# Workshop Manual

## Audi A6 2011 ➤
## Audi A6 China 2012 ➤
## Audi A7 Sportback 2011 ➤

## Heating, air conditioning

Edition 07.2018

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# List of Workshop Manual Repair Groups

## Repair Group

00 - Technical data

80 - Heating

87 - Air conditioning system



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

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# 00 – Technical data

## 1 General notes

(ARL005974; Edition 07.2018)

⇒ “1.1 Type plates”, page 1

⇒ “1.2 Notes on odours in vehicles with air conditioner”, page 2

⇒ “1.3 Seat heating”, page 4

⇒ “1.4 Seat ventilation”, page 10

⇒ “1.5 Heated rear window”, page 15

⇒ “1.6 Operating unit”, page 16

⇒ “1.7 Notes on control motors”, page 22

⇒ “1.8 Auxiliary air conditioner - vehicles with high-voltage system only”, page 28

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### 1.1 Type plates

**The type plate indicating the type of refrigerant and the refrigerant capacity is located on the bottom left of the bonnet.**

**Note**

- *The label indicates the type of refrigerant used and the quantity of refrigerant and refrigerant oil with which the system was charged during production.*
- *Symbols on the label indicate the hazards which may be encountered when handling the refrigerant or working on the refrigerant circuit.*
- *For all air conditioners up to 06/2016, the refrigerant circuit is charged with refrigerant R134a. From 06/2016 onwards (gradual introduction), refrigerant R134a or R1234yf may be used, depending on the country version and vehicle model ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .*
- *Standards and regulations may also be listed, such as certain SAE standards applicable in the USA. SAE J639 specifies the safety warnings for air conditioners in passenger cars. SAE J842 specifies that all components and materials must be approved for use with refrigerant R1234yf; SAE J2845 states that only trained and certified individuals may perform repairs and service on the refrigerant circuit of the air conditioner.*
- *Depending on the version and production period, the GWP (global warming potential) value may be included for the refrigerant used.*
- *The capacities and type of refrigerant oil listed on the label apply to the status at the time of the vehicle's production. Always refer to the vehicle-specific Workshop Manual for the current applicable values ⇒ “4 Technical data”, page 99 , ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Capacities for refrigerant R134a/refrigerant oil and approved refrigerant oils , or ⇒ Air conditioners with refrigerant R1234yf - General notes; Rep. gr. 00 ; Technical data .*

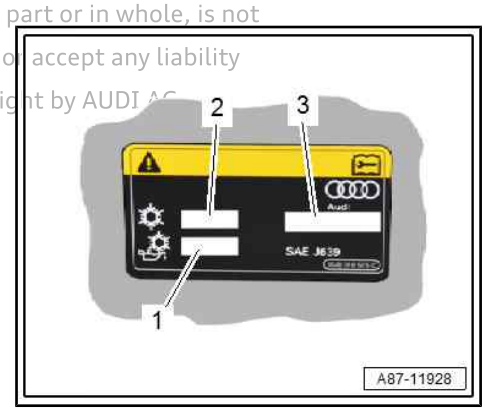
Version 1

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1 - Refrigerant designation, e.g. R134a or R1234yf (depending on production date and version)

2 - Refrigerant capacity

Version 2




1 - Refrigerant oil designation, in this case PAG oil (for further information, refer to ⇒ “4.2 Approved refrigerant oils and refrigerant oil capacities”, page 101 ).

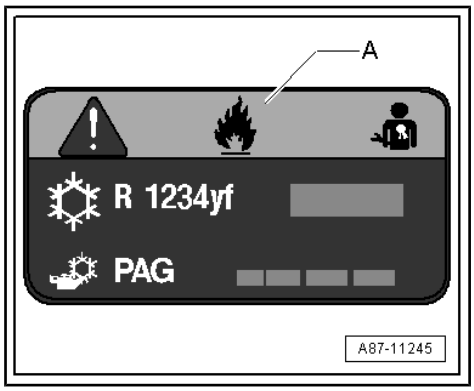
2 - Refrigerant designation, e.g. R134a or R1234yf (depending on production date and version). Depending on the type plate version and vehicle production period, the GWP (global warming potential) value may be included for the refrigerant used ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems (“Refrigerant R134a”, “Environmental aspects for refrigerant R134a”), or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Technical and physical principles .

3 - Refrigerant capacity

**Note**

- *For refrigerant R134a and refrigerant oil capacities, as well as approved refrigerant oils, refer to ⇒ “4 Technical data”, page 99 and ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Capacities for refrigerant R134a/refrigerant oil and approved refrigerant oils .*
- *For refrigerant R1234yf and refrigerant oil capacities as well as approved refrigerant oils, refer to ⇒ “4 Technical data”, page 99 , and ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Technical data .*

Version 3




**Note**

*Explanation of information on label -A- ⇒ page 2 .*

## 1.2 Notes on odours in vehicles with air conditioner

Odours coming from the air conditioner can have various causes. Not all of these odours originate in the evaporator of the air conditioning unit and can therefore be eliminated by cleaning the evaporator.

| Type of odour | Possible cause and remedy |
|---|---|
| Smell of burnt oil | ♦ Usually originates in engine compartment due to leak(s) in engine or gearbox<br>– Eliminate leak(s) in engine or gearbox. |

| Type of odour | Possible cause and remedy |
|---|---|
| Sulphurous smell of exhaust gas | ♦ Leak(s) in exhaust system<br>♦ Exhaust gas entering passenger compartment (e.g. when reversing through a cloud of exhaust fumes)<br>– Eliminate leak(s) in exhaust system. |
| Fishy smell of coolant | ♦ Leak(s) in engine cooling system or air conditioner heat exchanger<br>– If fishy odour occurs in both fresh air and air recirculation mode, check air conditioner heat exchanger for leaks. |
| Scorched clutch smell | ♦ Clutch linings worn or clutch operated incorrectly<br>– Check clutch. |
| Other odours | ♦ Floor mats, retrofitted protective seat covers etc.<br>– Check and renew or clean floor mats or protective covers. |
| Mouldy smell from front end of vehicle | ♦ Water can enter fresh air intake via drip rail if plenum chamber cover is damaged or not installed properly.<br>– Check fresh air intake of air conditioning unit ⇒ page 504 .<br>♦ Deposits (leaves, pine needles etc.) may have accumulated in plenum chamber.<br>– Check plenum chamber for deposits ⇒ page 505 .<br>♦ Water may not be able to drain out of plenum chamber.<br>– Check water drains ⇒ page 505 . |
| Odour from air conditioning unit | ♦ Too much water condensation in air conditioning unit<br>– Check condensation drain ⇒ page 484 .<br>♦ Old or severely contaminated dust and pollen filter<br>– Check dust and pollen filter ⇒ page 472 .<br>♦ Deposits on evaporator fins<br>– Clean evaporator ⇒ page 414 . |

**Note**

♦ *The odour can only be eliminated by cleaning with the ultrasound A/C cleaner - VAS 6189A- if it actually occurs in the evaporator.*

♦ *There are numerous evaporator cleaning methods with different effects available on the market. Cleaning the evaporator using the ultrasound A/C cleaner - VAS 6189A- or a suction-feed spray gun - V.A.G 1538- is one of the methods currently checked and approved by Audi. Other methods checked and approved by Audi and the corresponding information can be found e.g. on the "Audi Partner Portal" or the "Audi ServiceNet" (⇒ table).*

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♦ *The following procedures are examples of how to access "Audi ServiceNet". Depending on the country, "Air conditioner cleaning" may be found, for example, in the "Genuine parts" submenu. For precise details on how to find the instructions on "Air conditioner cleaning", follow the instructions provided on the "Audi Partner Portal" or on "Audi ServiceNet".*

– Select path:

| Audi ServiceNet | | |
|---|---|---|
| | Products | |
| | | Maintenance and wear |

| | |
|---|---|
| | Air conditioner cleaning |

Or

| |
|---|
| Audi ServiceNet |
| AGP/AGA |
| Product information |
| Information according to categories |
| Maintenance and wear |
| Air conditioner cleaning |

# 1.3 Seat heating

⇒ “1.3.1 Checking front seat heating”, page 4
⇒ “1.3.2 Checking rear seat heating”, page 7

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## 1.3.1 Checking front seat heating

**Components involved in activation of front seat heating**

The operating unit ( Climatronic control unit - J255- ) transmits the request to activate the seat heating via the data bus to the corresponding control unit (control unit dependent on vehicle model and equipment) ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

- On vehicles without a seat and steering column adjustment control unit with memory - J136- or front passenger seat adjustment with memory control unit - J521- , the onboard supply control unit - J519- activates the driver's and front passenger side seat heating. The request for seat heating activation is first transmitted by the operating unit ( Climatronic control unit - J255- ) via the data bus to the data bus diagnostic interface - J533- and then relayed to -J519- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations (for the appropriate vehicle system).
- On vehicles with a seat and steering column adjustment control unit with memory - J136- and a front passenger seat adjustment with memory control unit - J521- , -J136- activates the driver side seat heating, and -J521- activates the front passenger side seat heating. The seat heating activation request is transmitted by the operating unit ( Climatronic control unit - J255- ) via the data bus first to the data bus diagnostic interface - J533- and then relayed to -J136- and -J521- . If a vehicle is fitted with -J136- but not -J521- , -J136- activates the driver seat heating, and -J519- activates the front passenger seat heating ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations (for the appropriate vehicle system).
- A start/stop system is offered for this vehicle in combination with certain engines. On vehicles with a start/stop system, the seat heating is deactivated while the stop function is active (to protect the battery - A- ). However, the setting for activation of the seat heating remains stored in the operating unit ( Climatronic control unit - J255- ). The seat heating is switched on again after the engine has been re-started via the start function ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- The heating setting for the driver seat can be stored for a specific key. The settings selected before switching off the ignition are then used the next time the vehicle is driven ⇒ Owner's Manual .
- On vehicles with no seat occupied sensor for the front passenger seat and the rear seats, the seat heating is currently

not deactivated automatically if a seat is not occupied while the vehicle is being driven. However, if the ignition is switched off and not switched on again within approx. 10 minutes, the setting for activation of the seat heating is deleted ⇒ Owner's Manual .

- Depending on the vehicle, the seat heating setting may be reduced automatically by one level after a certain time (e.g. after 10 minutes) ⇒ Owner's Manual .

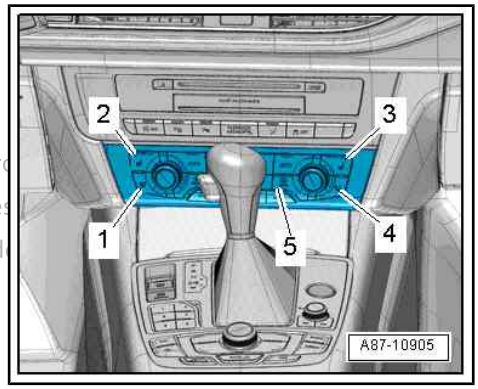


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**Note**

- *The seat heating may be activated differently depending on the vehicle model ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *Depending on the model and vehicle equipment, the various pieces of information on the activation of the seat heating (setting transmitted by the operating unit ( Climatronic control unit - J255- ), specified and actual seat temperature, etc.) are displayed differently in the various measured value blocks in the different control units ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *If the heating of the driver seat or front passenger seat cannot be activated for some reason (e.g. short circuit in connection to seat heating element, open circuit in power supply to corresponding control unit), this is stored as a fault in the onboard supply control unit - J519- , the seat and steering column adjustment control unit with memory - J136- or the front passenger seat adjustment with memory control unit - J521- (depending on model and vehicle equipment). On such vehicles, the information that the event memory in the corresponding control unit has to be read out may not be transmitted via the data bus to the operating unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester ("Guided Fault Finding"). In the event of problems with seat heating, the first step should therefore always be to read out the event memories of the control units which activate the seat heating.*
- *The procedure for checking the activation of the seat heating is described in the Guided Fault Finding routine for the corresponding control unit ( onboard supply control unit - J519- , seat and steering column adjustment control unit with memory - J136- or front passenger seat adjustment with memory control unit - J521- , depending on vehicle model and equipment) ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *If, for example, the voltage measured at terminal "30" of the onboard supply control unit - J519- falls below a value stored in -J519- , the seat heating output is reduced or deactivated completely to relieve the load on the alternator - C- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *The "Read measured values" function of the Guided Fault Finding routine for the operating unit ( Climatronic control unit - J255- ) indicates which seat heating setting has been selected. Depending on the version and the equipment of the vehicle, the activation of the seat heating as well as the actual and specified temperatures in the seat and the actual current flowing via the seat heating etc. are displayed using the "Read measured values" function for the corresponding control unit ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *Depending on the vehicle model, the seat heating of the front passenger seat may be deactivated after a certain period if the system detects that the seat is not occupied (deactivation by way of the seat occupied sensor was not provided at the start of production, introduction not yet finalised) ⇒ Owner's Manual .*

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- There are different versions of the operating unit ( Climatronic control unit - J255- ) ⇒ Electronic parts catalogue . You can identify the different versions, for example, by the symbols in the buttons -2, 3- (for vehicles with optional “seat heating”) and -1, 4- (for vehicles with optional “seat heating/ventilation”).
- The function indicator lamps in the buttons light up when seat heating is switched on ⇒ Owner's Manual .
- The seat heating level is set on the operating unit ( Climatronic control unit - J255- ); this setting is then transmitted via the data bus to the corresponding control unit. The specified temperatures for the different seat heating settings are stored in the corresponding control units. Depending on the version of the control unit and the production period of the vehicle, the specified temperature for the seat heating may be different even if the setting on -J255- is the same ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

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## 1.3.2 Checking rear seat heating

**Components involved in activation of rear seat heating**

The activation of the rear seat heating varies according to the vehicle version and equipment.

**Note**

*On vehicles with no rear Climatronic operating unit - E265- , the rear seat heating setting is selected via the heated rear left seat switch with regulator - E128- or the rear left seat heating switch - E77- and the heated rear right seat switch with regulator - E129- or the rear right seat heating switch - E78- . The heated bench seat cushion for rear left seat - Z10- , the heated backrest for rear left seat - Z11- , the heated bench seat cushion for rear right seat - Z12- and the heated backrest for rear right seat - Z13- are then activated by the heated rear seats control unit - J786- . This control unit does not currently have self-diagnosis capability. However, the onboard supply control unit - J519- must enable the activation ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

On vehicles with rear Climatronic operating unit - E265- , the rear seat heating is set via -E265- . -E265- then activates the rear seat heating differently depending on the vehicle equipment and model.

- On vehicles without control unit for rear seat adjustment, driver side - J876- or control unit for rear seat adjustment, passenger side - J877- , the rear seat heating is activated by the rear Climatronic operating unit - E265- . The rear seat heating is switched on by -E265- if the onboard supply control unit - J519- does not detect a condition preventing activation of the seat heating. -J519- first transmits the request via the data bus to the data bus diagnostic interface - J533- ; it is then relayed to -E265- via the operating unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations (for the corresponding vehicle system).
- On vehicles with a control unit for rear seat adjustment, driver side - J876- and a control unit for rear seat adjustment, passenger side - J877- , the rear seat heating is not activated directly by the rear Climatronic operating unit - E265- . Rather, activation is implemented by -J876- and -J877- . The activation request for the seat heating is transmitted by -E265- to the operating unit ( Climatronic control unit - J255- ). This control unit first relays the request to the data bus diagnostic interface

- J533- (via the data bus), from where it is transmitted to -J876- and -J877- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations (for the appropriate vehicle system).

- A start/stop system is offered for this vehicle in combination with certain engines. On vehicles with a start/stop system, the seat heating is deactivated while the stop function is active (to protect the battery - A- ). However, the setting for the activation of the seat heating remains stored in the rear Climatronic operating unit - E265- . The seat heating is switched on again after the engine has been re-started via the start function ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

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**Note**

- *The seat heating may be activated differently depending on the vehicle model ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *Depending on the model and vehicle equipment, the various pieces of information on the activation of the seat heating (setting transmitted by rear Climatronic control unit - E265- , specified and actual seat temperatures, etc.) are displayed differently in the various measured value blocks in the different control units ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *If there is a situation in which the rear seat heating cannot be activated (e.g. short circuit in connection to seat heating element, open circuit in power supply to corresponding control unit), this is stored as a fault in the rear Climatronic operating unit - E265- , the onboard supply control unit - J519- , the operating unit ( Climatronic control unit - J255- ), the data bus diagnostic interface - J533- , the control unit for rear seat adjustment, driver side - J876- or the control unit for rear seat adjustment, passenger side - J877- (depending on the vehicle model and equipment). On this vehicle, the information that the event memory in the corresponding control unit has to be read out may not be transmitted via the data bus to -E265- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”). In the event of problems with seat heating, the first step should therefore always be to read out the event memories of the control units which activate the seat heating.*
- *The procedure for checking the activation of the heated seats is described in the Guided Fault Finding routine for the corresponding control unit ( rear Climatronic operating unit - E265- , control unit for rear seat adjustment, driver side - J876- or control unit for rear seat adjustment, passenger side - J877- , depending on vehicle model and equipment) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *If, for example, the voltage measured at terminal “30” of the onboard supply control unit - J519- falls below a value stored in -J519- , the seat heating output is reduced or deactivated completely to relieve the load on the alternator - C- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *The “Read measured values” function of the Guided Fault Finding routine for the rear Climatronic operating unit - E265- indicates which seat heating setting has been made. Depending on the version and the equipment of the vehicle, the activation of the seat heating as well as the actual and specified temperatures in the seat and the actual current flowing via the seat heating etc. are displayed using the “Read measured values” function of the Guided Fault Finding routine for the corresponding control unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *Depending on the vehicle model, the rear seat heating may be deactivated after a certain period if the system detects that one of the seats is not occupied (at the start of production, no provision was made for deactivation via the seat occupied sensor; introduction not yet finalised) ⇒ Owner's Manual .*

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## 1.4 Seat ventilation

⇒ “1.4.1 Checking front seat ventilation”, page 10

⇒ “1.4.2 Rear seat ventilation”, page 12

## 1.4.1 Checking front seat ventilation

**Components involved in activation of seat heating and seat ventilation (front)**

The operating unit ( Climatronic control unit - J255- ) transmits the request to activate the seat ventilation via the data bus to the corresponding control unit (control unit dependent on vehicle model and equipment) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

- Vehicles with seat ventilation are always fitted with a seat and steering column adjustment control unit with memory - J136- and a front passenger seat adjustment with memory control unit - J521- . These control units then activate the seat ventilation. The activation process is the same as for vehicles with seat heating only and fitted with -J136- and -J521- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations (for the appropriate vehicle system).
- A start/stop system is offered for this vehicle in combination with certain engines. On vehicles with a start/stop system, the seat ventilation can be deactivated while the stop function is active (to protect the battery - A- ). However, the setting for activation of the seat ventilation remains stored in the operating unit ( Climatronic control unit - J255- ). The seat ventilation is switched on again after the engine has been re-started via the start function ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- The ventilation setting for the driver seat can be stored for a specific key. The settings selected before switching off the ignition are then used the next time the vehicle is driven ⇒ Owner's Manual .
- On vehicles with no seat occupied sensor for the front passenger seat and the rear seats, the seat ventilation is currently not deactivated automatically if a seat is not occupied while the vehicle is being driven. However, if the ignition is switched off and not switched on again within approx. 10 minutes, the setting for activation of the seat ventilation is deleted ⇒ Owner's Manual .
- Depending on the vehicle, the seat ventilation may be reduced automatically by one level after a certain time (e.g. after 10 minutes) ⇒ Owner's Manual .

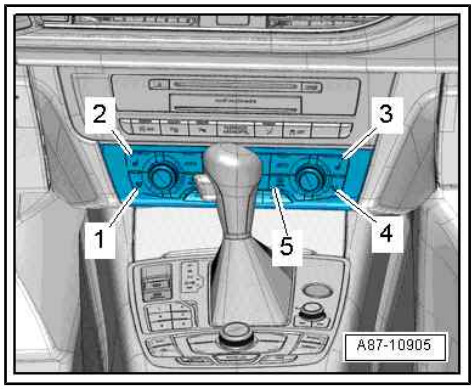
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**Note**

- *The seat ventilation may be activated differently depending on the vehicle model ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *Depending on the model and vehicle equipment, the various pieces of information on the activation of the seat ventilation (setting transmitted by Climatronic control unit - J255- , specified and actual seat temperature, etc.) are displayed differently in the various measured value blocks in the different control units ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *If the ventilation of the driver seat or front passenger seat cannot be activated for some reason (e.g. short circuit or open circuit in power supply to corresponding control unit), this is stored as a fault in the onboard supply control unit - J519- , the seat and steering column adjustment control unit with memory - J136- or the front passenger seat adjustment with memory control unit - J521- (depending on model and vehicle equipment). On such vehicles, the information that the event memory in the corresponding control unit has to be read out may not be transmitted via the data bus to the operating unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”). In the event of problems with seat ventilation, the first step should therefore always be to read out the event memories of the control units which activate the seat ventilation.*
- *The procedure for checking the activation of the seat ventilation is described in the Guided Fault Finding routine for the corresponding control unit ( onboard supply control unit - J519- , seat and steering column adjustment control unit with memory - J136- or front passenger seat adjustment with memory control unit - J521- , depending on vehicle model and equipment) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *If, for example, the voltage measured at terminal “30” of the onboard supply control unit - J519- falls below a value stored in -J519- , the seat ventilation output is reduced or deactivated completely to relieve the load on the alternator - C- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *The “Read measured values” function of the Guided Fault Finding routine for the operating unit ( Climatronic control unit - J255- ) indicates which seat ventilation setting has been selected. Depending on the version and the equipment of the vehicle, the activation of the seat ventilation as well as the actual and specified temperatures in the seat and the actual current flowing via the seat heating etc. are displayed using the “Read measured values” function for the corresponding control unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *Depending on the vehicle model, the seat ventilation of the front passenger seat may be deactivated after a certain period if the system detects that the seat is not occupied (deactivation by way of the seat occupied sensor was not provided at the start of production, introduction not yet finalised) ⇒ Owner's Manual .*

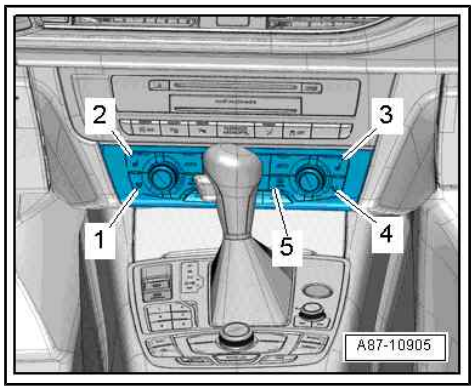
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- There are different versions of the operating unit ( Climatronic control unit - J255- ) ⇒ Electronic parts catalogue . You can identify the different versions, for example, by the symbols in the buttons -2, 3- (for vehicles with optional “seat heating”) and -1, 4- (for vehicles with optional “seat heating/ventilation”).
- The function indicator lamps in the buttons light up when the seat ventilation is switched on ⇒ Owner's Manual .
- The seat ventilation level is set on the operating unit ( Climatronic control unit - J255- ); this setting is then transmitted via the data bus to the corresponding control unit. The specified temperatures for the different seat ventilation settings are stored in the corresponding control units. Depending on the version of the control unit and the production period of the vehicle, the specified temperature for the seat ventilation may be different even if the setting on -J255- is the same ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).




**Please also observe the following notes regarding the operation of the seat ventilation:**

- On this vehicle, the seats are not heated automatically when seat ventilation is switched on (activated/deactivated using buttons -1, 4-), but rather only if the seat heating is switched on additionally using buttons -2, 3-. The following modes are therefore possible: seat heating without seat ventilation, seat ventilation without seat heating and seat heating with seat ventilation ⇒ Owner's Manual .
- The activation of the fans for the seat cushion and backrest (e.g. 1 fan each in backrest and seat cushion) depends on the selected seat ventilation level (approx. 40 % of maximum power at level 1 and approx. 85 % at level 3) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- The ventilation setting for the driver seat is stored when you switch off the ignition and is allocated via the ignition key. After switching on the ignition/starting the engine, the seat ventilation is activated according to the last setting ⇒ Owner's Manual .
- The ventilation setting for the front passenger seat and rear seats is also stored when you switch off the ignition. However, if the ignition remains switched off longer than approx. 10 minutes, the seat ventilation will not be re-activated when the ignition is switched on/the engine is started (the settings will be erased) ⇒ Owner's Manual .




## 1.4.2 Rear seat ventilation

**Components involved in activation of rear seat ventilation**

The activation of the rear seat ventilation differs according to the vehicle version and equipment.

On vehicles with rear Climatronic operating unit - E265- the rear seat ventilation is set via -E265- . -E265- then activates the rear seat ventilation differently depending on the vehicle equipment and model.

- On vehicles with a control unit for rear seat adjustment, driver side - J876- and a control unit for rear seat adjustment, passenger side - J877- , the rear seat ventilation is not activated directly by the rear Climatronic operating unit - E265- . Rather, activation is implemented by -J876- and -J877- . The activation request for the seat ventilation is transmitted by -E265- to the operating unit ( Climatronic control unit - J255- ). This control unit first relays the request to the data bus diagnostic interface - J533- (via the data bus), from where it is transmitted to -J876- and -J877- ⇒ Vehicle diagnostic tester (“Guided Fault Find-

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ing") and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations (for the appropriate vehicle system).

- Vehicles with seat ventilation are not always fitted with a control unit for rear seat adjustment, driver side - J876- and a control unit for rear seat adjustment, passenger side - J877- . If there is no -J876- / -J877- fitted, the rear Climatronic operating unit - E265- activates the control unit for rear right seat ventilation - J801- and the control unit for rear left seat ventilation - J802- directly. Depending on the vehicle equipment, these control units then activate the seat ventilation ⇒ Vehicle diagnostic tester ("Guided Fault Finding") ⇒ Current flow diagrams, Electrical fault finding and Fitting locations (for the appropriate vehicle system).
- A start/stop system is offered for this vehicle in combination with certain engines. On vehicles with a start/stop system, the seat ventilation is deactivated while the stop function is active (to protect the battery - A- ). However, the setting for activation of the seat ventilation remains stored in the rear Climatronic operating unit - E265- . The seat ventilation is switched on again after the engine has been re-started via the start function ⇒ Vehicle diagnostic tester ("Guided Fault Finding").

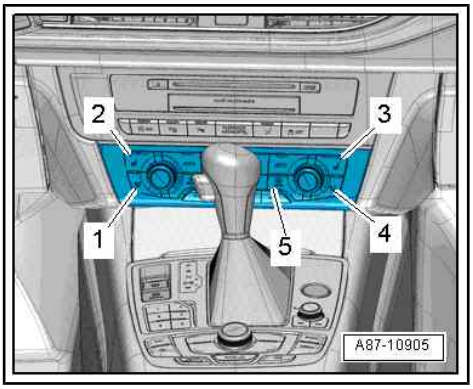
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**Note**

- *The seat ventilation may be activated differently depending on the vehicle model ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *Depending on the model and vehicle equipment, the various pieces of information on the activation of the seat ventilation (setting transmitted by rear Climatronic control unit - E265- , specified and actual seat temperatures, etc.) are displayed differently in the various measured values in the different control units ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *If there is a situation in which the rear seat ventilation cannot be activated (e.g. open circuit in power supply to corresponding control unit), this is stored as a fault in the rear Climatronic operating unit - E265- , the onboard supply control unit - J519- , the operating unit ( Climatronic control unit - J255- ), the data bus diagnostic interface - J533- , the control unit for rear seat adjustment, driver side - J876- or the control unit for rear seat adjustment, passenger side - J877- (depending on the vehicle model and equipment). On this vehicle, the information that the event memory in the corresponding control unit has to be read out may not be transmitted via the data bus to -E265- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”). If there is a problem with the seat ventilation, first read out the event memory of the control units controlling the seat heating and seat ventilation.*
- *The procedure for checking the activation of the seat ventilation is described in the Guided Fault Finding routine for the corresponding control unit ( rear Climatronic operating unit - E265- , control unit for rear seat adjustment, driver side - J876- or control unit for rear seat adjustment, passenger side - J877- , depending on vehicle model and equipment) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *If, for example, the voltage measured at terminal “30” of the onboard supply control unit - J519- falls below a value stored in -J519- , the seat ventilation output is reduced or deactivated completely to relieve the load on the alternator - C- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *The “Read measured values” function of the Guided Fault Finding routine for the rear Climatronic operating unit - E265- indicates which seat ventilation setting has been made. Depending on the version and the equipment of the vehicle, the activation of the seat ventilation as well as the actual and specified temperatures in the seat and the actual current flowing via the seat heating etc. are displayed using the “Read measured values” function of the Guided Fault Finding routine for the corresponding control unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *Depending on the vehicle model, the rear seat ventilation may be deactivated after a certain period if the system detects that one of the seats is not occupied (at the start of production, no provision was made for deactivation via the seat occupied sensor; introduction not yet finalised) ⇒ Owner's Manual .*

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## 1.5 Heated rear window




**Note**

- *If the heated rear window cannot be switched on for some reason (short circuit in connection to heated rear window relay - J9- , open circuit in power supply to convenience system central control unit - J393- etc.), this is stored as a fault in - J393- and a message is transmitted via the data bus / data bus diagnostic interface - J533- to inform the operating unit ( Climatronic control unit - J255- ) that the event memory in -J393- has to be read out ⇒ Vehicle diagnostic tester (“Guided Fault Finding”). Activation of the heated rear window - Z1- is indicated in the measured value of -J393- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *If the voltage measured at the onboard supply control unit - J519- at terminal “30” drops below a value stored in -J519- or the operating unit ( Climatronic control unit - J255- ), the heated rear window is deactivated completely (or the power reduced), thus relieving the load on the alternator - C- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *If the heated rear window - Z1- has to be shut off due to undervoltage, the indicator lamp in the heated rear window button in the operating unit ( Climatronic control unit - J255- ) stays on. However, if deactivation lasts longer than approx. 100 seconds -J255- switches off the indicator lamp.*
- *The “Read measured values” function of the Guided Fault Finding routine for the operating unit ( Climatronic control unit - J255- ) indicates that the rear window heating is switched on or why there is no actuation although there is a corresponding request ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *The procedure for checking the activation of the heated rear window is described in the Guided Fault Finding for the convenience system central control unit - J393- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *The amount of time for which the heated rear window is activated depends on various factors (encoding of the rear window version in -J255- , the measured ambient temperature etc.). For example, the heating for a certain type of rear window may switch off after just three minutes when the ambient temperature is above +5 °C, but the heating for a different type of rear window may remain switched on for up to 20 minutes when the ambient temperature is below -20 °C ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *However, the heated rear window can also be activated permanently (until the ignition is switched off) by pressing and holding the “heated rear window” button -item 5- on the operating unit ( Climatronic control unit - J255- ). The length of time that the button must be pressed can be set in -J255- via the “adaption” function ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Owner's Manual .*
- *If the ambient temperature changes while you are driving (e.g. rises above 0 °C) the heated rear window is deactivated automatically after the operating period set on the operating unit ( Climatronic control unit - J255- ) ⇒ Owner's Manual .*

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- *A start/stop system is offered for this vehicle in combination with certain engines. On vehicles with a start/stop system, the rear window heating is deactivated while the stop function is active (to protect the battery - A- ). However, the setting for activation of the heated rear window - Z1- remains stored in the operating unit ( Climatronic control unit - J255- ). The rear window heating is switched on again after the engine has been re-started via the start function ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

## 1.6 Operating unit

⇒ "1.6.1 General notes on operating unit ( Climatronic control unit J255 )", page 16

⇒ "1.6.2 General notes on rear Climatronic operating unit E265 ", page 21

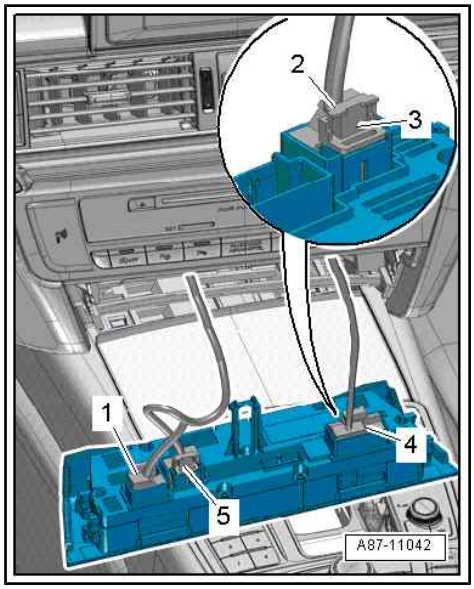
### 1.6.1 General notes on operating unit ( Climatronic control unit - J255- )

- Certain air conditioner functions can be switched on and off via the MMI system (Multi Media Interface) using the "A/C" function on the "Car" / "Car systems" menu. In addition, the operation of the air conditioner can also be influenced by the settings on the MMI (Multi Media Interface) in the "A/C" function of the "Car" / "Car systems" menu. Therefore, if there are problems with these components, first check the settings on the MMI ⇒ Infotainment/MMI Operating Manual .
- On vehicles with a start/stop system, the stop function is disabled depending on the setting on the operating unit ( Climatronic control unit - J255- ). For example, the stop function is not possible, or the stop function is interrupted and the engine is switched on as soon as the "defrost" mode is selected. This also applies if the difference between the set specified temperature and the measured actual temperature exceeds a certain value in heating and cooling mode ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- Currently air conditioner operating units ( Climatronic control unit - J255- ) cannot be exchanged in the familiar manner (component protection active). The component protection feature (anti-theft system) can only be cancelled by entering certain vehicle data ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- If a -J255- with active component protection (anti-theft system) is installed in a different vehicle, the functions required for vehicle security can still be selected, but not the convenience functions
- The buttons and rotary controls are illuminated by LEDs which cannot be renewed separately.
- The function indicator lamps in the buttons and rotary controls and the rotary controls and buttons themselves cannot be renewed separately.
- If the control buttons on the operating unit ( Climatronic control unit - J255- ) remain pressed down for long periods (because of objects resting on them, for instance) this may lead to a fault being stored in the event memory indicating that the buttons are sticking. If applicable, check the operation of the buttons and erase the event memory if no problem is found.
- The seat heating and seat ventilation level is set on the operating unit ( Climatronic control unit - J255- ); this setting is then transmitted via the data bus e.g. to the onboard supply control unit - J519- . The specified temperatures for the different seat heating and seat ventilation settings are stored in -J519- . De-

pending on the version of -J519- , the specified temperature for the seat heating and seat ventilation may therefore differ even if the settings on the operating unit, Climatronic control unit - J255- are the same ⇒ Vehicle diagnostic tester (“Guided Fault Finding” for -J519- ).

- If the measurements are incorrect, check the infrared temperature and sunlight penetration sensor fitted in the operating unit ( Climatronic control unit - J255- ). The infrared temperature and sunlight penetration sensor must not be covered or concealed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- The functions selected are indicated by the illumination of the LEDs in the various buttons and rotary controls on the operating unit ( Climatronic control unit - J255- ).
- On vehicles with the “basic” version, the functions currently selected are not displayed by the operating unit ( Climatronic control unit - J255- ). Only certain settings are indicated on the display of the Multi Media Interface (MMI) ⇒ Owner's Manual . The display time can be set via the “Adaption” function of the operating unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- On vehicles with the “deluxe” version, the functions currently selected are indicated on the display of the operating unit ( Climatronic control unit - J255- ) and on the display of the Multi Media Interface (MMI). The display time can be set via the “Adaption” function of the operating unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- If no fault has been stored and a function is not available, check the adaption of the operating unit ( Climatronic control unit - J255- ); the function may have been deactivated by a setting. If applicable, reset the adaption in all adaption channels to the factory setting ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- If there is a situation in which heating or ventilation of the driver seat or front passenger seat cannot be activated, this is stored as a fault in the onboard supply control unit - J519- , the seat and steering column adjustment control unit with memory - J136- or the front passenger seat adjustment with memory control unit - J521- . On this vehicle, information is currently not always transmitted via the data bus to the operating unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- If there are problems with seat heating or ventilation, start by reading out the event memories of the control units which activate the seat heating and ventilation ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- If a new 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 event memory ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

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- Certain air conditioner functions can be switched on and off via the MMI system (Multi Media Interface) using the “A/C” function on the “Car” / “Car systems” menu. In addition, the operation of the air conditioner can also be influenced by the settings on the MMI (Multi Media Interface) in the “A/C” function of the “Car” / “Car systems” menu. Therefore, if there are problems with these components, first check the settings on the MMI ⇒ Infotainment/MMI Operating Manual .
- On vehicles with a start/stop system, the stop function is disabled depending on the setting on the operating unit ( Climatronic control unit - J255- ). For example, the stop function is not possible, or the stop function is interrupted and the engine is switched on as soon as the “defrost” mode is selected. This also applies if the difference between the set specified temperature and the measured actual temperature exceeds a certain value in heating and cooling mode ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Currently air conditioner operating units ( Climatronic control unit - J255- ) cannot be exchanged in the familiar manner (component protection active). The component protection feature (anti-theft system) can only be cancelled by entering certain vehicle data ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- If a -J255- with active component protection (anti-theft system) is installed in a different vehicle, the functions required for vehicle security can still be selected, but not the convenience functions
- The buttons and rotary controls are illuminated by LEDs which cannot be renewed separately.
- The function indicator lamps in the buttons and rotary controls and the rotary controls and buttons themselves cannot be renewed separately.
- If the control buttons on the operating unit ( Climatronic control unit - J255- ) remain pressed down for long periods (because of objects resting on them, for instance) this may lead to a fault being stored in the event memory indicating that the buttons are sticking. If applicable, check the operation of the buttons and erase the event memory if no problem is found.
- The seat heating and seat ventilation level is set on the operating unit ( Climatronic control unit - J255- ); this setting is then transmitted via the data bus e.g. to the onboard supply control unit - J519- . The specified temperatures for the different seat heating and seat ventilation settings are stored in -J519- . Depending on the version of -J519- , the specified temperature for the seat heating and seat ventilation may therefore differ even if the settings on the operating unit ( Climatronic control unit - J255- ) are the same ⇒ Vehicle diagnostic tester (“Guided Fault Finding” for -J519- ).
- If the measurements are incorrect, check the infrared temperature and sunlight penetration sensor fitted in the operating unit ( Climatronic control unit - J255- ). The infrared temperature and sunlight penetration sensor must not be covered or concealed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- The functions selected are indicated by the illumination of the LEDs in the various buttons and rotary controls on the operating unit ( Climatronic control unit - J255- ).

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- On vehicles with the “basic” version, the functions currently selected are not displayed by the operating unit ( Climatronic control unit - J255- ). Only certain settings are indicated on the display of the Multi Media Interface (MMI) ⇒ Owner's Manual . The display time can be set via the “Adaption” function of the operating unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- On vehicles with the “deluxe” version, the functions currently selected are indicated on the display of the operating unit ( Climatronic control unit - J255- ) and on the display of the Multi Media Interface (MMI). The display time can be set via the “Adaption” function of the operating unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- If no fault has been stored and a function is not available, check the adaption of the operating unit ( Climatronic control unit - J255- ); the function may have been deactivated by a setting. If applicable, reset the adaption to the factory setting in all adaption channels ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) .
- If there is a situation in which heating or ventilation of the driver seat or front passenger seat cannot be activated, this is stored as a fault in the onboard supply control unit - J519- , the seat and steering column adjustment control unit with memory - J136- or the front passenger seat adjustment with memory control unit - J521- . On this vehicle, information is currently not always transmitted via the data bus to the operating unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) .
- If there are problems with seat heating or ventilation, start by reading out the event memories of the control units which activate the seat heating and ventilation ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) .
- If a new 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 event memory ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) .
- From model year 2013 onwards, the display in the MMI for the air distribution changes. At the same time a modified operating unit ( Climatronic control unit - J255- ) is introduced ( -J255- with part number 4G0 820 043 from index “AA” onwards); observe correct allocation ⇒ Electronic parts catalogue .
- Up to model year 2012, the signal from -G355- was evaluated via the convenience system central control unit - J393- . From model year 2013 onwards, the onboard supply control unit - J519- evaluates the signal from -G355- and transmits the measured value to the operating unit ( Climatronic control unit - J255- ). Pay attention to the correct version and assignment of -J255- ⇒ Electronic parts catalogue , ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Depending on the production period (gradual introduction from model year 2013 onwards) and the vehicle version, the humidity sender - G355- may no longer be addressed as a component in the event memory. If there is a discrepancy for -G355- on such vehicles, the rain and light sensor - G397- is indicated as the location of the fault.

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- Vehicles with a “basic” air conditioner are fitted with dash panel vents without potentiometers on both sides ( -G628- and -G629- ) at the factory. However, certain vehicles may have been retrofitted with dash panel vents with potentiometers, together with the corresponding wiring and a special operating unit ( Climatronic control unit - J255- , “basic” version, with additional connector -5-). The electrical connections between -J255- and the two potentiometers ( -G628- and -G629- ) largely correspond to the connections fitted at the factory for the “deluxe” version ⇒ Current flow diagrams, Electrical fault finding and Fitting locations. Whether the components have been retrofitted is documented in the vehicle history (repair history) for the vehicle concerned.

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Vehicles from model year 2014 onwards

- Depending on the engine, certain vehicles are gradually being equipped with an air conditioner compressor additionally fitted with an air conditioning system magnetic clutch - N25- ⇒ page 315 . In certain air conditioner operating modes (e.g. “Econ” mode), the air conditioner compressor drive system is deactivated completely via this magnetic clutch. For -N25- to be activated by the operating unit ( Climatronic control unit - J255- ), the correct version of -J255- must be fitted and correctly encoded ⇒ Electronic parts catalogue and ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Modified air conditioner operating units ( Climatronic control unit - J255- ) are gradually being introduced (introduction not yet finalised; different functions; with part number up to index “AH”: can be identified e.g. by AC button; with part number from index “AJ” (or index “BA”) onwards: can be identified e.g. by A/C button) ⇒ Electronic parts catalogue .
- To make it possible for the air conditioning system magnetic clutch - N25- to be activated by the operating unit ( Climatronic control unit - J255- ), these vehicles may only be fitted with -J255- provided with the functions required for the activation of -N25- (e.g. -J255- with part number up to index “AT” is not designed for activation of -N25- . E.g. -J255- with part number from index “BA” onwards is designed for activation of -N25- ). Instead of -J255- with e.g. index “AJ”, the vehicle may also be fitted with a version with index “BA” (function designed for activation of -N25- is not used) ⇒ Electronic parts catalogue . In this case, the functions required for the corresponding vehicle are deactivated or activated via the coding of -J255- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- There are different versions of the coolant circulation pump - V50- with differing methods of activation; pay attention to the correct version and assignment to the air conditioner operating unit ( Climatronic control unit - J255- ⇒ page 517 ) and ⇒ Electronic parts catalogue .

Vehicles with auxiliary heater

- Make sure the air conditioner operating unit ( Climatronic control unit - J255- ) is correctly assigned to the hand-held remote control transmitter and to the remote control receiver for auxiliary heater - R64- . There are different versions of the hand-held remote control transmitter and -R64- for -J255- with part number up to index “AH” (can be identified e.g. by AC button) and with part number from index “AJ” onwards (can be identified e.g. by A/C button). Possibly no function if incorrect components are combined or if coding or adaption are incorrect (exact date of introduction on Audi A6 and Audi A7 not yet finalised, gradual conversion planned from model year 2014 onwards) ⇒ Auxiliary/supplementary heater; Rep. gr. 82 ; Overview of fitting locations - auxiliary/supplementary heater; Overview of fitting locations - components not located in passenger compartment , ⇒ Electronic parts catalogue and ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)

Vehicles with high-voltage system (hybrid vehicles)

- To permit implementation of the various functions of the operating unit ( Climatronic control unit - J255- ) required for vehicles with a high-voltage system, such vehicles must always be fitted with a -J255- that is provided with the relevant functions. The necessary functions for vehicles with a high-voltage system are integrated in control units -J255- with part number 4G0 820 043 and index “P” onwards ⇒ Electronic parts catalogue and ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

**Note**

- *All vehicles with high-voltage system are equipped with the “deluxe” version air conditioner as of the start of production.*
- *For example, control units -J255- with part number 4G0 820 043 and index “P”, “Q” or “R” were installed in vehicles with high-voltage system from the start of production onwards ⇒ Electronic parts catalogue .*

After renewing the operating unit ( Climatronic control unit - J255- ), always perform the following steps ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Check coding.

– Perform basic setting.

– Check adaption if applicable.

– Read out event memory and delete any entries displayed.

## 1.6.2 General notes on rear Climatronic operating unit - E265-

- Certain air conditioner functions can be switched on and off via the MMI system (Multi Media Interface) using the “A/C” function on the “Car” / “Car systems” menu. In addition, the operation of the air conditioner can also be influenced by the settings on the MMI (Multi Media Interface) in the “A/C” function of the “Car” / “Car systems” menu. Therefore, if there are problems with these components, first check the settings on the MMI ⇒ Infotainment/MMI Operating Manual .
- The component protection function is currently not active on the rear Climatronic operating unit - E265- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- The buttons and rotary controls are illuminated by LEDs which cannot be renewed separately.

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- The function indicator lamps in the buttons and rotary controls and the rotary controls and buttons themselves cannot be renewed separately.
- If the control buttons on the rear Climatronic operating unit -E265- remain pressed down for long periods (because of objects resting on them, for instance) this may lead to a fault being stored in the event memory indicating that the buttons are stuck. If applicable, check the operation of the buttons and erase the event memory if no problem is found.
- If a new -E265- has been installed and the basic setting not performed, the air conditioner control action will be restricted; this is displayed as an entry in the event memory ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

After renewing the operating unit ( Climatronic control unit -J255- ), always perform the following steps ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Check coding.
– Perform basic setting.
– Check adaption if applicable.
– Read out event memory and delete any entries displayed.

## 1.7 Notes on control motors

⇒ “1.7.1 General notes on control motors”, page 22

⇒ “1.7.2 Overview - control motors of air conditioner”, page 24

⇒ “1.7.3 Preparing adapter cables for activation of control motors”, page 28

### 1.7.1 General notes on control motors

**Caution**

*Air conditioner malfunctions can occur.*

- *The air conditioner will not function properly if control motors and/or the corresponding connectors are interchanged ⇒ “1.7.2 Overview - control motors of air conditioner”, page 24 .*
- *The control motors and connectors are identical; if they are installed or connected incorrectly, the corresponding flaps can no longer be properly matched and/or activated.*
- *The control motors are assigned via the “Addressing” function in “Guided Fault Finding”.*
- *Malfunctions will occur if the control motors are fitted at a different location at the air conditioning unit after “matching”. The control motors must therefore be marked before they are removed.*
- *The actuator socket for the control motor has no stop. It rotates permanently if the control motor is activated. A control motor should therefore not be activated after it has been detached.*

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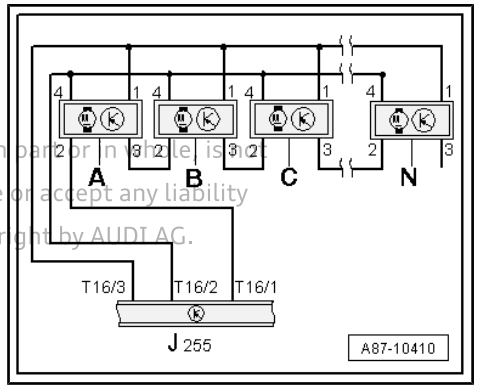
- There are various identical connectors on the air conditioning unit. To avoid the risk of interchanging them, mark the connectors before unplugging them.
- Different control motors are fitted on the air distribution housing and in the air intake unit; these motors have different

electrical values and part number indices ⇒ Electronic parts catalogue . The control motors must be marked before they are removed to avoid the risk of interchanging them.

- The actuator socket in the control motor for the shaft of the flaps/actuating arms has no stop. It rotates permanently if the control motor is activated. A control motor should therefore not be activated after it has been detached.
- After installing the control motor, perform basic setting of air conditioner ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- While you are performing the basic setting, the control motors are assigned and matched in accordance with the series connection of the wiring. If the sequence is not as specified, the control motors will not be matched properly and the flaps will not be controlled correctly ⇒ page 24 .
- The activation of the electrical components of the air conditioner can be checked via the “Final control diagnosis” and “Basic setting” functions (e.g. to check for interchanged components) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- After fitting a new control motor, perform the basic setting and check the activation by the operating unit ( Climatronic control unit - J255- ) as well as the operation of the control motor ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

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## 1.7.2 Overview - control motors of air conditioner




- The various control motors -A ... N- on the air distribution housing and air intake box are matched and activated via data lines. The various control motors are connected in series via these data lines to the operating unit ( Climatronic control unit - J255- ).
- A fault at a control motor connected via this data line or a fault in the wiring may lead to various entries in the event memory with different types of fault ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

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**Air conditioner (“basic” version):**

- Currently, 10 control motors (depending on version) are connected in series via the data line to -J255- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- The sequence and number of control motors in the wiring currently depend on the version of the air conditioner ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- In the “Basic setting” function, only perform the matching of the control motors connected to the data line to -J255- if there is no fault stored in -J255- with a cause other than a non-matched or incorrectly matched control motor. After matching has been performed via a data line, interrogate the event memory of -J255- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

**Air conditioner (“deluxe” version):**

- Currently, 16 control motors (depending on version) are connected in series via the data lines to -J255- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- 2 further control motors are also activated by -E265- via an additional data line (fitted at air distribution housing beneath centre console) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- The sequence and number of control motors in the wiring currently depend on the version of the air conditioner ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- In the “Basic setting” function, only perform the matching of the control motors connected to the data line to -J255- / -E265- if there is no fault stored in -J255- / -E265- with a cause other than a non-matched or incorrectly matched control motor. In addition, matching of the control motors must be performed consecutively via the data lines at -J255- / -E265- . For the matching of the control motors connected to the two data lines, interrogate the event memory of -J255- after performing matching via a data line ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

**All versions (continued):**

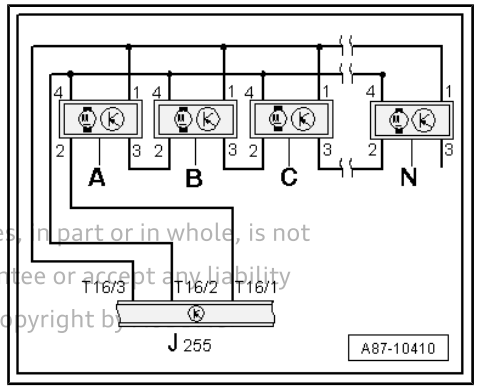
The effect of a fault and the type of fault stored in the event memory differ depending on the operating status or the “Guided Fault Finding” function for the air conditioner in which a specific fault occurs ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

If there is a fault concerning the control motor sequence (two or more connectors at control motors, or control motors themselves interchanged during installation):

- Operation of the control motors may still be OK until basic setting (addressing of control motors) is next performed if the connectors have been interchanged. However, the next time basic setting is performed, these control motors will be incorrectly matched (addressed) and the control motors (and thus the flaps) will no longer be activated properly from that point onwards (incorrect assignment).
- If the connectors at the control motors have been interchanged, these control motors will be incorrectly matched (addressed) in the basic setting function and the control motors (and thus the flaps) will not be activated properly (incorrect assignment). Check the wiring between the control motors if you suspect that connectors have been interchanged ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Depending on the adjustment range for this control motor, an incorrect end stop will be detected during basic setting and stored as a fault in the event memory and basic setting will be terminated.
- The wrong flaps will be moved and the direction of air flow will be incorrect. Depending on the adjustment range of the control motor, this is not always recognised as a fault. Therefore, all connectors and control motors (with fitting location) must be marked before they are unplugged, and the basic setting must be performed after plugging the connectors back in again.

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Faults which exist or occur during normal air conditioner operation may lead to the following event memory entries, depending on the type of fault:




**Air conditioner (“basic” version):**

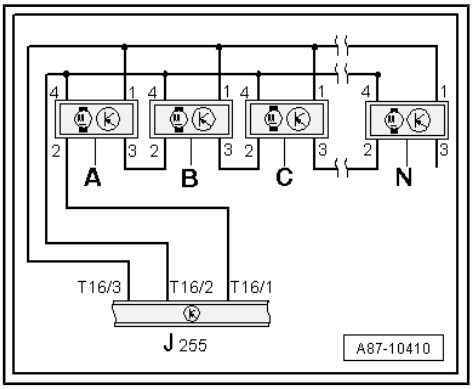
- If there is a fault in the positive or earth connection to a control motor, this control motor can no longer exchange information with -J255- , and the corresponding control motor is stored in the event memory.
- If there is a fault in the data line to a control motor (e.g. open circuit in connector to contact “2” of control motor -B-), this control motor and all the control motors -C … N- series-connected downstream of this control motor can no longer exchange information with -J255- , and the corresponding control motor as well as those connected downstream of it are stored in the event memory.
- If there is a fault in the electronics of a control motor (e.g. in control motor -B-), the control motor may, depending on the type of fault, still be able to exchange information with -J255- , but all control motors -C … N- connected downstream of this control motor are stored in the event memory.

**Air conditioner (“deluxe” version):**

- If there is a fault in the positive or earth connection to a control motor, this control motor can no longer exchange information with -J255- / -E265- , and the corresponding control motor is stored in the event memory.
- If there is a fault in the data line to a control motor (e.g. open circuit in connector to contact “2” of control motor -B-), this control motor and all the control motors -C … N- series-connected downstream of this control motor can no longer exchange information with -J255- / -E265- , and the corresponding control motor as well as those connected downstream of it are stored in the event memory.
- If there is a fault in the electronics of a control motor (e.g. in control motor -B-), the control motor -B- may, depending on the type of fault, still be able to exchange information with -J255- / -E265- , but all control motors -C … N- connected downstream of this control motor are stored in the event memory.

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**All versions (continued):**




Faults which exist or occur during basic setting of the air conditioner may lead to the following event memory entries, depending on the type of fault:

**Air conditioner (“basic” version):**

- If there is a fault in the positive or earth connection to a control motor (e.g. control motor -B-), this control motor cannot exchange information with -J255- and is therefore not recognised during the basic setting function. As all control motors are re-assigned and re-matched starting from the last control motor -N- during the basic setting function, this control motor is missing in the series. -J255- detects that a control motor is missing and stores the first control motor in the series connection as missing. In addition, the fault “Automatic addressing not OK” is displayed and, with certain control motors, possibly also “Upper or lower limit value exceeded”.
- If there is a fault in the data line to a control motor (e.g. open circuit in connector to contact “2” of control motor -C-), this control motor and all the control motors series-connected downstream of this control motor can no longer exchange information with -J255- , and these control motors are therefore not recognised during the basic setting function. As all control motors are re-assigned and re-adapted starting from the last control motor -N- during the basic setting function, these control motors are missing in the series. -J255- recognises that several control motors are missing (e.g. only control motors -B and A- are detected and matched as incorrectly assigned motors). All other control motors are stored as missing in the event memory, and the fault “Automatic addressing not OK” is displayed.
- If there is a fault in the electronics of a control motor or if a fault occurs during basic setting (e.g. in control motor -C-), this control motor may, depending on the type of fault, still be able to exchange information with -J255- , but is no longer able to exchange data with all the control motors (as far as control motor -N-) connected downstream of it. -J255- recognises that several control motors are missing (possibly only control motors -C … A- are incorrectly assigned and matched). All other control motors are stored as missing in the event memory, and the fault “Automatic addressing not OK” is displayed.

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**Air conditioner (“deluxe” version):**

- If there is a fault in the positive or earth connection to a control motor (e.g. control motor -B-), this control motor cannot exchange information with -J255- / -E265- and is therefore not recognised during the basic setting function. As all control motors are re-assigned and re-matched starting from the last control motor -N- during the basic setting function, this control motor is missing in the series. -J255- / -E265- detects a missing control motor and stores the first control motor in the series connection as missing. In addition, the fault “Automatic addressing not OK” is displayed and, with certain control motors, possibly also “Upper or lower limit value exceeded”.

- If there is a fault in the data line to a control motor (e.g. open circuit in connector to contact “2” of control motor -C-), this control motor and all the control motors series-connected downstream of this control motor can no longer exchange information with -J255- / -E265- , and these control motors are therefore not recognised during the basic setting function. As all control motors are re-assigned and re-adapted starting from the last control motor -N- during the basic setting function, these control motors are missing in the series. -J255- / -E265- recognises that several control motors are missing (e.g. only control motors -B and A- are detected and matched as incorrectly assigned motors). All other control motors are stored as missing in the event memory, and the fault “Automatic addressing not OK” is displayed.
- If there is a fault in the electronics of a control motor or if a fault occurs during basic setting (e.g. in control motor -C-), this control motor may, depending on the type of fault, still be able to exchange information with -J255- / -E265- , but is no longer able to exchange data with all the control motors (as far as control motor -N-) connected downstream of it. -J255- / -E265- recognises that several control motors are missing (possibly only control motors -C … A- are incorrectly assigned and matched). All other control motors are stored as missing in the event memory, and the fault “Automatic addressing not OK” is displayed.

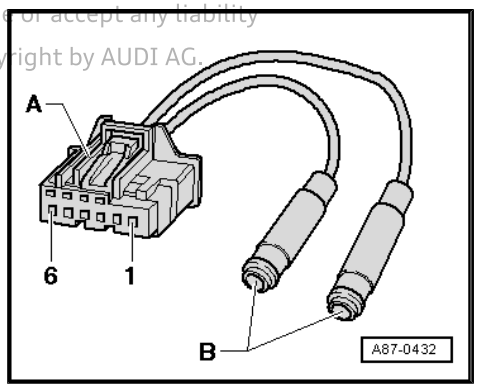
## 1.7.3 Preparing adapter cables for activation of control motors

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**Procedure**

– Connect one cable each (with a cross section of 0.25 mm²) to contacts “5” and “6” of connector -A- ( flat contact housing with auxiliary contact lock - 6Q0 972 706- ) ⇒ Electronic parts catalogue .

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




## 1.8 Auxiliary air conditioner - vehicles with high-voltage system only

⇒ “1.8.1 Notes on auxiliary air conditioner”, page 28

## 1.8.1 Notes on auxiliary air conditioner

- On certain vehicles with high-voltage system (Audi A6 e-tron), you will find the function “Auxiliary air conditioner” on the Multi Media Interface (MMI), where you can display and select the various functions of the auxiliary heater (via the high-voltage heater (PTC) - Z115- ), the auxiliary ventilation and the cooling for the passenger compartment (via the air conditioner) ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .
- Even on vehicles with high-voltage system (depending on version) which do not feature an auxiliary heater as an optional extra, the passenger compartment can be ventilated, heated with the high-voltage heater (PTC) - Z115- or cooled with the air conditioner when ambient temperatures are high via the “Auxiliary air conditioner” function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

- On vehicles with high-voltage system which feature an auxiliary heater as an optional extra, the passenger compartment can be heated with the high-voltage heater (PTC) - Z115- or the auxiliary heater via the “Auxiliary air conditioner” function. As a general rule, the auxiliary heater is only activated at ambient temperatures below -10 °C. If the ambient temperature is above -10 °C, the operating unit ( Climatronic control unit - J255- ) usually determines that the heating output of -Z115- is sufficiently high to heat up the passenger compartment ⇒ Auxiliary/supplementary heater; Rep. gr. 00 ; General notes , ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

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- If the “Auxiliary air conditioner” function is activated and the operating unit ( -J255- ) determines that heat output mode is necessary, various control units are interrogated by -J255- via the data bus, e.g. the thermal management control unit - J1024- , battery regulation control unit - J840- , control unit for high-voltage battery charging unit - J1050- etc. If -J255- is informed that the hybrid battery unit - AX1- ( drive battery - A2- ) is charged sufficiently, that enough energy is available to operate the high-voltage heater (PTC) - Z115- and that there is enough fuel in the fuel tank, -J255- activates -J1024- (which controls -Z115- via the high-voltage heater (PTC) control unit - J848- ) or the auxiliary heater, depending on the ambient temperature.

- To ensure that the vehicle always operates correctly after the passenger compartment has been heated, ventilated or cooled via the “Auxiliary air conditioner” function, there must be enough fuel in the fuel tank (also on vehicles without auxiliary heater as optional extra) so that the “Auxiliary air conditioner” function for heating, ventilating or cooling the passenger compartment is activated by the operating unit ( -J255- ). Reason: Energy is drawn from the hybrid battery unit - AX1- ( drive battery - A2- ) via the “Auxiliary air conditioner” function. It must be possible to start the engine so that the vehicle can be moved safely even after the charge level of -AX1- ( drive battery - A2- ) has been reduced ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

- So that the passenger compartment can be heated or ventilated via the “Auxiliary air conditioner” function or cooled via the air conditioner if ambient temperatures are high, the operating unit ( -J255- ) starts up and activates further components (e.g. -J1024- , the operating and display unit for rear air conditioning system - E265- , the fresh air blower - V2- and various air conditioner control motors). -J1024- activates the high-voltage heater (PTC) - Z115- when heating is required, or the electrical air conditioner compressor - V470- when cooling is required.

- So that the coolant heated up by -Z115- is conveyed through the heat exchanger of the heater and air conditioning unit, further components must be activated by various control units (e.g. thermal management coolant pump 2 - V618- , coolant changeover valve 3 - N634- , etc.)
⇒ “7.1 Overview of fitting locations - engine coolant circuit”, page 509 , ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant (Connection diagram - coolant hoses), ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode, and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

- If -J255- or the thermal management control unit - J1024- is informed that the hybrid battery unit - AX1- ( drive battery - A2- ) is not sufficiently charged and therefore that not enough energy is available for the operation of the high-voltage heater (PTC) - Z115- , or that there is not enough fuel in the fuel tank, -J255- does not activate the “Auxiliary air conditioner” function (this means that -Z115- and the “Auxiliary heater” function are also not activated) ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode ⇒ Current flow diagrams, Electrical fault finding

and Fitting locations, ⇒ Owner's Manual and ⇒ Infotainment/ MMI Operating Manual .

- On vehicles with high-voltage system which feature “Audi connect services” as an optional extra, the “Auxiliary air conditioner” function can also be switched on and off using a mobile phone (and control unit 1 for information electronics - J794- ) ⇒ Communication; Rep. gr. 91 ; Telephone system; Layout - telephone , ⇒ Current flow diagrams, Electrical fault finding and Fitting locations, ⇒ Owner's Manual and ⇒ Infotainment/ MMI Operating Manual .



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# 2 Safety precautions

⇒ “2.1 Safety precautions when working on high-voltage vehicles”, page 31

⇒ “2.2 Safety precautions when working on vehicles with start/stop system”, page 38

⇒ “2.3 Safety precautions when using testers and measuring instruments during a road test”, page 38

⇒ “2.4 Safety precautions when working on the cooling system”, page 39

⇒ “2.5 Safety precautions when handling refrigerants”, page 39

## 2.1 Safety precautions when working on high-voltage vehicles

⇒ “2.1.1 Working on vehicles with high-voltage system (hybrid vehicles)”, page 31

⇒ “2.1.2 Visual inspection of high-voltage components and wiring for damage”, page 36

### 2.1.1 Working on vehicles with high-voltage system (hybrid vehicles)

WARNING

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

WARNING

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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**Risk of injury if auxiliary air conditioner is activated**

On electric and hybrid vehicles, the auxiliary air conditioner can switch itself on if it has been activated. The radiator fans can start up automatically and trap or draw in parts of the body.

– Deactivate the auxiliary air conditioner.

### De-energising high-voltage system

**DANGER!**

*High voltage can cause fatal injury.*

*Danger of severe or fatal injuries from electric shock.*

- *The high-voltage system may only be de-energised by a suitably qualified person (Audi high-voltage technician).*
- *It must be definitely confirmed that the high-voltage system is de-energised. The system may only be de-energised using the vehicle diagnostic tester via "Guided Fault Finding".*
- *The qualified person (Audi high-voltage technician) confirms that the system is de-energised and uses the locking cap - T40262- to ensure that the system cannot be re-energised. As an additional precaution, the ignition key and the maintenance connector for high-voltage system - TW- are then stored in a safe place by the qualified person.*
- *The qualified person (Audi high-voltage technician) marks the vehicle by attaching the appropriate warning signs.*

**Note**

- *De-energising high-voltage system:*
- *Connect vehicle diagnostic tester.*
- *Select* `Guided Fault Finding` *mode.*
- *Using the* `Go to` *key, select the following menu items in succession*
- `Function/component selection`
- `Body`
- `Electrical system`
- `Self-diagnosis compatible systems`
- `8C - Hybrid battery management -J840`
- `8C - Hybrid battery management, functions`
- `51 - De-energise high-voltage system (Rep. gr. 93)`
- The system must first be de-energised by an Audi high-voltage technician before any work is done on the high-voltage system ⇒ Electrical system, hybrid; Rep. gr. 93 ; De-energising high-voltage system .
- The types of work for which the high-voltage system has to be de-energised are indicated in the instructions for the procedure. For further information, see ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

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Note

- *The high-voltage system must be de-energised before beginning any work on components of hybrid vehicles that are connected to the high-voltage system (e.g. the electrically driven air conditioner compressor).*
- *Work on the air conditioning system of hybrid vehicles that does not directly affect the high-voltage system (e.g. performing pressure test on refrigerant circuit, running Guided Fault Finding for air conditioner or control unit for air conditioning compressor - J842- etc.) must only be carried out by electrically instructed persons ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *For certain work on hybrid vehicle components that are installed near high-voltage system components, the high-voltage system must be de-energised prior to beginning work ⇒ Electrical system, hybrid; Rep. gr. 93 ; De-energising high-voltage system .*

### Re-energising high-voltage system

DANGER!

***High voltage can cause fatal injury.***

***Danger of severe or fatal injuries from electric shock.***

- ***The high-voltage system may only be re-energised by a suitably qualified person (Audi high-voltage technician).***
- ***The system may only be re-energised using the vehicle diagnostic tester via "Guided Fault Finding".***
- ***The vehicle is then made ready for operation again by the qualified person (Audi high-voltage technician).***
- ***The qualified person (Audi high-voltage technician) marks the vehicle by attaching the appropriate warning signs.***

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Note

- *Re-energising high-voltage system:*
- *Connect vehicle diagnostic tester.*
- *Select* `Guided Fault Finding` *mode.*
- *Using the* `Go to` *key, select the following menu items in succession*
- `Function/component selection`
- `Body`
- `Electrical system`
- `Self-diagnosis compatible systems`
- `8C - Hybrid battery management -J840`
- `8C - Hybrid battery management, functions`
- `51 - Re-energise high-voltage system (Rep. gr. 93)`

### Working with ignition switched on or high-voltage system active

**DANGER!**

*When working on a vehicle with the ignition switched on or while the drive system is active, the engine can start unexpectedly and exhaust fumes can cause a health hazard in closed rooms. Moving parts can trap or draw in parts of the body and/or clothing (safety hazard).*

*Before switching on the ignition, perform the following steps:*

- *Move selector lever to position P*
- *Activate parking brake*
- *Switch off ignition*
- *Open bonnet*
- *Connect battery charger (e.g. battery charger - VAS 5095A- ) to jump-start connections of 12 V electrical system*
- *Switch on ignition*

### Working on vehicles with a high-voltage system

- If work is necessary in the vicinity of high-voltage system components, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .
- If work is necessary on components of the high-voltage system, de-energise the high-voltage system ⇒ Electrical system, hybrid; Rep. gr. 93 ; De-energising high-voltage system and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .
- To minimise the number of automatic engine starts when the vehicle's drive system is active during test and measurement work, charge the vehicle batteries e.g. with the battery charger 60A - VAS 5904- in battery standby mode ⇒ Electrical system; General information; Rep. gr. 27 ; Battery; Charging battery and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .
- For test and measurement work that requires the vehicle's drive system to be active (READY) or the ignition to be switched on, move the selector lever to position “P”, activate the parking brake and take care to keep well clear of the engine when it is running. Set up any tools needed so that they cannot come into contact with moving parts.

**Note**

- *Also move the selector lever to position “P” and activate the parking brake before performing test and measurement work for which the ignition must be switched on but where the vehicle's drive system does not need to be active (READY).*
- *The status of the drive system (READY) is shown by the control unit in dash panel insert - J285- via the “power meter” ⇒ Owner's Manual .*
- *Activating and deactivating drive system ⇒ Owner's Manual (note display of control unit in dash panel insert - J285- ).*

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## 2.1.2 Visual inspection of high-voltage components and wiring for damage

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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**Procedure: Performing visual inspection**

- When performing the visual inspection of the engine compartment area, pay particular attention to the power and control electronics for electric drive, the high-voltage wiring for the battery and the air conditioner compressor and the high-voltage wiring for the electric drive motor.
- When performing a visual inspection of the vehicle underbody, pay attention to the high-voltage wiring and the corresponding covers.
- When performing the visual inspection at the rear of the vehicle, pay particular attention to the hybrid battery unit - AX1- ( drive battery - A2- ), the high-voltage wiring for the battery and the electronics box with the maintenance connector for high-voltage system.

Check the following when performing the visual inspection:

- There must be no external damage on any high-voltage components.
- The insulation of the high-voltage wiring must be intact and undamaged.
- Check for unusual deformations of the high-voltage wiring.
- If you notice anything unusual or if anything is unclear, ask the responsible Audi high-voltage technician or electrically skilled person.

- For further information on the high-voltage system, refer to ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

*Voltage levels in the high-voltage system of the hybrid vehicle constitute a safety hazard. Danger of electrocution!*

- *It is very important to report any faults discovered to the Audi high-voltage technician responsible immediately ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .*

## 2.2 Safety precautions when working on vehicles with start/stop system

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**WARNING**

*Risk of injury due to automatic engine start on vehicles with start/stop system.*

- *On vehicles with activated start/stop system (indicated by a message in the instrument cluster), the engine may start automatically if it needs to.*
- *Therefore it is important to ensure that the start/stop system is deactivated when performing repairs (switch off ignition, if required switch on ignition again).*

## 2.3 Safety precautions when using testers and measuring instruments during a road test

**If using testers and measuring instruments during a road test, please note the following:**

**WARNING**

*Accidents can be caused if the driver is distracted by test equipment, or if test equipment is not properly secured.*

*Injuries can also be caused if the passenger airbag is triggered in a collision.*

- *The use of test equipment while driving causes distraction.*
- *There is an increased risk of injury if test equipment is not secured.*
- *Testers and measuring instruments should always be secured on the rear seat with a strap and should be operated by a second person sitting in the rear.*

## 2.4 Safety precautions when working on the cooling system

**Note the following when working on the cooling system:**

**WARNING**

*Risk of scalding due to hot steam and hot coolant.*

- *The cooling system is pressurised. When the engine is warm, the coolant temperature may be above 90 °C.*
- *To relieve pressure, cover coolant expansion tank cap with a cloth and open carefully.*

**Caution**

*Risk of overheating if cap is not fitted properly.*

- *You must feel and hear cap engage when closing it.*

## 2.5 Safety precautions when handling refrigerants

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

**Note**

*For vehicles manufactured up to week 22/2016, the air conditioning system is charged with refrigerant R134a. For vehicles manufactured from week 22/2016 onwards, the air conditioning system is charged with refrigerant R134a or R1234yf, depending on the version* ⇒ *"1.1 Type plates", page 1* , *and*
⇒ *"2.1 System overview - refrigerant circuit", page 131* .

**Refrigerant R134a**

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).

**Refrigerant R1234yf**

2,3,3,3-tetrafluoropropene ($C_3H_2F_4$ or $CF_3CF = CH_2$)

This refrigerant is currently known in Germany by the trade names R1234yf, HFO 1234yf, Opteon 1234yf etc. (other trade names may be used in other countries).

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**WARNING**

*Refrigerant R1234yf is a gas which is flammable in a particular concentration in the air (flammability limits of 6.2% and 12.3% by volume of air).*

- *Static electricity, sparks from tools (e.g. against a hard surface), hot surfaces and open flame can cause the mixture of refrigerant R1234yf and air to ignite.*
- *Risk of explosion if refrigerant gas mixes with air in the vicinity of an ignition source.*
- *Keep ignition sources of any kind away from pressurised containers and equipment associated with refrigerant R1234yf.*
- *Ensure good ventilation when handling refrigerant and working on the refrigerant circuit (exchange of air at least once per hour in workshops and 3 times per hour in low-level areas (e.g. inspection pits).*

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**Both types of refrigerant**

In Germany, observe the following safety measures for this refrigerant (additional regulations may apply in other countries).

**Caution**

*Refrigerant is a potential health hazard!*

- *Before performing repair work on an open refrigerant circuit, discharge the refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit (Air conditioner with refrigerant R134a; Refrigerant circuit; Working with the air conditioner service station), or ⇒ Air conditioners with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .*
- *Always perform work on the refrigerant circuit in well ventilated areas. Make sure that there are no inspection pits, open shafts or cellar entrances within a radius of 5 metres.*

WARNING

*Danger of asphyxiation, frostbite and poisoning from escaping refrigerant.*

- *Switch on the exhaust gas extraction system.*
- *Escaping refrigerant is colourless, odourless and heavier than air (it displaces oxygen). Should refrigerant gas escape, this can result in an imperceptible danger of asphyxiation in poorly ventilated areas and inspection pits.*

*Risk of dry coughing and nausea caused by toxic chemical decomposition products of refrigerant gas.*

- *Smoking, welding, soldering and brazing are not permitted in areas exposed to refrigerant. The high temperature of a naked flame or hot objects causes decomposition of refrigerant gas. The resultant decomposition products are toxic.*

*Risk of eye injuries!*

- *Keep an eye-bath to hand.*
- *Should liquid refrigerant come into contact with your eyes, rinse them thoroughly with water for about 15 minutes.*
- *Then apply eye drops and consult a doctor immediately, even if your eyes do not hurt.*
- *Always inform the doctor of the type of refrigerant involved.*

*Intensive exposure to refrigerant would cause frostbite on unprotected parts of the body. All contact with liquid refrigerant or refrigerant vapours should be avoided.*

- *Wear rubber gloves to protect your hands.*
- *Wear safety goggles to protect your eyes.*
- *Should liquid refrigerant come into contact with other parts of the body, rinse these thoroughly with cold water for about 15 minutes.*

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WARNING

*Danger from escaping pressurised refrigerant.*

*Danger of frostbite on skin and other parts of the body.*

- *Extract the refrigerant and then immediately open up the refrigerant circuit.*
- *Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.*

# 3 Repair instructions

⇒ “3.1 Rules for cleanliness”, page 42

⇒ “3.2 General notes”, page 42

⇒ “3.3 General repair instructions”, page 43

⇒ “3.4 Contact corrosion”, page 44

⇒ “3.5 Routing and attaching pipes and wiring”, page 44

⇒ “3.6 Installing radiators and condensers”, page 44

⇒ “3.7 Checking cooling output”, page 45

⇒ “3.8 Working on refrigerant circuit”, page 86

⇒ “3.9 Discharging refrigerant circuit”, page 86

⇒ “3.10 Notes on general repairs”, page 88

⇒ “3.11 Paintwork repairs on vehicles with air conditioning system”, page 97

⇒ “3.12 Refrigerant circuit seals”, page 97

## 3.1 Rules for cleanliness

**Even small quantities of dirt can lead to defects. Therefore it is important to observe the following rules for cleanliness when working on the air conditioner:**

- Immediately seal off open lines and connections with clean plugs, e.g. from engine bung set - VAS 6122- .
- Place removed parts on a clean surface and cover them. Use only lint-free cloths.
- Carefully cover or seal open components if repairs cannot be carried out immediately.
- Only install clean components; replacement parts should only be unpacked immediately prior to installation. Do not use parts that have been stored without their packaging (e.g. in toolboxes).
- Do not work with compressed air when the system is open.
- Protect unplugged electrical connectors against dirt and moisture and make sure connections are dry when attaching.

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## 3.2 General notes

- For the applicable current flow diagrams, refer to ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- A label in the engine compartment indicates the capacity and the refrigerant used ⇒ page 1 .
- For further information on performing repair work on vehicles with air conditioning systems and on handling refrigerant, refer to ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , and ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Repair instructions; Refrigerant and refrigerant oil .

## 3.3 General repair instructions

**WARNING**

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

**Note**

*Disconnect battery before starting electric welding work on vehicle ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .*

The air conditioner refrigerant circuit may only be discharged and opened:

- If this is required by the safety precautions ( ⇒ page 39 ).
- If this is necessary for the removal of other components.
- If components of the air conditioner refrigerant circuit have to be removed or renewed.

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

**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 discharging the refrigerant circuit.*

If it is necessary for certain repair measures of the heater and air conditioner to discharge and open the air conditioner refrigerant circuit, the steps involved are described in the corresponding work procedure. Specific tools are required for discharging the refrigerant circuit; such work may only be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit (Air conditioner with refrigerant R134a; Refrigerant circuit; Working with the air conditioner service station), and ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .

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**Note**

*It is not permissible to perform servicing work on the air conditioner refrigerant circuit which involves discharging and opening the refrigerant circuit without the necessary tools and expertise. The vehicle may have to be taken to a workshop which is equipped with the necessary tools and at which the work can be performed by appropriately qualified personnel. There the refrigerant circuit can be discharged and opened in the specified manner ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .*

## 3.4 Contact corrosion

Contact corrosion can occur if unsuitable connecting elements (bolts, nuts, washers), rivets, plugs, grommets, adhesives, etc. are used.

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For this reason, the manufacturer only fits connecting elements with a special coating. 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 .

**Please note:**

- If you have any doubts about whether certain parts can be reused, always use new components.
- We recommend the use of genuine replacement parts only as these have been checked and are compatible with aluminium ⇒ Electronic parts catalogue .
- We recommend using Audi Accessories ⇒ Electronic parts catalogue .
- Damage caused by contact corrosion is not covered by the warranty.

## 3.5 Routing and attaching pipes and wiring

- To avoid interchanging components and to make sure the components are re-installed in the original positions, mark e.g. fuel lines, hydraulic fluid lines, vacuum lines, activated charcoal filter system lines and electrical wiring before removing them. Make sketches or take photographs if necessary.
- To avoid damaging pipes, hoses and wiring, ensure sufficient clearance from all moving or hot components in engine compartment (limited space in engine compartment).
- After attaching, check routing of refrigerant lines. They must be inserted in brackets provided and should not make contact with other components.

## 3.6 Installing radiators and condensers

- Even if fitted correctly, there may be slight pressure marks on the radiator and condenser fins. This does not mean that the components are damaged. If the fins are only very slightly distorted, this does not justify renewal of the radiator or the condenser.
- If the condenser and radiator are no longer parallel as a result of slight deformation at the securing lugs on the sides of the condenser (e.g. following an accident), this can be corrected by bending the lugs back into position, provided that the condenser is still functioning properly and that there is no leakage. If the lugs are slightly deformed, the condenser does not have to be renewed.
- Slight bending of the condenser (up to 4 mm) is not a problem as long as there is enough of a gap (at least 4 mm) between the condenser and the radiator, the condenser is still functioning properly and there is no leakage. If there are slight deformations, the condenser does not have to be renewed.

## 3.7 Checking cooling output

⇒ “3.7.1 Notes on checking cooling output - vehicles without high-voltage system”, page 45

⇒ “3.7.2 Requirements for checking cooling output of air conditioner”, page 46

⇒ “3.7.3 Checking - vehicles without high-voltage system”, page 50

⇒ “3.7.4 Fault finding if readout does not match specification (required air conditioner cooling output is not attained) - vehicles without high-voltage system”, page 55

⇒ “3.7.5 Fault finding if ice forms at evaporator - vehicles without high-voltage system”, page 57

⇒ “3.7.6 Fault finding if air conditioner cooling output is OK at front, but required values are not attained at rear - basic version”, page 59

⇒ “3.7.7 Fault finding if air conditioner cooling output is OK at front, but required values are not attained at rear - deluxe version”, page 60

⇒ “3.7.8 Notes on checking cooling output - vehicles with high-voltage system”, page 62

⇒ “3.7.9 Requirements for checking cooling output of air conditioner - vehicles with high-voltage system”, page 66

⇒ “3.7.10 Checking - vehicles with high-voltage system”, page 69

⇒ “3.7.11 Fault finding if readout does not match specification (required cooling output is not attained) - vehicles with high-voltage system”, page 78

⇒ “3.7.12 Fault finding if ice forms at evaporator - vehicles with high-voltage system”, page 84

### 3.7.1 Notes on checking cooling output - vehicles without high-voltage system

**Note**

- *A start/stop system is available as an optional extra for this vehicle in combination with certain engines. Depending on the setting on the operating unit ( Climatronic control unit - J255- , and if applicable also on rear Climatronic operating unit - E265- ) the stop function may be prevented by these units. For example, the stop function is not possible, or the stop function is interrupted and the engine is switched on as soon as the “defrost” mode is selected on -J255- . This also applies if the difference between the set specified temperature and the measured actual temperature exceeds a certain value in heating and cooling mode ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *On this vehicle, the coolant circulation pump - V50- / circulation pump - V55- is activated not only when the “stop function” is active, but also when the engine is running e.g. with the temperature setting “warm” selected on the operating unit ( Climatronic control unit - J255- ) (“HI” displayed on -J255- and Multi Media Interface). On this vehicle, the coolant circulation pump - V50- / circulation pump - V55- (if fitted, depending on equipment and engine) is also activated to assist the engine coolant pump ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

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- *Vehicles with an “auxiliary heater” are currently not fitted with a coolant circulation pump - V50- (or a coolant shut-off valve - N82- ). On vehicles with no -V50- or -N82- , this function is performed by the auxiliary heater components ( heater coolant shut-off valve - N279- and circulation pump - V55- ) ⇒ Auxiliary/supplementary heater; Rep. gr. 82 ; Coolant circuit with auxiliary/supplementary heater; Connection diagram - coolant hoses .*
- *Vehicles with no “auxiliary heater” are not always fitted with a coolant circulation pump - V50- and a coolant shut-off valve - N82- (depending on equipment and engine).*
- *On vehicles with a “basic” air conditioner, the temperature of the air flowing out of the air conditioning unit to the vent in the rear centre console is regulated by the operating unit ( Climatronic control unit - J255- ) so that a moderate air temperature is set. For this purpose the specified temperature for the air from the vents in the rear centre console is calculated at -J255- based on the setting for the left and right sides. However, if the setting on -J255- is such that the temperature is no longer regulated (e.g. maximum heating or maximum cooling), the temperature of the air from the vent in the rear centre console is no longer regulated. If, for example, the settings on -J255- are maximum heating for one side and maximum cooling for the other, the air for the vent in the rear centre console is heated to the maximum level.*
- *On vehicles with a “deluxe” air conditioner, the temperature of the air flowing out of the air conditioning unit to the rear vents is regulated by the operating unit ( Climatronic control unit - J255- ) according to the setting on the rear Climatronic operating unit - E265- . The relevant data are exchanged between -J255- and -E265- via the data bus ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *Certain air conditioner functions can be switched on and off via the MMI system (Multi Media Interface) using the “A/C” function on the “Car” / “Car systems” menu. In addition, the operation of the air conditioner can also be influenced by the settings on the MMI (Multi Media Interface) in the “A/C” function of the “Car” / “Car systems” menu. Therefore, if there are problems with these components, first check the settings on the MMI ⇒ Infotainment/MMI Operating Manual .*

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## 3.7.2 Requirements for checking cooling output of air conditioner

**Only for vehicles with mechanically driven air conditioner compressor; not for vehicles with high-voltage system (hybrid vehicles)**

- 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 (vehicles with 4-cyl. or 6-cyl. engine) ⇒ page 252 .
- Air conditioner compressor drive unit correctly installed, air conditioner compressor actually being driven (vehicles with 8-cyl. FSI/TFSI engine) ⇒ page 252 .
- All air ducts, covers and seals OK and properly installed
- Air flow through dust and pollen filter not impeded by dirt ⇒ page 472
- Air intake of air conditioning unit (in fresh air and air recirculation mode) not impeded by dirt or retrofitted components.

- Vehicles with “deluxe” version of the air conditioner: air duct for glove box cooling fitted as specified ⇒ page 497 (connection for glove box cooling is sealed off on “basic” version of air conditioner).
- Vehicle not exposed to direct sunlight
- Engine warm (coolant temperature above 80 °C)
- Event memory of operating unit ( Climatronic control unit - J255- , and if applicable of rear Climatronic operating unit - E265- ) interrogated and erased, basic setting performed and coding of -J255- (and -E265- ) checked ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Adaption of -J255- (and if applicable -E265- ) checked ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Vehicles with “basic” version air conditioner: following air conditioner settings made in MMI (Multi Media Interface) by way of “A/C” function in “Car” / “Car systems” menu (if possible): Air flow “A/C mode medium”.
- Vehicles with “deluxe” version air conditioner: following air conditioner settings made in MMI (Multi Media Interface) via “A/C” function in “Car” / “Car systems” menu (if possible): Auto recirculation “Off”, Air flow “A/C mode medium” and footwell temperature “medium” (upward-pointing arrow).

**Note**

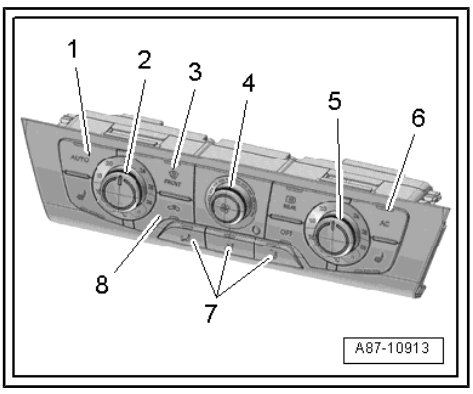
- *The functions for setting the air conditioner in the MMI (Multi Media Interface) (“A/C” function in “Car” / “Car systems” menu) vary depending on the version of the air conditioner, the production period and the vehicle model (some functions are not provided on all models) ⇒ Owner's Manual .*
- *For example, on USA models with a “basic” version air conditioner, there is currently no provision for making settings by way of the MMI ⇒ Owner's Manual .*

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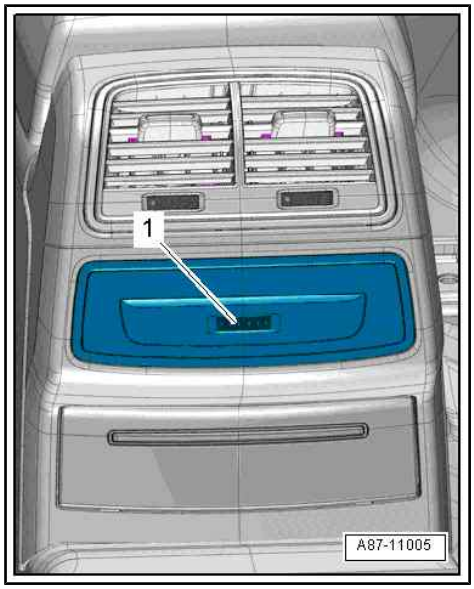
- All dash panel vents and vents in rear centre console and B-pillar (“deluxe” version) open.
- On the “deluxe” version, vent for glove box cooling (in glove box) closed.
- Air outlet from rear footwell vents (beneath front seats) not obstructed by floor mats or other objects (check).
- Bonnet closed.
- Engine running

Following settings made on operating unit ( Climatronic control unit - J255- ), “basic” version:

- “Auto” mode – lamp in AUTO button -1- on
- Temperature setting “cold” – both rotary controls -2, 5- on “cold” stop
- Air conditioner compressor on – lamp in AC button -6- on
- Rotary control -4- for fresh air blower set to “maximum speed”



If fitted, potentiometer for rear temperature selection - G538- -item 1- set to “cold”

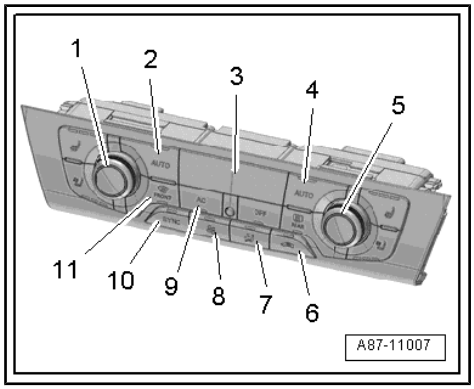



**Note**

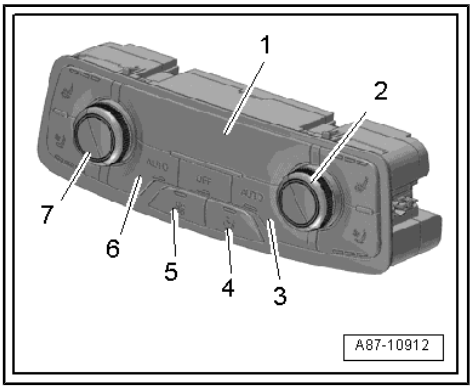
*The potentiometer for rear temperature selection - G538- is only fitted in the rear centre console of a certain country-specific version on vehicles with an air conditioner of “basic” type.*

Following settings made on operating unit ( Climatronic control unit - J255- ), “deluxe” version:

- “Auto” mode – lamps in both AUTO buttons -2, 4- on
- Temperature setting “cold” via rotary controls -1, 5- – display “LO” for driver and front passenger side in display -3- of -J255- and in display of Multi Media Interface
- Air conditioner compressor on – lamp in AC button -9- of -J255- is on.
- Setting for fresh air blower -7- “maximum speed” – display on -J255- and Multi Media Interface display at speed setting “10” or higher




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If fitted, following settings made on rear Climatronic operating unit - E265- :

- "Auto" mode – lamps in both AUTO buttons -3, 6- on
- Temperature setting "cold" via rotary controls -2, 7- – display "LO" for left and right side in display -1-
- Setting for fresh air blower -5- "maximum speed" – display speed "5" or higher

**Note**

- *Manual alteration of the fresh air blower speed causes the lamps in the AUTO buttons to go out.*
- *The maximum possible fresh air blower speed depends on several factors (electrical system voltage etc.).*

**Functions with engine running:**

– Radiator fan(s) ( radiator fan - V7- and radiator fan 2 - V177- ) running (activation and speed governed by pressure in refrigerant circuit and engine temperature)

**Note**

- *Depending on the version of the operating unit ( Climatronic control unit - J255- ), the radiator fan(s) ( radiator fan - V7- and radiator fan 2 - V177- ) is/are only activated when a certain pressure is exceeded in the refrigerant circuit (currently a pressure of approx. 9 bar upwards). Activation of the radiator fan(s) is displayed in the "Read measured values" function ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *Depending on the engine control unit, the specified and actual speeds of radiator fans -V7- and -V177- may differ ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

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– The fresh air blower runs at maximum speed.

**Note**

*The maximum possible fresh air blower speed depends on several factors (electrical system voltage etc.).*

– Air conditioner switches to air recirculation mode (approx. 1 minute after engine is started, air flow / fresh air flap is closed and air recirculation flap is opened; air is drawn in from passenger compartment by fresh air blower underneath dash panel / behind glove box).

**Note**

*If any of these requirements is not satisfied, interrogate the event memory, perform final control diagnosis and read out the corresponding measured values ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

## 3.7.3 Checking - vehicles without high-voltage system

**Special tools and workshop equipment required**

- Vehicle diagnostic tester with “Guided Fault Finding” function and corresponding connecting wires ⇒ Workshop equipment
- Commercially available thermometer (for measuring temperature; if applicable use thermometer with 2 probes for simultaneous measurement of temperature e.g. on right and left)

**Not on vehicles with high-voltage system (hybrid vehicles)**

- Requirements for checking cooling output met ⇒ page 46

– Measure ambient temperature (it must be over 15 °C).

– Close doors, bonnet, windows, sun roof and rear lid.

– Open all dash panel vents and vent in rear centre console.

– On vehicles with “deluxe” air conditioner, open vents in B-pillars.

– Start engine.

– Switch off air conditioner compressor (“Econ” mode set on operating unit, Climatronic control unit - J255- , lamp in AC button not on).

– Start air conditioner Guided Fault Finding (on operating unit, Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Select and read out measured values for activation of air conditioner compressor and pressure in refrigerant circuit in “Read measured values” function ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

**Note**

*Various measured values can be selected for the following test and displayed in a table ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

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For checking the cooling output it is recommended to call up the following measured values of -J255- :

- Measured values for following temperature sensors: left vent temperature sender - G150- , right vent temperature sender - G151- , left footwell vent temperature sensor - G261- , right footwell vent temperature sensor - G262- , evaporator output temperature sender - G263- )
- Activation of following components: fresh air blower - V2- , radiator fan - V7- , radiator fan 2 - V177-
- Activation of following components (if fitted, depending on equipment and type of engine): coolant circulation pump - V50- / circulation pump - V55- , coolant shut-off valve - N82- / heater coolant shut-off valve - N279-
- Activation of air conditioner compressor regulating valve - N280- (compressor shut-off criteria and actual compressor current)
- Coolant temperature and ambient temperature
- Measured value of refrigerant pressure sender ( -G395- / -G65- ).

**Note**

*Different designation (depending on vehicle). On the A6 e-tron, this sender is referred to as the high-pressure sender - G65- . On this vehicle, it exchanges data with the thermal management control unit - J1024- . On all vehicles except the Audi A6 e-tron, this sender is referred to as the refrigerant pressure and temperature sender - G395- . On these vehicles, it exchanges data with the operating unit ( Climatronic control unit - J255- ) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

**Checking**

- Air conditioner compressor switched off, current of 0 A (amps) for activation of -N280- displayed
- Pressure in refrigerant circuit is identical to or above value in table below (depending on ambient temperature).

| Ambient temperature in °C | Pressure displayed (in bar) |
|---|---|
| 15 | 3.0 |
| 20 | 4.0 |
| 25 | 5.0 |
| 30 | 6.0 |
| 35 | 7.0 |

**Note**

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- *On the absolute pressure scale, 0 bar corresponds to an absolute vacuum. Normal ambient pressure thus corresponds to approx. 1 bar absolute and 0 bar gauge pressure. On the scales of most pressure gauges, 0 bar gauge pressure corresponds to an absolute pressure of 1 bar (can be seen from -1 mark below 0).*
- *Depending on the version of -J255- , the measured values may only be displayed as whole numbers. The display fluctuates between two values if the measured pressure is between the two.*
- *The pressure in the refrigerant circuit depends on the ambient temperature. Due to the radiation of heat by components (e.g. radiator), the pressure displayed when the engine is warm is slightly higher than that given for the corresponding ambient temperature.*
- *If the pressure displayed is lower than that given in the table: Check the signal of the refrigerant pressure sender ( -G395- / -G65- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”). If no fault is found at the refrigerant pressure sender ( -G395- / -G65- ), there is not enough refrigerant in the circuit. The vehicle must be taken to a workshop which is equipped with the necessary tools and at which the work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit (Working with the air conditioner service station), or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 00 ; Laws and regulations .*

**If pressure in refrigerant circuit is OK:**

– Switch on air conditioner compressor by selecting “Auto” mode on operating unit ( Climatronic control unit - J255- and

also on -E265- if fitted); lamps in AUTO button(s) and AC button will light up.

**Note**

*When you press the SYNC button on -J255- ("deluxe" version only), the settings for the driver side are also applied for the front passenger side and for -E265- .*

– Set air conditioner to "cold" temperature setting (for driver and passenger side) using rotary control on -J255- .
– On vehicles with rear Climatronic operating and display unit -E265- , also set rear temperature to "cold" (for left and right side).
– By way of the rotary controls on -J255- , set the air delivery to "dash panel vents" (for driver and front passenger side).
– On vehicles with -E265- , set the air delivery by way of the rotary controls on -E265- to the vents in the rear centre console.

**Note**

- *The indicator lamp in the AUTO button goes out when the air flow direction and/or the fresh air blower speed is/are altered manually.*
- *The maximum possible fresh air blower speed depends on several factors (electrical system voltage etc.).*

– In the "Read measured values" function, read out the actual current with which the air conditioner compressor regulating valve - N280- is activated (an actual current above 0.3 A is displayed, air conditioner compressor is switched on) ⇒ Vehicle diagnostic tester ("Guided Fault Finding").

**Note**

- *The specified current for activating the air conditioner compressor regulating valve -N280- is calculated by -J255- . The request is transmitted via the data bus to the onboard supply control unit - J519- ; -J519- activates -N280- and provides feedback on the actual current ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *If no or insufficient current is displayed as measured value, check activation of -N280- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *-N280- is activated by -J255- via -J519- . Activation of -N280- is also displayed as measured value in -J519- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *The actual current flowing via -N280- is measured by -J519- and transmitted via the data bus to -J255- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

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– In the "Read measured values" function, read out the pressure in the refrigerant circuit measured by the refrigerant pressure sender ( -G395- / -G65- ). The pressure displayed increases to above the value with the air conditioner compressor switched off ⇒ Vehicle diagnostic tester ("Guided Fault Finding").

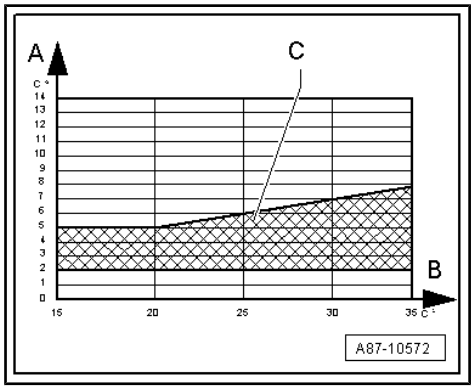
**Note**

- *Different designation (depending on vehicle). On the A6 e-tron, this sender is referred to as the high-pressure sender - G65- . On this vehicle, it exchanges data with the thermal management control unit - J1024- . On all vehicles except the Audi A6 e-tron, this sender is referred to as the refrigerant pressure and temperature sender - G395- . On these vehicles, it exchanges data with the operating unit ( Climatronic control unit - J255- ) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *If the pressure displayed as the measured value does not change and activation of the air conditioner compressor is OK (⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode), check again whether the air conditioner compressor is actually being driven and the air conditioner compressor regulating valve - N280- is being activated. There is a fault in the refrigerant circuit if the air conditioner compressor is being driven and -N280- is being activated. The vehicle must be taken to a workshop equipped with the necessary tools where this work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , and ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 00 ; Laws and regulations (compressor control may not be OK). Inform the workshop of the problem detected.*
- *-N280- is activated by -J255- (via -J519- ) so 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 above 0.55 A is displayed for the activation of -N280- 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, activation 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 -N280- (and at the expansion valve). Such ice formation impedes the control of the air conditioner compressor. The evaporator is cooled down too much and ices up. An iced-up evaporator may cause various problems* *⇒ page 57* *.*

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– Press air recirculation mode button on operating unit ( Climatronic control unit - J255- ): symbol for "air recirculation mode" in air recirculation button lights up.
– Set engine speed to 2000 rpm (start of time measurement).
– In "Read measured values" function, read out measured value of evaporator output temperature sender - G263- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
– Use thermometer to measure temperature of air from vent in rear centre console.

– Compare measured value displayed (for -G263- ) to values in graph.




A - Air temperature measured by -G263- (downstream of evaporator in front air conditioning unit)

B - Ambient temperature

C - Permissible tolerance range

- Depending on the ambient temperature, the measured air temperature downstream of the evaporator (measured value of -G263- ) should be within the stated tolerance range -C- after 5 minutes.
- The measured temperatures from the vents of the rear centre console correspond to the temperature measured by -G263- . Permissible deviation from measured value of -G263- at front max. + 9 °C (however not below +1 °C).

**Note**

- *If the required values at the front are not attained, check the measured value of -G263- . To do so, compare the measured value displayed for -G263- to the measured values of the left vent temperature sender - G150- and the right vent temperature sender - G151- .*
- *If the measured value for -G263- differs only slightly from the measured value for -G150- / -G151- : Perform fault finding if readout does not match specification ⇒ page 55 .*
- *If the measured value for -G263- is greater than the measured value for -G150- and/or -G151- , check for proper installation of -G263- ⇒ page 623 and perform the electrical check for this sender ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *If the measured temperatures from the rear centre console vents are more than 1 °C lower than the measured value for -G263- , check the temperature sensors used for measurement (the design of the air conditioner is such that the temperature at the rear cannot be lower than at the front).*
- *One way to check whether the air conditioner is working is by feeling the refrigerant lines: the "low-pressure side" refrigerant line (thick line between internal heat exchanger and air conditioner compressor) cools down and the "high-pressure side" refrigerant line (thin line between condenser and internal heat exchanger) becomes warm ⇒ page 131 .*

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**If the measured value for the evaporator output temperature sender - G263- (and thus the cooling output of the air conditioner) and the measured temperature of the air from the rear centre console vents are OK and there are no problems, the cooling output test is completed.**

- If the measured value of -G263- (and thus the cooling output of the air conditioner) is not OK, perform fault finding measures if the readout does not match the specification (the required cooling output is not attained) ⇒ page 55 .
- If the measured value of -G263- (and thus the cooling output of the air conditioner) is OK and there is a problem with excessively high or differing output temperatures, check the activation of the temperature flaps in the air conditioning unit ⇒ page 429 .

♦ If the measured value of -G263- (and thus the cooling output of the air conditioner) is OK and there are problems with a lack of cooling output from the rear vents (excessively high or differing air outflow temperatures from the rear vents), check actuation of the temperature flaps in the rear vent air duct: “basic” version ⇒ page 59 , “deluxe” version ⇒ page 60 and ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 3.7.4 Fault finding if readout does not match specification (required air conditioner cooling output is not attained) - vehicles without high-voltage system

**Not on vehicles with high-voltage system (hybrid vehicles)**

– Select display with measured values for activation of air conditioner compressor and pressure in refrigerant circuit in “Read measured values” function ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Repeat cooling output test ⇒ page 50 .

– Observe displays for compressor activation during cooling output test.

– Air conditioner compressor regulating valve - N280- deactivated during cooling output test (actual control current drops below 0.35 A)?

↓ yes ↓

Continued ⇒ page 55 . Activation of air conditioner compressor is switched off.

↓ no ↓

• Is there an increase in pressure in refrigerant circuit during cooling output test?

↓ yes ↓

Continued ⇒ page 56 . Increase in pressure in refrigerant circuit

↓ no ↓

– Check again whether compressor shaft is actually being driven and -N280- activated.

– If the air conditioner compressor is being driven and -N280- activated, 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; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 00 ; Laws and regulations .

– Inform the workshop of the problem detected.

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**Continuation of check: “Activation of air conditioner compressor is deactivated”**

– -N280- deactivated during cooling output test by operating unit ( Climatronic control unit - J255- )/by on-board supply control unit - J519- (actual current drops below 0.35 A), and compressor shut-off criterion displayed as measured value by operating unit -J255- ?

↓ yes ↓

– Read out event memory and relevant measured values of -J255- and -J519- and eliminate cause of deactivation ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

↓ no ↓

– -N280- deactivated during cooling output test by -J519- (actual current drops below 0.35 A) and air conditioner compressor shut-off criterion not displayed as measured value?

– Read out event memory of -J519- , eliminate fault displayed and erase event memory ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Repeat cooling output test ⇒ page 50 .

– In “Read measured values” function of Guided Fault Finding routine for - J255- and -J519- , read out displays indicating measured values for activation of -N280- .

– Check activation of -N280- by -J519- and eliminate cause of deactivation ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Repeat cooling output test ⇒ page 50 .

**Continuation of check: “Increase in pressure in refrigerant circuit”**

– Open bonnet.

– Repeat cooling output test ⇒ page 45 .

– Read out pressure in refrigerant circuit and activation of radiator fans from measured values of -J255- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

- Radiator fan(s) ( radiator fan - V7- and radiator fan 2 - V177- ) running according to activation during cooling output test? Speed is governed by coolant temperature and pressure in refrigerant circuit (determined by engine control unit). Or: Radiator fans switched in as soon as pressure in refrigerant circuit exceeds approx. 9 bar? (Depending on engine control unit, specified and actual values for activation of radiator fans -V7- and -V177- may differ.)

↓ yes ↓

– Read out measured values with display for “pressure in refrigerant circuit” and “activation of radiator fans” ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

- Radiator fan(s) running at higher speed as pressure in refrigerant circuit increases in line with request from -J255- (difference between specified and actual values is permissible)?

↓ yes ↓

– The vehicle must be taken to a workshop equipped with the necessary tools where this work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 00 ; Laws and regulations .

– Inform this workshop of the problem detected.

↓ no ↓

– Check activation of radiator fans, e.g. in “Final control diagnosis” function ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

- Activation of radiator fans is requested by -J255- ; however, other control units implement activation. Therefore actual value for activation of radiator fans may differ from required specification ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Service activation system for radiator fan(s).

– Repeat cooling output test ⇒ page 50 .

– Check activation of radiator fan(s), e.g. in “Final control diagnosis” function ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Service activation system for radiator fan(s).

– Repeat cooling output test ⇒ page 50 .

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**Note**

- *The pressure in the refrigerant circuit depends on various influencing factors. In general, 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, or 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 (radiator fan (s) running and cooling condenser).*
- *The measured value of the refrigerant pressure sender ( -G395- / -G65- ) is used by the operating unit ( Climatronic control unit - J255- or thermal management control unit - J1024- ) to calculate the pressure in the refrigerant circuit, which it then displays ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *At absolute pressures below approx. 1.8 bar or above approx. 32 bar, -J255- ( -J1024- ) does not switch on the air conditioner compressor (the air conditioner compressor regulating valve - N280- is not activated on mechanically driven air conditioner compressors). The air conditioner compressor is only re-activated once the absolute pressure has risen above 1.8 bar or dropped below 16 bar.*
- *Further information on the pressure in the refrigerant circuit ⇒ Vehicle diagnostic tester ("Guided Fault Finding")*
- *To prevent the air conditioner compressor from being switched off abruptly if the pressure in the refrigerant circuit or the coolant temperature is too high, its output is limited by -J255- (by -J1024- ) as soon as the pressure in the refrigerant circuit exceeds approx. 30 bar absolute (full compressor output is not restored again until pressure has dropped below 27 bar), or the temperature of the coolant exceeds 115 °C (compressor is switched off completely when coolant reaches 118 °C).*

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## 3.7.5 Fault finding if ice forms at evaporator - vehicles without high-voltage system

**Not on vehicles with high-voltage system (hybrid vehicles)**

- The air conditioner compressor regulating valve - N280- is activated by the operating unit ( Climatronic control unit - J255- ) via the onboard supply control unit - J519- in such a way that the temperature of the air downstream of the evaporator in the front air conditioning unit reaches the specified value (approx. 2 to 5 °C).
- After starting the vehicle, a value above 0.55 A is displayed as the relevant measured value for -J255- depending on the measured temperature, the engine speed and the voltage of the vehicle's electrical system ⇒ Vehicle diagnostic tester ("Guided Fault Finding"). As soon as the temperature measured by the evaporator output temperature sender - G263- approaches the specified value, activation 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 -N280- (and/or at the expansion valve). Such ice formation impedes the control of the air conditioner compressor. The evaporator is cooled down too much and ices up. An iced-up evaporator may cause the following problems:**

- The air conditioner fails repeatedly or sporadically (no cooling/heating output) after long journeys; after the ignition is switched off and waiting a short while, the air conditioner functions properly again.
- The windscreen, rear window and/or door windows mist up on the inside after long journeys; the windscreen, rear window and/or door windows are initially not de-misted even after pressing the “defrost” button of the operating unit ( Climatronic control unit - J255- ); After switching off the ignition and waiting a short while, the air conditioner functions properly again.

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**Checking:**

- Check measured value of evaporator output temperature sender - G263- in “Read measured values” function ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- If the measured value of -G263- is too high under the operating conditions described by the customer (above e.g. 10 °C depending on ambient temperature despite the air conditioner functioning properly), check -G263- and compare the measured values of -G263- to those of the vent temperature sender -G150- / -G151- (an incorrect measured value may cause the evaporator to ice up) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- If the measured value for -G263- 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 must be taken to a workshop which is equipped with the necessary tools and at which the work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit (Working with the air conditioner service station), or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 00 ; Laws and regulations . Inform the workshop of the problem detected.
- Check the “low-pressure side” refrigerant line (thick line between connection at internal heat exchanger and air conditioner compressor) with the engine running ⇒ page 131 . If this line is severely iced up when the problem occurs (thin layer of ice is permissible), this also indicates that evaporator temperature is too low. The vehicle must be taken to a workshop equipped with the necessary tools where this work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 00 ; Laws and regulations (compressor control may not be OK). Inform the workshop of the problem detected.

**Checking evaporator if icing-up is suspected:**

- Open vents in dash panel and in rear centre console.
- On vehicles with “deluxe” air conditioner, open vents in B-pillars.
- Start engine.
- Switch on air conditioner compressor by selecting “Auto” mode on operating unit ( Climatronic control unit - J255- ); lamps in AUTO button(s) and AC button light up.
- Set air conditioner to “cold” temperature setting (for driver and passenger side) using rotary control on -J255- .

– Set lowest possible speed for fresh air blower - V2- on -J255- (lowest possible cooling output of air conditioning unit).
– Set rear Climatronic operating unit - E265- to “cold” temperature setting (for left and right sides if applicable).
– If fitted, the potentiometer for rear temperature selection - G538- is set to “cold”.
– Using rotary controls on -E265- (if fitted), set direction of airflow on -E265- to vents in rear centre console.
– Set a medium speed for fresh air blower on -E265- .
– Set engine speed to 2000 rpm.
– In “Read measured values” function, read out measured value of evaporator output temperature sender - G263- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– If measured value of evaporator output temperature sender - G263- is too low (below 0 °C for lengthy period at ambient temperature above 0 °C): The vehicle must be taken to a workshop equipped with the necessary tools where this work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 00 ; Laws and regulations . Inform the workshop of the problem detected.

**If expansion valve is iced up:**

– The air conditioner fails repeatedly or sporadically (no cooling/heating output) after long journeys; after the ignition is switched off and waiting a short while, the air conditioner functions properly again.
– The vehicle must be taken to a workshop equipped with the necessary tools where this work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 00 ; Laws and regulations .
– Inform this workshop of the problem detected.

## 3.7.6 Fault finding if air conditioner cooling output is OK at front, but required values are not attained at rear - “basic” version

**Note**

♦ *To check the rear cooling output, measure the temperature of the air from the vents in the rear centre console using a thermometer.*
♦ *The “basic” version air conditioner is currently not available for vehicles with high-voltage system.*

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Condition(s) for this test:

♦ Cooling output of air conditioner checked and OK ⇒ page 50 .

– Air outlet from rear footwell vents (beneath front seats) not obstructed by floor mats or other objects (check).
– In “Read measured values” function of -J255- , select display group with measured values for evaporator output temperature sender - G263- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Repeat cooling output test ⇒ page 45 .

– Measure temperature of air from vent in rear centre console (left and right) using a thermometer; measured values correspond to temperatures previously measured by evaporator output temperature sender - G263- ; permissible deviation 9 ° C ⇒ page 50 .

**Note**

*As the air cooled by the air conditioning unit has to flow through the air duct under the centre console to the rear, it may take a while before the air at the rear vent attains the required values.*

- Thermometer does not measure any temperature below or more than 9 °C higher than the measured value of -G263- .

↓
yes
↓

- Rear cooling output OK (end of test).

– If there are problems with a lack of heating output, refer to ⇒ page 429 .

– If there are problems with differing air temperatures from rear vents (check temperature sensors and control motors of air conditioner) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

no
↓

- Temperatures at one or all measurement point(s) too high (or too low)?

– Check temperature sensor with incorrect measured value ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Check activation and operation of control motors at air conditioning unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Check operation of potentiometer for rear temperature selection - G538- (if fitted) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 3.7.7 Fault finding if air conditioner cooling output is OK at front, but required values are not attained at rear - “deluxe” version

**Applies to vehicles with mechanical and electrically driven air conditioner compressor.**

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**Note**

- *This test is the same for vehicles with mechanical and electrically driven air conditioner compressor (vehicles with and without high-voltage system / hybrid vehicles).*
- *To check the rear cooling output, measure the temperature of the air from the vents in the rear centre console using a thermometer.*
- *The correct temperature will only be measured if enough air can flow past the rear temperature sensors ( -G635- / -G636- , -G637- / -G638- ). Alter direction of air flow if necessary.*

Condition(s) for this test:

- Cooling output of air conditioner checked and OK ⇒ “3.7.3 Checking - vehicles without high-voltage system”, page 50 (vehicles with no high-voltage system) or ⇒ “3.7.10 Checking - vehicles with high-voltage system”, page 69 (vehicles with high-voltage system).

For checking the cooling output it is recommended to call up the following measured values of rear Climatronic operating unit -E265- :

- Measured values of following temperature sensors: Rear chest vent temperature senders -G635- / -G636- , vent temperature senders for rear footwell -G637- / -G638- .

– Open vents in B-pillars (left and right).

– Air outlet from rear footwell vents (beneath front seats) not obstructed by floor mats or other objects (check).

– Set air distribution at -E265- so that air is routed to all vents.

– Repeat cooling output test, read out and make a note of measured value of -G263- ⇒ page 45 .

– In “Read measured values” function of -E265- , select display group with measured values of temperature senders -G635- , -G636- , -G637- and -G638- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Measure temperature of air from vent in rear centre console (left and right) using a thermometer; measured values correspond to temperatures previously measured by evaporator output temperature sender - G263- ; permissible deviation +9 ° C ⇒ page 50 .

– Note measured values of the various temperature sensors during cooling output test.

– Do the temperatures measured at the rear by the various temperature sensors correspond to the temperature of the air from the vent in the rear centre console (left and right) measured with a thermometer (permissible deviation of display values from temperature measured at -G263- less than +9 °C, measured values roughly correspond to temperature measured with thermometer)?

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**Note**

- *As the air cooled by the air conditioning unit has to flow through the air duct under the centre console to the rear, it may take a while before the air at the rear vent attains the required values.*
- *If the required temperature is not attained at one of the temperature sensors, alter the setting on -E265- so that more air flows past this temperature sensor.*

- Temperature below or more than 9 °C higher than the last measured value of -G263- not measured at any measurement point?

↓
yes
↓

- Rear cooling output OK (end of test).

– If there are problems with a lack of heating output, refer to ⇒ page 429 .

– If there are problems with differing air temperatures from rear vents (check temperature sensors and control motors of air conditioner) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

no
↓

- Temperatures at one, several or all measurement point (s) too high (or too low)?

– Check temperature sensor with incorrect measured value ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Check activation and operation of control motors on air conditioning unit or on air distribution housing (rear) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 3.7.8 Notes on checking cooling output - vehicles with high-voltage system

**Vehicles with electrically driven air conditioner compressor only**

**Note**

*The “basic” version air conditioner is currently not available for vehicles with high-voltage system.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

**WARNING**

***Working on vehicles with high-voltage wiring:***

- ***Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.***
- ***High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.***
- ***The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.***

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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Working with ignition switched on or high-voltage system active

**DANGER!**

*When working on a vehicle with the ignition switched on or while the drive system is active, the engine can start unexpectedly and exhaust fumes can cause a health hazard in closed rooms. Moving parts can trap or draw in parts of the body and/or clothing (safety hazard).*

*Before switching on the ignition, perform the following steps:*

- *Move selector lever to position P*
- *Activate parking brake*
- *Switch off ignition*
- *Open bonnet*
- *Connect battery charger (e.g. battery charger - VAS 5095A- ) to jump-start connections of 12 V electrical system*
- *Switch on ignition*

– To minimise the number of automatic engine starts when the vehicle's drive system is active during test and measurement work, charge the vehicle batteries e.g. with the battery

charger 60A - VAS 5904- in battery standby mode ⇒ Electrical system; General information; Rep. gr. 27 ; Battery; Charging battery and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

– For test and measurement work that requires the vehicle's drive system to be active (READY) or the ignition to be switched on, move the selector lever to position “P”, activate the parking brake and take care to keep well clear of the engine when it is running. Set up any tools needed so that they cannot come into contact with moving parts.

**Note**

- *Also move the selector lever to position “P” and activate the parking brake before performing test and measurement work for which the ignition must be switched on but where the vehicle's drive system does not need to be active (READY).*
- *The status of the drive system (READY) is shown by the control unit in dash panel insert - J285- via the “power meter” ⇒ Owner's Manual .*
- *Activating and deactivating drive system ⇒ Owner's Manual (note display of control unit in dash panel insert - J285- ).*

**Note**

- *The status of the drive system (READY) is shown by the control unit in dash panel insert - J285- via the “power meter”.*
- *Activating vehicle drive system (check "READY" display in control unit in dash panel insert - J285- ) ⇒ Owner's Manual*
- *Move the selector lever to position “P” and activate the parking brake before performing test and measurement work for which the ignition must be switched on but where the vehicle's drive system does not need to be active.*

**Problems relating to poor or insufficient cooling output at the battery cooling module or at the high-voltage battery heat exchanger on vehicles with a high-voltage system when the cooling output at the evaporator in the air conditioning unit is OK may be caused by the following:**

Audi A6 hybrid (vehicles with battery cooling module)
⇒ “10 Components for cooling high-voltage battery - Audi A6 hybrid”, page 565

- Activation or operation of control motors at battery cooling module ( air recirculation flap 1 control motor for hybrid battery - V479- and air recirculation flap 2 control motor for hybrid battery - V480- ) not OK; check activation ⇒ Vehicle diagnostic tester (“Guided Fault Finding” for battery regulation control unit - J840- ).
- Activation or operation of refrigerant shut-off valve 2 for hybrid battery - N517- (part of expansion valve on battery cooling module) not OK; check activation ⇒ Vehicle diagnostic tester (“Guided Fault Finding” for battery regulation control unit - J840- ).
- Measured values of temperature sensors in battery cooling module not OK ( temperature sensor before evaporator for hybrid battery - G756- , temperature sensor after evaporator for hybrid battery - G757- ); check measured values ⇒ Vehicle diagnostic tester (“Guided Fault Finding” for battery regulation control unit - J840- ).

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- Air routing from battery cooling module (to or from drive battery - A2- ) or to or from battery cooling module (to vehicle's forced ventilation system) not OK; checking
⇒ “10.5 Air intake and air outlet openings”, page 573 .

**Note**

- *Two evaporators are installed on this vehicle (one in the air conditioning unit and one in the battery cooling module on the Audi A6 hybrid; one in the air conditioning unit and one in the high-voltage battery heat exchanger on the Audi A6 e-tron). If the measured temperature corresponds to or is below the specified value at one evaporator but the required specified value is not attained at the other evaporator, the system is controlled as follows: The battery regulation control unit - J840- activates the electric air conditioner compressor at a higher speed via the power and control electronics for electric drive - JX1- and the control unit for air conditioning compressor - J842- . This causes the cooling output of the air conditioner to increase and the pressure on the low-pressure side and the evaporator temperature to drop. If the required temperature value is then not reached at one evaporator, -J840- activates the refrigerant shut-off valve 1 for hybrid battery - N516- or the refrigerant shut-off valve 2 for hybrid battery - N517- so that refrigerant no longer flows through the evaporator which is too cold ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *As the cooling output of the evaporator in the battery cooling module is considerably less than that of the evaporator in the air conditioning unit, the required temperature may still be reached in the battery cooling module when there is insufficient refrigerant in the circuit, but the required temperature will no longer be reached at the evaporator in the air conditioning unit (although the air conditioner compressor is being activated at a higher speed).*

Audi A6 e-tron (vehicles with high-voltage battery heat exchanger)
⇒ “9 Components for cooling high-voltage system - Audi A6 e-tron”, page 559

- Activation or operation of thermal management coolant pump 2 - V618- is not OK; check activation ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode (for thermal management control unit - J1024- ).
- Activation or operation of refrigerant shut-off valve 2 - N640- (part of expansion valve at high-voltage battery heat exchanger) is not OK; check activation ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode (for thermal management control unit - J1024- ).
- The measured value of the thermal management coolant temperature sender 1 - G902- in the high-voltage battery coolant circuit is not OK; check measured valve ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode (for battery regulation control unit - J840- ).
- Fault in high-voltage battery coolant circuit ( control unit for high-voltage battery charging unit - J1050- , hybrid battery unit - AX1- ); check coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses (high-voltage battery cooling system)

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**Note**

- *This vehicle is fitted with 2 evaporators (one in the air conditioning unit and one in the high-voltage battery heat exchanger). If the measured temperature corresponds to or is below the specified value at one evaporator but the required specified value is not attained at the other evaporator, the system is controlled as follows: The thermal management control unit - J1024- activates the electric air conditioner compressor at a higher speed via the control unit for air conditioning compressor - J842- . This causes the cooling output of the air conditioner to increase and the pressure on the low-pressure side and the evaporator temperature to drop. If the required temperature value is then not reached at one evaporator, -J1024- activates the refrigerant shut-off valve - V424- or the refrigerant shut-off valve 2 - N640- so that refrigerant no longer flows through the evaporator which is too cold ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *As the cooling output of the evaporator in the high-voltage battery heat exchanger is less than that of the evaporator in the air conditioning unit, the required temperature may still be reached in the high-voltage battery heat exchanger when there is insufficient refrigerant in the circuit, but the required temperature will no longer be reached at the evaporator in the air conditioning unit (although the air conditioner compressor is being activated at a higher speed).*

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## 3.7.9 Requirements for checking cooling output of air conditioner - vehicles with high-voltage system

**Vehicles with electrically driven air conditioner compressor only**

- Ambient temperature above 15 °C
- Radiator and condenser clean (clean if necessary)
- During this test the vehicle batteries are charged using a battery charger in battery back-up mode ⇒ Electrical system; General information; Rep. gr. 27 ; Battery; Charging battery .
- All air ducts, covers and seals OK and properly installed
- Air flow through dust and pollen filter not impeded by dirt ⇒ page 472
- Air intake (in fresh air and air recirculation mode) not impeded by dirt or retrofitted components
- Vehicle not exposed to direct sunlight
- Engine warm (coolant temperature above 80 °C)
- No faults entered in event memory of power and control electronics for electric drive - JX1- , battery regulation control unit - J840- and control unit for air conditioning compressor - J842- ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode (Audi A6 hybrid).
- No faults entered in event memory of thermal management control unit - J1024- ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode (Audi A6 e-tron).
- Event memory of operating unit ( Climatronic control unit - J255- , and if applicable of rear Climatronic operating unit - E265- ) interrogated and erased; basic setting performed and coding of -J255- (and -E265- ) checked ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

- Adaption of -J255- (and if applicable -E265- ) checked ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Vehicles with “deluxe” version air conditioner: following air conditioner settings made in MMI (Multi Media Interface) via “A/C” function in “Car” / “Car systems” menu (if possible): Auto recirculation “Off”, Air flow “A/C mode medium” and footwell temperature “medium” (upward-pointing arrow).

**Note**

*The functions for setting the air conditioner in the MMI (Multi Media Interface) (“A/C” function in “Car” / “Car systems” menu) vary depending on the version of the air conditioner, the production period and the vehicle model (some functions are not provided on all models) ⇒ Owner's Manual .*

- All dash panel vents and vents in rear centre console and B-pillar (“deluxe” version) open.
- On the “deluxe” version, vent for glove box cooling (in glove box) closed.
- Air outlet from rear footwell vents (beneath front seats) not obstructed by floor mats or other objects (check).
- All dash panel vents open
- Bonnet closed.
- Ignition switched on and drive system activated (READY), engine running only if e.g. drive battery - A2- not sufficiently charged.

**DANGER!**

***When working on a vehicle with the ignition switched on or while the drive system is active, the engine can start unexpectedly and exhaust fumes can cause a health hazard in closed rooms. Moving parts can trap or draw in parts of the body and/or clothing (safety hazard).***

***Before switching on the ignition, perform the following steps:***

- *Move selector lever to position P*
- *Activate parking brake*
- *Switch off ignition*
- *Open bonnet*
- *Connect battery charger (e.g. battery charger - VAS 5095A- ) to jump-start connections of 12 V electrical system*
- *Switch on ignition*

– To minimise the number of automatic engine starts when the vehicle's drive system is active during test and measurement work, charge the vehicle batteries e.g. with the battery charger 60A - VAS 5904- in battery standby mode ⇒ Electrical system; General information; Rep. gr. 27 ; Battery; Charging battery and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

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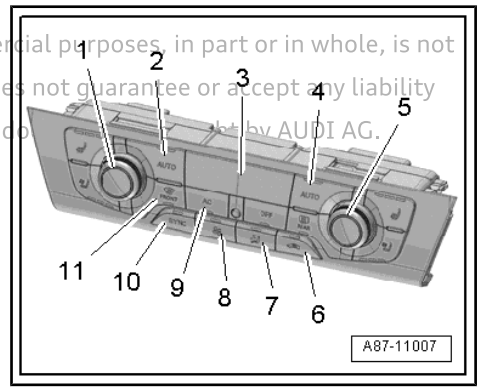
**Note**

- *The status of the drive system (READY) is shown by the control unit in dash panel insert - J285- via the “power meter”.*
- *Activating vehicle drive system (check "READY" display in control unit in dash panel insert - J285- ) ⇒ Owner's Manual*
- *Move the selector lever to position “P” and activate the parking brake before performing test and measurement work for which the ignition must be switched on but where the vehicle's drive system does not need to be active.*

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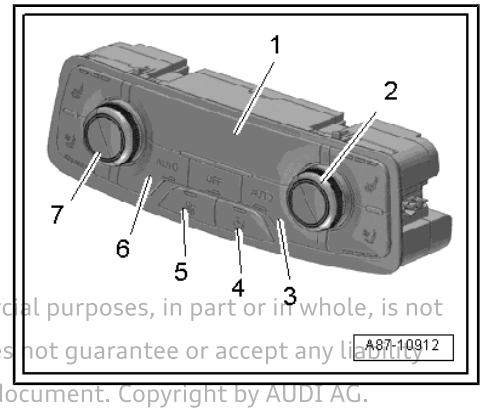
Following settings made on operating unit ( Climatronic control unit - J255- ), “deluxe” version:

- “Auto” mode – lamps in both AUTO buttons -2, 4- on
- Temperature setting “cold” via rotary controls -1, 5- – display “LO” for driver and front passenger side in display -3- of -J255- and in display of Multi Media Interface
- Air conditioner compressor on – lamp in AC button -9- of -J255- is on.
- Setting for fresh air blower -7- “maximum speed” – display on -J255- and Multi Media Interface display at speed setting “10” or higher



If fitted, following settings made on rear Climatronic operating unit - E265- :

- "Auto" mode – lamps in both AUTO buttons -3, 6- on
- Temperature setting "cold" via rotary controls -2, 7- – display "LO" for left and right side in display -1-
- Setting for fresh air blower -5- "maximum speed" – display speed "5" or higher




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**Note**

- *Manual alteration of the fresh air blower speed causes the lamps in the AUTO buttons to go out.*
- *The maximum possible fresh air blower speed depends on several factors (electrical system voltage etc.).*

**Functions with drive system active (READY):**

– Radiator fan(s) ( radiator fan - V7- and radiator fan 2 - V177- ) running (activation and speed 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 when a certain pressure is exceeded in the refrigerant circuit (currently a pressure of approx. 9 bar upwards). The activation of the radiator fan(s) is displayed as a measured value ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

– Fresh air blower - V2- running at maximum speed (speed "10" or higher)

**Note**

*The maximum possible fresh air blower speed depends on various factors (coolant temperature, vehicle's electrical system voltage etc.).*

– The air conditioner switches to air recirculation mode (approx. 1 minute after the engine is started or the drive system is activated (READY), the air flow flap / fresh air flap is closed and the air recirculation flap is opened; air is drawn in from the passenger compartment by the fresh air blower - V2- underneath the dash panel / behind the glove box).

**Note**

*If one of these requirements is not met, interrogate event memory of Climatronic control unit - J255- , perform final control diagnosis and read out measured values ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

## 3.7.10 Checking - vehicles with high-voltage system

**Special tools and workshop equipment required**

- Vehicle diagnostic tester with appropriate connecting wire
- Battery charger, 60A - VAS 5904-
- Commercially available thermometer (for measuring temperature; if applicable use thermometer with 2 probes for simultaneous measurement of temperature e.g. on right and left)

**Vehicles with electrically driven air conditioner compressor only**

- Requirements for checking cooling output met ⇒ page 66

– Measure ambient temperature (it must be over 15 °C).

– Close doors, bonnet, windows, sun roof and rear lid.

– Open all dash panel vents.

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**DANGER!**

***When working on a vehicle with the ignition switched on or while the drive system is active, the engine can start unexpectedly and exhaust fumes can cause a health hazard in closed rooms. Moving parts can trap or draw in parts of the body and/or clothing (safety hazard).***

***Before switching on the ignition, perform the following steps:***

- ***Move selector lever to position P***
- ***Activate parking brake***
- ***Switch off ignition***
- ***Open bonnet***
- ***Connect battery charger (e.g. battery charger - VAS 5095A- ) to jump-start connections of 12 V electrical system***
- ***Switch on ignition***

– To minimise the number of automatic engine starts when the vehicle's drive system is active during test and measurement work, charge the vehicle batteries e.g. with the battery charger 60A - VAS 5904- in battery standby mode ⇒ Electrical system; General information; Rep. gr. 27 ; Battery; Charging battery and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**Note**

- *The status of the drive system (READY) is shown by the control unit in dash panel insert - J285- via the “power meter”.*
- *Activating vehicle drive system (check "READY" display in control unit in dash panel insert - J285- ) ⇒ Owner's Manual*
- *Move the selector lever to position “P” and activate the parking brake before performing test and measurement work for which the ignition must be switched on but where the vehicle's drive system does not need to be active.*

– Ignition switched on and drive system active (READY), engine only starts or runs if e.g. drive battery - A2- is not sufficiently charged.

– Switch off air conditioner compressor (“ECON” mode set on air conditioner display unit, Climatronic control unit - J255- , indicator lamp in AC button off).

Audi A6 hybrid (vehicles with battery cooling module)
⇒ “10 Components for cooling high-voltage battery - Audi A6 hybrid”, page 565

– Start Guided Fault Finding for air conditioner ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– In “Read measured values” function, select display groups with measured values for activation of air conditioner compressor and pressure in refrigerant circuit and read out measured values (on vehicles with electrical air conditioner compressor - V470- the values are displayed in different measured value blocks) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

Audi A6 e-tron (vehicles with high-voltage battery heat exchanger)
⇒ “9 Components for cooling high-voltage system - Audi A6 e-tron”, page 559

– Start Guided Fault Finding for thermal management control unit - J1024- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– In “Read measured values” function, read out display group with measured value for activation of air conditioner compressor ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– Terminate Guided Fault Finding for -J1024- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– Start Guided Fault Finding for air conditioner ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– In “Read measured values” function, select display group with measured value for pressure in refrigerant circuit and read out measured value ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

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All vehicles

♦ The air conditioner compressor is deactivated, no compressor speed is displayed.
♦ Pressure in refrigerant circuit is identical to or above value in table below (depending on ambient temperature).

| Ambient temperature in °C | Pressure displayed (in bar) |
|---|---|
| 15 | 3.0 |
| 20 | 4.0 |
| 25 | 5.0 |
| 30 | 6.0 |
| 35 | 7.0 |

**Note**

- *On the absolute pressure scale, 0 bar corresponds to an absolute vacuum. Normal ambient pressure thus corresponds to approx. 1 bar absolute and 0 bar gauge pressure. On the scales of most pressure gauges, 0 bar gauge pressure corresponds to an absolute pressure of 1 bar (can be seen from -1 mark below 0).*
- *Depending on the version of the air conditioner operating unit ( Climatronic control unit - J255- ), the measured values may only be displayed as whole numbers. The display fluctuates between two values if the measured pressure is between the two.*
- *The displays for the activation of the air conditioner compressor differ. For a mechanically driven air conditioner compressor, the tester displays the specified and actual current for activation of the air conditioner compressor regulating valve - N280- . For an electrical air conditioner compressor - V470- , the specified and actual speed of -V470- , which are transmitted by the control unit for air conditioning compressor - J842- , are displayed in a different measured value block ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *The pressure in the refrigerant circuit depends on the ambient temperature. Due to the radiation of heat by components (e.g. radiator), the pressure displayed when the engine is warm is slightly higher than that given for the corresponding ambient temperature.*
- *If the pressure displayed is lower than that given in the table: Check the signal of the refrigerant pressure sender ( -G395- / -G65- ) ⇒ Vehicle diagnostic tester ("Guided Fault Finding"). If no fault is found at the refrigerant pressure sender ( -G395- / -G65- ), there is not enough refrigerant in the circuit. The vehicle must be taken to a workshop which is equipped with the necessary tools and at which the work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit (Working with the air conditioner service station).*

If pressure in refrigerant circuit is OK:

– Switch on air conditioner compressor by selecting "Auto" mode on air conditioner operating unit ( Climatronic control unit - J255- ) (indicator lamps in AUTO button(s) and AC button on).

– Set air conditioner to "cold" temperature setting (for driver and passenger side) using rotary control on air conditioner operating unit ( Climatronic control unit - J255- ).

– By way of the rotary controls on -J255- , set the air delivery to "dash panel vents" (for driver and front passenger side).

– On vehicles with -E265- , set the air delivery by way of the rotary controls on -E265- to the vents in the rear centre console.

**Note**

- *The lamp in the AUTO button(s) goes out when the direction of air delivery and/or the fresh air blower speed are altered manually.*
- *The maximum possible fresh air blower speed depends on several factors (electrical system voltage etc.).*

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– In the “Read measured values” function, read out the speed at which the electrical air conditioner compressor - V470- is activated by the control unit for air conditioning compressor - J842- (the display will show a speed greater than 800 rpm: air conditioner compressor is running) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

**Note**

- *The specified speed is calculated by the air conditioner operating unit ( Climatronic control unit - J255- ) on the Audi A6 hybrid and by the thermal management control unit - J1024- on the Audi A6 e-tron. On both versions, the request is transmitted via the data bus to the control unit for air conditioning compressor - J842- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *When driving, the air conditioner compressor operates over a speed range of 800 to 8600 rpm.*
- *When the vehicle is stationary or only moving slowly (up to a speed of approx. 45 km/h), the air conditioner compressor is not activated at the maximum specified speed (of approx. 8500 rpm); the air conditioner compressor speed is limited to approx. 5000 rpm.*
- *At an air conditioner compressor speed of 5000 rpm, with a very high ambient temperature (in excess of 35 °C) and a high fresh air blower speed (unfavourable ambient conditions), the output (delivery volume) of the air conditioner compressor is at first not always sufficient to reduce the temperature of the air downstream of the evaporator to the specified value. One way of checking the control action of the air conditioner compressor under these conditions is to activate the fresh air blower with only approx. 40 % of the maximum voltage and to check the temperature at reduced fresh air blower speed ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode for air conditioner and battery regulation.*
- *If an insufficient speed or no speed at all is displayed as a measured value (a speed of less than 4000 rpm although the required temperature of the air downstream of the evaporator has still not been reached), check the activation of the electrical air conditioner compressor - V470- by the control unit for air conditioner compressor - J842- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

– In the “Read measured values” function of the air conditioner operating unit (the Climatronic control unit - J255- or the thermal management control unit - J1024- on the Audi A6 e-tron), read out the pressure in the refrigerant circuit measured by the refrigerant pressure sender ( -G395- / -G65- ). The pressure displayed increases to above the value with the air conditioner compressor switched off ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

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**Note**

- *If the pressure displayed as the measured value does not change and activation of the air conditioner compressor is OK ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode, there is a fault in the refrigerant circuit. Take the vehicle to a workshop which is equipped with the necessary tools and at which the work can be performed by appropriately qualified personnel (there may be problems with control of air conditioner compressor) ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit . Inform the workshop of the problem detected.*
- *The air conditioner compressor is activated by the control unit for air conditioning compressor - J842- , when requested by the air conditioner operating unit ( Climatronic control unit - J255- or thermal management control unit - J1024- ), in such a way that the temperature of the air downstream of the evaporator reaches the specified value (approx. 2 to 5 °C).*
- *After the engine is started, the air conditioner compressor is activated at a speed greater than 3000 rpm 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, the activation is reduced and the compressor output is decreased.*
- *Under certain operating conditions, residual moisture in the refrigerant circuit may lead to the formation of ice at the expansion valve for the evaporator in the air conditioning unit. This ice formation can impair the control function of the expansion valve/air conditioner compressor. The evaporator is insufficiently or excessively cooled and may ice up. An iced-up evaporator may cause various problems ⇒ page 84 .*
- *Two evaporators are installed on the Audi A6 hybrid (one in the air conditioning unit and one in the battery cooling module or in the high-voltage battery heat exchanger). If the measured temperature corresponds to or is below the specified value at one evaporator but the required specified value is not attained at the other evaporator, the system is controlled as follows: The battery regulation control unit - J840- activates the electric air conditioner compressor at a higher speed via the power and control electronics for electric drive - JX1- and the control unit for air conditioning compressor - J842- . This causes the cooling output of the air conditioner to increase and the pressure on the low-pressure side and the evaporator temperature to drop. If the required temperature value is then not reached at one evaporator, -J840- activates the refrigerant shut-off valve 1 for hybrid battery - N516- or the refrigerant shut-off valve 2 for hybrid battery - N517- so that refrigerant no longer flows through the evaporator which is too cold ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

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- *Two evaporators are installed on the Audi A6 e-tron (one in the air conditioning unit and one in the high-voltage battery heat exchanger). If the measured temperature corresponds to or is below the specified value at one evaporator but the required specified value is not attained at the other evaporator, the system is controlled as follows: The thermal management control unit - J1024- activates the electric air conditioner compressor at a higher speed via the control unit for air conditioning compressor - J842- . This causes the cooling output of the air conditioner to increase and the pressure on the low-pressure side and the evaporator temperature to drop. If the required temperature value is then not reached at one evaporator, -J1024- activates the refrigerant shut-off valve - V424- or the refrigerant shut-off valve 2 - N640- so that refrigerant no longer flows through the evaporator which is too cold ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *As the cooling output of the evaporator in the battery cooling module is less than that of the evaporator in the air conditioning unit, the required temperature may still be reached in the battery cooling module or at the high-voltage battery heat exchanger when there is insufficient refrigerant in the circuit, but the required temperature will no longer be reached at the evaporator in the air conditioning unit (although the air conditioner compressor is being activated at a higher speed).*
- *On Audi A6 e-tron vehicles (depending on version), the measured value of -G263- can be evaluated by the operating unit ( Climatronic control unit - J255- (as on all other vehicles in this series) or thermal management control unit - J1024- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *If the measured value is evaluated by -J1024- on the Audi A6 e-tron (and transmitted to -J255- via the data bus), a different version of -J255- is installed ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode and ⇒ Electronic parts catalogue .*

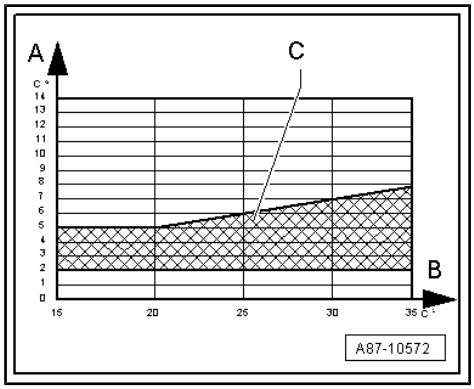
– Press button for air recirculation mode on air conditioner operating unit ( Climatronic control unit - J255- ); symbol for “air recirculation mode” in air recirculation button lights up.

– In “Read measured values” function, read out measured value of evaporator output temperature sender - G263- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Use thermometer to measure temperature of air from vent in rear centre console.

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– Compare measured value displayed (for -G263- ) to values in graph.




A - Air temperature (downstream of evaporator in air conditioning unit) measured by evaporator output temperature sender - G263-

B - Ambient temperature

C - Permissible tolerance range

- Depending on the ambient temperature, the measured air temperature downstream of the evaporator (measured value of -G263- ) should be within the stated tolerance range -C- after 5 minutes.
- The measured temperatures from the vents of the rear centre console correspond to the temperature measured by -G263- . Permissible deviation from measured value of -G263- at front max. + 9 °C (however not below +1 °C).

**Note**

- *If the required values at the front are not attained, check the measured value of -G263- . To do so, compare the measured value displayed for -G263- to the measured values of the left vent temperature sender - G150- and the right vent temperature sender - G151- .*
- *If the measured value for -G263- differs only slightly from the measured value for -G150- / -G151- : Perform fault finding if readout does not match specification* *⇒ page 78* *.*
- *If the measured value for -G263- is greater than the measured value for -G150- and/or -G151- , check for proper installation of -G263-* *⇒ page 623* *and perform the electrical check for this sender ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *If the measured temperatures from the rear centre console vents are more than 1 °C lower than the measured value for -G263- , check the temperature sensors used for measurement (the design of the air conditioner is such that the temperature at the rear cannot be lower than at the front).*
- *One way to check whether the air conditioner is working is by feeling the refrigerant lines: the "low-pressure side" refrigerant line (thick line between internal heat exchanger and air conditioner compressor) cools down and the "high-pressure side" refrigerant line (thin line between condenser and internal heat exchanger) becomes warm*
  *⇒ "2.1.2 System overview - refrigerant circuit, Audi A6 hybrid (vehicles with high-voltage system)", page 135* *.*

**If the measured value for the evaporator output temperature sender - G263- (and thus the cooling output of the air conditioner) and the measured temperature of the air from the rear centre console vents are OK and there are no problems, the cooling output test is completed.**

- If the measured value of -G263- (and thus the cooling output of the air conditioner) is not OK, perform fault finding measures if the readout does not match the specification (the required cooling output is not attained) ⇒ page 78 .
- If the measured value of -G263- (and thus the cooling output of the air conditioner) is OK and there is a problem with excessively high or differing output temperatures, check the activation of the temperature flaps in the air conditioning unit ⇒ page 429 .

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- If the measured value of -G263- (and thus the cooling output of the air conditioner) is OK and there are problems with a lack of cooling output from the rear vents (excessively high or differing air outflow temperatures from the rear vents), check activation of the temperature flaps in the rear vent air duct ⇒ page 60 and ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

**Note**

- *The shut-off valve installed in the refrigerant line to the expansion valve upstream of the evaporator in the air conditioning unit is open when not activated. When this valve is activated, or if it is blocked, refrigerant cannot flow through to the expansion valve; check operation using ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode (for -J840- ).*
- *The shut-off valve installed in the refrigerant line to the expansion valve upstream of the evaporator in the air conditioning unit is currently identical on the Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue . However, the designations in the current flow diagrams and Guided Fault Finding are different ( refrigerant shut-off valve 2 for hybrid battery - N517- for Audi A6 hybrid and refrigerant shut-off valve 2 - N640- on Audi A6 e-tron) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

**If the measured value of the evaporator output temperature sender - G263- (and thus the cooling output of the air conditioner) is OK and there is a problem with a lack of cooling output for battery cooling:**

- Check activation and operation of the components of the battery cooling module by the battery regulation control unit - J840- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

**Note**

- *The refrigerant shut-off valve 2 for hybrid battery - N517- attached to the expansion valve of the battery cooling module on the Audi A6 hybrid is closed when not activated; check operation using ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode (for battery regulation control unit - J840- ).*
- *The refrigerant shut-off valve 2 - N640- attached to the expansion valve downstream of the high-voltage battery heat exchanger on the Audi A6 e-tron is closed when not activated; check operation using ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode (for thermal management control unit - J1024- ).*

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## 3.7.11 Fault finding if readout does not match specification (required cooling output is not attained) - vehicles with high-voltage system

**Fault finding for Audi A6 hybrid** ⇒ page 78

**Fault finding for Audi A6 e-tron** ⇒ page 81

**Fault finding for Audi A6 hybrid**

– Select display with measured values for activation of air conditioner compressor and pressure in refrigerant circuit in “Read measured values” function ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Repeat cooling output test ⇒ page 69 .

– Observe displays for compressor activation during cooling output test.

– Is air conditioner compressor deactivated during cooling output test (specified speed drops below 1500 rpm)?

↓ yes ↓

Continued ⇒ page 78 . Activation of air conditioner compressor is switched off.

↓ no ↓

• Is there an increase in pressure in refrigerant circuit during cooling output test?

↓ yes ↓

Continued ⇒ page 79 . Increase in pressure in refrigerant circuit

↓ no ↓

In “Read measured values” function of battery regulation control unit - J840- , select display with measured values for activation of refrigerant shut-off valve 1 for hybrid battery - N516- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

If -N516- is activated, rectify the condition that caused it to be activated.

If the air conditioner compressor is activated and -N516- is not activated, the vehicle must 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; Rep. gr. 87 ; Refrigerant circuit .

Inform the workshop of the problem found (possibly insufficient refrigerant in circuit, -N516- is blocked or electrical air conditioner compressor - V470- is defective).

Continuation of check: “Activation of air conditioner compressor is deactivated”

– Is activation of air conditioner compressor cancelled by air conditioner operating unit, Climatronic control unit - J255- (by battery regulation control unit - J840- or control unit for air conditioning compressor - J842- ) during cooling output test; does specified speed drop to below 1500 rpm?

↓ yes ↓

↓ no ↓

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– Interrogate event memory of -J255- , -J840- and -J842- .

Eliminate faults displayed and erase event memory.

Read out measured value with compressor shut-off criteria of -J255- and eliminate cause of deactivation ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

Repeat cooling output test ⇒ page 69 .

– Air conditioner compressor deactivated during cooling output test by -J840- or -J842- (only the actual speed drops below 1500 rpm)?

Interrogate event memory of -J840- and -J842- , rectify fault displayed and erase event memory ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

In “Read measured values” function for -J840- and -J842- , read out displays indicating measured values for activation of electrical air conditioner compressor - V470- .

Check activation of -V470- by -J842- and eliminate cause of deactivation ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

Repeat cooling output test ⇒ page 69 .

Continuation of check: “Increase in pressure in refrigerant circuit”

– Open bonnet.

– Repeat cooling output test ⇒ page 69 .

– Read out pressure in refrigerant circuit via “Read measured values” function of air conditioner operating unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

• Radiator fan(s) ( radiator fan - V7- and radiator fan 2 - V177- ) running during cooling output test? Speed is governed by coolant temperature and pressure in refrigerant circuit (determined by engine control unit). Or are radiator fans switched in as soon as pressure in refrigerant circuit exceeds a pressure of approx. 9 bar?

↓ yes ↓

– Read out measured values with display for “pressure in refrigerant circuit” and “activation of radiator fans” ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

• Radiator fan(s) running at a higher speed as pressure in refrigerant circuit increases (according to request from -J255- )?

↓ yes ↓

↓ no ↓

– Check activation of radiator fan(s), e.g. in “Final control diagnosis” function ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Service activation system for radiator fan(s).

– Repeat cooling output test ⇒ page 69 .

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– In “Read measured values” function of battery regulation control unit - J840- , select display with measured values for activation of refrigerant shut-off valve 1 for hybrid battery - N516- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– If -N516- is activated, rectify the condition that caused it to be activated.

– If the air conditioner compressor is activated and -N516- is not activated, the vehicle must 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; Rep. gr. 87 ; Refrigerant circuit .

– Inform the workshop of the problem found (possibly insufficient refrigerant in circuit, -N516- is blocked or electrical air conditioner compressor - V470- is defective).

– Check activation of radiator fans, e.g. in “Final control diagnosis” function ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Service activation system for radiator fan(s).

– Repeat cooling output test ⇒ page 69 .

**Note**

- *The pressure in the refrigerant circuit depends on various influencing factors. In general, 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, or 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 (radiator fan (s) running and cooling condenser).*
- *The measured value of the refrigerant pressure sender ( -G395- / -G65- ) is used by the operating unit ( Climatronic control unit - J255- or thermal management control unit - J1024- on the Audi A6 e-tron) to calculate the pressure in the refrigerant circuit, which it then displays ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *At absolute pressures below approx. 1.8 bar and above approx. 32 bar, the operating unit ( Climatronic control unit - J255- ) does not switch on the air conditioner compressor (the control unit for air conditioning compressor - J842- and thus the electrical air conditioner compressor - V470- are not activated). The air conditioner compressor is only re-activated once the absolute pressure has risen above 1.8 bar or dropped below 16 bar.*
- *Further information on the pressure in the refrigerant circuit can be found in Guided Fault Finding ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *To prevent the air conditioner compressor from being switched off abruptly if the pressure in the refrigerant circuit or the coolant temperature is too high, its output is limited by the air conditioner operating unit ( Climatronic control unit - J255- ) as soon as the pressure in the refrigerant circuit exceeds approx. 30 bar absolute (full compressor output is not restored again until pressure has dropped below 27 bar), or the temperature of the coolant exceeds 115 °C (compressor is switched off completely when coolant reaches 118 °C).*

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**Fault finding for Audi A6 e-tron**

– Select display with measured values for activation of air conditioner compressor and pressure in refrigerant circuit (alternately in Climatronic control unit - J255- and thermal management control unit - J1024- ) in “Read measured values” function ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Repeat cooling output test ⇒ page 69 .

– Observe displays for compressor activation during cooling output test ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode (via -J1024- ).

– Is air conditioner compressor deactivated during cooling output test (specified speed drops below 1500 rpm)?

↓ yes ↓

Continued ⇒ page 81 . Activation of air conditioner compressor is switched off.

↓ no ↓

• Is there an increase in pressure in refrigerant circuit during cooling output test ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode (via -J255- )?

↓ yes ↓

Continued: increase in pressure in refrigerant circuit

↓ no ↓

In “Read measured values” function of -J1024- , select display with measured values for activation of refrigerant shut-off valve - V424- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

If -V424- is activated, rectify the condition that caused it to be activated.

If the air conditioner compressor is activated and -V424- is not activated, the vehicle must 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; Rep. gr. 87 ; Refrigerant circuit .

Inform the workshop of the problem found (possibly insufficient refrigerant in circuit, -V424- is blocked or electrical air conditioner compressor - V470- is defective).

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Continuation of check: “Activation of air conditioner compressor is deactivated”

– If activation of air conditioner compressor is cancelled during cooling output test by thermal management control unit - J1024- (or by control unit for air conditioning compressor - J842- ), does specified speed drop to below 1500 rpm?

↓ yes ↓

↓ no ↓

– Activation of air conditioner compressor cancelled during cooling output test by -J1024- (specified and actual speed drop below 1500 rpm)?

– Interrogate event memory of -J1024- .

Eliminate faults displayed and erase event memory.

Read out measured value with compressor shut-off criteria from -J1024- and eliminate cause of deactivation ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

Repeat cooling output test ⇒ page 69 .

– Activation of air conditioner compressor cancelled during cooling output test by -J842- (only the actual speed drops below 1500 rpm)?

Interrogate event memory of -J842- via -J1024- , rectify fault displayed and erase event memory ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

In “Read measured values” function of -J1024- , read out displays indicating measured values for activation of electrical air conditioner compressor -V470- .

Check activation of -V470- by -J842- and eliminate cause of deactivation ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

Repeat cooling output test ⇒ page 69 .

Continuation of check: “Increase in pressure in refrigerant circuit”

– Open bonnet.

– Repeat cooling output test ⇒ page 69 .

– Read out pressure in refrigerant circuit via “Read measured values” function of air conditioner operating unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

• Radiator fan(s) ( radiator fan - V7- and radiator fan 2 - V177- ) running during cooling output test? Speed is governed by coolant temperature and pressure in refrigerant circuit (determined by -J1024- ). Or are radiator fans switched in as soon as pressure in refrigerant circuit exceeds a pressure of approx. 9 bar?

↓
yes
↓

– Alternating between “Read measured values” function of -J255- and -J1024- , read out the following:

– Read out measured values with display for “pressure in refrigerant circuit” via “Read measured values” function of -J255- / -J1024- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Read out measured values with display for “activation of radiator fans” via “Read measured values” function of -J1024- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

• Radiator fan(s) running at a higher speed as pressure in refrigerant circuit increases (according to request from -J1024- )?

↓
yes
↓

↓
no
↓

– Check activation of radiator fan(s), e.g. in “Final control diagnosis” function of -J1024- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Service activation system for radiator fan(s).

– Repeat cooling output test ⇒ page 69 .

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↓
no
↓

– In “Read measured values” function of -J1024- , select display with measured values for activation of refrigerant shut-off valve - V424- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– If -V424- is activated, rectify the condition that caused it to be activated.
– If the air conditioner compressor is activated and -V424- is not activated, the vehicle must 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; Rep. gr. 87 ; Refrigerant circuit .
– Inform the workshop of the problem found (possibly insufficient refrigerant in circuit, -V424- is blocked or electrical air conditioner compressor - V470- is defective).
– Check activation of radiator fans, e.g. in “Final control diagnosis” function of -J1024- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– Service activation system for radiator fan(s).
– Repeat cooling output test ⇒ page 69 .

**Note**

- *The pressure in the refrigerant circuit depends on various influencing factors. In general, 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, or 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 (radiator fan (s) running and cooling condenser).*
- *The measured value of the refrigerant pressure sender ( -G395- / -G65- ) is used by the operating unit ( Climatronic control unit - J255- or thermal management control unit - J1024- on the Audi A6 e-tron) to calculate the pressure in the refrigerant circuit, which it then displays ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *At absolute pressures of less than approx. 1.8 bar and greater than approx. 32 bar, the operating unit ( Climatronic control unit - J255- ) does not transmit the request for the air conditioner compressor to the thermal management control unit - J1024- (the control unit for air conditioning compressor - J842- and thus the electrical air conditioner compressor - V470- are not activated by -J1024-). The air conditioner compressor is only re-activated once the absolute pressure has risen above 1.8 bar or dropped below 16 bar.*
- *Further information on the pressure in the refrigerant circuit can be found in Guided Fault Finding ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *To prevent the air conditioner compressor from having to be switched off abruptly by the thermal management control unit - J1024- if the pressure in the refrigerant circuit or the temperature of the refrigerant is too high, its output is limited by - J1024- as soon as the pressure in the refrigerant circuit (determined by the air conditioner operating unit ( Climatronic control unit - J255- ) and transmitted via the data bus to - J1024- ) exceeds approx. 30 bar absolute (full compressor output is not restored again until pressure has dropped below 27 bar), or the temperature of the coolant exceeds 115 °C (compressor is switched off completely when coolant reaches 118 °C).*

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## 3.7.12 Fault finding if ice forms at evaporator - vehicles with high-voltage system

**Vehicles with high-voltage system (hybrid vehicles)**

- The electrical air conditioner compressor - V470- is activated via the control unit for air conditioning compressor - J842- by the air conditioner operating unit ( Climatronic control unit - J255- on the Audi A6 hybrid or thermal management control unit - J1024- on the Audi A6 e-tron) in such a way that the temperature of the air downstream of the evaporator reaches the specified value (approx. 2 to 5 ℃).
- After the ignition is switched on, a value greater than 4000 rpm is displayed depending on the road speed, the measured temperature and the voltage of the vehicle's electrical system. As soon as the temperature measured by the evaporator output temperature sender - G263- approaches the specified value, the activation is reduced and the compressor output is decreased.

**Note**

- *On Audi A6 e-tron vehicles (depending on version), the measured value of -G263- can be evaluated by the operating unit ( Climatronic control unit - J255- (as on all other vehicles in this series) or thermal management control unit - J1024- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *If the measured value is evaluated by -J1024- on the Audi A6 e-tron (and transmitted to -J255- via the data bus), a different version of -J255- is installed ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode and ⇒ Electronic parts catalogue .*

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The following problems may be encountered if the measured value of the evaporator output temperature sender - G263- is incorrect (too high):

– The air conditioner fails repeatedly or sporadically (no cooling/heating output) after extended driving; after the vehicle has been stopped, the air conditioner functions properly again (after a short wait).

– The windscreen and/or side/rear windows mist up on the inside after extended driving; the windows are not de-misted even after pressing the “defrost” button on the air conditioner operating unit ( Climatronic control unit - J255- ). After the vehicle has been stopped, the air conditioner functions properly again (after a short wait).

Remedy:

– Check measured value of evaporator output temperature sender - G263- in “Measured values” function ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode (of control unit - J255- ).

– If measured value for -G263- is too high under usage conditions described by customer (above e.g. 10 °C depending on ambient temperature) although air conditioner is functioning properly, check -G263- (incorrect measured value can cause evaporator to ice up).

One way to check whether the air conditioner is working is by feeling the refrigerant lines: the “low-pressure side” refrigerant line (thick line between internal heat exchanger and air conditioner compressor) cools down and the “high-pressure side” refrigerant line (thin line between condenser and internal heat exchang-

er) becomes warm
⇒ “2.1.2 System overview - refrigerant circuit, Audi A6 hybrid (vehicles with high-voltage system)”, page 135 .

– If the measured value of -G263- on the Audi A6 hybrid is too low under the usage conditions described by the customer (at ambient temperature above 0 °C, colder than 0 °C for lengthy period), check activation of electrical air conditioner compressor - V470- and refrigerant shut-off valve 1 for hybrid battery - N516- by battery regulation control unit - J840- . If, for example, -N516- is not activated correctly when hybrid drive is active (no activation despite only drive battery - A2- cooling being required), the evaporator in the air conditioning unit may ice up.

– If the measured value of -G263- on the Audi A6 e-tron is too low under the usage conditions described by the customer (at ambient temperature above 0 °C, colder than 0 °C for lengthy period), check activation of electrical air conditioner compressor - V470- and refrigerant shut-off valve - V424- by thermal management control unit - J1024- . If, for example, -V424- is not activated correctly when the vehicle is in electric mode (no activation despite only cooling for high-voltage system components being required), the evaporator in the air conditioning unit may ice up.

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– Check “low-pressure side” refrigerant line (thick line between internal heat exchanger and air conditioner compressor) ⇒ “2.1.2 System overview - refrigerant circuit, Audi A6 hybrid (vehicles with high-voltage system)”, page 135 with engine / air conditioner compressor running. If this line is severely iced up when the problem occurs (thin layer of ice is permissible), this also indicates that evaporator temperature is too low. Check the following:

♦ On the Audi A6 hybrid: the measured value of the evaporator output temperature sender - G263- as well as the activation and operation of the electrical air conditioner compressor - V470- , the refrigerant shut-off valve 1 for hybrid battery - N516- , the refrigerant shut-off valve 2 for hybrid battery - N517- , the control unit for air conditioning compressor - J842- and the battery regulation control unit - J840- . Take the vehicle to a workshop equipped with the necessary tools where the work can be performed by appropriately qualified personnel if a fault is found on -V470- , -N516- , -N517- or -J842- ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode and ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit . Inform the workshop of the problem detected.

♦ On the Audi A6 e-tron: the measured value of the evaporator output temperature sender - G263- as well as the activation and operation of the electrical air conditioner compressor - V470- , the refrigerant shut-off valve - V424- , the refrigerant shut-off valve 2 - N640- , the thermal management control unit - J1024- and the control unit for air conditioning compressor - J842- (via -J1024- ). Take the vehicle to a workshop equipped with the necessary tools where the work can be performed by appropriately qualified personnel if a fault is found on -V470- , -V424- , -N640- or -J842- ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode and ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit . Inform the workshop of the problem detected.

## 3.8 Working on refrigerant circuit

**DANGER!**

*Always perform work on the refrigerant circuit in well ventilated areas.*

- *Make sure that there are no inspection pits, shafts or cellar entrances within a radius of 5 metres. Any available exhaust gas extractor systems must be switched on.*
- *The refrigerant emerging is not only colourless and odourless, but also heavier than air and thus displaces oxygen. Should refrigerant gas escape even though the safety precautions have been observed, this can result in an imperceptible danger of asphyxiation in poorly ventilated areas and inspection pits.*

**WARNING**

*Risk of injury due to pressure build-up in the air conditioner (exposure to heat).*

- *Exposure to heat generates considerable pressure in the air conditioning system, which could cause it to burst.*
- *Welding, brazing and soldering work must not be performed on components of air conditioning system when charged. This also applies to welding and soldering work on the vehicle if there is a danger of air conditioner components becoming hot.*
- *Renew damaged or leaking components of the air conditioner.*

**Caution**

*The ingress of moisture will lead to the air conditioner malfunctioning.*

- *When servicing the air conditioner, re-seal all open components and pipe connections immediately.*
- *If the air conditioner has been open for a certain amount of time, check components for corrosion and renew if necessary.*

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## 3.9 Discharging refrigerant circuit

Refrigerant must not be allowed to escape into the environment; it should be extracted from the refrigerant circuit with a suction unit or an air conditioner service station. The extracted refrigerant must then either 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 must be taken to a workshop which is equipped with the necessary tools and at which the work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit (Working with the air conditioner service station), or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 00 ; Laws and regulations .

**Reason:**

If refrigerant R134a or R1234yf escapes into the earth’s atmosphere, it contributes towards the greenhouse effect.

**Note**

- *Refrigerant R1234yf has far less of a greenhouse effect than R134a.*
- *Refrigerant R134a and R1234yf do not affect the earth's ozone layer (R134a and R1234yf do not have any chlorine atoms). Depletion of the ozone layer in the upper atmosphere is only brought about by the splitting of carbon-chlorine bonds (as is the case, for example, with refrigerant R12).*
- *The global warming potential (GWP) of R1234yf is approx. 4; the GWP of R134a is approx. 1400 (GWP of carbon dioxide = 1) ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 00 ; Laws and regulations .*

After discharging the air conditioner, unplug the connector from the air conditioner compressor regulating valve - N280- or from the refrigerant pressure sender ( -G395- / -G65- ).

**Reason:**

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

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## 3.10 Notes on general repairs

⇒ “3.10.1 Checking electrical air conditioner components activated or evaluated via other control units”, page 88

⇒ “3.10.2 Checking electrical components activated by air conditioning system”, page 89

⇒ “3.10.3 Checking air conditioner components - vehicles with high-voltage system”, page 89

⇒ “3.10.4 Checking supplementary heating - vehicles with TDI engine and Audi A6 hybrid”, page 92

⇒ “3.10.5 Checking supplementary heating - Audi A6 e-tron”, page 94

⇒ “3.10.6 Notes on dust and pollen filter with activated charcoal filter insert”, page 96

### 3.10.1 Checking electrical air conditioner components activated or evaluated via other control units

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**Note**

- *Various air conditioner components are no longer actuated directly by the operating unit ( Climatronic control unit - J255- ). For example, the air conditioner compressor regulating valve - N280- is activated via the onboard supply control unit - J519- . The data are exchanged between the two control units via the data bus ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *The measured values of various air conditioner components are no longer evaluated directly by the operating unit ( Climatronic control unit - J255- ). For example, the pressure signal from the refrigerant pressure and temperature sender - G395- is evaluated by the onboard supply control unit - J519- and the measured values are transmitted via the data bus to -J255- ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *Different designation for refrigerant pressure sender (depending on vehicle). On the A6 e-tron, this sender is referred to as the high-pressure sender - G65- . On this vehicle, it exchanges data with the thermal management control unit - J1024- . On all vehicles except the Audi A6 e-tron, this sender is referred to as the refrigerant pressure and temperature sender - G395- . On these vehicles, it exchanges data with the operating unit ( Climatronic control unit - J255- ) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *A start/stop system is offered for this vehicle in combination with certain engines. Depending on the setting on the operating unit ( Climatronic control unit - J255- ), the stop function can be prevented. For example, the stop function is not possible, or the stop function is interrupted and the engine is switched on as soon as the “defrost” mode is selected. This also applies if the difference between the set specified temperature and the measured actual temperature exceeds a certain value in heating and cooling mode ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

- *Certain air conditioner functions can be switched on and off via the MMI system (Multi Media Interface) using the "A/C" function on the "Car" / "Car systems" menu. In addition, the operation of the air conditioner can also be influenced by the settings on the MMI (Multi Media Interface) in the "A/C" function of the "Car" / "Car systems" menu. Therefore, if there are problems with these components, first check the settings on the MMI ⇒ Infotainment/MMI Operating Manual .*

## 3.10.2 Checking electrical components activated by air conditioning system

**Note**

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- *Various electrical components in the vehicle (e.g. heated rear window - Z1- and heated seats) which are not part of the air conditioning system are activated by the operating unit ( Climatronic control unit - J255- or the rear Climatronic operating unit - E265- ). For example, the request to switch on -Z1- is first transmitted to the data bus diagnostic interface - J533- via the data bus and then relayed to the convenience system central control unit - J393- ; -J393- then activates -Z1- via the heated rear window relay - J9- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations. Electrical checks for these components and for -J393- are described in ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *Certain air conditioner functions can be switched on and off via the MMI system (Multi Media Interface) using the "A/C" function on the "Car" / "Car systems" menu. In addition, the operation of the air conditioner can also be influenced by the settings on the MMI (Multi Media Interface) in the "A/C" function of the "Car" / "Car systems" menu. Therefore, if there are problems with these components, first check the settings on the MMI ⇒ Infotainment/MMI Operating Manual .*

## 3.10.3 Checking air conditioner components - vehicles with high-voltage system

**Hybrid vehicles and Audi A6 e-tron**

- Air conditioner (and refrigerant circuit) components which are identical on vehicles with and without a high-voltage system can be checked, removed and installed as described for vehicles with no high-voltage system (e.g. the control motors on the air conditioning unit) ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode (for air conditioner).
- Air conditioner components which are largely identical on vehicles with and without a high-voltage system, but which may differ for example in terms of their function, can be checked, removed and installed as described for vehicles with no high-voltage system, e.g. the air conditioner operating unit ( Climatronic control unit - J255- ) ⇒ Electronic parts catalogue and ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode (for air conditioner).
- Air conditioner (and refrigerant circuit) components which differ on vehicles with and without a high-voltage system (e.g. the electrical air conditioner compressor - V470- with the control unit for air conditioning compressor - J842- ) should be checked, removed and installed as described for vehicles with a high-voltage system (e.g. -J842- with address word "40" (on Audi A6 hybrid) ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode). The control unit for air conditioning compressor - J842- (and thus the electrical air conditioner compressor - V470- ) are supplied with power by the power and control

electronics for electric drive - JX1- . -JX1- (address word “51” on Audi A6 hybrid) should therefore also be checked in the event of a problem ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

- Air conditioner (and refrigerant circuit) components only fitted on vehicles with a high-voltage system (e.g. the electrical components of the battery cooling module, the refrigerant shut-off valve 1 for hybrid battery - N516- and the refrigerant shut-off valve 2 for hybrid battery - N517- etc. on the Audi A6 hybrid, or the refrigerant shut-off valve - V424- and the refrigerant shut-off valve 2 - N640- on the Audi A6 e-tron) are removed and installed as described for vehicles with a high-voltage system. These components are not activated directly by the air conditioner operating unit ( Climatronic control unit - J255- ). These components are activated e.g. via the battery regulation control unit - J840- (with address word “8C”) or the thermal management control unit - J1024- ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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– To minimise the number of automatic engine starts when the vehicle's drive system is active during test and measurement work, charge the vehicle batteries e.g. with the battery charger 60A - VAS 5904- in battery standby mode ⇒ Electrical system; General information; Rep. gr. 27 ; Battery; Charging battery and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

– Activate vehicle drive system (with ignition switched on, check "READY" display in control unit in dash panel insert - J285- ).

**Note**

- *The status of the drive system (READY) is shown by the control unit in dash panel insert - J285- via the “power meter”.*
- *Activating vehicle drive system (check "READY" display in control unit in dash panel insert - J285- ) ⇒ Owner's Manual*
- *Also move the selector lever to position “P” and activate the parking brake before performing test and measurement work for which the ignition must be switched on but where the vehicle's drive system does not need to be active (READY).*

## 3.10.4 Checking supplementary heating - vehicles with TDI engine and Audi A6 hybrid

**Note**

- *Vehicles with TDI engine and vehicles with a high-voltage system (Audi A6 hybrid) and petrol engine are currently provided with a supplementary heating function. The type of supplementary heating depends on the vehicle equipment ⇒ Audi sales literature .*
- *Vehicles with TDI engine and no auxiliary heater as optional equipment and vehicles with a high-voltage system (Audi A6 hybrid) and petrol engine are equipped with an electrical air heater element (designation " auxiliary air heater element - Z35- ") for supplementary heating. After leaving the heat exchanger in the front air conditioning unit, the air is additionally heated by -Z35- ⇒ page 424 and ⇒ Audi sales literature .*
- *On vehicles with TDI engine, the electric supplementary heating is activated via the corresponding engine control unit. If there is a request from the operating unit ( Climatronic control unit - J255- ), the corresponding engine control unit activates the auxiliary air heater element - Z35- via the low heat output relay - J359- and the high heat output relay - J360- . The control units exchange the relevant information via the data bus ⇒ Vehicle diagnostic tester, "Guided Fault Finding" function and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *Certain air conditioner functions (e.g. activation of the supplementary heating system) can be switched on and off via the MMI system (Multi Media Interface) using the "A/C" function on the "Car" / "Car systems" menu. In addition, the operation of the air conditioner can also be influenced by the settings on the MMI (Multi Media Interface) in the "A/C" function of the "Car" / "Car systems" menu. Therefore, if there are problems with these components, first check the settings on the MMI ⇒ Infotainment/MMI Operating Manual .*
- *Vehicles with TDI engine and an auxiliary heater as optional equipment are not always fitted with an electrical auxiliary air heater element - Z35- for supplementary heating. On vehicles with no -Z35- , the auxiliary heater assumes the function of -Z35- and operates as a fuel-burning supplementary heater ⇒ Audi sales literature and ⇒ Auxiliary/supplementary heater; Rep. gr. 82 ; Auxiliary/supplementary heater; Overview of fitting locations - auxiliary/supplementary heater . On vehicles with no -Z35- , the auxiliary heater warms the coolant additionally when the engine is running.*
- *On vehicles with a petrol engine (currently applies only for vehicles with high-voltage system/ hybrid vehicles), the electric supplementary heating ( auxiliary air heater element - Z35- ) is activated by a signal from the operating unit, Climatronic control unit - J255- by way of the local data bus (via the same output by which the fresh air blower control unit - J126- is activated) to the auxiliary air heater control unit - J604- . In the event of problems with the fresh air blower control unit - J126- or the fresh air blower - V2- on these vehicles, also check the auxiliary air heater control unit - J604- ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

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- *The auxiliary air heater element - Z35- is activated via the low heat output relay - J359- and the high heat output relay - J360- , which are activated by the corresponding engine control unit (e.g. by engine control unit - J623- ) or by the auxiliary air heater control unit - J604- in response to a request from the operating unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode and ⇒ page 424 .*
- *Checking activation of the auxiliary air heater element - Z35- is described in the ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode for the air conditioner and ⇒ page 424 .*
- *The function "Read measured values" of the operating unit ( Climatronic control unit - J255- ) shows that the request for activation of the electric supplementary heater is being transmitted to the relevant engine control unit / auxiliary air heater control unit - J604- ⇒ Vehicle diagnostic tester ("Guided Fault Finding"). On vehicles with a diesel engine, the function "Read measured values" of the engine control unit then indicates implementation of the request or the reason for non-activation despite the request ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *Except for vehicles with high-voltage system (hybrid), vehicles with petrol engine are currently not fitted with a supplementary heater, or an auxiliary heater fitted as optional extra is not activated as a supplementary heater ⇒ Auxiliary/supplementary heater; Rep. gr. 82 ; Auxiliary/supplementary heater; Overview of fitting locations - auxiliary/supplementary heater .*
- *The auxiliary air heater control unit - J604- fitted on vehicles with certain petrol engines has no diagnosis capability at present ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *Vehicles with a high-voltage system (hybrid vehicles) and petrol engine are currently equipped with an auxiliary air heater element - Z35- to provide a supplementary heating function ⇒ page 424 .*
- *Checking the activation of the auxiliary air heater element - Z35- depends on the engine version. For vehicles with a diesel engine this can be found in the Guided Fault Finding for the engine fitted in the particular vehicle. For vehicles with a petrol engine, this can be found in the Guided Fault Finding for the air conditioner ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

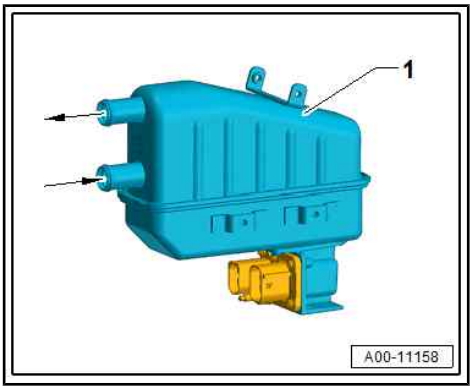
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## 3.10.5 Checking supplementary heating - Audi A6 e-tron

**Note**

- *Audi A6 e-tron vehicles are currently provided with a supplementary heating function. The type of supplementary heating depends on the vehicle equipment ⇒ Audi sales literature .*
- *Audi A6 e-tron vehicles are currently not fitted with an auxiliary air heater element - Z35- ; on these vehicles, the high-voltage heater (PTC) - Z115- (with high-voltage heater (PTC) control unit - J848- ) assumes the function of the auxiliary air heater element.*
- *Certain air conditioner functions (e.g. activation of the supplementary heating system) can be switched on and off via the MMI system (Multi Media Interface) using the "A/C" function on the "Car" / "Car systems" menu. In addition, the operation of the air conditioner can also be influenced by the settings on the MMI (Multi Media Interface) in the "A/C" function of the "Car" / "Car systems" menu. Therefore, if there are problems with these components, first check the settings on the MMI ⇒ Infotainment/MMI Operating Manual .*

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- The high-voltage heater (PTC) - Z115- -1- has a nominal power of approx. 5000 W (watts). The nominal power is only produced at low coolant temperatures (e.g. at a coolant intake temperature of -20 °C and a coolant flow rate of 8 ltr./min.).
- The power delivered to the coolant flowing through the heater -Z115- depends greatly on the temperature and quantity of the coolant. If there is not enough coolant flowing through the heater -Z115- , the coolant will heat up more; however due to the small amount of coolant less energy is generated.
- -Z115- is not designed for a particular direction of flow. However, a particular direction of coolant flow -arrows- is required to ensure proper bleeding of -Z115- (depending on the installation position). Therefore, the ends of the coolant hoses must be connected to the correct sides (the upper coolant hose to the heat exchanger in the air conditioning unit)
⇒ “7.1 Overview of fitting locations - engine coolant circuit”, page 509 .

**Components involved in activation of supplementary heater:**

- Heat energy is delivered to the coolant via the high-voltage heater (PTC) - Z115- -1- before it enters the heat exchanger (in the air conditioning unit)
⇒ “7.1 Overview of fitting locations - engine coolant circuit”, page 509 and ⇒ Vehicle diagnostic tester (“Guided Fault Finding”). For this to happen, there must be e.g. a request from the operating unit ( Climatronic control unit - J255- ) for the thermal management control unit - J1024- .
- If -J1024- determines that heating output mode is necessary, various control units are interrogated by -J1024- via the data bus, e.g. the battery regulation control unit - J840- (fitted in the hybrid battery unit - AX1- ) and the control unit for high-voltage battery charging unit - J1050- . If no conditions preventing the activation of -Z115- are transmitted by these control units, -J1024- will activate -Z115- (via the high-voltage heater (PTC) control unit - J848- ). For further information, refer to
⇒ “1.8 Auxiliary air conditioner - vehicles with high-voltage system only”, page 28 , ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- So that the coolant heated up by -Z115- is conveyed through the air conditioner heat exchanger when the engine is running, in electric mode (with the engine stopped) and when the “Auxiliary air conditioner” function is active (with the ignition switched off), the thermal management coolant pump 2 - V618- and the coolant changeover valve 3 - N634- must also be activated (by the corresponding engine control unit) and they must operate correctly. For further information, refer to
⇒ “1.8 Auxiliary air conditioner - vehicles with high-voltage system only”, page 28 , ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses , ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- On vehicles with high-voltage system (Audi A6 e-tron) and auxiliary heater installed as an optional extra, the auxiliary heater is activated as a supplementary heater or the high-voltage heater (PTC) - Z115- is activated by -J1024- depending on various factors. For more information, refer to
⇒ “1.8 Auxiliary air conditioner - vehicles with high-voltage system only”, page 28 and ⇒ Auxiliary/supplementary heater; Rep. gr. 00 ; General notes (Notes on auxiliary heater operation - vehicles with high-voltage system).

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- The operating unit ( Climatronic control unit - J255- ), -J1024- and the high-voltage heater (PTC) control unit - Z115- installed in the high-voltage heater (PTC) - J848- exchange data for switching -Z115- on and off via data lines ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

**Criteria for activation of high-voltage heater (PTC) - Z115-**

- The operating unit ( Climatronic control unit - J255- ) transmits a request for the activation of the supplementary heater to -J1024- . -J1024- interrogates various control units via the data bus. If the conditions stored in -J1024- are met and no fault is detected by -J848- , -J848- will activate -Z115- . If any of the conditions for activating -Z115- stored in -J1024- are not met, no request is transmitted or activation is switched off.
- The cut-in criteria must be met in -J1024- , and/or no shut-off criterion may be active. For a list of the cut-in criteria, refer to ⇒ Vehicle diagnostic tester (“Guided Fault Finding” for -J1024- ).

**Shut-off criteria for activation of supplementary heater**

-J1024- deactivates the request for activation of -Z115- if one of the cut-in criteria is no longer met or a fault is detected by -J848- .

## 3.10.6 Notes on dust and pollen filter with activated charcoal filter insert

The filter with activated charcoal acts as a dust and pollen filter. However, it can also filter gaseous pollutants such as ozone, benzene and nitrogen dioxide out of the air. The main function of the activated charcoal layer in the dust and pollen filter is to keep peak concentrations away from the passenger compartment.

However, the activated charcoal also absorbs certain gaseous impurities in the air passing through. The activated charcoal layer in the dust and pollen filter has different effects on the various pollutants in the air:

- Certain pollutants are firmly bound in the activated charcoal layer.
- Other pollutants are converted into harmless compounds, as in a catalytic converter.
- For the rest of the pollutants the activated charcoal functions like a capacitor. When the pollution increases, the activated charcoal initially absorbs pollutants until a certain level of saturation has been reached. If the pollutant level drops, the activated charcoal layer continuously emits the absorbed particles again.

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As the activated charcoal layer permanently binds some of the particles in the air, we recommend renewing the dust and pollen filter earlier than specified under the following operating conditions:

- If the vehicle is driven in areas with a high level of air pollution
- If the vehicle is not equipped with an air quality sensor - G238- (“basic” air conditioner) and therefore the "Automatic air recirculation" function is not available
- If the vehicle is equipped with an air quality sensor - G238- (“deluxe” air conditioner) and the “Automatic air recirculation” function is switched off.

**Note**

- *In vehicles fitted with an air quality sensor - G238- (“deluxe” air conditioner), the air conditioner should preferably always be operated with the “Automatic air recirculation” function activated.*
- *The activated charcoal layer in the dust and pollen filter becomes saturated after a certain time.*
- *A saturated filter can no longer absorb pollutants; they will then pass through unfiltered.*

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## 3.11 Paintwork repairs on vehicles with air conditioning system

When performing paintwork repairs, object temperatures of 80 ° C must not be exceeded in drying booths or their preheating zones.

**Reason:**

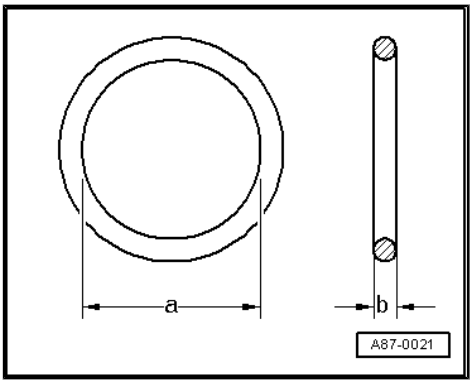
Exposure to heat generates considerable pressure in the system, which could cause it to burst.

## 3.12 Refrigerant circuit seals

- O-rings should always only be used once and must then be renewed.
- Coat O-rings with refrigerant oil before fitting.
- Make sure O-rings are seated correctly on pipe or in groove.
- Ensure absolute cleanliness when working (even the slightest contamination, e.g. a single hair, could cause leakage).

**Note**

- *Only install O-rings which are resistant to refrigerant R134a and/or R1234yf and the corresponding refrigerant oils. These O-rings may be colour-coded to prevent mix-ups (e.g. “red”, “purple” or “violet”) ⇒ Electronic parts catalogue .*
- *Dimensions -a- and -b- differ depending on where the O-ring is fitted ⇒ Electronic parts catalogue .*
- *In addition to the coloured O-rings, black O-rings are also used at the factory for certain connections.*




## 3.13 Notes on high-voltage components and potential equalisation lines

A potential equalisation measurement must be performed on the high-voltage components affected after installation of high-voltage components or potential equalisation lines.

– Connect vehicle diagnostic tester .

– Select and start `ODIS-Service` mode.

– Select `Special functions` tab.

– Select the following:

- `High-voltage`
- `Potential equalisation measurement on high-voltage components`

- 8C - Potential equalisation measurement hybrid battery unit AX1

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# 4 Technical data

⇒ “4.1 Refrigerant capacities”, page 99

⇒ “4.2 Approved refrigerant oils and refrigerant oil capacities”, page 101

⇒ “4.3 Oil distribution”, page 106

## 4.1 Refrigerant capacities

⇒ “4.1.1 Capacities for refrigerant R134a”, page 99

⇒ “4.1.2 Capacities for refrigerant R1234yf”, page 100

### 4.1.1 Capacities for refrigerant R134a

For refrigerant R134a and refrigerant oil capacities, refer to ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Capacities for refrigerant R134a/refrigerant oil and approved refrigerant oils .

**Note**

*Observe the different capacities for refrigerant R134a on vehicles without a rear air conditioning unit (with one evaporator) and on vehicles with a high-voltage system (with two evaporators) ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Capacities for refrigerant R134a/refrigerant oil and approved refrigerant oils .*

– Discharge, evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

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**Note**

- *The compressor version may differ depending on the production period and engine ⇒ Electronic parts catalogue .*
- *The specified refrigerant oil capacities for the refrigerant circuit may differ depending on the type of air conditioner compressor ⇒ Electronic parts catalogue and ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Capacities for refrigerant R134a/refrigerant oil and approved refrigerant oils .*
- *Always charge the refrigerant circuit as far as the upper tolerance limit (some refrigerant remains in filler hoses).*
- *For further information refer to ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

## 4.1.2 Capacities for refrigerant R1234yf

**Note**

- *When charging the high-pressure side of refrigerant circuits, always fill to the upper tolerance limit (some liquid refrigerant will remain in the filler hoses).*
- *Unless otherwise stated, the capacities specified for refrigerant R1234yf also apply to the S and RS versions of this vehicle model.*
- *When charging a vehicle's refrigerant circuit, the air conditioner service station must be on the same level as the vehicle (maximum difference 50 cm). Depending on how the air conditioner service station is designed, having too great a height difference can cause the amount of refrigerant shown to differ from the actual amount poured in. The accuracy of the air conditioner service station may change.*
- *The capacities for refrigerant R1234yf and the corresponding refrigerant oil are now listed in this manual rather than in the Workshop Manual for all models ⇒ "4 Technical data", page 99 , and ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Technical data .*
- *Note different capacities for refrigerant R1234yf in vehicles without rear air conditioning unit (with one evaporator) and vehicles with high-voltage system (with two evaporators).*
- *For additional notes on evacuating and charging the refrigerant circuit, refer to ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .*

– Discharge, evacuate and charge refrigerant circuit ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Capacity for refrigerant R1234yf**

| Vehicle model | Production period | Capacity in grams | Differing characteristics of this refrigerant circuit |
|---|---|---|---|
| Audi A6 | From 06.16 onwards | 530 +/- 15 | • None |
| Audi A7 | From 06.16 onwards | 530 +/- 15 | • None |
| Audi A6 e-tron | From 06.16 onwards | R1234yf will not be used for the time being (for refrigerant R134a capacities, refer to ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Capacities for refrigerant R134a/refrigerant oil and approved refrigerant oils | • Electrically driven air conditioner compressor<br>• With second evaporator in high-voltage battery heat exchanger |

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| Vehicle model | Production period | Capacity in grams | Differing characteristics of this refrigerant circuit |
|---|---|---|---|
| Audi RS 6/ RS 7 | From 9.2016 to 11.2016 | 530 +/- 15 | • None |
| Audi RS 6/ RS 7 | From 12.2016 onwards | 435 +/- 15 | • Refrigerant circuit with reduced interior volume |

## 4.2 Approved refrigerant oils and refrigerant oil capacities

⇒ "4.2.1 Approved refrigerant oils and refrigerant oil capacities for refrigerant R134a", page 101

⇒ "4.2.2 Approved refrigerant oils for refrigerant R1234yf", page 102

⇒ "4.2.3 Refrigerant oil capacities for refrigerant R1234yf", page 104

### 4.2.1 Approved refrigerant oils and refrigerant oil capacities for refrigerant R134a

The special refrigerant oil to be used exclusively for refrigerant circuits with refrigerant R134a is not always available on the refrigerant oil market ⇒ Electronic parts catalogue .

For refrigerant R134a and refrigerant oil capacities, refer to ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Capacities for refrigerant R134a/refrigerant oil and approved refrigerant oils .

– Discharge, evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Starting up air conditioner after charging refrigerant circuit ⇒ page 232 , and ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems (Air conditioner with refrigerant R134a, General information on air conditioning systems). Before using air conditioner after system has been re-charged.

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**Caution**

***Charging the refrigerant circuit with the wrong refrigerant oil will cause malfunctions of the air conditioner.***

- ***The refrigerant circuit must only be charged with approved refrigerant oils ⇒ Electronic parts catalogue . The correct refrigerant oil depends on the manufacturer and version of the air conditioner compressor installed ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Capacities for refrigerant R134a/refrigerant oil and approved refrigerant oils .***

***Charging the refrigerant circuit with the wrong quantity of refrigerant oil will cause malfunctions of the air conditioner.***

- ***Too much refrigerant oil in the refrigerant circuit results in higher pressures and a reduction in the cooling output of the system.***
- ***Too little refrigerant oil in the refrigerant circuit may result in failure of the air conditioner compressor due to lubrication problems.***

***Risk of corrosion in refrigerant circuit.***

- ***Refrigerant oil absorbs moisture. Never use refrigerant oil from containers which have been open for a lengthy period ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .***

**Important information:**

As refrigerant oil is extremely hygroscopic, open containers must be closed and re-sealed immediately after use to prevent moisture from entering.

## 4.2.2 Approved refrigerant oils for refrigerant R1234yf

**Note**

- *PAG (polyalkylene glycol) oil is highly hygroscopic (attracts water); open containers should therefore be closed immediately so that they are air-tight.*
- *PAG oil becomes unusable if it is stored in open containers for a long period of time.*

**Caution**

*Charging the refrigerant circuit with the wrong refrigerant oil will cause malfunctions of the air conditioner.*

- *The refrigerant circuit must only be charged with approved refrigerant oils ⇒ Electronic parts catalogue . The correct refrigerant oil depends on the make and type of the air conditioner compressor fitted.*

*Charging the refrigerant circuit with the wrong quantity of refrigerant oil will cause malfunctions of the air conditioner.*

- *Too much refrigerant oil in the refrigerant circuit results in higher pressures and a reduction in the cooling output of the system.*
- *Too little refrigerant oil in the refrigerant circuit may result in failure of the air conditioner compressor due to lubrication problems.*

*Risk of corrosion in refrigerant circuit.*

- *Refrigerant oil absorbs moisture. Never use refrigerant oil from containers which have been open for a long period of time ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Repair instructions; Refrigerant and refrigerant oil .*

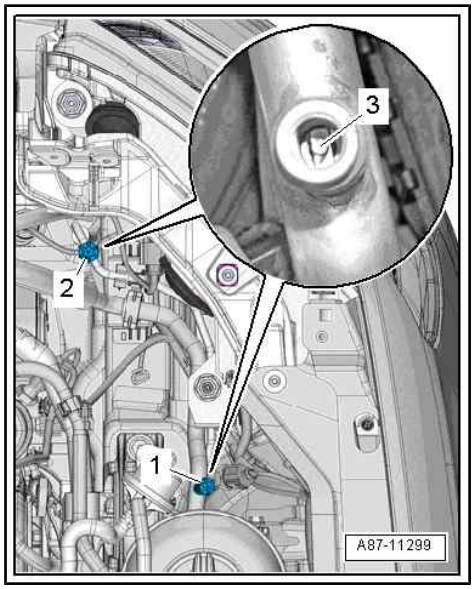
**Important information:**

As refrigerant oil is extremely hygroscopic, open containers must be closed and re-sealed immediately after use to prevent moisture from entering.

- The refrigerant oils used with refrigerant R134a are not appropriate for use with refrigerant R1234yf ⇒ Electronic parts catalogue .
- The special refrigerant oil to be used exclusively for refrigerant circuits with refrigerant R1234yf is not always available on the refrigerant oil market ⇒ Electronic parts catalogue .
- Refrigerant oils intended specifically for a particular air conditioner compressor can therefore be obtained from the replacement parts range ⇒ Electronic parts catalogue .
- If a defective air conditioner compressor is replaced by a compressor from a different manufacturer, it is important to check whether the refrigerant oil already in the refrigerant circuit (from the removed compressor) is also approved for the new compressor. If a different refrigerant oil is approved for the new air conditioner compressor than for the removed compressor, the refrigerant circuit must be cleaned (flushed) ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Renewing components .
- Using other refrigerant oils may cause the system to fail, as it cannot be guaranteed that they will mix and circulate with refrigerant R1234yf to lubricate the air conditioner compressor.
- There are different refrigerant oils for “Denso”, “Delphi/Mahle”, “Visteon” and “Sanden” air conditioner compressors ⇒ Electronic parts catalogue .
- The refrigerant oil (part no. G 055 535 M2, external designation ND 12) for use in refrigerant circuits with “Denso” air conditioner compressors is the same for mechanical and electric air conditioner compressors ⇒ Electronic parts catalogue .
- For refrigerant circuits with mechanically or electrically driven “Sanden”, “Delphi/Mahle” or “Visteon” air conditioner com-

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pressors, use refrigerant oil with part no. G 052 535 M2 (external designation SP A2) ⇒ Electronic parts catalogue .




**Note**

- *To ensure that air conditioner service stations do not always need to be cleaned before starting work on a different type of vehicle (due to the different refrigerant oils used depending on the manufacturer of the air conditioner compressor), specified small quantities (up to max. 10 %) of the total quantity of refrigerant oil in the corresponding refrigerant circuit are permitted to meet a different specification from that of the air conditioner compressor installed. On Audi vehicles, this means that it is permitted to use max. 10 % refrigerant oil of the type SP A2 on vehicles with a "Denso" air conditioner compressor (with ND 12 refrigerant oil) or max. 10 % refrigerant oil of the type ND 12 on vehicles with a "Sanden", "Delphi/ Mahle" or "Visteon" air conditioner compressor (with SP A2 refrigerant oil). However, other refrigerant oils not listed here must not be used (different properties due to different viscosity, different/missing additives etc.).*
- *Instead of using an air conditioner service station, refrigerant oil extracted when emptying the refrigerant circuit can be added via an open connection or, when valve -3- is removed, via a service connection -1- or -2- using a commercially available disposable syringe before evacuating the refrigerant circuit ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station . This may be practical e.g. if the refrigerant oil specified for the refrigerant circuit is normally only rarely used. Always use fresh refrigerant oil ⇒ Electronic parts catalogue . Service connection -1- or -2- may be in a different location in the vehicle ⇒ "2.1 System overview - refrigerant circuit", page 131 .*

⇒ "4.2.3 Refrigerant oil capacities for refrigerant R1234yf", page 104

## 4.2.3 Refrigerant oil capacities for refrigerant R1234yf

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**Note**

- *The compressor version may differ depending on the production period and engine ⇒ Electronic parts catalogue .*
- *There may be different refrigerant oil capacities for the refrigerant circuit depending on the type of air conditioner compressor ⇒ Electronic parts catalogue .*
- *For further notes on refrigerant oil, refer to ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 00 ; Repair instructions; Refrigerant and refrigerant oil .*

- ⇒ "4.2.2 Approved refrigerant oils for refrigerant R1234yf", page 102
- Layout and characteristics of refrigerant circuit ⇒ page 131

| Vehicle model | Production period | Total quantity of oil in refrigerant circuit in $cm^3$ | Quantity of refrigerant oil in replacement compressor in $cm^3$ | Differing characteristics of this refrigerant circuit |
|---|---|---|---|---|
| Audi A6 / A7 | From 06.16 onwards | 110 +/- 10 | 110 +/- 10 | • “Denso” air conditioner compressor (e.g. type “ 6 SES 14” or “ 6 SAS 14”) with oil separator (with and without air conditioning system magnetic clutch - N25- ) |
| Audi A6 e-tron | From 06.16 onwards | R1234yf will not be used for the time being (for refrigerant R134a capacities, refer to ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Capacities for refrigerant R134a/refrigerant oil and approved refrigerant oils | R1234yf will not be used for the time being (for refrigerant R134a capacities, refer to ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Capacities for refrigerant R134a/refrigerant oil and approved refrigerant oils | • Electrically driven air conditioner compressor manufactured by “Sanden” |

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**Note**

- *The replacement compressor contains the full quantity of oil intended for the refrigerant circuit. If the air conditioner compressor is renewed, the quantity of oil in the compressor must therefore be adjusted accordingly ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*
- *At the start of production, all vehicles except the Audi A6 e-tron were fitted with mechanically driven air conditioner compressors manufactured by "Denso". Air conditioner compressors produced by other manufacturers may also be fitted at a later date ⇒ Electronic parts catalogue .*
- *At the start of production, the Audi A6 e-tron is fitted with an electrically driven "Sanden" air conditioner compressor ( electrical air conditioner compressor - V470- with control unit for air conditioning compressor - J842- ). There is no provision for an air conditioner compressor regulating valve - N280- on this air conditioner compressor.*
- *These air conditioner compressors are available as replacement parts with different refrigerant oil capacities and attention must therefore be paid to the oil quantity in the compressor as well as the exact part number ⇒ Electronic parts catalogue*
- *The different oil quantities in the air conditioner compressor may result from the design of the air conditioner compressor (with or without oil separator at high-pressure connection) or, in the case of identical air conditioner compressors, from the design of the refrigerant circuit; pay attention to these quantities. Too much oil in the circuit results in higher pressures and a reduced cooling output of the system. Too little oil may lead to lubrication problems in the air conditioner compressor.*
- *The air conditioner compressor may have been fitted at the factory with a type plate indicating the part number and the quantity of refrigerant oil in the air conditioner compressor.*

## 4.3 Oil distribution

- During operation of the air conditioner, the refrigerant oil that was in the air conditioner compressor before it was activated for the first time is distributed throughout the refrigerant circuit.
- The extent to which the refrigerant oil is distributed throughout the refrigerant circuit differs depending on the last air conditioner operating status before it was switched off, the ambient temperatures etc. Therefore it is not possible to give generally applicable information on the distribution of the refrigerant oil in the refrigerant circuit. Therefore observe the notes on renewing components of the refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Renewing components of refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Refrigerant circuit; Renewing components .

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# 80 – Heating

## 1 Overview of fitting locations - heater

**Only one type of air conditioner is available for the vehicles in this series. There is currently no provision for a heater separate from the air conditioner.**

**All the information required for servicing the heating and air conditioning system can be found in “Air conditioner” (Repair group 87 in this Workshop Manual)**
⇒ “1 Overview of fitting locations - air conditioner”, page 108 .

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# 87 – Air conditioning system

## 1 Overview of fitting locations - air conditioner

⇒ “1.1 Overview of fitting locations - components not located in passenger compartment”, page 108

⇒ “1.2 Overview of fitting locations - components in passenger compartment (front)”, page 122

⇒ “1.3 Overview of fitting locations - components in passenger compartment (rear)”, page 127

### 1.1 Overview of fitting locations - components not located in passenger compartment

⇒ “1.1.1 Overview of fitting locations - components not located in passenger compartment, component group 1”, page 108

⇒ “1.1.2 Overview of fitting locations - components not located in passenger compartment, component group 2”, page 110

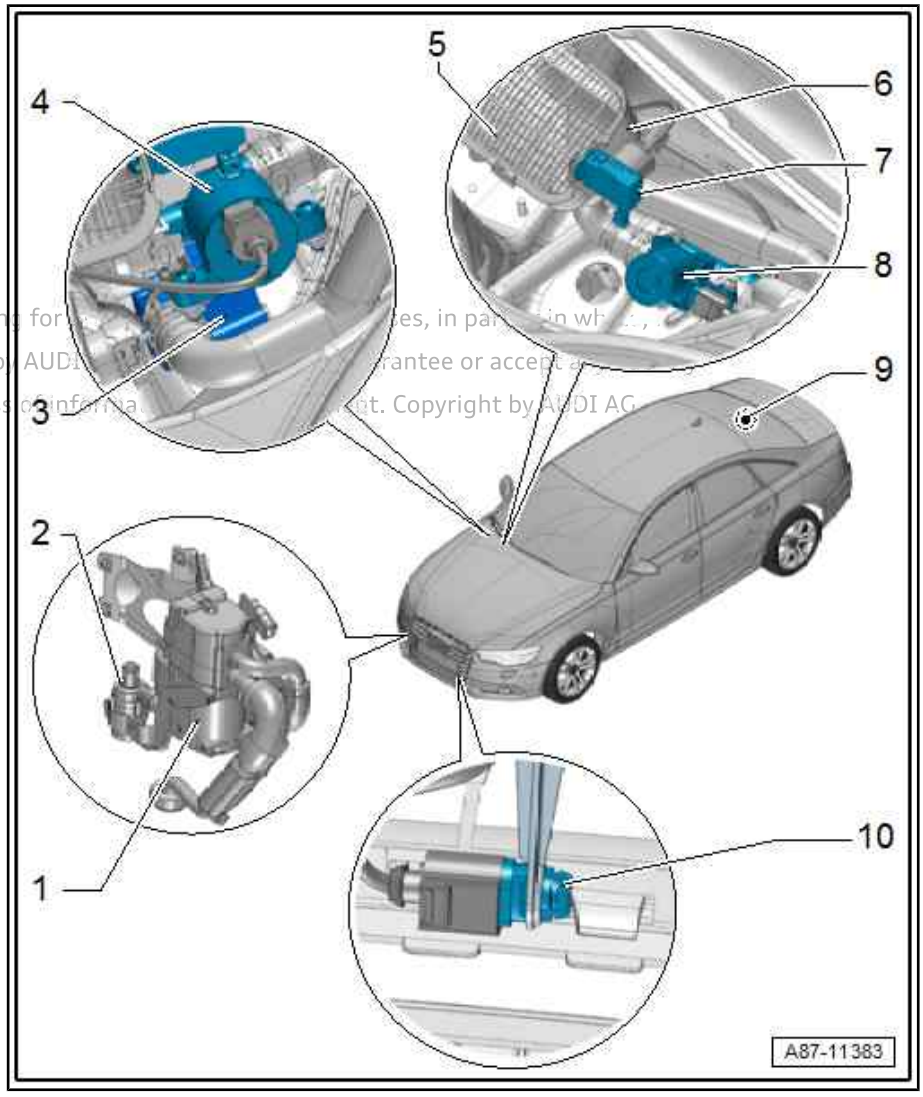
⇒ “1.1.3 Overview of fitting locations - components not located in passenger compartment, component group 3”, page 112

⇒ “1.1.4 Overview of fitting locations - components not located in passenger compartment (rear)”, page 113

⇒ “1.1.5 Overview of fitting locations - additional or different components, vehicles with high-voltage system”, page 114

#### 1.1.1 Overview of fitting locations - components not located in passenger compartment, component group 1

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**1 - Auxiliary heater with auxiliary heater control unit - J364-**

**2 - Circulation pump - V55-**

- For vehicles with auxiliary heater

**3 - Coolant circulation pump - V50-**

- Depending on equipment version

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**4 - Coolant shut-off valve - N82-**

- Depending on equipment version

**5 - Intake grille**

- For fresh air intake
- Country-specific version: A filter designed to stop the fresh air blower drawing in dust and sand may be fitted instead of the fresh air intake grille for certain countries with a high dust level in the ambient air (e.g. China) ⇒ Electronic parts catalogue .

**6 - Fresh air intake**

- Removing and installing ⇒ page 504

**7 - Air quality sensor - G238- with humidity sender in fresh air intake duct - G657-**

- Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Removing and installing ⇒ page 617

**8 - Heater coolant shut-off valve - N279-**

- Depending on equipment version

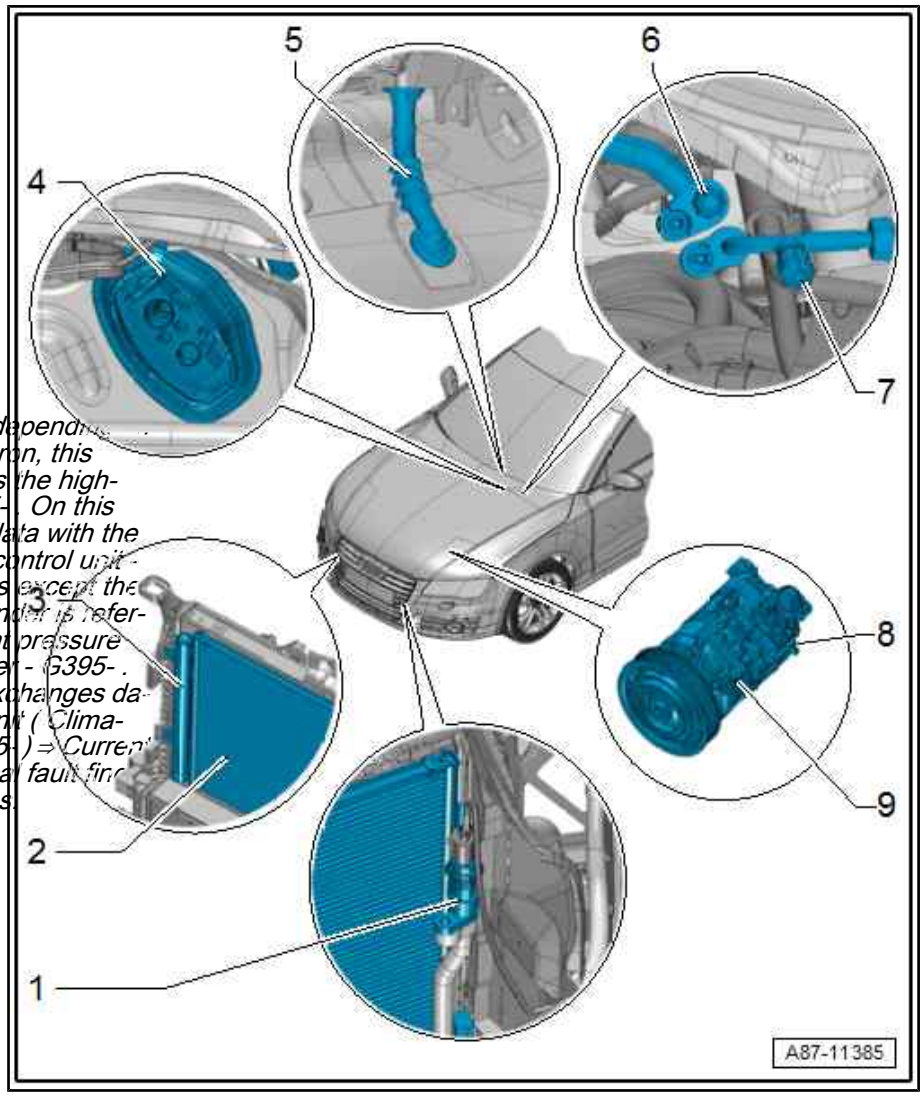
**9 - Heated rear window - Z1-**

- Overview of fitting locations ⇒ page 113

**10 - Ambient temperature sensor - G17-**

- Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Removing and installing ⇒ page 618

## 1.1.2 Overview of fitting locations - components not located in passenger compartment, component group 2




**1 - Refrigerant pressure sender ( -G395- / -G65- )**

- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Exploded view ⇒ page 148

**Note**

*Different designation (dependi... vehicle). On the A6 e-tron, this sender is referred to as the high-pressure sender - G65- . On this vehicle, it exchanges data with the thermal management control unit - J1024- . On all vehicles except the Audi A6 e-tron, this sender is referred to as the refrigerant pressure and temperature sender - G395- . On these vehicles, it exchanges data with the operating unit ( Climatronic control unit - J255- ) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

**2 - Condenser**

- ❑ With integrated receiver
- ❑ Exploded view ⇒ page 148

**3 - Receiver**

- ❑ Exploded view ⇒ page 148

**4 - Expansion valve**

- ❑ Exploded view ⇒ page 155
- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

**5 - Condensation drain**

- ❑ Checking ⇒ page 484
- ❑ Removing and installing ⇒ page 483

**6 - Service connection (low-pressure side)**

- ❑ For measuring, discharging and charging

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**Caution**

*Danger from escaping pressurised refrigerant if valve in refrigerant line is defective.*
*Danger of frostbite on skin and other parts of the body.*
*Always discharge refrigerant circuit before removing component; connection has no valve ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; General description of refrigerant circuit components .*

- ❑ Different versions depending on refrigerant (R134a or R1234yf)
  ⇒ “2.16 Differences in service connections depending on refrigerant (R134a or R1234yf)”, page 227 and
  ⇒ Electronic parts catalogue
- ❑ Exploded view ⇒ page 155

**7 - Service connection (high-pressure side)**

- ❑ For measuring, discharging and charging

**Caution**

*Danger from escaping pressurised refrigerant if valve in refrigerant line is defective.*
*Danger of frostbite on skin and other parts of the body.*
*Always discharge refrigerant circuit before removing component; connection has no valve ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; General description of refrigerant circuit components .*

- ❑ Different versions depending on refrigerant (R134a or R1234yf)
  ⇒ “2.16 Differences in service connections depending on refrigerant (R134a or R1234yf)”, page 227 and
  ⇒ Electronic parts catalogue
- ❑ Exploded view ⇒ page 155

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**8 - Air conditioner compressor regulating valve - N280-**

- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

**9 - Air conditioner compressor**

- ❑ For correct version refer to ⇒ Electronic parts catalogue
- ❑ Exploded view ⇒ page 237
- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

## 1.1.3 Overview of fitting locations - components not located in passenger compartment, component group 3

**1 - Plenum chamber water drain (centre left)**

- ❑ Checking ⇒ page 505
- ❑ Cleaning ⇒ page 507

**2 - Plenum chamber water drain (right-side)**

- ❑ Checking ⇒ page 505
- ❑ Cleaning ⇒ page 507

**3 - Plenum chamber water drain (centre right)**

- ❑ Checking ⇒ page 505
- ❑ Cleaning ⇒ page 507

**4 - Forced ventilation vent in passenger compartment (right-side)**

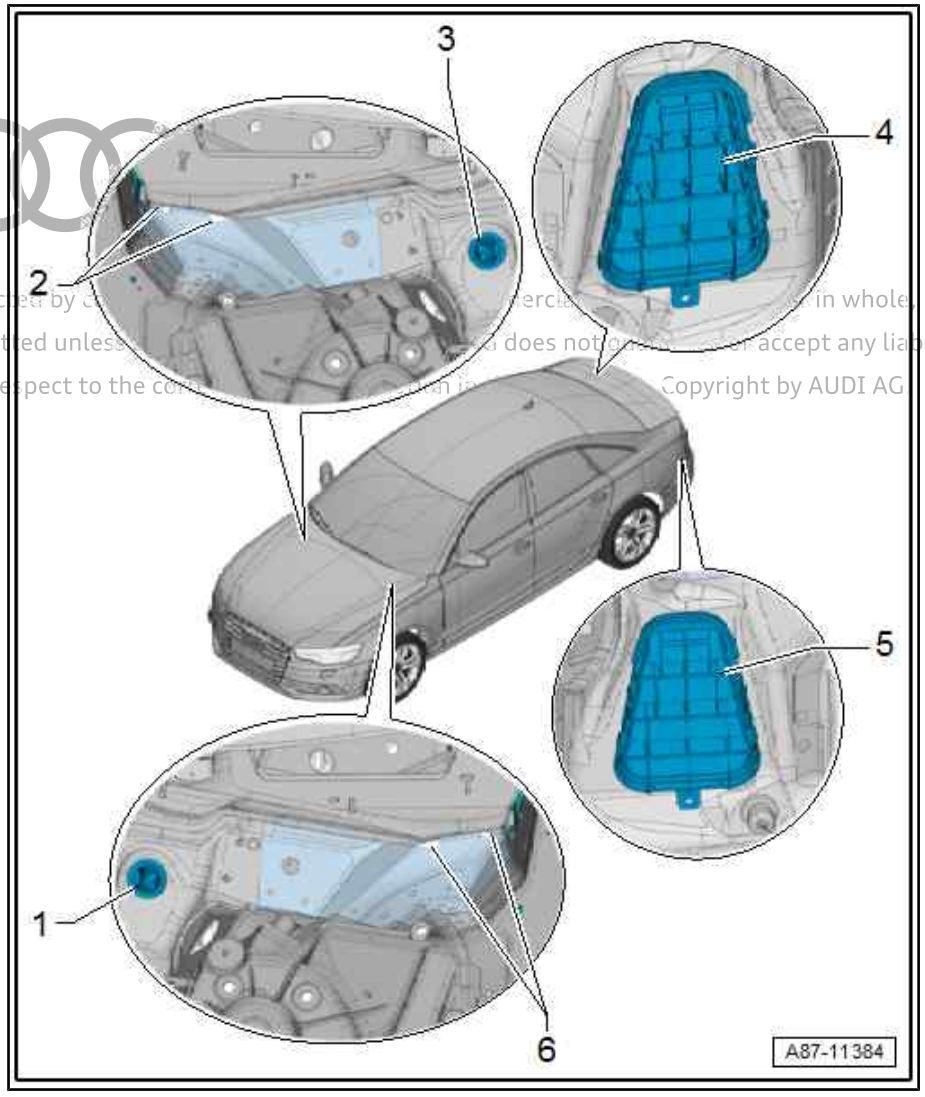
- ❑ Overview of fitting locations ⇒ page 113

**5 - Forced ventilation vent in passenger compartment (left-side)**

- ❑ Overview of fitting locations ⇒ page 113

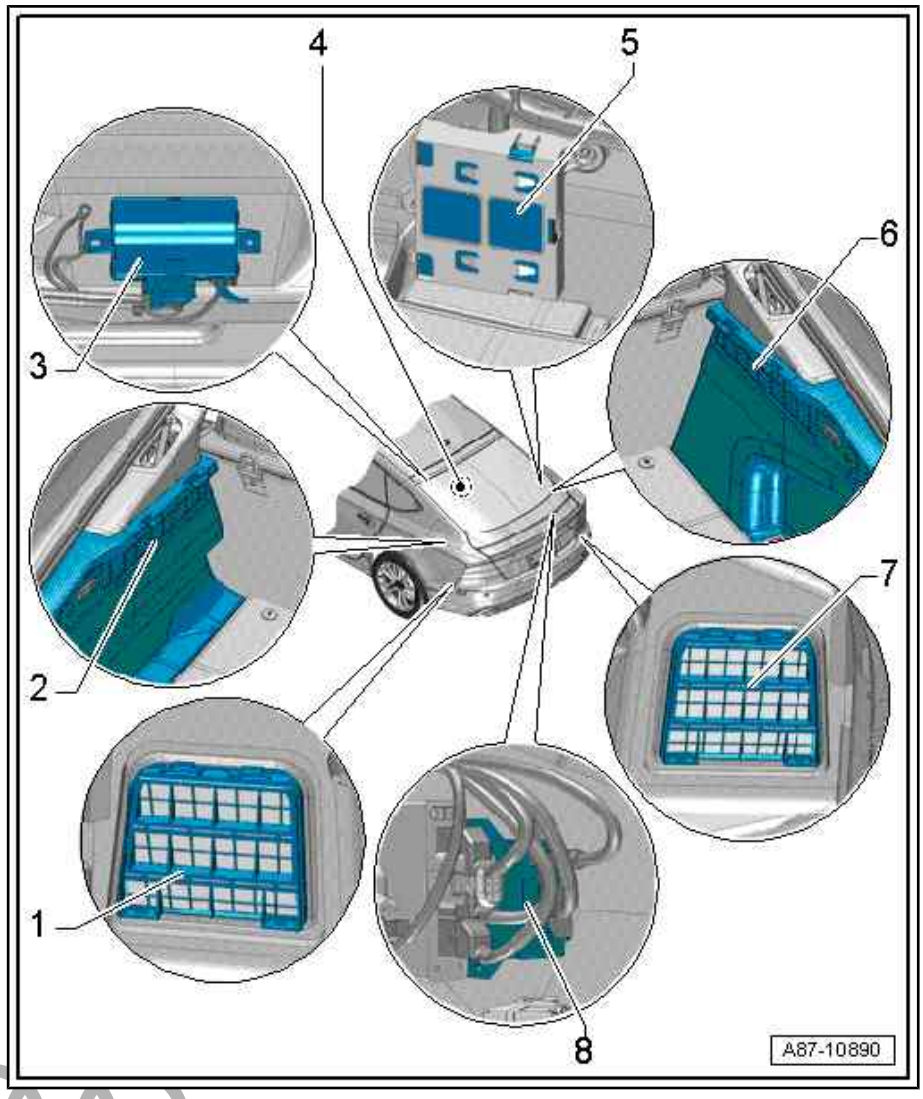
**6 - Plenum chamber water drain (left-side)**

- ❑ Checking ⇒ page 505
- ❑ Cleaning ⇒ page 507




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## 1.1.4 Overview of fitting locations - components not located in passenger compartment (rear)




**1 - Forced ventilation vent (left-side)**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Checking ⇒ page 501
- ❑ Removing and installing ⇒ page 503

**2 - Ventilation slots in luggage compartment (left-side)**

- ❑ Different versions and layout. Shown on Audi A7 in illustration
- ❑ Checking ⇒ page 501

**3 - Data bus diagnostic interface - J533-**

- ❑ Via -J533- , operating unit ( Climatronic control unit - J255- ) exchanges information via the data bus with the other control units (e.g. with convenience system central control unit - J393- , onboard supply control unit - J519- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ Electrical system; Rep. gr. 97 ; Control units; Removing and installing data bus diagnostic interface - J533-

**4 - Heated rear window - Z1-**

- ❑ The request for rear window heating is transmitted from the operating unit ( Climatronic control unit - J255- ) via the data bus to the convenience system central control unit - J393- . Activation is performed via -J393- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- ❑ Notes on operation of heated rear window ⇒ page 15
- ❑ Removing and installing rear window ⇒ General body repairs, exterior; Rep. gr. 64 ; Rear window; Removing and installing rear window

**5 - Convenience system central control unit - J393-**

- ❑ Various vehicle systems (e.g. heated rear window - Z1- ) are activated, and signals from other components (e.g. signal from humidity sender - G355- ) are evaluated via -J393- (or onboard supply control unit - J519- , depending on vehicle) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- ❑ Removing and installing ⇒ General body repairs, exterior; Rep. gr. 57 ; Central locking system; Removing and installing convenience system central control unit - J393-

**6 - Ventilation slots in luggage compartment (right-side)**

- ❑ Different versions and layout. Shown on Audi A7 in illustration

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- ❑ Checking ⇒ page 501

**7 - Forced ventilation vent (right-side)**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Checking ⇒ page 501
- ❑ Removing and installing ⇒ page 503

**8 - Remote control receiver for auxiliary heater - R64-**

- ❑ Depending on equipment version
- ❑ For vehicles with auxiliary heater
- ❑ As soon as an activation signal from the auxiliary heater remote control hand transmitter is detected, the auxiliary heater control unit - J364- interrogates the operating unit ( Climatronic control unit - J255- ). - J255- then determines whether auxiliary heating mode is required to attain the temperatures set or whether auxiliary ventilation mode is sufficient.

**Note**

- *Make sure the air conditioner operating unit ( Climatronic control unit - J255- ) is correctly assigned to the hand-held remote control transmitter and to the remote control receiver for auxiliary heater - R64- . There are different versions of the hand-held remote control transmitter and -R64- for -J255- with part number up to index "AH" (can be identified e.g. by AC button) and with part number from index "AJ" onwards (can be identified e.g. by A/C button).*
- *Possibly no function if incorrect components are combined or if coding or adaption are incorrect (exact date of introduction on Audi A6 and Audi A7 not yet finalised, gradual conversion planned from model year 2014 onwards) ⇒ Auxiliary/supplementary heater; Rep. gr. 82 ; Overview of fitting locations - auxiliary/supplementary heater; Overview of fitting locations - components not located in passenger compartment , ⇒ Electronic parts catalogue and ⇒ Vehicle diagnostic tester ("Guided Fault Finding")*

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## 1.1.5 Overview of fitting locations - additional or different components, vehicles with high-voltage system

**Components at front of vehicle and in plenum chamber**
⇒ page 115

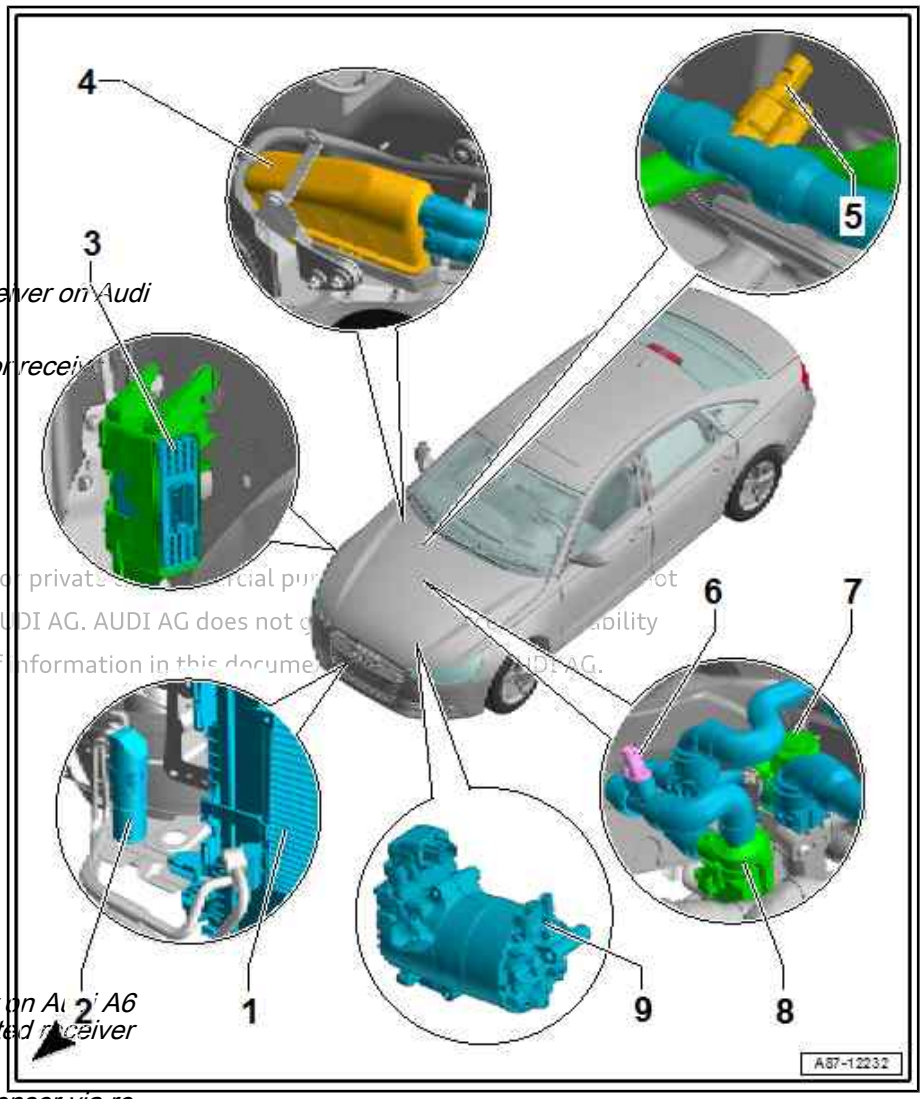
**Components in plenum chamber and at rear of vehicle**
⇒ page 118

For further information, refer to:

- ⇒ "9 Components for cooling high-voltage system - Audi A6 e-tron", page 559

♦ ⇒ “10 Components for cooling high-voltage battery - Audi A6 hybrid”, page 565

**Components at front of vehicle and in plenum chamber**




**1 - Condenser**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Exploded view ⇒ page 148

**Note**

- ♦ *With integrated receiver on Audi A6 hybrid*
- ♦ *With connections for receiver on Audi A6 e-tron*

**2 - Receiver**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Exploded view of a condenser with integrated receiver (Audi A6 hybrid) ⇒ “2.2.2 Exploded view - condenser, with receiver and desiccant cartridge”, page 151
- ❑ Removing and installing ⇒ “2.14 Removing and installing receiver”, page 218

**Note**

- ♦ *Fitted to condenser on Audi A6 hybrid (with integrated receiver on condenser)*
- ♦ *Connected to condenser via refrigerant lines on Audi A6 e-tron*

**3 - Thermal management control unit - J1024-**

- ❑ Only installed on Audi A6 e-tron
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 624
- ❑ Incorporation into vehicle electrical system ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

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Note

*Various functions of the air conditioner and the cooling function for the high-voltage system components are controlled via the thermal management control unit - J1024- (⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations).*

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**4 - High-voltage heater (PTC) - Z115- (with high-voltage heater (PTC) control unit - J848- )**

- ❑ Only installed on Audi A6 e-tron
- ❑ For all work on - Z115- (and on vehicles with high-voltage system), note additional warnings for working on such vehicles ⇒ page 31 and ⇒ Engine, mechanics; Rep. gr. 00 ; Safety precautions; Safety precautions when working on high-voltage vehicles .
- ❑ Checking ⇒ Vehicle diagnostic tester ("Guided Fault Finding") and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Incorporated into coolant circuit ⇒ "7.1 Overview of fitting locations - engine coolant circuit", page 509 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- ❑ Removing and installing ⇒ "7.11 Removing and installing high-voltage heater (PTC) Z115 , with J848 - Audi A6 e-tron only", page 536

Note

- *-Z115- has a nominal power of approx. 5000 watts. The nominal power is only produced at low coolant temperatures.*
- *Further notes ⇒ "3.10.5 Checking supplementary heating - Audi A6 e-tron", page 94*

**5 - Coolant temperature sender 2 for thermal management - G903-**

- ❑ Only installed on Audi A6 e-tron
- ❑ Checking ⇒ Vehicle diagnostic tester ("Guided Fault Finding") and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 545 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- ❑ Incorporated into coolant circuit ⇒ "7.1 Overview of fitting locations - engine coolant circuit", page 509 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- ❑ Different versions. For correct version refer to ⇒ Electronic parts catalogue .

Note

*Transmits measured coolant temperature to thermal management control unit - J1024- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

**6 - Coolant temperature sender 7 for thermal management - G908-**

- ❑ Only installed on Audi A6 e-tron
- ❑ Checking ⇒ Vehicle diagnostic tester ("Guided Fault Finding") and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 547 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses

- ❑ Incorporated into coolant circuit ⇒ “7.1 Overview of fitting locations - engine coolant circuit”, page 509 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- ❑ Different versions. For correct version refer to ⇒ Electronic parts catalogue .

**Note**

- ♦ *To remove: Release pressure in coolant circuit, remove bolt (tightening torque: 8 Nm) and detach -G908- from bracket ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .*
- ♦ *Lubricate new O-ring with coolant before installing ⇒ Electronic parts catalogue .*
- ♦ *Transmits measured coolant temperature to thermal management control unit - J1024- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations*

**7 - Coolant changeover valve 3 - N634-**

- ❑ Only installed on Audi A6 e-tron
- ❑ Incorporation into coolant circuit ⇒ “7.1 Overview of fitting locations - engine coolant circuit”, page 509
- ❑ Check activation of -N634- ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode (for -J1024- ).
- ❑ Removing and installing ⇒ “7.7 Removing and installing bracket with V618 and N634 - Audi A6 e-tron only”, page 529

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**Note**

- ♦ *The function of -N634- is equivalent to the function of -N279- on vehicles with an auxiliary heater ⇒ “7.1 Overview of fitting locations - engine coolant circuit”, page 509 and ⇒ Auxiliary/supplementary heater; Rep. gr. 82 ; Coolant circuit with auxiliary/supplementary heater; Connection diagram - coolant hoses .*
- ♦ *The designation and activation of this valve varies depending on the vehicle equipment. On vehicles without “auxiliary/supplementary heater” as optional extra, it is referred to as -N634- and is activated by the thermal management control unit - J1024- . On vehicles with “auxiliary/supplementary heater” as an optional extra, it is known as -N279- and is activated by the auxiliary heater control unit - J364- ⇒ Auxiliary/supplementary heater; Rep. gr. 82 ; Coolant circuit with auxiliary/supplementary heater; Connection diagram - coolant hoses and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .*

### 8 - Thermal management coolant pump 2 - V618-

- ❑ Only installed on Audi A6 e-tron
- ❑ Incorporated into coolant circuit ⇒ “7.1 Overview of fitting locations - engine coolant circuit”, page 509 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- ❑ Removing and installing ⇒ “7.7 Removing and installing bracket with V618 and N634 - Audi A6 e-tron only”, page 529 and ⇒ “7.9 Removing and installing thermal management coolant pump 2 V618 - Audi A6 e-tron only”, page 533

**Note**

- *The designation of this pump can vary. On vehicles with high-voltage system (Audi A6 e-tron), it is referred to as the thermal management coolant pump 2 -V618- , on vehicles without high-voltage system as the coolant circulation pump - V50- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *-V618- is activated via thermal management control unit -J1024- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations*
- *Check correct installation position and operation of -V618- if there is a problem with insufficient heat output from the heater and air conditioning unit with the engine running, regardless of whether -Z115- is activated ⇒ Current flow diagrams, Electrical fault finding and Fitting locations and ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

### 9 - Electrically driven air conditioner compressor

- ❑ Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue
- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue
- ❑ Different activation and functions on Audi A6 hybrid and Audi A6 e-tron ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

**Note**

*This illustration shows the air conditioner compressor on the Audi A6 e-tron.*

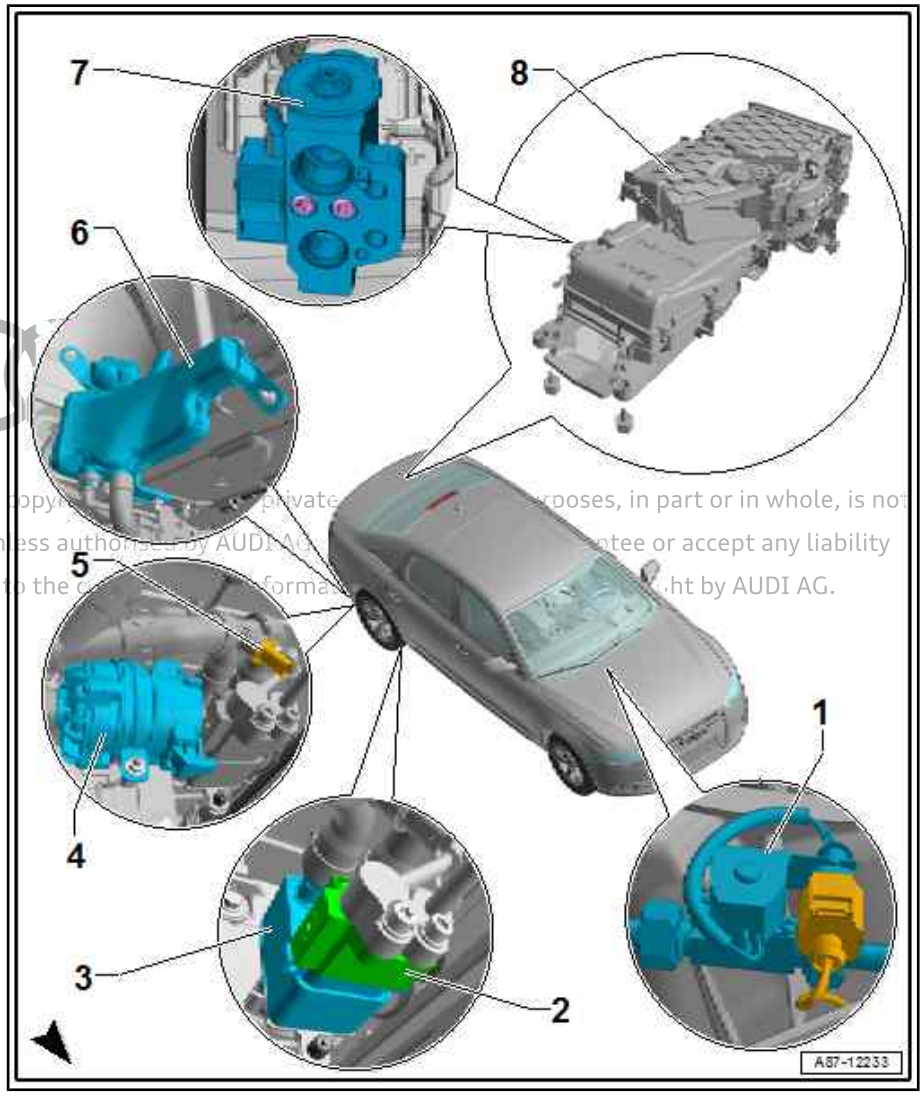
- ❑ Exploded view ⇒ page 239

### Components in plenum chamber and at rear of vehicle

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**1 - Refrigerant shut-off valve ( - N516- / -V424- )**

- Different designations, depending on vehicle ( refrigerant shut-off valve 1 for hybrid battery - N516- for Audi A6 hybrid and refrigerant shut-off valve - V424- for Audi A6 e-tron) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Activated when air conditioner is switched off; shuts off flow of refrigerant to expansion valve in heat pump and battery cooling mode, and therefore to evaporator in front heater and air conditioning unit.
- Different activation on Audi A6 hybrid and Audi A6 e-tron ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Fitted in plenum chamber (left-side)
- Checking ⇒ Vehicle diagnostic tester ("Guided Fault Finding")
- Exploded view ⇒ page 155




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**2 - Expansion valve with refrigerant shut-off valve 2 - N640-**

- Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue
- Only installed on Audi A6 e-tron
- Checking ⇒ Vehicle diagnostic tester ("Guided Fault Finding")
- Removing and installing ⇒ page 196

**Note**

*The valve is activated by the thermal management control unit - J1024- ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

**3 - High-voltage battery heat exchanger**

- Only installed on Audi A6 e-tron
- Incorporation in coolant circuit of high-voltage system ⇒ page 520 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses (Connection diagram - coolant hoses, cooling components for high-voltage system)

For further information, refer to ⇒ Item 4 (page 120) .

- Check operation and cooling of heat exchanger via air conditioner ⇒ Vehicle diagnostic tester ("Guided Fault Finding" for air conditioner and hybrid battery energy management system).

- ❑ Removing and installing ⇒ page 199

**4 - Coolant pump for high-voltage battery - V590-**

- ❑ Only installed on Audi A6 e-tron
- ❑ Incorporation in coolant circuit of high-voltage system ⇒ page 520 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses (Connection diagram - coolant hoses, cooling components for high-voltage system)
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 562 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses (Connection diagram - coolant hoses, cooling components for high-voltage system).

**Note**

- ♦ *Activated by battery regulation control unit - J840- (via coolant pump relay - J235- ) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- ♦ *Checking activation and function ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode*
- ♦ *The temperature of the coolant upstream of the high-voltage battery heat exchanger is measured by the coolant temperature sender 1 for thermal management - G902- . The measured values from this sender can be read out via the thermal management control unit - J1024- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- ♦ *If there is a problem because the components of the high-voltage system are not cooled and the air conditioner cooling output is OK, check that the high-voltage battery heat exchanger is cooled down ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode (for air conditioner and high-voltage system). Make sure that coolant is actually being cooled by the high-voltage battery heat exchanger ⇒ “7.3.2 Incorporation of air conditioner into coolant circuit of high-voltage system”, page 521 and ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

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**5 - Coolant temperature sender 1 for thermal management - G902-**

- ❑ Only installed on Audi A6 e-tron
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 560 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- ❑ Incorporation in coolant circuit of high-voltage system ⇒ page 520 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses (Connection diagram - coolant hoses, cooling components for high-voltage system)
- ❑ Different versions. For correct version refer to ⇒ Electronic parts catalogue .

**Note**

*Transmits measured coolant temperature to thermal management control unit - J1024- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

**6 - Coolant expansion tank for high-voltage battery cooling system**

- Only installed on Audi A6 e-tron in vicinity of right rear wheel
- Removing and installing ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .
- Incorporation into coolant circuit; draining and filling cooling system ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- With coolant shortage indicator sender 2 - G837-

**7 - Expansion valve with refrigerant shut-off valve 2 for hybrid battery - N517-**

- Only installed on Audi A6 hybrid
- Exploded view ⇒ page 568

**8 - Battery cooling module**

- Only installed on Audi A6 hybrid
- Exploded view ⇒ page 568

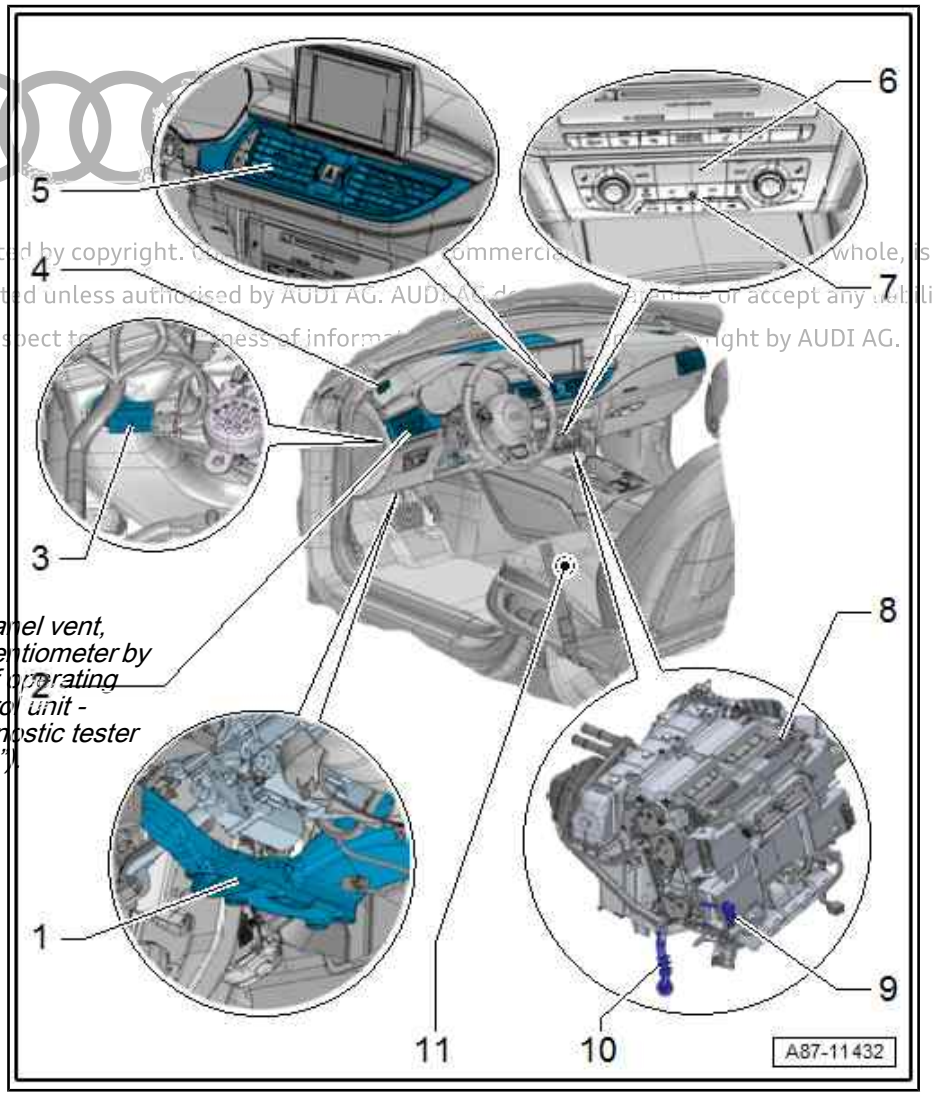
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## 1.2 Overview of fitting locations - components in passenger compartment (front)

⇒ “1.2.1 Overview of fitting locations - components in passenger compartment (front), from left side”, page 122

⇒ “1.2.2 Overview of fitting locations - components in passenger compartment (front), from right side”, page 124

### 1.2.1 Overview of fitting locations - components in passenger compartment (front), from left side




**1 - Footwell vent (left-side)**

- Exploded view ⇒ page 488

**2 - Dash panel vent (left-side) with -G628-**

- “Deluxe” version: with potentiometer in left side vent - G628-
- Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Exploded view ⇒ page 488

**Note**

*After renewing dash panel vent, match end stops at potentiometer by performing adaption of operating unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

**3 - Left vent temperature sender - G150-**

- Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Removing and installing ⇒ page 619
- An incorrectly installed vent temperature sender will cause flow noise

**4 - Defroster vent for side window (left-side)**

**5 - Dash panel vent (centre left) with -G626-**

- “Deluxe” version
- Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Exploded view ⇒ page 488

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**Note**

*After renewing dash panel vent, match end stops at potentiometer by performing adaption of operating unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

**6 - Air conditioner operating unit**

- ❑ Climatronic control unit - J255-
- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 556

**7 - Infrared sensor**

- ❑ For determining temperature in passenger compartment
- ❑ A contaminated infrared sensor will cause problems with air conditioner control ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

**8 - Heater and air conditioning unit (left-side)**

- ❑ Exploded view ⇒ page 392
- ❑ Removing and installing ⇒ page 460
- ❑ Dismantling and assembling ⇒ page 467

**9 - Left footwell vent temperature sender - G261-**

- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 620

**10 - Condensation drain (left-side)**

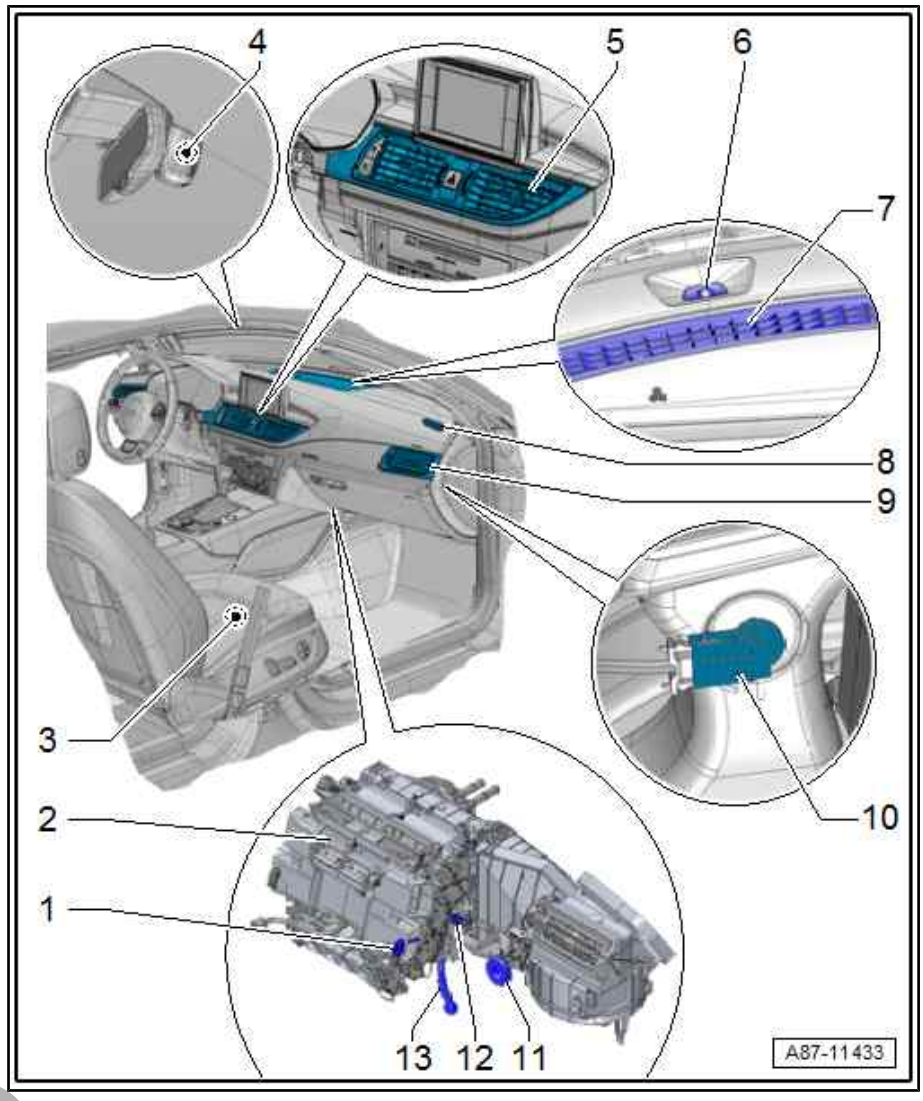
- ❑ Checking ⇒ page 484
- ❑ Removing and installing ⇒ page 483

**11 - Front seat (left-side)**

- ❑ Equipment version with seat heating, seat ventilation
- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Notes on operation of seat heating ⇒ page 4
- ❑ Notes on operation of seat ventilation ⇒ page 10
- ❑ Servicing seat heating ⇒ General body repairs, interior; Rep. gr. 74 ; Front seat covers and padding; Overview - seat heating elements
- ❑ Servicing seat ventilation ⇒ General body repairs, interior; Rep. gr. 72 ; Front seats; Overview of fitting locations - electrical and electronic components

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## 1.2.2 Overview of fitting locations - components in passenger compartment (front), from right side




**1 - Right footwell vent temperature sender - G262-**

- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 620

**2 - Heater and air conditioning unit (right-side)**

- ❑ Exploded view ⇒ page 392
- ❑ Removing and installing ⇒ page 460
- ❑ Dismantling and assembling ⇒ page 467

**3 - Front seat (right-side)**

- ❑ Equipment version with seat heating, seat ventilation
- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Notes on operation of seat heating ⇒ page 4
- ❑ Notes on operation of seat ventilation ⇒ page 10
- ❑ Servicing seat heating ⇒ General body repairs, interior; Rep. gr. 74 ; Front seat covers and padding; Overview - seat heating elements
- ❑ Servicing seat ventilation ⇒ General body repairs, interior; Rep. gr. 72 ; Front seats; Overview of fitting locations - electrical and electronic components

**4 - Humidity sender - G355-**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Humidity sender is integrated in rain and light sensor - G397- and cannot be renewed separately in the event of a fault. Renewing ⇒ Electrical system; Rep. gr. 96 ; Further lights and controls in vehicle interior; Overview of fitting locations - further lights and controls in vehicle interior

**5 - Dash panel vent (centre right) with -G627-**

- ❑ “Deluxe” version
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Exploded view ⇒ page 488

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**Note**

*After renewing dash panel vent, match end stops at potentiometer by performing adaption of operating unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

**6 - Sunlight penetration photosensor - G107-**

- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 607

**7 - Windscreen defroster vent**

- ❑ Exploded view ⇒ page 488

**8 - Defroster vent for side window (right-side)**

- ❑ Exploded view ⇒ page 488

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**9 - Dash panel vent (right-side) with -G629-**

- ❑ “Deluxe” version
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Exploded view ⇒ page 488

**Note**

*After renewing dash panel vent, match end stops at potentiometer by performing adaption of operating unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

**10 - Right vent temperature sender - G151-**

- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 619
- ❑ An incorrectly installed vent temperature sender will cause flow noise

**11 - Air duct for glove box cooling**

**12 - Evaporator output temperature sender - G263-**

- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 623

**Note**

- ◆ *On Audi A6 e-tron vehicles (depending on version), the measured value of -G263- can be evaluated by the operating unit ( Climatronic control unit - J255- (as on all other vehicles in this series) or thermal management control unit - J1024- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

- *If the measured value is evaluated by -J1024- on the Audi A6 e-tron (and transmitted to -J255- via the data bus), a different version of -J255- is installed ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode and ⇒ Electronic parts catalogue .*

**13 - Condensation drain (right-side)**

- ❑ Checking ⇒ page 484
- ❑ Removing and installing ⇒ page 483

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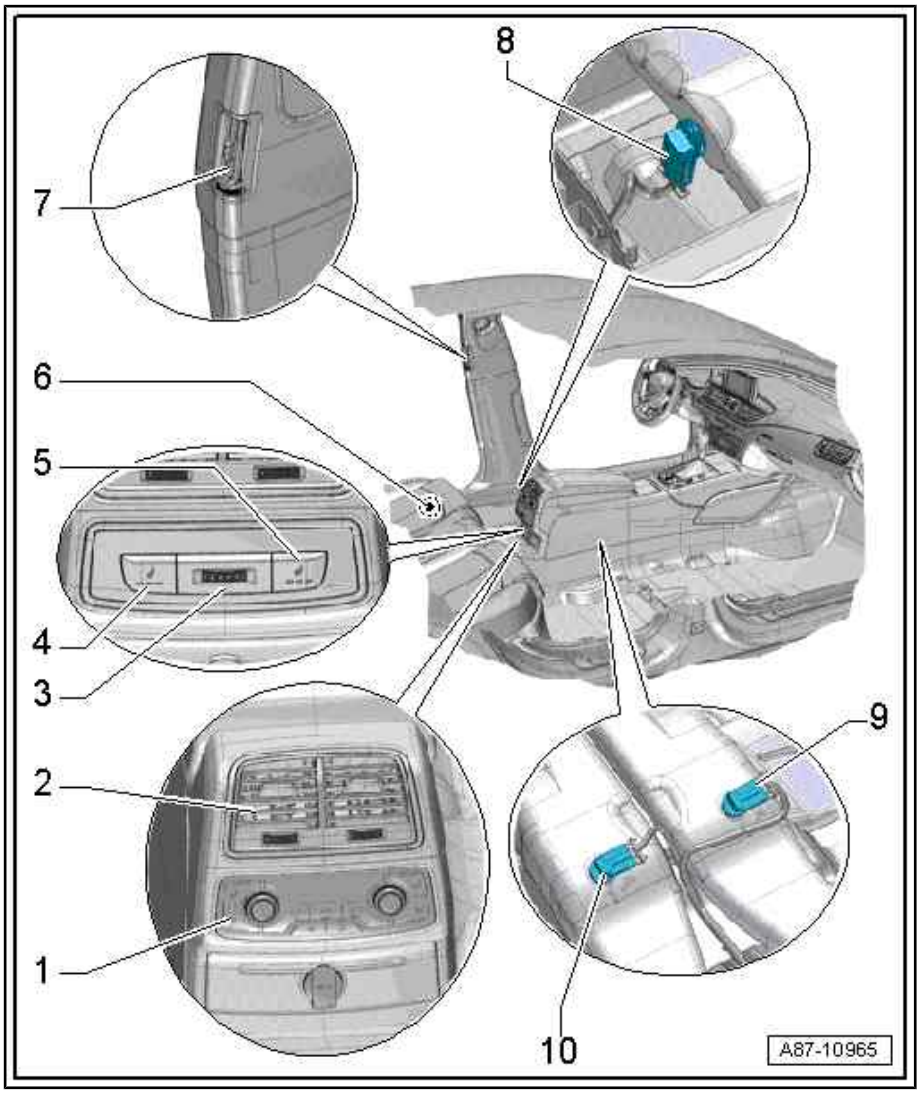
## 1.3 Overview of fitting locations - components in passenger compartment (rear)

⇒ "1.3.1 Overview of fitting locations - components in passenger compartment (rear), from left side", page 127

⇒ "1.3.2 Overview of fitting locations - components in passenger compartment (rear), from right side", page 129

⇒ "10 Components for cooling high-voltage battery - Audi A6 hybrid", page 565

### 1.3.1 Overview of fitting locations - components in passenger compartment (rear), from left side




**1 - Rear Climatronic operating unit - E265-**

- ❑ "Deluxe" version only
- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ page 558
- ❑ Currently no childproof lock is available (introduction not yet finalised)
- ❑ If a childproof lock becomes available at a later date and is active in the vehicle, the settings for the rear air conditioner and seat heating cannot be altered ⇒ Owner's Manual
- ❑ General notes ⇒ page 21

**2 - Rear vent with -G630- / -G631-**

- ❑ In centre console
- ❑ "Deluxe" version
- ❑ Checking ⇒ Vehicle diagnostic tester ("Guided Fault Finding") and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Exploded view - centre console .

**Note**

*After renewing rear vent, match end stops at potentiometer by performing adaption of operating unit ( Climatronic control unit - J255- ) and rear Climatronic operating unit - E265- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

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**3 - Potentiometer for rear temperature selection - G538-**

- ❑ Country-specific version
- ❑ “Basic” version only
- ❑ Combined with trim panel as one component, cannot be renewed separately
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Exploded view - centre console .

**4 - Heated rear left seat switch with regulator - E128-**

- ❑ “Basic” air conditioner only
- ❑ Switch does not have self-diagnosis capability. Seat heating activation is only implemented if corresponding release is issued by onboard supply control unit - J519- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations and ⇒ Vehicle diagnostic tester (“Guided Fault Finding” for onboard supply control unit)
- ❑ Notes on operation of seat heating ⇒ page 4
- ❑ Servicing seat heating ⇒ General body repairs, interior; Rep. gr. 74 ; Front seat covers and padding; Overview - seat heating elements

**5 - Heated rear right seat switch with regulator - E129-**

- ❑ “Basic” air conditioner only
- ❑ Switch does not have self-diagnosis capability. Seat heating activation is only implemented if corresponding release is issued by onboard supply control unit - J519- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations and ⇒ Vehicle diagnostic tester (“Guided Fault Finding” for onboard supply control unit)
- ❑ Notes on operation of seat heating ⇒ page 4
- ❑ Servicing seat heating ⇒ General body repairs, interior; Rep. gr. 74 ; Front seat covers and padding; Overview - seat heating elements

**6 - Rear seat bench**

- ❑ Equipment version with seat heating, seat ventilation
- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Notes on operation of seat heating ⇒ page 4
- ❑ Notes on operation of seat ventilation ⇒ page 10
- ❑ Servicing seat heating ⇒ General body repairs, interior; Rep. gr. 74 ; Front seat covers and padding; Overview - seat heating elements
- ❑ Servicing seat ventilation ⇒ General body repairs, interior; Rep. gr. 72 ; Front seats; Overview of fitting locations - electrical and electronic components

**7 - Vent in B-pillar (left-side)**

- ❑ “Deluxe” air conditioner only
- ❑ Removing and installing ⇒ General body repairs, interior; Rep. gr. 70 ; Passenger compartment trim panels; Removing and installing B-pillar trim

**8 - Vent temperature sender for rear left footwell - G637-**

- ❑ “Deluxe” air conditioner only
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 620

**9 - Rear right chest vent temperature sender - G636-**

- ❑ In air duct for rear vent
- ❑ “Deluxe” air conditioner only
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 622

**10 - Rear left chest vent temperature sender - G635-**

- ❑ In air duct for rear vent

- ❑ “Deluxe” air conditioner only
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 622

## 1.3.2 Overview of fitting locations - components in passenger compartment (rear), from right side

**1 - Vent temperature sender for rear right footwell - G638-**

- ❑ “Deluxe” air conditioner only
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 620

**2 - Control unit for air ionisation system - J897-**

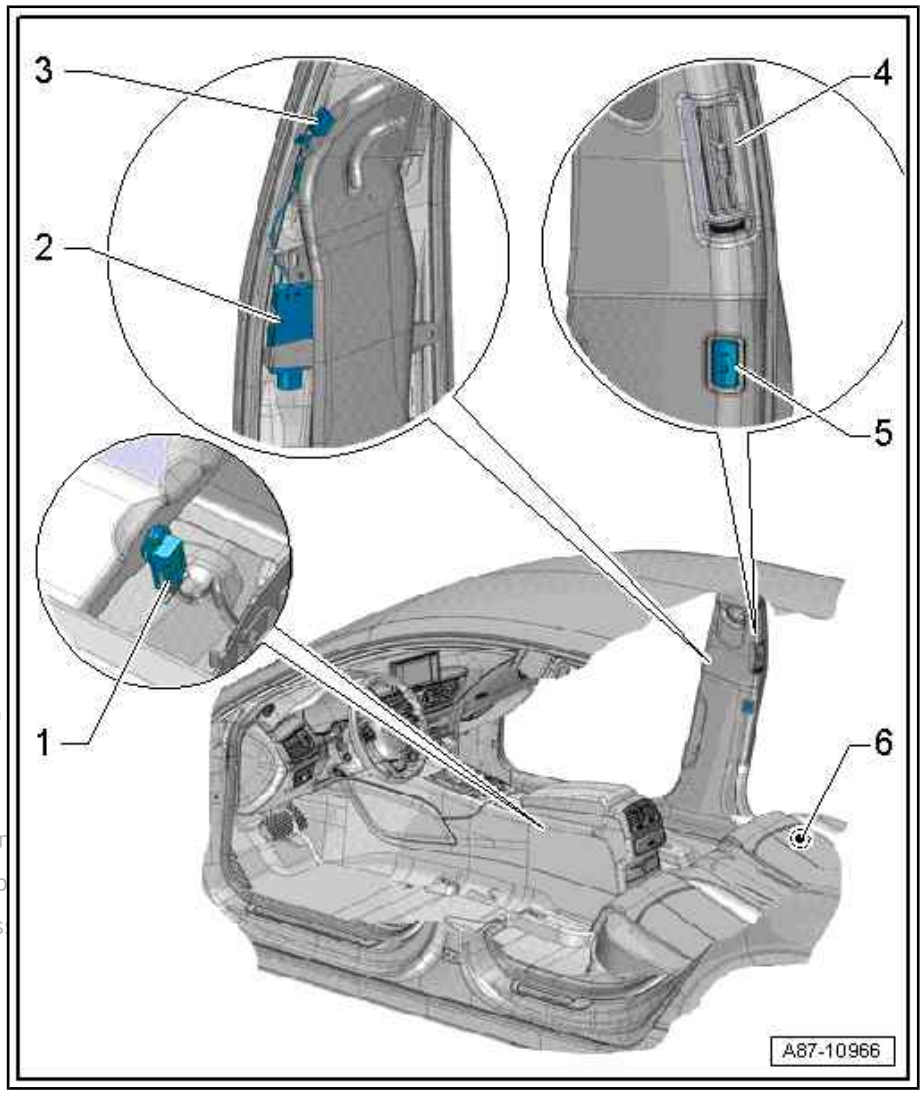
- ❑ Country-specific version
- ❑ “Deluxe” air conditioner only
- ❑ Removing and installing ⇒ page 623

**3 - Ioniser**

- ❑ Combined as one unit with control unit for air ionisation system - J897-

**4 - Vent in B-pillar (right-side)**

- ❑ “Deluxe” air conditioner only
- ❑ Removing and installing ⇒ General body repairs, interior; Rep. gr. 70 ; Passenger compartment trim panels; Removing and installing B-pillar trim




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**5 - Button for air ionisation system - E677-**

- ❑ Country-specific version
- ❑ “Deluxe” air conditioner only
- ❑ Removing and installing ⇒ General body repairs, interior; Rep. gr. 70 ; Passenger compartment trim panels; Removing and installing B-pillar trim

**6 - Rear seat bench**

- ❑ Equipment version with seat heating, seat ventilation
- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Notes on operation of seat heating ⇒ page 4
- ❑ Notes on operation of seat ventilation ⇒ page 10
- ❑ Servicing seat heating ⇒ General body repairs, interior; Rep. gr. 74 ; Front seat covers and padding; Overview - seat heating elements

- Servicing seat ventilation ⇒ General body repairs, interior; Rep. gr. 72 ; Front seats; Overview of fitting locations - electrical and electronic components



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# 2 Refrigerant circuit

⇒ “2.1 System overview - refrigerant circuit”, page 131

⇒ “2.2 Exploded view - condenser”, page 148

⇒ “2.3 Overview of fitting locations - refrigerant lines to rear, vehicles with high-voltage system”, page 153

⇒ “2.4 Exploded view - refrigerant lines”, page 155

⇒ “2.5 Removing and installing refrigerant pressure sender ( G395 / G65 )”, page 162

⇒ “2.6 Checking cut-in signal for air conditioner compressor regulating valve N280 ”, page 165

⇒ “2.7 Disconnecting and attaching refrigerant lines”, page 169

⇒ “2.8 Removing and installing refrigerant lines with internal heat exchanger”, page 183

⇒ “2.9 Removing and installing internal heat exchanger”, page 187

⇒ “2.10 Removing and installing expansion valve”, page 190

⇒ “2.11 Removing and installing heat exchanger for high-voltage battery”, page 199

⇒ “2.12 Removing and installing condenser”, page 205

⇒ “2.13 Detaching and attaching refrigerant lines at condenser”, page 209

⇒ “2.14 Removing and installing receiver”, page 218

⇒ “2.15 Removing and installing desiccant bag/desiccant cartridge”, page 225

⇒ “2.16 Differences in service connections depending on refrigerant (R134a or R1234yf)”, page 227

⇒ “2.17 Removing and installing valve from service connection (low and high-pressure sides)”, page 230

⇒ “2.18 Starting up air conditioner after charging refrigerant circuit”, page 232

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## 2.1 System overview - refrigerant circuit

⇒ “2.1.1 System overview - refrigerant circuit, vehicles without high-voltage system”, page 131

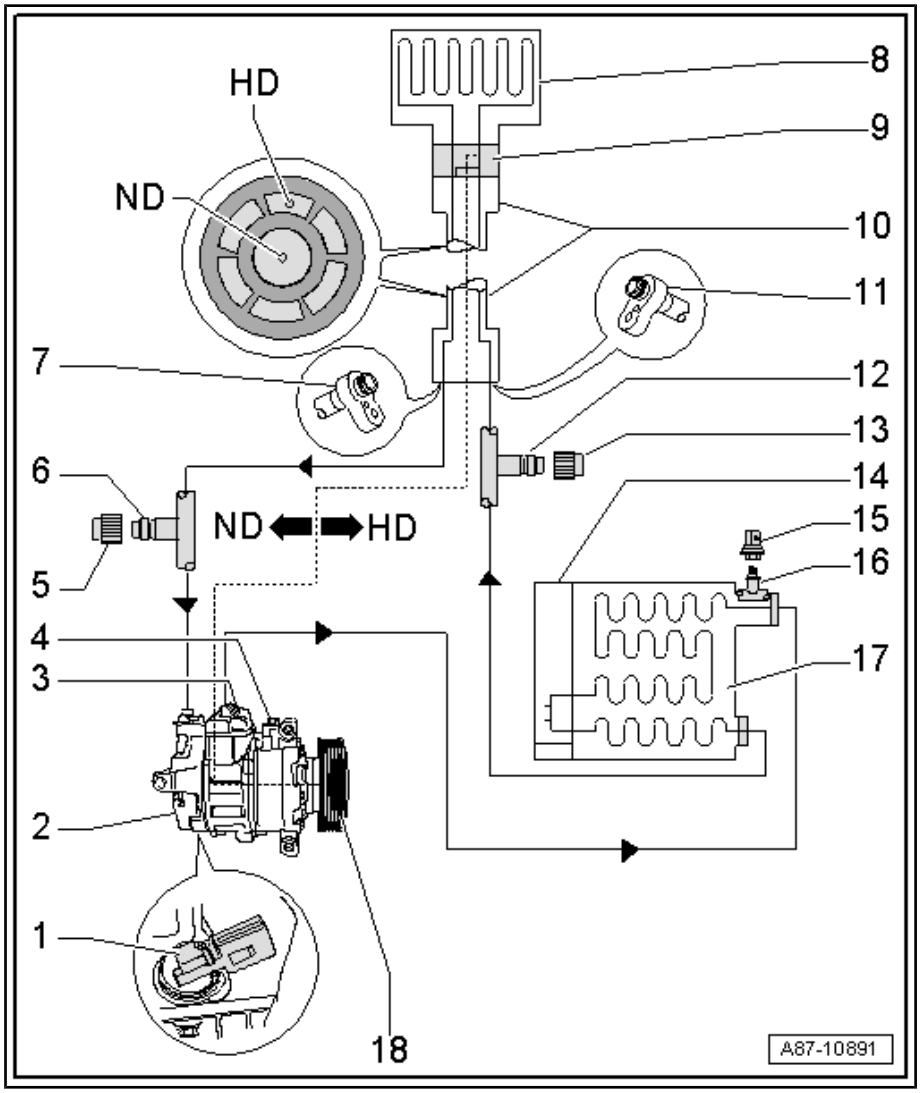
⇒ “2.1.2 System overview - refrigerant circuit, Audi A6 hybrid (vehicles with high-voltage system)”, page 135

⇒ “2.1.3 System overview - refrigerant circuit, Audi A6 e-tron (vehicles with high-voltage system)”, page 141

### 2.1.1 System overview - refrigerant circuit, vehicles without high-voltage system

HD = High-pressure side

ND = Low-pressure side




**1 - Air conditioner compressor regulating valve - N280-**

- ❑ Checking activation and operation ⇒ page 165 , ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

**2 - Air conditioner compressor**

- ❑ Exploded view ⇒ page 237
- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

**3 - High-pressure safety valve**

> **Caution**
>
> *Danger from escaping pressurised refrigerant if valve is defective.*
> *Danger of frostbite on skin and other parts of the body.*
> *Always discharge refrigerant circuit before removing component; connection has no valve.*

**4 - Oil drain plug**

**5 - Cap**

- ❑ With seal
- ❑ Always screw on
- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ “2.16 Differences in service connections depending on refrigerant (R134a or R1234yf)”, page 227 and ⇒ Electronic parts catalogue

**6 - Service connection (low-pressure side)**

- ❑ For measuring and discharging
- ❑ In area of suspension turret (left-side)

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**Caution**

*Danger from escaping pressurised refrigerant if valve in refrigerant line is defective.*
*Danger of frostbite on skin and other parts of the body.*
*Always discharge refrigerant circuit before removing component; connection has no valve ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Refrigerant circuit; General description of refrigerant circuit components .*

- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ "2.16 Differences in service connections depending on refrigerant (R134a or R1234yf)", page 227 and ⇒ Electronic parts catalogue
- ❑ Service connection is fitted in refrigerant line to internal heat exchanger

**7 - Refrigerant line (low-pressure side)**

- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

**8 - Evaporator**

- ❑ The evaporator is manufactured with the refrigerant pipes permanently attached. If a repair is required, the available replacement evaporators for vehicles with refrigerant R134a have refrigerant pipes which are attached at a connecting point ⇒ page 406 and ⇒ Electronic parts catalogue
- ❑ Removing and installing for vehicles with refrigerant R134a ⇒ page 406
- ❑ Removing and installing for vehicles with refrigerant R1234yf (and vehicles with refrigerant R134a for which the evaporator is not available with a connecting point for the refrigerant pipes) ⇒ page 403

**Note**

- ♦ *On vehicles with refrigerant R1234yf, the refrigerant pipes are permanently attached to the evaporator; as no separable connections are permitted in the passenger compartment, evaporators with connecting points for the refrigerant pipes must not be installed on these vehicles.*

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- *On vehicles which use refrigerant R1234yf, no separable connections in the refrigerant circuit (e.g. between the refrigerant lines and the evaporator) are permitted in the passenger compartment. On these vehicles, the heater and air conditioning unit (with the evaporator housing) must therefore always be removed, and the evaporator must be renewed (as a complete unit) together with the refrigerant lines ⇒ Electronic parts catalogue and ⇒ page 403 .*

**9 - Expansion valve**

- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

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**10 - Refrigerant line with internal heat exchanger**

- ❑ In this refrigerant line, the hot liquid refrigerant flowing through the high-pressure side gives off energy to the cold refrigerant vapour flowing through the low-pressure side, thus enhancing the efficiency of the air conditioner
- ❑ Different versions depending on refrigerant (R134a or R1234yf)
  ⇒ "2.16 Differences in service connections depending on refrigerant (R134a or R1234yf)", page 227 and
  ⇒ Electronic parts catalogue

**11 - Refrigerant line (high-pressure side)**

**12 - Service connection (high-pressure side)**

- ❑ For measuring, discharging and charging
- ❑ In area of suspension turret (left-side)

**Caution**

***Danger from escaping pressurised refrigerant if valve in refrigerant line is defective.***
***Danger of frostbite on skin and other parts of the body.***
***Always discharge refrigerant circuit before removing component; connection has no valve ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; General description of refrigerant circuit components .***

- ❑ Different versions depending on refrigerant (R134a or R1234yf)
  ⇒ "2.16 Differences in service connections depending on refrigerant (R134a or R1234yf)", page 227 and
  ⇒ Electronic parts catalogue
- ❑ Service connection is fitted in refrigerant line to internal heat exchanger

**13 - Cap**

- ❑ With seal
- ❑ Always screw on

- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

**14 - Receiver with desiccant bag**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Exploded view ⇒ page 148

**Note**

*Depending on the version, the receiver is integrated into or attached to the condenser.*

**15 - Refrigerant pressure and temperature sender - G395-**

- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Exploded view ⇒ page 148
- ❑ Removing and installing ⇒ page 162
- ❑ Tightening torque: 5 Nm

**Note**

*Different designation (depending on vehicle). On the A6 e-tron, this sender is referred to as the high-pressure sender - G65- . On this vehicle, it exchanges data with the thermal management control unit - J1024- . On all vehicles except the Audi A6 e-tron, this sender is referred to as the refrigerant pressure and temperature sender - G395- . On these vehicles, it exchanges data with the operating unit ( Climatronic control unit - J255- ) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

**16 - Connection with valve**

**17 - Condenser**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Exploded view ⇒ page 148

**18 - Pulley/drive unit**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Renewing pulley ⇒ page 252
- ❑ Renewing drive unit ⇒ page 237

## 2.1.2 System overview - refrigerant circuit, Audi A6 hybrid (vehicles with high-voltage system)

**Note**

*The vehicles in this series with high-voltage systems are all fitted with refrigerant circuits charged with refrigerant R134a.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles

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⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

If work is necessary in the vicinity of high-voltage system components, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

If work is necessary on components of the high-voltage system, de-energise the high-voltage system ⇒ Electrical system, hybrid; Rep. gr. 93 ; De-energising high-voltage system and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**HD = High-pressure side**

**ND = Low-pressure side**

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**1 - Electrically driven air conditioner compressor**

- ❑ Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue
- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

**Note**

*This illustration shows the air conditioner compressor on the Audi A6 hybrid.*

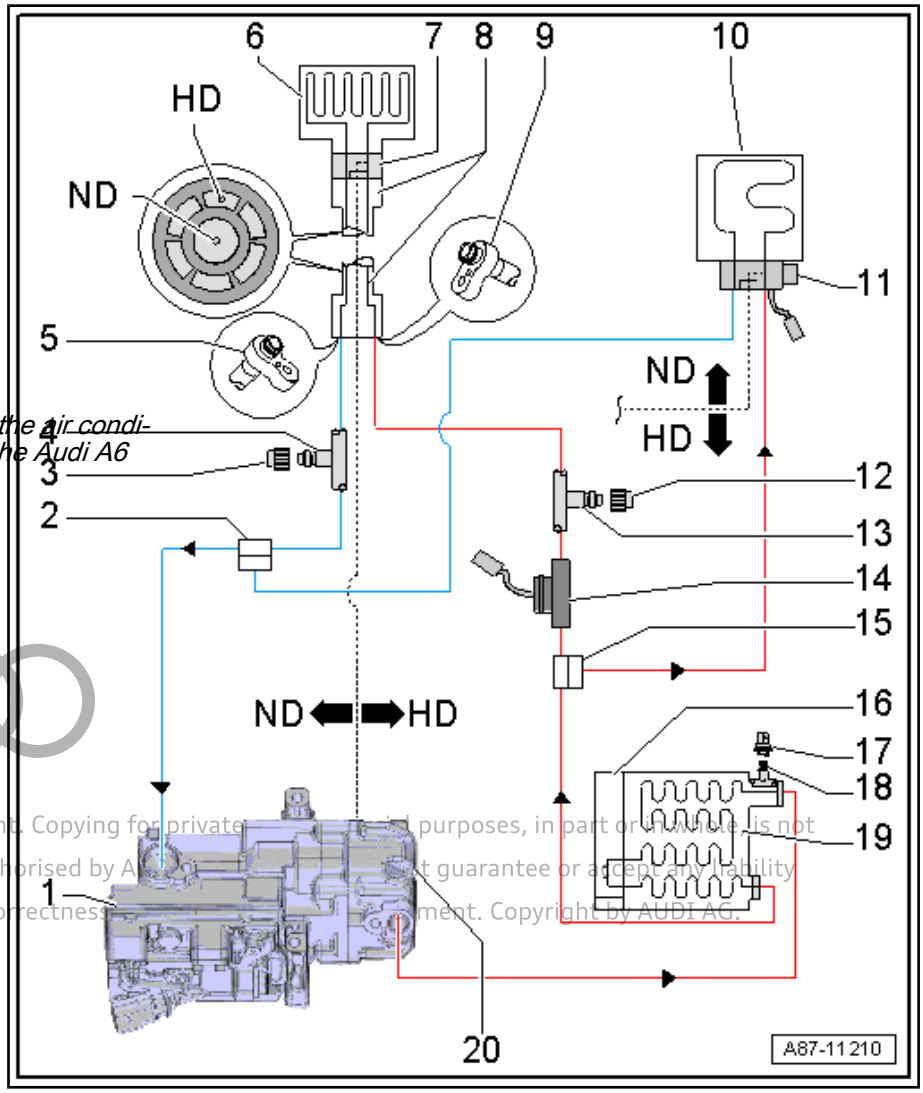
- ❑ Exploded view ⇒ page 239

**2 - Connection to evaporator in battery cooling module**

- ❑ Low-pressure side

**Caution**

***Danger from escaping pressurised refrigerant. Danger of frostbite on skin and other parts of the body. Only loosen bolts at joints if refrigerant circuit is empty.***




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**3 - Cap**

- ❑ With seal
- ❑ Always screw on
- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

**4 - Service connection (low-pressure side)**

- ❑ Different versions (with primary sealing valve or Schrader valve) depending on refrigerant line; distinguishing features ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .
- ❑ For air conditioner service station for measuring pressure and discharging refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit (Air conditioner with refrigerant R134a; Refrigerant circuit; Working with the air conditioner service station).

**Caution**

*Danger from escaping pressurised refrigerant if valve in refrigerant line is defective.*
*Danger of frostbite on skin and other parts of the body.*
*Always discharge refrigerant circuit before removing component; connection has no valve ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

**5 - Refrigerant line (low-pressure side)**

**6 - Evaporator in air conditioning unit**

**7 - Expansion valve**

- For evaporator in air conditioning unit
- Exploded view ⇒ page 155
- Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

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**8 - Refrigerant line with internal heat exchanger**

- In this refrigerant line, the hot liquid refrigerant flowing through the high-pressure side gives off energy to the cold refrigerant vapour flowing through the low-pressure side, thus enhancing the efficiency of the air conditioner
- Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

**9 - Refrigerant line (high-pressure side)**

**10 - Evaporator in battery cooling module**

**11 - Expansion valve with refrigerant shut-off valve 2 for hybrid battery - N517-**

- Exploded view ⇒ page 568

**12 - Cap**

- With seal
- Always screw on

**13 - Service connection (high-pressure side)**

- Different versions (with primary sealing valve or Schrader valve) depending on refrigerant line; distinguishing features ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .
- For air conditioner service station for measuring pressure and for discharging and charging refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit (Air conditioner with refrigerant R134a; Refrigerant circuit; Working with the air conditioner service station).

**Caution**

*Danger from escaping pressurised refrigerant if valve in refrigerant line is defective.*
*Danger of frostbite on skin and other parts of the body.*
*Always discharge refrigerant circuit before removing component; connection has no valve ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

- ❑ Different versions depending on refrigerant (R134a or R1234yf)
  ⇒ “2.16 Differences in service connections depending on refrigerant (R134a or R1234yf)”, page 227 and
  ⇒ Electronic parts catalogue

**14 - Refrigerant shut-off valve 1 for hybrid battery - N516-**

- ❑ Fitted in plenum chamber (left-side)
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)
- ❑ Exploded view ⇒ page 155

**Note**

*Different designations, depending on vehicle ( refrigerant shut-off valve 1 for hybrid battery - N516- for Audi A6 hybrid and refrigerant shut-off valve - V424- for Audi A6 e-tron)*
*⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

**15 - Connection to evaporator in battery cooling module**

- ❑ High-pressure side

**Caution**

*Danger from escaping pressurised refrigerant if valve in refrigerant line is defective.*
*Danger of frostbite on skin and other parts of the body.*
*Always discharge refrigerant circuit before removing component; connection has no valve ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

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- ❑ Different versions depending on refrigerant (R134a or R1234yf)
  ⇒ “2.16 Differences in service connections depending on refrigerant (R134a or R1234yf)”, page 227 and
  ⇒ Electronic parts catalogue

**16 - Receiver with desiccant bag**

- ❑ Different versions ⇒ Electronic parts catalogue

❑ Exploded view ⇒ page 148

**Note**

*Depending on the version, the receiver is integrated into or attached to the condenser.*

**17 - Refrigerant pressure and temperature sender - G395-**

❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)
❑ Exploded view ⇒ page 148
❑ Removing and installing ⇒ page 162
❑ Tightening torque: 5 Nm

**Note**

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*Different designation (depending on vehicle). On the A6 e-tron, this sender is referred to as the high-pressure sender - G65- . On this vehicle, it exchanges data with the thermal management control unit - J1024- . On all vehicles except the Audi A6 e-tron, this sender is referred to as the refrigerant pressure and temperature sender - G395- . On these vehicles, it exchanges data with the operating unit ( Climatronic control unit - J255- ) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

**18 - Connection with valve**

**19 - Condenser**

❑ Exploded view ⇒ page 148

**Note**

- *Different versions ⇒ Electronic parts catalogue*
- *With integrated receiver*

**20 - High-pressure safety valve**

## 2.1.3 System overview - refrigerant circuit, Audi A6 e-tron (vehicles with high-voltage system)

**Note**

*The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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If work is necessary in the vicinity of high-voltage system components, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

If work is necessary on components of the high-voltage system, de-energise the high-voltage system ⇒ Electrical system, hybrid; Rep. gr. 93 ; De-energising high-voltage system and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**HD = High-pressure side**

**ND = Low-pressure side**

**1 - Electrically driven air conditioner compressor**

- ❑ Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue
- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

**Note**

*This illustration shows the air conditioner compressor on the Audi A6 e-tron.*

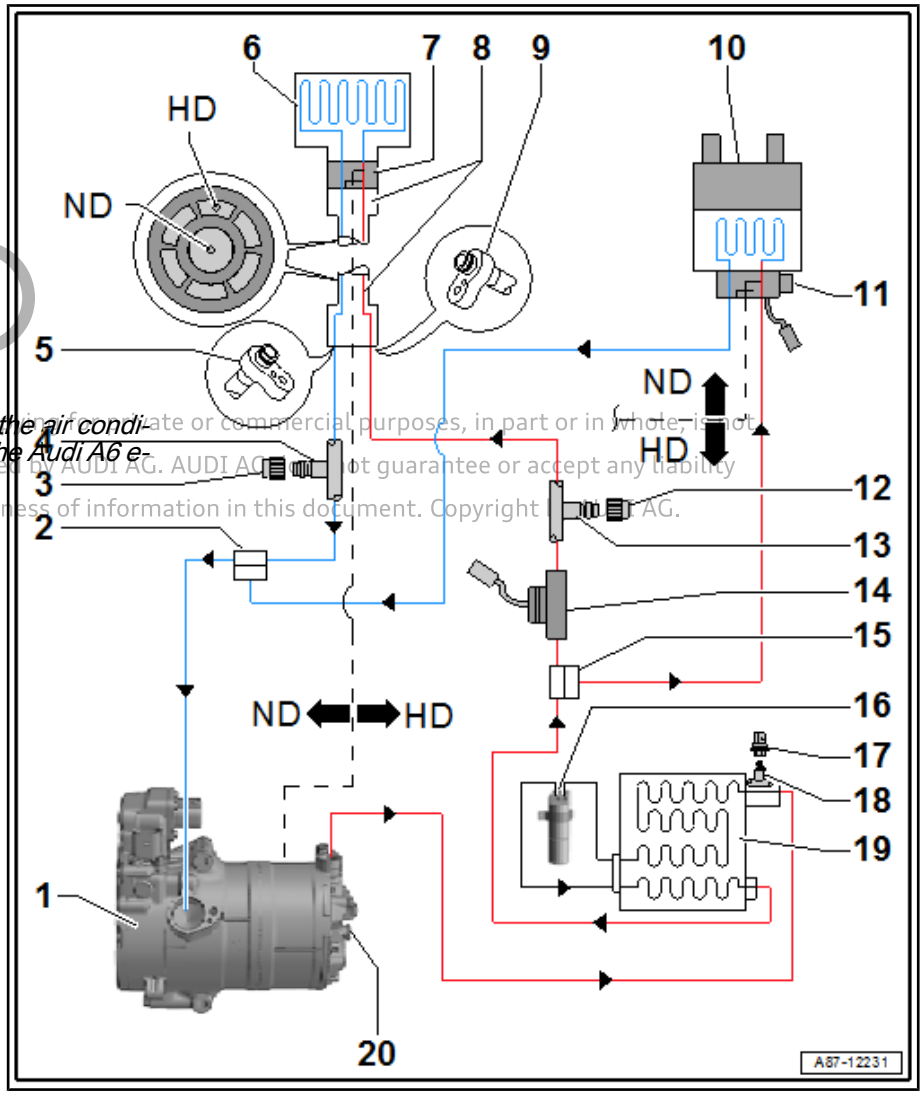
- ❑ Exploded view ⇒ page 239

**2 - Joint with connection to evaporator in high-voltage battery heat exchanger**

- ❑ Low-pressure side

**Caution**

***Danger from escaping pressurised refrigerant. Danger of frostbite on skin and other parts of the body. Only loosen bolts at joints if refrigerant circuit is empty.***




**3 - Cap**

- ❑ With seal
- ❑ Always screw on
- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

**4 - Service connection (low-pressure side)**

- ❑ Different versions (with primary sealing valve or Schrader valve) depending on refrigerant line; distinguishing features ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .
- ❑ For air conditioner service station for measuring pressure and discharging refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit (Air conditioner with refrigerant R134a; Refrigerant circuit; Working with the air conditioner service station).

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**Caution**

*Danger from escaping pressurised refrigerant if valve in refrigerant line is defective.*
*Danger of frostbite on skin and other parts of the body.*
*Always discharge refrigerant circuit before removing component; connection has no valve ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ “2.16 Differences in service connections depending on refrigerant (R134a or R1234yf)”, page 227 and ⇒ Electronic parts catalogue

**5 - Refrigerant line (low-pressure side)**

**6 - Evaporator in air conditioning unit**

**7 - Expansion valve**

- ❑ For evaporator in air conditioning unit
- ❑ Exploded view ⇒ page 155
- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

**8 - Refrigerant line with internal heat exchanger**

- ❑ In this refrigerant line, the hot liquid refrigerant flowing through the high-pressure side gives off energy to the cold refrigerant vapour flowing through the low-pressure side, thus enhancing the efficiency of the air conditioner
- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ “2.16 Differences in service connections depending on refrigerant (R134a or R1234yf)”, page 227 and ⇒ Electronic parts catalogue

**9 - Refrigerant line (high-pressure side)**

**10 - High-voltage battery heat exchanger (evaporator)**

- ❑ Removing and installing ⇒ page 199

**11 - Expansion valve with refrigerant shut-off valve 2 - N640-**

- ❑ Removing and installing ⇒ page 196

**12 - Cap**

- ❑ With seal
- ❑ Always screw on
- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

**13 - Service connection (high-pressure side)**

- ❑ Different versions (with primary sealing valve or Schrader valve) depending on refrigerant line; distinguishing features ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .
- ❑ For air conditioner service station for measuring pressure and for discharging and charging refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit (Air conditioner with refrigerant R134a; Refrigerant circuit; Working with the air conditioner service station).

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**Caution**

*Danger from escaping pressurised refrigerant if valve in refrigerant line is defective.*
*Danger of frostbite on skin and other parts of the body.*
*Always discharge refrigerant circuit before removing component; connection has no valve ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

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- ❑ Different versions depending on refrigerant (R134a or R1234yf)
  ⇒ “2.16 Differences in service connections depending on refrigerant (R134a or R1234yf)”, page 227 and
  ⇒ Electronic parts catalogue

**Note**

*Depending on version, the service connection may also be installed in the refrigerant line leading to the high-voltage battery heat exchanger (upstream of refrigerant shut-off valve - V424- ). Different versions of refrigerant lines ⇒ Electronic parts catalogue .*

**14 - Refrigerant shut-off valve - V424-**

- ❑ Fitted in plenum chamber (left-side)
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)
- ❑ Exploded view ⇒ page 155

**Note**

*Different designations, depending on vehicle ( refrigerant shut-off valve 1 for hybrid battery - N516- for Audi A6 hybrid and refrigerant shut-off valve - V424- for Audi A6 e-tron) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

**15 - Joint with connection to evaporator in high-voltage battery heat exchanger**

- ❑ High-pressure side

**Caution**

*Danger from escaping pressurised refrigerant if valve in refrigerant line is defective.*
*Danger of frostbite on skin and other parts of the body.*
*Always discharge refrigerant circuit before removing component; connection has no valve ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

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**16 - Receiver with desiccant bag**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Exploded view ⇒ page 148

**Note**

- ♦ *Depending on the version, the receiver is integrated into or attached to the condenser on all vehicles except the Audi A6 e-tron.*
- ♦ *On the Audi A6 e-tron, the receiver is a separate component; it is connected to the condenser by two refrigerant lines ⇒ page 148 .*

**17 - Refrigerant pressure and temperature sender - G395- / high-pressure sender - G65-**

- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)
- ❑ Exploded view ⇒ page 148
- ❑ Removing and installing ⇒ page 162
- ❑ Tightening torque: 5 Nm

**Note**

- ♦ *Different designation (depending on vehicle). On the A6 e-tron, this sender is referred to as the high-pressure sender - G65- . On this vehicle, it exchanges data with the thermal management control unit - J1024- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- ♦ *On all vehicles except the Audi A6 e-tron, this sender is referred to as the refrigerant pressure and temperature sender - G395- . On these vehicles, it exchanges data with the operating unit ( Climatronic control unit - J255- ) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

**18 - Connection with valve**

**19 - Condenser**

❑ Exploded view ⇒ page 148

**Note**

- *With additional connections to receiver*
- *Different versions ⇒ Electronic parts catalogue*

**20 - High-pressure safety valve**

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## 2.2 Exploded view - condenser

⇒ “2.2.1 Exploded view - condenser, vehicles with high-voltage system”, page 148

⇒ “2.2.2 Exploded view - condenser, with receiver and desiccant cartridge”, page 151

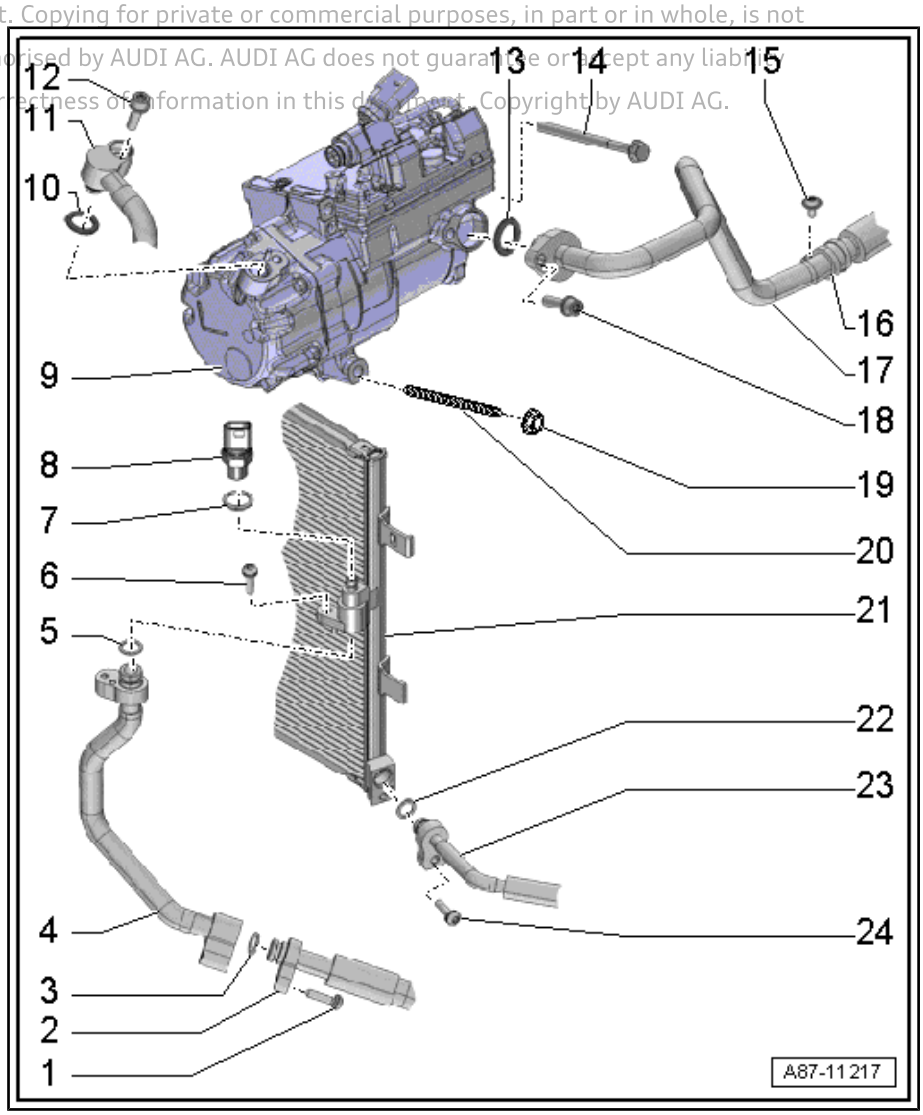
⇒ “2.2.3 Exploded view - condenser, with connections to receiver”, page 152

## 2.2.1 Exploded view - condenser, vehicles with high-voltage system

**Note**

- *The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*
- *This illustration shows an air conditioner compressor as installed on the Audi A6 hybrid; a different air conditioner compressor version is installed on the Audi A6 e-tron ⇒ page 239 and ⇒ Electronic parts catalogue .*

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**1 - Bolt**
- ❑ 9 Nm

**2 - Refrigerant line**
- ❑ To air conditioner compressor
- ❑ Different versions ⇒ Electronic parts catalogue

**3 - O-ring**
- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**4 - Refrigerant line**
- ❑ From condenser
- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ page 209

**5 - O-ring**
- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**6 - Bolt**
- ❑ 9 Nm

**7 - O-ring**
- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**8 - Refrigerant pressure and temperature sender - G395-**

- ❑ Removing and installing ⇒ page 162
- ❑ Tightening torque: 5 Nm

**Note**

- ♦ *On all vehicles except the Audi A6 e-tron, this sender is referred to as the refrigerant pressure and temperature sender - G395- . On these vehicles, it exchanges data with the operating unit ( Climatronic control unit - J255- ) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- ♦ *Different designation (depending on vehicle). On the A6 e-tron, this sender is referred to as the high-pressure sender - G65- . On this vehicle, it exchanges data with the thermal management control unit - J1024- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

**9 - Electrically driven air conditioner compressor**

- ❑ Exploded view ⇒ page 239
- ❑ Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue

**Note**

- ♦ *This illustration shows the air conditioner compressor on the Audi A6 hybrid.*
- ♦ *Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue*

**10 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**11 - Refrigerant line**

- ❑ To condenser
- ❑ Removing and installing ⇒ “3.4.2 Detaching and attaching refrigerant lines at electrically driven air conditioner compressor - Audi A6 hybrid”, page 272

**Note**

*This illustration shows a refrigerant line as installed on the Audi A6 hybrid; a different type of refrigerant line is installed on the Audi A6 e-tron ⇒ Electronic parts catalogue .*

**12 - Bolt**

- ❑ Tightening torque ⇒ page 237

**13 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue

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- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**14 - Bolt**

- ❑ 25 Nm

**15 - Bolt**

- ❑ 4.5 Nm

**16 - Retaining clip**

**17 - Refrigerant line**

- ❑ Low-pressure side
- ❑ Removing and installing
  ⇒ “3.4.2 Detaching and attaching refrigerant lines at electrically driven air conditioner compressor - Audi A6 hybrid”, page 272

**Note**

*This illustration shows a refrigerant line as installed on the Audi A6 hybrid; a different type of refrigerant line is installed on the Audi A6 e-tron ⇒ Electronic parts catalogue .*

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**18 - Bolt**

- ❑ Tightening torque ⇒ page 237

**19 - Nut**

- ❑ Bolt -item 18- may also be fitted instead of threaded pin and nut ⇒ Electronic parts catalogue .
- ❑ 2x
- ❑ 25 Nm

**20 - Threaded pin**

- ❑ Bolt -item 18- may also be fitted instead of threaded pin ⇒ Electronic parts catalogue . Tightening torque: 25 Nm
- ❑ 2x
- ❑ Screw in hand-tight

**21 - Condenser**

- ❑ Exploded view ⇒ page 151

**22 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**23 - Refrigerant line**

- ❑ To refrigerant shut-off valve 2 for hybrid battery - N517-
- ❑ Removing and installing ⇒ page 187

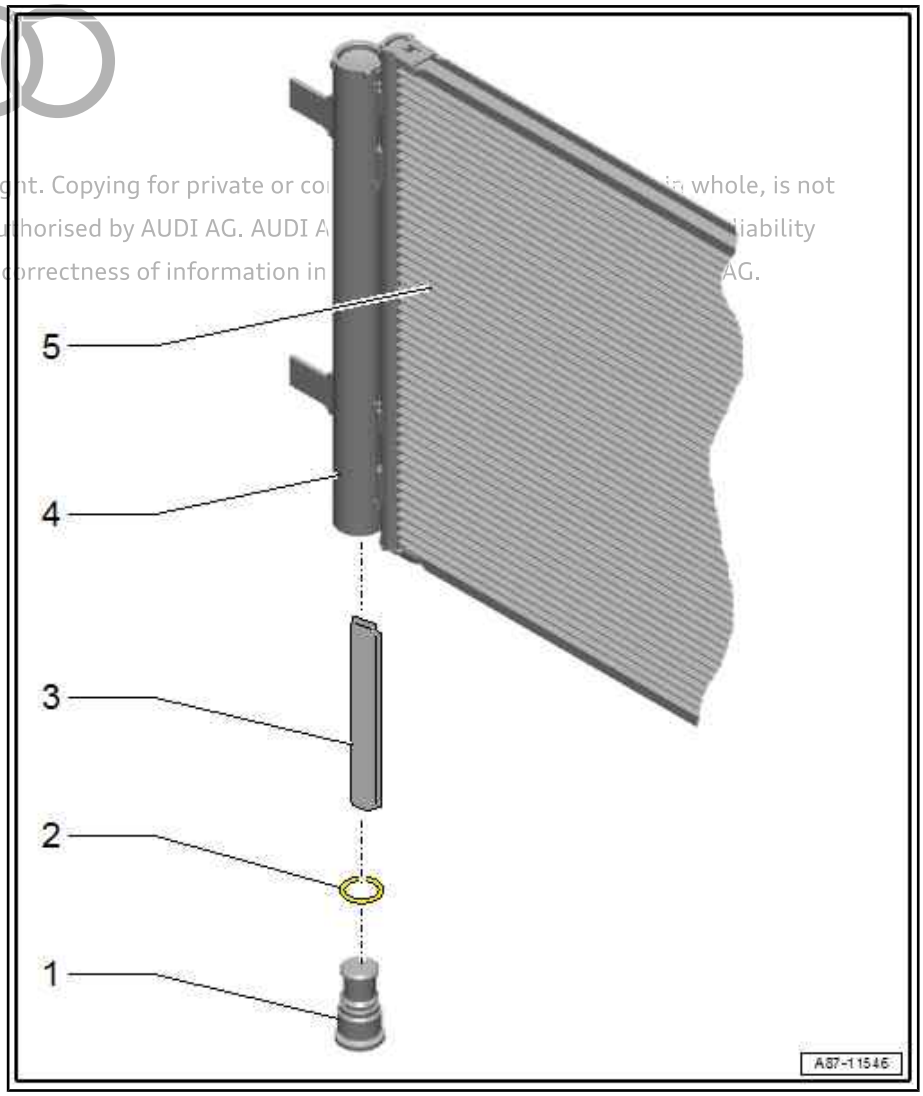
**24 - Bolt**

- ❑ 9 Nm

## 2.2.2 Exploded view - condenser, with receiver and desiccant cartridge

**Note**

- *Different condenser versions are fitted on vehicles without high-voltage system and on Audi A6 hybrid vehicles with an attached or integrated receiver ⇒ Electronic parts catalogue .*
- *The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*




**1 - Plug**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ With filter element (strainer)
- ❑ Renew plug if damaged
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97
- ❑ 2 Nm

**2 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**3 - Desiccant cartridge**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ page 225

**4 - Receiver**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Integrated in condenser on this version

**5 - Condenser**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Detaching and attaching refrigerant line ⇒ page 209
- ❑ Removing and installing ⇒ page 205

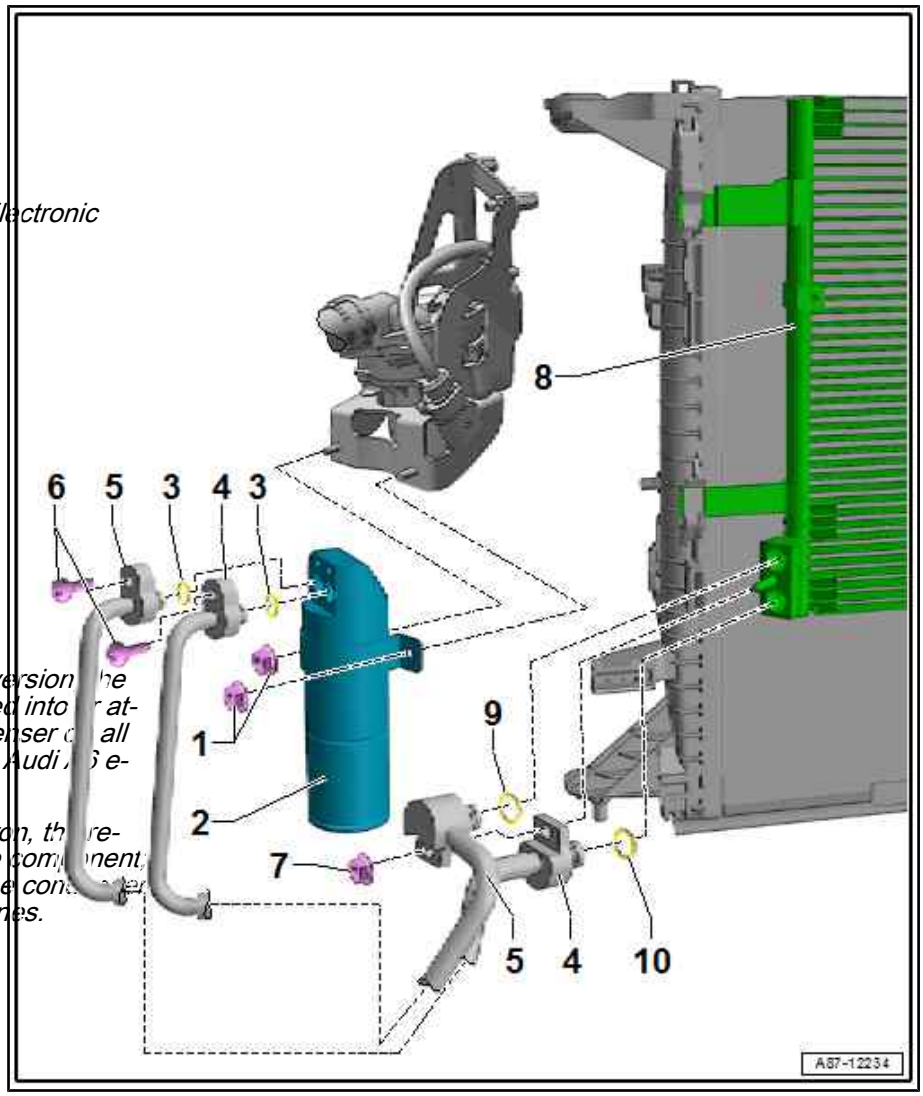
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## 2.2.3 Exploded view - condenser, with connections to receiver

**Note**

- *Different condenser versions are fitted on the Audi A6 e-tron with additional connections to the receiver ⇒ Electronic parts catalogue .*
- *The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

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**1 - Nuts (or bolt)**

- ❑ 2x
- ❑ 4.5 Nm

**Note**

*Different versions ⇒ Electronic parts catalogue*

**2 - Receiver with desiccant bag**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ "2.14.2 Removing and installing receiver with desiccant cartridge - Audi A6 e-tron only", page 220

**Note**

- *Depending on the version, the receiver is integrated into or attached to the condenser on all vehicles except the Audi A6 e-tron.*
- *On the Audi A6 e-tron, the receiver is a separate component, it is connected to the condenser by two refrigerant lines.*

**3 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**4 - Refrigerant line**

- ❑ Supply line from condenser
- ❑ Connect on correct side

**5 - Refrigerant line**

- ❑ Return line to condenser
- ❑ Connect on correct side

**6 - Bolt**

- ❑ 9 Nm

**7 - Nut**

- ❑ Bolt may also be fitted instead of threaded pin and nut ⇒ Electronic parts catalogue
- ❑ 9 Nm

**8 - Condenser**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Detaching and attaching refrigerant line ⇒ page 209
- ❑ Removing and installing ⇒ page 205

**9 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**10 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

## 2.3 Overview of fitting locations - refrigerant lines to rear, vehicles with high-voltage system

⇒ "2.3.1 Overview of fitting locations - refrigerant lines, vehicles with high-voltage system", page 153

### 2.3.1 Overview of fitting locations - refrigerant lines, vehicles with high-voltage system

**Note**

*The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

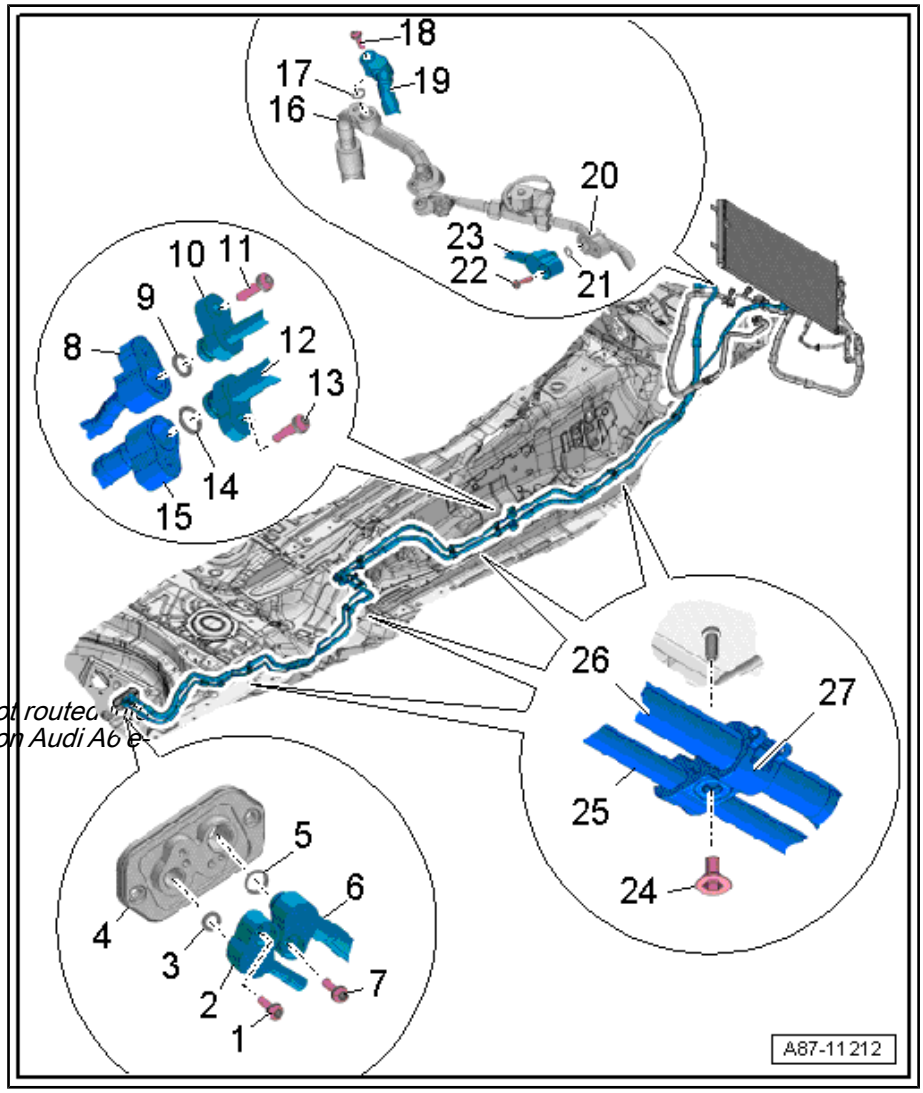
**Caution**

***Danger from escaping pressurised refrigerant.***

***Danger of frostbite on skin and other parts of the body.***

- ***Only loosen bolts at joints if refrigerant circuit is empty.***

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**1 - Bolt**

**2 - Refrigerant line (low-pressure side)**

- ❑ On underbody (rear)
- ❑ Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue
- ❑ Exploded view ⇒ page 157

**3 - O-ring**

- ❑ Renew

**4 - Leadthrough for refrigerant lines into luggage compartment**

- ❑ Only on Audi A6 hybrid
- ❑ Exploded view ⇒ page 157

**Note**

*Refrigerant lines are not routed into luggage compartment on Audi A6 e-tron ⇒ page 159 .*

**5 - O-ring**

- ❑ Renew

**6 - Refrigerant line (high-pressure side)**

- ❑ On underbody (rear)
- ❑ Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue
- ❑ Exploded view ⇒ page 157

**7 - Bolt**

**8 - Refrigerant line (high-pressure side)**

- ❑ On underbody (rear)
- ❑ Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue

**9 - O-ring**

- ❑ Renew

**10 - Refrigerant line (high-pressure side)**

- ❑ On underbody (front)
- ❑ Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue

**11 - Bolt**

**12 - Refrigerant line (low-pressure side)**

- ❑ On underbody (front)
- ❑ Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue

**13 - Bolt**

**14 - O-ring**

- ❑ Renew

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**15 - Refrigerant line (low-pressure side)**

- ❑ On underbody (rear)
- ❑ Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue

**16 - Refrigerant line (low-pressure side)**

- ❑ In engine compartment

**17 - O-ring**

- ❑ Renew

**18 - Bolt**

**19 - Refrigerant line (low-pressure side)**

- ❑ On underbody (front)

**20 - Refrigerant line (high-pressure side)**

- ❑ In engine compartment

**21 - O-ring**

- ❑ Renew

**22 - Bolt**

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**23 - Refrigerant line (high-pressure side)**

- ❑ On underbody (front)

**24 - Speed nut**

- ❑ 2.2 Nm

**25 - Refrigerant line (high-pressure side)**

- ❑ On underbody

**26 - Refrigerant line (low-pressure side)**

- ❑ On underbody

**27 - Bracket**

- ❑ For refrigerant lines

## 2.4 Exploded view - refrigerant lines

⇒ “2.4.1 Exploded view - refrigerant lines, expansion valve, internal heat exchanger”, page 155

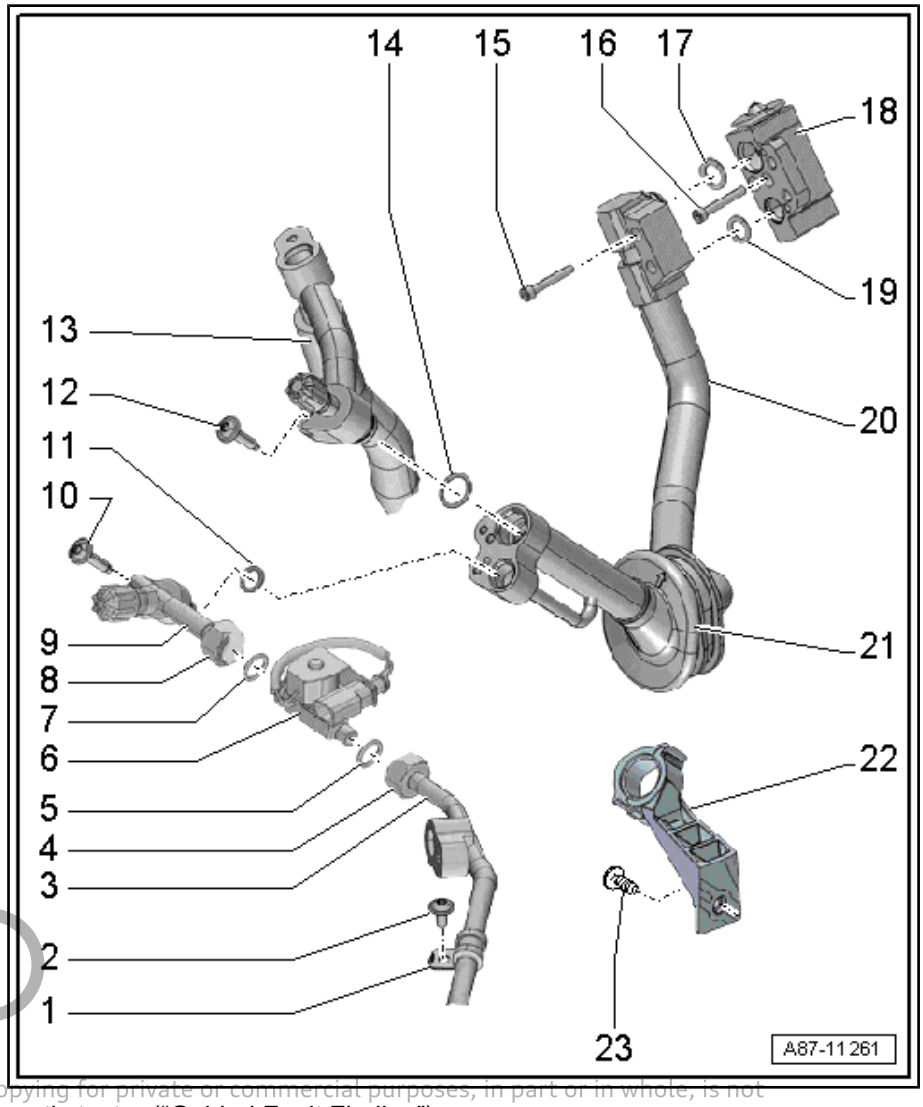
⇒ “2.4.2 Exploded view - refrigerant lines (front), vehicles with high-voltage system”, page 157

⇒ “2.4.3 Exploded view - refrigerant lines (rear), vehicles with high-voltage system”, page 159

### 2.4.1 Exploded view - refrigerant lines, expansion valve, internal heat exchanger

**Note**

*The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*




**1 - Retaining clip**

**2 - Bolt**

**3 - Refrigerant line (high-pressure side)**

- ❑ From condenser
- ❑ Detaching and attaching refrigerant line ⇒ page 209
- ❑ Removing and installing ⇒ page 205

**4 - Union nut**

- ❑ 16.5 Nm

**5 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**6 - Refrigerant shut-off valve ( - N516- / -V424- )**

- ❑ Different designations, depending on vehicle ( refrigerant shut-off valve 1 for hybrid battery - N516- for Audi A6 hybrid and refrigerant shut-off valve - V424- for Audi A6 e-tron) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- ❑ Fitted in plenum chamber (left-side)
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)
- ❑ Removing and installing ⇒ page 577

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**7 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**8 - Union nut**

- ❑ 16.5 Nm

**9 - Refrigerant line (high-pressure side)**

- ❑ To internal heat exchanger
- ❑ Removing and installing ⇒ page 187

**10 - Bolt - M6**

- ❑ 9 Nm

**11 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**12 - Bolt - M6**

- ❑ 9 Nm

**13 - Refrigerant line (low-pressure side)**

- ❑ To internal heat exchanger

- ❑ Removing and installing ⇒ page 183
- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

**14 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**15 - Bolt - M8**

- ❑ 2x
- ❑ 9 Nm

**16 - Bolt**

- ❑ 2x
- ❑ 5.5 Nm

**17 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**18 - Expansion valve**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Detaching and attaching refrigerant line ⇒ page 187
- ❑ Removing and installing ⇒ page 190
- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

**19 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**20 - Refrigerant line with internal heat exchanger**

- ❑ The hot liquid refrigerant flowing on the high-pressure side supplies energy to the cold refrigerant vapour flowing on the low-pressure side, thus enhancing the efficiency of the air conditioner
- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ page 187

**21 - Grommet**

**22 - Bracket**

- ❑ For refrigerant line with internal heat exchanger

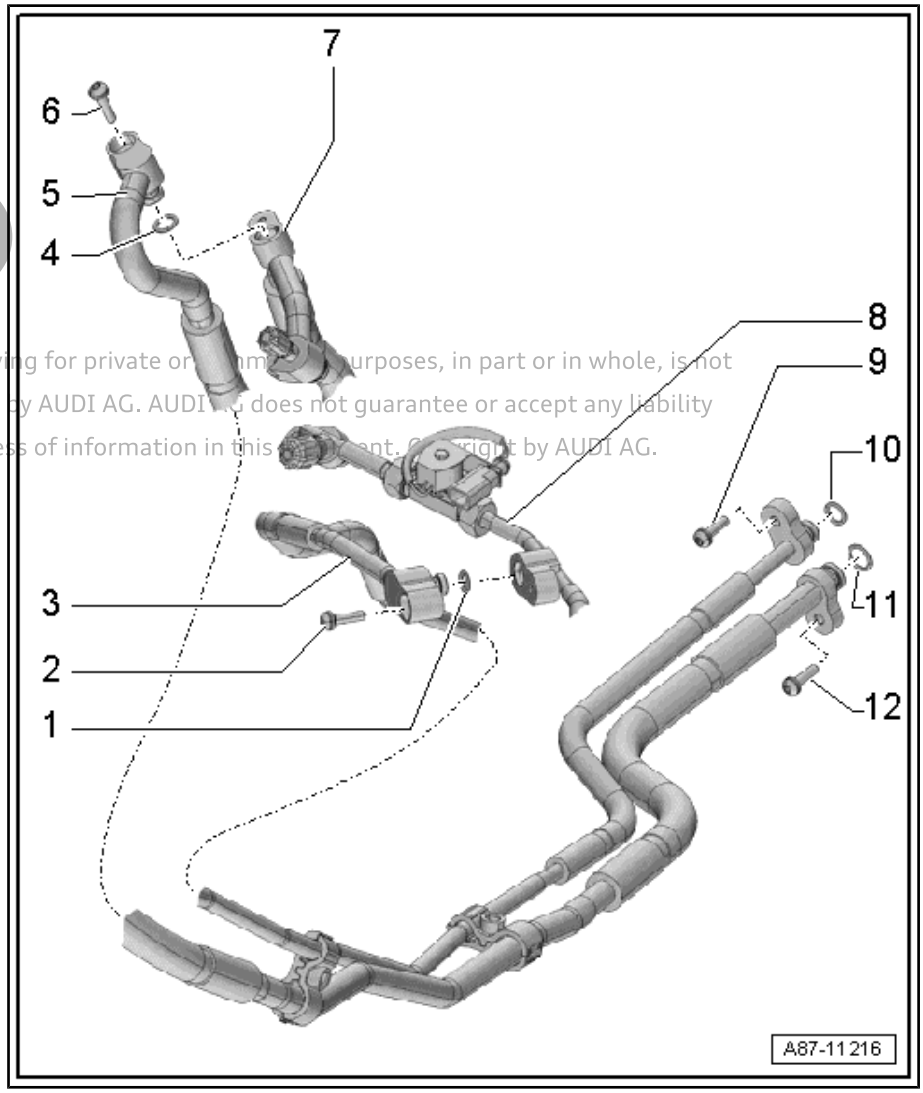
**23 - Bolt**

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## 2.4.2 Exploded view - refrigerant lines (front), vehicles with high-voltage system

**Note**

*The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*




**1 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**2 - Bolt**

- ❑ 9 Nm

**3 - Refrigerant line (high-pressure side)**

- ❑ At front of underbody (vehicle floor)
- ❑ Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ page 169

**4 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**5 - Refrigerant line (low-pressure side)**

- ❑ At front of underbody (vehicle floor)
- ❑ Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ page 169

**6 - Bolt**

- ❑ 9 Nm

**7 - Refrigerant line (low-pressure side)**

- ❑ Exploded view ⇒ page 155
- ❑ Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

**8 - Refrigerant line (high-pressure side)**

- ❑ Exploded view ⇒ page 155

**9 - Bolt**

- ❑ 9 Nm

**10 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**11 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**12 - Bolt**

- ❑ 9 Nm

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## 2.4.3 Exploded view - refrigerant lines (rear), vehicles with high-voltage system

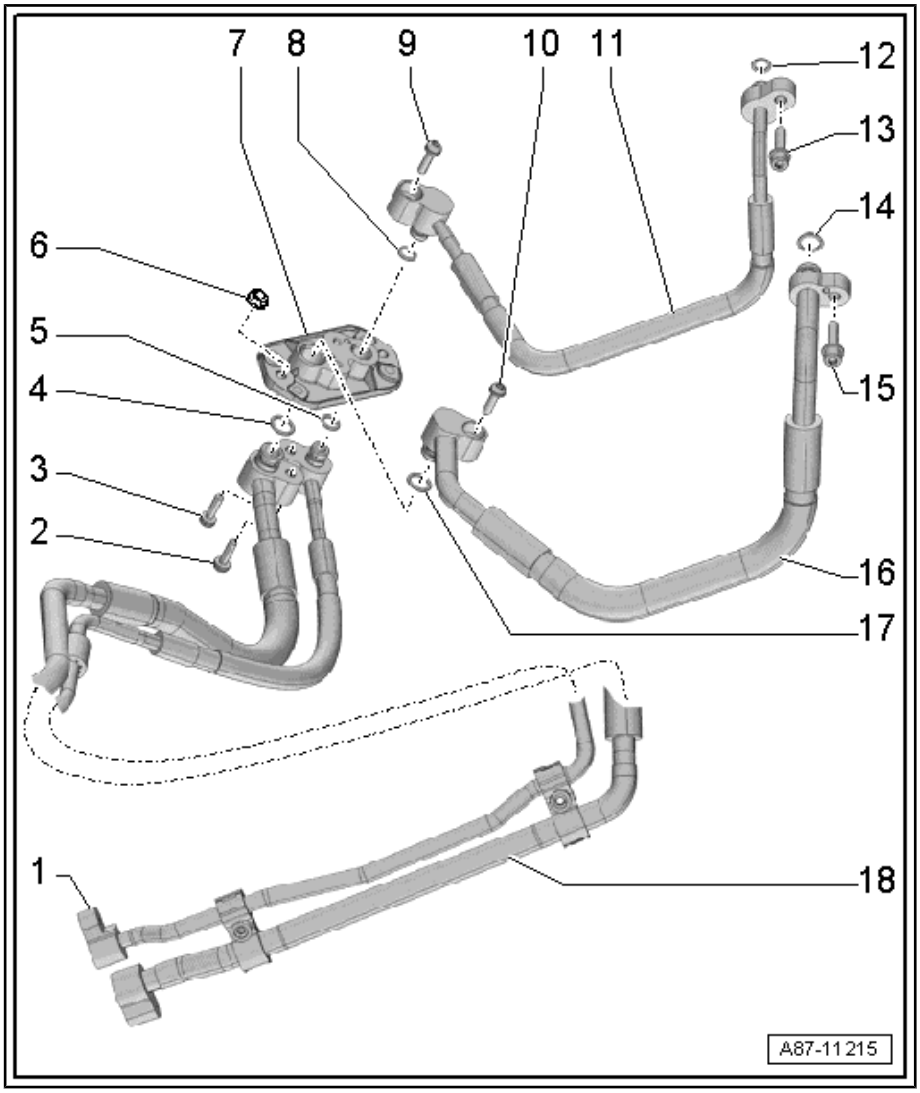
**Exploded view - refrigerant lines (rear), Audi A6 hybrid**
⇒ page 159

**Exploded view - refrigerant lines (rear), Audi A6 e-tron**
⇒ page 160

**Exploded view - refrigerant lines (rear), Audi A6 hybrid**

**Note**

*The vehicles in this series with high-voltage systems are all fitted with refrigerant circuits charged with refrigerant R134a.*




**1 - Refrigerant line (high-pressure side)**
- ❑ On vehicle floor (rear)
- ❑ Removing and installing ⇒ page 173

**2 - Bolt**
- ❑ 9 Nm

**3 - Bolt**
- ❑ 9 Nm

**4 - O-ring**
- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**5 - O-ring**
- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**6 - Nut**
- ❑ 2x
- ❑ 8 Nm

**7 - Leadthrough for refrigerant lines into luggage compartment**
- ❑ Removing and installing ⇒ page 177

**8 - O-ring**
- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**9 - Bolt**
- ❑ 9 Nm

**10 - Bolt**
- ❑ 9 Nm

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**11 - Refrigerant line (high-pressure side)**

- ❑ To battery cooling module in luggage compartment
- ❑ Removing and installing ⇒ page 181

**12 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**13 - Bolt**

- ❑ 9 Nm

**14 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**15 - Bolt**

- ❑ 9 Nm

**16 - Refrigerant line (low-pressure side)**

- ❑ To battery cooling module in luggage compartment
- ❑ Removing and installing ⇒ page 181

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**17 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**18 - Refrigerant line (low-pressure side)**

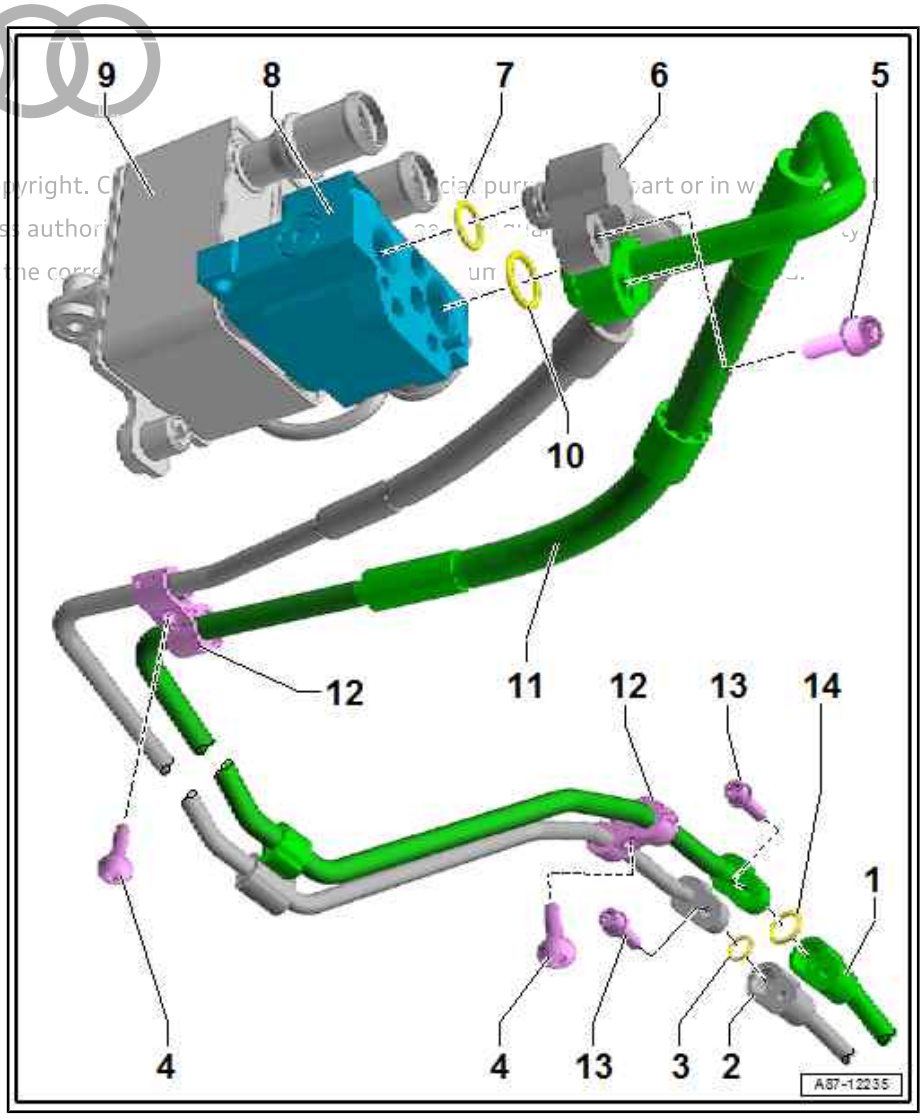
- ❑ On vehicle floor (rear)
- ❑ Removing and installing ⇒ page 173

**Exploded view - refrigerant lines (rear), Audi A6 e-tron**

**Note**

*The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

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**1 - Refrigerant line (low-pressure side)**

- ❑ At front of underbody (vehicle floor)
- ❑ Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ page 169

**2 - Refrigerant line (high-pressure side)**

- ❑ At front of underbody (vehicle floor)
- ❑ Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ page 169

**3 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**4 - Speed nut**

- ❑ 2.2 Nm

**5 - Bolt**

M6 - 9 Nm

M8 - 25 Nm

**6 - Refrigerant line (high-pressure side)**

- ❑ On vehicle floor (rear)
- ❑ Removing and installing ⇒ page 173
- ❑ Detach from expansion valve ⇒ page 196

**7 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**8 - Expansion valve with refrigerant shut-off valve 2 - N640-**

- ❑ Removing and installing ⇒ page 196

**9 - High-voltage battery heat exchanger (evaporator)**

- ❑ Removing and installing ⇒ page 199

**10 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**11 - Refrigerant line (low-pressure side)**

- ❑ On vehicle floor (rear)
- ❑ Removing and installing ⇒ page 173
- ❑ Detach from expansion valve ⇒ page 196

**12 - Bracket**

- ❑ For refrigerant lines

**13 - Bolt**

- ❑ 9 Nm

**14 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

## 2.5 Removing and installing refrigerant pressure sender ( -G395- / -G65- )

⇒ "2.5.1 Notes on refrigerant pressure sender ( G395 / G65 )", page 162

⇒ "2.5.2 Removing and installing refrigerant pressure sender ( G395 / G65 ) - Audi A6/A7", page 163

⇒ "2.5.3 Removing and installing refrigerant pressure and temperature sender G395 - Audi RS 6/RS 7", page 164

### 2.5.1 Notes on refrigerant pressure sender ( -G395- / -G65- )

**Note**

- *Different designation (depending on vehicle). On the A6 e-tron, this sender is referred to as the high-pressure sender - G65- . On this vehicle, it exchanges data with the thermal management control unit - J1024- . On all vehicles except the Audi A6 e-tron, this sender is referred to as the refrigerant pressure and temperature sender - G395- . On these vehicles, it exchanges data with the operating unit ( Climatronic control unit - J255- ) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *The power supply for the high-pressure sender - G65- is provided via the thermal management coolant pump relay - J1141- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations on the Audi A6 e-tron.*
- *The cooling output cannot be checked if -G395- ( -G65- ) has been removed; the operating unit ( Climatronic control unit - J255- or thermal management control unit - J1024- ) does not switch on the air conditioner compressor ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *The refrigerant circuit remains closed when removing -G395- ( -G65- ) (connection with valve).*
- *This vehicle should only be fitted with a refrigerant pressure and temperature sender - G395- ( high-pressure sender - G65- ) which exchanges data with the corresponding control unit via the data bus ⇒ Electronic parts catalogue .*
- *These vehicles must not be fitted with senders ( -G395- / -G65- ) which transmit square-wave signals.*
- *RS models are fitted with a shallower condenser. With this condenser, -G395- is not accessible from above.*

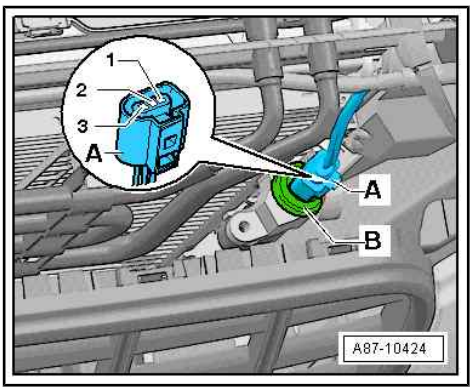
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## 2.5.2 Removing and installing refrigerant pressure sender ( -G395- / -G65- ) - Audi A6/A7

**Note**

*Different designation (depending on vehicle). On the A6 e-tron, this sender is referred to as the high-pressure sender - G65- . On this vehicle, it exchanges data with the thermal management control unit - J1024- . On all vehicles except the Audi A6 e-tron, this sender is referred to as the refrigerant pressure and temperature sender - G395- . On these vehicles, it exchanges data with the operating unit ( Climatronic control unit - J255- ) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

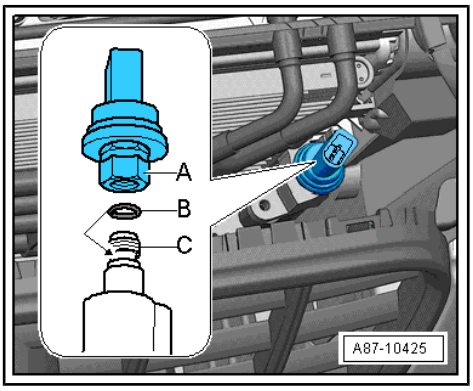
### Removing




– Remove lock carrier cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing attachments .
– Unplug electrical connector -A-.
– Unscrew refrigerant pressure sender ( -G395- / -G65- ) -item B-.

### Installing

Install in reverse order of removal; note the following:




### Tightening torques

♦ Tightening torque: 5 Nm
⇒ “2.2.1 Exploded view - condenser, vehicles with high-voltage system”, page 148

**Note**

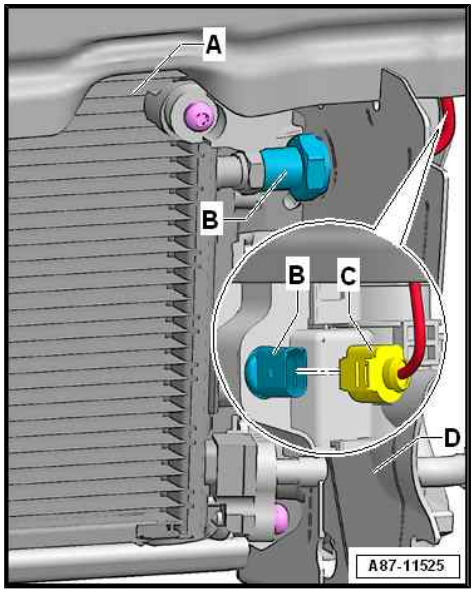
*O-ring -B- ⇒ page 97 ; for correct version refer to ⇒ Electronic parts catalogue .*

– Tighten refrigerant pressure sender ( -G395- / -G65- ) -item A-.
– As a final step, interrogate event memory and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

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## 2.5.3 Removing and installing refrigerant pressure and temperature sender - G395- - Audi RS 6/RS 7

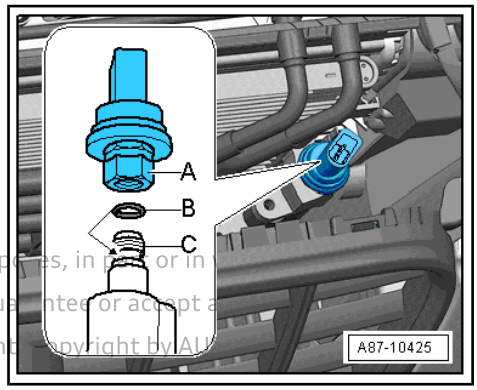
### Removing




– Remove bumper cover (front) ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing bumper cover .
– Unplug electrical connector -C-.
– Remove air duct -D-.
– Remove refrigerant pressure and temperature sender - G395- -item B-.

### Installing

Install in reverse order of removal; note the following:




### Tightening torques

♦ Tightening torque: 5 Nm
⇒ “2.2.1 Exploded view - condenser, vehicles with high-voltage system”, page 148

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**Note**

*O-ring -B- ⇒ page 97 ; for correct version refer to ⇒ Electronic parts catalogue .*

– Secure refrigerant pressure and temperature sender - G395- -item A-.
– As a final step, interrogate event memory and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

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

**Note**

- *The following describes the procedure for checking a "Denso" air conditioner compressor (type "6 SEU 14") without air conditioning system magnetic clutch - N25- . Perform the check in the same manner on vehicles with a different type of compressor or a compressor from a different manufacturer.*
- *The difference on air conditioner compressors with -N25- is that a 3-pin connector may be installed ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *In the following the checking procedure is described for vehicles with a 6-cyl. TDI engine; the procedure may differ for vehicles with a different engine (4-cyl., 6-cyl. or 8-cyl. engine).*
- *Not fitted on vehicles with an electrically driven air conditioner compressor*
- *Certain malfunctions of -N280- (e.g. sticking valve or open circuit in coil) can lead to problems with air conditioner compressor (no cooling output from air conditioner, evaporator icing up etc.). If -N280- (and not air conditioner compressor itself) is cause of problem, air conditioner compressor can be serviced by renewing -N280- ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Renewing components of refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*
- *-N280- is not available as a replacement part for all air conditioner compressors. If -N280- cannot be obtained separately for a particular air conditioner compressor (different versions available), the entire air conditioner compressor must be renewed if problems occur ⇒ Electronic parts catalogue .*
- *On air conditioner compressors with -N25- , you may have to discard plug contacts from connector housing on -N280- before renewing -N280- ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Renewing components of refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*

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### Preparations

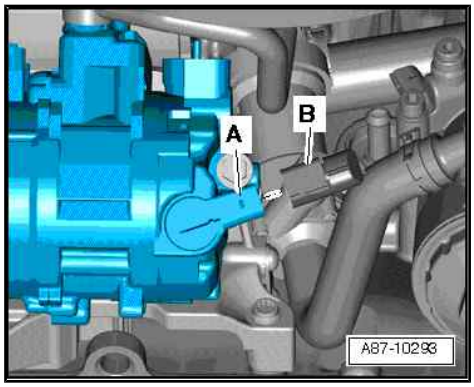
– Switch off ignition.

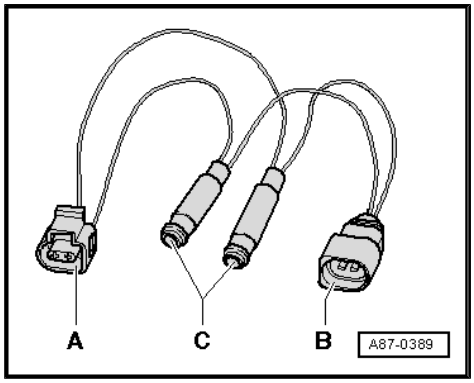
– Remove noise insulation (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation .

### Test sequence

– Unplug electrical connector -B- at air conditioner compressor regulating valve - N280- -A-.

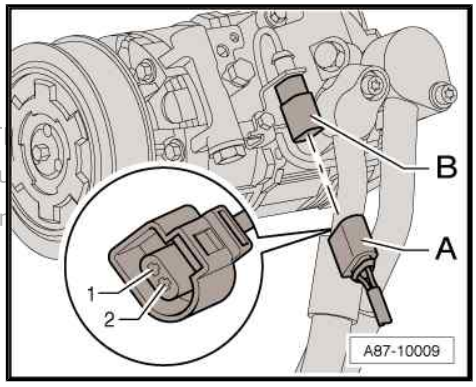
– Use an adapter cable to re-connect connector -A- and connector -B- at air conditioner compressor regulating valve - N280- .




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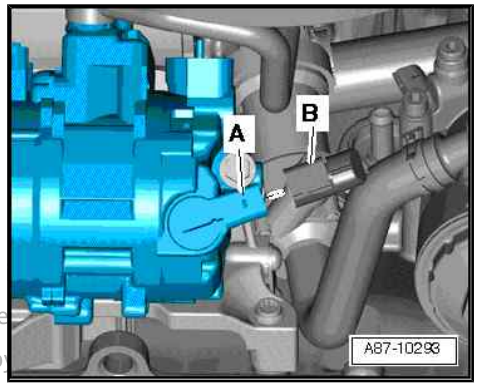
**Note**




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- *Different adapter cables must be used, depending on the version of the air conditioner compressor (with or without air conditioning system magnetic clutch -N25-). For example, test instrument adapter/DSO (3-pin) - VAS 5257- must be used for an air conditioner compressor without -N25-, and test instrument adapter/DSO (2-pin) - VAS 5256- must be used for an air conditioner compressor with -N25- . If no suitable adapter is available, you can establish the connection between connector -A- and connector -B- with components from the auxiliary measuring set - V.A.G 1594 C- .*
- *Alternatively, you can use an improvised adapter cable for this test. For this you will need e.g. one 2-pin connector each (-A- and -B-; part numbers 1J0 973 702 and 1J0 973 802 and the corresponding plug contacts), two commercially available sockets for banana plugs -C- and two cables (cross-section = 0.5 $mm^2$) for an air conditioner compressor without -N25- .*
- *The air conditioner compressor regulating valve - N280- is activated by the onboard supply control unit - J519- when requested by the air conditioner operating and display unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic, testing and information system VAS 5051 ("Guided Fault Finding") and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *The top illustration shows an air conditioner compressor without -N25- on which the 2-pin connector -A- to the vehicle wiring harness is plugged in directly at the air conditioner compressor regulating valve - N280- (connector -B-). Depending on the version of the air conditioner compressor, the connector -B- may also be provided with a short wire.*
- *The activation of the air conditioner compressor regulating valve - N280- is displayed in the measured value block of the onboard supply control unit - J519- . The maximum control current depends on the version of the operating and display unit ( Climatronic control unit - J255- ) ⇒ Vehicle diagnostic, testing and information system VAS 5051 ("Guided Fault Finding") and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *The measured current flowing via the air conditioner compressor regulating valve - N280- is displayed in the measured value blocks of the air conditioner operating and display unit ( Climatronic control unit - J255- ) and the onboard supply control unit - J519- ⇒ Vehicle diagnostic, testing and information system VAS 5051 ("Guided Fault Finding") .*
- *If the required actual current does not flow via the air conditioner compressor regulating valve - N280- , check the positive and earth connections of the onboard supply control unit - J519- and the wiring between -J519- and -N280- on the basis of the current flow diagram for open circuit, contact resistance and interchanged components ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

– Connect probe - VAS 5051/8- to adapter cables.
– Test lead (signal wire) to contact -2- of connector -B-
– Test lead (screen, earth) to contact -1- of connector -B-




**Note**

*On an air conditioner compressor with a different connector (e.g. a 3-pin connector on an air conditioner compressor with -N25- ), pay attention to the pin assignment when connecting the test cables ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

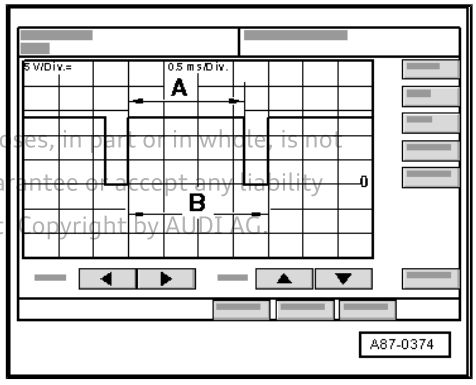
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– On vehicle diagnostic, testing and information system - VAS 5051/- , set testing mode DSO (Digital Storage Oscilloscope).
– Then select 5 V/div = 0.5 ms/div (5 V DC and 0.5 milliseconds per unit).
– Start engine.
– Set temperature on air conditioner operating and display unit ( Climatronic control unit - J255- ) to maximum cooling output.
– Press AC or A/C button (with lamp indicating when air conditioner compressor is switched on) on air conditioner operating and display unit ( Climatronic control unit - J255- ) to activate and deactivate air conditioner compressor regulating valve - N280- .

Depending on the setting of the air conditioner operating and display unit ( Climatronic control unit - J255- ), the display of the oscilloscope will show:

– In “OFF” or “AC off” mode (indicator lamp in “AC” or A/C button off), there is no square-wave signal ( air conditioner compressor regulating valve - N280- is not activated).

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




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**Note**

- *The illustration shows a signal with a duty cycle of approx. 80 %.*
- *The pulse width -A- is governed by the required cooling output and 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 onboard supply control unit - J519- on the basis of the request from the air conditioner operating and display 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 and display unit ( Climatronic control unit - J255- ) and the measured ambient influences govern the pulse width of the square-wave signal (duty cycle between 30 % and 100 %, the air conditioner compressor regulating valve - N280- is activated so that the compressor output required to obtain the specified temperatures is achieved).

**Note**

- *In “Auto” and “AC on” mode (indicator lamps in buttons on) and with the temperature set to “Lo”, the air conditioner compressor regulating valve - N280- is activated so that the maximum permissible current of approx. 0.65 A flows via the - N280- (maximum compressor output).*
- *In control mode, the activation time is governed by the required cooling output and the voltage of the vehicle's electrical system, for example; however, it is always long enough to achieve a mean current of 0.3 A.*

## 2.7 Disconnecting and attaching refrigerant lines

⇒ “2.7.1 Removing and installing refrigerant lines to rear of vehicle at front of underbody (vehicle floor) - vehicles with high-voltage system”, page 169

⇒ “2.7.2 Removing and installing rear refrigerant lines at underbody (vehicle floor) - vehicles with high-voltage system”, page 173

⇒ “2.7.3 Removing and installing leadthrough for refrigerant lines into luggage compartment - vehicles with high-voltage system”, page 177

⇒ “2.7.4 Removing and installing refrigerant lines to battery cooling module in luggage compartment - vehicles with high-voltage system”, page 181

### 2.7.1 Removing and installing refrigerant lines to rear of vehicle at front of underbody

## (vehicle floor) - vehicles with high-voltage system

**Note**

*The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

**WARNING**

***Working on vehicles with high-voltage wiring:***

- ***Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.***
- ***High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.***
- ***The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.***

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

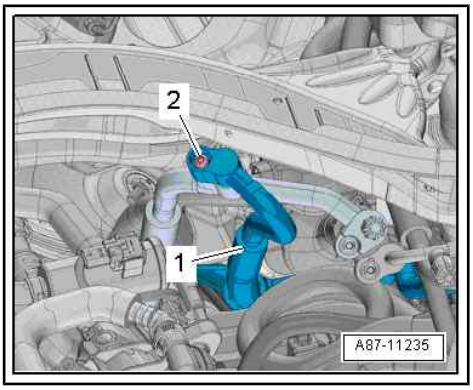
*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

### Special tools and workshop equipment required

- Removal lever - 80 - 200-

### Removing




– On vehicles with high-voltage system (Audi A6 e-tron), switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

– Switch off ignition.

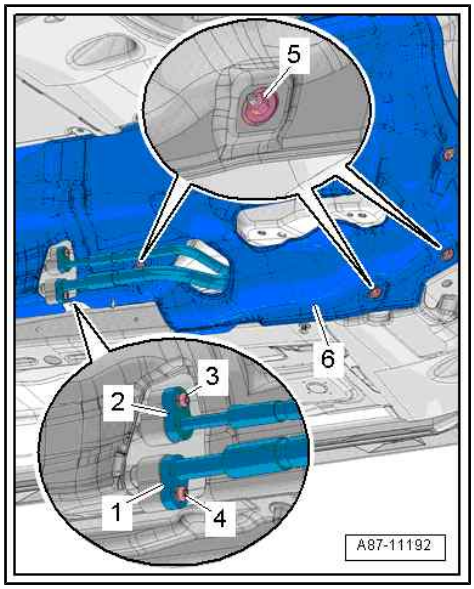
– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit (Air conditioner with refrigerant R134a; Refrigerant circuit; Working with the air conditioner service station), or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .

– Remove bolt -2- and disconnect refrigerant line -1-.

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

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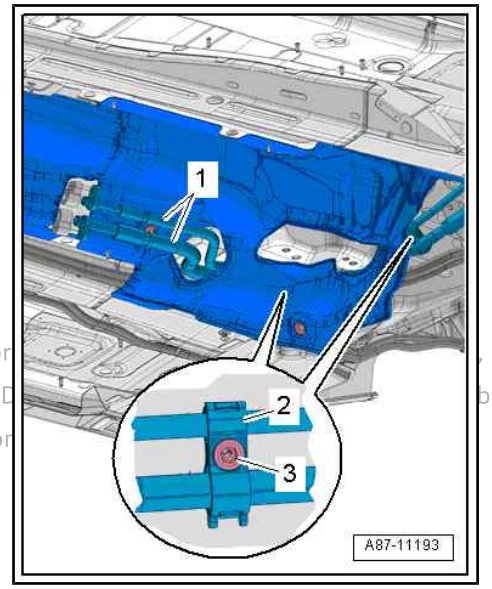
– Remove noise insulation (rear) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
– Remove cover (centre) for underbody (left-side) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim panels; Removing and installing underbody trim panels .
– Remove bolts -3 and 4- and disconnect refrigerant lines -1 and 2-.




**Note**

*Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue*

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .
– Unscrew nuts -5- from heat shield -6- for tunnel (centre) and press unfastened section slightly to the side.
– Unscrew nut -3- from brackets -2- for refrigerant lines.
– Detach refrigerant lines (front) -1- downwards.




### Installing

Install in reverse order of removal; note the following.

### Tightening torques

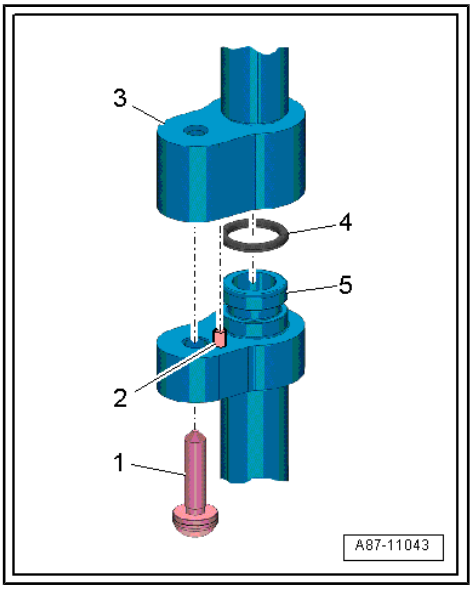
♦ ⇒ “2.4.2 Exploded view - refrigerant lines (front), vehicles with high-voltage system”, page 157

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**Note**

♦ *Observe fitting instructions for O-rings ⇒ page 97 .*
♦ *After attaching, check routing of refrigerant lines. They must be inserted in brackets provided and should not make contact with other components.*

– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .
– Clean refrigerant line connections -3 and 5- and check for damage.
– Make sure that O-rings -4- are correctly seated in grooves of corresponding mounting.
– Check that dowel pin -2- (not fitted on all connections) is not damaged and is seated correctly.
– Tighten bolt -1-.
– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .
– Re-install remaining components (removed earlier).
– For electrical connections and routing, refer to ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
– Switch on ignition.
– Interrogate event memory of operating unit ( Climatronic control unit - J255- ) and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .




**Note**

*Observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

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## 2.7.2 Removing and installing rear refrigerant lines at underbody (vehicle floor) - vehicles with high-voltage system

**Note**

*The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

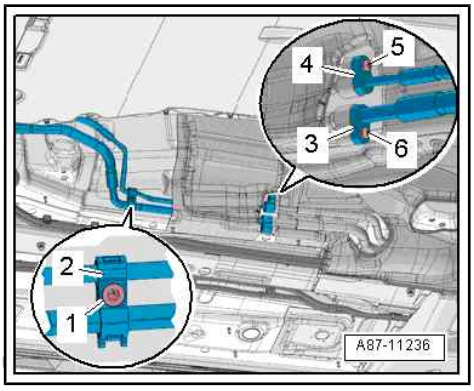
- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

### Removing

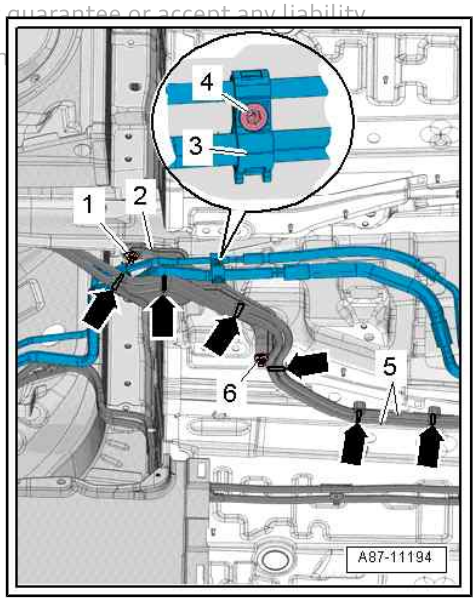
- On vehicles with high-voltage system (Audi A6 e-tron), switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .
- Switch off ignition.
- Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .
- Remove exhaust system (rear) ⇒ Rep. gr. 26 ; Exhaust pipes/ silencers; Exploded view - silencers .
- Remove cover (centre) for underbody ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim panels; Removing and installing underbody trim panels .
- Remove heat shield for tunnel (rear) ⇒ General body repairs, exterior; Rep. gr. 66 ; Strips / trim panels / extensions; Removing and installing heat shield for floor .
- Remove heat shield for exhaust system (centre) ⇒ General body repairs, exterior; Rep. gr. 66 ; Strips / extensions / trim panels; Removing and installing heat shield for floor .
- Remove cross-piece ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim panels; Removing and installing tunnel cross-piece .
- Lower rear axle until coil spring on left side can be moved to the side ⇒ Running gear, axles, steering; Rep. gr. 42 ; Subframe; Exploded view - subframe .
- Remove bolts -5 and 6- and detach refrigerant lines -3 and 4-.




**Note**

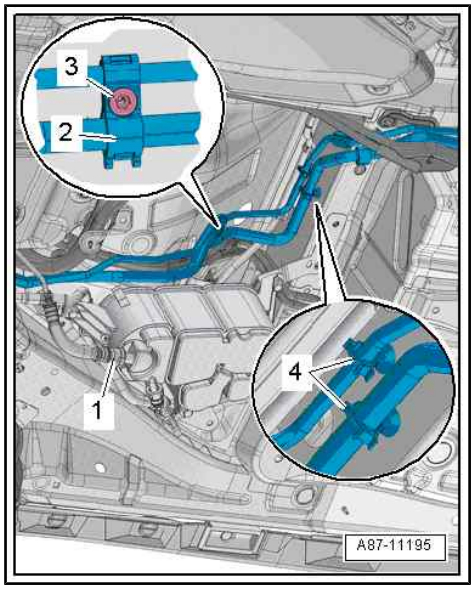
*Different types of refrigerant lines on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue*

- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .
- Unscrew nut -1- from bracket -2- for refrigerant lines.
- Move clear high-voltage cables -5- at bracket and underbody (vehicle floor) -arrows-.
- Unscrew nut -4- from bracket -3- for refrigerant lines.
- Unscrew nuts -1 and 6- and detach bracket -2- for high-voltage cables.



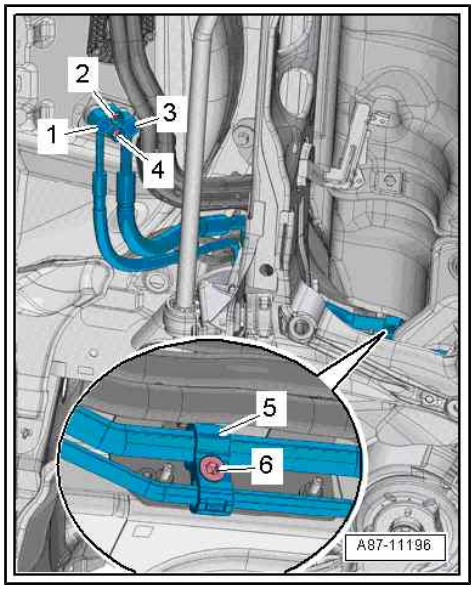

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– Unscrew nut -3- from bracket -2- for refrigerant lines.
– Open quick-release retainer -4- and move refrigerant lines clear.
– Press release tab and disconnect line -1- from secondary air pump.




Audi A6 hybrid

– Unscrew nut -6- from bracket -5- for refrigerant lines.




**Note**

*Different types of refrigerant lines on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue*

– Remove bolts -2 and 4- and detach refrigerant lines -1 and 3-.

Audi A6 e-tron

– Disconnect refrigerant lines from expansion valve with refrigerant shut-off valve 2 - N640- ⇒ page 196 .

All vehicles with high-voltage system

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .
– Take out refrigerant lines between rear axle and underbody (vehicle floor) towards front.

### Installing

Install in reverse order of removal; note the following.

### Tightening torques

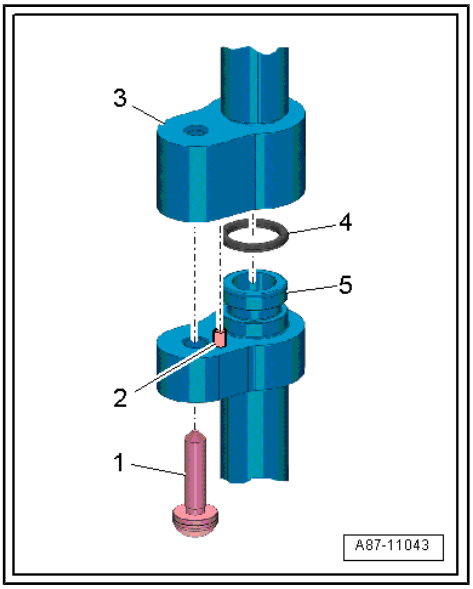
- ⇒ “2.4.2 Exploded view - refrigerant lines (front), vehicles with high-voltage system”, page 157

**Note**

- *Observe fitting instructions for O-rings ⇒ page 97 .*
- *After attaching, check routing of refrigerant lines. They must be inserted in brackets provided and should not make contact with other components.*

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– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .
– Clean refrigerant line connections -3 and 5- and check for damage.
– Make sure that O-rings -4- are correctly seated in grooves of corresponding mounting.
– Check that dowel pin -2- (not fitted on all connections) is not damaged and is seated correctly.
– Tighten bolts -1-.
– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .
– Re-install remaining components (removed earlier).
– For electrical connections and routing, refer to ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
– Switch on ignition.
– As a final step, interrogate event memory and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .




**Note**

*Observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .*

## 2.7.3 Removing and installing leadthrough for refrigerant lines into luggage compartment - vehicles with high-voltage system

**Note**

- *Only on Audi A6 hybrid*
- *The vehicles in this series with high-voltage systems are all fitted with refrigerant circuits charged with refrigerant R134a.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

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**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

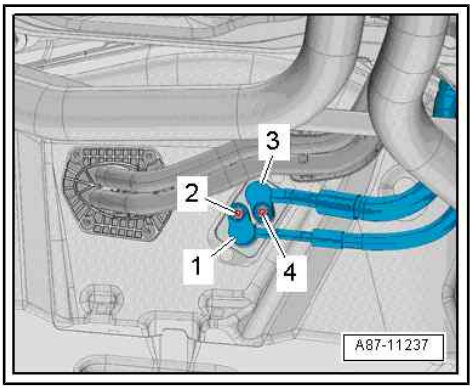
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### Removing

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Remove bolts -2 and 4- and detach refrigerant lines -1 and 3- from underbody (vehicle floor).

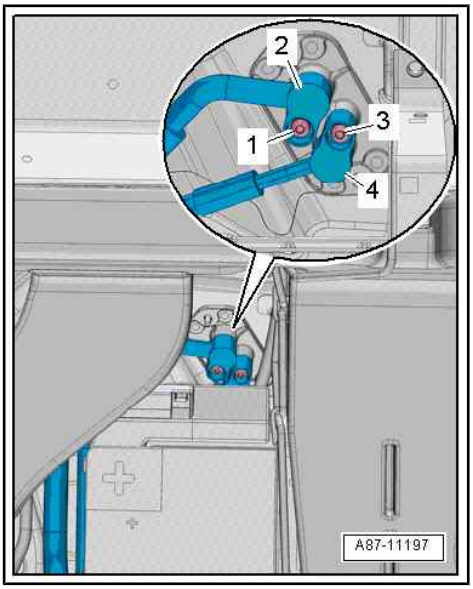
– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .




– Remove luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Exploded view - luggage compartment floor .

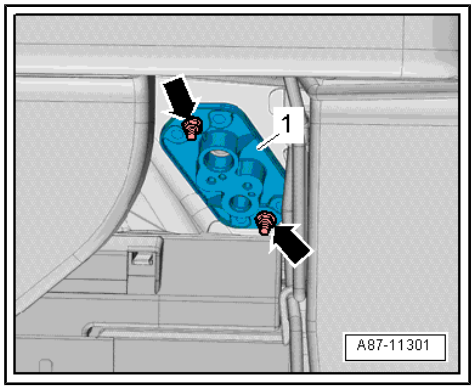
– Remove bolts -1 and 3- and detach refrigerant lines -2 and 4-.

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .




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– Unscrew nuts -arrows- and detach leadthrough for refrigerant lines -1-.




### Installing

Install in reverse order of removal; note the following.

### Tightening torques

- ⇒ “2.4.3 Exploded view - refrigerant lines (rear), vehicles with high-voltage system”, page 159

### Note

- *If seal in leadthrough is damaged, apply silicone adhesive sealant - D 176 001 A3- or similar at this location ⇒ Electronic parts catalogue .*
- *The bonding surface must be clean and free from grease when applying the silicone adhesive sealant.*
- *Observe fitting instructions for O-rings ⇒ page 97 .*
- *After attaching, check routing of refrigerant lines. They must be inserted in brackets provided and should not make contact with other components.*

– Install refrigerant lines to battery cooling module on rear of underbody (vehicle floor) ⇒ page 173 .

– Install refrigerant lines to battery cooling module in luggage compartment ⇒ page 181 .

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Re-install remaining components (removed earlier).

– For electrical connections and routing, refer to ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

– Switch on ignition.

– As a final step, interrogate event memory and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

### Note

*Also observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

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## 2.7.4 Removing and installing refrigerant lines to battery cooling module in luggage compartment - vehicles with high-voltage system

**Note**

- *Only on Audi A6 hybrid*
- *The vehicles in this series with high-voltage systems are all fitted with refrigerant circuits charged with refrigerant R134a.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

**Special tools and workshop equipment required**

- Engine bung set - VAS 6122-

**Removing**

– Switch off ignition.

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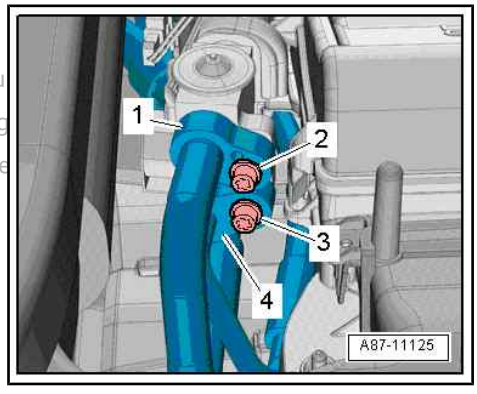
– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Remove luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Exploded view - luggage compartment floor .

– Remove bolt -2- and disconnect refrigerant line -1-.

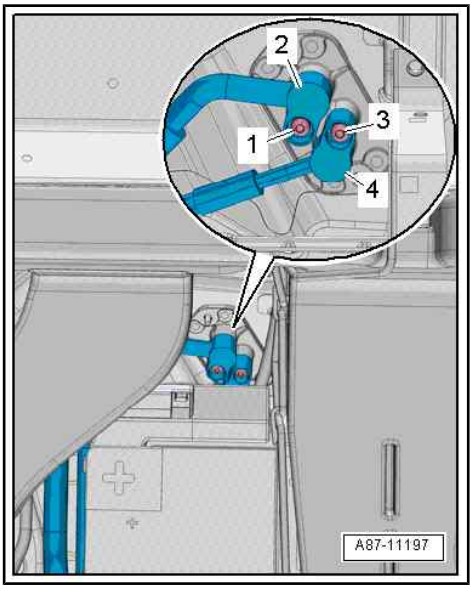
– Remove bolt -3- and disconnect refrigerant line -4-.

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .



– Remove bolts -1 and 3- and disconnect and remove refrigerant lines -2 and 4-.

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .




**Installing**

Install in reverse order of removal; note the following.

**Tightening torques**

◆ ⇒ “2.4.3 Exploded view - refrigerant lines (rear), vehicles with high-voltage system”, page 159

**Note**

◆ *Observe fitting instructions for O-rings ⇒ page 97 .*

◆ *After attaching, check routing of refrigerant lines. They must be inserted in brackets provided and should not make contact with other components.*

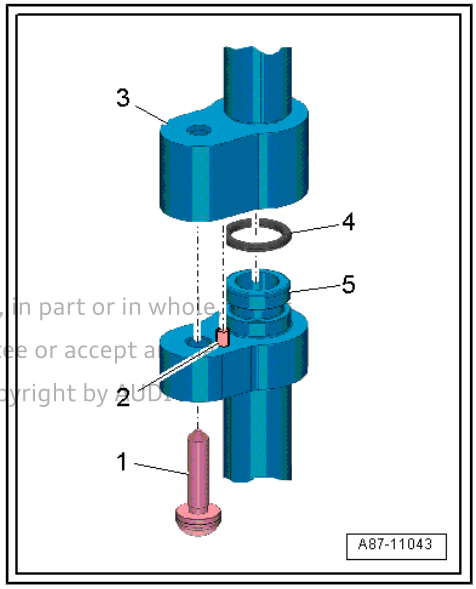
– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .

– Clean refrigerant line connections -3 and 5- and check for damage.

– Make sure that O-rings -4- are correctly seated in grooves of corresponding mounting.

– Check that dowel pin -2- (not fitted on all connections) is not damaged and is seated correctly.

– Tighten bolts -1-.




– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Re-install remaining components (removed earlier).

– For electrical connections and routing, refer to ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

– Switch on ignition.

– As a final step, interrogate event memory and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

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**Note**

*Also observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

## 2.8 Removing and installing refrigerant lines with internal heat exchanger

**Vehicles with high-voltage system:**

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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DANGER!

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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All vehicles:

WARNING

*Danger from escaping pressurised refrigerant.*

*Danger of frostbite on skin and other parts of the body.*

- *Extract the refrigerant and then immediately open up the refrigerant circuit.*
- *Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.*

Note

*Specific tools are required when discharging the refrigerant circuit, and this work may only be performed by qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .*

### Special tools and workshop equipment required

- Engine bung set - VAS 6122-

### Removing

– On vehicles with high-voltage system (Audi A6 e-tron), switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

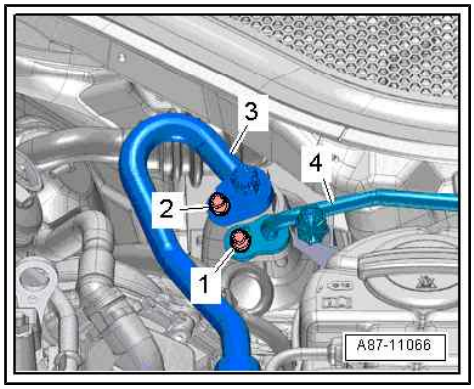
– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .

– Vehicles with high-voltage system (hybrid vehicles):

- Detach refrigerant line from shut-off valve 1 ⇒ page 574 .
- Disconnect refrigerant line (front) to battery cooling module from refrigerant line to internal heat exchanger ⇒ page 169 .

– Remove bolts -1 and 2- and detach refrigerant lines -3 and 4-.

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .




### Installing

Install in reverse order of removal; note the following:

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### Tightening torques

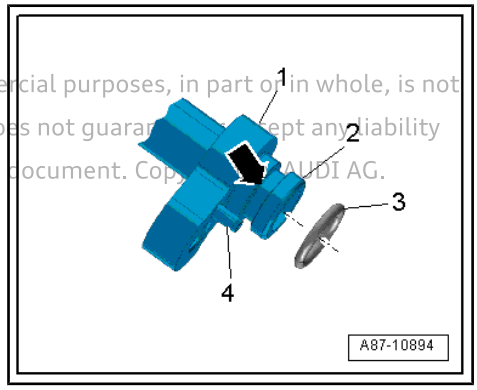
- ⇒ “2.4.1 Exploded view - refrigerant lines, expansion valve, internal heat exchanger”, page 155

– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .

– If fitted, check that dowel pin -4- is not damaged and is seated correctly.

– Check guide ring -2- at refrigerant line connection for damage.

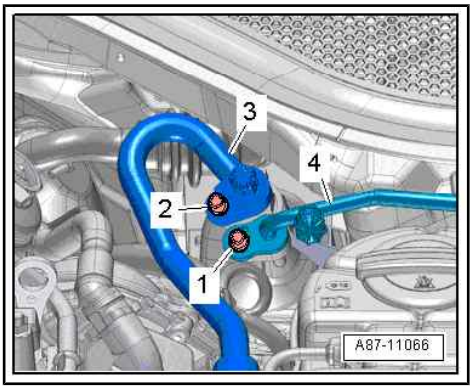
– Insert O-ring -3- in groove -arrow- in connection for refrigerant line -1-.




**Note**

- *Lubricate O-rings lightly with refrigerant oil before fitting ⇒ page 97 .*
- *Make sure O-rings are seated correctly in groove -arrow- of corresponding refrigerant line.*
- *After attaching, check routing of refrigerant lines. They must be inserted in brackets provided and should not make contact with other components.*

– Insert refrigerant lines -3 and 4- in corresponding connections.
– Tighten bolts -1 and 2-.
– Vehicles with high-voltage system (hybrid vehicles):
♦ Install refrigerant line from shut-off valve 1 ⇒ page 574 .
♦ Install refrigerant line (front) to battery cooling module ⇒ page 169 .
– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .
– As a final step, interrogate event memory and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).




## 2.9 Removing and installing internal heat exchanger

**Special tools and workshop equipment required**

♦ Engine bung set - VAS 6122-

**Removing**

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .
– Remove plenum chamber partition panel ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber partition panel .

**Note**

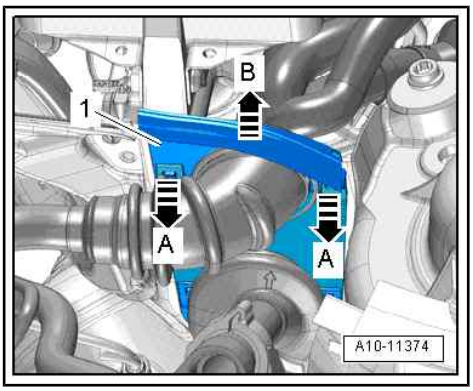
*On vehicles in which the coolant hose is routed through the plenum chamber partition panel it is only necessary to unfasten the plenum chamber partition panel.*

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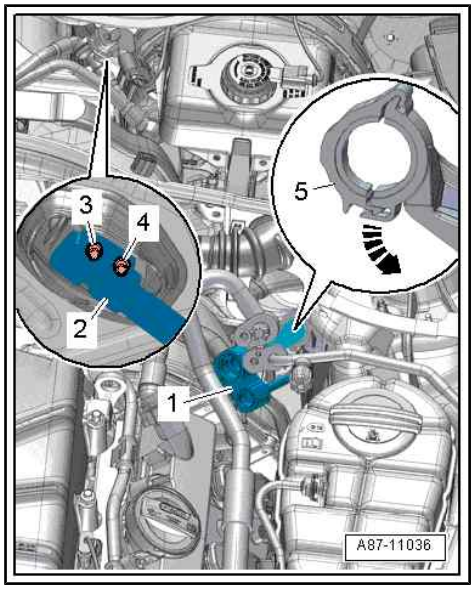
– Release fasteners -arrows A- and lift off pipe leadthrough -1- -arrow B-.
– Detach refrigerant lines from internal heat exchanger ⇒ page 183 .

Vehicles with high-voltage system (hybrid vehicles):

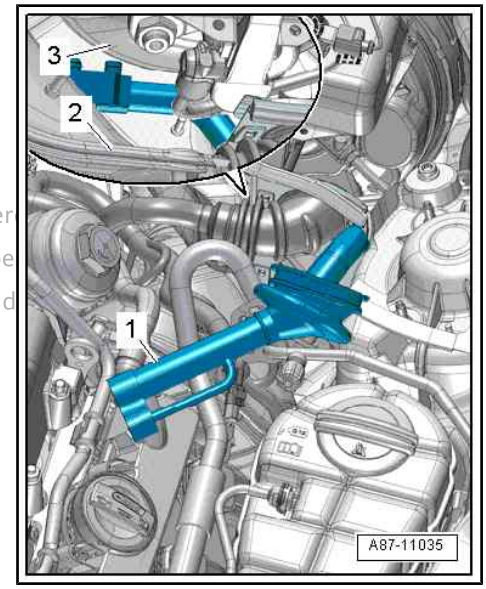
♦ Remove refrigerant line from shut-off valve 1 ⇒ page 574 .
♦ Remove refrigerant line (front) to battery cooling module ⇒ page 169 .



– Move internal heat exchanger -1- clear at bracket; to do so, release clip -5- -arrow- and open.
– Remove bolts -3, 4-.
– Detach refrigerant line -2- with internal heat exchanger from expansion valve.
– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .




– Take out refrigerant line -1- with internal heat exchanger towards front, as shown.
– Vehicles in which coolant hose is routed through plenum chamber partition panel: Push plenum chamber partition panel -2- towards engine.
– Guide refrigerant line with internal heat exchanger through underneath brake servo -3- (twist line while guiding through).




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### Installing

Install in reverse order of removal; note the following:

**Tightening torques**

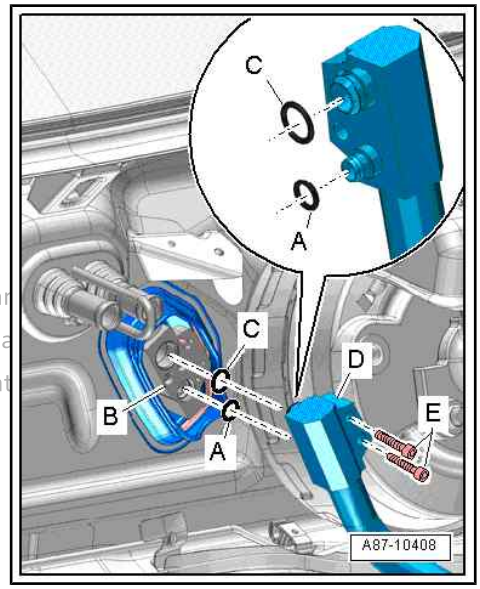
- ⇒ "2.4.1 Exploded view - refrigerant lines, expansion valve, internal heat exchanger", page 155

– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .

– Clean connections at expansion valve -B- and at internal heat exchanger -D- and check for damage.

– Thoroughly clean connection area of refrigerant lines and check for damage.

– Insert O-rings -A and C- in groove on connection of internal heat exchanger.




**Note**

- *Coat O-rings lightly with refrigerant oil before fitting ⇒ page 97 .*
- *Make sure O-rings are correctly seated in groove -arrow- of corresponding refrigerant line.*
- *After attaching, check routing of refrigerant lines. They must be inserted in brackets provided and should not make contact with other components.*

– Insert internal heat exchanger at expansion valve.

– Tighten bolts -E-.

– Attach refrigerant lines to internal heat exchanger ⇒ page 183 .

Vehicles with high-voltage system (hybrid vehicles):

- Install refrigerant line from shut-off valve 1 ⇒ page 574 .
- Install refrigerant line (front) to battery cooling module ⇒ page 169 .

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

*Observe notes on starting up air conditioner after installing air conditioner compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

– As a final step, interrogate event memory and erase any entries displayed ⇒ Vehicle diagnostic tester ("Guided Fault Finding").

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## 2.10 Removing and installing expansion valve

⇒ “2.10.1 Removing and installing expansion valve (front air conditioning unit)”, page 190

⇒ “2.10.2 Removing and installing expansion valve with N517 - vehicles with high-voltage system”, page 193

⇒ “2.10.3 Removing and installing expansion valve with N640 - vehicles with high-voltage system (Audi A6 e-tron)”, page 196

## 2.10.1 Removing and installing expansion valve (front air conditioning unit)

**WARNING**

*Danger from escaping pressurised refrigerant.*

*Danger of frostbite on skin and other parts of the body.*

- *Extract the refrigerant and then immediately open up the refrigerant circuit.*
- *Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.*

**Note**

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- *Specific tools are required when discharging the refrigerant circuit, and this work may only be performed by qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .*
- *Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue*

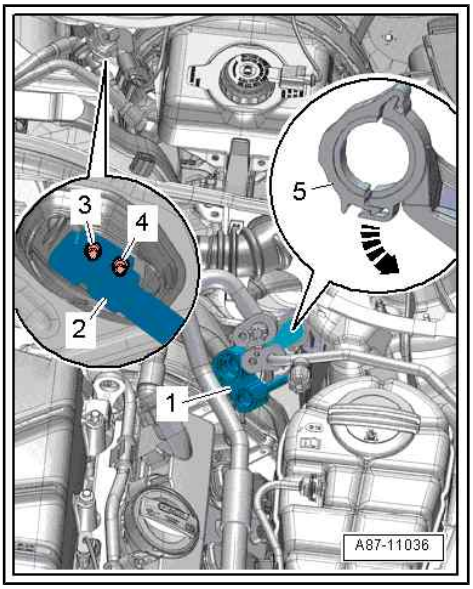
**Special tools and workshop equipment required**

- Engine bung set - VAS 6122-

**Note**

*After the air conditioner compressor is switched off, it might take a relatively long period on this vehicle before the pressure in the high-pressure side drops (the expansion valve is cold and the pressure in the low-pressure side increases rapidly after the compressor is switched off, the expansion valve is closed and the refrigerant can flow to the low-pressure side only slowly).*

### Removing




– Remove body brace ⇒ Running gear, axles, steering; Rep. gr. 40 ; Suspension strut, upper links; Removing and installing body brace .

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .

– If necessary, remove plenum chamber partition panel ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber partition panel .

**Note**

*There are several versions of the plenum chamber partition panel (depending on engine) ⇒ Electronic parts catalogue . Depending on the version of the plenum chamber partition panel (and thus on the engine), the space between the plenum chamber partition panel and the connection for the internal heat exchanger at the expansion valve is not large enough for bolts -3, 4- to be removed and for the internal heat exchanger to be detached from the expansion valve while the plenum chamber partition panel is installed (e.g. vehicles with a 6-cyl. TDI engine with two turbochargers).*

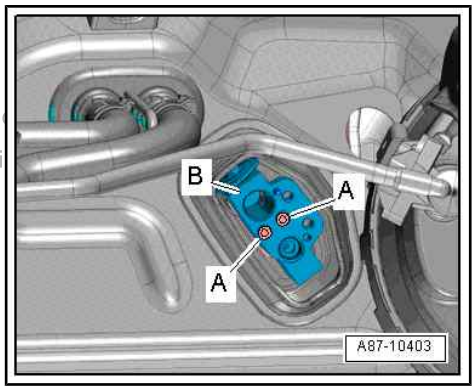
– Detach refrigerant lines from internal heat exchanger ⇒ page 183 .

– Move internal heat exchanger -1- clear at bracket; to do so, release clip -5- -arrow- and open.

– Remove bolts -3, 4-.

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

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .




– Unscrew bolts -A-.

– Detach expansion valve -B- from refrigerant lines to evaporator.

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

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### Installing

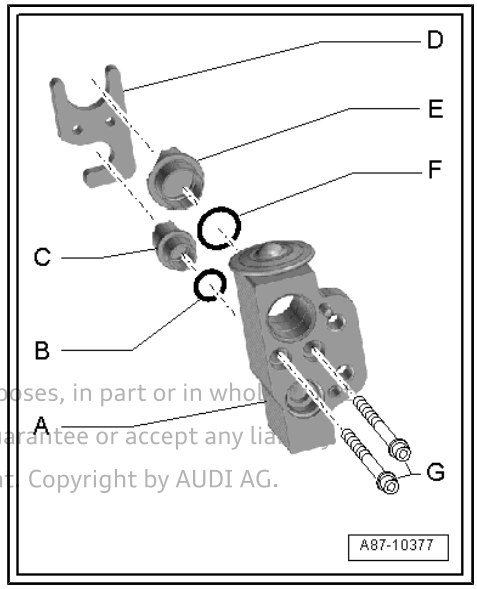
Install in reverse order of removal; note the following:

### Tightening torques

- ⇒ “2.4.1 Exploded view - refrigerant lines, expansion valve, internal heat exchanger”, page 155
- Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue

– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .

– Insert O-rings -B and F- at connecting pipes -C and E- to evaporator.




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**Note**

- *There are different versions of the expansion valve (identical housing, but different characteristic curve). For correct version refer to ⇒ Electronic parts catalogue .*
- *Check refrigerant pipes to evaporator for dirt and damage.*
- *Lubricate O-rings lightly with refrigerant oil before fitting ⇒ page 97 .*
- *Make sure O-rings are seated correctly on connecting pipes of evaporator.*
- *If the heat insulation -2- is not installed or is not installed properly, the output of the air conditioner may be reduced (change in set characteristic curve due to heat radiation).*

– Retainer -D- must be positioned on connecting pipes as shown.

– Insert expansion valve -A- at evaporator.

– Tighten bolts -G-.

– Install internal heat exchanger ⇒ page 187 .

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

*Observe notes on starting up air conditioner after installing air conditioner compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

– As a final step, interrogate event memory and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 2.10.2 Removing and installing expansion valve with -N517- - vehicles with high-voltage system

**Note**

- *Only on Audi A6 hybrid*
- *The vehicles in this series with high-voltage systems are all fitted with refrigerant circuits charged with refrigerant R134a.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

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**WARNING**

***Working on vehicles with high-voltage wiring:***

- ***Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.***
- ***High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.***
- ***The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.***

**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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**Removing**

– Switch off ignition.

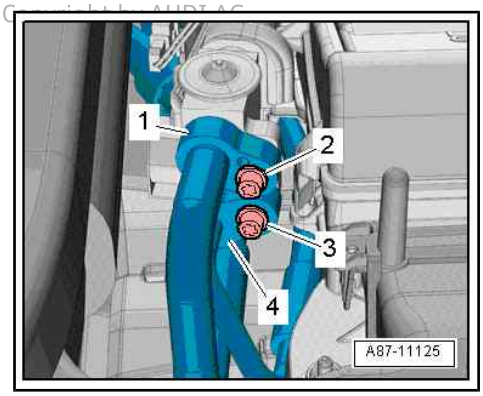
– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Remove luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Exploded view - luggage compartment floor .

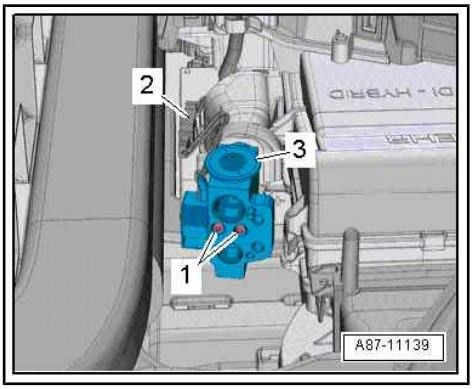
– Remove bolt -2- and disconnect refrigerant line -1-.

– Remove bolt -3- and disconnect refrigerant line -4-.

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .



– Take electrical connector -2- out of bracket and unplug.
– Remove bolts -1-.
– Remove refrigerant shut-off valve 2 for hybrid battery - N517- -item 3- from refrigerant lines to evaporator.
– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

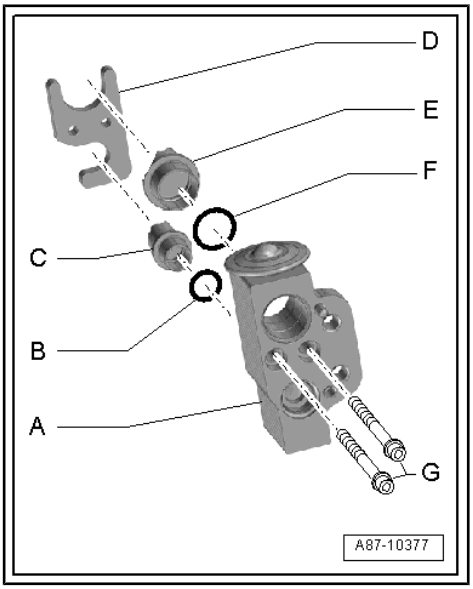



## Installing

Install in reverse order of removal; note the following:

### Tightening torques

♦ ⇒ “10.3 Exploded view - battery cooling module”, page 568
– Clean connecting pipes -C- and -E- to evaporator as well as connections at expansion valve and check for damage.




**Note**

♦ *There are different versions of the expansion valve (identical housing but different characteristic control curve); therefore it is important to observe the correct assignment ⇒ Electronic parts catalogue .*
♦ *Observe fitting instructions for O-rings ⇒ page 97 .*

– Renew O-rings -B- and -F-; for correct version refer to ⇒ Electronic parts catalogue .
– Coat O-rings lightly with refrigerant oil before installing ⇒ page 97 .
– Make sure retainer -D- is positioned correctly on connecting pipes -C- and -E- to evaporator.
– Tighten bolts -G-.
– Install refrigerant lines to battery cooling module in luggage compartment ⇒ page 181 .
– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .
– Re-install remaining components (removed earlier).
– Switch on ignition.
– Interrogate event memory of operating unit ( Climatronic control unit - J255- ) and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

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**Note**

*Also observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

## 2.10.3 Removing and installing expansion valve with -N640- - vehicles with high-voltage system (Audi A6 e-tron)

**Note**

- *Only on Audi A6 e-tron*
- *Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue*
- *The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

**WARNING**

***Working on vehicles with high-voltage wiring:***

- ***Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.***
- ***High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.***
- ***The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.***

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

**Note**

*Specific tools are required for discharging the refrigerant circuit; such work may only be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit (Air conditioner with refrigerant R134a; Refrigerant circuit; Working with the air conditioner service station).*

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### Removing

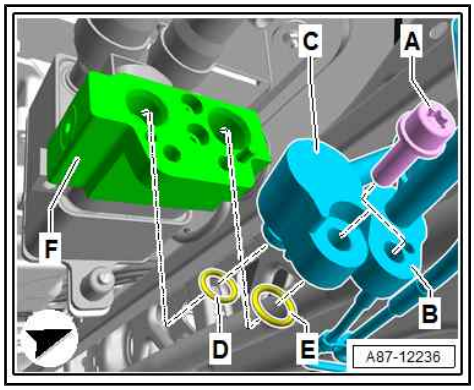
– On vehicles with high-voltage system (Audi A6 e-tron), switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

– Switch off ignition.

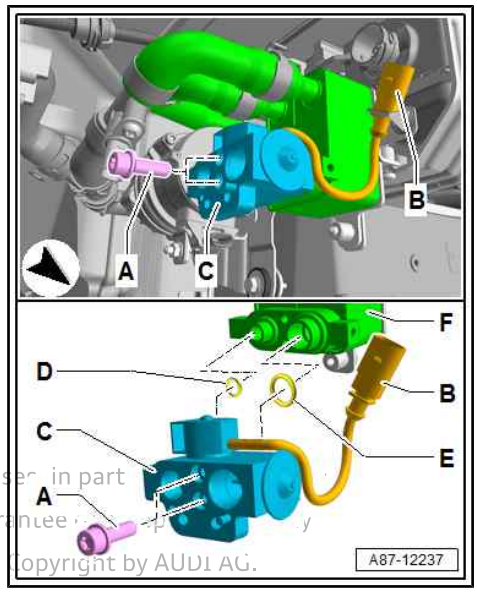
– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Remove diagonal strut (rear) for easier access ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 42 ; Subframe; Exploded view - subframe .

– Unscrew bolts -A-.
– Disconnect refrigerant lines -B, C- from expansion valve -F-.
– Seal off open refrigerant lines -B, C- and connections at expansion valve -F- with clean plugs from engine bung set - VAS 6122- .




– Unscrew bolts -A-.
– Take electrical connector -B- out of bracket and unplug.
– Detach expansion valve -C- (with refrigerant shut-off valve 2 - N640- ) from heat exchanger for high-voltage components -F-.
– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .




**Installing**

Install in reverse order of removal; note the following:

– Clean connecting pipes to heat exchanger for high-voltage components -F- as well as connections at expansion valve -C- and check for damage.

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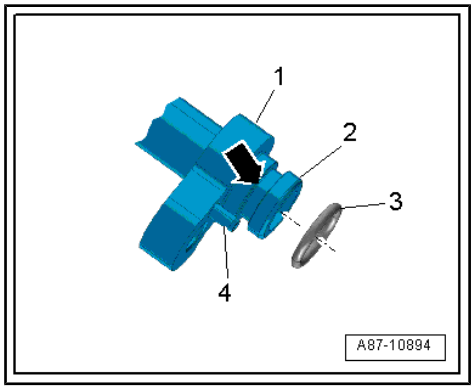
**Note**

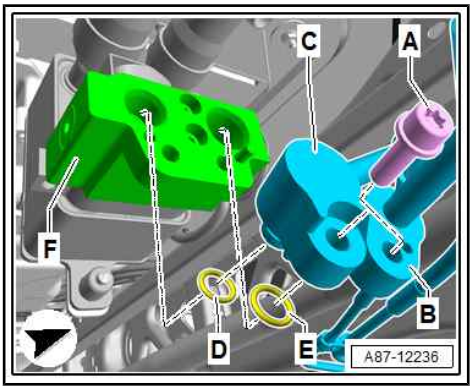
♦ *There are different versions of the expansion valve (identical housing but different characteristic control curve); therefore it is important to observe the correct assignment ⇒ Electronic parts catalogue .*

♦ *Observe fitting instructions for O-rings ⇒ page 97 .*

– Renew O-rings -D- and -E-; for correct version, refer to ⇒ Electronic parts catalogue .
– Coat O-rings lightly with refrigerant oil before installing ⇒ page 97 .
– Tighten bolts -A- (tightening torque for M6 bolts: 9 Nm).

– If fitted, check that dowel pin -4- at refrigerant lines is not damaged and is seated correctly.
– If fitted, check guide ring -2- at refrigerant line connection for damage.
– Renew O-rings -3-; for correct version, refer to ⇒ Electronic parts catalogue .
– Coat O-rings lightly with refrigerant oil before installing ⇒ page 97 .






- Check that O-rings -D- and -E- are seated correctly.
- Secure refrigerant lines -B, C- at expansion valve -F-.
- Tighten bolts -A- (tightening torque for M6 bolts: 9 Nm, M8 bolts: 25 Nm).
- Re-install remaining components (removed earlier).
- Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .
- Switch on ignition.
- Interrogate event memory of operating unit ( Climatronic control unit - J255- ) and thermal management control unit - J1024- and erase any faults displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

*Also observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

## 2.11 Removing and installing heat exchanger for high-voltage battery

**Note**

- *Only on Audi A6 e-tron*
- *The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

***Safety hazard: the engine can start unexpectedly.***
***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

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**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

**WARNING**

***Danger from escaping pressurised refrigerant.***

***Danger of frostbite on skin and other parts of the body.***

- ***Extract the refrigerant and then immediately open up the refrigerant circuit.***
- ***Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.***

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**Note**

*Specific tools are required for discharging the refrigerant circuit; such work may only be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit (Air conditioner with refrigerant R134a; Refrigerant circuit; Working with the air conditioner service station).*

### Removing

– On vehicles with high-voltage system (Audi A6 e-tron), switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

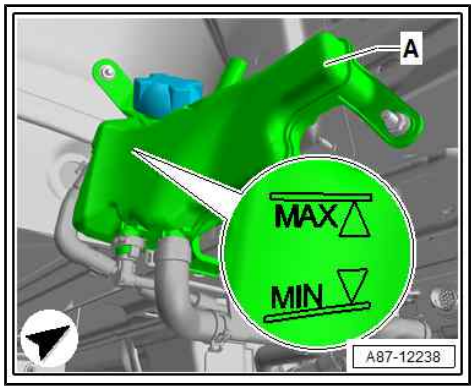
– Switch on ignition.

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Remove rear wheel housing liner (right-side) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (rear) .

– Remove cross brace and diagonal strut (rear) for easier access ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 42 ; Subframe; Exploded view - subframe .

– Carefully open filler cap on coolant expansion tank -A- for high-voltage system.




**Note**

*There are different versions and different layouts of the coolant expansion tank -A- ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .*

**WARNING**

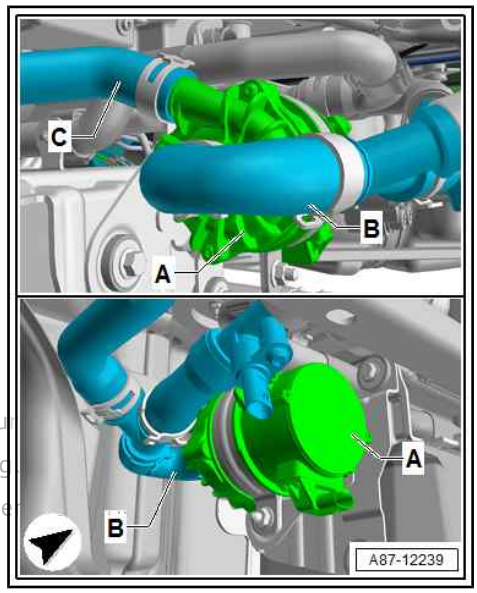
***Risk of scalding due to hot steam and hot coolant.***

- ***The cooling system is pressurised when the high-voltage system is warm.***
- ***To relieve pressure, cover the filler cap on the coolant expansion tank for the high-voltage system with a cloth and open carefully.***

– Drain coolant from coolant circuit of high-voltage system ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

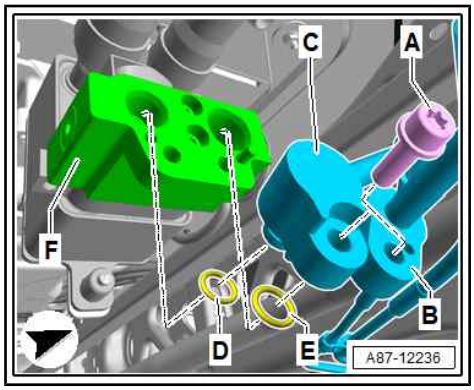
**Note**

*To drain coolant, disconnect coolant hose -B- from coolant pump for high-voltage battery - V590- -A- ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .*



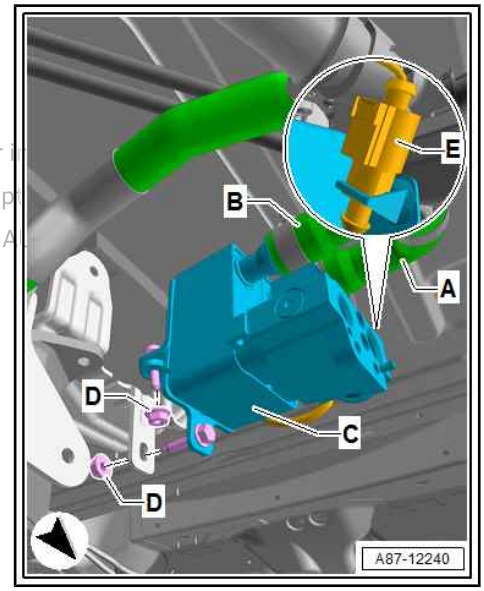

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– Unscrew bolts -A-.
– Disconnect refrigerant lines -B, C- from expansion valve -F-.
– Seal off open refrigerant lines -B, C- and connections at expansion valve -F- with clean plugs from engine bung set - VAS 6122- .



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– Label position of coolant hoses -A, B- at connections to high-voltage battery heat exchanger -C- (coolant hose -A- from heat exchanger via coolant temperature sender 1 for thermal management - G902- to coolant pump for high-voltage battery - V590- and -B- from hybrid battery unit - AX1- )
⇒ “7.3 Incorporation of air conditioner into coolant circuit of high-voltage system - Audi A6 e-tron only”, page 520 .




**Note**

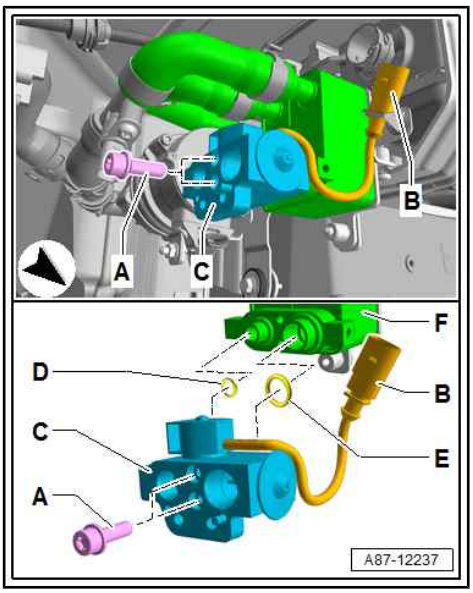
*The heat exchanger is designed such that a specific direction of flow is required to ensure maximum cooling of the coolant. The coolant hoses must therefore be connected in the correct positions*
*⇒ “7.3 Incorporation of air conditioner into coolant circuit of high-voltage system - Audi A6 e-tron only”, page 520 .*

– Detach coolant hoses -A- and -B- from connections to heat exchanger -C-.
– Unplug connector for refrigerant shut-off valve 2 - N640- -E-.
– Remove nuts -D- (or bolts) and then loosen and remove heat exchanger -C-.

**Note**

- *Different versions (secured with nuts -D- or bolts) ⇒ Electronic parts catalogue*
- *Seal off open connections in the lines at the connection point using clean plugs, e.g. from engine bung set - VAS 6122- .*

– Unscrew bolts -A-.
– Take electrical connector -B- out of bracket.
– Detach expansion valve -C- (with refrigerant shut-off valve 2 - N640- ) from heat exchanger for high-voltage components -F-.
– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .



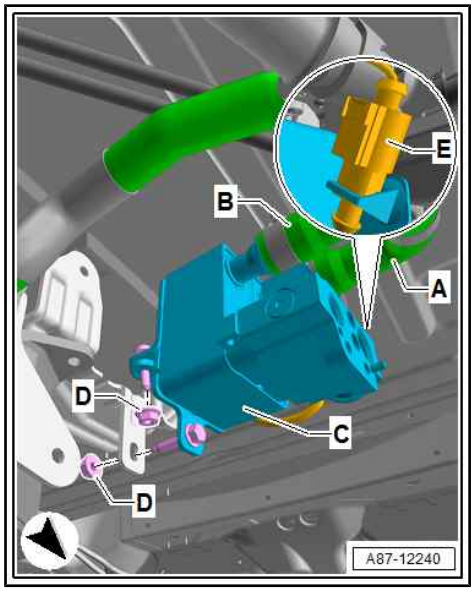

**Installing**

Install in reverse order of removal; note the following.

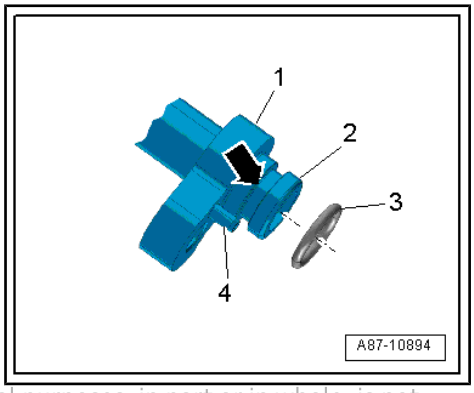
– Fit expansion valve -C- (with -N640- ) to high-voltage battery heat exchanger -F- ⇒ page 196 .

**Note**

*When it has been removed, the heat exchanger -C- contains refrigerant oil which must be returned to the refrigerant circuit (together with the new components) ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Renewing components of refrigerant circuit .*

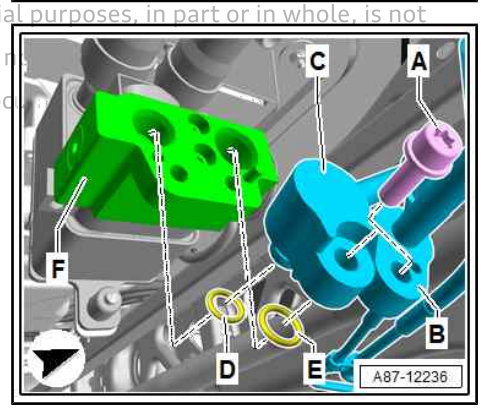



- Fit heat exchanger -C- on bracket.
- Fit nuts -D- (or bolts); tightening torque 9 Nm.
- Fit coolant hoses -A- and -B- in correct positions on connections to heat exchanger -C-.
- Plug in connector for refrigerant shut-off valve 2 - N640- -E-.




- If fitted, check that dowel pin -4- at refrigerant lines is not damaged and is seated correctly.
- If fitted, check guide ring -2- at refrigerant line connection for damage.
- Renew O-rings -3-; for correct version, refer to ⇒ Electronic parts catalogue .
- Coat O-rings lightly with refrigerant oil before installing ⇒ page 97 .

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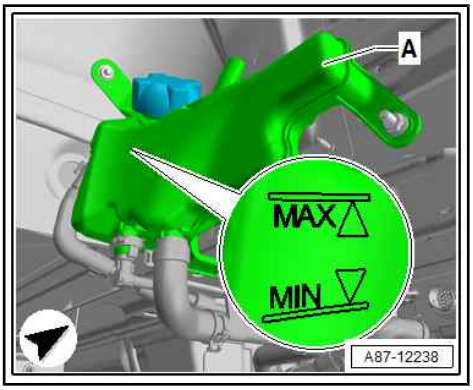



- Check that O-rings -D- and -E- are seated correctly.
- Secure refrigerant lines -B, C- at expansion valve -F-.
- Tighten bolts -A- (tightening torque for M6 bolts: 9 Nm, M8 bolts: 25 Nm).

**Note**

- *After attaching, check routing of refrigerant lines. They must be inserted in brackets provided and should not make contact with other components.*
- *Observe fitting instructions for O-rings -D, E- ⇒ page 97 .*

– Fill coolant into coolant expansion tank -A- for coolant circuit of high-voltage system and bleed coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .




**Note**

*Special procedures are required for bleeding the coolant circuit of the high-voltage system. For example, the coolant pump for high-voltage battery - V590- must be activated (e.g. via the thermal management control unit - J1024- ) ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .*

– Re-install remaining components removed previously in reverse order and/or re-attach detached components.
– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit (Air conditioner with refrigerant R134a; Refrigerant circuit; Working with the air conditioner service station).
– Switch on ignition.
– Interrogate event memory of operating unit ( Climatronic control unit - J255- ) and thermal management control unit - J1024- and erase any faults displayed ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

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**Note**

*Also observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

## 2.12 Removing and installing condenser

**Note**

*There are different versions of the condenser, depending on the vehicle. Depending on the version, the receiver (for example) is integrated into or attached to the condenser on all vehicles except the Audi A6 e-tron. On the Audi A6 e-tron, the receiver is a separate component; it is connected to the condenser by two refrigerant lines ⇒ Electronic parts catalogue .*

### Removing

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .

**Audi RS 6 / RS 7:**

– Remove impact bar ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing impact bar .

**Audi A6 e-tron**

– On vehicles with high-voltage system (Audi A6 e-tron), switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

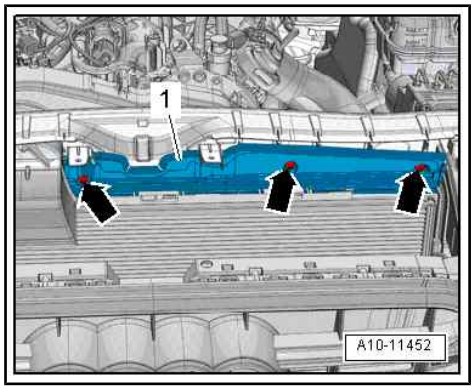
– Remove impact bar ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing impact bar .

**Audi A6/A7:**

– Remove lock carrier cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing attachments .

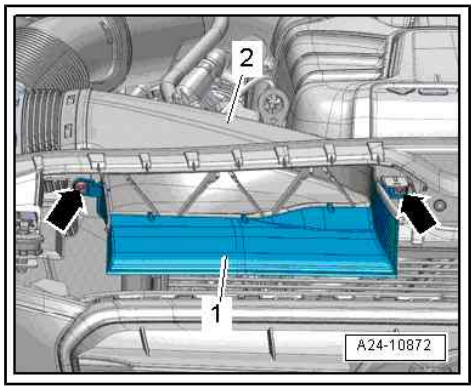
– If fitted, remove bolts -arrows-.

– Detach air duct -1-.




– Remove bolts -arrows-.

– Detach air duct -1- at intermediate flange -2- for air cleaner housing.

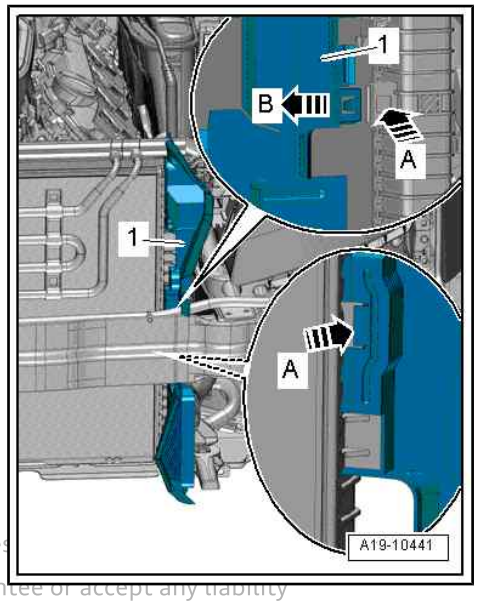



**All versions (continued):**

– Detach refrigerant lines from condenser ⇒ page 209 .

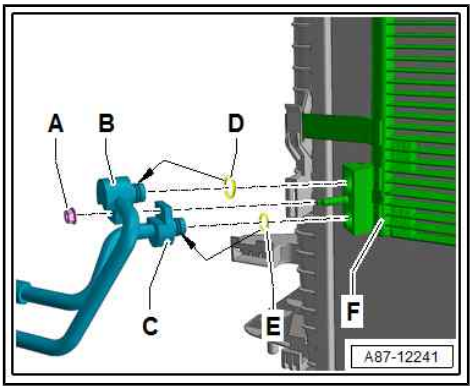
– Release retaining tabs -arrows A- and detach air duct -1- (left and right) -arrow B-.

**Audi A6 e-tron**




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– Remove nut -A- (tightening torque: 9 Nm) and disconnect refrigerant lines leading to receiver -B, C- from condenser -F-.



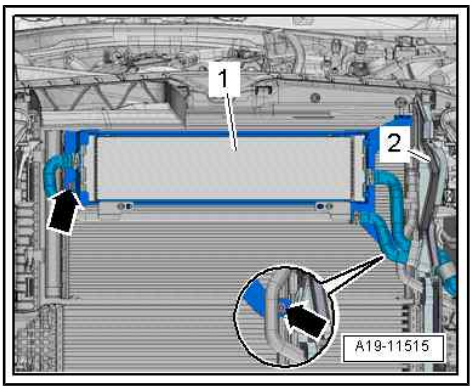

**Note**

*Seal off open connections in the lines at the connection point and at condenser using clean plugs, e.g. from engine bung set - VAS 6122- .*

**All vehicles with high-voltage system:**

– Remove bolts -arrows-.

– Detach radiator (front) -1- upwards, swivel to one side together with air duct -2- and place to one side with connected coolant hoses.



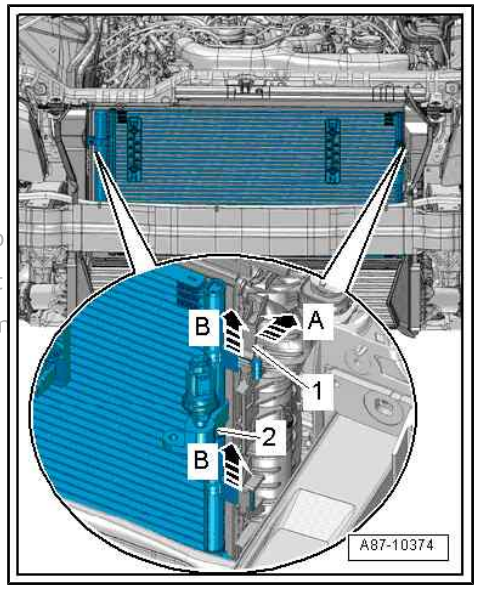

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**All vehicles (continued):**

– Unplug electrical connector at refrigerant pressure sender ( -G395- / -G65- ).

**Note**

*Different designation (depending on vehicle). On the A6 e-tron, this sender is referred to as the high-pressure sender - G65- . On this vehicle, it exchanges data with the thermal management control unit - J1024- . On all vehicles except the Audi A6 e-tron, this sender is referred to as the refrigerant pressure and temperature sender - G395- . On these vehicles, it exchanges data with the operating unit ( Climatronic control unit - J255- ) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*




– Have a 2nd mechanic release retaining clips -1- in direction of -arrow A- and lift condenser -2- out of mountings on radiator -arrows B-.

**Installing**

Install in reverse order of removal; note the following:

**Note**

- *Installing radiators and condensers ⇒ page 44*
- *When it has been removed, the condenser contains refrigerant oil which must be returned to the refrigerant circuit (together with the new condenser) ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Renewing components of refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*

– Attach refrigerant lines to condenser ⇒ page 209 .

– Attach refrigerant lines from receiver at condenser (Audi A6 e-tron only). ⇒ page 215

– Install cooler for power and control electronics for electric drive (vehicles with high-voltage system only) ⇒ Engine, mechanics; Rep. gr. 19 ; Radiator/radiator fans; Exploded view - radiator/radiator fans .

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

*Observe notes on starting up air conditioner after installing air conditioner compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

## 2.13 Detaching and attaching refrigerant lines at condenser

⇒ "2.13.1 Detaching and attaching refrigerant lines at condenser", page 209

⇒ "2.13.2 Detaching and attaching refrigerant lines at condenser - vehicles with high-voltage system", page 212

⇒ "2.13.3 Separating refrigerant lines (leading to receiver) from condenser", page 215

## 2.13.1 Detaching and attaching refrigerant lines at condenser

**WARNING**

*Danger from escaping pressurised refrigerant.*

*Danger of frostbite on skin and other parts of the body.*

- *Extract the refrigerant and then immediately open up the refrigerant circuit.*
- *Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.*

**Note**

*Specific tools are required when discharging the refrigerant circuit, and this work may only be performed by qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .*

**Special tools and workshop equipment required**

♦ Engine bung set - VAS 6122-

**Removing**

– On vehicles with high-voltage system (Audi A6 e-tron), switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .

– Remove lock carrier cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing attachments .

**Audi RS 6 / RS 7:**

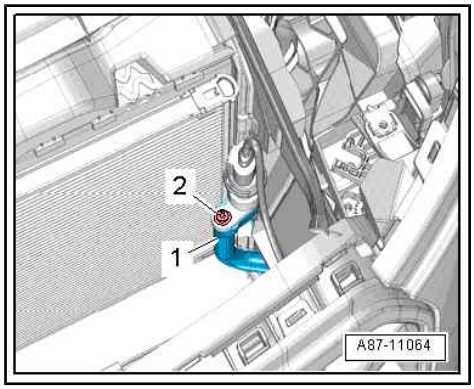
– Remove bumper cover (front) ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing bumper cover .

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**All versions (continued):**

– Remove bolt -2- and disconnect refrigerant line -1-.

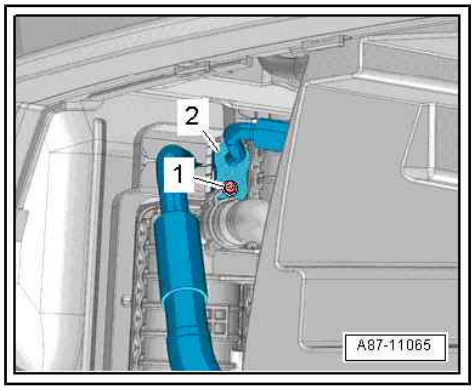
– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .




– Remove closure plate for bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing attachments .

– Remove bolt -1- and disconnect refrigerant line -2-.

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .




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### Installing

Install in reverse order of removal; note the following:

### Tightening torques

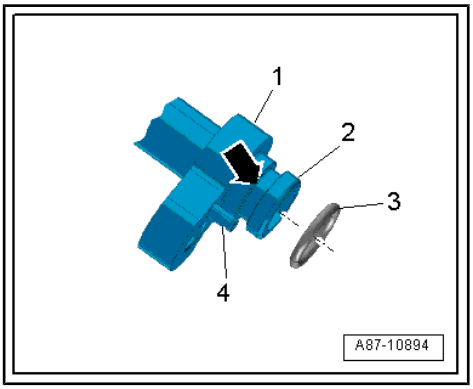
- ⇒ “2.2.1 Exploded view - condenser, vehicles with high-voltage system”, page 148

– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .

– If fitted, check that dowel pin -4- is not damaged and is seated correctly.

– Check guide ring -2- at refrigerant line connection for damage.

– Insert O-ring -3- in groove -arrow- in connection for refrigerant line -1-.




**Note**

- *Lubricate O-rings lightly with refrigerant oil before fitting ⇒ page 97 .*
- *Make sure O-rings are seated correctly in groove -arrow- of corresponding refrigerant line.*
- *After attaching, check routing of refrigerant lines. They must be inserted in brackets provided and should not make contact with other components.*

– Insert refrigerant lines in corresponding connection at condenser.

– Tighten bolts.

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

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**Note**

*Observe notes on starting up air conditioner after installing air conditioner compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

– As a final step, interrogate event memory and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 2.13.2 Detaching and attaching refrigerant lines at condenser - vehicles with high-voltage system

**Note**

*The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

**WARNING**

***Working on vehicles with high-voltage wiring:***

- ***Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.***
- ***High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.***
- ***The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.***

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

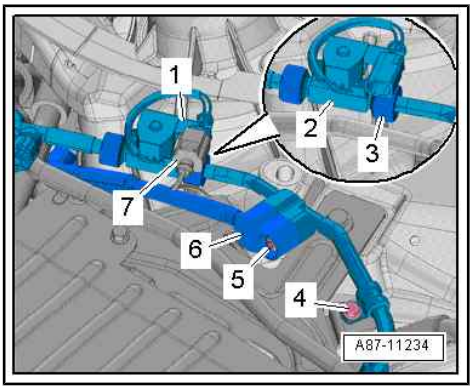
- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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### Special tools and workshop equipment required

- Engine bung set - VAS 6122-

### Removing




– On vehicles with high-voltage system (Audi A6 e-tron), switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

– Switch off ignition.

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

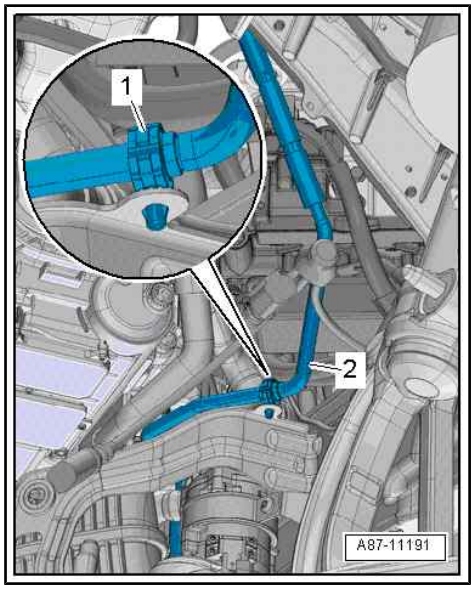
– Unplug electrical connector -7- and remove from bracket -1-.

– Counterhold shut-off valve 1 -item 2- and unscrew union nut -3-.

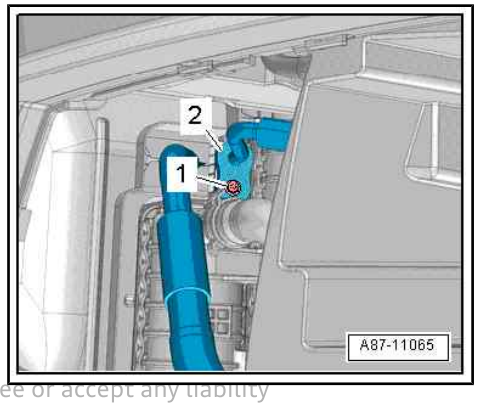
– Remove bolt -5- and disconnect refrigerant line -6-.

– Remove bolt -4-.

– Remove wheel housing liner (front left) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
– Open retainer -1- in wheel housing and move refrigerant line -2- clear.




– Remove air intake grille ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing attachments .
– Remove bolt -1- and disconnect refrigerant line -2- from condenser.
– Take refrigerant line out towards wheel housing, rotating it.
– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .




**Installing**

Install in reverse order of removal; note the following.

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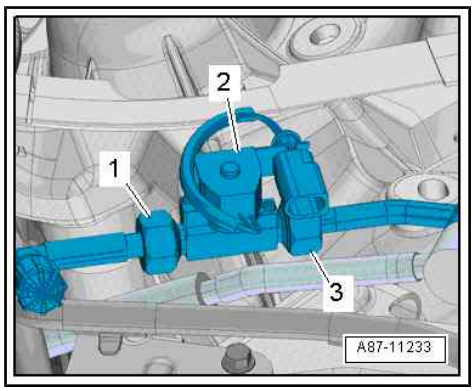
**Tightening torques**

♦ ⇒ “2.4.1 Exploded view - refrigerant lines, expansion valve, internal heat exchanger”, page 155

**Note**

♦ *Observe fitting instructions for O-rings ⇒ page 97 .*
♦ *After attaching, check routing of refrigerant lines. They must be inserted in brackets provided and should not make contact with other components.*

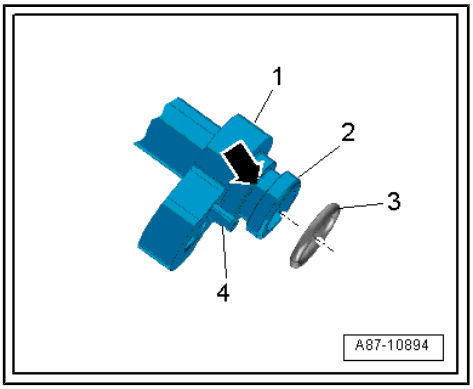
– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .
– Screw in union nut -3- by hand until it makes contact.
– Counterhold shut-off valve 1 -item 2- and tighten union nuts fully.




**Note**

*When tightening the union nuts, make sure not to strain the refrigerant lines.*

– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .
– If fitted, check that dowel pin -4- is not damaged and is seated correctly.
– Check guide ring -2- at refrigerant line connection for damage.
– Insert O-ring -3- in groove -arrow- in connection for refrigerant line -1-.




**Note**

- *Observe fitting instructions for O-rings ⇒ page 97 .*
- *After attaching, check routing of refrigerant lines. They must be inserted in brackets provided and should not make contact with other components.*

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .
– Re-install remaining components (removed earlier).
– Switch on ignition.
– Interrogate event memory of operating unit ( Climatronic control unit - J255- ), thermal management control unit - J1024- (only on Audi A6 e-tron) and control unit for air conditioning compressor - J842- , and erase any faults displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

*Also observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

## 2.13.3 Separating refrigerant lines (leading to receiver) from condenser

**Note**

- *Only on Audi A6 e-tron*
- *The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

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**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

**Special tools and workshop equipment required**

- Engine bung set - VAS 6122-

**Detaching**

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– On vehicles with high-voltage system (Audi A6 e-tron), switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

– Switch off ignition.

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Remove impact bar ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing impact bar .

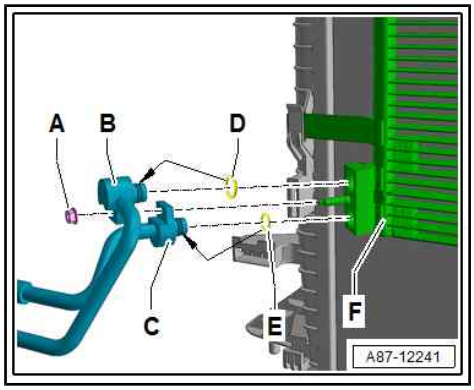
**WARNING**

*Danger from escaping pressurised refrigerant.*

*Danger of frostbite on skin and other parts of the body.*

- *Extract the refrigerant and then immediately open up the refrigerant circuit.*
- *Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.*

– Remove nut -A- (tightening torque: 9 Nm) and disconnect refrigerant lines leading to receiver -B, C- from condenser -F-.




**Note**

*Seal off open connections in the lines at the connection point and at condenser using clean plugs, e.g. from engine bung set - VAS 6122- .*

### Attaching

Install in reverse order of removal; note the following.

**Note**

- *Observe fitting instructions for O-rings ⇒ page 97 .*
- *After attaching, check routing of refrigerant lines. They must be inserted in brackets provided and should not make contact with other components.*

– Renew O-rings -D, E-; for correct version, refer to ⇒ Electronic parts catalogue .

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Re-install remaining components (removed earlier).

– Switch on ignition.

– Interrogate event memory of operating unit ( Climatronic control unit - J255- ) and thermal management control unit - J1024- and erase any faults displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

*Also observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

## 2.14 Removing and installing receiver

⇒ “2.14.1 Removing and installing receiver from condenser - not Audi A6 e-tron”, page 218

⇒ “2.14.2 Removing and installing receiver with desiccant cartridge - Audi A6 e-tron only”, page 220

## 2.14.1 Removing and installing receiver from condenser - not Audi A6 e-tron

**Note**

*Depending on the version of the condenser, the receiver may be attached to or integrated into the condenser. Renew desiccant cartridge (for condenser with integrated receiver) ⇒ page 225 .*

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**WARNING**

*Danger from escaping pressurised refrigerant.*

*Danger of frostbite on skin and other parts of the body.*

- *Extract the refrigerant and then immediately open up the refrigerant circuit.*
- *Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.*

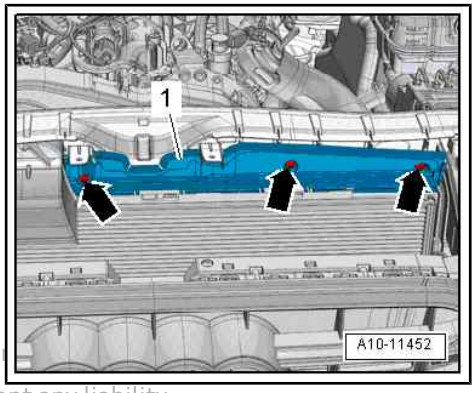
### Removing

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .

– Remove lock carrier cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing attachments .

– If fitted, remove bolts -arrows-.

– Detach air duct -1-.



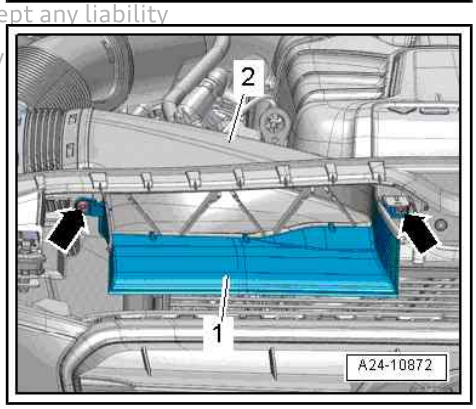

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– Remove bolts -arrows-.

– Detach air duct -1- at intermediate flange -2- for air cleaner housing.

– On vehicles without charge air cooler, remove closure plate for bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing attachments .

– Remove charge air cooler ⇒ Rep. gr. 21 ; Charge air system; Removing and installing charge air cooler .

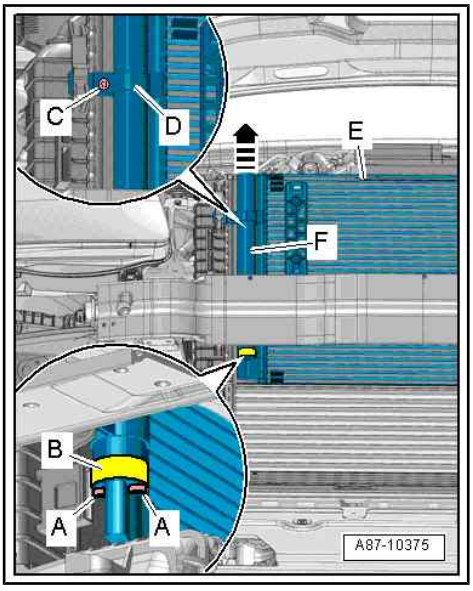



– Push up protective collar -B- at connection point.

– Unscrew bolts -A-.

– Unscrew bolt -C- and lift off bracket -D-.

– Pull receiver -F- upwards out of condenser -E- -arrow-.




**Note**

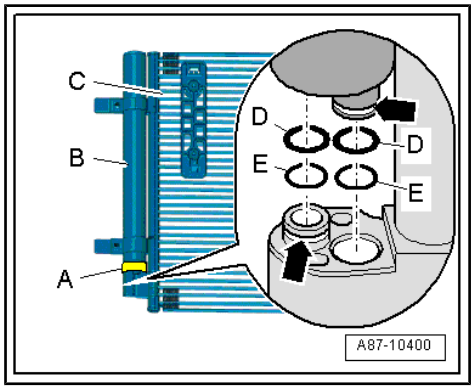
- *Make sure that the rubber grommet -B- is not lost when detaching the receiver.*
- *Seal the open connections at the receiver and condenser with suitable caps (to prevent dirt and moisture from entering).*

### Installing

Install in reverse order of removal; note the following:

– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .

– Clean contact surface of condenser -C-.
– Check connections at condenser and receiver for damage.
– Insert O-rings -D and E- in grooves -arrows- in corresponding connections.




**Note**

- *Coat O-rings lightly with refrigerant oil before fitting ⇒ page 97 .*
- *Check refrigerant pipes to evaporator for dirt and damage.*
- *Make sure O-rings are seated correctly in groove -arrow- of corresponding connection.*

– Position receiver -B- on condenser and tighten bolts.

**Tightening torques**

- Receiver to condenser: 10 Nm

– Fit protective collar -A- over connection point.
– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

*Observe notes on starting up air conditioner after installing air conditioner compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

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– As a final step, interrogate event memory and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 2.14.2 Removing and installing receiver with desiccant cartridge - Audi A6 e-tron only

**Note**

*The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

WARNING

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

WARNING

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

DANGER!

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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**Special tools and workshop equipment required**

♦ Engine bung set - VAS 6122-

**Removing**

– On vehicles with high-voltage system (Audi A6 e-tron), switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

– Switch off ignition.

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Remove impact bar ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing impact bar .

**WARNING**

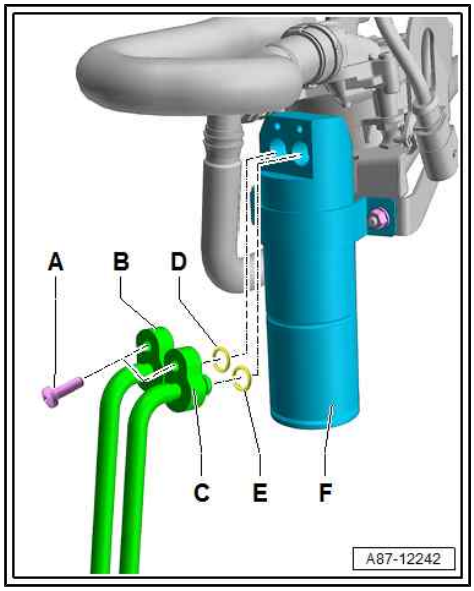
*Danger from escaping pressurised refrigerant.*

*Danger of frostbite on skin and other parts of the body.*

- *Extract the refrigerant and then immediately open up the refrigerant circuit.*
- *Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.*

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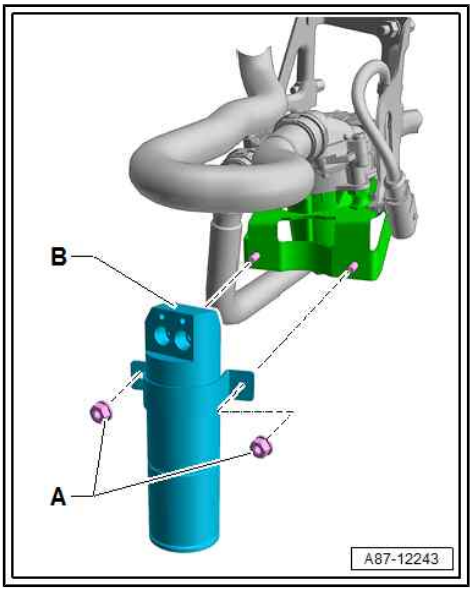
– Remove bolts -A- (tightening torque: 9 Nm) and disconnect refrigerant lines -B, C- from receiver -F-.




**Note**

*Seal off open connections in the lines at the connection point and at receiver using clean plugs, e.g. from engine bung set - VAS 6122- .*

– Remove nut -A- (or bolt) (tightening torque: 4.5 Nm) and detach receiver -B- from bracket.




**Note**

*Different versions ⇒ Electronic parts catalogue*

### Installing

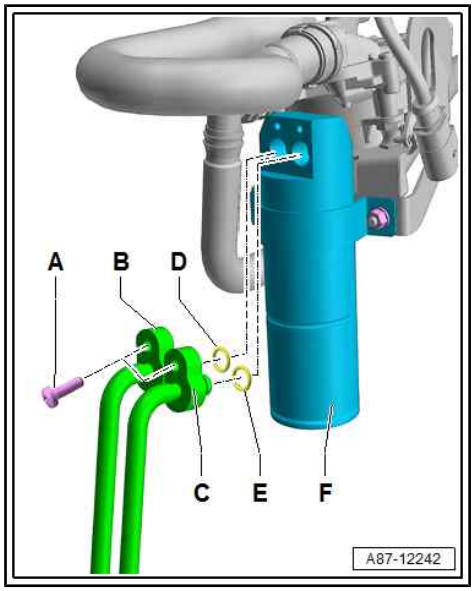
Install in reverse order of removal; note the following.

**Note**

- *Observe fitting instructions for O-rings ⇒ page 97 .*
- *When it has been removed, the receiver contains refrigerant oil which must be returned to the refrigerant circuit (together with the new receiver) ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Renewing components of refrigerant circuit .*
- *After attaching, check routing of refrigerant lines. They must be inserted in brackets provided and should not make contact with other components.*

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– Renew O-rings -D, E-; for correct version, refer to ⇒ Electronic parts catalogue .




**Note**

- *Coat O-rings lightly with refrigerant oil before fitting ⇒ page 97 .*
- *Check connections on refrigerant lines leading to receiver for dirt and damage.*
- *Make sure O-rings are seated correctly in groove of corresponding connection.*

– Re-install remaining components (removed earlier).

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Switch on ignition.

– Interrogate event memory of operating unit ( Climatronic control unit - J255- ) and thermal management control unit - J1024- and erase any faults displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

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**Note**

*Also observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Re-install remaining components (removed earlier).

– Switch on ignition.

– Interrogate event memory of operating unit ( Climatronic control unit - J255- ) and thermal management control unit - J1024- and erase any faults displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

*Also observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

## 2.15 Removing and installing desiccant bag/ desiccant cartridge

**Note**

- *Not on Audi A6 e-tron*
- *Removing and installing receiver with desiccant cartridge (Audi A6 e-tron only)* *⇒ page 220* *.*

**WARNING**

***Danger from escaping pressurised refrigerant.***

***Danger of frostbite on skin and other parts of the body.***

- ***Extract the refrigerant and then immediately open up the refrigerant circuit.***
- ***Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.***

**Note**

- *Specific tools are required when discharging the refrigerant circuit, and this work may only be performed by qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .*
- *There are different versions of the condenser and the integrated desiccant cartridge. For correct version refer to ⇒ Electronic parts catalogue .*

### Removing

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .

– On vehicles without charge air cooler, remove closure plate for bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing attachments .

– Remove charge air cooler ⇒ Rep. gr. 21 ; Charge air system; Removing and installing charge air cooler .

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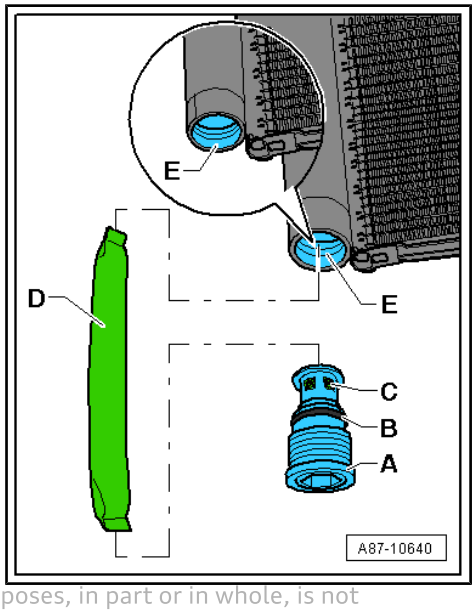
– Check pressure in refrigerant circuit via pressure gauge of air conditioner service station ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .

**WARNING**

***Danger from escaping pressurised refrigerant.***

***Danger of frostbite on skin and other parts of the body.***

- ***Only remove the plug when the pressure in the refrigerant circuit is equal to or less than the atmospheric pressure.***




– Unscrew plug -A-.

– Using long-nose pliers, pull desiccant cartridge -D- out of receiver -E-.

**Installing**

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Install in reverse order of removal; note the following:

**Tightening torques**

- ⇒ “2.2.2 Exploded view - condenser, with receiver and desiccant cartridge”, page 151

**Note**

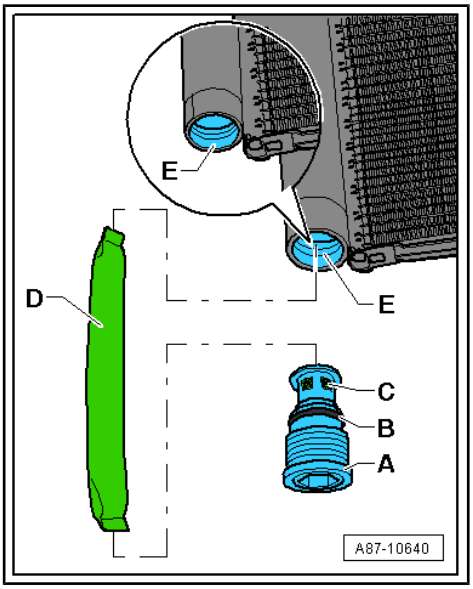
*The plug, O-ring and desiccant cartridge must always be renewed after the receiver has been opened ⇒ Electronic parts catalogue .*

– Check threads and sealing surfaces of receiver at condenser for dirt or damage via opening.

**Note**

- *Keep bag with air-tight seal containing desiccant cartridge closed as long as possible. Only open bag immediately before inserting desiccant cartridge in condenser. After opening bag, desiccant cartridge soon becomes saturated with moisture from ambient air and becomes unusable.*
- *Lubricate O-ring of plug slightly with refrigerant oil before fitting ⇒ page 97 .*

– Take desiccant cartridge -D- out of its bag and insert it in receiver -E- of condenser.
– Fit and screw in plug -A-.
– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .




**Note**

*Observe notes on starting up air conditioner after installing air conditioner compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

– As a final step, interrogate event memory and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 2.16 Differences in service connections depending on refrigerant (R134a or R1234yf)

**Note**

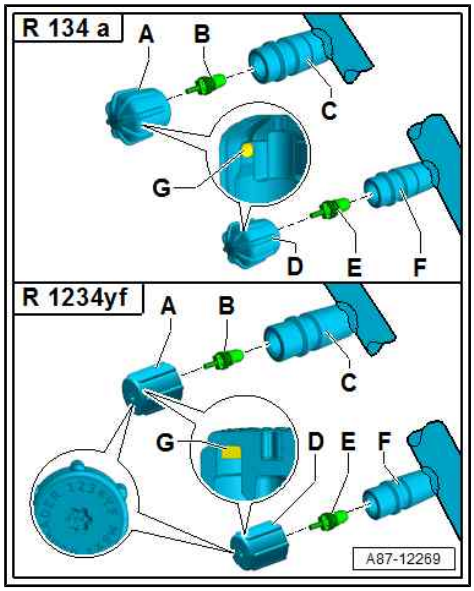
- *Only use valves and connections which are resistant to the corresponding refrigerant (R134a and/or R1234yf) and related refrigerant oils ⇒ Electronic parts catalogue .*
- *The service connections for the refrigerant circuits are designed such that only the specified service couplings for the specified refrigerant (R134a or R1234yf) can be connected.*
- *These illustrations show service connections in which a Schrader valve (needle valve or push pin) is installed. However, depending on the vehicle version or the type of refrigerant etc., service connections with a primary sealing valve (ball valve) may also be installed (different technology).*
- *Arrangement in vehicle and in refrigerant circuit ⇒ “1.1 Overview of fitting locations - components not located in passenger compartment”, page 108 and ⇒ “2.1 System overview - refrigerant circuit”, page 131*
- *There are different connections (outer diameter) for high and low-pressure sides.*
- *Discharge refrigerant circuit before removing valves or valve cores ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit (Air conditioner with refrigerant R134a; Refrigerant circuit; Working with the air conditioner service station), or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .*
- *Removing and installing valve from service connection (low and high-pressure sides) ⇒ page 230 .*
- *Always screw on sealing caps with seal.*

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## Service connections (refrigerant R134a and R1234yf)

**WARNING**

***Before removing valves -B, E-, connect the air conditioner service station and extract refrigerant. Refrigerant circuit must be empty; danger of injury ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .***




- Cap for service connection (high-pressure side) -A- with seal -G-
- Valve core on high-pressure side (version: Schrader valve or needle valve) -B-
- Service connection (high-pressure side) -C-
- Cap for service connection (high-pressure side) -D- with seal -G-
- Valve core on low-pressure side (version: Schrader valve or needle valve) -E-
- Service connection (low-pressure side) -F-

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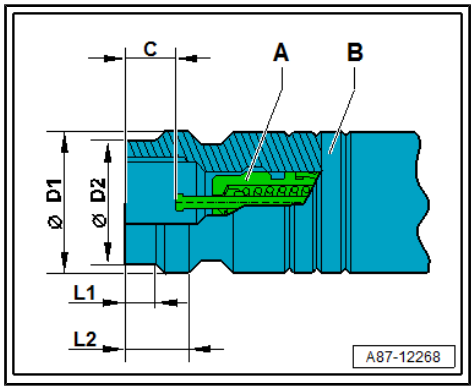
**Note**

- *Service connections -C, F- for refrigerant R134a and R1234yf are available in different versions (depending on manufacturer), with different sealing caps -A, D- and valves -B, E-. Ensure correct assignment ⇒ Electronic parts catalogue .*
- *Sealing caps -A, D- for the service connections on the R134a refrigerant circuit are currently black. The sealing caps for the service connections on the R1234yf refrigerant circuit are currently grey. The refrigerant type (e.g. "R1234yf") may also be printed on the sealing caps.*
- *After connecting, carefully screw the handwheel of the service coupling into the quick-release coupling adapter only to the extent required to reliably open the valve -B, E- in the service connection (observe the pressure gauge; do not open the valve -B, E- too far).*
- *The service connections -C, F- for R134a and R134yf refrigerant circuits are designed such that only the service couplings specified for the corresponding refrigerant can be connected (different dimensions ⇒ page 229 ).*
- *Service connections -C, F-, for example, are soldered into a refrigerant line and therefore cannot be renewed separately.*
- *To remove and install the valves -B, E- (with the refrigerant circuit drained), make use of an adapter from the socket -T10364- for example ⇒ page 230 .*
- *Take care when tightening the valves -B, E- (low torque) ⇒ page 230 .*
- *These valves are available in different versions with differing tightening torques. Tightening torque for valve core -C-with a VG5 thread (5.2 x 0.7 mm tyre valve): 0.4 Nm. +- 0.1 Nm; tightening torque for valve core with an M6 x 0.75 mm thread: 0.9 Nm +- 0.1 Nm; tightening torque for valve core with an M8 x 1.0 mm: 2.0 Nm +- 0.2 Nm.*
- *There are different versions of valve caps -A, D-; therefore tightening torques vary. Tightening torque for valve cap with M8 x 1 mm or M10 x 1 mm thread: 0.4 Nm +- 0.1 Nm.*

**Dimensions of service connections**

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- Valve core -A- (different versions) ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , and ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; General description of refrigerant circuit components .
- Service connection -B- (different versions on high-pressure and low-pressure side depending on refrigerant)




| Dimensions of service connections -B- | Service connection (refrigerant R134a) | | Service connection (refrigerant R1234yf) | |
|---|---|---|---|---|
| | High-pressure side | Low-pressure side | High-pressure side | Low-pressure side |
| Outer diameter -D1- | 16.0 mm | 13.0 mm | 17.0 mm | 14.0 mm |
| Outer diameter -D2- | 14.0 mm | 11.0 mm | 13.0 mm | 12.0 mm |
| Offset -L1- | 4.6 mm | 6.15 mm | 9.0 mm | 4.75 mm |
| Offset -L2- | 8.16 mm | 9.16 mm | 12.5 mm | 7.2 mm |
| Installation position of valve (not actuated) -C- | 6.1 - 7.1 mm | 6.1 - 7.1 mm | 8.3 - 9.3 mm | 8.3 - 9.3 mm |

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## 2.17 Removing and installing valve from service connection (low and high-pressure sides)

**WARNING**

***Danger from escaping pressurised refrigerant.***

***Danger of frostbite on skin and other parts of the body.***

- ***Extract the refrigerant and then immediately open up the refrigerant circuit.***
- ***Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.***

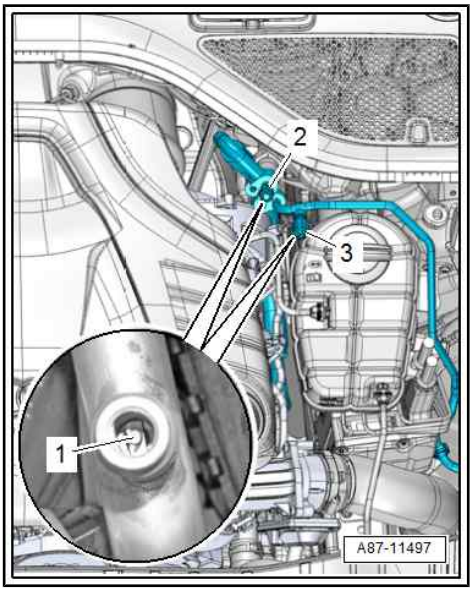
**Note**

*Specific tools are required when discharging the refrigerant circuit, and this work may only be performed by qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , and ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Refrigerant circuit; General description of refrigerant circuit components .*

**Special tools and workshop equipment required**

- Socket - T10364-

### Removing




– Unscrew caps (with seal) -2- or -3-.
– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .
– Unscrew valve -1- from service connection using a suitable adapter from socket - T10364- .

**Note**

*For further information on the service connection, refer to ⇒ page 227 , ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Refrigerant circuit; General description of refrigerant circuit components .*

### Installing

Installation is carried out in reverse order; note the following:

– Screw valve -1- into service connection using a suitable adapter from socket - T10364- (tightening torque ⇒ page 227 ).
– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

*Observe notes on starting up air conditioner after installing air conditioner compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

– As a final step, interrogate event memory and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

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## 2.18 Starting up air conditioner after charging refrigerant circuit

⇒ "2.18.1 Procedure if it is unavoidable to start the engine with an empty refrigerant circuit", page 232

⇒ "2.18.2 Procedure when starting the engine for the first time after charging the refrigerant circuit", page 233

### 2.18.1 Procedure if it is unavoidable to start the engine with an empty refrigerant circuit

**Caution**

*Risk of damage to the mechanically driven air conditioner compressor if the engine is run with the refrigerant circuit empty ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station; Discharging refrigerant circuit .*

- *The air conditioner compressor is always driven when the engine is running (there is no magnetic clutch). Therefore do not start the engine unless the refrigerant circuit has been properly assembled.*
- *If, for example, the refrigerant lines are not connected to the air conditioner compressor when the engine is running, the compressor might heat up (internal heat generation) so much that this can lead to irreparable damage to the compressor.*
- *If possible, only start the engine with the refrigerant circuit filled.*
- *Do not start the engine while or after evacuating the refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station; Evacuating refrigerant circuit .*
- *The engine should only run as long as absolutely necessary.*

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**Note**

*The air conditioner compressor is equipped with an internal oil circuit to prevent damage if the refrigerant circuit is empty. For this there must still be a residual quantity of refrigerant oil in the air conditioner compressor.*

- The refrigerant circuit must be assembled completely.
- The refrigerant circuit must not be under vacuum.
- The engine speed must not exceed 2500 rpm.
- The engine should only run as long as absolutely necessary (e.g. to move the vehicle in the workshop).
- If air conditioner compressor was removed previously: There must be at least a quarter of the amount of refrigerant oil specified for this refrigerant circuit in the compressor.

Note

*If only the refrigerant has been extracted (without removing the air conditioner compressor), the design of the refrigerant circuit ensures that there is sufficient refrigerant oil in the compressor to maintain lubrication of the compressor for a brief operating period.*

## 2.18.2 Procedure when starting the engine for the first time after charging the refrigerant circuit

**Vehicles with high-voltage system (hybrid vehicles)**

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

WARNING

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

WARNING

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

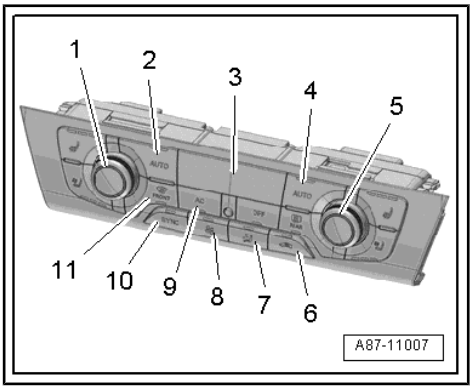
**Caution**

- *After installing the electrically driven air conditioner compressor and then charging the refrigerant circuit, first start up the compressor via the "Compressor run-in" function of the basic setting routine. Otherwise, the air conditioner compressor may be damaged if refrigerant oil has accumulated in the compression chamber of the air conditioner compressor due to inappropriate storage prior to installation ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode for air conditioner and battery regulation.*
- *An electrically driven air conditioner compressor may only be activated when the refrigerant circuit is charged. Running the air conditioner compressor with the refrigerant circuit empty could lead to compressor damage ⇒ Vehicle diagnostic tester ("Guided Fault Finding" for air conditioner and battery regulation).*

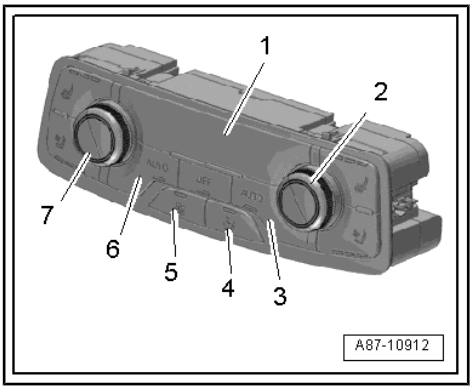
- All components removed have been re-installed.
- The refrigerant circuit is charged ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging .

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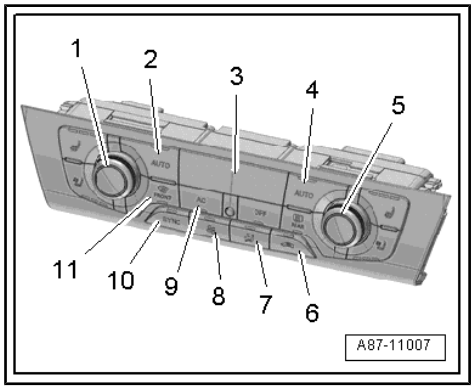
– Interrogate event memory and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– On vehicles with high-voltage system (hybrid vehicles): Start up electrical air conditioner compressor - V470- via “Compressor run-in” function ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode for air conditioner and battery regulation.
– Open all dash panel vents and any vents in B-pillar.
– Switch on ignition.
• Lamp in AC button -9- is off.
– Start engine with air conditioner compressor switched off and run at idling speed for at least 5 minutes.
– Switch on air conditioner compressor by selecting “Auto” mode on operating unit ( Climatronic control unit - J255- and also on -E265- if fitted); lamps in AUTO button(s) and AC button will light up.




• Lamps in buttons -2, 4 and 9- light up.
• Lamps in buttons -3 and 6- light up.




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**Note**

*When you press the SYNC button -10- on -J255- ("deluxe" version only), the settings for the driver side are also applied for the front passenger side and for -E265- .*

– Set air conditioner to "cold" temperature setting (for driver and passenger side) using rotary control on -J255- .
– On vehicles with rear Climatronic operating and display unit -E265- , also set rear temperature to "cold" (for left and right side).

**Note**

*If you press the SYNC button beforehand, the settings for the driver side are also applied for the front passenger side and for -E265- (if fitted).*

– Run air conditioner compressor with engine at idling speed for at least 5 minutes.

**Note**

*Observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

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# 3 Air conditioner compressor

⇒ “3.1 Exploded view - drive unit for air conditioner compressor”, page 237

⇒ “3.2 Exploded view - pulley”, page 252

⇒ “3.3 Detaching and attaching air conditioner compressor at bracket”, page 257

⇒ “3.4 Detaching and attaching refrigerant lines at air conditioner compressor”, page 270

⇒ “3.5 Removing and installing air conditioner compressor”, page 286

⇒ “3.6 Removing and installing air conditioning system magnetic clutch N25 ”, page 315

⇒ “3.7 Removing and installing pulley”, page 318

⇒ “3.8 Unfastening and securing air conditioner compressor drive shaft”, page 323

⇒ “3.9 Removing and installing air conditioner compressor drive shaft”, page 325

⇒ “3.10 Removing and installing drive plate with overload protection”, page 326

⇒ “3.11 Checking and adjusting concentricity of drive plate with overload protection”, page 327

⇒ “3.12 Removing and installing drive plate at air conditioner compressor”, page 327

⇒ “3.13 Removing and installing drive plate with roller bearing”, page 329

## 3.1 Exploded view - drive unit for air conditioner compressor

⇒ “3.1.1 Exploded view - drive unit for air conditioner compressor, vehicles with 4-cyl. petrol engine”, page 237

⇒ “3.1.2 Exploded view - electrically driven air conditioner compressor, Audi A6 hybrid”, page 239

⇒ “3.1.3 Exploded view - electrically driven air conditioner compressor, Audi A6 e-tron”, page 241

⇒ “3.1.4 Exploded view - drive unit for air conditioner compressor, vehicles with 6-cyl. petrol engine”, page 244

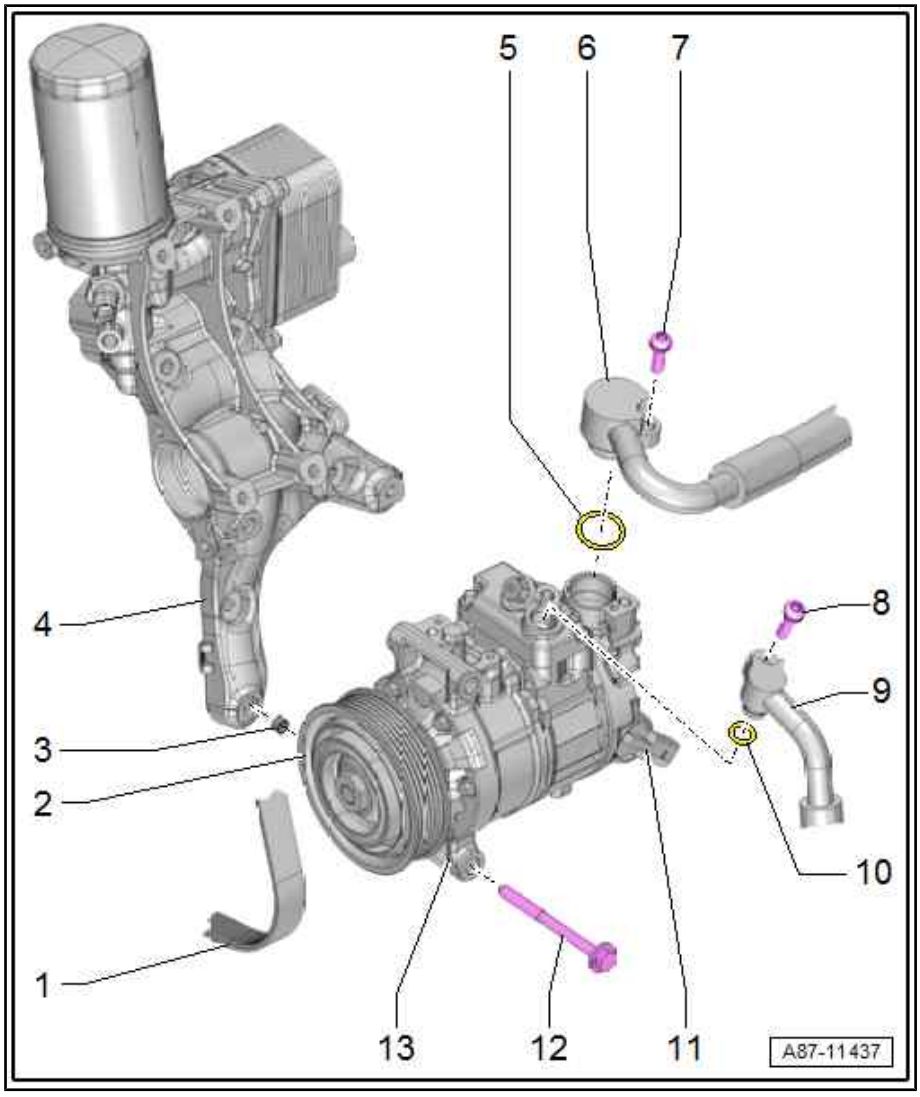
⇒ “3.1.5 Exploded view - drive unit for air conditioner compressor, vehicles with 8-cyl. FSI/TFSI engine”, page 246

⇒ “3.1.6 Exploded view - drive unit for air conditioner compressor, vehicles with 4-cyl. TDI engine”, page 248

⇒ “3.1.7 Exploded view - drive unit for air conditioner compressor, vehicles with 6-cyl. TDI engine”, page 250

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### 3.1.1 Exploded view - drive unit for air conditioner compressor, vehicles with 4-cyl. petrol engine




**1 - Poly V-belt**

- ❑ Check for wear
- ❑ Removing and installing ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt
- ❑ Mark direction; install in correct position ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt

**2 - Pulley with overload protection**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Exploded view ⇒ page 252

**3 - Dowel sleeve**

- ❑ 2x

**4 - Bracket for ancillaries**

- ❑ Removing and installing ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing bracket for ancillaries

**5 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**6 - Refrigerant line (low-pressure side)**

**7 - Bolt**

- ❑ M6 - 9 Nm
- ❑ M8 - 25 Nm

**8 - Bolt**

- ❑ M6 - 9 Nm
- ❑ M8 - 25 Nm

**9 - Refrigerant line (high-pressure side)**

**10 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**11 - Air conditioner compressor regulating valve - N280-**

- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

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**12 - Bolt**

- ❑ 3x
- ❑ Different versions ⇒ Electronic parts catalogue

Steel bolt

- ❑ 25 Nm

Aluminium bolt

- ❑ Renew after removing
- ❑ 8 Nm +180°

**13 - Air conditioner compressor**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Detaching and attaching refrigerant line ⇒ page 270
- ❑ Detaching and attaching at bracket ⇒ page 257
- ❑ Removing and installing ⇒ page 286

**Note**

*Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue*

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## 3.1.2 Exploded view - electrically driven air conditioner compressor, Audi A6 hybrid

**Note**

- *With control unit for air conditioning compressor - J842- and electrical air conditioner compressor - V470-*
- *If the control unit for air conditioning compressor - J842- is defective, the amount of refrigerant oil in the new air conditioner compressor must be adjusted. For this purpose, the refrigerant circuit does not have to be flushed with refrigerant R134a ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Renewing components of refrigerant circuit .*
- *For further notes on the air conditioner compressor, refer to ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*
- *The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

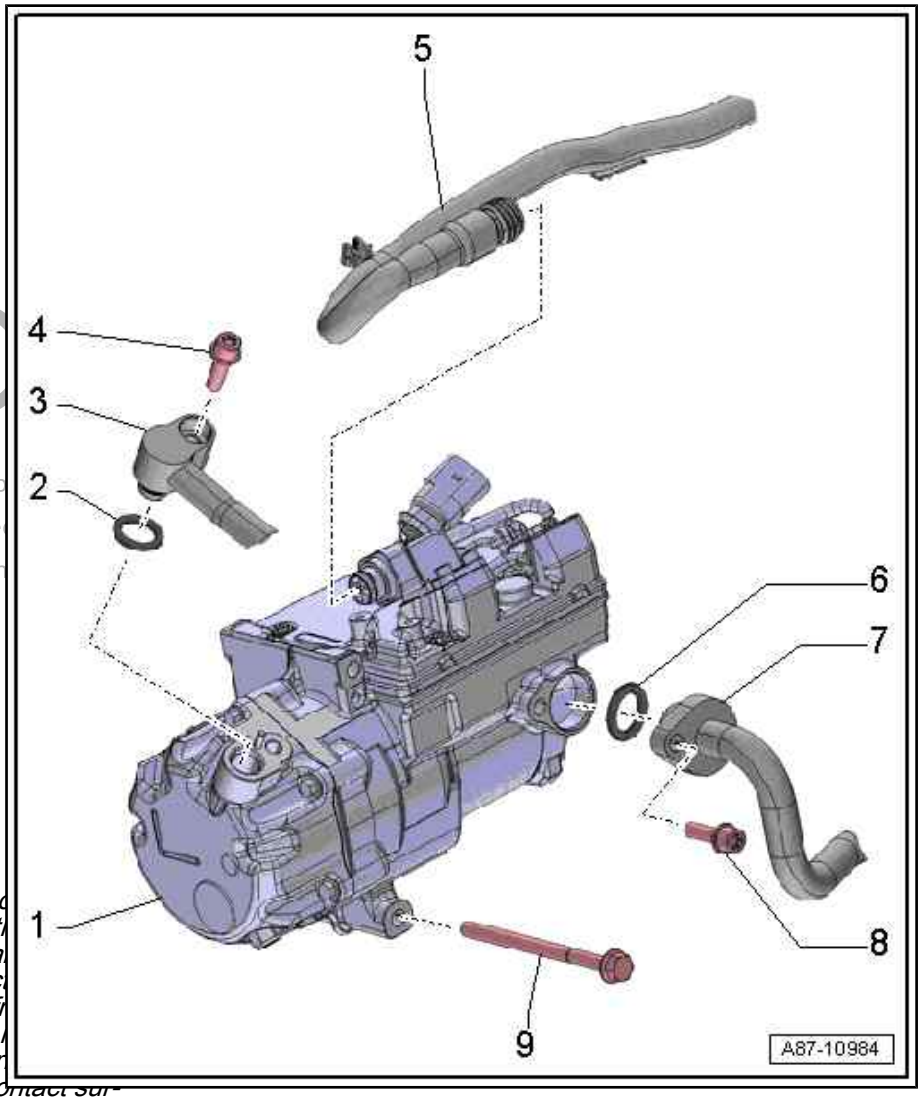
**1 - Electrically driven air conditioner compressor**

- ❑ Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue
- ❑ With control unit for air conditioning compressor - J842- and electrical air conditioner compressor - V470-
- ❑ ⇒ “3.3.2 Detaching and attaching electrically driven air conditioner compressor at bracket - Audi A6 hybrid”, page 259

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⇒ “3.4.2 Detaching and attaching refrigerant lines at electrically driven air conditioner compressor - Audi A6 hybrid”, page 272

- ❑ ⇒ “3.5.2 Removing and installing electrically driven air conditioner compressor - Audi A6 hybrid”, page 289




**Note**

- *Prior to installation, c tachment points of t tioner compressor a bracket. The contac must be clean and fr and grease. If this is n treat the contact sur cordingly with the contact sur- face cleaning set - VAS 6410- ⇒ Electrical system; General information; Rep. gr. 97 ; Contact surface cleaning set -VAS 6410- .*
- *The electrical air conditioner compressor - V470- is supplied with electric power via a fuse fitted in the power and control electronics for electric drive - JX1- ⇒ “11.14 Fuse for electrical air conditioner compressor V470 ”, page 626 , ⇒ Rep. gr. 93 ; Power and control electronics for electric drive and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

**2 - O-ring**

- ❑ Renew

**3 - Refrigerant line**

- ❑ High-pressure side

**4 - Bolt**

- ❑ M6 - 9 Nm

- ❑ M8 - 25 Nm

**5 - High-voltage wire to power and control electronics for electric drive - JX1-**

**6 - O-ring**

- ❑ Renew

**7 - Refrigerant line**

- ❑ Low-pressure side

**8 - Bolt**

- ❑ M6 - 9 Nm
- ❑ M8 - 25 Nm

**9 - Bolt**

- ❑ Different versions ⇒ Electronic parts catalogue

Steel bolt

- ❑ 25 Nm

Aluminium bolt

- ❑ Renew after removing
- ❑ 8 Nm +180°

## 3.1.3 Exploded view - electrically driven air conditioner compressor, Audi A6 e-tron

**Note**

- *With control unit for air conditioning compressor - J842- and electrical air conditioner compressor - V470-*
- *If the control unit for air conditioning compressor - J842- is defective, the amount of refrigerant oil in the new air conditioner compressor must be adjusted. For this purpose, the refrigerant circuit does not have to be flushed with refrigerant R134a ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Renewing components of refrigerant circuit .*
- *For further notes on the air conditioner compressor, refer to ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*
- *The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

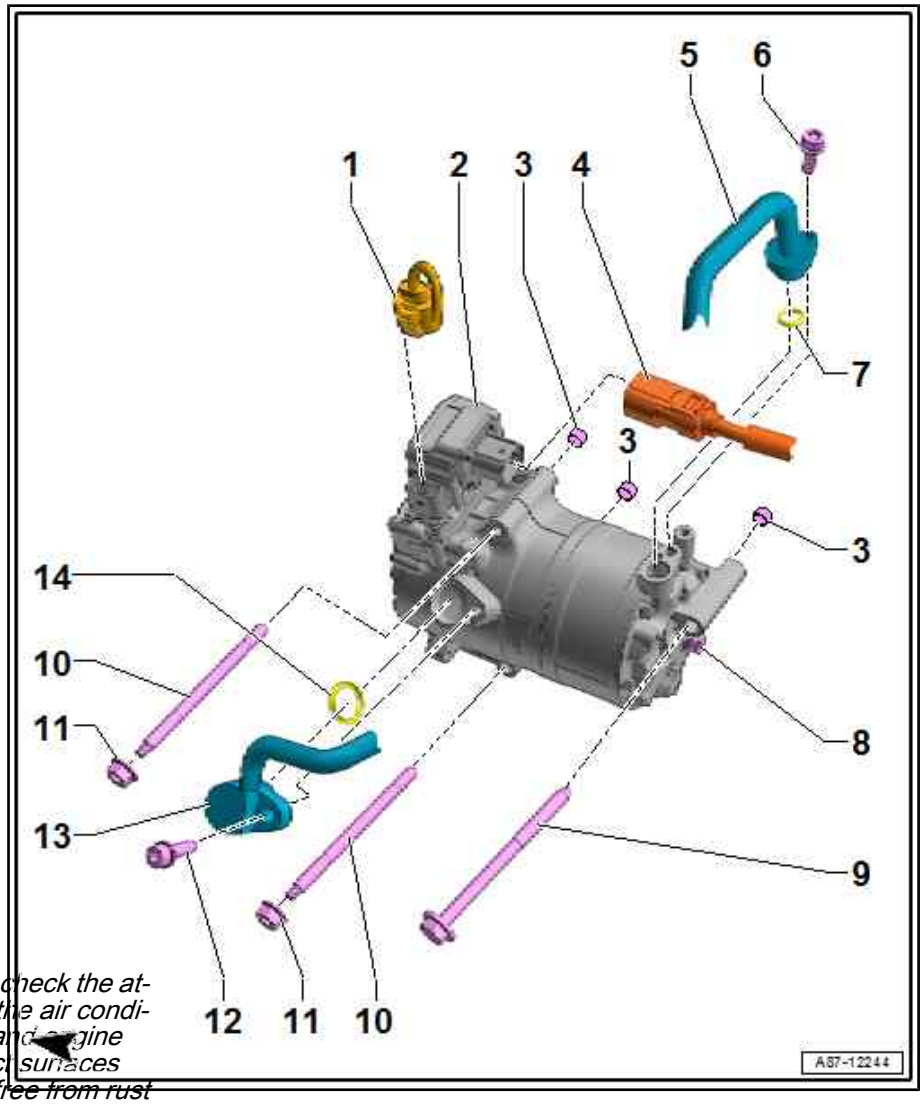
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**1 - 8-pin connector**

- ❑ With control wire from thermal management control unit - J1024- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

**2 - Electrically driven air conditioner compressor**

- ❑ Different versions on Audi A6 hybrid and Audi A6 e-tron ⇒ Electronic parts catalogue
- ❑ With control unit for air conditioning compressor - J842- and electrical air conditioner compressor - V470-
- ❑ ⇒ “3.4.3 Detaching and attaching refrigerant lines at electrically driven air conditioner compressor - Audi A6 e-tron”, page 275
- ❑ ⇒ “3.5.3 Removing and installing electrically driven air conditioner compressor - Audi A6 e-tron”, page 296




**Note**

- *Prior to installation, check the attachment points of the air conditioner compressor and engine bracket. The contact surfaces must be clean and free from rust and grease. If this is not the case, treat the contact surfaces accordingly with the contact surface cleaning set - VAS 6410- ⇒ Electrical system; Rep. gr. 97 ; Connectors .*
- *The electrical air conditioner compressor - V470- is supplied with electric power via a fuse fitted in the power and control electronics for electric drive - JX1- ⇒ “11.14 Fuse for electrical air conditioner compressor V470”, page 626 , ⇒ Engine; Rep. gr. 93 ; Power and control electronics for electric drive; Removing and installing power and control electronics for electric drive and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

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**3 - Dowel sleeve**

**4 - High-voltage wire to power and control electronics for electric drive - JX1- (with control unit for high-voltage battery charging unit - J1050- )**

- ❑ Detaching and attaching ⇒ Rep. gr. 93 ; High-voltage wires; Overview of fitting locations - high-voltage wires

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**5 - Refrigerant line**

- ❑ High-pressure side
- ❑ Different versions depending on engine ⇒ Electronic parts catalogue

**6 - Bolt**

- ❑ M6 - tightening torque 9 Nm
- ❑ M8 - tightening torque 25 Nm

**7 - O-ring**

- ❑ Renew ⇒ page 97 ; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate lightly with refrigerant oil

**8 - High-pressure safety valve**

**Caution**

***Danger from escaping pressurised refrigerant if valve is defective.***
***Danger of frostbite on skin and other parts of the body.***
***Always discharge refrigerant circuit before removing component; connection has no valve.***

**9 - Bolt**

- ❑ Tightening torque for steel bolt: 25 Nm
- ❑ Different versions ⇒ Electronic parts catalogue

**Note**

- *If aluminium bolts have been used to secure the air conditioner compressor, (different versions ⇒ Electronic parts catalogue ), renew the aluminium bolts (do not re-use). Tightening torque for aluminium bolts 8 Nm +180°.*
- *A threaded pin (and nut) may be fitted here instead of a bolt ⇒ Item 10 (page 243) .*

**10 - Threaded pin**

- ❑ Tightening torque: 9 Nm

**Note**

- *A bolt may be fitted here instead of the threaded pin and nut ⇒ Item 9 (page 243) .*
- *Must be removed before removing air conditioner compressor.*

**11 - Nut**

- ❑ Tightening torque: 25 Nm

**12 - Bolt**

- ❑ M6 - tightening torque 9 Nm
- ❑ M8 - tightening torque 25 Nm

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**13 - Refrigerant line**

- ❑ Low-pressure side
- ❑ Different versions depending on engine ⇒ Electronic parts catalogue

**14 - O-ring**

- ❑ Renew ⇒ page 97 ; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate lightly with refrigerant oil

## 3.1.4 Exploded view - drive unit for air conditioner compressor, vehicles with 6-cyl. petrol engine

**1 - Poly V-belt**

- ❑ Check for wear
- ❑ Removing and installing ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt
- ❑ Mark direction; install in correct position ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt

**2 - Pulley with overload protection**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Exploded view ⇒ page 252

**3 - Dowel sleeve**

- ❑ 2x

**4 - Engine support (left-side)**

- ❑ With bracket for air conditioner compressor

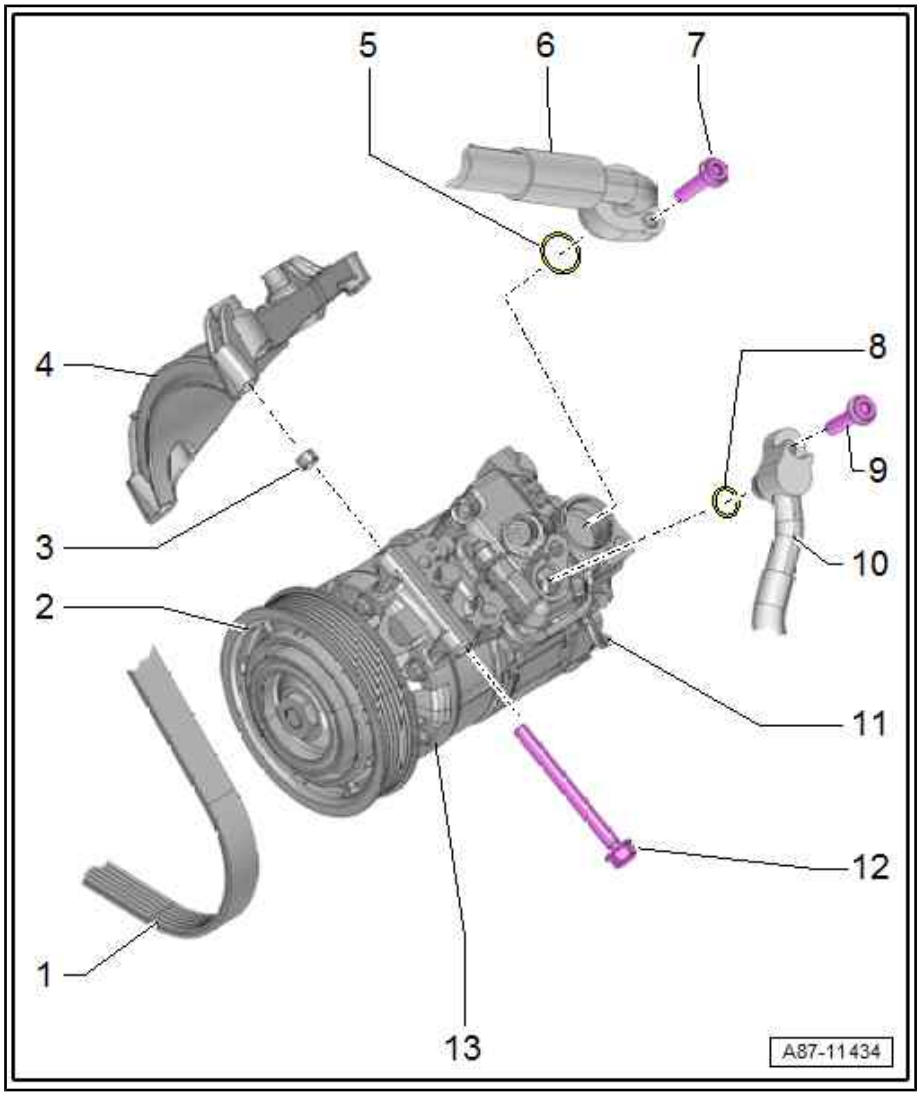
**5 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**6 - Refrigerant line (low-pressure side)**

**7 - Bolt**

- ❑ M6 - 9 Nm
- ❑ M8 - 25 Nm



**8 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**9 - Bolt**

- ❑ M6 - 9 Nm
- ❑ M8 - 25 Nm

**10 - Refrigerant line (high-pressure side)**

**11 - Air conditioner compressor regulating valve - N280-**

- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

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**12 - Bolt**

- ❑ 3x
- ❑ Different versions ⇒ Electronic parts catalogue

Steel bolt

- ❑ 25 Nm

Aluminium bolt

- ❑ Renew after removing
- ❑ 8 Nm +180°

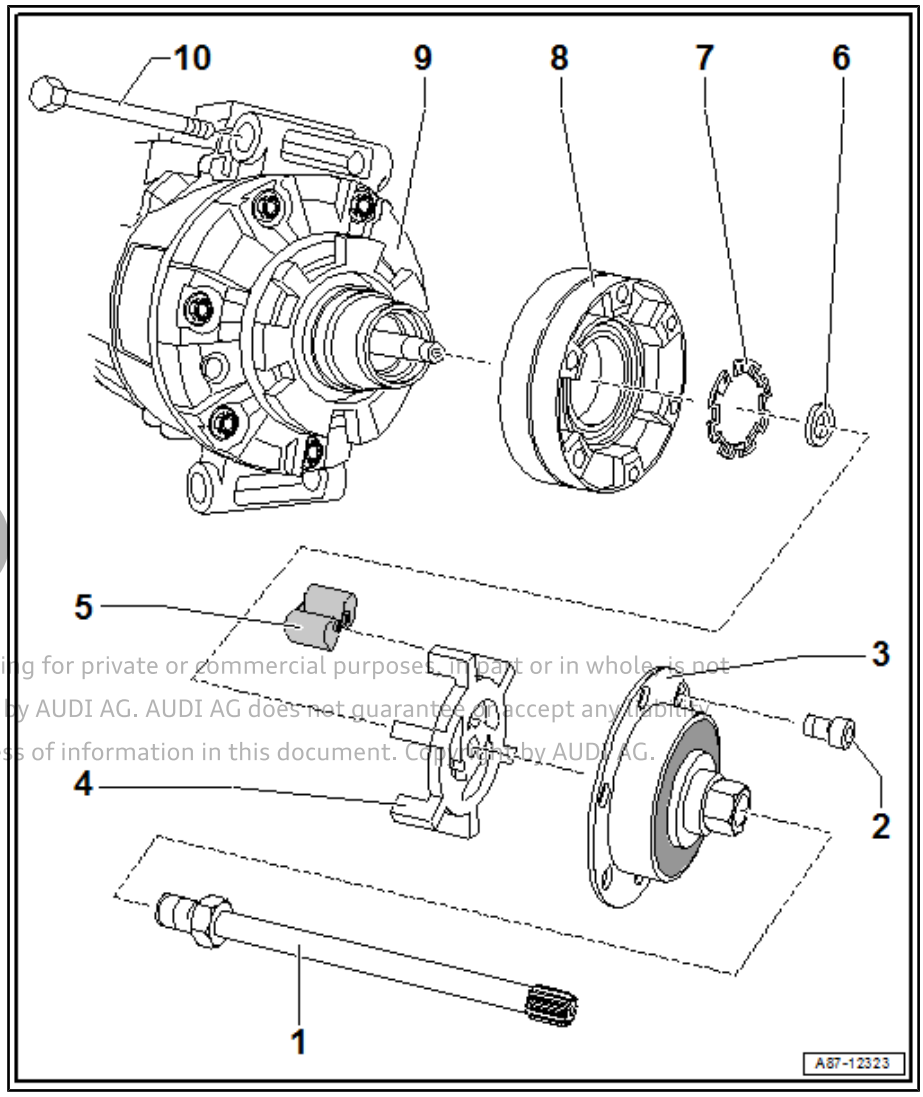
**13 - Air conditioner compressor**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Detaching and attaching refrigerant line ⇒ page 279
- ❑ Detaching and attaching at bracket ⇒ page 268
- ❑ Removing and installing ⇒ page 303

**Note**

*Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue*

## 3.1.5 Exploded view - drive unit for air conditioner compressor, vehicles with 8-cyl. FSI/TFSI engine




**1 - Air conditioner compressor drive shaft**

- Must be seated in splines of drive gear on engine without play after thread has been tightened
- Lubricate splines for drive gear e.g. with grease - G 000 100- ⇒ Electronic parts catalogue
- Unfastening and tightening
  ⇒ “3.8 Unfastening and securing air conditioner compressor drive shaft”, page 323
- Removing and installing
  ⇒ “3.9 Removing and installing air conditioner compressor drive shaft”, page 325
- 60 Nm

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**2 - Bolt**

- 10 Nm

**3 - Drive plate**

- With overload protection; triggered if torque is too great (e.g. if air conditioner compressor cannot rotate freely) causing drive shaft to free-wheel without driving air conditioner compressor
- Checking concentricity
  ⇒ “3.11 Checking and adjusting concentricity of drive plate with overload protection”, page 327
- Removing and installing
  ⇒ “3.10 Removing and installing drive plate with overload protection”, page 326

**4 - Drive plate**

- Screwed onto compressor shaft
- With overload protection; triggered if torque is too great (e.g. if air conditioner compressor cannot rotate freely) causing drive shaft to free-wheel without driving air conditioner compressor
- Removing and installing
  ⇒ “3.12 Removing and installing drive plate at air conditioner compressor”, page 327
- 30 Nm

**5 - Rubber element**

- Isolates drive unit, dampens vibration and noise
- Install in correct position
  ⇒ “3.12 Removing and installing drive plate at air conditioner compressor”, page 327

**6 - Spacer**

- Original spacer must be fitted
- Dimensions: 17.5 x 10 x 3 mm

**7 - Circlip**

- ❑ Renew
- ❑ Install correctly: flat side must face air conditioner compressor

**8 - Drive plate**

- ❑ With roller bearing
- ❑ Removing and installing ⇒ “3.13 Removing and installing drive plate with roller bearing”, page 329
- ❑ Clean air conditioner compressor flange before fitting drive plate

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**9 - Air conditioner compressor**

**Caution**

*Only remove after discharging the refrigerant circuit; 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; Rep. gr. 87 ; General information on air conditioning systems , and ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 00 ; Laws and regulations .*

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Detaching and attaching refrigerant line
  ⇒ “3.4.5 Detaching and attaching refrigerant lines at air conditioner compressor - vehicles with 8-cyl. FSI/TFSI engine”, page 281
- ❑ Removing and installing
  ⇒ “3.5.5 Removing and installing air conditioner compressor - vehicles with 8-cyl. FSI/TFSI engine”, page 306
- ❑ Renewing drive unit
  ⇒ “3.1.5 Exploded view - drive unit for air conditioner compressor, vehicles with 8-cyl. FSI/TFSI engine”, page 246

**Note**

*Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue*

**10 - Bolt**

- ❑ 3x
- ❑ Different versions ⇒ Electronic parts catalogue

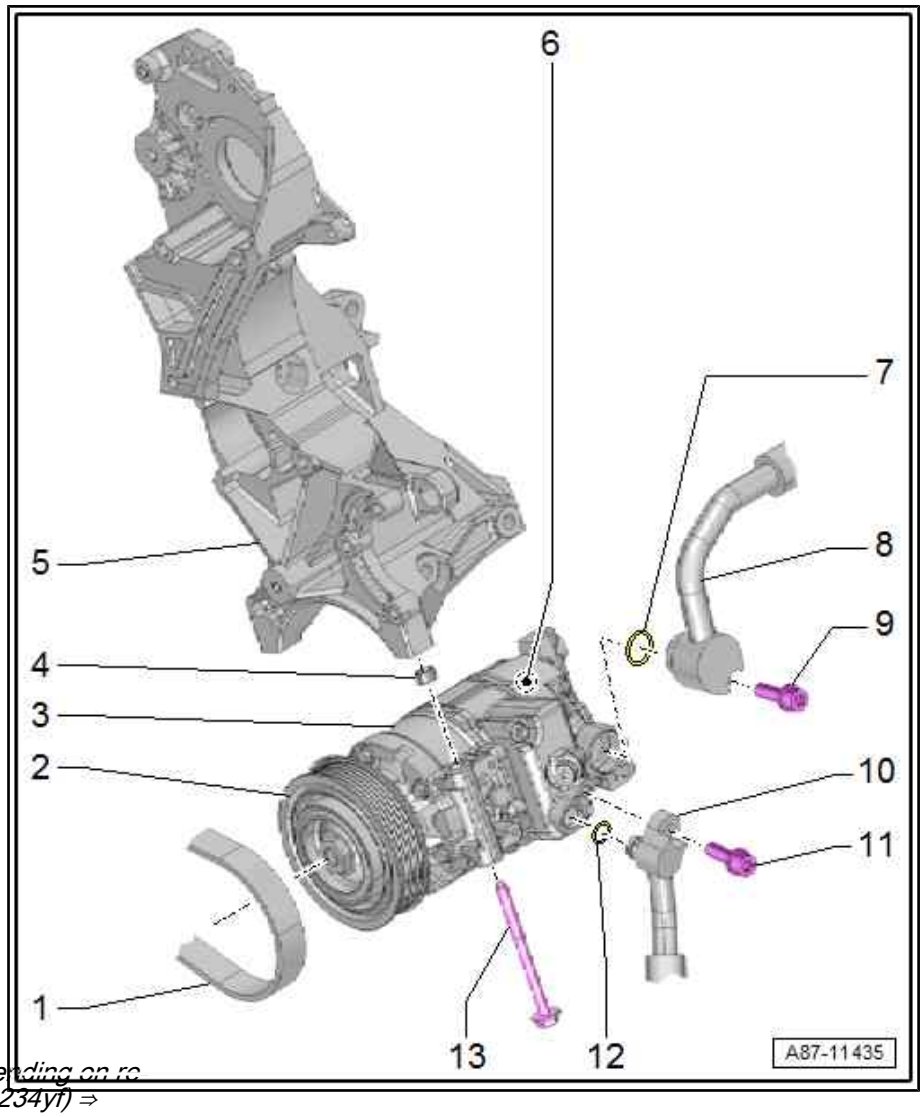
Steel bolt

- ❑ 25 Nm

Aluminium bolt

- ❑ Renew after removing
- ❑ 8 Nm +180°

## 3.1.6 Exploded view - drive unit for air conditioner compressor, vehicles with 4-cyl. TDI engine




**1 - Poly V-belt**

- ❑ Check for wear
- ❑ Removing and installing ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt
- ❑ Mark direction; install in correct position ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt

**2 - Pulley with overload protection**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Exploded view ⇒ page 252

**3 - Air conditioner compressor**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Detaching and attaching refrigerant line ⇒ page 270
- ❑ Detaching and attaching at bracket ⇒ page 257
- ❑ Removing and installing ⇒ page 286

**Note**

*Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue*

**4 - Dowel sleeve**

- ❑ 2x

**5 - Bracket for ancillaries**

- ❑ Removing and installing ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing bracket for ancillaries

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**6 - Air conditioner compressor regulating valve - N280-**

- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

**7 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**8 - Refrigerant line (low-pressure side)**

**9 - Bolt**

- ❑ M6 - 9 Nm

- ❑ M8 - 25 Nm

**10 - Refrigerant line (high-pressure side)**

**11 - Bolt**

- ❑ M6 - 9 Nm
- ❑ M8 - 25 Nm

**12 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**13 - Bolt**

- ❑ 3x
- ❑ Different versions ⇒ Electronic parts catalogue

Steel bolt

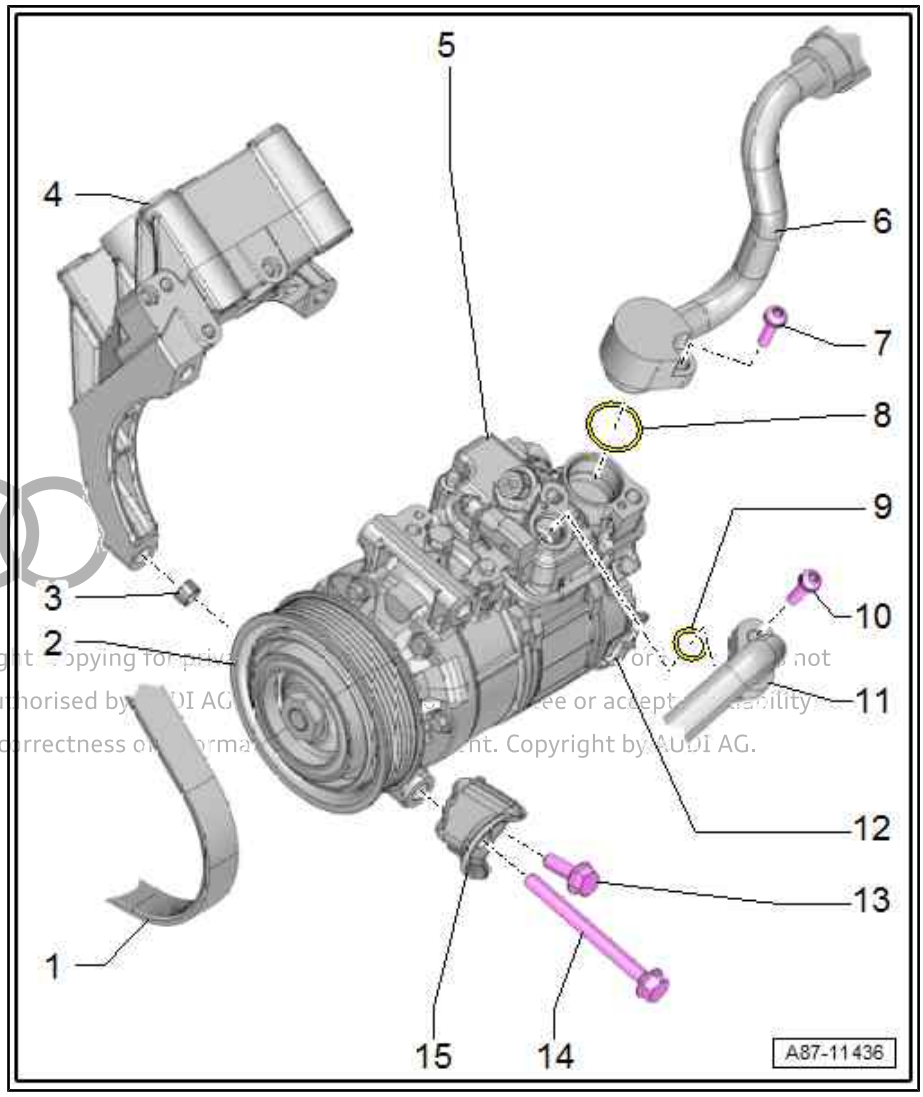
- ❑ 25 Nm

Aluminium bolt

- ❑ Renew after removing
- ❑ 8 Nm +180°

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## 3.1.7 Exploded view - drive unit for air conditioner compressor, vehicles with 6-cyl. TDI engine




**1 - Poly V-belt**

- ❑ Check for wear
- ❑ Removing and installing ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt
- ❑ Mark direction; install in correct position ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt

**2 - Pulley with overload protection**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Exploded view ⇒ page 252

**3 - Dowel sleeve**

- ❑ 2x

**4 - Bracket**

- ❑ For air conditioner compressor
- ❑ Removing and installing ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing bracket for ancillaries

**5 - Air conditioner compressor**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Detaching and attaching refrigerant line ⇒ page 270
- ❑ Detaching and attaching at bracket ⇒ page 257
- ❑ Removing and installing ⇒ page 286

**Note**

*Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue*

**6 - Refrigerant line (low-pressure side)**

**7 - Bolt**

- ❑ M6 - 9 Nm
- ❑ M8 - 25 Nm

**8 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

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**9 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**10 - Bolt**

- ❑ M6 - 9 Nm
- ❑ M8 - 25 Nm

**11 - Refrigerant line (high-pressure side)**

**12 - Air conditioner compressor regulating valve - N280-**

- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

**13 - Bolt**

- ❑ 23 Nm

**14 - Bolt**

- ❑ 3x
- ❑ Different versions ⇒ Electronic parts catalogue

Steel bolt

- ❑ 25 Nm

Aluminium bolt

- ❑ Renew after removing
- ❑ 8 Nm +180°

**15 - Bracket**

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## 3.2 Exploded view - pulley

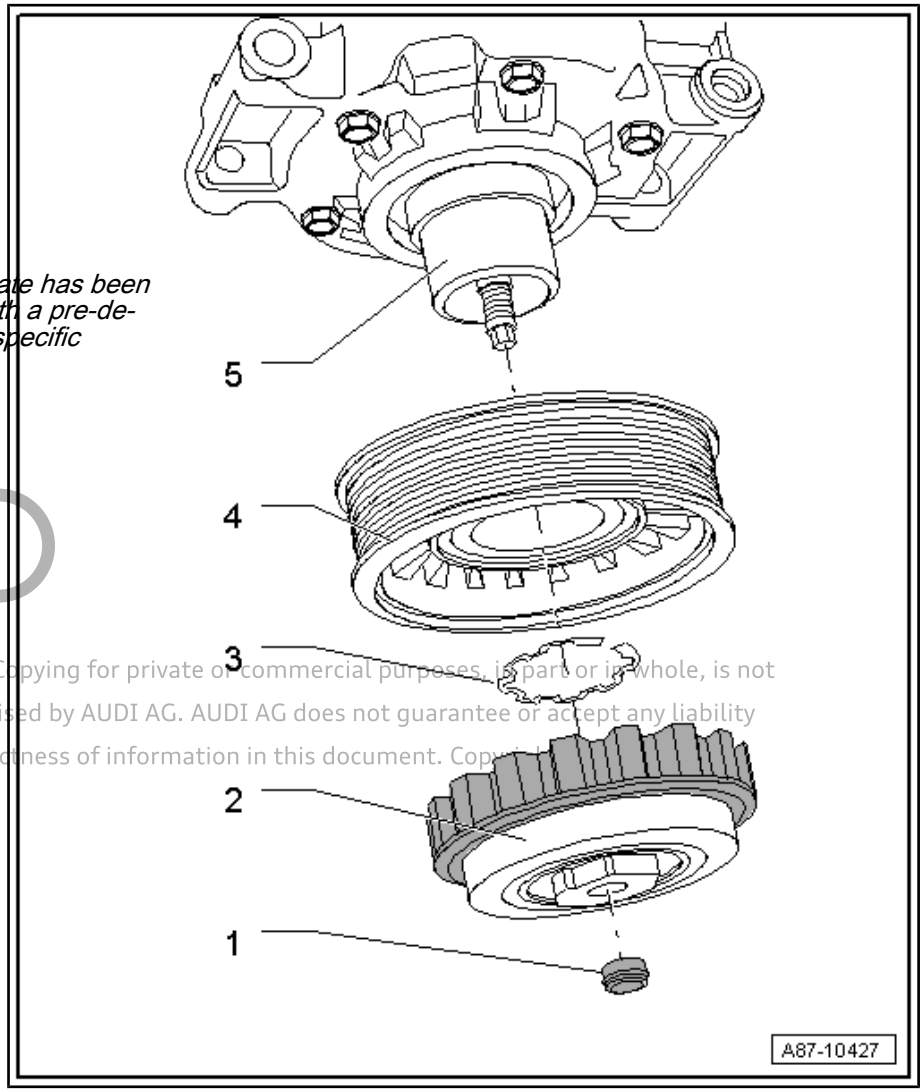
⇒ “3.2.1 Exploded view - Denso air conditioner compressor pulley (version 1)”, page 252

⇒ “3.2.2 Exploded view - Denso air conditioner compressor pulley (version 2)”, page 253

⇒ “3.2.3 Exploded view - Denso air conditioner compressor pulley (version 3)”, page 254

⇒ “3.2.4 Exploded view - pulley, air conditioner compressor with air conditioning system magnetic clutch N25 ”, page 255

### 3.2.1 Exploded view - “Denso” air conditioner compressor pulley (version 1)




**1 - Cap**

**2 - Drive plate**

- ❑ Renew
- ❑ Screwed onto compressor shaft

**Note**

*Thread of new drive plate has been lubricated at factory with a pre-determined amount of a specific grease.*

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ With overload protection device; triggered if torque is too great (e.g. if air conditioner compressor cannot rotate freely) causing pulley to free-wheel without driving air conditioner compressor
- ❑ With rubber elements for decoupling pulley from air conditioner compressor drive shaft and for dampening vibrations and noise
- ❑ Removing and installing ⇒ page 318
- ❑ 30 Nm

**3 - Circlip**

- ❑ Renew
- ❑ Install correctly: flat side must face air conditioner compressor

**4 - Pulley**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Made of plastic, sensitive to impact
- ❑ Removing and installing ⇒ page 318

**5 - Air conditioner compressor**

- ❑ Clean air conditioner compressor drive shaft before fitting pulley

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**Note**

*Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue*

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## 3.2.2 Exploded view - “Denso” air conditioner compressor pulley (version 2)

**1 - Bolt**

- ❑ Renew
- ❑ 20 Nm

**2 - Drive plate**

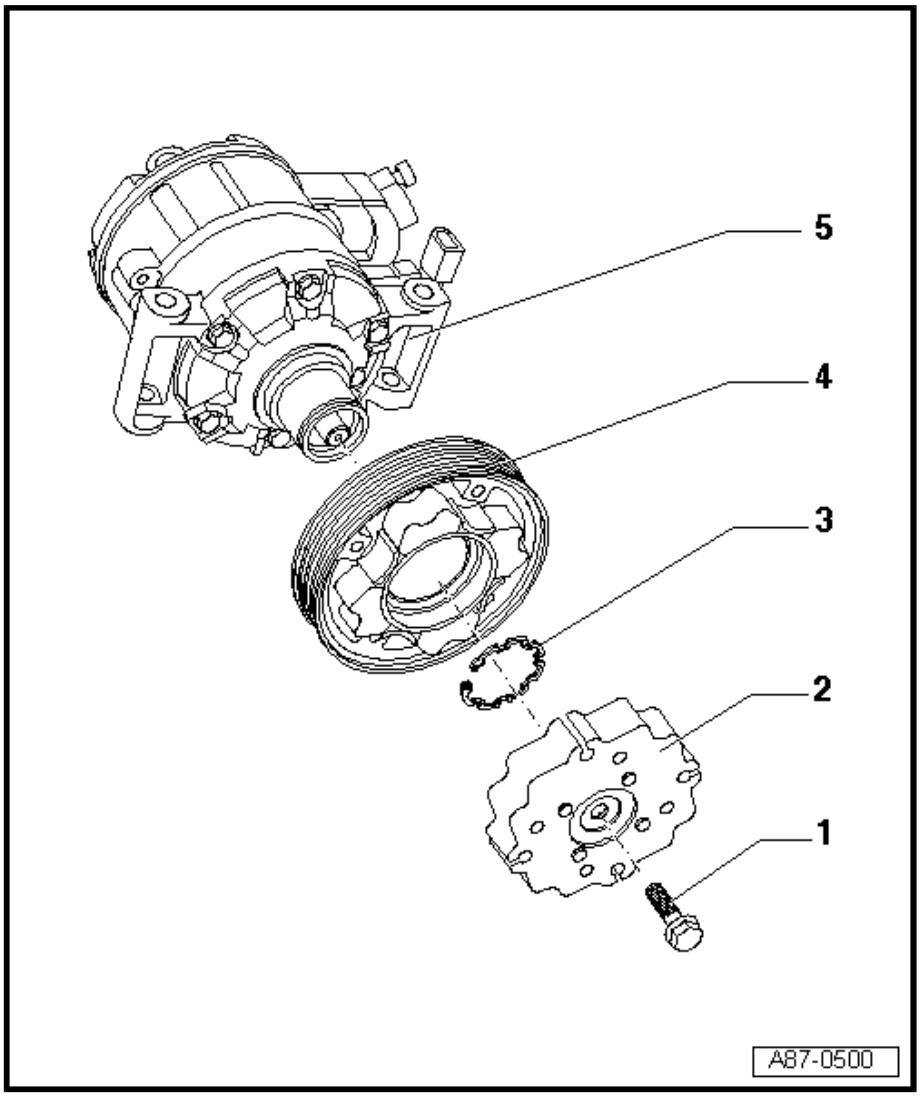
- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ page 320
- ❑ With overload protection device; triggered if torque is too great (e.g. if air conditioner compressor cannot rotate freely) causing pulley to free-wheel without driving air conditioner compressor

**3 - Circlip**

- ❑ Renew
- ❑ Install correctly: flat side must face air conditioner compressor

**4 - Pulley**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ page 320
- ❑ Rubber element of pulley is triggered if torque is too great (e.g. if air conditioner compressor cannot rotate freely) causing pulley to free-wheel without driving air conditioner compressor.




**Note**

*Under certain conditions (e.g. engine running roughly), rubber element of pulley may be triggered when there is no fault in the air conditioner compressor or refrigerant circuit.*

**5 - Air conditioner compressor**

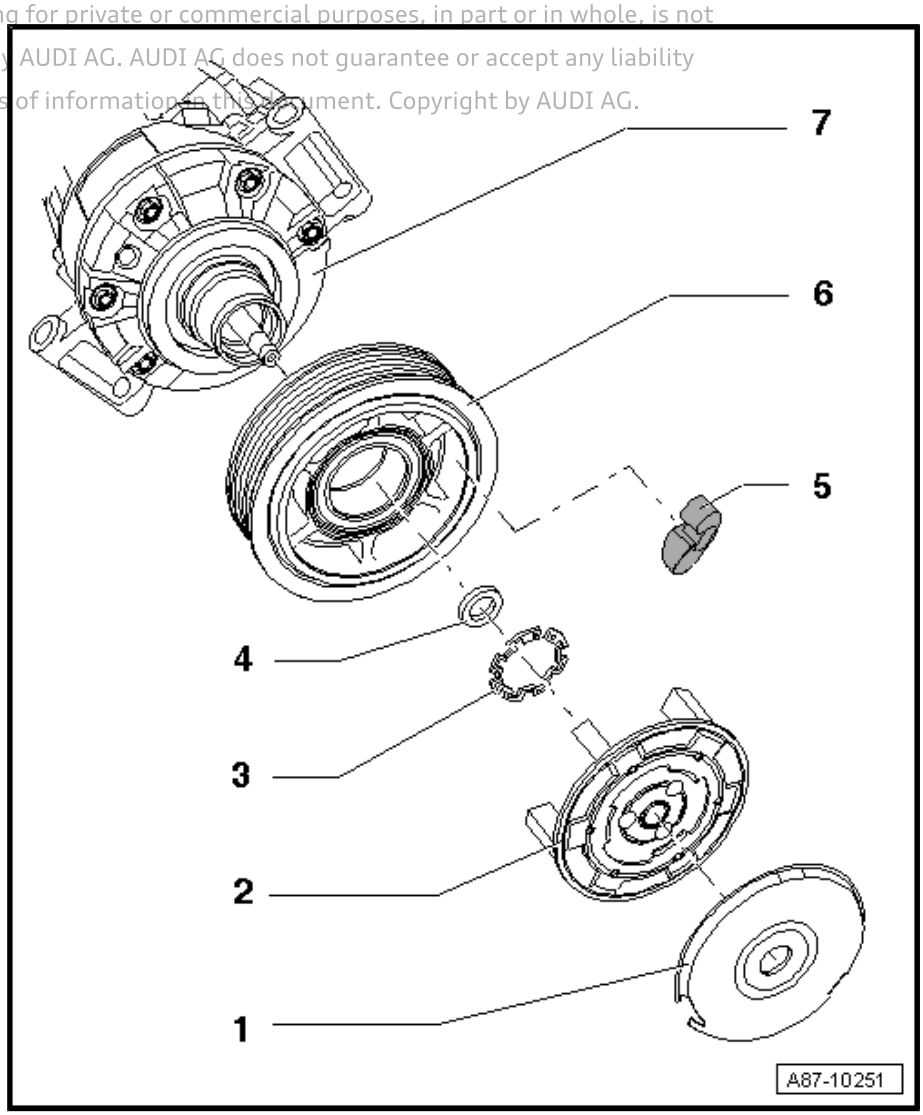
- ❑ Clean air conditioner compressor drive shaft before fitting pulley

**Note**

*Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue*

## 3.2.3 Exploded view - “Denso” air conditioner compressor pulley (version 3)

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**1 - Circlip with rubber disc**

- ❑ Remove carefully using a small screwdriver or long-nose pliers (paying particular attention to pulley)
- ❑ Removing and installing ⇒ page 321
- ❑ Vulcanised rubber disc provides noise insulation when compressor output is low and engine is idling

**2 - Drive plate**

- ❑ Screwed onto compressor shaft
- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ With overload protection device; triggered if torque is too great (e.g. if air conditioner compressor cannot rotate freely) causing pulley to free-wheel without driving air conditioner compressor
- ❑ Removing and installing ⇒ page 321
- ❑ Tightening torque: 35 Nm

**3 - Circlip**

- ❑ Renew
- ❑ Ensure correct installation position (flat side facing air conditioner compressor)
- ❑ Removing and installing ⇒ page 321

**4 - Spacer**

- ❑ Dimensions: 17.5 x 10 x 3 mm

**5 - Rubber elements**

- ❑ 6x, ensure correct installation ⇒ page 321
- ❑ Decouples pulley from drive shaft of air conditioner, damping vibration and noise
- ❑ Before installation, coat rubber elements slightly with lubricant (e.g. tyre fitting paste or soap solution).

**6 - Pulley**

- ❑ Pulley is made of plastic, is sensitive to impact and should be treated with special care.
- ❑ Different versions ⇒ Electronic parts catalogue

❑ Removing and installing ⇒ page 321

**7 - Air conditioner compressor**

❑ Without air conditioning system magnetic clutch - N25-

❑ Different versions may be fitted, depending on engine type and country-specific version of vehicle ⇒ Electronic parts catalogue .

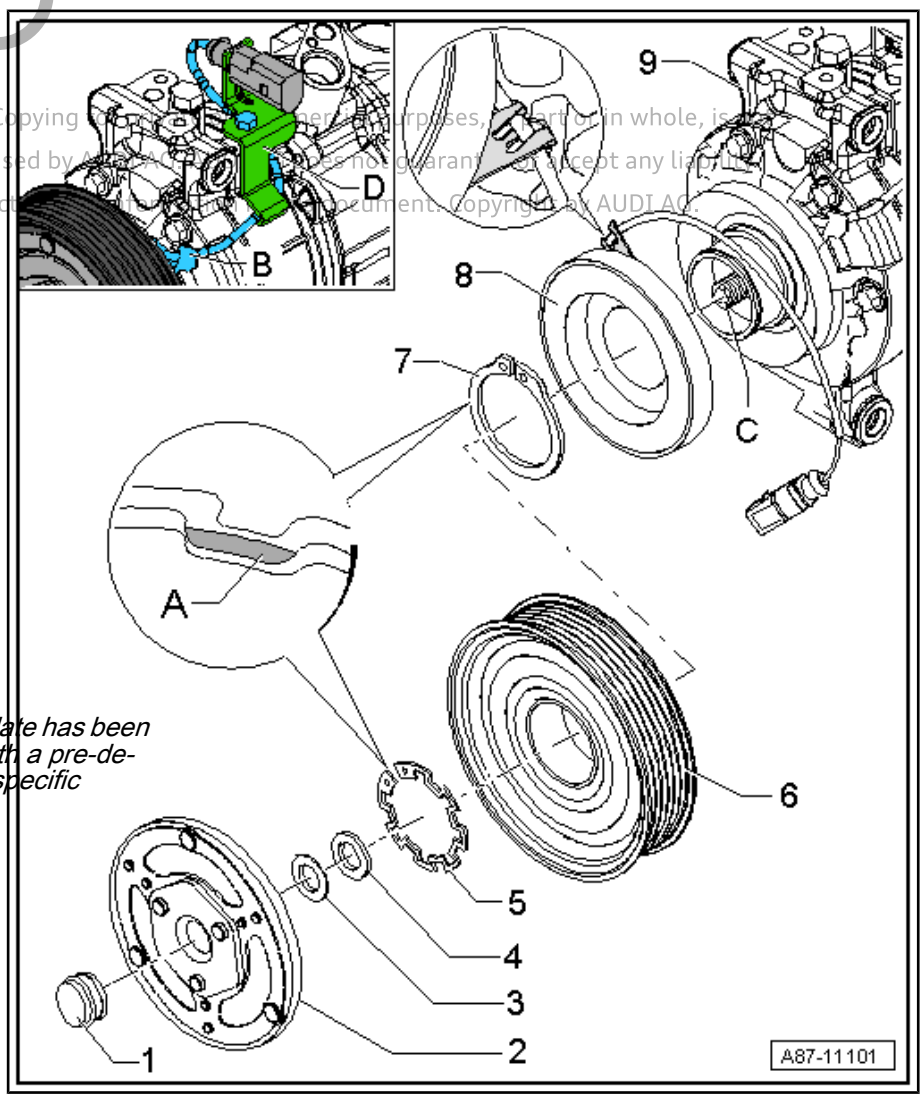
❑ Clean air conditioner compressor flange before fitting pulley.

**Note**

*Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue*

## 3.2.4 Exploded view - pulley, air conditioner compressor with air conditioning system magnetic clutch - N25-

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**1 - Cap**

❑ Not always fitted

**2 - Clutch plate**

❑ Renew

❑ Screwed onto compressor shaft

– Clean contact surfaces of clutch plate and pulley before attaching.

– Clean thread of compressor shaft before screwing on clutch plate.

– After tightening, check gap width between pulley and clutch plate and correct if necessary ⇒ page 316 .

**Note**

*Thread of new clutch plate has been lubricated at factory with a pre-determined amount of a specific grease.*

❑ Different versions ⇒ Electronic parts catalogue

❑ With overload protection device; triggered if torque is too great (e.g. if air conditioner compressor cannot rotate freely) causing pulley to free-wheel without driving air conditioner compressor when magnetic clutch -N25- is activated

Detaching/attaching

– To detach, hold compressor shaft -C- in position and use a suitable tool to turn clutch plate in direction of -arrow- (anti-clockwise) as described for drive plate on an air conditioner compressor without magnetic

clutch
⇒ “3.7.1 Removing and installing pulley - Denso air conditioner compressor (version 1)”, page 318 .

- ❑ Tightening torque: 30 Nm

**3 - Window glass**

**4 - Spacer**

- ❑ For adjusting gap between clutch plate and pulley
- ❑ Checking gap ⇒ page 317

**5 - Circlip**

- ❑ Renew
- ❑ Ensure correct installation position (flat side facing air conditioner compressor)
- ❑ When fitting circlip, take care not to bend it open more than necessary.

– Ensure that circlip is fitted correctly (bevelled side -A- faces away from air conditioner compressor; flat side faces compressor).

**6 - Pulley**

- ❑ Pulley is sensitive to impact and should therefore be treated with care.
- ❑ Clean air conditioner compressor flange before fitting pulley.
- ❑ Different versions (depending e.g. on type of engine) ⇒ Electronic parts catalogue
- ❑ If pulley cannot be detached from air conditioner compressor flange by hand, refer to ⇒ page 316 .

**7 - Circlip**

- ❑ Renew
- ❑ Ensure correct installation position (flat side facing air conditioner compressor)
- ❑ When fitting circlip, take care not to bend it open more than necessary.

– Ensure that circlip is fitted correctly (bevelled side -A- faces away from air conditioner compressor; flat side faces compressor).

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**8 - Solenoid**

- ❑ When installing, make sure retainer for cable -B- is positioned correctly.
- ❑ Depending on version, connector -D- may be attached to air conditioner compressor with a bracket.
- ❑ On air conditioner compressors on which wiring for activating -N25- and -N280- is combined in a 3-pin connector, eject wire leading to -N25- from connector using a suitable release tool from wiring harness repair set - VAS 1978 B- ⇒ Electrical system; Rep. gr. 97 ; Connectors

**9 - Air conditioner compressor**

- ❑ Different versions may be fitted, depending on engine type and country-specific version of vehicle ⇒ Electronic parts catalogue .
- ❑ Clean air conditioner compressor flange before fitting pulley.
- ❑ Clean thread of compressor shaft and apply a small quantity of grease to thread.

**Note**

*Different versions depending on refrigerant (R134a or R1234yf) ⇒ Electronic parts catalogue*

## 3.3 Detaching and attaching air conditioner compressor at bracket

⇒ “3.3.1 Detaching and attaching air conditioner compressor at bracket - vehicles with 4-cyl. TFSI/TDI engine”, page 257

⇒ “3.3.2 Detaching and attaching electrically driven air conditioner compressor at bracket - Audi A6 hybrid”, page 259

⇒ “3.3.3 Detaching and attaching air conditioner compressor with refrigerant lines connected - vehicles with 6-cyl. FSI/TFSI and 8-cyl. FSI/TFSI engine”, page 268

⇒ “3.3.4 Detaching and attaching air conditioner compressor at bracket - vehicles with 6-cyl. TDI engine”, page 268

⇒ “3.5.3 Removing and installing electrically driven air conditioner compressor - Audi A6 e-tron”, page 296

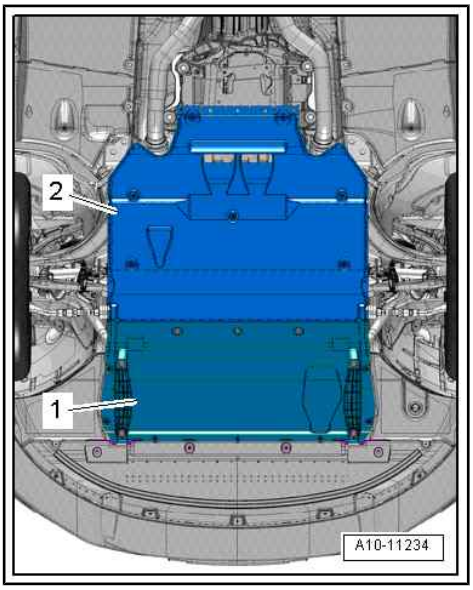
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### 3.3.1 Detaching and attaching air conditioner compressor at bracket - vehicles with 4-cyl. TFSI/TDI engine

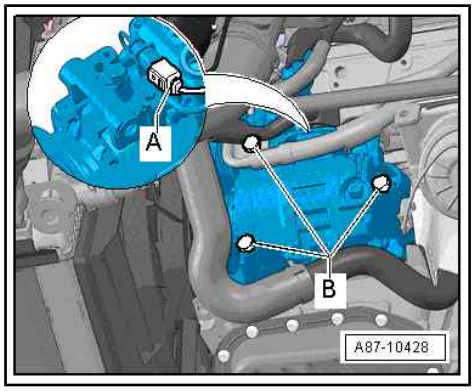
**Removing**

- Refrigerant circuit not opened

– Remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



– Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .
– Unplug electrical connector -A-.
– Remove bolts -B- and detach air conditioner compressor.




**Caution**

***Risk of damage to refrigerant lines and hoses***

- ***Do not stretch, kink or bend refrigerant lines and hoses.***

– Suspend air conditioner compressor from lock carrier with a piece of wire.

**Note**

*If the air conditioner compressor cannot be swivelled far enough away from the engine, the compressor must be removed completely (TFSI engine ⇒ page 286 , TDI engine ⇒ page 311 ).*

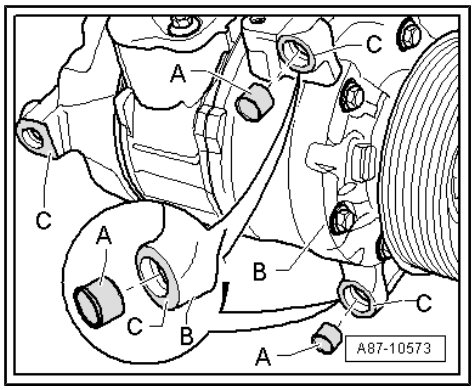
### Installing

Install in reverse order of removal; note the following:

### Tightening torques

- ⇒ “3.1 Exploded view - drive unit for air conditioner compressor”, page 237

– Thoroughly clean contact surfaces -C- on air conditioner compressor.
– Insert dowel sleeves -A- in air conditioner compressor -B-.




**Note**

- *There are different versions of the dowel sleeves (different lengths) ⇒ Electronic parts catalogue .*
- *Make sure that the dowel sleeves are positioned correctly and that the contact surfaces are clean. Incorrectly fitted dowel sleeves or dirty/damaged contact surfaces could lead to misalignment between the air conditioner compressor and the engine. After a period of operation, misalignment will cause damage to the air conditioner compressor.*
- *After attaching the air conditioner compressor, check the routing of the refrigerant lines. They must be inserted in the brackets provided (if fitted, depends on engine).*
- *Check the refrigerant lines and the corresponding brackets for adequate clearance with respect to the other components, ensuring a sufficient distance between the belt, bracket and pulley.*

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

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## 3.3.2 Detaching and attaching electrically driven air conditioner compressor at bracket - Audi A6 hybrid

**Note**

- *The air conditioner compressor cannot be detached and moved away from the bracket on the Audi A6 e-tron; it must therefore always be removed completely* *⇒ "3.5.3 Removing and installing electrically driven air conditioner compressor - Audi A6 e-tron", page 296* .
- *The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

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For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ "Electrical system, hybrid; Rep. gr. 93", General warning instructions for work on the high-voltage system.

**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

**WARNING**

***Working on vehicles with high-voltage wiring:***

- ***Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.***
- ***High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.***
- ***The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.***

DANGER!

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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**Note**

- *With control unit for air conditioning compressor - J842- and electrical air conditioner compressor - V470-*
- *The electric motor of the air conditioner compressor is supplied with power by the power and control electronics for electric drive - JX1- .*
- *The control unit for air conditioning compressor - J842- integrated in the air conditioner compressor regulates the speed and thereby the output of the air conditioner compressor ( electrical air conditioner compressor - V470- ) based on the request received via the data bus ⇒ Vehicle diagnostic tester ("Guided Fault Finding" for air conditioner and battery regulation).*
- *The electrically driven air conditioner compressor is not fitted with an air conditioner compressor regulating valve - N280- . The output of the air conditioner compressor is regulated externally via the air conditioner compressor speed ⇒ Current flow diagrams, Electrical fault finding and Fitting locations and ⇒ Vehicle diagnostic tester ("Guided Fault Finding" for air conditioner and battery regulation).*
- *At present, the electrically driven air conditioner compressor operates on the principle of a scroll-type supercharger (similar to the "G-Lader" supercharger).*
- *The control unit for air conditioning compressor - J842- and the electrical air conditioner compressor - V470- form one component and cannot be separated at present.*

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As work on the high-voltage system is required for the following sequence of operations, de-energise the high-voltage system ⇒ page 31 , ⇒ Electrical system, hybrid; Rep. gr. 93 ; De-energising high-voltage system . Pay particular attention to the "General warning instructions for work on the high-voltage system" ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**Note**

- *On vehicles with 4-cyl. engine, the air conditioner compressor can be detached from the bracket and re-attached without opening the refrigerant lines.*
- *Do not discharge the refrigerant circuit when detaching the air conditioner compressor from the bracket. Do not detach refrigerant hoses and refrigerant lines from the compressor.*
- *Do not unfasten the refrigerant lines and corresponding clamps.*
- *Leave the high-voltage system wire connected to the air conditioner compressor. Do not release the high-voltage system connector at the air conditioner compressor.*
- *After detaching the air conditioner compressor, secure it to the vehicle, e.g. with a piece of wire. Do not leave it hanging from the refrigerant lines.*
- *Depending on the engine and the country-specific version, different air conditioner compressors may be installed ⇒ Electronic parts catalogue .⇒*

### Detaching

As work on the high-voltage system is required for the following sequence of operations, de-energise the high-voltage system ⇒ page 31 , ⇒ Electrical system, hybrid; Rep. gr. 93 ; De-energising high-voltage system . Pay particular attention to the “General warning instructions for work on the high-voltage system” ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

– Switch off ignition.

– De-energise high-voltage system ⇒ Electrical system, hybrid; Rep. gr. 93 ; De-energising high-voltage system .

De-energise high-voltage system.

**DANGER!**

***High voltage can cause fatal injury.***

***Danger of severe or fatal injuries from electric shock.***

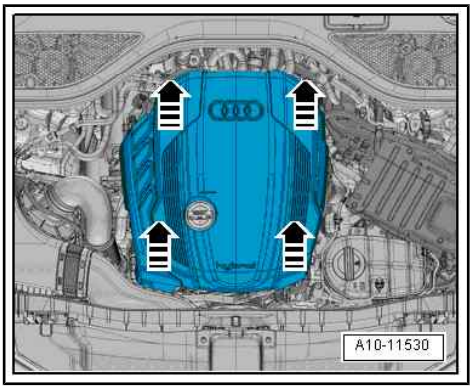
- ***The high-voltage system may only be de-energised by a suitably qualified person (Audi high-voltage technician).***
- ***It must be definitely confirmed that the high-voltage system is de-energised. The system may only be de-energised using the vehicle diagnostic tester via “Guided Fault Finding”.***
- ***The qualified person (Audi high-voltage technician) confirms that the system is de-energised and uses the locking cap - T40262- to ensure that the system cannot be re-energised. As an additional precaution, the ignition key and the maintenance connector for high-voltage system - TW- are then stored in a safe place by the qualified person.***
- ***The qualified person (Audi high-voltage technician) marks the vehicle by attaching the appropriate warning signs.***

**Note**

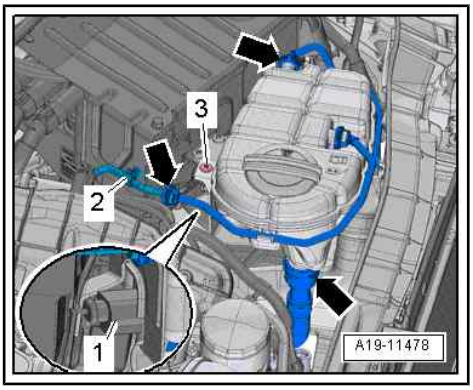
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- *De-energising high-voltage system:*
- *Connect vehicle diagnostic tester.*
- *Select* `Guided Fault Finding` *mode.*
- *Using the* `Go to` *key, select the following menu items in succession*
- `Function/component selection`
- `Body`
- `Electrical system`
- `Self-diagnosis compatible systems`
- `8C - Hybrid battery management -J840`
- `8C - Hybrid battery management, functions`
- `51 - De-energise high-voltage system (Rep. gr. 93)`

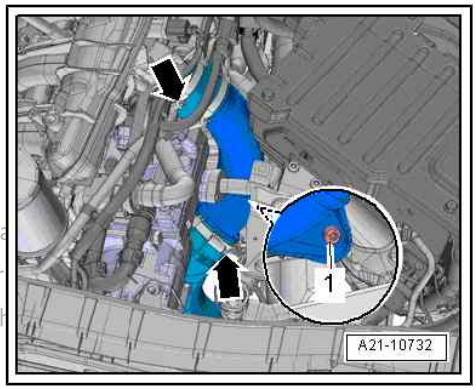
– Detach engine cover panel ⇒ Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .




– Drain coolant ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
– Lift retaining clips -arrows- and disconnect coolant hoses.
– Unscrew bolt -3- and move coolant hose -2- clear.
– Detach coolant expansion tank and unplug electrical connector -1-.

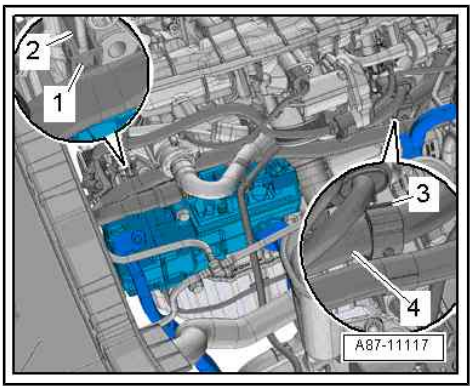



– Unfasten hose clips -arrows-.
– Remove bolt -1- and detach air pipe.

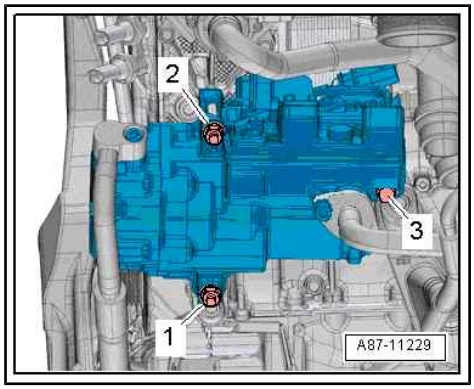



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– Expose attachment points -1 and 3- of high-voltage system wire -4- on engine.



– Remove nuts -1, 2- and bolt -3-.

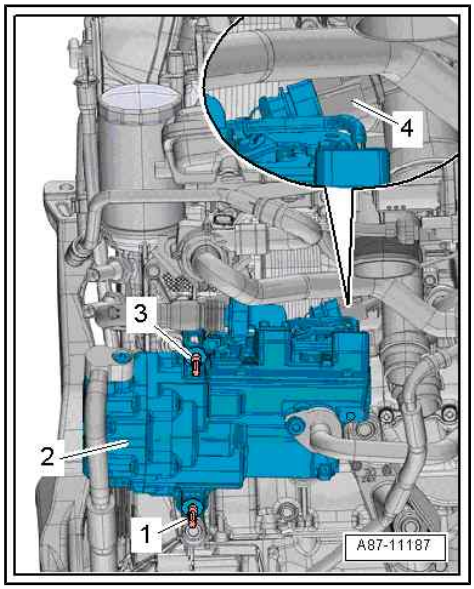



– Remove threaded pins -1 and 3-.

**Note**

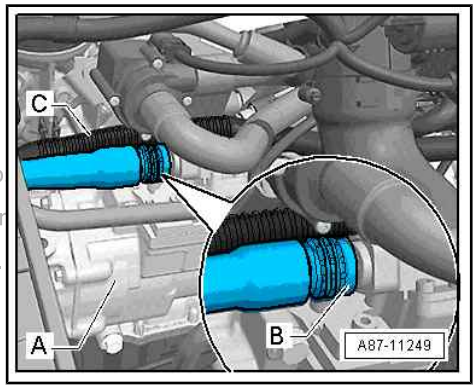
*Bolts may also be fitted instead of threaded pins -1 and 3- ⇒ Electronic parts catalogue .*

– Move air conditioner compressor -2- slightly to the side and unplug electrical connector -4- (for low voltage on air conditioner compressor).




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– Detach air conditioner compressor -A- and swivel it to the left away from the engine as far as possible without kinking or straining the cable of the high-voltage system -C- or the refrigerant hoses.




**Caution**

*Risk of damaging cable or connector of high-voltage system*

- *Take care not to twist or bend the connector of the high-voltage system -B-.*
- *Take care not to twist, strain, kink or bend the cable of the high-voltage system -C-.*

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– Attach the air conditioner compressor to the vehicle (e.g. with a piece of wire) in such a way that neither the high-voltage system wire nor the refrigerant hoses are kinked or strained.

**Caution**

*Risk of damage to high-voltage system wire or refrigerant lines and hoses.*

- *Do not stretch, kink or bend refrigerant lines and hoses.*

**Note**

*If the air conditioner compressor cannot be swivelled far enough away from the engine, the compressor must be removed completely*
*⇒ "3.5.2 Removing and installing electrically driven air conditioner compressor - Audi A6 hybrid", page 289 .*

### Attaching

Install in reverse order of removal; note the following:

### Tightening torques

- ⇒ "3.1.2 Exploded view - electrically driven air conditioner compressor, Audi A6 hybrid", page 239
- Prior to installation, check the air conditioner compressor and bracket attachment points. The contact surfaces must be clean and free from rust and grease. If this is not the case, treat the contact surfaces accordingly with the contact surface cleaning set - VAS 6410- ⇒ Electrical system; Rep. gr. 97 ; Connectors .

– Top up coolant ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

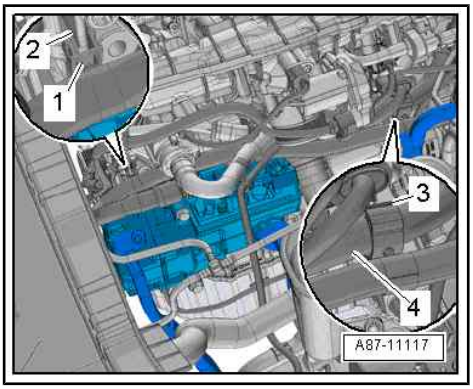
**Note**

- *After re-installing the electrically driven air conditioner compressor (if removed) and then charging the refrigerant circuit, first start up the compressor via the "Compressor run-in" function of the basic setting routine. Otherwise, the air conditioner compressor may be damaged if refrigerant oil has accumulated in the compression chamber of the air conditioner compressor due to inappropriate storage prior to installation ⇒ page 232 and ⇒ Vehicle diagnostic tester ("Guided Fault Finding" for air conditioner and battery regulation).*
- *An electrically driven air conditioner compressor may only be activated when the refrigerant circuit is charged. Running the air conditioner compressor with the refrigerant circuit empty could lead to compressor damage ⇒ Vehicle diagnostic tester ("Guided Fault Finding" for air conditioner and battery regulation).*
- *After attaching the air conditioner compressor, check the routing of the refrigerant lines. They must be inserted in the brackets provided (if fitted, depends on engine).*
- *Check that refrigerant lines and corresponding brackets have adequate clearance to other components, ensuring sufficient distance between belt, bracket and pulley.*

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– Attach the high-voltage system wire at the specified positions on the engine.

• Secure clip -1- at engine -2- and (if fitted) retainer -3- at wiring harness -4- as shown in illustration.




– Re-install remaining components (removed earlier).

– Re-energise power supply of high-voltage system ⇒ Electrical system, hybrid; Rep. gr. 93 ; De-energising high-voltage system .

Re-energising high-voltage system

**DANGER!**

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***High voltage can cause fatal injury.***

***Danger of severe or fatal injuries from electric shock.***

- ***The high-voltage system may only be re-energised by a suitably qualified person (Audi high-voltage technician).***
- ***The system may only be re-energised using the vehicle diagnostic tester via "Guided Fault Finding".***
- ***The vehicle is then made ready for operation again by the qualified person (Audi high-voltage technician).***
- ***The qualified person (Audi high-voltage technician) marks the vehicle by attaching the appropriate warning signs.***

**Note**

- *Re-energising high-voltage system:*
- *Connect vehicle diagnostic tester.*
- *Select* `Guided Fault Finding` *mode.*
- *Using the* `Go to` *key, select the following menu items in succession*
- `Function/component selection`
- `Body`
- `Electrical system`
- `Self-diagnosis compatible systems`
- `8C - Hybrid battery management -J840`
- `8C - Hybrid battery management, functions`
- `51 - Re-energise high-voltage system (Rep. gr. 93)`

– Switch on ignition.

– Interrogate event memory of operating unit ( Climatronic control unit - J255- ) and control unit for air conditioning compressor - J842- and erase any faults displayed ⇒ Vehicle diagnostic tester ("Guided Fault Finding").

## 3.3.3 Detaching and attaching air conditioner compressor with refrigerant lines connected - vehicles with 6-cyl. FSI/TFSI and 8-cyl. FSI/TFSI engine

On vehicles with 6-cyl. FSI/TFSI or 8-cyl. FSI/TFSI engine, the air conditioner compressor can only be detached from the bracket with the refrigerant circuit open.

Removing and installing air conditioner compressor: vehicles with 6-cyl. FSI/TFSI engine ⇒ page 303 , vehicles with 8-cyl. FSI/TFSI engine ⇒ page 306

## 3.3.4 Detaching and attaching air conditioner compressor at bracket - vehicles with 6-cyl. TDI engine

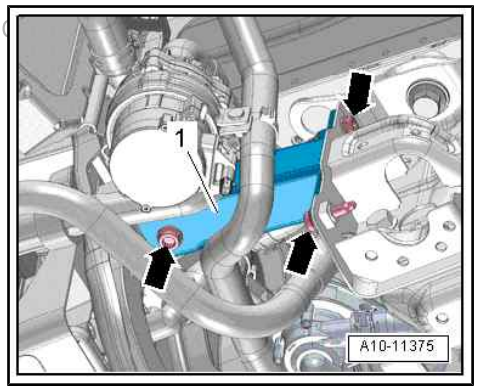
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**Removing**

- Refrigerant circuit not opened

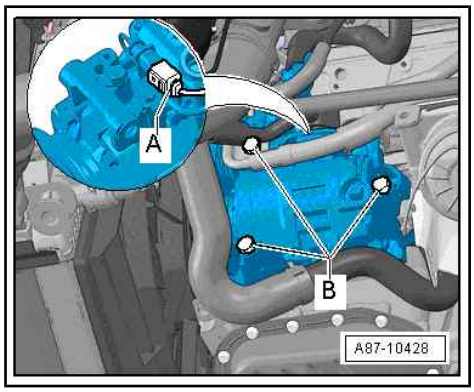
– Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .

– Remove bolts -arrows- (left-side) and detach strut -1- for lock carrier.



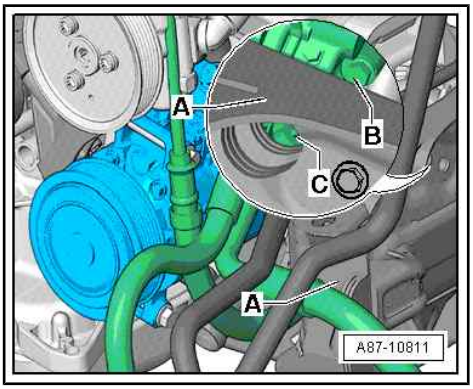

– Unplug electrical connector -A-.

– Remove bolts -B- and detach air conditioner compressor.



**Note**

*There is an opening -C- in the subframe -A- for loosening the rear bolt -B-.*




**Caution**

***Risk of damage to refrigerant lines and hoses***

- ***Do not stretch, kink or bend refrigerant lines and hoses.***

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– Suspend air conditioner compressor from lock carrier with a piece of wire.

**Note**

*If the air conditioner compressor cannot be swivelled far enough away from the engine, the compressor must be removed completely* *⇒ page 313* *.*

### Installing

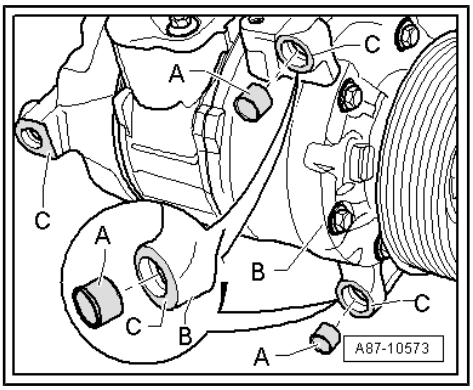
Install in reverse order of removal; note the following:

### Tightening torques

- ⇒ “3.1.7 Exploded view - drive unit for air conditioner compressor, vehicles with 6-cyl. TDI engine”, page 250

– Thoroughly clean contact surfaces -C- on air conditioner compressor.

– Insert dowel sleeves -A- in air conditioner compressor -B-.




**Note**

- *There are different versions of the dowel sleeves (different lengths) ⇒ Electronic parts catalogue .*
- *Make sure that the dowel sleeves are positioned correctly and that the contact surfaces are clean. Incorrectly fitted dowel sleeves or dirty/damaged contact surfaces could lead to misalignment between the air conditioner compressor and the engine. After a period of operation, misalignment will cause damage to the air conditioner compressor.*
- *After attaching the air conditioner compressor, check the routing of the refrigerant lines. They must be inserted in the brackets provided (if fitted, depends on engine).*
- *Check the refrigerant lines and the corresponding brackets for adequate clearance with respect to the other components, ensuring a sufficient distance between the belt, bracket and pulley.*

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

## 3.4 Detaching and attaching refrigerant lines at air conditioner compressor

⇒ “3.4.1 Detaching and attaching refrigerant lines at mechanically driven air conditioner compressor - vehicles with 4-cyl. TFSI/TDI engine”, page 270

⇒ “3.4.2 Detaching and attaching refrigerant lines at electrically driven air conditioner compressor - Audi A6 hybrid”, page 272

⇒ “3.4.3 Detaching and attaching refrigerant lines at electrically driven air conditioner compressor - Audi A6 e-tron”, page 275

⇒ “3.4.4 Detaching and attaching refrigerant lines at air conditioner compressor - vehicles with 6-cyl. FSI/TFSI engine”, page 279

⇒ “3.4.5 Detaching and attaching refrigerant lines at air conditioner compressor - vehicles with 8-cyl. FSI/TFSI engine”, page 281

⇒ “3.4.6 Detaching and attaching refrigerant lines at air conditioner compressor - vehicles with 6-cyl. TDI engine”, page 284

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## 3.4.1 Detaching and attaching refrigerant lines at mechanically driven air conditioner compressor - vehicles with 4-cyl. TFSI/TDI engine

**WARNING**

*Danger from escaping pressurised refrigerant.*

*Danger of frostbite on skin and other parts of the body.*

- *Extract the refrigerant and then immediately open up the refrigerant circuit.*
- *Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.*

**Special tools and workshop equipment required**

- Engine bung set - VAS 6122-

**Caution**

*Risk of irreparable damage to air conditioner compressor.*

- *The air conditioner compressor is always driven when the engine is running (there is no magnetic clutch). Therefore do not start the engine unless the refrigerant circuit has been properly assembled.*
- *If, for example, the refrigerant lines are not connected to the air conditioner compressor when the engine is running, the compressor might heat up (internal heat generation) so much that this can lead to irreparable damage to the compressor.*

**Removing**

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners

with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .

– Remove air hose ⇒ Rep. gr. 21 ; Charge air system; Exploded view - charge air system .

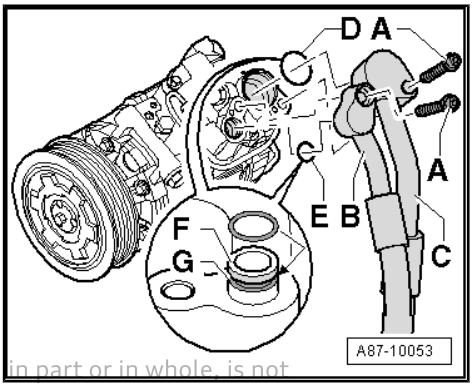
**Caution**

*Risk of damage to refrigerant lines and hoses*

- *Do not stretch, kink or bend refrigerant lines and hoses.*

– Remove bolts -A- and detach refrigerant lines -B and C-.

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .




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## Installing

Install in reverse order of removal; note the following:

### Tightening torques

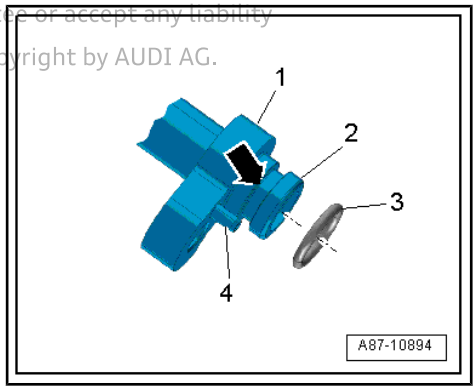
- ⇒ “3.1 Exploded view - drive unit for air conditioner compressor”, page 237

– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .

– If fitted, check that dowel pin -4- is not damaged and is seated correctly.

– Check guide ring -2- at refrigerant line connection for damage.

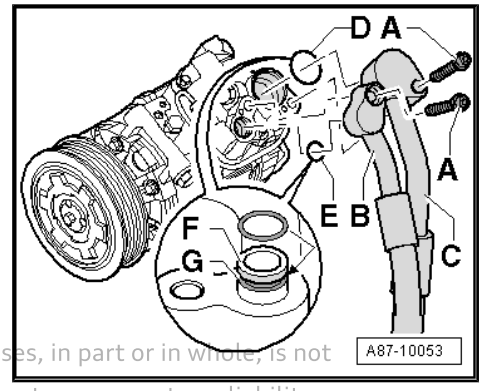
– Insert O-ring -3- in groove -arrow- in connection for refrigerant line -1-.




**Note**

- *Do not use O-rings from caps of replacement compressor connections.*
- *Lubricate O-rings lightly with refrigerant oil before fitting ⇒ page 97 .*
- *Make sure O-rings are seated correctly in groove -arrow- of corresponding refrigerant line.*
- *After attaching the refrigerant lines to the air conditioner compressor (and after installing the air conditioner compressor) check the routing of the lines. They must be inserted in the brackets provided and must not make contact with other components.*

– Insert refrigerant lines -B and C- in corresponding connections on air conditioner compressor.
– Tighten bolts -A-.
– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .




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**Note**

*Observe notes on starting up air conditioner after installing air conditioner compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

## 3.4.2 Detaching and attaching refrigerant lines at electrically driven air conditioner compressor - Audi A6 hybrid

**Note**

*The vehicles in this series with high-voltage systems are all fitted with refrigerant circuits charged with refrigerant R134a.*

### Special tools and workshop equipment required

♦ Engine bung set - VAS 6122-

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

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**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

**WARNING**

*Danger from escaping pressurised refrigerant.*

*Danger of frostbite on skin and other parts of the body.*

- *Extract the refrigerant and then immediately open up the refrigerant circuit.*
- *Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.*

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### Removing

– Switch off ignition.

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

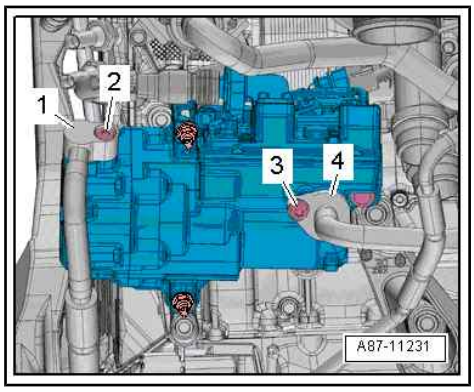
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– Detach coolant expansion tank and move to side with coolant hose attached.

**Caution**

*Risk of damage to refrigerant lines and hoses*

- *Do not stretch, kink or bend refrigerant lines and hoses.*




– Remove bolts -2 and 3- and detach refrigerant lines -1 and 4-.

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

### Installing

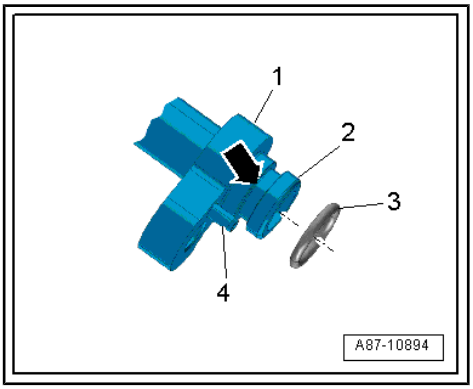
Install in reverse order of removal; note the following:

### Tightening torques

- ⇒ “3.1.2 Exploded view - electrically driven air conditioner compressor, Audi A6 hybrid”, page 239

– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .

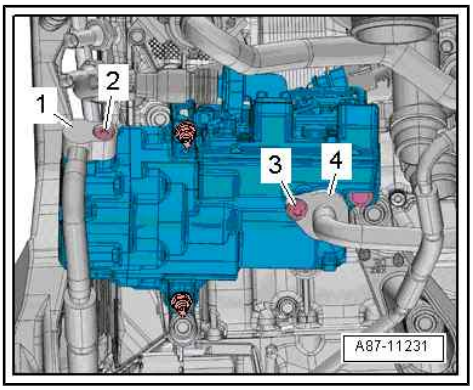
– If fitted, check that dowel pin -4- is not damaged and is seated correctly.
– Check guide ring -2- at refrigerant line connection for damage.
– Insert O-ring -3- in groove -arrow- in connection for refrigerant line -1-.




**Note**

- *Lubricate O-rings lightly with refrigerant oil before fitting ⇒ page 97 .*
- *Make sure O-rings are seated correctly in groove -arrow- of corresponding refrigerant line.*
- *After attaching the refrigerant lines to the air conditioner compressor (and after installing the air conditioner compressor) check the routing of the lines. They must be inserted in the brackets provided and must not make contact with other components.*
- *An electrically driven air conditioner compressor may only be activated when the refrigerant circuit is charged. Running the air conditioner compressor with the refrigerant circuit empty could lead to compressor damage ⇒ Vehicle diagnostic tester ("Guided Fault Finding" for air conditioner and battery regulation).*

– Insert refrigerant lines -1 and 4- in corresponding connections on air conditioner compressor.
– Tighten bolts -2 and 3-.
– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .




**Note**

*Also observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester ("Guided Fault Finding"):

– Read out event memory and delete any entries displayed.

## 3.4.3 Detaching and attaching refrigerant lines at electrically driven air conditioner compressor - Audi A6 e-tron

**Note**

*The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

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**Special tools and workshop equipment required**

- Engine bung set - VAS 6122-

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 36 and note ⇒ Electrical system; Rep. gr. 93 ; General warning instructions for work on the high-voltage system , and ⇒ Rep. gr. 93 ; High-voltage wires; Overview of fitting locations - high-voltage wires .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

**WARNING**

*Danger from escaping pressurised refrigerant.*

*Danger of frostbite on skin and other parts of the body.*

- *Extract the refrigerant and then immediately open up the refrigerant circuit.*
- *Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.*

### Removing

– On vehicles with high-voltage system, switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

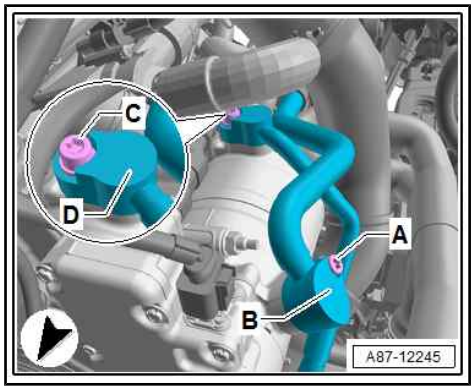
– Switch on ignition.

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Detach engine cover panel ⇒ Engine, mechanics; Rep. gr. 10 ; Engine cover panel .

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– Check refrigerant lines -B, D- in connection area for dirt, and clean if necessary.
– Remove bolts -A, C- and detach refrigerant lines -B, D- from air conditioner compressor.



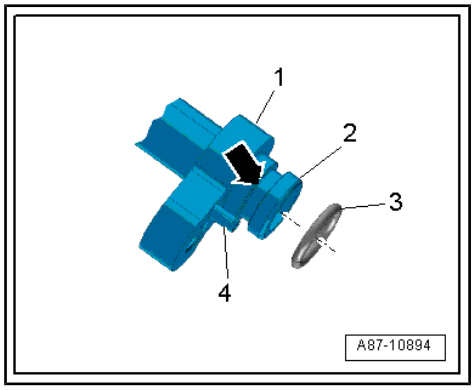

**Note**

*Seal off open connections in the lines at the connection point using clean plugs, e.g. from engine bung set - VAS 6122- .*

### Installing

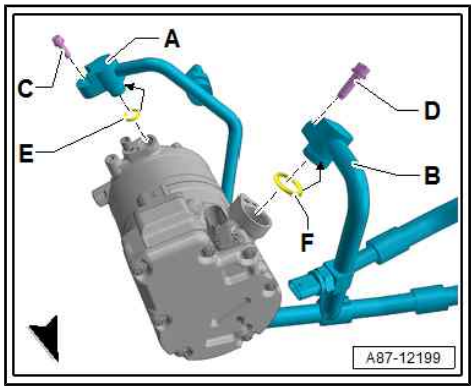
Install in reverse order of removal; note the following:

– Renew O-rings -3- at refrigerant line connections; for correct version, refer to ⇒ Electronic parts catalogue .
– If fitted, check that dowel pin -4- is not damaged and is seated correctly.
– Check guide ring -2- at refrigerant line connection for damage.
– Insert O-ring -3- in groove -arrow- in connection for refrigerant line -1-.




**Note**

- *Lubricate O-rings lightly with refrigerant oil before fitting ⇒ page 97 .*
- *Make sure O-rings -E, F- are seated correctly in groove -arrow- of corresponding refrigerant line -A, B-.*
- *After attaching the refrigerant lines to the air conditioner compressor (and after installing the air conditioner compressor) check the routing of the lines. They must be inserted in the brackets provided and must not make contact with other components.*
- *An electrically driven air conditioner compressor may only be activated when the refrigerant circuit is charged. Running the air conditioner compressor with the refrigerant circuit empty could lead to compressor damage ⇒ Vehicle diagnostic tester ("Guided Fault Finding" for air conditioner and battery regulation).*




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– Insert refrigerant lines -B, D- in corresponding connections on air conditioner compressor.

– Tighten bolts -A, C- on refrigerant lines.

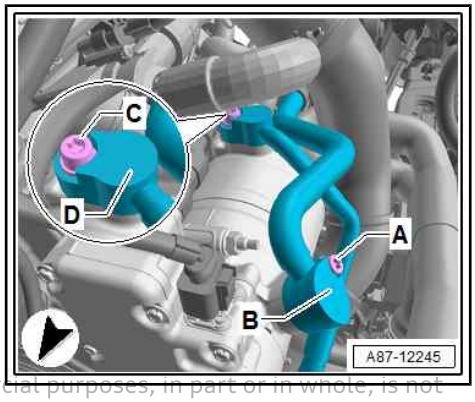
• Tightening torque for bolts -A, C- ⇒ page 241

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Switch on ignition.

– Finally, interrogate event memory of thermal management control unit - J1024- (on vehicles with high-voltage system) and operating unit ( Climatronic control unit - J255- ), and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .




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**Note**

*Also observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

## 3.4.4 Detaching and attaching refrigerant lines at air conditioner compressor - vehicles with 6-cyl. FSI/TFSI engine

**WARNING**

*Danger from escaping pressurised refrigerant.*

*Danger of frostbite on skin and other parts of the body.*

- *Extract the refrigerant and then immediately open up the refrigerant circuit.*
- *Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.*

**Special tools and workshop equipment required**

♦ Engine bung set - VAS 6122-

**Caution**

*Risk of irreparable damage to air conditioner compressor.*

- *The air conditioner compressor is always driven when the engine is running (there is no magnetic clutch). Therefore do not start the engine unless the refrigerant circuit has been properly assembled.*
- *If, for example, the refrigerant lines are not connected to the air conditioner compressor when the engine is running, the compressor might heat up (internal heat generation) so much that this can lead to irreparable damage to the compressor.*

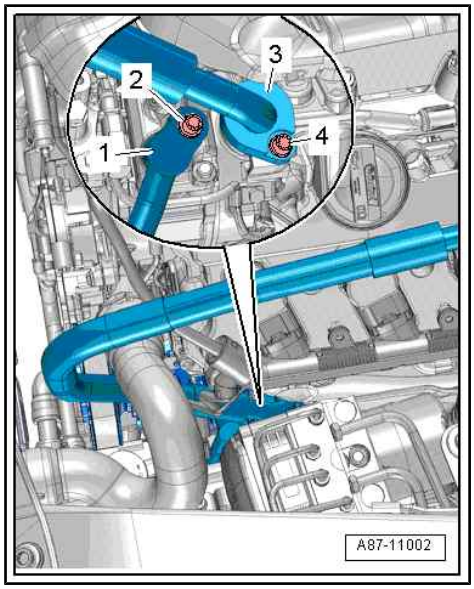
### Removing

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .

**Caution**

*Risk of damage to refrigerant lines and hoses*

- *Do not stretch, kink or bend refrigerant lines and hoses.*




– Remove bolts -2 and 4- and detach refrigerant lines -1 and 3-.

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

### Installing

Install in reverse order of removal; note the following:

#### Tightening torques

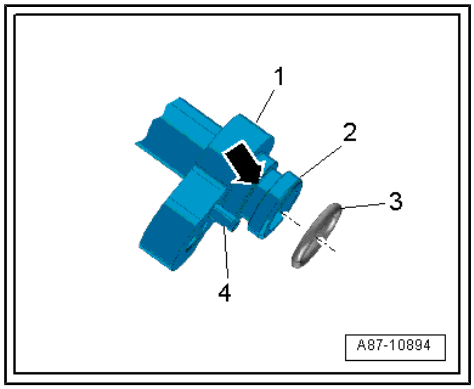
- ⇒ “3.1.4 Exploded view - drive unit for air conditioner compressor, vehicles with 6-cyl. petrol engine”, page 244

– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .

– If fitted, check that dowel pin -4- is not damaged and is seated correctly.

– Check guide ring -2- at refrigerant line connection for damage.

– Insert O-ring -3- in groove -arrow- in connection for refrigerant line -1-.

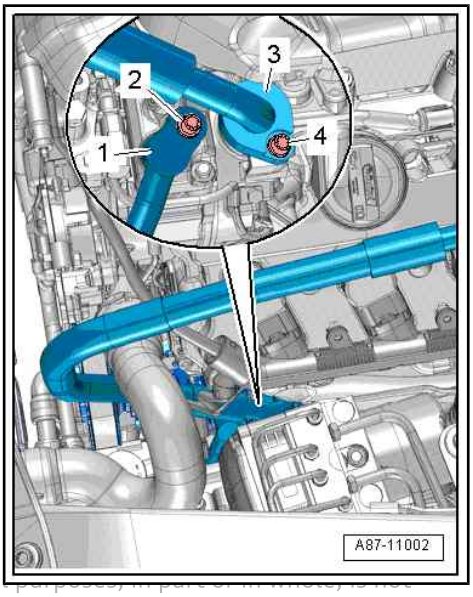



**Note**

- *Do not use O-rings from caps of replacement compressor connections.*
- *Lubricate O-rings lightly with refrigerant oil before fitting ⇒ page 97 .*
- *Make sure O-rings are seated correctly in groove -arrow- of corresponding refrigerant line.*
- *After attaching the refrigerant lines to the air conditioner compressor (and after installing the air conditioner compressor) check the routing of the lines. They must be inserted in the brackets provided and must not make contact with other components.*

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– Insert refrigerant lines -1 and 3- in corresponding connections on air conditioner compressor.
– Tighten bolts -2 and 4-.
– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .




**Note**

*Observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

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After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

## 3.4.5 Detaching and attaching refrigerant lines at air conditioner compressor - vehicles with 8-cyl. FSI/TFSI engine

**WARNING**

*Danger from escaping pressurised refrigerant.*

*Danger of frostbite on skin and other parts of the body.*

- *Extract the refrigerant and then immediately open up the refrigerant circuit.*
- *Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.*

**Special tools and workshop equipment required**

♦ Engine bung set - VAS 6122-

**Caution**

*Risk of irreparable damage to air conditioner compressor.*

- *The air conditioner compressor is always driven when the engine is running (there is no magnetic clutch). Therefore do not start the engine unless the refrigerant circuit has been properly assembled.*
- *If, for example, the refrigerant lines are not connected to the air conditioner compressor when the engine is running, the compressor might heat up (internal heat generation) so much that this can lead to irreparable damage to the compressor.*

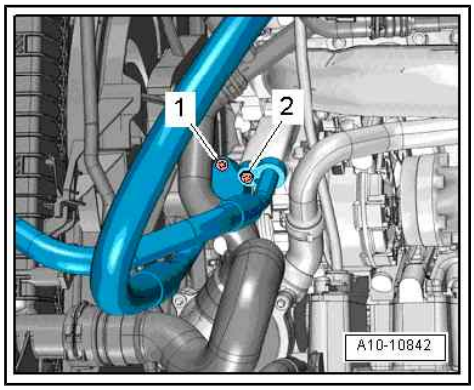
### Removing

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .

– Remove air cleaner housing (left-side) (e.g. on FSI engine) ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing

– Release pressure in coolant circuit by opening cap on coolant expansion tank.

– Unscrew bolts -1 and 2-, working from above (between left longitudinal member and engine).




**Caution**

*Risk of damage to refrigerant lines and hoses*

- *Do not stretch, kink or bend refrigerant lines and hoses.*

**Note**

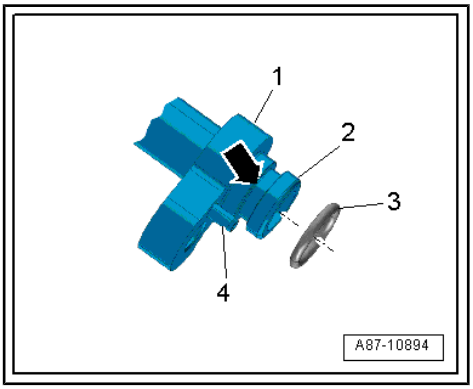
- *To be able to unscrew bolts -1- and -2-, carefully press coolant hoses fitted in this area to the side.*
- *If you intend to remove the refrigerant lines completely, mark the routing of the refrigerant lines to the other hoses and lines prior to removal (to make sure you can then route them properly when re-installing them).*

– Detach refrigerant lines from air conditioner compressor.

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

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### Installing



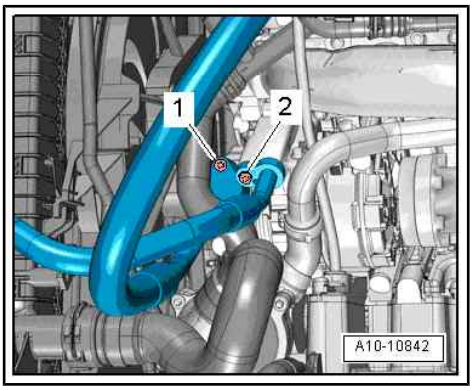

Install in reverse order of removal; note the following:

– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .
– If fitted, check that dowel pin -4- is not damaged and is seated correctly.
– Check guide ring -2- at refrigerant line connection for damage.
– Insert O-ring -3- in groove -arrow- in connection for refrigerant line -1-.

**Note**

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- *Do not use O-rings from caps of replacement compressor connections.*
- *Lubricate O-rings lightly with refrigerant oil before fitting* *⇒ page 97* .
- *Make sure O-rings are seated correctly in groove -arrow- of corresponding refrigerant line.*
- *After attaching the refrigerant lines to the air conditioner compressor (and after installing the air conditioner compressor) check the routing of the lines. They must be inserted in the brackets provided and must not make contact with other components.*




– Insert both refrigerant lines in corresponding connection at air conditioner compressor.
– Tighten bolts -1- and -2-.
– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

*Observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

### Tightening torques

| Component | Tightening torque |
|---|---|
| Refrigerant lines to air conditioner compressor (M8 bolts) | 25 Nm |

- ⇒ “3.1 Exploded view - drive unit for air conditioner compressor”, page 237

## 3.4.6 Detaching and attaching refrigerant lines at air conditioner compressor - vehicles with 6-cyl. TDI engine

**WARNING**

*Danger from escaping pressurised refrigerant.*

*Danger of frostbite on skin and other parts of the body.*

- *Extract the refrigerant and then immediately open up the refrigerant circuit.*
- *Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.*

### Special tools and workshop equipment required

- Engine bung set - VAS 6122-

**Caution**

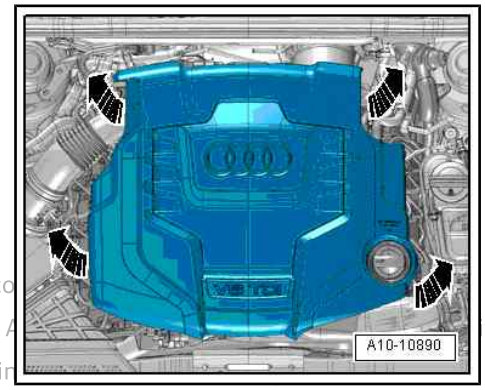
*Risk of irreparable damage to air conditioner compressor.*

- *The air conditioner compressor is always driven when the engine is running (there is no magnetic clutch). Therefore do not start the engine unless the refrigerant circuit has been properly assembled.*
- *If, for example, the refrigerant lines are not connected to the air conditioner compressor when the engine is running, the compressor might heat up (internal heat generation) so much that this can lead to irreparable damage to the compressor.*

### Removing

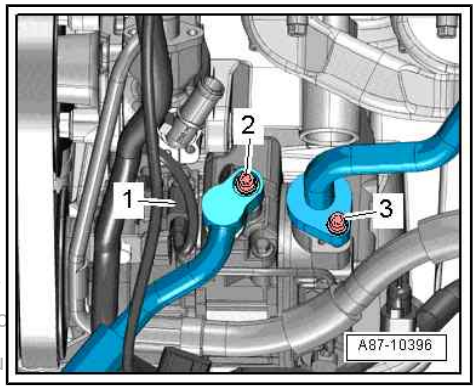
– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .

– Detach engine cover panel -arrows-.




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– Unscrew bolts -2 and 3- and detach refrigerant lines from air conditioner compressor.




**Caution**

***Risk of damage to refrigerant lines and hoses***

- ***Do not stretch, kink or bend refrigerant lines and hoses.***

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**Note**

*On vehicles with 6-cyl. TDI engine, bolts -2- and -3- are accessible from underneath and from above.*

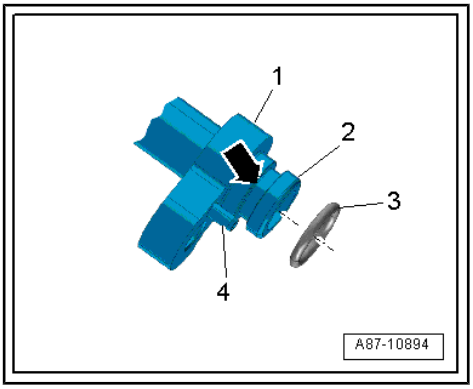
– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

### Installing

Install in reverse order of removal; note the following:

### Tightening torques

- ⇒ “3.1.7 Exploded view - drive unit for air conditioner compressor, vehicles with 6-cyl. TDI engine”, page 250

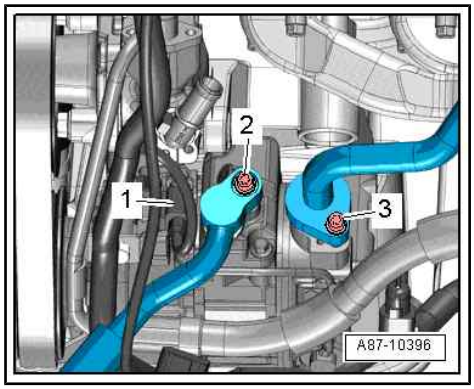



– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .
– If fitted, check that dowel pin -4- is not damaged and is seated correctly.
– Check guide ring -2- at refrigerant line connection for damage.
– Insert O-ring -3- in groove -arrow- in connection for refrigerant line -1-.

**Note**

- *Do not use O-rings from caps of replacement compressor connections.*
- *Lubricate O-rings lightly with refrigerant oil before fitting ⇒ page 97 .*
- *Make sure O-rings are seated correctly in groove -arrow- of corresponding refrigerant line.*
- *After attaching the refrigerant lines to the air conditioner compressor (and after installing the air conditioner compressor) check the routing of the lines. They must be inserted in the brackets provided and must not make contact with other components.*

– Insert both refrigerant lines in corresponding connection at air conditioner compressor.
– Tighten bolts -2 and 3-.
– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .




**Note**

*Observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

## 3.5 Removing and installing air conditioner compressor

⇒ “3.5.1 Removing and installing mechanically driven air conditioner compressor - vehicles with 4-cyl. TFSI engine”, page 286

⇒ “3.5.2 Removing and installing electrically driven air conditioner compressor - Audi A6 hybrid”, page 289

⇒ “3.5.3 Removing and installing electrically driven air conditioner compressor - Audi A6 e-tron”, page 296

⇒ “3.5.4 Removing and installing air conditioner compressor - vehicles with 6-cyl. FSI/TFSI engine”, page 303

⇒ “3.5.5 Removing and installing air conditioner compressor - vehicles with 8-cyl. FSI/TFSI engine”, page 306

⇒ “3.5.6 Removing and installing air conditioner compressor - vehicles with 4-cyl. TDI engine”, page 311

⇒ “3.5.7 Removing and installing air conditioner compressor - vehicles with 6-cyl. TDI engine”, page 313

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### 3.5.1 Removing and installing mechanically driven air conditioner compressor - vehicles with 4-cyl. TFSI engine

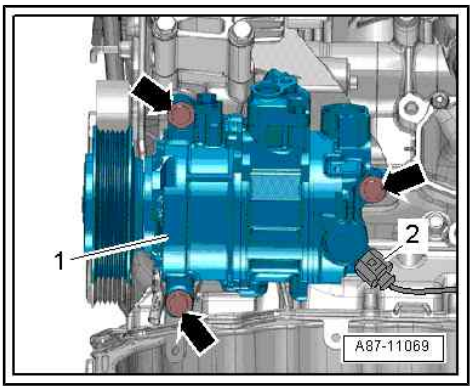
**Caution**

*Only open or remove after discharging the refrigerant circuit; 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; Rep. gr. 87 ; General information on air conditioning systems , and ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .*

**Note**

*The air conditioner compressor can also be detached from the bracket without opening the refrigerant circuit ⇒ page 257 .*

### Removing




- Detach refrigerant lines from air conditioner compressor ⇒ page 270 .
- Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .
- Unplug electrical connector -2- at air conditioner compressor regulating valve - N280- .
- Unscrew bolts -arrows- and detach air conditioner compressor -1-.

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### Installing

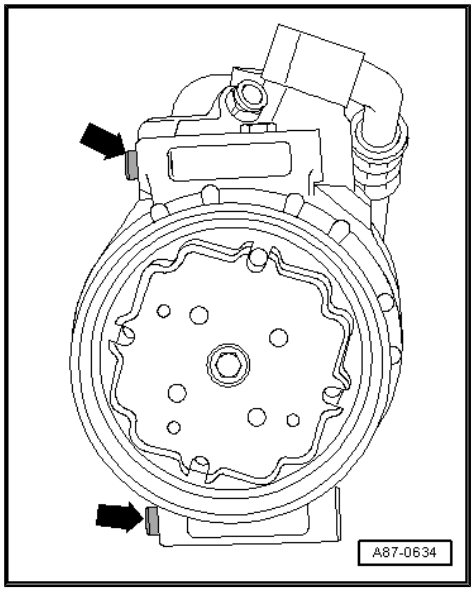
Install in reverse order of removal; note the following:

### Tightening torques

- ⇒ “3.1.1 Exploded view - drive unit for air conditioner compressor, vehicles with 4-cyl. petrol engine”, page 237

– Thoroughly clean contact surfaces on air conditioner compressor.

– Insert dowel sleeves -arrows- in air conditioner compressor.




**Note**

- *Make sure that the dowel sleeves are positioned correctly and that the contact surfaces are clean. Incorrectly fitted dowel sleeves or dirty/damaged contact surfaces could lead to misalignment between the air conditioner compressor and the engine. After a period of operation, misalignment will cause damage to the air conditioner compressor.*
- *When it is removed, the air conditioner compressor contains an indeterminate amount of refrigerant oil. For this reason it is important to observe the notes on renewing the compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Renewing components of refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*

– After installing a new air conditioner compressor or pouring in fresh refrigerant oil and before fitting the poly V-belt (e.g. after cleaning the refrigerant circuit), crank the compressor 10 turns by hand before starting the engine for the first time to prevent damage to the compressor.

– Attach refrigerant lines to air conditioner compressor ⇒ page 270 .

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

*Observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

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## 3.5.2 Removing and installing electrically driven air conditioner compressor - Audi A6 hybrid

**Note**

*The vehicles in this series with high-voltage systems are all fitted with refrigerant circuits charged with refrigerant R134a.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

**WARNING**

***Working on vehicles with high-voltage wiring:***

- ***Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.***
- ***High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.***
- ***The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.***

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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**Note**

- *With control unit for air conditioning compressor - J842- and electrical air conditioner compressor - V470-*
- *The electric motor of the air conditioner compressor is supplied with power by the power and control electronics for electric drive - JX1-*
  *⇒ "11.14 Fuse for electrical air conditioner compressor V470 ", page 626 .*
- *The control unit for air conditioning compressor - J842- integrated in the air conditioner compressor regulates the speed and thereby the output of the air conditioner compressor ( electrical air conditioner compressor - V470- ) based on the request received via the data bus ⇒ Vehicle diagnostic tester ("Guided Fault Finding" for air conditioner and battery regulation).*
- *The electrically driven air conditioner compressor is not fitted with an air conditioner compressor regulating valve - N280- . The output of the air conditioner compressor is regulated externally via the air conditioner compressor speed ⇒ Current flow diagrams, Electrical fault finding and Fitting locations and ⇒ Vehicle diagnostic tester ("Guided Fault Finding" for air conditioner and battery regulation).*
- *At present, the electrically driven air conditioner compressor operates on the principle of a scroll-type supercharger (similar to the "G-Lader" supercharger).*
- *The control unit for air conditioning compressor - J842- and the electrical air conditioner compressor - V470- form one component and cannot be separated at present.*

As work on the high-voltage system is required for the following sequence of operations, de-energise the high-voltage system ⇒ page 31 , ⇒ Electrical system, hybrid; Rep. gr. 93 ; De-energising high-voltage system . Pay particular attention to the "General warning instructions for work on the high-voltage system" ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

– Switch off ignition.
– De-energise high-voltage system ⇒ Electrical system, hybrid; Rep. gr. 93 ; De-energising high-voltage system .

De-energise high-voltage system.

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**DANGER!**

***High voltage can cause fatal injury.***

***Danger of severe or fatal injuries from electric shock.***

- ***The high-voltage system may only be de-energised by a suitably qualified person (Audi high-voltage technician).***
- ***It must be definitely confirmed that the high-voltage system is de-energised. The system may only be de-energised using the vehicle diagnostic tester via "Guided Fault Finding".***
- ***The qualified person (Audi high-voltage technician) confirms that the system is de-energised and uses the locking cap - T40262- to ensure that the system cannot be re-energised. As an additional precaution, the ignition key and the maintenance connector for high-voltage system - TW- are then stored in a safe place by the qualified person.***
- ***The qualified person (Audi high-voltage technician) marks the vehicle by attaching the appropriate warning signs.***

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**Note**

- *De-energising high-voltage system:*
- *Connect vehicle diagnostic tester.*
- *Select* `Guided Fault Finding` *mode.*
- *Using the* `Go to` *key, select the following menu items in succession*
- `Function/component selection`
- `Body`
- `Electrical system`
- `Self-diagnosis compatible systems`
- `8C - Hybrid battery management -J840`
- `8C - Hybrid battery management, functions`
- `51 - De-energise high-voltage system (Rep. gr. 93)`

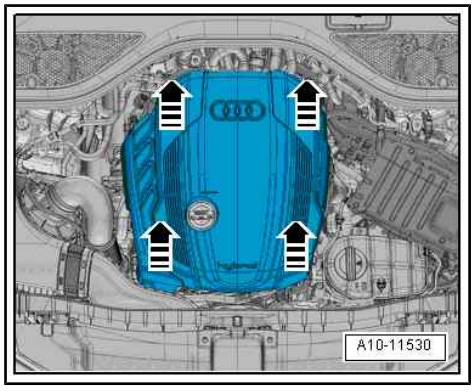
### Removing

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

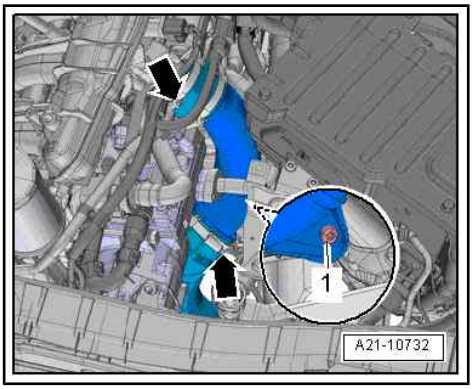
– Detach engine cover panel -arrows- ⇒ Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

– Unfasten coolant expansion tank from bracket and swivel to one side.

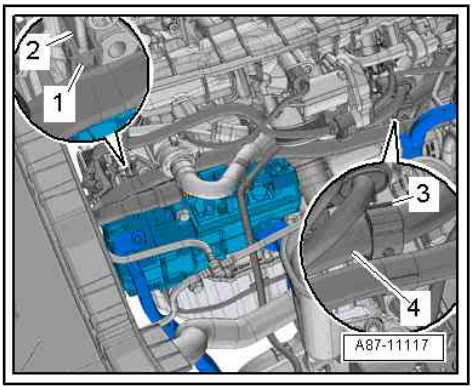
– Detach refrigerant lines from air conditioner compressor ⇒ page 272 .



– Unfasten hose clips -arrows-.
– Remove bolt -1- and detach air pipe.




– Expose attachment points -1 and 3- of high-voltage system wire -4- on engine.

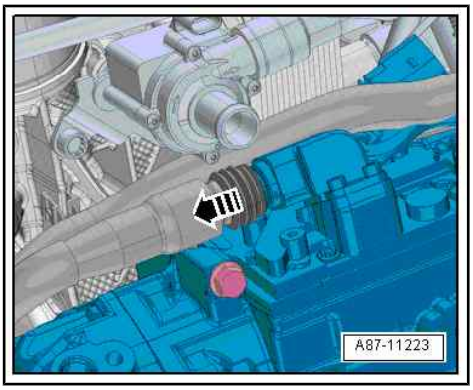



Disconnect electrical wire.

**Caution**

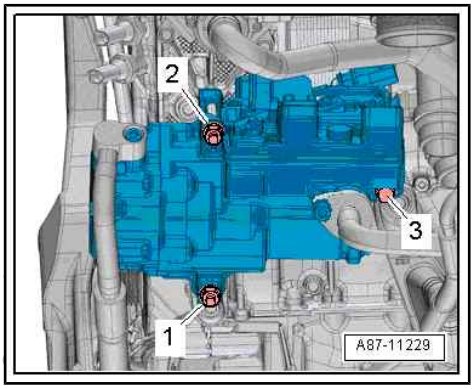
*Risk of damaging cable or connector of high-voltage system*

- *Take care not to bend high-voltage wires.*
- *After releasing the connector, make sure it is horizontal when unplugging it. Do NOT turn the connector.*



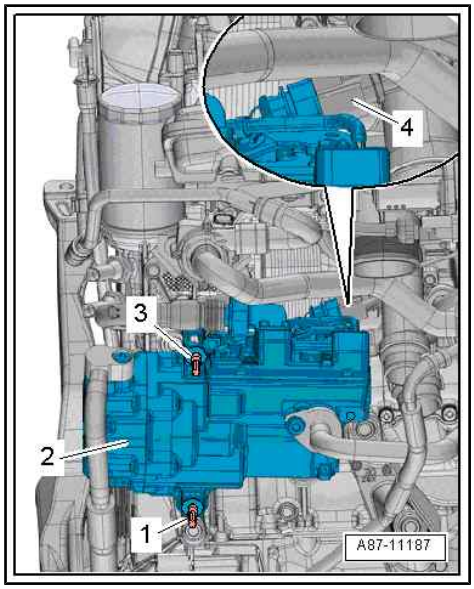

– Pull locking element in direction of -arrow-.
– Unplug connector from air conditioner compressor; connector must be horizontal and must not be turned.
– Cover high-voltage wire connector and mating plug at air conditioner compressor to prevent damage and contamination (e.g. with clean plugs from engine bung set - VAS 6122- ).

– Remove nuts -1, 2- and bolt -3-.




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– Remove threaded pins -1 and 3-.




**Note**

*Bolts may also be fitted instead of threaded pins -1 and 3- ⇒ Electronic parts catalogue .*

– Move air conditioner compressor -2- slightly to the side and unplug electrical connector -4- (for low voltage on air conditioner compressor).
– Lift out air conditioner compressor upwards and towards front.

**Installing**

Install in reverse order of removal; note the following.

Before fitting air conditioner compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Renewing components of refrigerant circuit

**Note**

*When it is removed, the air conditioner compressor contains an indeterminate amount of refrigerant oil. For this reason it is important to observe the notes on renewing the compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Renewing components of refrigerant circuit .*

**Tightening torques**

- ⇒ “3.1.2 Exploded view - electrically driven air conditioner compressor, Audi A6 hybrid”, page 239

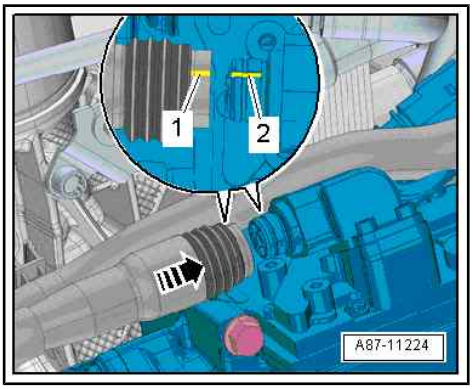
**Note**

- *After installing the electrically driven air conditioner compressor and then charging the refrigerant circuit, first start up the compressor by way of the “Compressor run-in” function of the basic setting routine. Otherwise, the air conditioner compressor may be damaged if refrigerant oil has accumulated in the compression chamber of the air conditioner compressor due to inappropriate storage prior to installation ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode for air conditioner and battery regulation.*
- *An electrically driven air conditioner compressor may only be activated when the refrigerant circuit is charged. Running the air conditioner compressor with the refrigerant circuit empty could lead to compressor damage ⇒ Vehicle diagnostic tester (“Guided Fault Finding” for air conditioner and battery regulation).*

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

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– Plug in and lock high-voltage system connector at air conditioner compressor.




**Caution**

*Risk of damaging cable or connector of high-voltage system*

- *Take care not to bend high-voltage wires.*
- *Always plug the connector in at the air conditioner compressor in the specified position (connector coding). Do NOT turn the connector.*

– Check connector for dirt and damage.

– Plug in connector at air conditioner compressor.

• Marks -1- and -2- on connector and air conditioner compressor must align.

– Fasten locking element in direction of -arrow-.

– Re-install remaining components removed in reverse order.

– Re-energise power supply of high-voltage system ⇒ Electrical system, hybrid; Rep. gr. 93 ; De-energising high-voltage system .

Re-energising high-voltage system

**DANGER!**

*High voltage can cause fatal injury.*

*Danger of severe or fatal injuries from electric shock.*

- *The high-voltage system may only be re-energised by a suitably qualified person (Audi high-voltage technician).*
- *The system may only be re-energised using the vehicle diagnostic tester via "Guided Fault Finding".*
- *The vehicle is then made ready for operation again by the qualified person (Audi high-voltage technician).*
- *The qualified person (Audi high-voltage technician) marks the vehicle by attaching the appropriate warning signs.*

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**Note**

- *Re-energising high-voltage system:*
- *Connect vehicle diagnostic tester.*
- *Select* `Guided Fault Finding` *mode.*
- *Using the* `Go to` *key, select the following menu items in succession*
- `Function/component selection`
- `Body`
- `Electrical system`
- `Self-diagnosis compatible systems`
- `8C - Hybrid battery management -J840`
- `8C - Hybrid battery management, functions`
- `51 - Re-energise high-voltage system (Rep. gr. 93)`

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– Switch on ignition.

– Interrogate event memory of operating unit ( Climatronic control unit - J255- ) and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Start up electrical air conditioner compressor - V470- via “Compressor run-in” function ⇒ Vehicle diagnostic tester (“Guided Fault Finding” for air conditioner and battery regulation).

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

*Also observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

## 3.5.3 Removing and installing electrically driven air conditioner compressor - Audi A6 e-tron

**Note**

*The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 36 and note ⇒ Electrical system; Rep. gr. 93 ; General warning instructions for work on the high-voltage system , and ⇒

Rep. gr. 93 ; High-voltage wires; Overview of fitting locations - high-voltage wires .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

The following procedure requires work to be performed on the high-voltage system; de-energising high-voltage system ⇒ page 31 , ⇒ Rep. gr. 93 ; De-energising high-voltage system and ⇒ Rep. gr. 00 ; Safety precautions; Safety precautions when working on high-voltage vehicles .

– On vehicles with high-voltage system, switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .
– Switch off ignition.
– De-energise high-voltage system ⇒ Rep. gr. 93 ; De-energising high-voltage system .

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### De-energising high-voltage system

**DANGER!**

*High voltage can cause fatal injury.*

*Danger of severe or fatal injuries from electric shock.*

- *The high-voltage system may only be de-energised by a suitably qualified person (Audi high-voltage technician).*
- *It must be definitely confirmed that the high-voltage system is de-energised. The system may only be de-energised using the vehicle diagnostic tester via "Guided Fault Finding".*
- *The qualified person (Audi high-voltage technician) confirms that the system is de-energised and uses the locking cap - T40262- to ensure that the system cannot be re-energised. As an additional precaution, the ignition key and the maintenance connector for high-voltage system - TW- are then stored in a safe place by the qualified person.*
- *The qualified person (Audi high-voltage technician) marks the vehicle by attaching the appropriate warning signs.*

**Note**

- *De-energising high-voltage system:*
- *Connect vehicle diagnostic tester.*
- *Select* `Guided Fault Finding` *mode.*
- *Using the* `Go to` *key, select the following menu items in succession*
- `Function/component selection`
- `Body`
- `Electrical system`
- `Self-diagnosis compatible systems`
- `8C - Hybrid battery management -J840`
- `8C - Hybrid battery management, functions`
- `51 - De-energise high-voltage system (Rep. gr. 93)`

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### Removing

– Switch on ignition.

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

**WARNING**

***Danger from escaping pressurised refrigerant.***

***Danger of frostbite on skin and other parts of the body.***

- ***Extract the refrigerant and then immediately open up the refrigerant circuit.***
- ***Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.***

– Detach engine cover panel ⇒ Engine, mechanics; Rep. gr. 10 ; Engine cover panel .

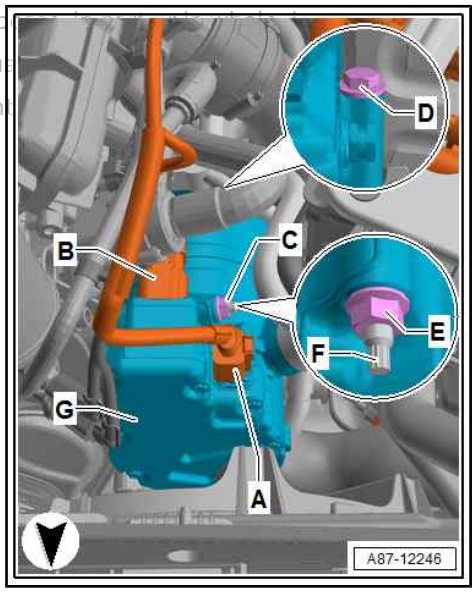
– Detach refrigerant lines from electrically driven air conditioner compressor ⇒ page 275 .

– Detach electrical connectors -A- (for low voltage) and -B- (high-voltage wires) from air conditioner compressor ⇒ Rep. gr. 93 ; High-voltage wires; Overview of fitting locations - high-voltage wires .

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– Cover low-voltage and high-voltage wire connectors and mating plug at air conditioner compressor -G- to prevent damage and contamination (e.g. with clean plugs from engine bung set - VAS 6122- ).

– Remove nut -E- and stud -F-.




**Note**

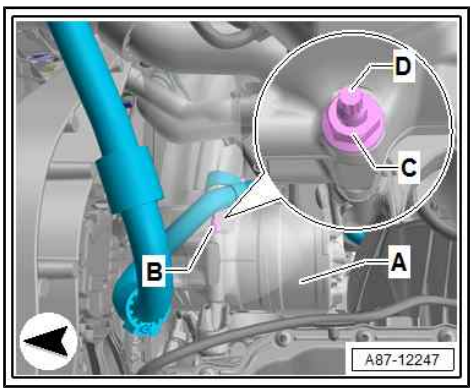
- *A bolt may be fitted in hole -C- instead of nut -F- and stud -E-.*
- *After removing nut -F-, unscrew stud -E- from bracket.*

– Remove bolts -D-.

– Remove noise insulation (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .

– Remove charge air cooler pressure pipe ⇒ Engine, mechanics; Rep. gr. 21 ; Charge air system; Exploded view - charge air system .

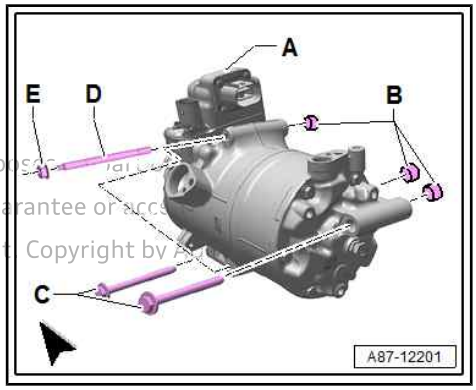
– Remove nut -C- and stud -D-.




**Note**

- *A bolt may be fitted in hole -B- instead of nut -C- and stud -D-.*
- *After removing nut -C-, unscrew stud -D- from bracket.*

– Detach air conditioner compressor -A-.




**Installing**

Install in reverse order of removal; note the following.

Before installing compressor, see ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .

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**Note**

*When it is removed, the air conditioner compressor contains an indeterminate amount of refrigerant oil. For this reason it is important to observe the notes on renewing the compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Renewing components of refrigerant circuit .*

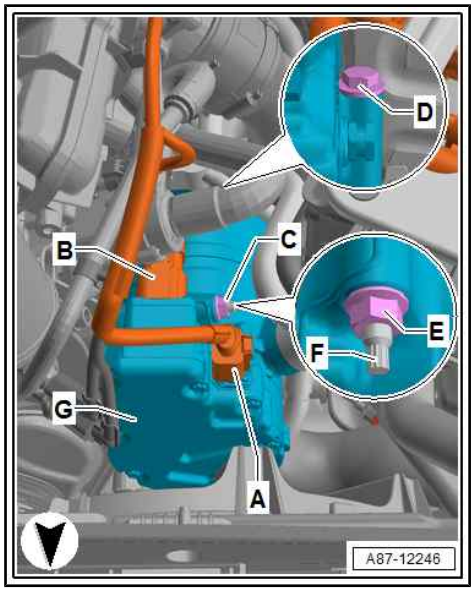
- Tightening torque (bolts -C-, stud -D- and nut -E-) ⇒ page 241
- Before bolting on air conditioner compressor -A-, check surfaces of compressor (at compressor and engine bracket) and clean if necessary ⇒ Electrical system; General information; Rep. gr. 97 ; Contact surface cleaning set -VAS 6410-
- If fitted, check contact surfaces for earth wire before bolting on, and clean if necessary ⇒ Electrical system; Rep. gr. 97 ; Connectors

– Check that dowel sleeves -B- are the correct version and that they are seated correctly.

**Note**

- *Prior to installation, check attachment points on air conditioner compressor and engine bracket. The contact surfaces must be clean and free from rust and grease. If this is not the case, treat the contact surfaces accordingly with the contact surface cleaning set - VAS 6410- ⇒ Electrical system; General information; Rep. gr. 97 ; Contact surface cleaning set -VAS 6410- .*
- *After attaching air conditioner compressor, check routing of refrigerant lines. They must be inserted in the brackets provided (if fitted, depends on engine).*
- *Check that refrigerant lines and corresponding brackets have adequate clearance to other components, ensuring sufficient distance between belt, bracket and pulley.*

– Connect electrical wiring to air conditioner compressor -A, B- and secure at specified positions.




**Note**

- *After installing the electrically driven air conditioner compressor -F- and then charging the refrigerant circuit, first start up the compressor via the "Compressor run-in" function of the basic setting routine. Otherwise, the air conditioner compressor may be damaged if refrigerant oil has accumulated in the compression chamber of the air conditioner compressor due to inappropriate storage prior to installation ⇒ Vehicle diagnostic tester ("Guided Fault Finding" for air conditioner).*
- *An electrically driven air conditioner compressor may only be activated when the refrigerant circuit is charged. Running the air conditioner compressor with the refrigerant circuit empty could lead to compressor damage ⇒ Vehicle diagnostic tester ("Guided Fault Finding" for air conditioner).*

– Re-install remaining components removed in reverse order.

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Re-energise power supply of high-voltage system ⇒ Rep. gr. 93 ; Re-energising high-voltage system .

Re-energising high-voltage system

**DANGER!**

***High voltage can cause fatal injury.***

***Danger of severe or fatal injuries from electric shock.***

- ***The high-voltage system may only be re-energised by a suitably qualified person (Audi high-voltage technician).***
- ***The system may only be re-energised using the vehicle diagnostic tester via "Guided Fault Finding".***
- ***The vehicle is then made ready for operation again by the qualified person (Audi high-voltage technician).***
- ***The qualified person (Audi high-voltage technician) marks the vehicle by attaching the appropriate warning signs.***

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**Note**

- *Re-energising high-voltage system:*
- *Connect vehicle diagnostic tester.*
- *Select* `Guided Fault Finding` *mode.*
- *Using the* `Go to` *key, select the following menu items in succession*
- `Function/component selection`
- `Body`
- `Electrical system`
- `Self-diagnosis compatible systems`
- `8C - Hybrid battery management -J840`
- `8C - Hybrid battery management, functions`
- `51 - Re-energise high-voltage system (Rep. gr. 93)`

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– Switch on ignition.
– Start up electrical air conditioner compressor - V470- via “Compressor run-in” function ⇒ Vehicle diagnostic tester (“Guided Fault Finding” for air conditioner and battery regulation).
– Finally, interrogate event memory of thermal management control unit - J1024- and operating unit ( Climatronic control unit - J255- ) and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

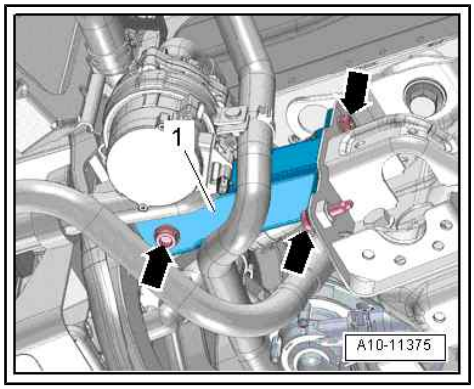
*Also observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

## 3.5.4 Removing and installing air conditioner compressor - vehicles with 6-cyl. FSI/ TFSI engine

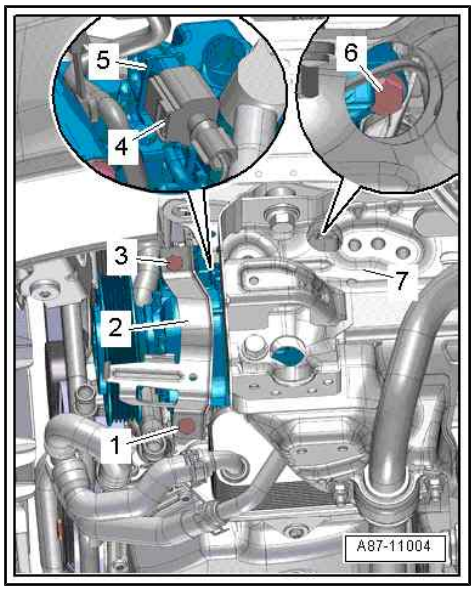
**Caution**

***Only open or remove after discharging the refrigerant circuit; 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; Rep. gr. 87 ; General information on air conditioning systems , and ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .***

### Removing




- Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .
- Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .
- Remove front section of wheel housing liner (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Unscrew bolts -arrows- (left and right) and detach longitudinal member (front bottom) -1-.
- If fitted, remove coolant circulation pump - V51- ⇒ Engine, mechanics; Rep. gr. 19 ; Coolant pump/thermostat assembly; Removing and installing electric coolant pump .
- Detach refrigerant lines from air conditioner compressor ⇒ page 279 .




- Remove electrical connector -4- for air conditioner compressor regulating valve - N280- from bracket -5- and unplug it.
- Unscrew bolt -6-; to do so, insert tool in opening in subframe -7-.
- Unscrew bolts -1, 3- and, if fitted, detach bracket -2- for continued coolant circulation pump - V51- .
- Unfasten air conditioner compressor and take it out to left side between lock carrier and subframe.

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### Installing

Install in reverse order of removal; note the following:

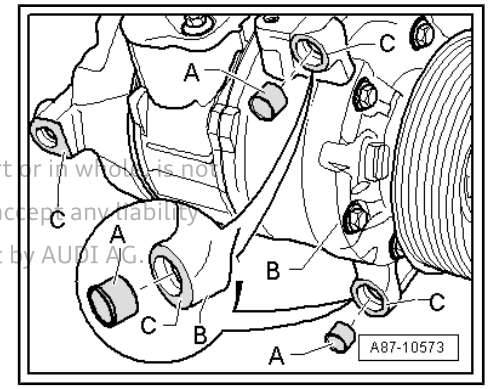
**Tightening torques**

- ⇒ "3.1.4 Exploded view - drive unit for air conditioner compressor, vehicles with 6-cyl. petrol engine", page 244

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– Thoroughly clean contact surfaces -C- on air conditioner compressor.

– Insert dowel sleeves -A- in air conditioner compressor -B-.




**Note**

- *Make sure that the dowel sleeves are positioned correctly and that the contact surfaces are clean. Incorrectly fitted dowel sleeves or dirty/damaged contact surfaces could lead to misalignment between the air conditioner compressor and the engine. After a period of operation, misalignment will cause damage to the air conditioner compressor.*
- *When it is removed, the air conditioner compressor contains an indeterminate amount of refrigerant oil. For this reason it is important to observe the notes on renewing the compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Renewing components of refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*

– After installing a new air conditioner compressor or pouring in fresh refrigerant oil and before fitting the poly V-belt (e.g. after cleaning the refrigerant circuit), crank the compressor 10 turns by hand before starting the engine for the first time to prevent damage to the compressor.

– Attach refrigerant lines to air conditioner compressor ⇒ page 270 .

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

*Observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

## 3.5.5 Removing and installing air conditioner compressor - vehicles with 8-cyl. FSI/ TFSI engine

**Caution**

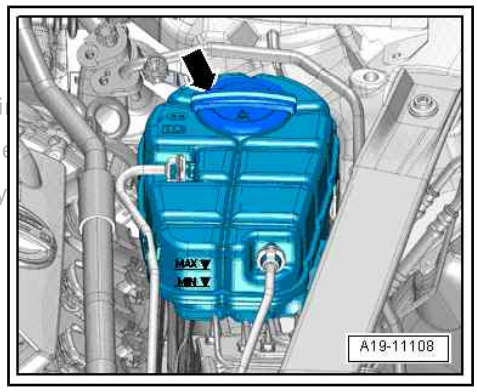
*Only open or remove after discharging the refrigerant circuit; take the vehicle to a workshop equipped with the necessary tools where the work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , and ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .*

**Special tools and workshop equipment required**

- Support bracket - 10- 222 A- with corresponding supplement set
- Engine and gearbox jack - V.A.G 1383 A-

**Removing**

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .




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**FSI engine:**

**WARNING**

*Risk of scalding due to hot steam and hot coolant.*

- *The cooling system is under pressure when the engine is hot.*
- *To relieve pressure, cover coolant expansion tank cap with a cloth and open carefully.*

– Open cap -arrow- on coolant expansion tank.

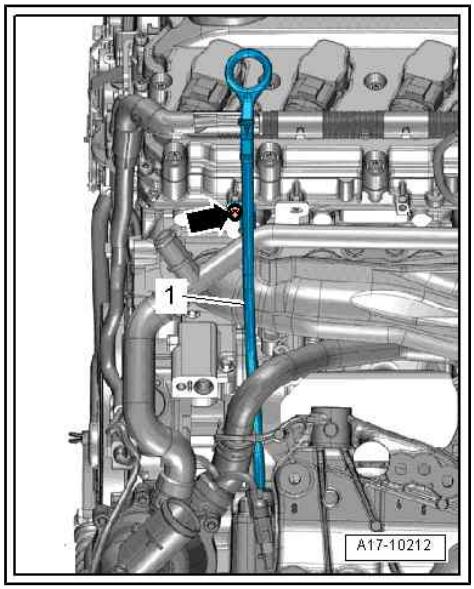
– Bring front wheels into straight-ahead position.

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .

– Remove engine mounting ⇒ Rep. gr. 10 ; Assembly mountings; Removing and installing engine mountings .

– Remove bolt -arrow-.

– Pull dipstick guide tube -1- out of sump (top section).

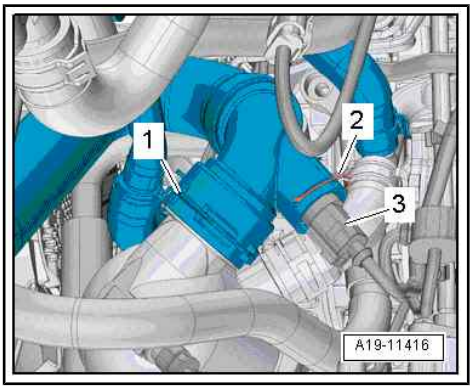


**TFSI engine:**

– Remove coolant pipe (top left) ⇒ Engine, mechanics; Rep. gr. 19 ; Coolant pipes; Removing and installing coolant pipes .

– Unplug electrical connector -3-.

– Lift retaining clip -1- and disconnect coolant hose.

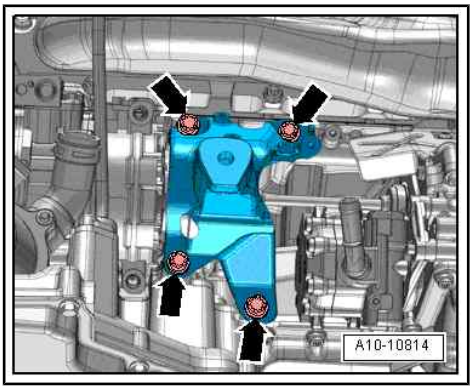



**Note**

*Disregard -item 2-.*

**All versions (continued):**

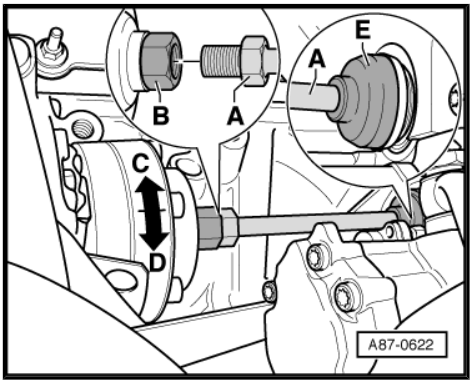
– Remove bolts -arrows- and detach engine support (left-side).




**Note**

- *For greater clarity, this illustration shows the engine support with the coolant pipe removed; however, the coolant pipe must be left in position.*
- *Depending on the version of the coolant pipe, it may be necessary to unfasten the coolant pipe from the engine and press it to the side slightly before removing the engine support.*

– Using two open-end spanners, hold air conditioner compressor drive shaft -A- and turn air conditioner compressor drive unit -B- in direction of -arrow C-.

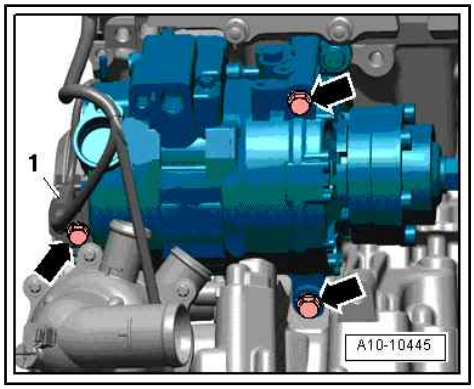



**Note**

- *Do not turn air conditioner compressor drive shaft -A-.*
- *After unfastening the thread, the air conditioner compressor drive shaft -A- can be pushed into the drive gear through boot -E-.*

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– Mark electrical connector -1- for air conditioner compressor regulating valve - N280- (to avoid possible interchange with other identical connectors).




**Note**

*The connectors for air conditioner compressor regulating valve - N280- and the electrical engine mounting are identical. If the connectors are interchanged, no entry is made in the event memory, but the air conditioner compressor is constantly activated and the evaporator may ice up.*

– Remove electrical connector -1- for air conditioner compressor regulating valve - N280- from bracket and unplug it.

– Unscrew bolts -arrows- and detach air conditioner compressor.

**Caution**

***Risk of damage to refrigerant lines and hoses***

- ***Do not stretch, kink or bend refrigerant lines and hoses.***

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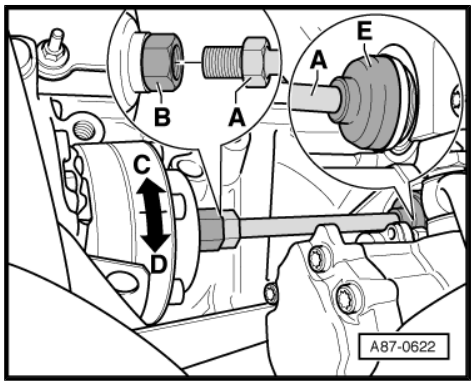
– Detach refrigerant lines from air conditioner compressor ⇒ “3.4.5 Detaching and attaching refrigerant lines at air conditioner compressor - vehicles with 8-cyl. FSI/TFSI engine”, page 281 .

– Carefully slide air conditioner compressor towards front and remove downwards.

### Installing

Install in reverse order of removal; note the following:

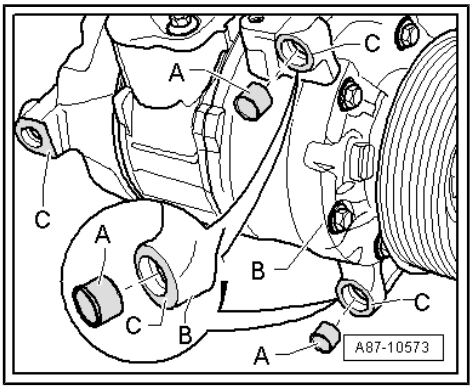
– If necessary, install air conditioner compressor drive shaft -A- (in drive gear on engine) and check that it is attached properly and check corresponding boot -E-.




**Note**

- *The boot -E- is secured in position on the flange with a clamp to prevent it from slipping ⇒ Electronic parts catalogue .*
- *Renew boot -E- if damaged.*
- *To secure clamp, use locking pliers for Phaeton steering rack - VAS 6199- or similar.*

– Thoroughly clean contact surfaces -C- on air conditioner compressor.
– Insert dowel sleeves -A- in air conditioner compressor -B-.



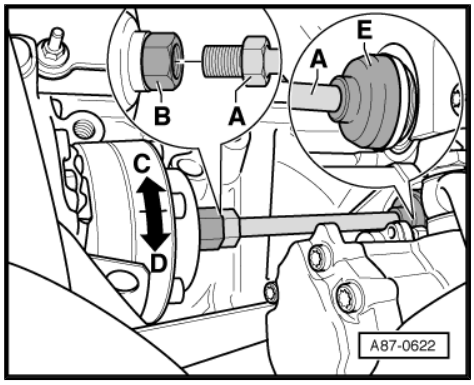

**Note**

- *Make sure that the dowel sleeves are positioned correctly and that the contact surfaces are clean. Incorrectly fitted dowel sleeves or dirty/damaged contact surfaces could lead to misalignment between the air conditioner compressor and the engine. After a period of operation, misalignment will cause damage to the air conditioner compressor.*
- *When it is removed, the air conditioner compressor contains an indeterminate amount of refrigerant oil. For this reason it is important to observe the notes on renewing the compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Renewing components of refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*

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– After installing a new air conditioner compressor or pouring in fresh refrigerant oil (e.g. after cleaning the refrigerant circuit), turn the air conditioner compressor drive unit -B- at the air conditioner compressor 10 times by hand in direction of -arrow C- before tightening the air conditioner compressor drive shaft -A- to avoid damaging the compressor.

– Hold air conditioner compressor drive shaft -A- with an open-end spanner and turn air conditioner compressor drive unit -B- in direction of -arrow D-.




**Note**

- *Do not turn air conditioner compressor drive shaft when tightening.*
- *After installation, check position of boot -E- on drive gear.*
- *After fitting drive shaft -A-, check installation position of boot -E-.*

**FSI engine:**

– Install engine support and engine mounting (left-side) ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings .

**TFSI engine:**

– Install coolant pipe (top left) ⇒ Engine, mechanics; Rep. gr. 19 ; Coolant pipes; Removing and installing coolant pipes .

**All versions (continued):**

– Attach refrigerant lines to air conditioner compressor ⇒ “3.4.5 Detaching and attaching refrigerant lines at air conditioner compressor - vehicles with 8-cyl. FSI/TFSI engine”, page 281 .

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .

– Start up air conditioner after charging refrigerant circuit ⇒ “2.18 Starting up air conditioner after charging refrigerant circuit”, page 232 .

**Note**

*Observe further notes on starting up air conditioner after installing air conditioner compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

**Tightening torques**

- ⇒ “3.1.5 Exploded view - drive unit for air conditioner compressor, vehicles with 8-cyl. FSI/TFSI engine”, page 246

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## 3.5.6 Removing and installing air conditioner compressor - vehicles with 4-cyl. TDI engine

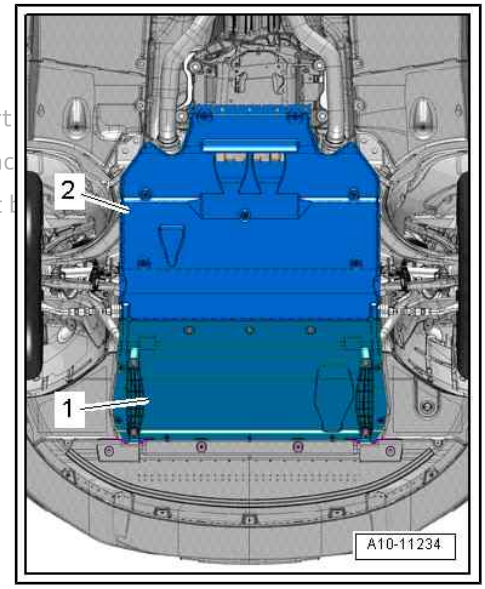
**Caution**

*Only open or remove after discharging the refrigerant circuit; 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; Rep. gr. 87 ; General information on air conditioning systems , and ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .*

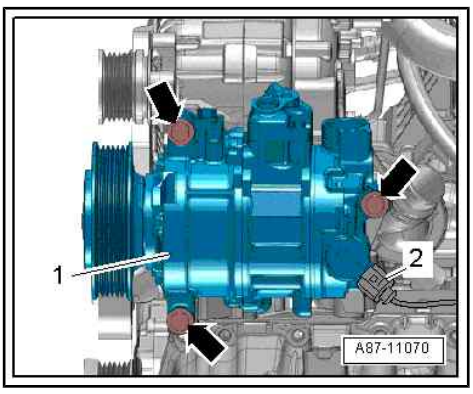
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**Removing**

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .
– Remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
– Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .
– Detach refrigerant lines from air conditioner compressor ⇒ page 270 .




– Unplug electrical connector -2- at air conditioner compressor regulating valve - N280- .
– Unscrew bolts -arrows-; to do so, insert tool in opening in subframe.
– Unfasten air conditioner compressor -1- from bracket and take it out to left side between lock carrier and subframe.



### Installing

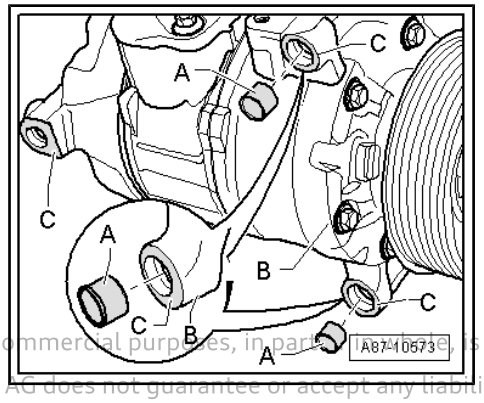
Install in reverse order of removal; note the following:

### Tightening torques

- ⇒ “3.1.6 Exploded view - drive unit for air conditioner compressor, vehicles with 4-cyl. TDI engine”, page 248

– Thoroughly clean contact surfaces -C- on air conditioner compressor.

– Insert dowel sleeves -A- in air conditioner compressor -B-.




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**Note**

- *Make sure that the dowel sleeves are positioned correctly and that the contact surfaces are clean. Incorrectly fitted dowel sleeves or dirty/damaged contact surfaces could lead to misalignment between the air conditioner compressor and the engine. After a period of operation, misalignment will cause damage to the air conditioner compressor.*
- *When it is removed, the air conditioner compressor contains an indeterminate amount of refrigerant oil. For this reason it is important to observe the notes on renewing the compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Renewing components of refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*

– After installing a new air conditioner compressor or pouring in fresh refrigerant oil and before fitting the poly V-belt (e.g. after cleaning the refrigerant circuit), crank the compressor 10 turns by hand before starting the engine for the first time to prevent damage to the compressor.

– Attach refrigerant lines to air conditioner compressor ⇒ page 270 .

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

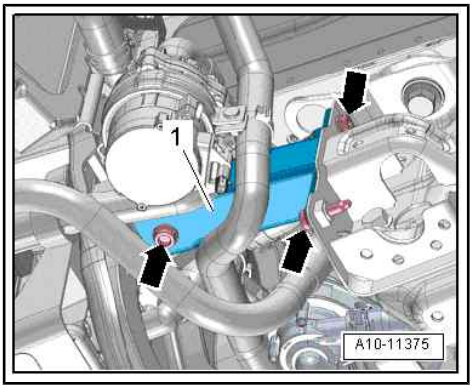
*Observe notes on starting up air conditioner after installing air conditioner compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

## 3.5.7 Removing and installing air conditioner compressor - vehicles with 6-cyl. TDI engine

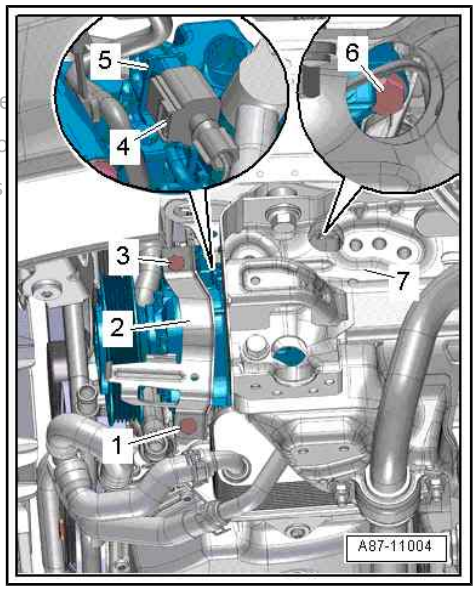
**Caution**

***Only open or remove after discharging the refrigerant circuit; 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; Rep. gr. 87 ; General information on air conditioning systems , and ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .***

### Removing




- Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .
- Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .
- Remove front section of wheel housing liner (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Unscrew bolts -arrows- (left and right) and detach longitudinal member (front bottom) -1-.
- Detach refrigerant lines from air conditioner compressor ⇒ page 284 .




- Remove electrical connector -4- for air conditioner compressor regulating valve - N280- from bracket -5- and unplug it.
- Unscrew bolt -6-; to do so, insert tool in opening in subframe -7-.
- Unscrew bolts -1, 3- and, if fitted, detach bracket -2- for continued coolant circulation pump - V51- .
- Unfasten air conditioner compressor and take it out to left side between lock carrier and subframe.

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### Installing

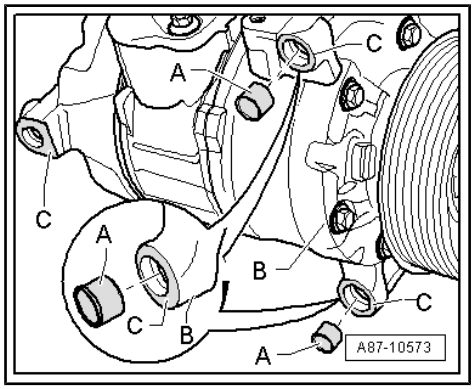
Install in reverse order of removal; note the following:

### Tightening torques

- ⇒ “3.1.7 Exploded view - drive unit for air conditioner compressor, vehicles with 6-cyl. TDI engine”, page 250

– Thoroughly clean contact surfaces -C- on air conditioner compressor.

– Insert dowel sleeves -A- in air conditioner compressor -B-.




**Note**

- *Make sure that the dowel sleeves are positioned correctly and that the contact surfaces are clean. Incorrectly fitted dowel sleeves or dirty/damaged contact surfaces could lead to misalignment between the air conditioner compressor and the engine. After a period of operation, misalignment will cause damage to the air conditioner compressor.*
- *When it is removed, the air conditioner compressor contains an indeterminate amount of refrigerant oil. For this reason it is important to observe the notes on renewing the compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Renewing components of refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*

– After installing a new air conditioner compressor or pouring in fresh refrigerant oil and before fitting the poly V-belt (e.g. after cleaning the refrigerant circuit), crank the compressor 10 turns by hand before starting the engine for the first time to prevent damage to the compressor.

– Install front longitudinal member (bottom) ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Exploded view - lock carrier .

– Attach refrigerant lines to air conditioner compressor ⇒ page 284 .

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

*Observe notes on starting up air conditioner after installing air conditioner compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

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## 3.6 Removing and installing air conditioning system magnetic clutch - N25-

⇒ “3.6.1 Notes on pulley with air conditioning system magnetic clutch N25 ”, page 315

⇒ “3.6.2 Detaching and attaching clutch plate”, page 316

⇒ “3.6.3 Detaching pulley”, page 316

⇒ “3.6.4 Checking gap between pulley and clutch plate”, page 317

### 3.6.1 Notes on pulley with air conditioning system magnetic clutch - N25-

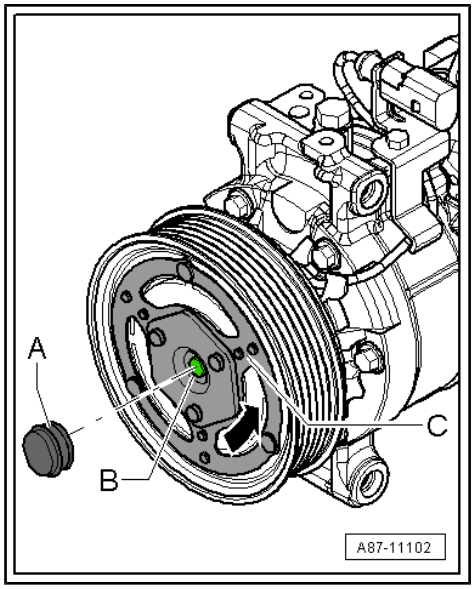
**Note**

- *If the pulley overload protection device has been triggered, check that the air conditioner compressor can rotate freely before renewing the pulley. If the air conditioner compressor does not rotate freely, renew the complete unit.*
- *It is usually not necessary to unfasten the air conditioner compressor from the engine to detach the pulley. Depending on the engine version, however, it may be necessary to unfasten the lock carrier from the vehicle and pull it forwards slightly (to create some space) ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Removing and installing lock carrier .*
- *If the pulley cannot be detached with the air conditioner compressor in position (this depends on the vehicle and engine version), detach the air conditioner compressor with the refrigerant lines connected: 4-cyl. engine ⇒ page 257 , 6-cyl. TDI engine ⇒ page 268 . On vehicles with 6-cyl. FSI/TFSI engine the air conditioner compressor has to be removed ⇒ page 303 .*
- *Various pulley versions with differing diameters may be fitted depending on the type of air conditioner compressor and the engine version ⇒ Electronic parts catalogue .*
- *The pulley and magnetic clutch are available as a replacement part (single part number). The pulley and the drive plate may be held together by a bolt (bolt is not required; can be disposed of). This bolt is used during manufacturing to insert a pre-determined amount of a specific grease into the thread of the drive plate (sufficient for fitting the drive plate onto the compressor shaft once; do not re-use a drive plate that has been unscrewed) ⇒ Electronic parts catalogue .*
- *The following illustration shows an air conditioner compressor with a separate connector for the activation of -N25- ; this air conditioner compressor has a separate connector for the activation of the air conditioner compressor regulating valve -N280- . On a different version of the air conditioner compressor, the wiring for activating -N25- and -N280- is combined in a 3-pin connector. If necessary, remove the wire to -N25- from the connector using a suitable release tool from the wiring harness repair set - VAS 1978 B- ⇒ Electrical system; General information; Rep. gr. 97 ; Releasing and dismantling connector housings .*

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## 3.6.2 Detaching and attaching clutch plate

**Procedure**




– Switch off ignition.

– Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .

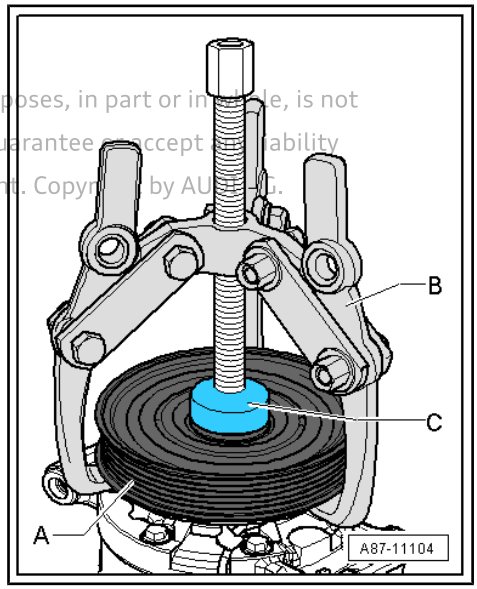
– Remove cap -A-.

– Hold air conditioner compressor drive shaft -B- e.g. with a commercially available hexagon socket wrench (7 mm) and turn clutch plate -C- in direction of -arrow-.

**Note**

*The torque for driving the air conditioner compressor is applied to the compressor shaft via the threaded attachment of the clutch plate -C-. If the clutch plate -C- has become so firmly screwed onto to the air conditioner compressor shaft -B- that it can no longer be loosened (the 7 mm hexagon flats can no longer transmit the necessary torque), the compressor must be renewed.*

## 3.6.3 Detaching pulley




**Note**

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- *If the pulley -A- cannot be detached by hand from the flange of the air conditioner compressor after removing the circlip (e.g. because of dirt), detach it carefully as described below.*
- *If the pulley -A- is supposed to be re-used, the arms of the puller must be applied so that the outside of the pulley is not squashed.*

– Carefully detach pulley -A- using a puller (with 3 arms) -B-.

**Note**

- *Do not support spindle of puller -B- on compressor shaft when detaching pulley -A-.*
- *To support spindle of puller -B- at compressor flange, use a sleeve -C- (e.g. sleeve V.A.G 1719/1 from magnetic clutch puller - V.A.G 1719- ).*
- *After detaching pulley -A-, thoroughly clean compressor flange; it must be possible to slide pulley -A- on by hand.*

## 3.6.4 Checking gap between pulley and clutch plate

**Note**

- *The gap must be within the permissible range around the entire circumference.*
- *The gap can also be measured when the air conditioner compressor is installed.*
- *If the gap is outside the permissible range, detach the clutch plate and adjust the gap to the correct dimension by removing or inserting spacers.*

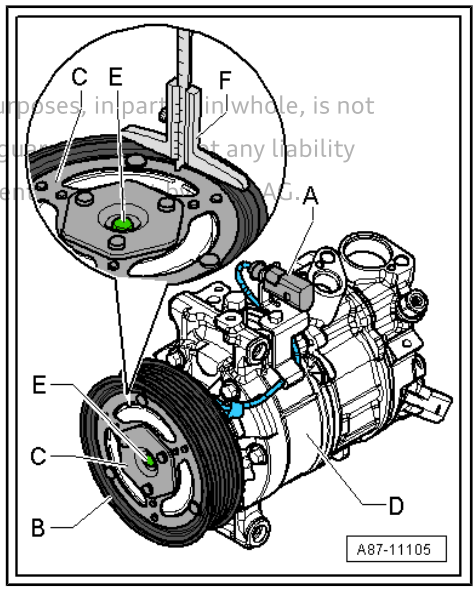
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**Procedure**

- Clutch plate -C- tightened to correct torque (30 Nm) on shaft of air conditioner compressor -E- ⇒ “3.6.2 Detaching and attaching clutch plate”, page 316 .

– Use a depth gauge -F- to measure dimension “1” between pulley -B- and clutch plate -C- at 3 points on circumference of clutch plate -C-; note down measured values.

– Apply a voltage of 12 V to wire to solenoid in connector -A-.




**Note**

- *Depending on the version of the air conditioner compressor, connector -A- may have one or three pins. On 3-pin connectors, the two wires to the air conditioner compressor regulating valve - N280- are also incorporated into the connector.*
- *There are different versions of the connector -A-; this illustration shows an air conditioner compressor on which the solenoid and -N280- are connected to the vehicle wiring harness via 2 connectors.*

– Apply earth to compressor housing -D-.

– Use a depth gauge -F- to measure dimension “2” between pulley -B- and clutch plate -C- at 3 points on circumference of clutch plate -C-; note down measured values.

– Calculate gap based on measured values (dimensions “1” and “2”).

Gap specification: 0.4 ... 0.6 mm (up to 0.8 mm with a used magnetic clutch)

## 3.7 Removing and installing pulley

⇒ “3.7.1 Removing and installing pulley - Denso air conditioner compressor (version 1)”, page 318

⇒ “3.7.2 Removing and installing pulley - Denso air conditioner compressor (version 2)”, page 320

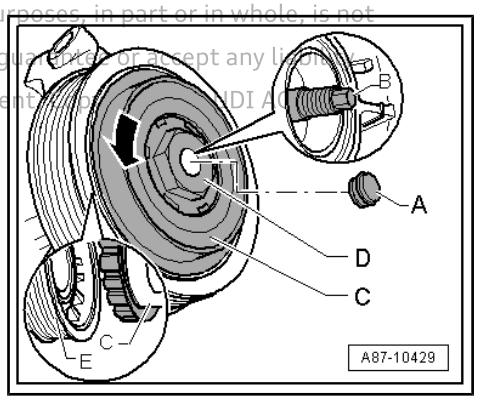
⇒ “3.7.3 Removing and installing pulley - Denso air conditioner compressor (version 3)”, page 321

### 3.7.1 Removing and installing pulley - “Denso” air conditioner compressor (version 1)

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**Note**

- *If the pulley overload protection has been tripped, check the freedom of movement of the air conditioner compressor before renewing the pulley. If the air conditioner compressor does not rotate freely, renew the complete unit.*
- *The air conditioner compressor can be detached from the bracket for ancillaries and re-attached without disconnecting refrigerant lines.*
- *Pulley is made of plastic, is sensitive to impact and should be treated with special care.*
- *If the overload protection of the drive plate -C- has been tripped, the pulley -E- can rotate with the outer section of the drive plate -C- without the air conditioner compressor shaft -B- and the hexagon -D- attached to the drive plate (inner section of drive plate -C-) also turning.*
- *The pulley is supplied as a replacement part together with the drive plate and cap, which are held together with a bolt. The bolt is not required and can be disposed of ⇒ Electronic parts catalogue .*
- *This bolt is used during manufacturing to insert a pre-determined amount of a specific grease into the thread of the drive plate (sufficient for fitting the drive plate onto the air conditioner compressor shaft once; do not re-use a drive plate that has been unscrewed).*



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### Removing

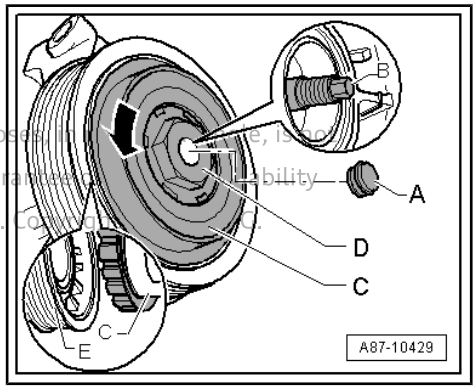
– Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .

– Remove cap -A-.

– Counterhold air conditioner compressor drive shaft -B- with a commercially available 7 mm Allen key.

– Turn drive plate -C- with pulley -E- in direction of -arrow-.

– Detach drive plate.

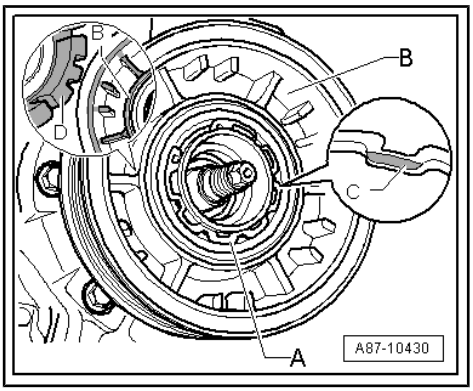



**Note**

- *The torque for driving the air conditioner compressor is applied to the air conditioner compressor shaft via the thread securing the drive plate.*
- *If the drive plate has become so firmly attached to the air conditioner compressor shaft that it can no longer be released (the 7 mm hexagon flats can no longer transmit the necessary torque), the air conditioner compressor must be renewed.*

– Remove circlip -A-.

– Detach pulley -B-.




### Installing

Install in reverse order of removal; note the following:

### Tightening torques

- ⇒ “3.2.1 Exploded view - Denso air conditioner compressor pulley (version 1)”, page 252

– Clean air conditioner compressor drive shaft before fitting pulley.

– Attach pulley to air conditioner compressor drive shaft.

• It should be possible to attach the component without having to exert force.

– Insert circlip -A- in correct position.

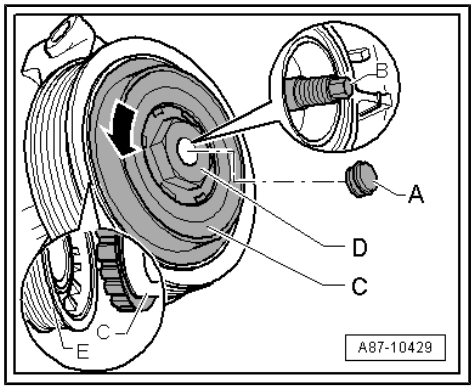
• Fit with bevelled side -C- facing away from air conditioner compressor (flat side towards compressor).

– Clean thread of air conditioner compressor drive shaft before bolting on drive plate.

**Note**

*Thread of new drive plate has been lubricated at factory with a pre-determined amount of a specific grease.*

– Insert rubber elements -D- in pulley -B- as shown and coat lightly with a small quantity of e.g. tyre assembly paste or soap solution for lubrication.
– Insert drive plate -C- in rubber elements until they make contact with air conditioner compressor drive shaft -B-.
– Press rubber element of drive plate into pulley -E- until drive plate makes contact with thread of air conditioner compressor drive shaft.
– Screw drive plate with pulley onto air conditioner compressor drive shaft by turning in opposite direction of -arrow-; counterhold with an Allen key.




## 3.7.2 Removing and installing pulley - “Denso” air conditioner compressor (version 2)

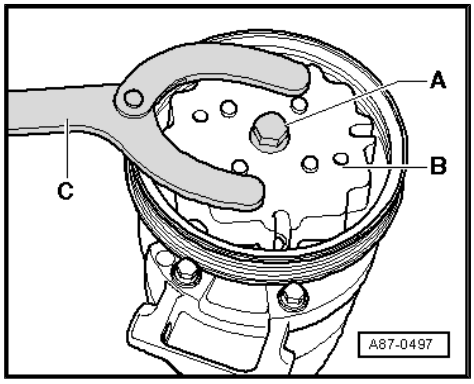
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**Note**

- *If the pulley overload protection has been tripped, check the freedom of movement of the air conditioner compressor before renewing the pulley. If the air conditioner compressor does not rotate freely, renew the complete unit.*
- *The pulley overload protection function is described e.g. in ⇒ Self-study programme No. 240 ; Audi A2 - Technology .*
- *The air conditioner compressor can be detached from the bracket on the engine and re-attached without opening up the refrigerant lines.*

### Removing

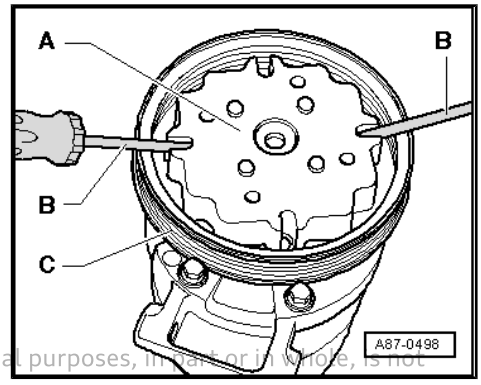
– Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .
– Counterhold with a commercially available two-hole pin wrench -C- (pin diameter 5.0 mm) at drive plate -B- and remove bolt -A-.




**Note**

- *If the pulley cannot be detached with the air conditioner compressor in position, detach the air conditioner compressor with the refrigerant lines connected.*
- *⇒ “3.3.1 Detaching and attaching air conditioner compressor at bracket - vehicles with 4-cyl. TFSI/TDI engine”, page 257*
- *⇒ “3.3.4 Detaching and attaching air conditioner compressor at bracket - vehicles with 6-cyl. TDI engine”, page 268*
- *On vehicles with 6-cyl. FSI/TFSI engine, the air conditioner compressor has to be removed ⇒ page 303 .*

– Carefully and evenly prise off drive plate -A- using 2 screwdrivers -B-.



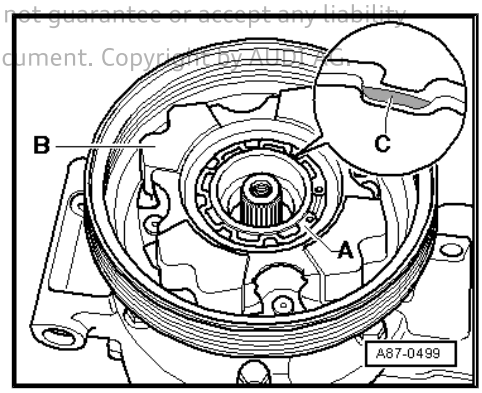

**Note**

- *When prising off drive plate -A-, take care not to damage collar of pulley -C-.*
- *There are different versions of the pulley -C- and the drive plate -A-. For correct version refer to ⇒ Electronic parts catalogue .*

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– Remove circlip -A-.

– Detach pulley -B-.




**Installing**

Install in reverse order of removal; note the following:

**Tightening torques**

- ⇒ “3.2.2 Exploded view - Denso air conditioner compressor pulley (version 2)”, page 253

**Note**

*Renew circlip.*

– Clean air conditioner compressor flange before fitting pulley.

– Fit pulley on air conditioner compressor flange.

- It should be possible to attach the component without having to exert force.

– Insert circlip -A- in correct position.

- Fit with bevelled side -C- facing away from air conditioner compressor (flat side towards compressor).

– Install air conditioner compressor:

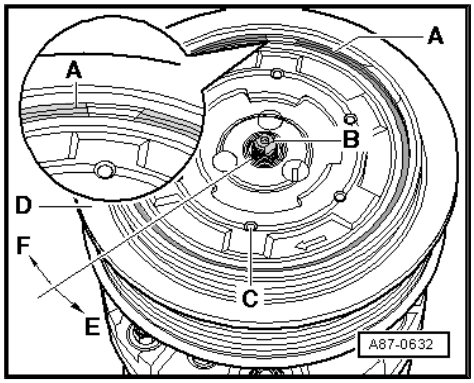
- ⇒ “3.3.1 Detaching and attaching air conditioner compressor at bracket - vehicles with 4-cyl. TFSI/TDI engine”, page 257
- ⇒ “3.3.4 Detaching and attaching air conditioner compressor at bracket - vehicles with 6-cyl. TDI engine”, page 268
- ⇒ “3.5.4 Removing and installing air conditioner compressor - vehicles with 6-cyl. FSI/TFSI engine”, page 303

## 3.7.3 Removing and installing pulley - “Denso” air conditioner compressor (version 3)

Air conditioner compressor without air conditioning system magnetic clutch - N25-

**Note**

- *Observe notes on renewing pulley ⇒ page 254 .*
- *Pulley is made of plastic, is sensitive to impact and should be treated with special care.*
- *If overload protection device of drive plate -C- has been triggered, remove circlip -A- and then prise drive plate off pulley -D-.*
- *Circlip -A- with a vulcanised rubber disc is fitted to minimise noise ⇒ page 254 and ⇒ Electronic parts catalogue .*

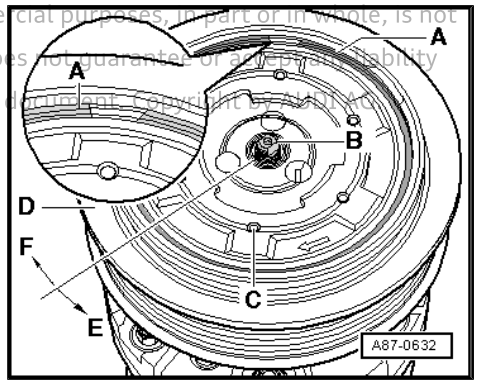



### Removing

– Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .

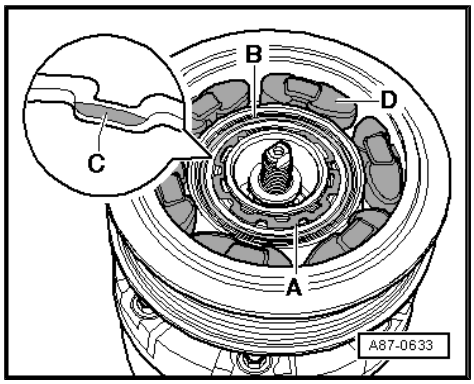
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– Use e.g. a small screwdriver or long-nose pliers to carefully remove circlip -A- (with vulcanised rubber disc ⇒ page 254 ), taking particular care not to damage pulley.




– Hold drive shaft -B- of air conditioner compressor using a standard hexagon socket wrench (commercially available) and turn drive plate -C- with pulley -D- in direction of arrow -E- (tightening torque: 35 Nm).
– Detach drive plate -C-.

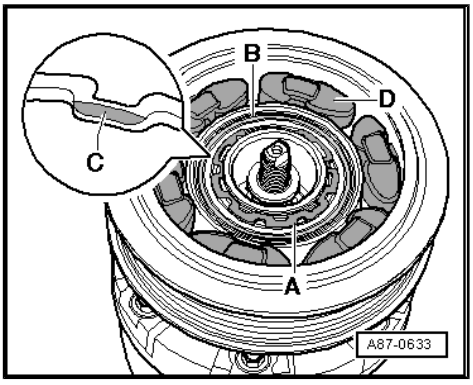
– Remove circlip -A-.
– Detach pulley -B-.




**Note**

*If the pulley cannot be detached with the air conditioner compressor in position, detach the air conditioner compressor with the refrigerant lines connected: 4-cyl. engine ⇒ page 257 , 6-cyl. TDI engine ⇒ page 268 . On vehicles with 6-cyl. FSI/TFSI engine the air conditioner compressor has to be removed ⇒ page 303 .*

**Installing**



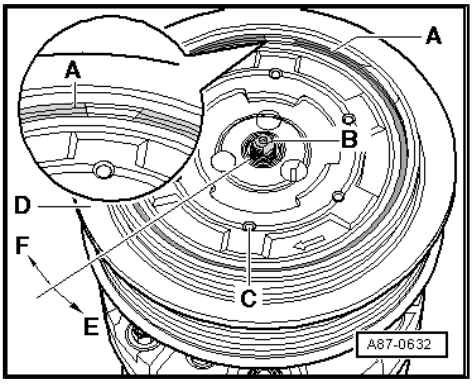

**Note**

*Renew circlip -A-.*

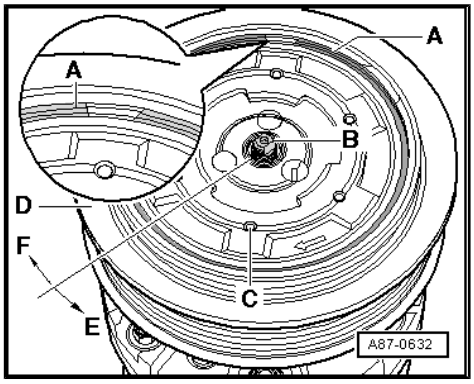
Clean air conditioner compressor flange before attaching pulley.

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

– Install pulley -B-.
– Ensure that circlip -A- is fitted correctly. Bevelled side -C- faces away from air conditioner compressor (flat side faces compressor).
– Insert rubber elements -D- into pulley -B- as shown.
– Before installing drive plate, coat rubber elements -D- lightly with lubricant (e.g. tyre fitting paste or soap solution).
– Insert drive plate -C- in rubber elements -D- (refer to top illustration) until it makes contact with shaft of air conditioner compressor -B-.




– Screw drive plate -C- onto compressor shaft -B- by turning in direction of arrow -F-.
– Tighten drive plate -C- (via pulley -D-) to 35 Nm by turning in direction of arrow -F- with a commercially available strap wrench (with fabric strap); hold compressor shaft -B- in position with a standard hexagon socket wrench (commercially available).
– Fit circlip -A- (with vulcanised rubber disc).




## 3.8 Unfastening and securing air conditioner compressor drive shaft

**Note**

*If the overload protection of the drive plate has been triggered, check that the air conditioner compressor can rotate freely before renewing the drive unit. If the air conditioner compressor does not rotate freely, renew the complete unit.*

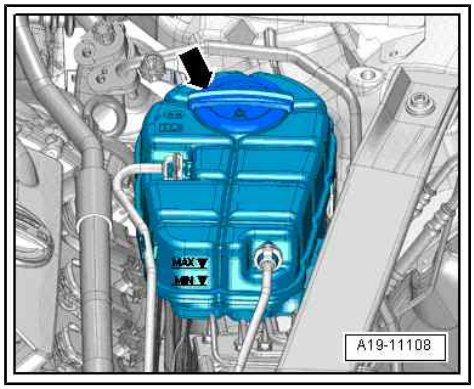
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### Unfastening

**WARNING**

*Risk of scalding due to hot steam and hot coolant.*

- *The cooling system is under pressure when the engine is hot.*
- *To relieve pressure, cover coolant expansion tank cap with a cloth and open carefully.*



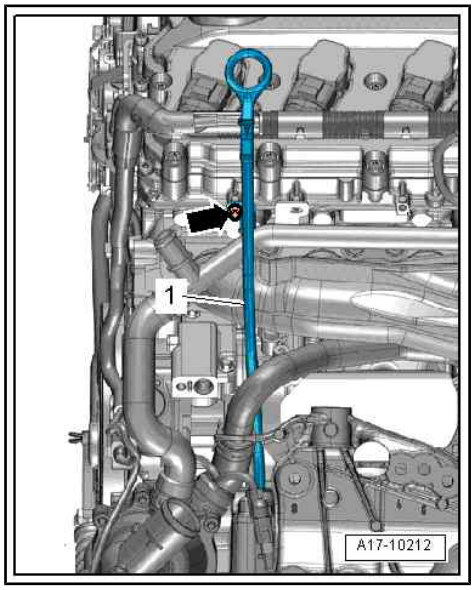

– Open cap -arrow- on coolant expansion tank.

– Bring front wheels into straight-ahead position.

– Remove engine mounting ⇒ Rep. gr. 10 ; Assembly mountings; Removing and installing engine mountings .

– Remove bolt -arrow-.

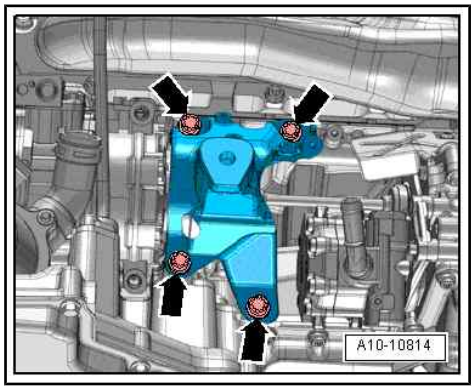
– Pull dipstick guide tube -1- out of sump (top section).




– Remove bolts -arrows- and detach engine support (left-side).

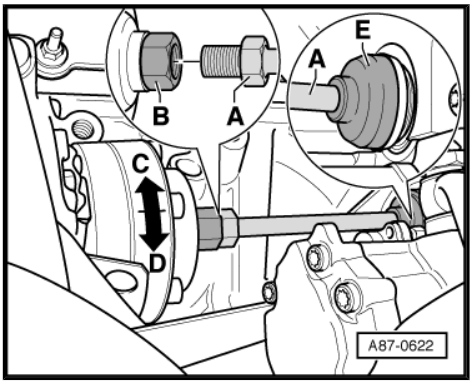
**Note**

- *For greater clarity, this illustration shows the engine support with the coolant pipe removed; however, the coolant pipe must be left in position.*
- *Depending on the version of the coolant pipe, it may be necessary to unfasten the coolant pipe from the engine and press it to the side slightly before removing the engine support.*




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– Hold air conditioner compressor drive shaft -A- with an open-end spanner and turn air conditioner compressor drive unit -B- in direction of -arrow C-.




**Note**

- *Drive shaft -A- must not be turned.*
- *After unfastening the thread, the drive shaft can be pushed through boot -E- into the drive gear.*

**Tightening**

**Tightening torques**

- ⇒ “3.1.5 Exploded view - drive unit for air conditioner compressor, vehicles with 8-cyl. FSI/TFSI engine”, page 246

– Hold air conditioner compressor drive shaft -A- with an open-end spanner and turn air conditioner compressor drive unit -B- in direction of -arrow D-.

– After tightening air conditioner compressor drive shaft, check installation position of boot -E-.

– Install engine support and engine mounting ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings .

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## 3.9 Removing and installing air conditioner compressor drive shaft

**Caution**

***Only open or remove after discharging the refrigerant circuit; 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; Rep. gr. 87 ; General information on air conditioning systems , and ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .***

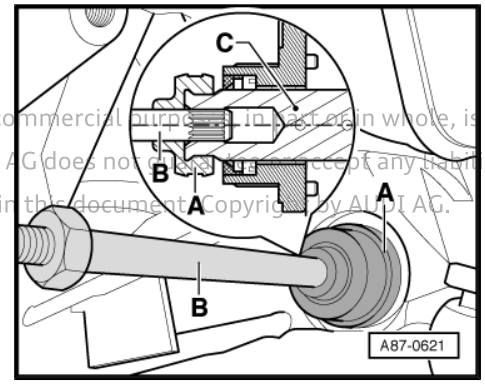
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**Removing**

– Remove air conditioner compressor ⇒ page 306 .

– Unfasten clamp and detach boot -A-.

– Pull drive shaft -B- out of splines of drive gear -C-.




**Installing**

Install in reverse order of removal; note the following:

**Note**

- *Renew boot if damaged.*
- *Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Electronic parts catalogue .*

– Check drive shaft -B-; splines must not show signs of wear and must engage in splines of drive gear -C- without play.

– Before inserting, coat splines of drive shaft -B- e.g. with grease - G 000 100- ⇒ Electronic parts catalogue .

– Before installing air conditioner compressor, insert drive shaft -B- and slide it into drive gear -C- as far as stop.

– Secure boot -A- at flange with clamp to prevent it from slipping off.

## 3.10 Removing and installing drive plate with overload protection

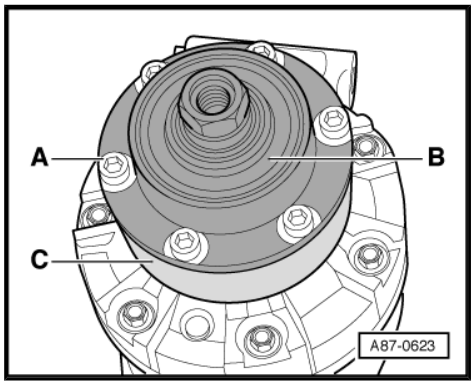
**Caution**

***Only open or remove after discharging the refrigerant circuit; 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; Rep. gr. 87 ; General information on air conditioning systems , and ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .***

**Removing**

– Remove air conditioner compressor ⇒ page 306 .

– Unscrew bolts -A-; to do so, counterhold drive plate -C- with commercially available strap wrench (with fabric strap).




**Installing**

Install in reverse order of removal; note the following:

**Tightening torques**

- ⇒ “3.2 Exploded view - pulley”, page 252

– Attach drive plate with overload protection -B- to drive plate.

– Insert bolts and tighten by hand until they make contact.

– Check concentricity of drive plate ⇒ page 327 .

– Tighten bolts.

– Check concentricity of drive plate again.

## 3.11 Checking and adjusting concentricity of drive plate with overload protection

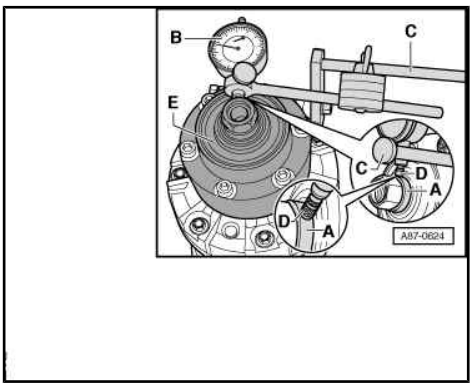
**Caution**

*Only open or remove after discharging the refrigerant circuit; 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; Rep. gr. 87 ; General information on air conditioning systems , and ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .*

**Special tools and workshop equipment required**

- Universal dial gauge bracket - VW 387-
- Dial gauge

**Procedure**




– Remove air conditioner compressor ⇒ page 306 .
– Clean flange of drive plate -A-.
– Attach dial gauge -B- to air conditioner compressor with universal dial gauge bracket - VW 387- -item C-.
– Apply probe -D- of dial gauge to flange of drive plate with a preload of approx. 1.0 mm and set dial gauge to “0”.
– Turn drive unit -E- of air conditioner compressor several times.
• Specification for eccentricity: less than 0.21 mm
• Maximum difference: 0.2 mm
– If eccentricity exceeds 0.2 mm, repeat adjustment of drive plate ⇒ page 326 .

## 3.12 Removing and installing drive plate at air conditioner compressor

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**Caution**

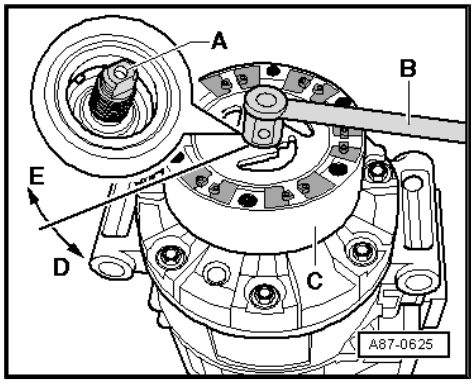
*Only open or remove after discharging the refrigerant circuit; take the vehicle to a workshop equipped with the necessary tools where the work can be performed by appropriately qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , and ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .*

### Removing

– Remove air conditioner compressor ⇒ page 306 .

– Remove drive plate with overload protection ⇒ page 326 .

– Unscrew drive plate -C- by turning it with a commercially available strap wrench (with fabric strap) in direction of -arrow D-. When doing so, provide support for compressor shaft -A- by applying a counterhold tool -B-.




**Note**

*Depending on the type of air conditioner compressor (the compressor shaft differs), use either a ring spanner, a socket wrench - T10001/10- from shock absorber set - T10001- or counterhold tool - 3079- to counterhold the compressor shaft.*

### Installing

Install in reverse order of removal; note the following:

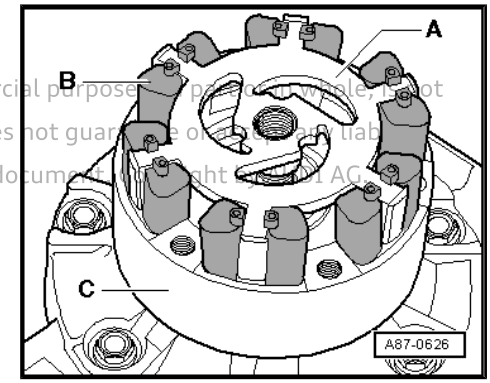
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### Tightening torques

♦ ⇒ “3.2 Exploded view - pulley”, page 252

– Insert rubber elements -B- in drive plate -A- as shown and lubricate lightly with tyre assembly paste, soap solution or similar.

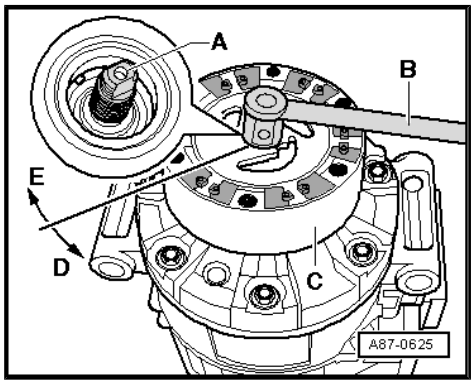
– Insert drive plate -C- in rubber elements until they make contact with air conditioner compressor drive shaft -B-.




**Note**

*The illustration shows rubber elements -B-, version “1”. Rubber elements, version “2”, are connected at the top.*

– Screw drive plate -C- onto compressor shaft -A- by turning it with a commercially available strap wrench (with fabric strap) in direction of -arrow E-. When doing so, provide support for compressor shaft by applying a counterhold tool -B-.




**Note**

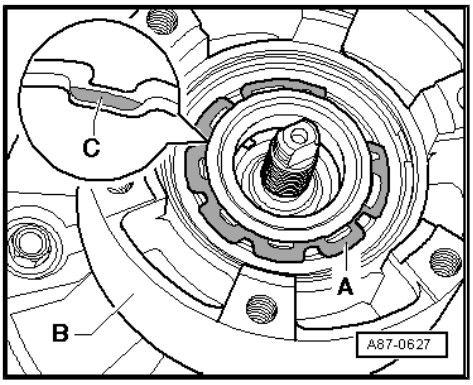
*Depending on the type of air conditioner compressor (the compressor shaft differs), use either a ring spanner, a socket wrench - T10001/10- from shock absorber set - T10001- or counterhold tool - 3079- to counterhold the compressor shaft.*

## 3.13 Removing and installing drive plate with roller bearing

**Caution**

***Only open or remove after discharging the refrigerant circuit; 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; Rep. gr. 87 ; General information on air conditioning systems , and ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .***

### Removing




– Remove air conditioner compressor ⇒ page 306 .
– Remove compressor shaft drive plate ⇒ page 327 .
– Remove circlip -A-.
– Detach drive plate -B-.

### Installing

Install in reverse order of removal; note the following:

**Note**

*Renew circlip.*

– Clean air conditioner compressor flange before fitting drive plate.
– Attach drive plate to air conditioner compressor flange.
• It should be possible to attach the component without having to exert force.
– Insert circlip -A- in correct position.
• Fit with bevelled side -C- facing away from air conditioner compressor (flat side towards compressor).

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# 4 Control motors

⇒ “4.1 Exploded view - control motors (front)”, page 331

⇒ “4.2 Exploded view - control motors (rear)”, page 343

⇒ “4.3 Removing and installing air flow flap control motor V71 ”, page 343

⇒ “4.4 Removing and installing defroster flap control motor V107 ”, page 345

⇒ “4.5 Removing and installing left footwell flap control motor V108 ”, page 348

⇒ “4.6 Removing and installing right footwell flap control motor V109 ”, page 351

⇒ “4.7 Removing and installing left centre vent control motor V110 ”, page 354

⇒ “4.8 Removing and installing right centre vent control motor V111 ”, page 357

⇒ “4.9 Removing and installing air recirculation flap control motor V113 ”, page 360

⇒ “4.10 Removing and installing rear temperature flap control motor V137 ”, page 361

⇒ “4.11 Removing and installing left temperature flap control motor V158 ”, page 363

⇒ “4.12 Removing and installing right temperature flap control motor V159 ”, page 365

⇒ “4.13 Removing and installing indirect ventilation flap control motor V213 ”, page 367

⇒ “4.14 Removing and installing rear left air quantity flap control motor V239 ”, page 368

⇒ “4.15 Removing and installing rear right air quantity flap control motor V240 ”, page 370

⇒ “4.16 Removing and installing left side vent control motor V299 ”, page 371

⇒ “4.17 Removing and installing right side vent control motor V300 ”, page 373

⇒ “4.18 Removing and installing rear left temperature flap control motor V313 ”, page 374

⇒ “4.19 Removing and installing rear right temperature flap control motor V314 ”, page 376

⇒ “4.20 Removing and installing rear left chest vent control motor V315 ”, page 377

⇒ “4.21 Removing and installing rear right chest vent control motor V316 ”, page 379

⇒ “4.22 Removing and installing air recirculation flap 1 control motor for hybrid battery V479 ”, page 380

⇒ “4.23 Removing and installing air recirculation flap 2 control motor for hybrid battery V480 ”, page 383

⇒ “4.24 Removing and installing brackets for control motors”, page 387

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## 4.1 Exploded view - control motors (front)

⇒ “4.1.1 Exploded view - control motors (front left), basic version”, page 332

⇒ “4.1.2 Exploded view - control motors (front right), basic version”, page 333

⇒ “4.1.3 Exploded view - control motors (front), actuating levers, cam plate (left-side), basic version”, page 335

⇒ “4.1.4 Exploded view - control motors (front), actuating levers, cam plate (right-side), basic version”, page 336

⇒ “4.1.5 Exploded view - control motors (front left), deluxe version”, page 337

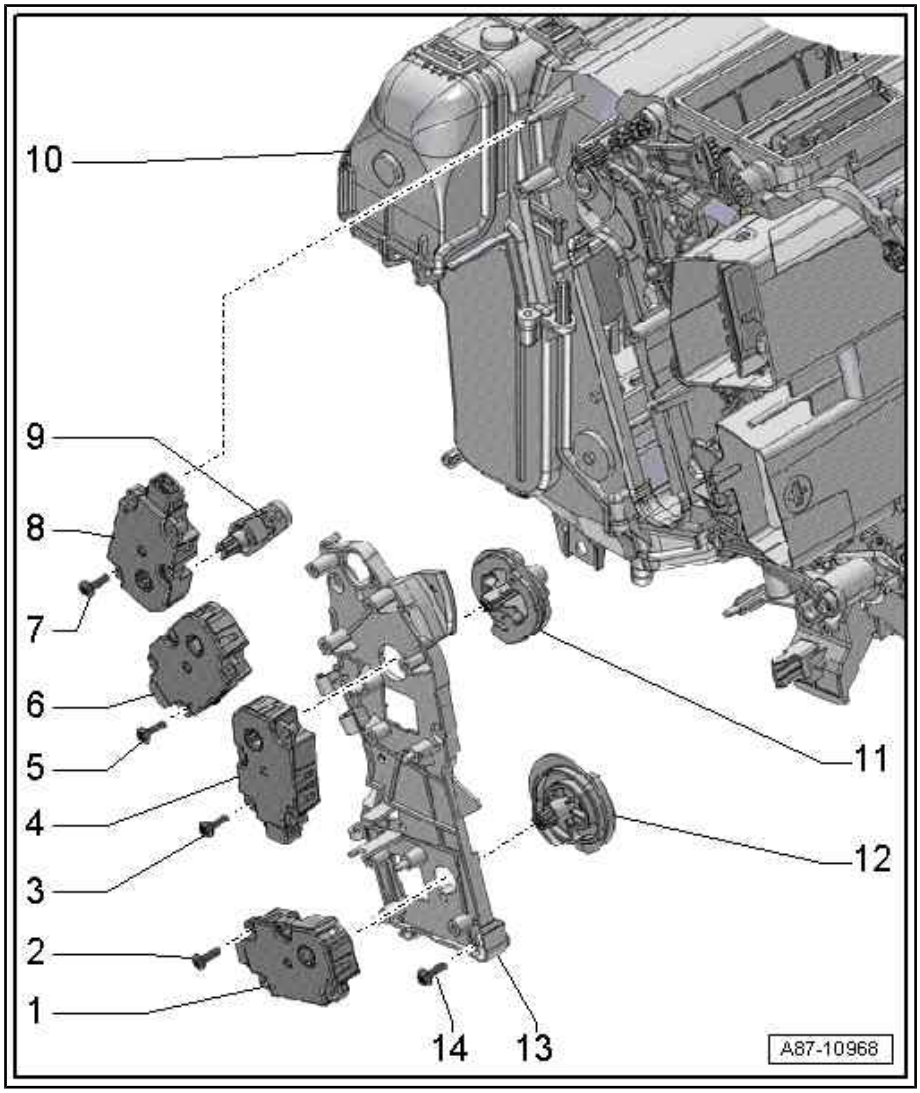
⇒ “4.1.6 Exploded view - control motors (front right), deluxe version”, page 339

⇒ “4.1.7 Exploded view - control motors (front), actuating levers, cam plate (left-side), deluxe version”, page 341

⇒ “4.1.8 Exploded view - control motors (front), actuating levers, cam plate (right-side), deluxe version”, page 342

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## 4.1.1 Exploded view - control motors (front left), “basic” version




**1 - Left footwell flap control motor - V108-**

- ❑ Removing and installing ⇒ page 348

**2 - Bolt**

- ❑ 2x
- ❑ 1 Nm

**3 - Bolt**

- ❑ 2x
- ❑ 1 Nm

**4 - Left centre vent control motor - V110-**

- ❑ Removing and installing ⇒ page 354

**5 - Bolt**

- ❑ 3x
- ❑ 1 Nm

**6 - Defroster flap control motor - V107-**

- ❑ Removing and installing ⇒ page 345

**7 - Bolt**

- ❑ 2x
- ❑ 1 Nm

**8 - Left temperature flap control motor - V158-**

- ❑ Removing and installing ⇒ page 363

**9 - Actuator for temperature flaps (left-side)**

- ❑ From heat exchanger for front vents

**10 - Air distribution housing**

- ❑ Removing and installing air conditioning unit ⇒ page 460
- ❑ Exploded view ⇒ page 392

**11 - Cam plate for flap actuators (left-side)**

- ❑ For centre dash panel vents and centre console vents

**12 - Cam plate for flap actuators (left-side)**

- ❑ For side dash panel vents, front and rear footwell vents

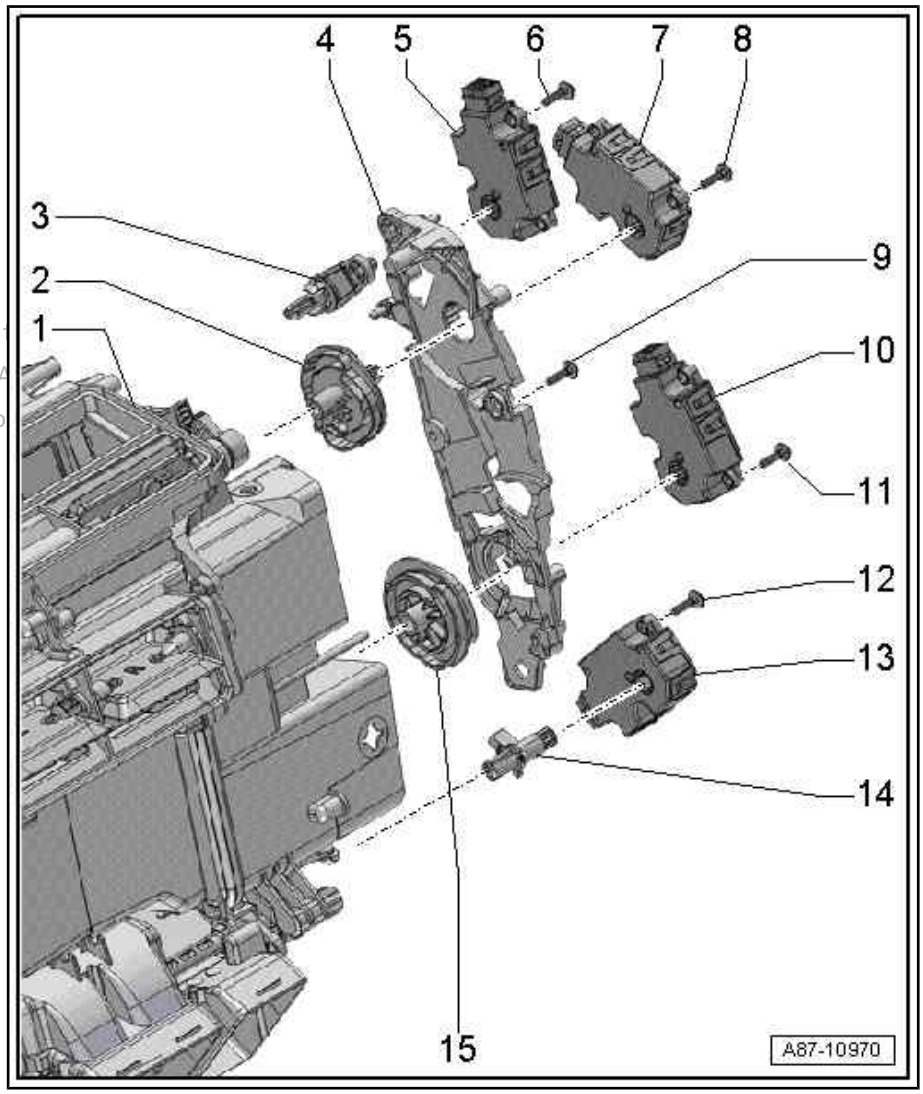
**13 - Bracket**

- ❑ For control motors -V107- / -V108- / -V110-
- ❑ Removing and installing ⇒ page 387

**14 - Bolt**

- ❑ 4x
- ❑ 1 Nm

## 4.1.2 Exploded view - control motors (front right), “basic” version




**1 - Air distribution housing**

- ❑ Removing and installing air conditioning unit ⇒ page 460
- ❑ Exploded view ⇒ page 392

**2 - Cam plate for flap actuators (right-side)**

- ❑ For centre dash panel vents and centre console vents

**3 - Actuator for temperature flaps (right-side)**

- ❑ From heat exchanger for front vents

**4 - Bracket**

- ❑ For control motors -V109- / -V111-
- ❑ Removing and installing ⇒ page 388

**5 - Right temperature flap control motor - V159-**

- ❑ Removing and installing ⇒ page 365

**6 - Bolt**

- ❑ 2x
- ❑ 1 Nm

**7 - Right centre vent control motor - V111-**

- ❑ Removing and installing ⇒ page 357

**8 - Bolt**

- ❑ 2x
- ❑ 1 Nm

**9 - Bolt**

- ❑ 4x
- ❑ 1 Nm

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**10 - Right footwell flap control motor - V109-**

- ❑ Removing and installing ⇒ page 351

**11 - Bolt**

- ❑ 2x
- ❑ 1 Nm

**12 - Bolt**

- ❑ 2x
- ❑ 1 Nm

**13 - Rear temperature flap control motor - V137-**

- ❑ Removing and installing ⇒ page 361

**14 - Actuators for rear temperature flaps**

- ❑ From heat exchanger for rear vents

**15 - Cam plate for flap actuators (right-side)**

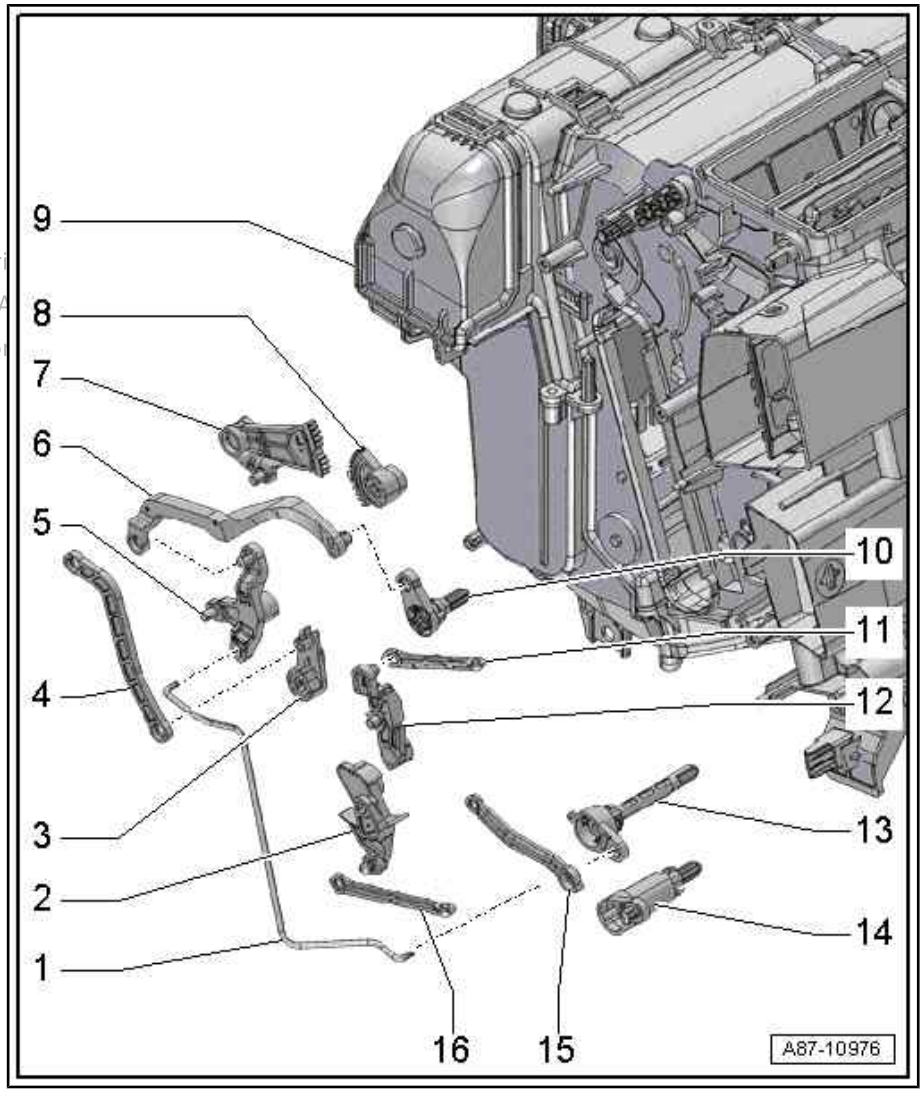
- ❑ For side dash panel vents, front and rear footwell vents

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## 4.1.3 Exploded view - control motors (front), actuating levers, cam plate (left-side), “basic” version

**Note**

*Renew only the components supplied with the repair kit. For repair kit refer to ⇒ Electronic parts catalogue .*




**1 - Connecting rod**

- ❑ For control of flaps for dash panel vent (centre) and rear vent

**2 - Actuating lever**

- ❑ For actuation of flaps for footwell vents (front and rear)

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**3 - Actuating lever**

- ❑ For actuation of warm air flap

**4 - Connecting element**

- ❑ For control of warm and cold air

**5 - Connecting element**

- ❑ For control of flaps for dash panel vent (centre) and rear vent

**6 - Connecting element**

- ❑ For control of flap for dash panel vent (centre)

**7 - Connecting element**

- ❑ For control of “indirect ventilation” flap

**8 - Actuating lever**

- ❑ For actuation of “indirect ventilation” flap

**9 - Air distribution housing**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ The air distribution housing of the air conditioning unit must not be dismantled

**10 - Actuating lever**

- ❑ For actuation of flap for dash panel vent (centre)

**11 - Connecting element**

- ❑ For control of flap for dash panel vent (side)

**12 - Actuating lever**

- ❑ For actuation of connecting element for flap for dash panel vent (side)

**13 - Actuating lever**

- ❑ For actuation of flap for rear vent

**14 - Actuating lever**

- ❑ For actuation of flap for footwell vent (rear)

**15 - Connecting element**

- ❑ For control of flap for footwell vent (rear)

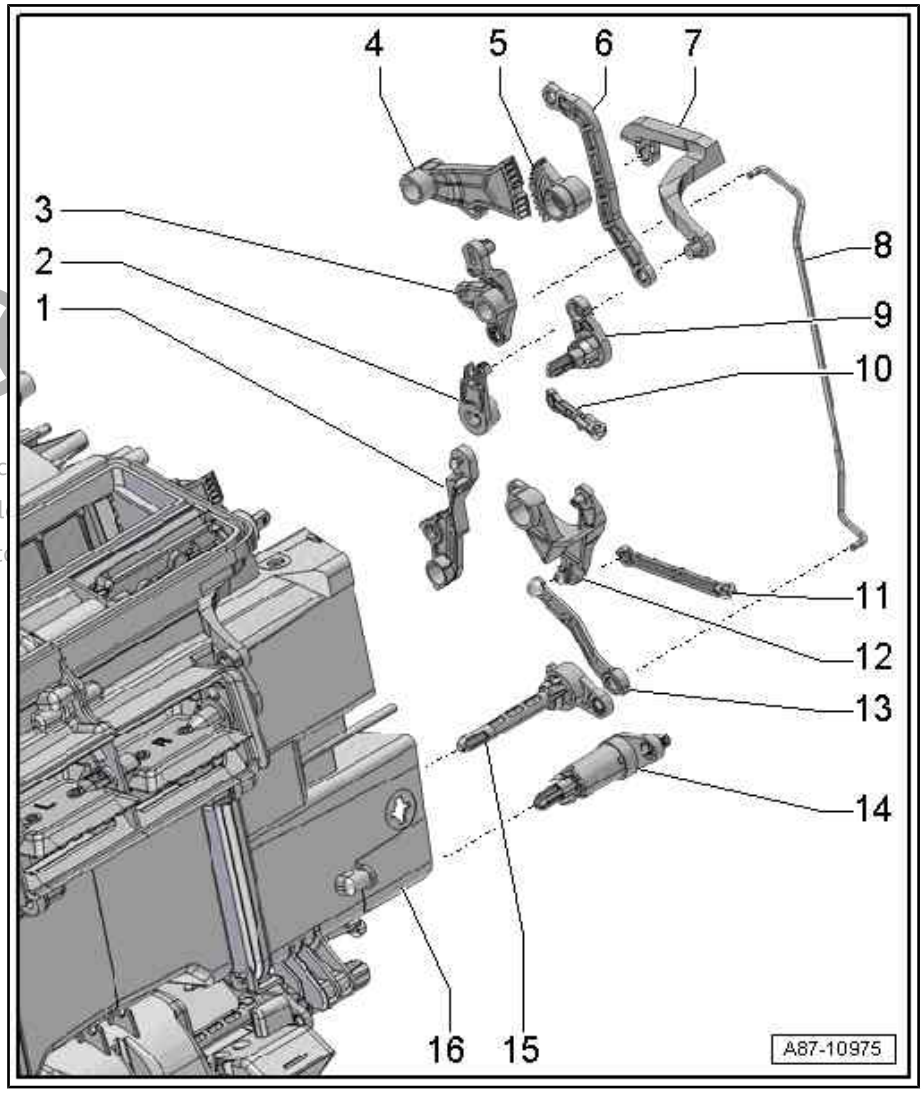
**16 - Connecting element**

- ❑ For control of flap for footwell vent (front)

## 4.1.4 Exploded view - control motors (front), actuating levers, cam plate (right-side), “basic” version

**Note**

*Renew only the components supplied with the repair kit. For repair kit refer to ⇒ Electronic parts catalogue .*




**1 - Actuating lever**

- ❑ For actuation of connecting element for flap for dash panel vent (side)

**2 - Actuating lever**

- ❑ For actuation of warm air flap

**3 - Connecting element**

- ❑ For control of flaps for dash panel vent (centre) and rear vent

**4 - Connecting element**

- ❑ For control of “indirect ventilation” flap

**5 - Actuating lever**

- ❑ For actuation of “indirect ventilation” flap

**6 - Connecting element**

- ❑ For control of warm and cold air

**7 - Connecting element**

- ❑ For control of flap for dash panel vent (centre)

**8 - Connecting rod**

- ❑ For control of flaps for dash panel vent (centre) and rear vent

**9 - Actuating lever**

- ❑ For actuation of flap for dash panel vent (centre)

**10 - Connecting element**

- ❑ For control of flap for dash panel vent (side)

**11 - Connecting element**

- ❑ For control of flap for footwell vent (front)

**12 - Actuating lever**

- ❑ For actuation of flaps for footwell vents (front and rear)

**13 - Connecting element**

- ❑ For control of flap for footwell vent (rear)

**14 - Actuating lever**

- ❑ For actuation of flap for footwell vent (rear)

**15 - Actuating lever**

- ❑ For actuation of flap for rear vent

**16 - Air distribution housing**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ The air distribution housing of the air conditioning unit must not be dismantled

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## 4.1.5 Exploded view - control motors (front left), “deluxe” version

**1 - Bolt**

- ❑ 2x
- ❑ 1 Nm

**2 - Rear left air quantity flap control motor - V239-**

- ❑ Removing and installing ⇒ page 368

**3 - Rear left temperature flap control motor - V313-**

- ❑ Removing and installing ⇒ page 374

**4 - Bolt**

- ❑ 2x
- ❑ 1 Nm

**5 - Actuator for temperature flap (left-side)**

- ❑ From heat exchanger for rear vents

**6 - Left footwell flap control motor - V108-**

- ❑ Removing and installing ⇒ page 349

**7 - Bolt**

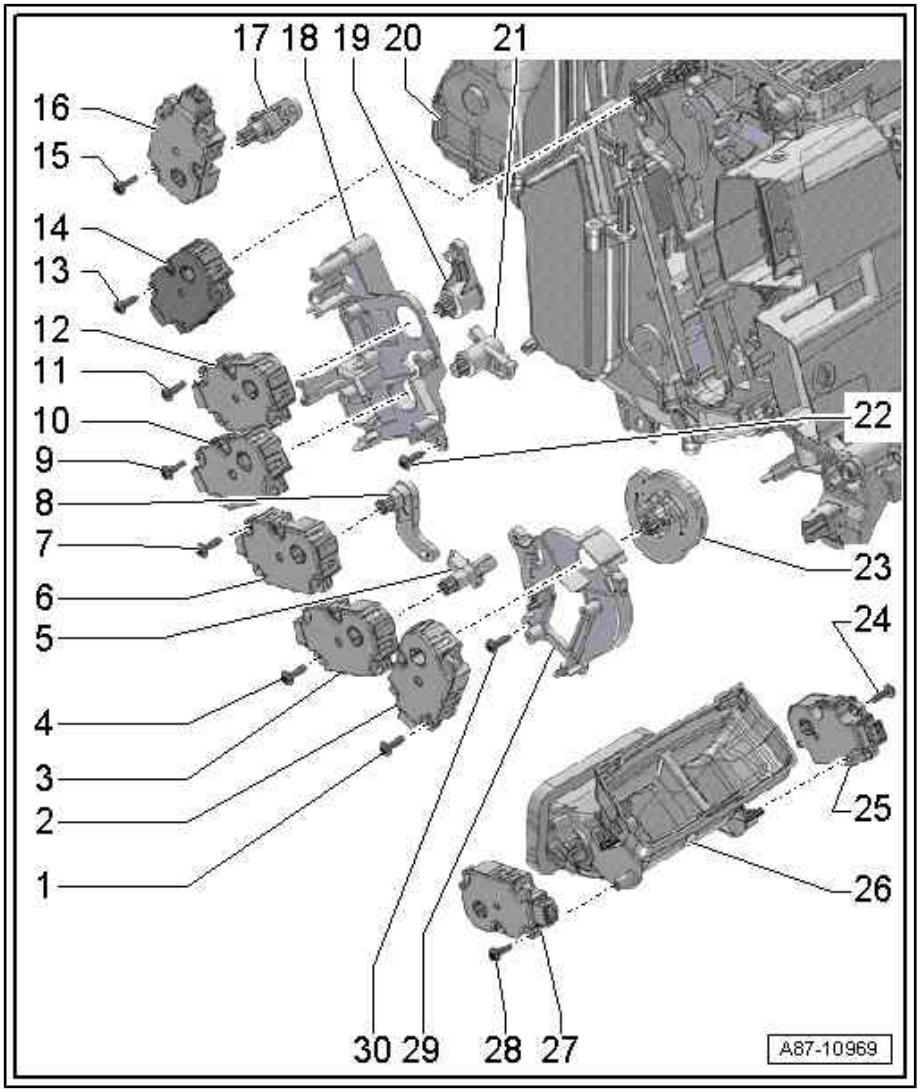
- ❑ 2x
- ❑ 1 Nm

**8 - Actuator for flap (left-side)**

- ❑ For footwell vent (front)

**9 - Bolt**

- ❑ 2x
- ❑ 1 Nm




**10 - Left side vent control motor - V299-**

- ❑ Removing and installing ⇒ page 371

**11 - Bolt**

- ❑ 2x
- ❑ 1 Nm

**12 - Left centre vent control motor - V110-**
- ❑ Removing and installing ⇒ page 356

**13 - Bolt**
- ❑ 3x
- ❑ 1 Nm

**14 - Defroster flap control motor - V107-**
- ❑ Removing and installing ⇒ page 345

**15 - Bolt**
- ❑ 2x
- ❑ 1 Nm

**16 - Left temperature flap control motor - V158-**
- ❑ Removing and installing ⇒ page 363

**17 - Actuator for temperature flap (left-side)**
- ❑ From heat exchanger for front vents

**18 - Bracket**
- ❑ For control motors -V110- / -V299-
- ❑ Removing and installing ⇒ page 389

**19 - Actuator for flap (left-side)**
- ❑ For dash panel vent (centre)

**20 - Air distribution housing**
- ❑ Removing and installing air conditioning unit ⇒ page 460
- ❑ Exploded view ⇒ page 392

**21 - Actuator for flap (left-side)**
- ❑ For dash panel vent (side)

**22 - Bolt**
- ❑ 4x
- ❑ 1 Nm

**23 - Cam plate for flaps (left-side)**
- ❑ For vents in rear footwell vents, centre console and B-pillar

**24 - Bolt**
- ❑ 2x
- ❑ 1 Nm

**25 - Rear right chest vent control motor - V316-**
- ❑ Removing and installing ⇒ page 379

**26 - Air duct to rear vent**
- ❑ In rear centre console
- ❑ Exploded view ⇒ page 488

**27 - Rear left chest vent control motor - V315-**
- ❑ Removing and installing ⇒ page 377

**28 - Bolt**
- ❑ 2x
- ❑ 1 Nm

**29 - Bracket**
- ❑ For control motor -V239-
- ❑ Removing and installing ⇒ page 391

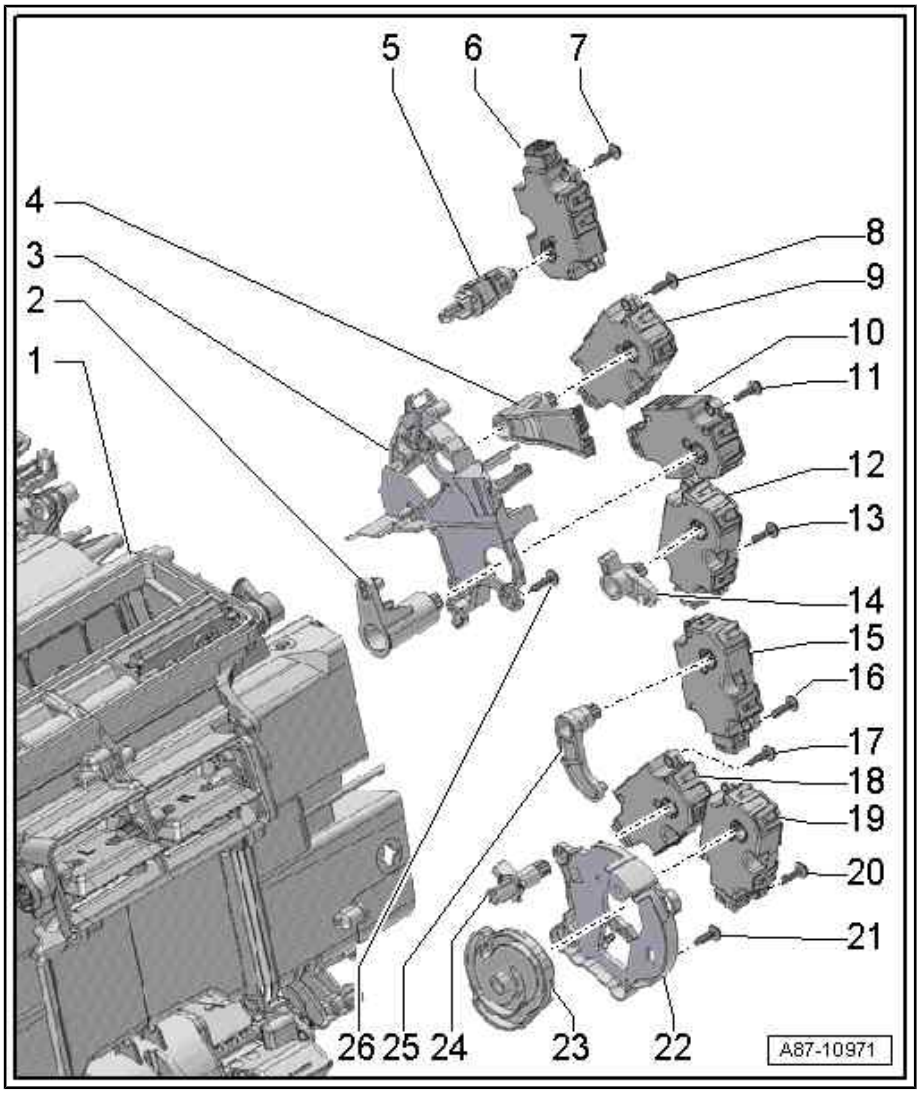
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**30 - Bolt**

- ❑ 3x
- ❑ 1 Nm

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## 4.1.6 Exploded view - control motors (front right), "deluxe" version




**1 - Air distribution housing**

- ❑ Removing and installing air conditioning unit ⇒ page 460
- ❑ Exploded view ⇒ page 392

**2 - Actuator for flap (right-side)**

- ❑ For dash panel vent (centre)

**3 - Bracket**

- ❑ For control motors - V111- / -V213-
- ❑ Removing and installing ⇒ page 390

**4 - Actuator for "indirect ventilation" flaps**

- ❑ For vents in dash panel (top)

**5 - Actuator for temperature flap (right-side)**

- ❑ From heat exchanger for front vents

**6 - Right temperature flap control motor - V159-**

- ❑ Removing and installing ⇒ page 365

**7 - Bolt**

- ❑ 2x
- ❑ 1 Nm

**8 - Bolt**

- ❑ 2x
- ❑ 1 Nm

**9 - Indirect ventilation flap control motor - V213-**

- ❑ Removing and installing ⇒ page 367

**10 - Right centre vent control motor - V111-**

- ❑ Removing and installing ⇒ page 359

**11 - Bolt**

- ❑ 2x
- ❑ 1 Nm

**12 - Right side vent control motor - V300-**

- ❑ Removing and installing ⇒ page 373

**13 - Bolt**

- ❑ 2x
- ❑ 1 Nm

**14 - Actuators for flap (right-side)**

- ❑ For dash panel vent (side)

**15 - Right footwell flap control motor - V109-**

- ❑ Removing and installing ⇒ page 351

**16 - Bolt**

- ❑ 3x
- ❑ 1 Nm

**17 - Bolt**

- ❑ 2x
- ❑ 1 Nm

**18 - Rear right temperature flap control motor - V314-**

- ❑ Removing and installing ⇒ page 376

**19 - Rear right air quantity flap control motor - V240-**

- ❑ Removing and installing ⇒ page 370

**20 - Bolt**

- ❑ 2x
- ❑ 1 Nm

**21 - Bolt**

- ❑ 3x
- ❑ 1 Nm

**22 - Bracket**

- ❑ For control motor -V240-
- ❑ Removing and installing ⇒ page 391

**23 - Cam plate for flaps (right-side)**

- ❑ For vents in rear footwell vents, centre console and B-pillar

**24 - Actuator for flap (right-side)**

- ❑ For footwell vent (front)

**25 - Actuator for temperature flap (right-side)**

- ❑ From heat exchanger for rear vents

**26 - Bolt**

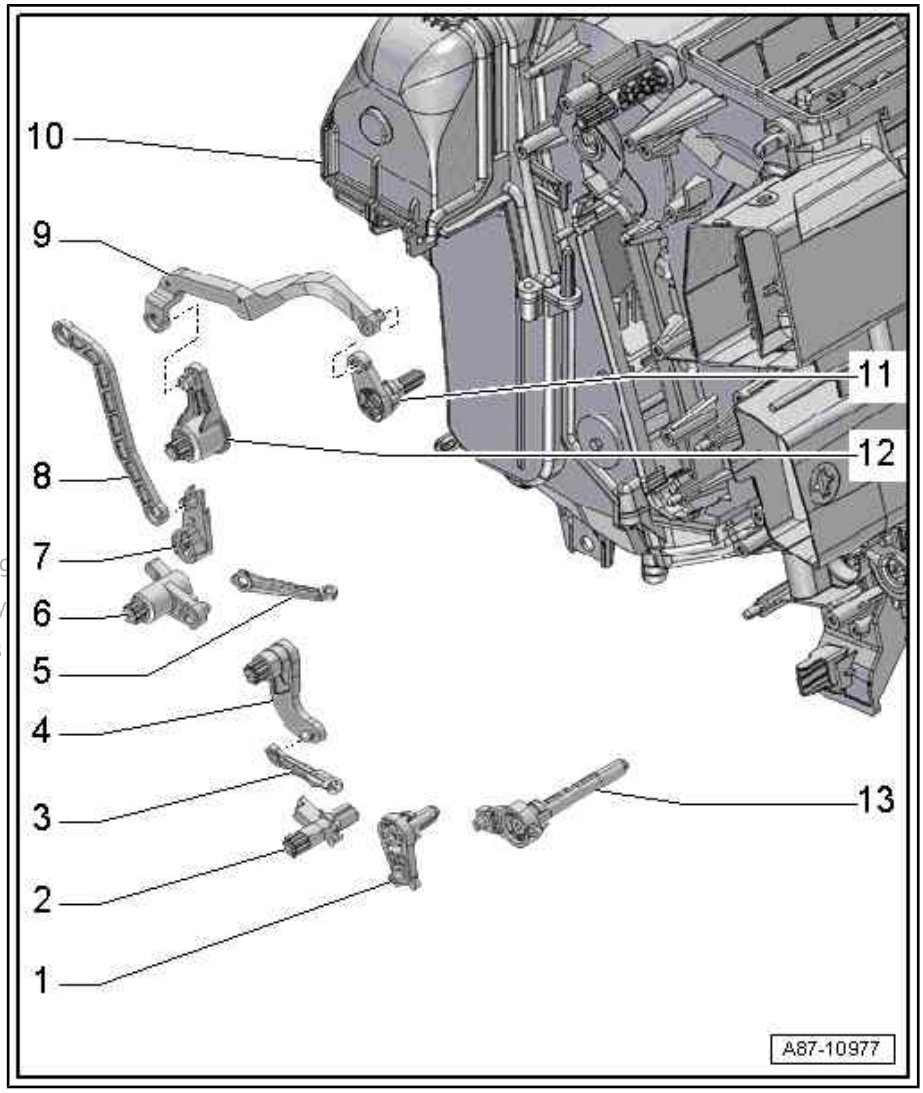
- ❑ 4x
- ❑ 1 Nm

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## 4.1.7 Exploded view - control motors (front), actuating levers, cam plate (left-side), “deluxe” version

**Note**

*Renew only the components supplied with the repair kit. For repair kit refer to ⇒ Electronic parts catalogue .*




**1 - Actuating lever**

- ❑ For actuation of flap for footwell vent (rear)

**2 - Actuating lever**

- ❑ For actuation of cold air flap

**3 - Connecting element**

- ❑ For control of flap for footwell vent (front)

**4 - Actuating lever**

- ❑ For control of flap for footwell vent (front)

**5 - Connecting element**

- ❑ For control of flap for dash panel vent (side)

**6 - Actuating lever**

- ❑ For actuation of flap for dash panel vent (side)

**7 - Actuating lever**

- ❑ For actuation of warm air flap

**8 - Connecting element**

- ❑ For control of warm and cold air

**9 - Connecting element**

- ❑ For control of flap for dash panel vent (centre)

**10 - Air distribution housing**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ The air distribution housing of the air conditioning unit must not be dismantled

**11 - Actuating lever**

- ❑ For actuation of flap for dash panel vent (centre)

**12 - Actuating lever**

- ❑ For control of flap for dash panel vent (centre)

**13 - Actuating lever**

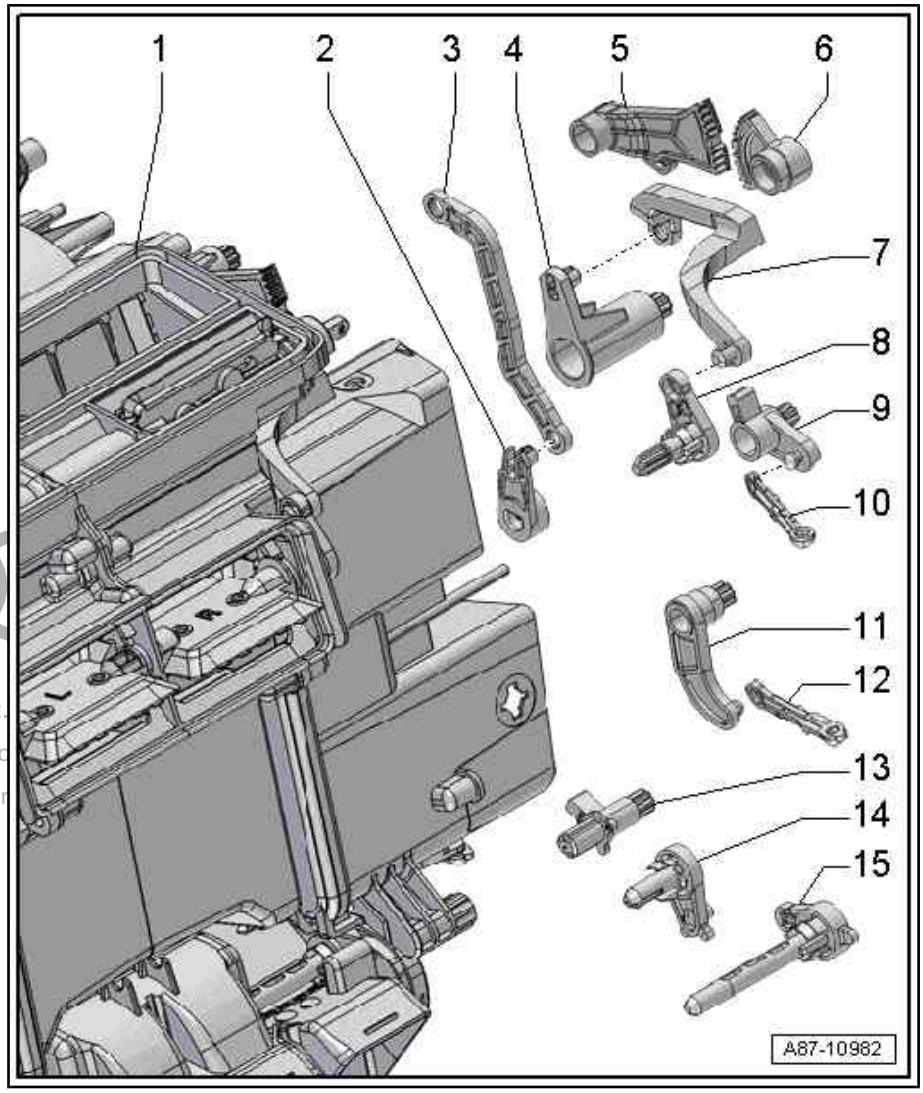
- ❑ For actuation of flap for rear vent

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## 4.1.8 Exploded view - control motors (front), actuating levers, cam plate (right-side), “deluxe” version

**Note**

*Renew only the components supplied with the repair kit. For repair kit refer to ⇒ Electronic parts catalogue .*




**1 - Air distribution housing**

- Different versions ⇒ Electronic parts catalogue
- The air distribution housing of the air conditioning unit must not be dismantled

**2 - Actuating lever**

- For actuation of warm air flap

**3 - Connecting element**

- For control of warm and cold air

**4 - Actuating lever**

- For control of flap for dash panel vent (centre)

**5 - Connecting element**

- For control of “indirect ventilation” flap

**6 - Actuating lever**

- For actuation of “indirect ventilation” flap

**7 - Connecting element**

- For control of flap for dash panel vent (centre)

**8 - Actuating lever**

- For actuation of flap for dash panel vent (centre)

**9 - Actuating lever**

- For control of flap for dash panel vent (side)

**10 - Connecting element**

- For control of flap for dash panel vent (side)

**11 - Actuating lever**

- For control of flap for footwell vent (front)

**12 - Connecting element**

- For control of flap for footwell vent (front)

**13 - Actuating lever**

- For actuation of cold air flap

**14 - Actuating lever**

- For actuation of flap for footwell vent (rear)

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**15 - Actuating lever**

- ❑ For actuation of flap for rear vent

## 4.2 Exploded view - control motors (rear)

**1 - Battery cooling module**

- ❑ Exploded view ⇒ page 568

**2 - Air recirculation flap 1 control motor for hybrid battery - V479-**

- ❑ Removing and installing ⇒ page 380

**3 - Bolt**

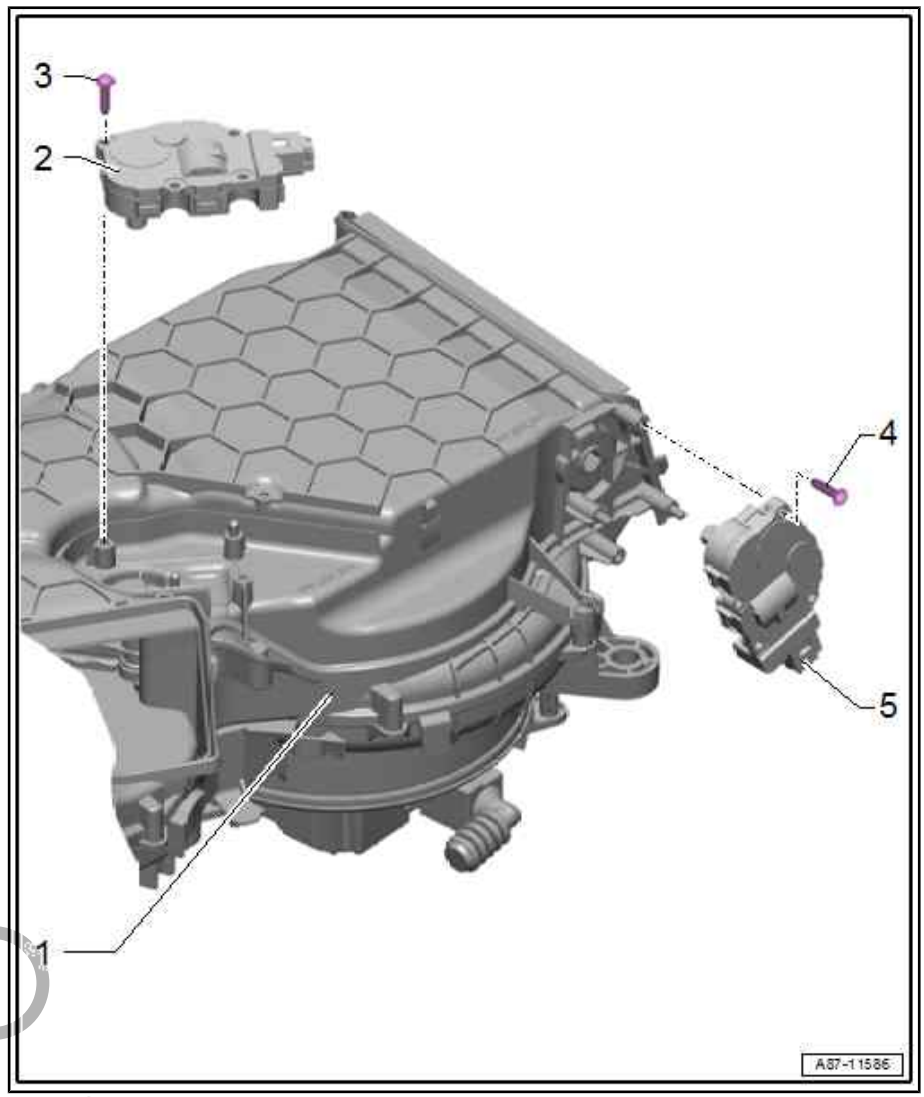
- ❑ 1.5 Nm

**4 - Bolt**

- ❑ 1.5 Nm

**5 - Air recirculation flap 2 control motor for hybrid battery - V480-**

- ❑ Removing and installing ⇒ page 383




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## 4.3 Removing and installing air flow flap control motor - V71-

⇒ "4.3.1 Operation of air flow flap control motor V71 ", page 343

⇒ "4.3.2 Removing and installing air flow flap control motor V71 ", page 344

### 4.3.1 Operation of air flow flap control motor - V71-

- ♦ With the air recirculation flap closed, the position of the fresh air/air flow flap can be seen via the air intake opening in the plenum chamber ⇒ page 505 .
- ♦ For the control of the air flow, the fresh air intake duct is partially closed via the air flow flap at higher vehicle speeds (from

approx. 80 km/h) by the operating unit ( Climatronic control unit - J255- ; position of air recirculation flap is specified by - J255- ).

- To reduce the change in the noise level of the fresh air blower - V2- caused by differences in the air intake when switching from fresh air mode to air recirculation mode or vice versa, the air flow flap control motor - V71- and the air recirculation flap control motor - V113- are activated as follows:
- When switching from fresh air mode to air recirculation mode, the air recirculation flap is opened first and the fresh-air intake duct is then closed via the air flow/fresh air flap.
- When switching from air recirculation mode to fresh air mode, the fresh-air intake duct is opened first via the air flow/fresh air flap and the air recirculation flap is then closed.
- In partial air recirculation mode, the air recirculation flap is opened and the air flow/fresh air flap moved to the centre position by -J255- (fresh-air and air recirculation intake ducts are simultaneously opened slightly). This results in an improved cooling effect in certain temperature ranges and at the same time causes the intake of a certain proportion of fresh air.

## 4.3.2 Removing and installing air flow flap control motor - V71-

### Removing

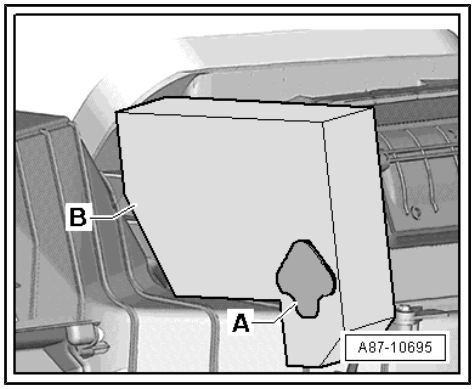
– Observe general notes ⇒ page 22 .

– Move front right seat to rearmost position.

– Switch off ignition.

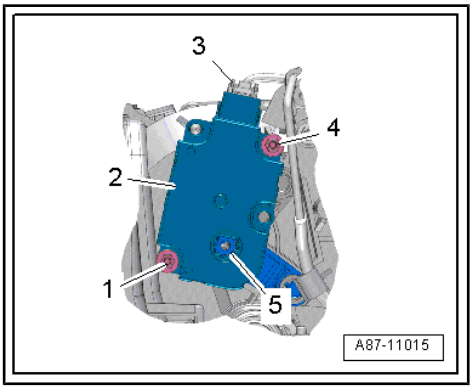
– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .

– Release bracket -A- and detach noise insulation cover -B-.




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– Mark electrical connector and control motor.
– Unplug electrical connector -3-.
– Remove bolts -1, 4-.
– Detach control motor -2- from shaft -5- for air flow flap.



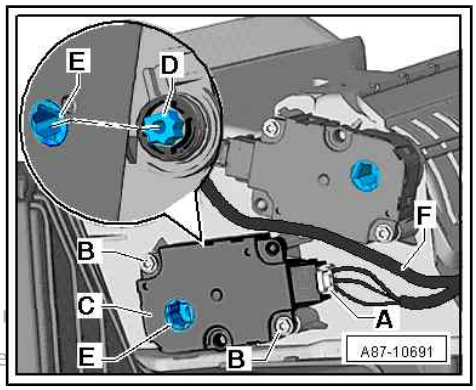

**Installing**

Install in reverse order of removal; note the following:

**Caution**

***Risk of damage to control motor.***

- ***The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.***
- ***If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.***




– The actuator socket -E- on the control motor -C- can only be fitted onto the shaft -D- in one position.

• The actuator socket in the control motor must be opposite the shaft as shown.

**Note**

*If the actuator socket and shaft are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

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– Plug in electrical connector -A-.
– Position control motor on air distribution housing. The shaft of the air flow flap must engage in the actuator socket.

• There must not be any play in the connection between the control motor and shaft.

– Tighten bolts -B- to specified torque ⇒ page 397 .
– Route wiring harness -F- so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.
– Perform basic setting.
– Perform final control diagnosis.

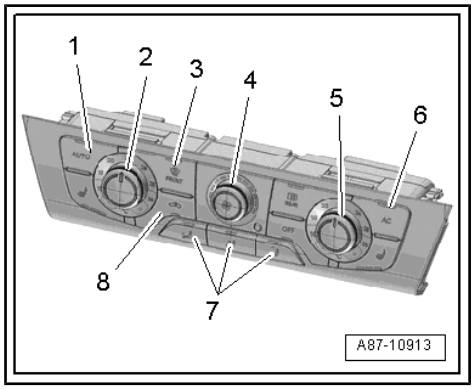
## 4.4 Removing and installing defroster flap control motor - V107-

**Removing**

– Observe general notes ⇒ page 22 .
– Move front left seat to rearmost position.

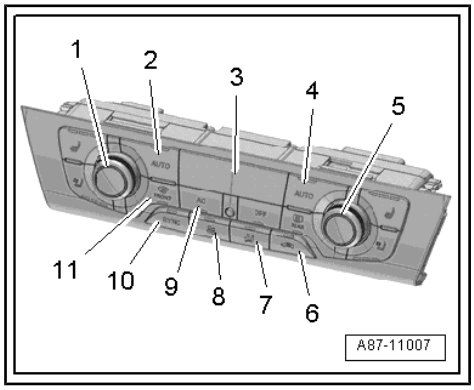
**Air conditioner (“basic” version):**

– Using button -3-, set direction of air delivery to “Windscreen”.




**Air conditioner (“deluxe” version):**

– Using button -11-, set direction of air delivery to “Windscreen”.




**Both versions (continued):**

- The air should emerge from the windscreen “defroster vent”.

– Switch off ignition.

– Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .

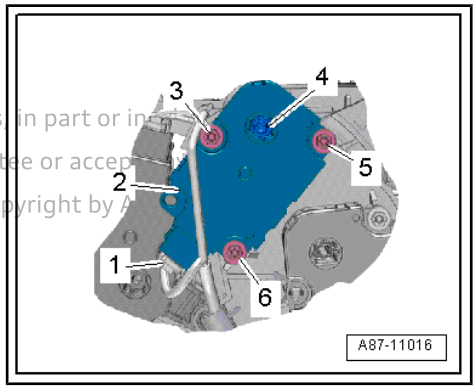
– Remove footwell vent (driver side) ⇒ page 494 .

– Remove accelerator pedal module ⇒ Rep. gr. 20 ; Accelerator mechanism; Exploded view - accelerator pedal module

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– Mark electrical connector and control motor.
– Unplug electrical connector -1-.
– Remove bolts -3, 5, 6-.
– Detach control motor -2- from shaft -4- for defroster flap.




**Note**

*When the control motor is detached, the defroster flap in the air distribution housing opens automatically (gravity). The shaft for the defroster flap is therefore always in a certain position.*

### Installing

Install in reverse order of removal; note the following:

### Tightening torque

◆ ⇒ “4.1 Exploded view - control motors (front)”, page 331

**Note**

*The air conditioning unit is supplied with different shafts. Version with short shaft: The control motor can only be attached to the shaft in the specified installation position. Version with longer shaft (difference in length: approx. 10 mm): The control motor can be turned into the specified installation position together with the shaft after it has been attached to the shaft.*

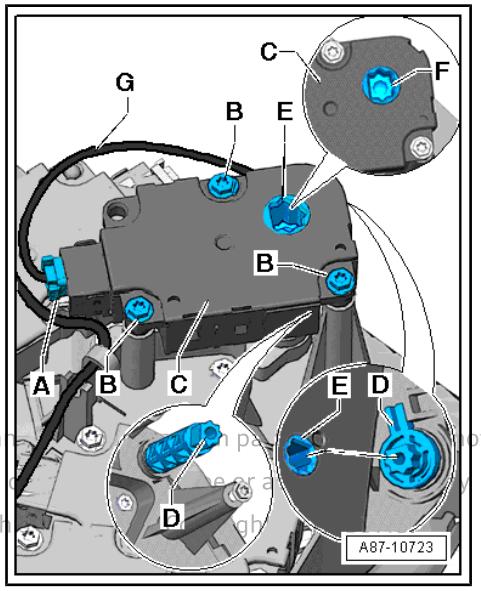
**Caution**

***Risk of damage to control motor.***

- ***The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.***
- ***If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.***

– The actuator socket -E- on the control motor -C- can only be fitted onto the shaft -D- in one position.

• The actuator socket in the control motor must be opposite the shaft as shown.




**Note**

*If the actuator socket and shaft are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -A-.

– Position control motor on air distribution housing. The shaft must engage in the actuator socket.

• There must not be any play in the connection between the control motor and shaft.

– Tighten bolts -B- to torque.

– Route wiring harness -G- so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

– Perform basic setting.

– Perform final control diagnosis.

## 4.5 Removing and installing left footwell flap control motor - V108-

⇒ “4.5.1 Removing and installing left footwell flap control motor V108 - basic version”, page 348

⇒ “4.5.2 Removing and installing left footwell flap control motor V108 - deluxe version”, page 349

### 4.5.1 Removing and installing left footwell flap control motor - V108- - “basic” version

**Removing**

– Observe general notes ⇒ page 22 .

– Move front left seat to rearmost position.

– Switch off ignition.

– Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .

– Remove footwell vent (driver side) ⇒ page 494 .

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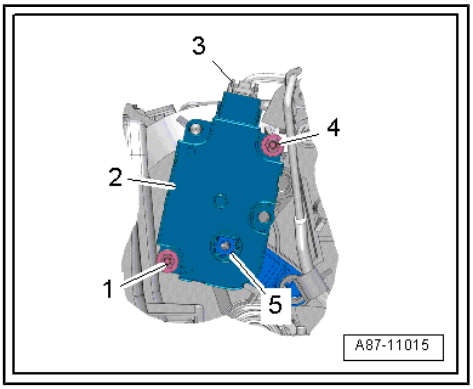
– Mark electrical connector and control motor.
– Remove bolts -1, 4-.
– Detach control motor -2- from shaft of actuating arm -5-.
– Unplug electrical connector -3-.

**Installing**

Install in reverse order of removal; note the following:

**Tightening torques**

◆ ⇒ “4.1 Exploded view - control motors (front)”, page 331

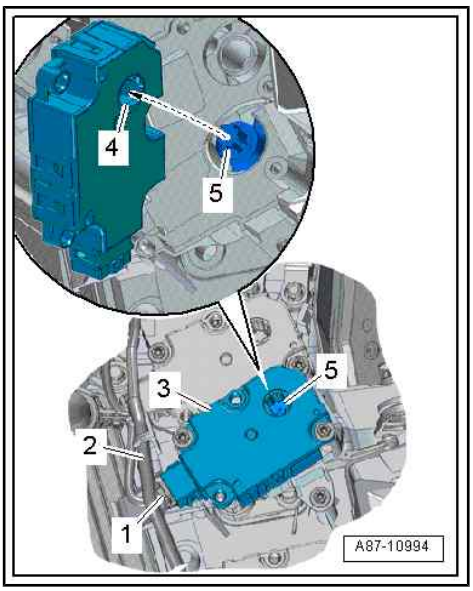



**Caution**

*Risk of damage to control motor.*

- *The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.*
- *If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.*

– The actuator socket in the control motor -3- can only be fitted onto the actuating arm -5- in one position.
• The actuator socket in the control motor must be opposite the actuating arm as shown.




**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -1-.
– Position control motor on air distribution housing. The actuating arm must engage -arrow- in actuator socket -4-.
• There must not be any play in the connection between the control motor and actuating arm.
– Tighten bolts to specified torque.
– Route wiring harness -2- so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.
– Perform basic setting.
– Perform final control diagnosis.

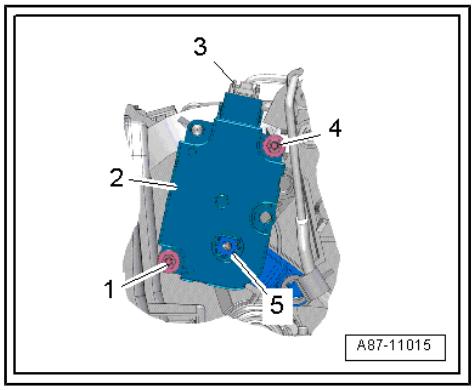
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## 4.5.2 Removing and installing left footwell flap control motor - V108- - “deluxe” version

**Removing**

– Observe general notes ⇒ page 22 .

– Move front left seat to rearmost position.
– Switch off ignition.
– Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .
– Remove footwell vent (driver side) ⇒ page 494 .
– Mark electrical connector and control motor.
– Remove bolts -1, 4-.
– Detach control motor -2- from shaft of actuating arm -5-.
– Unplug electrical connector -3-.




### Installing

Install in reverse order of removal; note the following:

### Tightening torques

◆ ⇒ “4.1.5 Exploded view - control motors (front left), deluxe version”, page 337

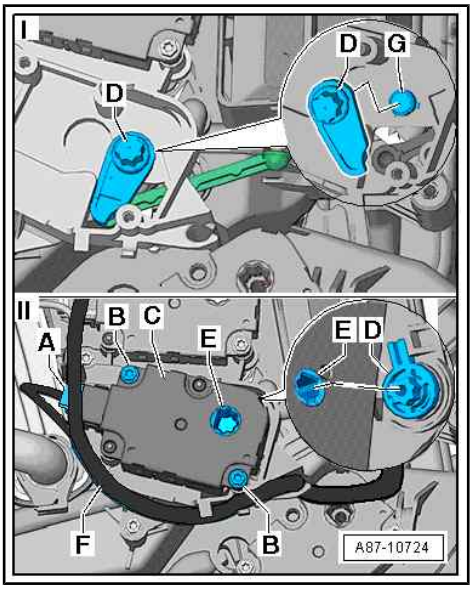
**Caution**

*Risk of damage to control motor.*

- *The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.*
- *If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.*

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– Check that actuating arm -D- is correctly positioned on mounting -G-.
– The actuator socket -E- in the control motor -C- can only be fitted onto the actuating arm -D- in one position.
• The actuator socket in the control motor must be opposite the actuating arm as shown.




**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -A-.
– Position control motor on air distribution housing. The actuating arm must engage in the actuator socket.
• There must not be any play in the connection between the control motor and actuating arm.
– Tighten bolts -B- to torque.
– Route wiring harness -F- so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.
– Perform basic setting.
– Perform final control diagnosis.

## 4.6 Removing and installing right footwell flap control motor - V109-

⇒ “4.6.1 Removing and installing right footwell flap control motor V109 - basic version”, page 351

⇒ “4.6.2 Removing and installing right footwell flap control motor V109 - deluxe version”, page 353

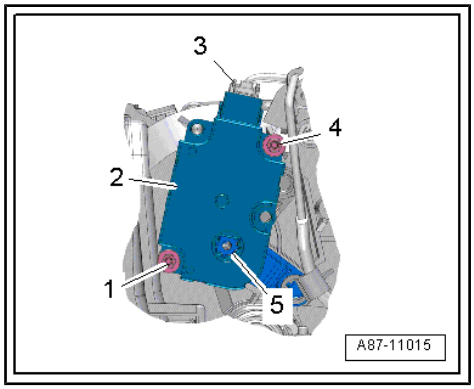
## 4.6.1 Removing and installing right footwell flap control motor - V109- - “basic” version

**Removing**

– Observe general notes ⇒ page 22 .
– Move front right seat to rearmost position.
– Switch off ignition.
– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .
– Remove air duct for dash panel vent (passenger side) ⇒ page 497 .
– Remove footwell vent (front passenger side) ⇒ page 494 .

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– Mark electrical connector and control motor.
– Remove bolts -1, 4-.
– Detach control motor -2- from shaft of actuating arm -5-.
– Unplug electrical connector -3-.




### Installing

Install in reverse order of removal; note the following:

### Tightening torques

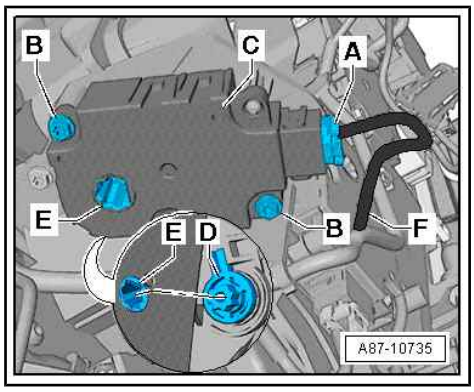
◆ ⇒ “4.1.2 Exploded view - control motors (front right), basic version”, page 333

**Caution**

*Risk of damage to control motor.*

- *The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.*
- *If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.*

– The actuator socket -E- in the control motor -C- can only be fitted onto the actuating arm -D- in one position.
• The actuator socket in the control motor must be opposite the actuating arm as shown.




**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -A-.
– Position control motor on air distribution housing. The actuating arm must engage in the actuator socket.
• There must not be any play in the connection between the control motor and actuating arm.
– Tighten bolts -B- to torque.
– Route wiring harness -F- so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.
– Perform basic setting.
– Perform final control diagnosis.

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## 4.6.2 Removing and installing right footwell flap control motor - V109- - “deluxe” version

### Removing

– Observe general notes ⇒ page 22 .

– Move front right seat to rearmost position.

– Switch off ignition.

– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .

– Remove footwell vent (front passenger side) ⇒ page 494 .

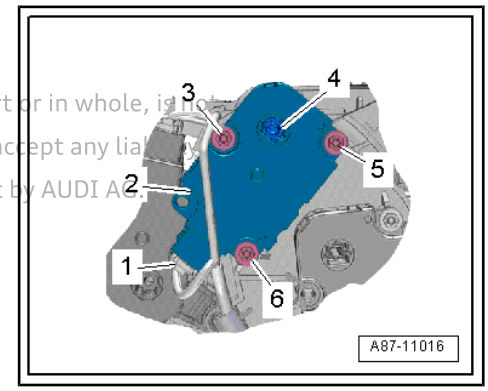
– Remove air duct for dash panel vent (passenger side) ⇒ page 497 .

– Mark electrical connector and control motor.

– Unplug electrical connector -1-.

– Remove bolts -3, 5, 6-.

– Detach control motor -2- from shaft -4- for footwell flap.




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**Note**

*The shaft may also be pulled out when the control motor is detached.*

### Installing

Install in reverse order of removal; note the following:

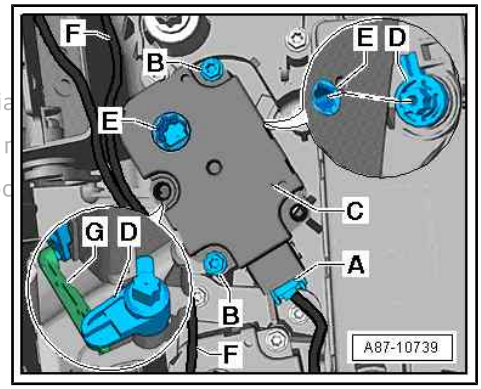
**Caution**

*Risk of damage to control motor.*

- *The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.*
- *If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.*

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– Check that connecting element -G- and actuating arm -D- are in correct installation position and function properly.
– The actuator socket -E- in control motor -C- can only be attached to the shaft in one position.
• The actuator socket in the control motor must be opposite the shaft as shown.




**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -A-.
– Position control motor on air distribution housing. The shaft must engage in the actuator socket.
• There must not be any play in the connection between the control motor and shaft.
– Tighten bolts -B- to specified torque ⇒ “4.1.6 Exploded view - control motors (front right), deluxe version”, page 339 .
– Route wiring harness -G- so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.
– Perform basic setting.
– Perform final control diagnosis.

## 4.7 Removing and installing left centre vent control motor - V110-

⇒ “4.7.1 Removing and installing left centre vent control motor V110 - basic version”, page 354

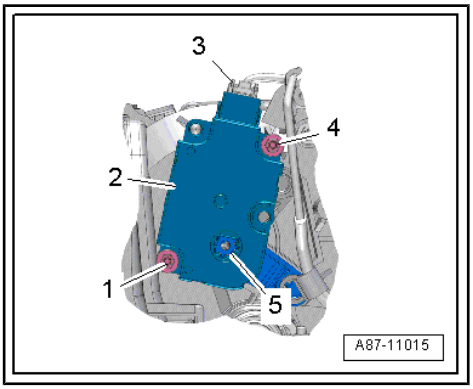
⇒ “4.7.2 Removing and installing left centre vent control motor V110 - deluxe version”, page 356

## 4.7.1 Removing and installing left centre vent control motor - V110- - “basic” version

### Removing

– Observe general notes ⇒ page 22 .
– Move front left seat to rearmost position.
– Switch off ignition.
– Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .
– Remove footwell vent (driver side) ⇒ page 494 .

– Mark electrical connector and control motor.
– Remove bolts -1, 4-.
– Detach control motor -2- from shaft of actuating arm -5-.
– Unplug electrical connector -3-.




### Installing

Install in reverse order of removal; note the following:

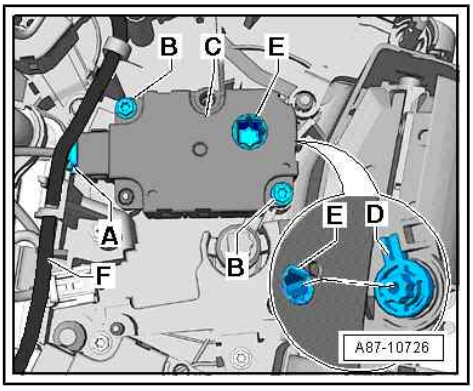
### Tightening torques

◆ ⇒ “4.1 Exploded view - control motors (front)”, page 331

**Caution**

*Risk of damage to control motor.*

- *The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.*
- *If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.*




– The actuator socket -E- in the control motor -C- can only be fitted onto the actuating arm -D- in one position.
• The actuator socket in the control motor must be opposite the actuating arm as shown.

**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22.*

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– Plug in electrical connector -A-.
– Position control motor on air distribution housing. The actuating arm must engage in the actuator socket.
• There must not be any play in the connection between the control motor and actuating arm.
– Tighten bolts -B- to torque.
– Route wiring harness -F- so that it cannot come into contact with moving components (e.g. control motor lever).

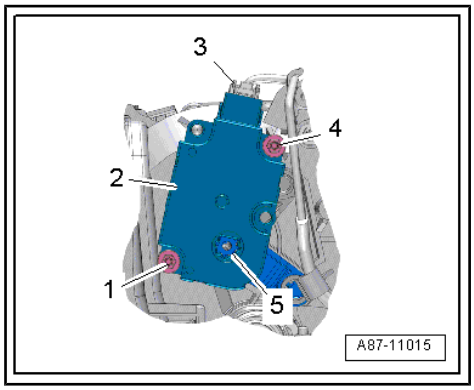
After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.
– Perform basic setting.
– Perform final control diagnosis.

## 4.7.2 Removing and installing left centre vent control motor - V110- - “deluxe” version

### Removing

– Observe general notes ⇒ page 22 .
– Move front left seat to rearmost position.
– Switch off ignition.
– Remove left side vent control motor ⇒ page 371 .
– Mark electrical connector and control motor.
– Remove bolts -1, 4-.
– Detach control motor -2- from shaft of actuating arm -5-.
– Unplug electrical connector -3-.




### Installing

Install in reverse order of removal; note the following:

### Tightening torques

◆ ⇒ “4.1.5 Exploded view - control motors (front left), deluxe version”, page 337

**Caution**

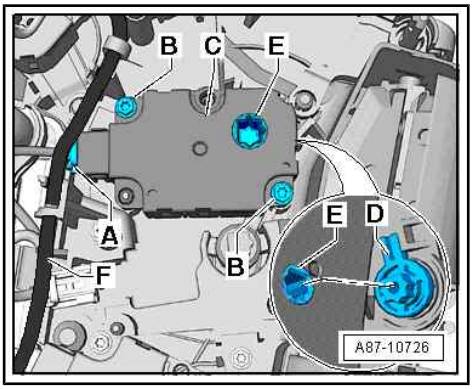
*Risk of damage to control motor.*

- *The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.*
- *If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.*

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– The actuator socket -E- in the control motor -C- can only be fitted onto the actuating arm -D- in one position.

• The actuator socket in the control motor must be opposite the actuating arm as shown.




**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -A-.

– Position control motor on air distribution housing. The actuating arm must engage in the actuator socket.

• There must not be any play in the connection between the control motor and actuating arm.

– Tighten bolts -B- to torque.

– Route wiring harness -F- so that it cannot come into contact with moving components (e.g. control motor lever).

– Install left side vent control motor ⇒ page 371 .

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

– Perform basic setting.

– Perform final control diagnosis.

## 4.8 Removing and installing right centre vent control motor - V111-

⇒ “4.8.1 Removing and installing right centre vent control motor V111 - basic version”, page 357

⇒ “4.8.2 Removing and installing right centre vent control motor V111 - deluxe version”, page 359

### 4.8.1 Removing and installing right centre vent control motor - V111- - “basic” version

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**Removing**

– Observe general notes ⇒ page 22 .

– Move front right seat to rearmost position.

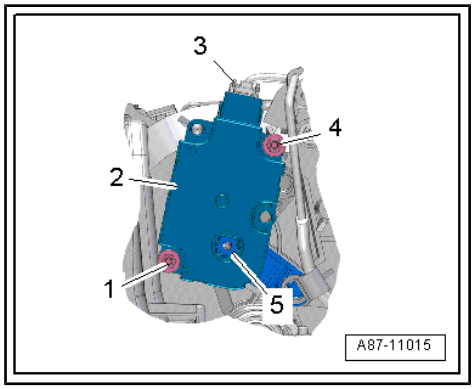
– Switch off ignition.

– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .

– Remove air duct for dash panel vent (passenger side) ⇒ page 497 .

– Remove air duct for footwell vent (front passenger side) ⇒ page 494 .

– Mark electrical connector and control motor.
– Remove bolts -1, 4-.
– Detach control motor -2- from shaft of actuating arm -5-.
– Unplug electrical connector -3-.




### Installing

Install in reverse order of removal; note the following:

### Tightening torques

◆ ⇒ “4.1 Exploded view - control motors (front)”, page 331

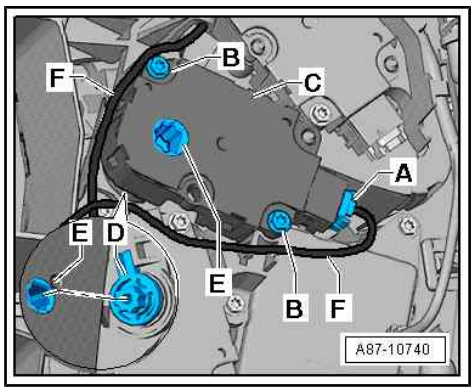
**Caution**

*Risk of damage to control motor.*

- *The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.*
- *If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.*

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– The actuator socket -E- in the control motor -C- can only be fitted onto the actuating arm -D- in one position.
• The actuator socket in the control motor must be opposite the actuating arm as shown.




**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -A-.
– Position control motor on air distribution housing. The actuating arm must engage in the actuator socket.
• There must not be any play in the connection between the control motor and actuating arm.
– Tighten bolts -B- to torque.
– Route wiring harness -F- so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.
– Perform basic setting.
– Perform final control diagnosis.

## 4.8.2 Removing and installing right centre vent control motor - V111- - "deluxe" version

### Removing

– Observe general notes ⇒ page 22 .

– Move front right seat to rearmost position.

– Switch off ignition.

– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .

– Remove footwell vent (front passenger side) ⇒ page 494 .

– Remove air duct for dash panel vent (passenger side) ⇒ page 497 .

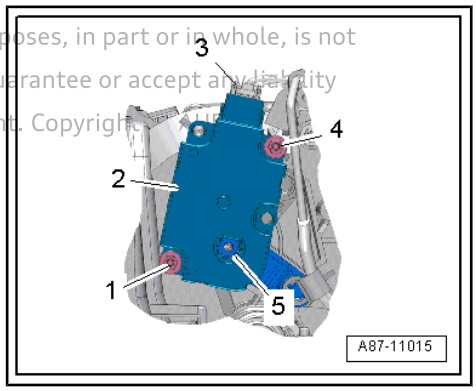
– Mark electrical connector and control motor.

– Remove bolts -1, 4-.

– Detach control motor -2- from shaft of actuating arm -5-.

– Unplug electrical connector -3-.

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### Installing

Install in reverse order of removal; note the following:

### Tightening torques

♦ ⇒ "4.1.6 Exploded view - control motors (front right), deluxe version", page 339

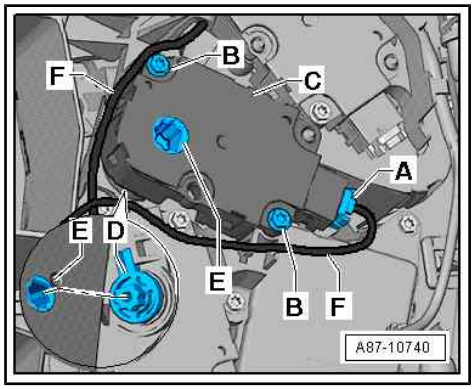
**Caution**

*Risk of damage to control motor.*

- *The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.*
- *If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.*

– The actuator socket -E- in the control motor -C- can only be fitted onto the actuating arm -D- in one position.

• The actuator socket in the control motor must be opposite the actuating arm as shown.




**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -A-.

– Position control motor on air distribution housing. The actuating arm must engage in the actuator socket.

• There must not be any play in the connection between the control motor and actuating arm.

– Tighten bolts -B- to torque.

– Route wiring harness -F- so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

– Perform basic setting.

– Perform final control diagnosis.

## 4.9 Removing and installing air recirculation flap control motor - V113-

### Removing

– Observe general notes ⇒ page 22 .

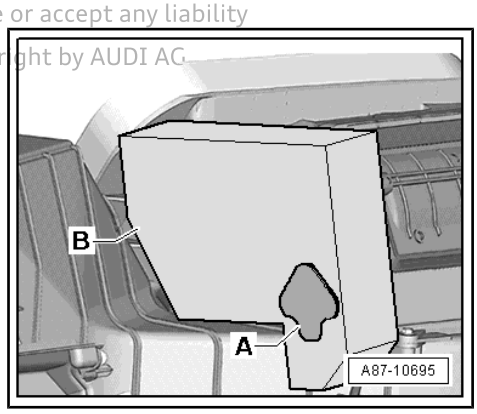
– Move front right seat to rearmost position.

– Switch off ignition.

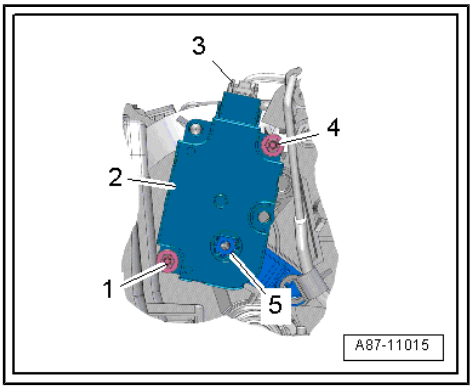
– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .

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– Release bracket -A- and detach noise insulation cover -B-.



– Mark electrical connector and control motor.
– Unplug electrical connector -3-.
– Remove bolts -1, 4-.
– Detach control motor -2- from shaft -5- for air recirculation flap.




**Installing**

Install in reverse order of removal; note the following:

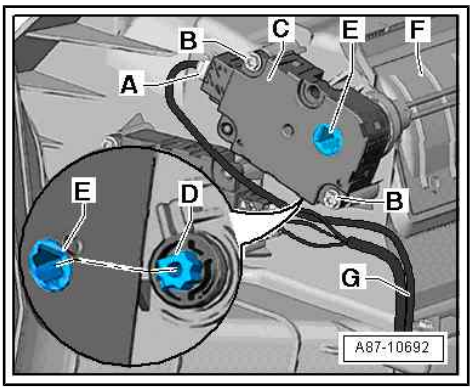
**Caution**

***Risk of damage to control motor.***

- ***The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.***
- ***If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.***

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– If there are problems due to moisture in the passenger compartment, also check the air recirculation flap -F- (must close completely).
– The actuator socket -E- on the control motor -C- can only be fitted onto the shaft -D- in one position.
• The actuator socket in the control motor must be opposite the shaft as shown.




**Note**

*If the actuator socket and shaft are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -A-.
– Position control motor on air distribution housing. The shaft of the air flow flap must engage in the actuator socket.
• There must not be any play in the connection between the control motor and shaft.
– Tighten bolts -B- to specified torque ⇒ page 397 .
– Route wiring harness -G- so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

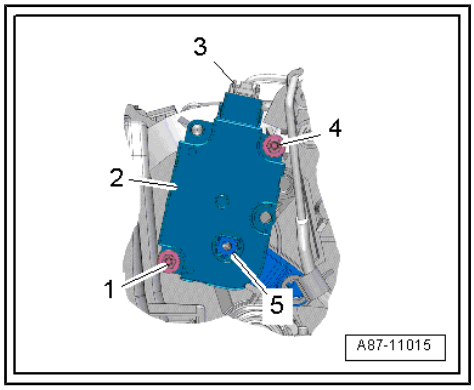
– Read out event memory and delete any entries displayed.
– Perform basic setting.
– Perform final control diagnosis.

## 4.10 Removing and installing rear temperature flap control motor - V137-

**Removing**

– Observe general notes ⇒ page 22 .

– Move front right seat to rearmost position.
– Switch off ignition.
– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .
– Remove dash panel cover (bottom) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .
– Mark electrical connector and control motor.
– Unplug electrical connector -3-.
– Remove bolts -1, 4-.
– Detach control motor -2- from shaft -5- for temperature flap.




**Note**

*The shaft may also be pulled out when the control motor is detached.*

### Installing

Install in reverse order of removal; note the following:

### Tightening torques

◆ ⇒ “4.1 Exploded view - control motors (front)”, page 331

**Caution**

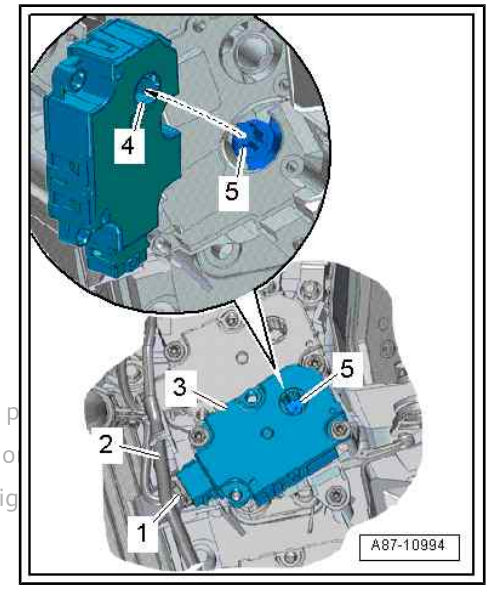
***Risk of damage to control motor.***

- ***The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.***
- ***If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.***

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– The actuator socket in the control motor -3- can only be fitted onto the actuating arm -5- in one position.

• The actuator socket in the control motor must be opposite the actuating arm as shown.




**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -1-.

– Position control motor on air distribution housing. The actuating arm must engage -arrow- in actuator socket -4-.

• There must not be any play in the connection between the control motor and actuating arm.

– Tighten bolts to specified torque.

– Route wiring harness -2- so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

– Perform basic setting.

– Perform final control diagnosis.

## 4.11 Removing and installing left temperature flap control motor - V158-

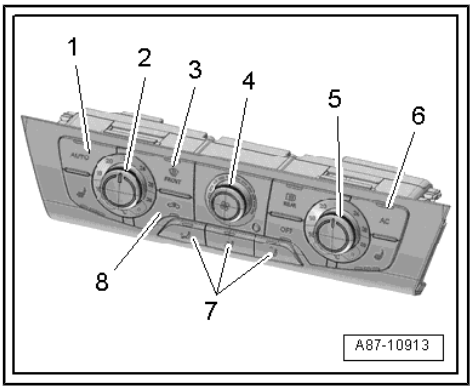
### Removing

– Observe general notes ⇒ page 22 .

– Move front left seat to rearmost position.

**Air conditioner (“basic” version):**

– Using button -3-, set direction of air delivery to “Windscreen”.




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**Air conditioner (“deluxe” version):**

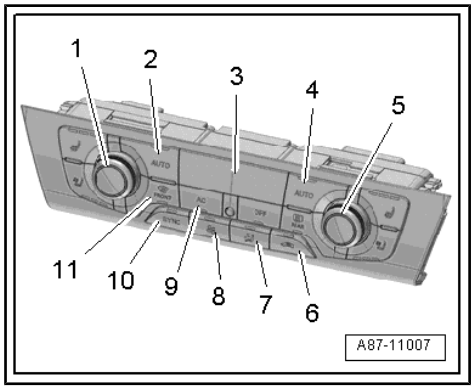
– Using button -11-, set direction of air delivery to “Windscreen”.

**Both versions (continued):**

- The air should emerge from the windscreen “defroster vent”.

– Switch off ignition.

– Remove defroster flap control motor ⇒ page 345 .

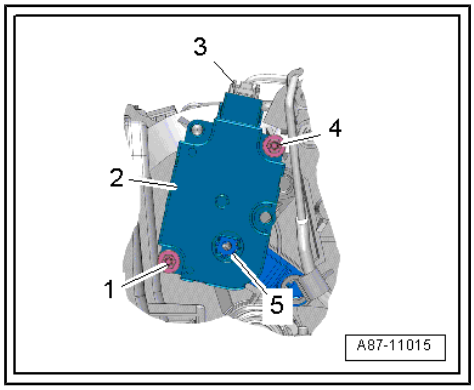



– Mark electrical connector and control motor.

– Remove bolts -1, 4-.

– Detach control motor -2- from shaft of actuating arm -5-.

– Unplug electrical connector -3-.




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### Installing

Install in reverse order of removal; note the following:

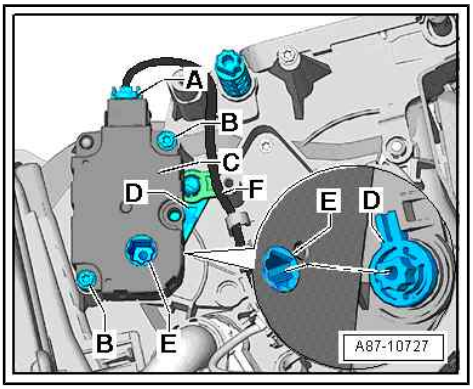
### Tightening torques

- ⇒ “4.1 Exploded view - control motors (front)”, page 331

**Caution**

*Risk of damage to control motor.*

- *The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.*
- *If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.*




– The actuator socket -E- in the control motor -C- can only be fitted onto the actuating arm -D- in one position.

• The actuator socket in the control motor must be opposite the actuating arm as shown.

**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -A-.

– Position control motor on air distribution housing. The actuating arm must engage in the actuator socket.

• There must not be any play in the connection between the control motor and actuating arm.

– Tighten bolts -B- to torque.

– Route wiring harness -F- so that it cannot come into contact with moving components (e.g. control motor lever).

– Install defroster flap control motor ⇒ page 345 .

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

– Perform basic setting.

– Perform final control diagnosis.

## 4.12 Removing and installing right temperature flap control motor - V159-

### Removing

– Observe general notes ⇒ page 22 .

– Move front right seat to rearmost position.

– Switch off ignition.

– Remove brackets for control motors -V109- / -V111- ⇒ page 388 .

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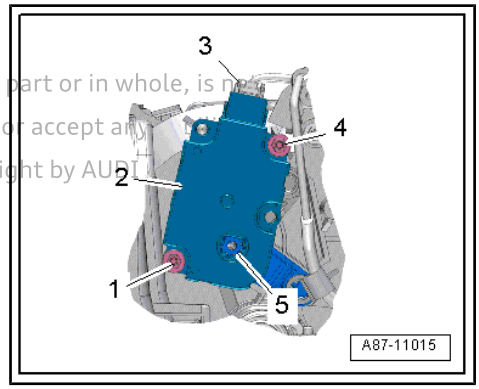
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– Mark electrical connector and control motor.

– Remove bolts -1, 4-.

– Detach control motor -2- from shaft of actuating arm -5-.

– Unplug electrical connector -3-.




**Installing**

Install in reverse order of removal; note the following:

**Tightening torques**

◆ ⇒ “4.1 Exploded view - control motors (front)”, page 331

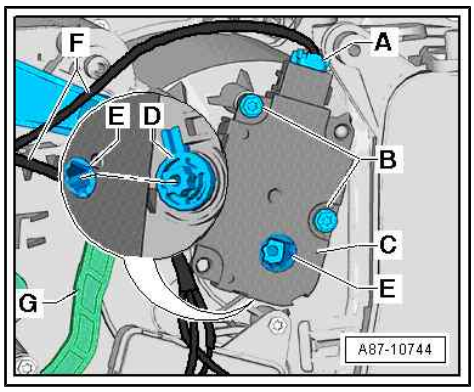
**Caution**

*Risk of damage to control motor.*

- *The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.*
- *If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.*

– The actuator socket -E- in the control motor -C- can only be fitted onto the actuating arm -D- in one position.

• The actuator socket in the control motor must be opposite the actuating arm as shown.




**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -A-.

– Position control motor on air distribution housing. The actuating arm must engage in the actuator socket.

• There must not be any play in the connection between the control motor and actuating arm.

– Tighten bolts -B- to torque.

– Route wiring harness -F- so that it cannot come into contact with moving components (e.g. control motor lever).

– Fit brackets for control motors -V109- / -V111- ⇒ page 388 .

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

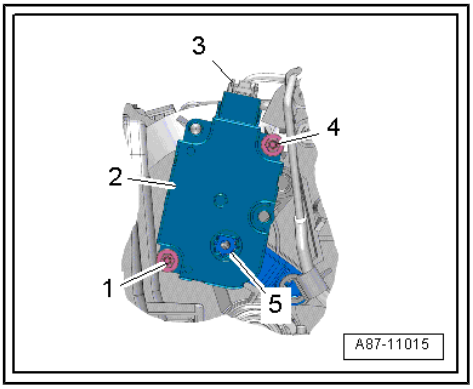
– Perform basic setting.

– Perform final control diagnosis.

## 4.13 Removing and installing indirect ventilation flap control motor - V213-

### Removing

– Observe general notes ⇒ page 22 .
– Move front right seat to rearmost position.
– Switch off ignition.
– Remove footwell vent (front passenger side) ⇒ page 494 .
– Remove air duct for dash panel vent (passenger side) ⇒ page 497 .
– Mark electrical connector and control motor.
– Remove bolts -1, 4-.
– Detach control motor -2- from shaft of actuating arm -5-.
– Unplug electrical connector -3-.




### Installing

Install in reverse order of removal; note the following:

### Tightening torques

◆ ⇒ “4.1.6 Exploded view - control motors (front right), deluxe version”, page 339

**Caution**

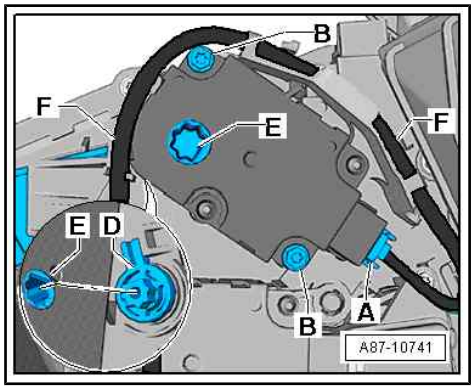
*Risk of damage to control motor.*

- *The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.*
- *If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.*

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– The actuator socket -E- in the control motor -C- can only be fitted onto the actuating arm -D- in one position.

• The actuator socket in the control motor must be opposite the actuating arm as shown.




**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -A-.

– Position control motor on air distribution housing. The actuating arm must engage in the actuator socket.

• There must not be any play in the connection between the control motor and actuating arm.

– Tighten bolts -B- to torque.

– Route wiring harness -F- so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

– Perform basic setting.

– Perform final control diagnosis.

## 4.14 Removing and installing rear left air quantity flap control motor - V239-

### Removing

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– Observe general notes ⇒ page 22 .

– Move front left seat to rearmost position.

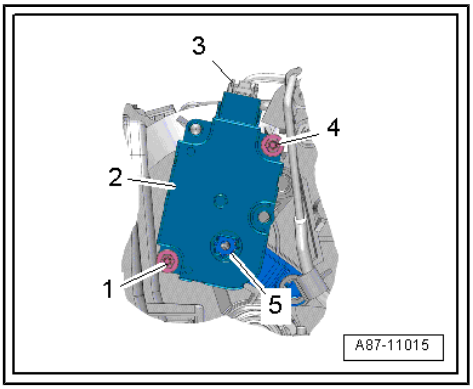
– Switch off ignition.

– Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .

– Remove dash panel cover (bottom) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .

– Remove centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .

– Mark electrical connector and control motor.
– Remove bolts -1, 4-.
– Detach control motor -2- from shaft -5- for air quantity flap.
– Unplug electrical connector -3-.




### Installing

Install in reverse order of removal; note the following:

### Tightening torques

◆ ⇒ “4.1.5 Exploded view - control motors (front left), deluxe version”, page 337

**Caution**

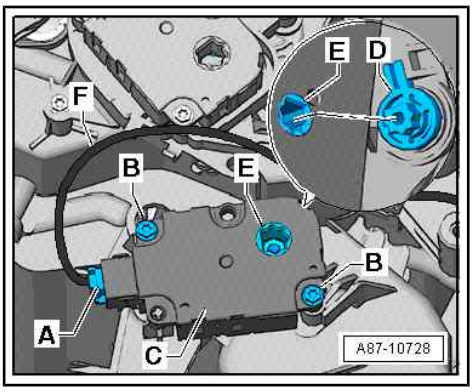
***Risk of damage to control motor.***

- ***The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.***
- ***If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.***

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– The actuator socket -E- in the control motor -C- can only be fitted onto the shaft -D- of the air quantity flap in one position.

• The actuator socket in the control motor must be opposite the actuating arm as shown.




**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -A-.
– Position control motor on air distribution housing. The actuating arm must engage in the actuator socket.

• There must not be any play in the connection between the control motor and actuating arm.

– Tighten bolts -B- to torque.
– Route wiring harness -F- so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.
– Perform basic setting.
– Perform final control diagnosis.

## 4.15 Removing and installing rear right air quantity flap control motor - V240-

### Removing

– Observe general notes ⇒ page 22 .

– Move front right seat to rearmost position.

– Switch off ignition.

– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .

– Remove dash panel cover (bottom) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .

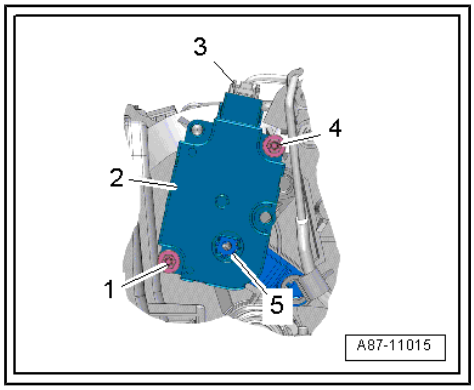
– Remove centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .

– Mark electrical connector and control motor.

– Unplug electrical connector -3-.

– Remove bolts -1, 4-.

– Detach control motor -2- from shaft of actuating arm -5-.




### Installing

Install in reverse order of removal; note the following:

### Tightening torques

◆ ⇒ “4.1.6 Exploded view - control motors (front right), deluxe version”, page 339

**Caution**

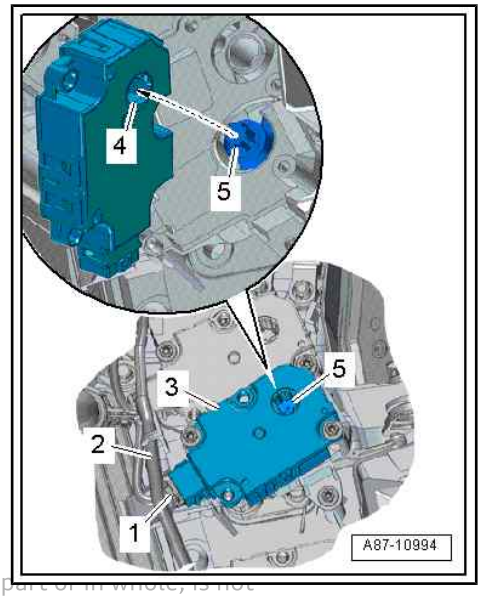
*Risk of damage to control motor.*

- *The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.*
- *If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.*

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– The actuator socket in the control motor -3- can only be fitted onto the actuating arm -5- in one position.

• The actuator socket in the control motor must be opposite the actuating arm as shown.




**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -1-.

– Position control motor on air distribution housing. The actuating arm must engage -arrow- in actuator socket -4-.

• There must not be any play in the connection between the control motor and actuating arm.

– Tighten bolts to specified torque.

– Route wiring harness -2- so that it cannot come into contact with moving components (e.g. control motor lever).

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After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

– Perform basic setting.

– Perform final control diagnosis.

## 4.16 Removing and installing left side vent control motor - V299-

### Removing

– Observe general notes ⇒ page 22 .

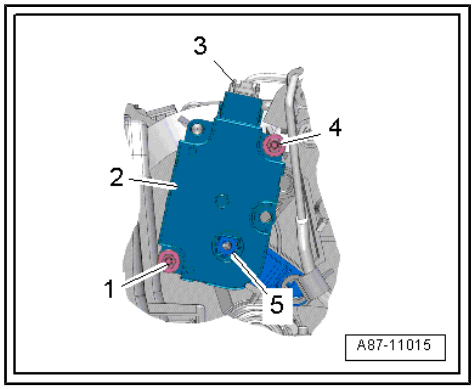
– Move front left seat to rearmost position.

– Switch off ignition.

– Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .

– Remove footwell vent (driver side) ⇒ page 494 .

– Mark electrical connector and control motor.
– Remove bolts -1, 4-.
– Detach control motor -2- from shaft of actuating arm -5-.
– Unplug electrical connector -3-.




### Installing

Install in reverse order of removal; note the following:

### Tightening torques

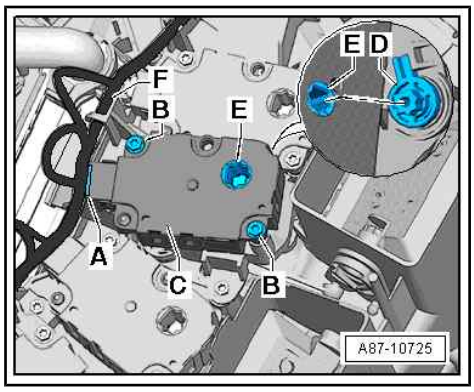
◆ ⇒ “4.1.5 Exploded view - control motors (front left), deluxe version”, page 337

**Caution**

*Risk of damage to control motor.*

- *The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.*
- *If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.*

– The actuator socket -E- in the control motor -C- can only be fitted onto the actuating arm -D- in one position.
• The actuator socket in the control motor must be opposite the actuating arm as shown.




**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -A-.
– Position control motor on air distribution housing. The actuating arm must engage in the actuator socket.
• There must not be any play in the connection between the control motor and actuating arm.
– Tighten bolts -B- to torque.
– Route wiring harness -F- so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.
– Perform basic setting.
– Perform final control diagnosis.

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## 4.17 Removing and installing right side vent control motor - V300-

### Removing

– Observe general notes ⇒ page 22 .

– Move front right seat to rearmost position.

– Switch off ignition.

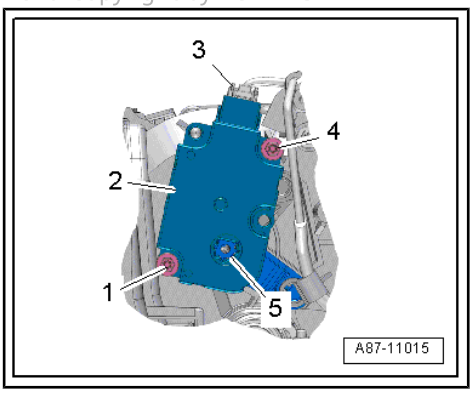
– Remove right centre vent control motor ⇒ page 359 .

– Mark electrical connector and control motor.

– Unplug electrical connector -3-.

– Remove bolts -1, 4-.

– Detach control motor -2- from shaft of actuating arm -5-.




**Note**

*The shaft may also be pulled out when the control motor is detached.*

### Installing

Install in reverse order of removal; note the following:

### Tightening torques

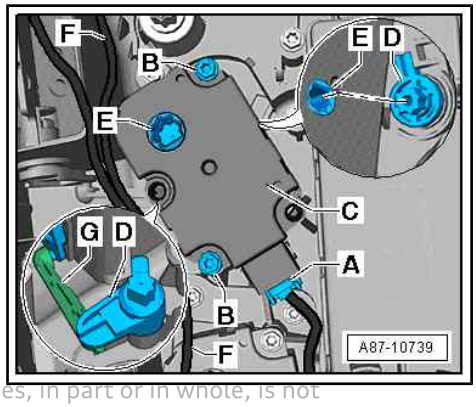
- ⇒ “4.1.6 Exploded view - control motors (front right), deluxe version”, page 339

**Caution**

***Risk of damage to control motor.***

- ***The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.***
- ***If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.***

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– Check that connecting element -G- and actuating arm -D- are in correct installation position and function properly.
– The actuator socket -E- in control motor -C- can only be attached to the shaft in one position.
• The actuator socket in the control motor must be opposite the shaft as shown.

**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

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– Plug in electrical connector -A-.
– Position control motor on air distribution housing. The shaft must engage in the actuator socket.
• There must not be any play in the connection between the control motor and shaft.
– Tighten bolts -B- to torque.
– Route wiring harness -G- so that it cannot come into contact with moving components (e.g. control motor lever).
– Install right centre vent control motor ⇒ page 359 .

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

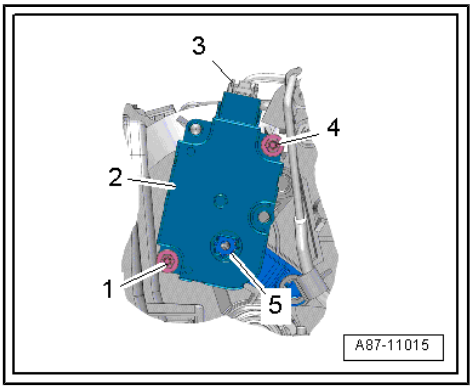
– Read out event memory and delete any entries displayed.
– Perform basic setting.
– Perform final control diagnosis.

## 4.18 Removing and installing rear left temperature flap control motor - V313-

### Removing

– Observe general notes ⇒ page 22 .
– Move front left seat to rearmost position.
– Switch off ignition.
– Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .
– Remove dash panel cover (bottom) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .

– Mark electrical connector and control motor.
– Remove bolts -1, 4-.
– Detach control motor -2- from shaft -5- for temperature flap.
– Unplug electrical connector -3-.




### Installing

Install in reverse order of removal; note the following:

### Tightening torques

◆ ⇒ “4.1.5 Exploded view - control motors (front left), deluxe version”, page 337

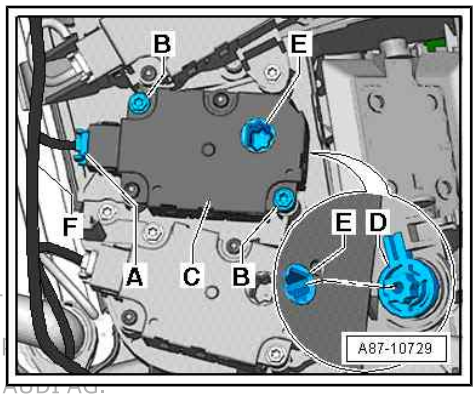
**Caution**

*Risk of damage to control motor.*

- *The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.*
- *If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.*

– The actuator socket -E- in the control motor -C- can only be fitted onto the actuating arm -D- in one position.

• The actuator socket in the control motor must be opposite the actuating arm as shown.




**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

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– Plug in electrical connector -A-.
– Position control motor on air distribution housing. The actuating arm must engage in the actuator socket.

• There must not be any play in the connection between the control motor and actuating arm.

– Tighten bolts -B- to torque.
– Route wiring harness -F- so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.
– Perform basic setting.
– Perform final control diagnosis.

## 4.19 Removing and installing rear right temperature flap control motor - V314-

### Removing

– Observe general notes ⇒ page 22 .

– Move front right seat to rearmost position.

– Switch off ignition.

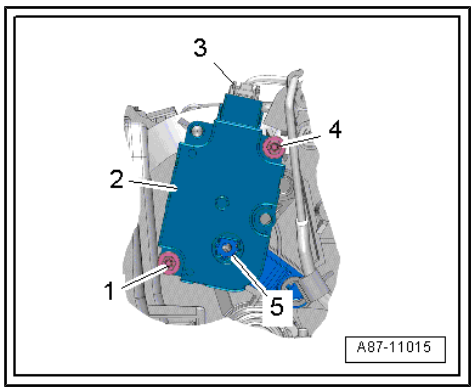
– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .

– Mark electrical connector and control motor.

– Unplug electrical connector -3-.

– Remove bolts -1, 4-.

– Detach control motor -2- from shaft of actuating arm -5-.




**Note**

*The shaft may also be pulled out when the control motor is detached.*

### Installing

Install in reverse order of removal; note the following:

### Tightening torques

- ⇒ “4.1.6 Exploded view - control motors (front right), deluxe version”, page 339

**Caution**

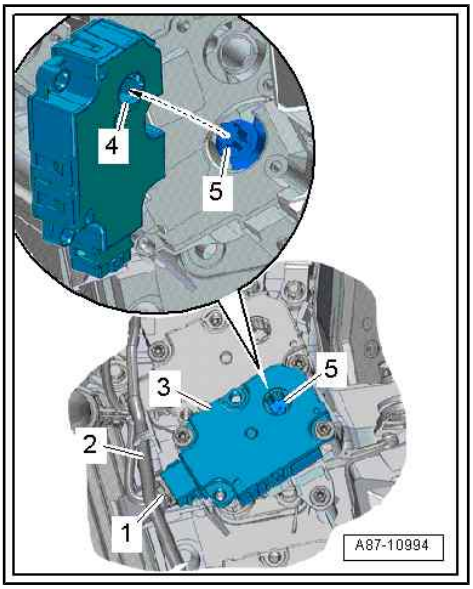
***Risk of damage to control motor.***

- ***The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.***
- ***If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.***

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– The actuator socket in the control motor -3- can only be fitted onto the actuating arm -5- in one position.

• The actuator socket in the control motor must be opposite the actuating arm as shown.




**Note**

*If the actuator socket and actuating arm are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -1-.

– Position control motor on air distribution housing. The actuating arm must engage -arrow- in actuator socket -4-.

• There must not be any play in the connection between the control motor and actuating arm.

– Tighten bolts to specified torque.

– Route wiring harness -2- so that it cannot come into contact with moving components (e.g. control motor lever).

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After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

– Perform basic setting.

– Perform final control diagnosis.

## 4.20 Removing and installing rear left chest vent control motor - V315-

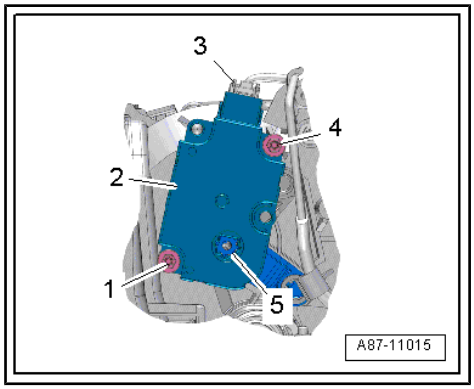
### Removing

– Observe general notes ⇒ page 22 .

– Remove rear vent ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .

– Remove air duct for rear vent ⇒ page 499 .

– Mark electrical connector and control motor.
– Unplug electrical connector -3-.
– Remove bolts -1, 4-.
– Detach control motor -2- from flap shaft -5-.




### Installing

Install in reverse order of removal; note the following:

### Tightening torques

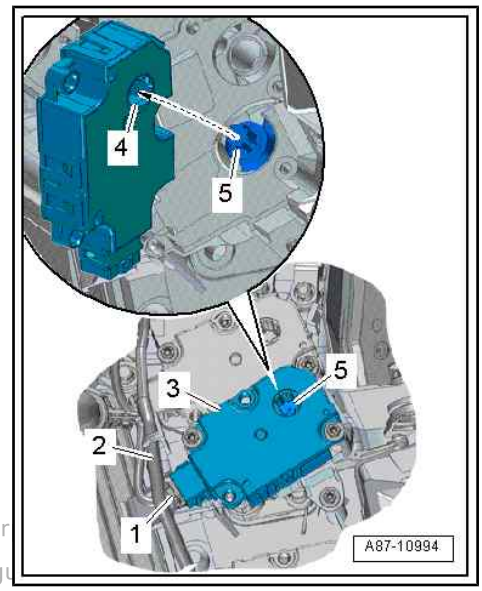
◆ ⇒ “4.1.5 Exploded view - control motors (front left), deluxe version”, page 337

**Caution**

*Risk of damage to control motor.*

- *The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.*
- *If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.*

– The actuator socket in the control motor -3- can only be attached to the shaft -5- in one position.
• The actuator socket in the control motor must be opposite the shaft as shown.




**Note**

*If the actuator socket and shaft are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -1-.
– Position control motor on air distribution housing. The actuating arm must engage -arrow- in actuator socket -4-.
• There must not be any play in the connection between the control motor and shaft.
– Tighten bolts to specified torque.
– Route wiring harness -2- so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.
– Perform basic setting.
– Perform final control diagnosis.

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## 4.21 Removing and installing rear right chest vent control motor - V316-

### Removing

– Observe general notes ⇒ page 22 .

– Remove rear vent ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .

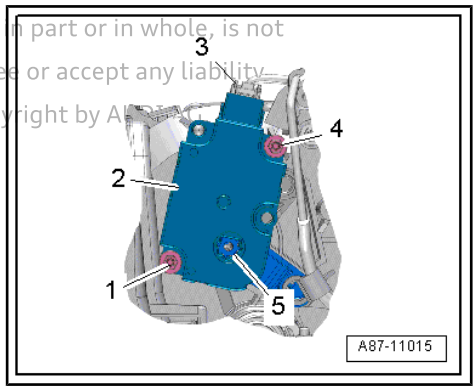
– Remove air duct for rear vent ⇒ page 499 .

– Mark electrical connector and control motor.

– Unplug electrical connector -3-.

– Remove bolts -1, 4-.

– Detach control motor -2- from flap shaft -5-.




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### Installing

Install in reverse order of removal; note the following:

### Tightening torques

◆ ⇒ “4.1.5 Exploded view - control motors (front left), deluxe version”, page 337

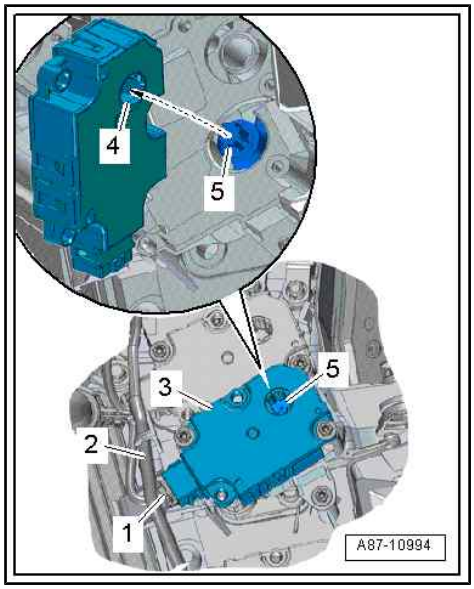
**Caution**

*Risk of damage to control motor.*

- *The actuator socket in the control motor must not be turned by hand when the connector is not plugged in, as this could damage the electronics in the control motor.*
- *If it is necessary to turn the actuator socket in the control motor, turn it carefully and slowly by hand with the connector plugged in.*

– The actuator socket in the control motor -3- can only be attached to the shaft -5- in one position.

• The actuator socket in the control motor must be opposite the shaft as shown.




**Note**

*If the actuator socket and shaft are not opposite one another, the socket in the control motor must be turned. Observe general notes ⇒ page 22 .*

– Plug in electrical connector -1-.

– Position control motor on air distribution housing. The actuating arm must engage -arrow- in actuator socket -4-.

• There must not be any play in the connection between the control motor and shaft.

– Tighten bolts to specified torque.

– Route wiring harness -2- so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

– Perform basic setting.

– Perform final control diagnosis.

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## 4.22 Removing and installing air recirculation flap 1 control motor for hybrid battery - V479-

**Note**

*Only fitted on Audi A6 hybrid*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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**Note**

- *On this vehicle, the control motor -V479- on the battery cooling module is activated by the battery regulation control unit -J840- via a data line. The two control motors are connected via this data line (LIN bus) to -J840- . If an incorrect control motor has been fitted, if the control motors at the battery cooling module have been interchanged or if there is a fault at one of the control motors or in the wiring, this can result in different entries in the event memory with different types of fault ⇒ Vehicle diagnostic tester ("Guided Fault Finding") and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *The control motors at the battery cooling module are identical to those at the air conditioning unit. However, since -J840- cannot perform addressing for the control motors, it is important to fit only control motors on the battery cooling module that already have the correct address. For this reason, take care to select the correct version (part number) when renewing and note the correct fitting location when installing ⇒ Vehicle diagnostic tester ("Guided Fault Finding") and ⇒ Electronic parts catalogue .*
- *Please note that in the vehicle diagnosis the air recirculation flap 1 control motor for hybrid battery - V479- is referred to as "Valve 1 for air supply to hybrid battery".*

**Caution**

***Pay attention to correct assignment of the control motors.***

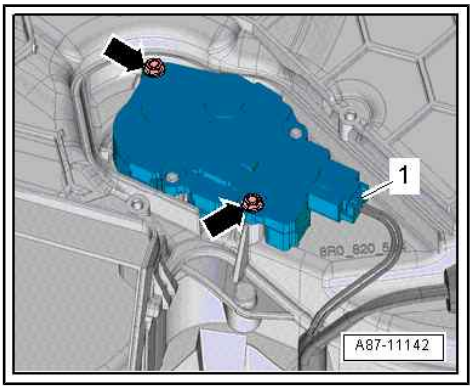
- ***The two control motors ( -V479- and -V480- ) are identical. The only difference is the assignment stored in the electronics (address).***
- ***If the control motors are interchanged on installation, activation of the flaps in the battery cooling module will be incorrect and problems with the drive battery - A2- will be encountered due to incorrect air routing.***
- ***Prior to removal, mark the control motor and the fitting location at the battery cooling module.***
- ***On installation, pay attention to the marking and check the part number of the control motor if necessary ⇒ Electronic parts catalogue .***

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**Note**

*At the start of production, the part number of -V479- for example is "8R0 820 504". Take care to select the correct version ⇒ Electronic parts catalogue .*

### Removing




– Switch off ignition.
– Remove luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Exploded view - luggage compartment floor .
– Unplug electrical connector -1-.
– Remove bolts -arrows- and detach air recirculation flap 1 control motor for hybrid battery - V479- .

### Installing

Install in reverse order of removal; note the following.

– Re-install remaining components (removed earlier).
– Switch on ignition.
– After installation, interrogate event memory of operating and display unit ( Climatronic control unit - J255- ) and battery regulation control unit - J840- and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– To check operation after installation (if necessary), perform final control diagnosis of both control motors on battery cooling module via battery regulation control unit - J840- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

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### Tightening torques

◆ ⇒ “4.2 Exploded view - control motors (rear)”, page 343

## 4.23 Removing and installing air recirculation flap 2 control motor for hybrid battery - V480-

**Note**

*Only fitted on Audi A6 hybrid*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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**Note**

- *On this vehicle, the control motor -V480- on the battery cooling module is activated by the battery regulation control unit -J840- via a data line. The two control motors are connected via this data line (LIN bus) to -J840- . If an incorrect control motor has been fitted, if the control motors at the battery cooling module have been interchanged or if there is a fault at one of the control motors or in the wiring, this can result in different entries in the event memory with different types of fault ⇒ Vehicle diagnostic tester ("Guided Fault Finding") and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *The control motors at the battery cooling module are identical to those at the air conditioning unit. However, since -J840- cannot perform addressing for the control motors, it is important to fit only control motors on the battery cooling module that already have the correct address. For this reason, take care to select the correct version (part number) when renewing and note the correct fitting location when installing ⇒ Vehicle diagnostic tester ("Guided Fault Finding") and ⇒ Electronic parts catalogue .*
- *Please note that in the vehicle diagnosis the air recirculation flap 2 control motor for hybrid battery - V480- is referred to as "Valve 2 for air supply to hybrid battery".*

**Caution**

***Pay attention to correct assignment of the control motors.***

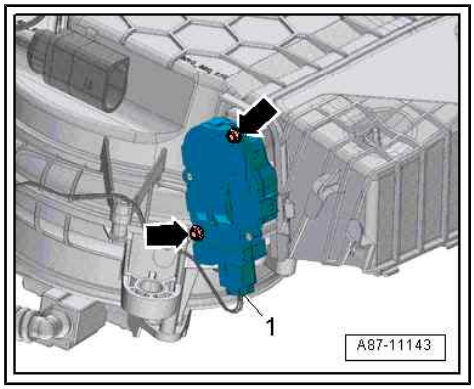
- ***The two control motors ( -V479- and -V480- ) are identical. The only difference is the assignment stored in the electronics (address).***
- ***If the control motors are interchanged on installation, activation of the flaps in the battery cooling module will be incorrect and problems with the drive battery - A2- will be encountered due to incorrect air routing.***
- ***Prior to removal, mark the control motor and the fitting location at the battery cooling module.***
- ***On installation, pay attention to the marking and check the part number of the control motor if necessary ⇒ Electronic parts catalogue .***

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**Note**

*At the start of production, the part number of -V480- for example is "8R0 820 510". Take care to select the correct version ⇒ Electronic parts catalogue .*

### Removing




– Switch off ignition.
– Remove luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Exploded view - luggage compartment floor .
– Remove rear cross panel trim ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Removing and installing lock carrier trim .
– Remove bolts -arrows-.
– Detach air recirculation flap 2 control motor for hybrid battery - V480- and unplug electrical connector -1-.

### Installing

Install in reverse order of removal; note the following.

– Re-install remaining components (removed earlier).
– Switch on ignition.
– After installation, interrogate event memory of operating and display unit ( Climatronic control unit - J255- ) and battery regulation control unit - J840- and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– To check operation after installation (if necessary), perform final control diagnosis of both control motors on battery cooling module via battery regulation control unit - J840- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

### Tightening torques

◆ ⇒ “4.2 Exploded view - control motors (rear)”, page 343

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## 4.24 Removing and installing brackets for control motors

⇒ “4.24.1 Removing and installing bracket for control motors V107 / V108 / V110 - basic version”, page 387

⇒ “4.24.2 Removing and installing bracket for control motors V109 / V111 - basic version”, page 388

⇒ “4.24.3 Removing and installing bracket for control motors V110 / V299 - deluxe version”, page 389

⇒ “4.24.4 Removing and installing bracket for control motors V111 / V213 - deluxe version”, page 390

⇒ “4.24.5 Removing and installing bracket for control motor V239 - deluxe version”, page 391

⇒ “4.24.6 Removing and installing bracket for control motor V240 - deluxe version”, page 391

### 4.24.1 Removing and installing bracket for control motors -V107- / -V108- / -V110- - “basic” version

**Removing**

– Remove defroster flap control motor ⇒ page 345 .

– Remove left centre vent control motor ⇒ page 354 .

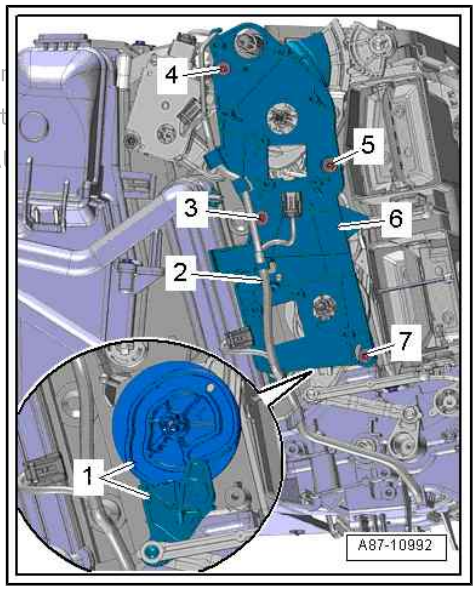
– Remove left footwell flap control motor ⇒ page 348 .

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– Move electrical wiring harness -2- clear.

– Remove bolts -3, 4, 5 and 7-.

– Detach bracket -6-. This may release cam plate with lever -1- at air distribution housing.




**Installing**

Install in reverse order of removal; note the following:

**Tightening torques**

♦ ⇒ “4.1.1 Exploded view - control motors (front left), basic version”, page 332

– Check that connecting elements and actuating arms for the various flaps are in correct installation positions and function properly.

– Insert wiring harness in mounting, making sure that it cannot come into contact with moving components (e.g. control motor lever).

– Install left footwell flap control motor ⇒ page 348 .

– Install left centre vent control motor ⇒ page 354 .

– Install defroster flap control motor ⇒ page 345 .

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

– Perform basic setting.

– Perform final control diagnosis.

## 4.24.2 Removing and installing bracket for control motors -V109- / -V111- - “basic” version

### Removing

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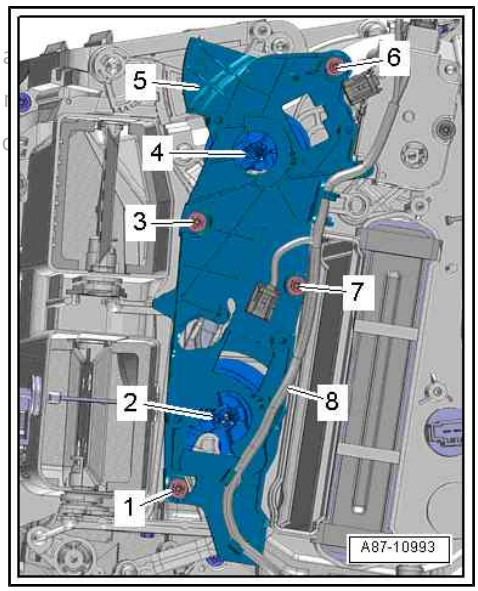
– Remove right centre vent control motor ⇒ page 357 .

– Remove right footwell flap control motor ⇒ page 351 .

– Move electrical wiring harness -8- clear.

– Remove bolts -1, 3, 6 and 7-.

– Detach bracket -5-. This may release cam plates with levers -2 and 4- at air distribution housing.




### Installing

Install in reverse order of removal; note the following:

### Tightening torques

♦ ⇒ “4.1.2 Exploded view - control motors (front right), basic version”, page 333

– Check that connecting elements and actuating arms for the various flaps are in correct installation positions and function properly.

– Insert wiring harness in mounting, making sure that it cannot come into contact with moving components (e.g. control motor lever).

– Install right footwell flap control motor ⇒ page 351 .

– Install right centre vent control motor ⇒ page 357 .

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

– Perform basic setting.

– Perform final control diagnosis.

## 4.24.3 Removing and installing bracket for control motors -V110- / -V299- - “deluxe” version

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### Removing

– Remove defroster flap control motor ⇒ page 345 .

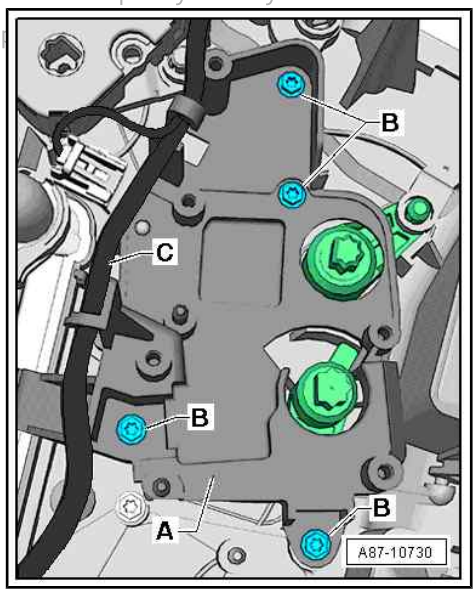
– Remove left side vent control motor ⇒ page 371 .

– Remove left centre vent control motor ⇒ page 356 .

– Move wiring harness -C- clear.

– Remove bolts -B-.

– Detach bracket -A-.




### Installing

Install in reverse order of removal; note the following:

### Tightening torques

♦ ⇒ “4.1.5 Exploded view - control motors (front left), deluxe version”, page 337

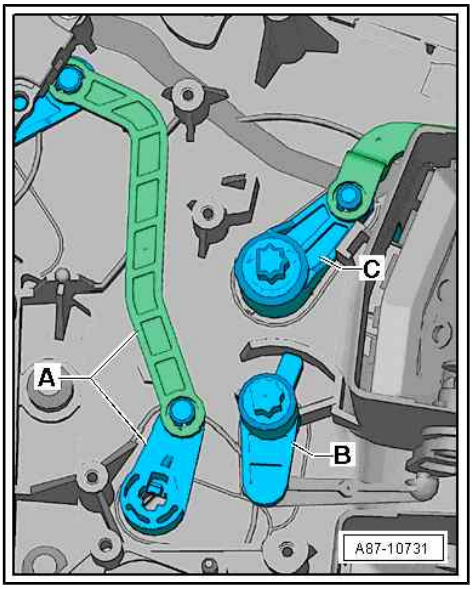
– Check that connecting elements and actuating arms for the various flaps -A-, -B- and -C- are in correct installation positions and function properly.

– Insert wiring harness in mounting, making sure that it cannot come into contact with moving components (e.g. control motor lever).

– Install left centre vent control motor ⇒ page 356 .

– Install left side vent control motor ⇒ page 371 .

– Install defroster flap control motor ⇒ page 345 .




After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

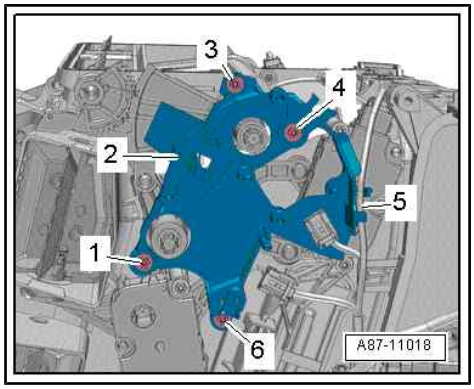
– Read out event memory and delete any entries displayed.

– Perform basic setting.

– Perform final control diagnosis.

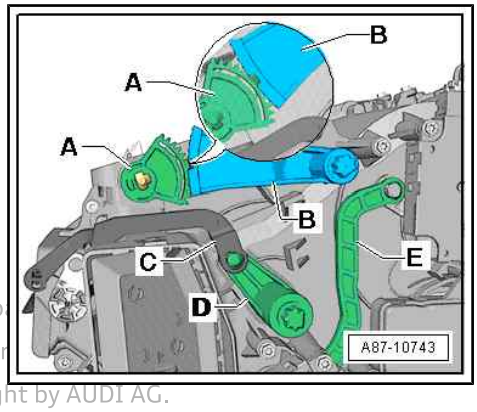
## 4.24.4 Removing and installing bracket for control motors -V111- / -V213- - “deluxe” version

### Removing




– Remove indirect ventilation flap control motor ⇒ page 367 .
– Remove right centre vent control motor ⇒ page 359 .
– Remove bolts -1, 3, 4 and 6-.
– Move electrical wiring harness -5- clear.
– Detach bracket -2-.

### Installing




Install in reverse order of removal; note the following:

### Tightening torques

◆ ⇒ “4.1.6 Exploded view - control motors (front right), deluxe version”, page 339

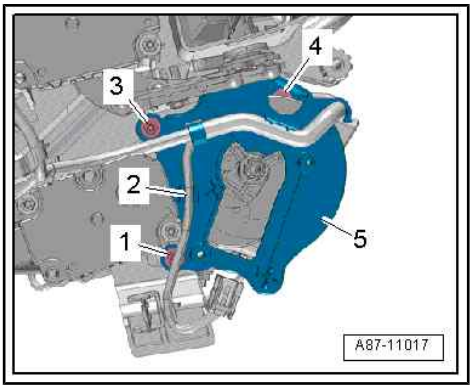
– Move toothed segment -A- of lever for indirect ventilation flap and actuating arm -B- to position shown.
• Wide tooth at lever for indirect ventilation flap must engage in recess in actuating arm.
– Check that connecting elements -C, E- and actuating arm -D- for the various flaps are in correct installation positions and function properly.
– Insert wiring harness in mounting, making sure that it cannot come into contact with moving components (e.g. control motor lever).
– Install right centre vent control motor ⇒ page 359 .
– Install indirect ventilation flap control motor ⇒ page 367 .

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.
– Perform basic setting.
– Perform final control diagnosis.

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## 4.24.5 Removing and installing bracket for control motor -V239- - “deluxe” version




### Removing

– Remove rear left air quantity flap control motor ⇒ page 368 .

– Move electrical wiring harness -2- clear.

– Remove bolts -1, 3, 4-.

– Detach bracket -5-.

### Installing

Install in reverse order of removal; note the following:

### Tightening torques

♦ ⇒ “4.1.5 Exploded view - control motors (front left), deluxe version”, page 337

– Insert wiring harness in mounting, making sure that it cannot come into contact with moving components (e.g. control motor lever).

– Install rear left air quantity flap control motor ⇒ page 368 .

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

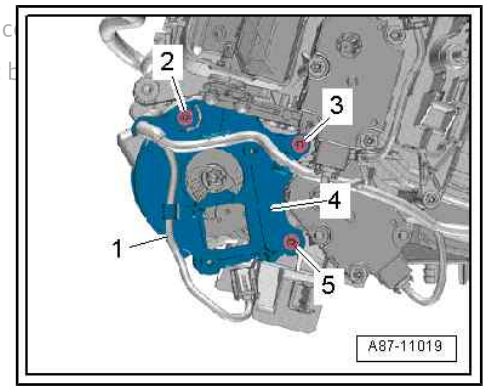
– Read out event memory and delete any entries displayed.

– Perform basic setting.

– Perform final control diagnosis.

## 4.24.6 Removing and installing bracket for control motor -V240- - “deluxe” version

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### Removing

– Remove rear right air quantity flap control motor ⇒ page 370 .

– Move electrical wiring harness -1- clear.

– Remove bolts -2, 3, 5-.

– Detach bracket -4-.

### Installing

Install in reverse order of removal; note the following:

### Tightening torques

♦ ⇒ “4.1.6 Exploded view - control motors (front right), deluxe version”, page 339

– Insert wiring harness in mounting, making sure that it cannot come into contact with moving components (e.g. control motor lever).

– Install rear right air quantity flap control motor ⇒ page 370 .

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

– Perform basic setting.

– Perform final control diagnosis.

# 5 Front heater and air conditioning unit

⇒ “5.1 Exploded view - attachments for heater and air conditioning unit and air intake box”, page 392

⇒ “5.2 Exploded view - flaps and partitions in air distribution housing”, page 393

⇒ “5.3 Exploded view - heater and air conditioning unit”, page 395

⇒ “5.4 Exploded view - air intake box of heater and air conditioning unit”, page 397

⇒ “5.5 Exploded view - evaporator housing”, page 399

⇒ “5.6 Removing and installing evaporator”, page 403

⇒ “5.7 Cleaning evaporator”, page 414

⇒ “5.8 Checking auxiliary air heater element Z35 ”, page 424

⇒ “5.9 Removing and installing auxiliary air heater element Z35 ”, page 427

⇒ “5.10 Checking heating output of actuation of temperature flaps of air conditioner”, page 429

⇒ “5.11 Removing and installing heater and air conditioning unit”, page 460

⇒ “5.12 Dismantling and assembling heater and air conditioning unit”, page 467

⇒ “5.13 Removing and installing dust and pollen filter”, page 472

⇒ “5.14 Removing and installing fresh air blower V2”, page 474

⇒ “5.15 Removing and installing heat exchanger”, page 476

⇒ “5.16 Removing and installing condensation drain”, page 483

⇒ “5.17 Checking condensation drain”, page 484

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## 5.1 Exploded view - attachments for heater and air conditioning unit and air intake box

**1 - Evaporator housing (bottom section)**

- ❑ Exploded view ⇒ page 399

**2 - Cover**

- ❑ For refrigerant pipes to evaporator
- ❑ Different versions ⇒ Electronic parts catalogue

**3 - Bolt**

- ❑ 4x
- ❑ 2 Nm

**4 - Evaporator housing (top section)**

- ❑ Exploded view ⇒ page 399

**5 - Bolt**

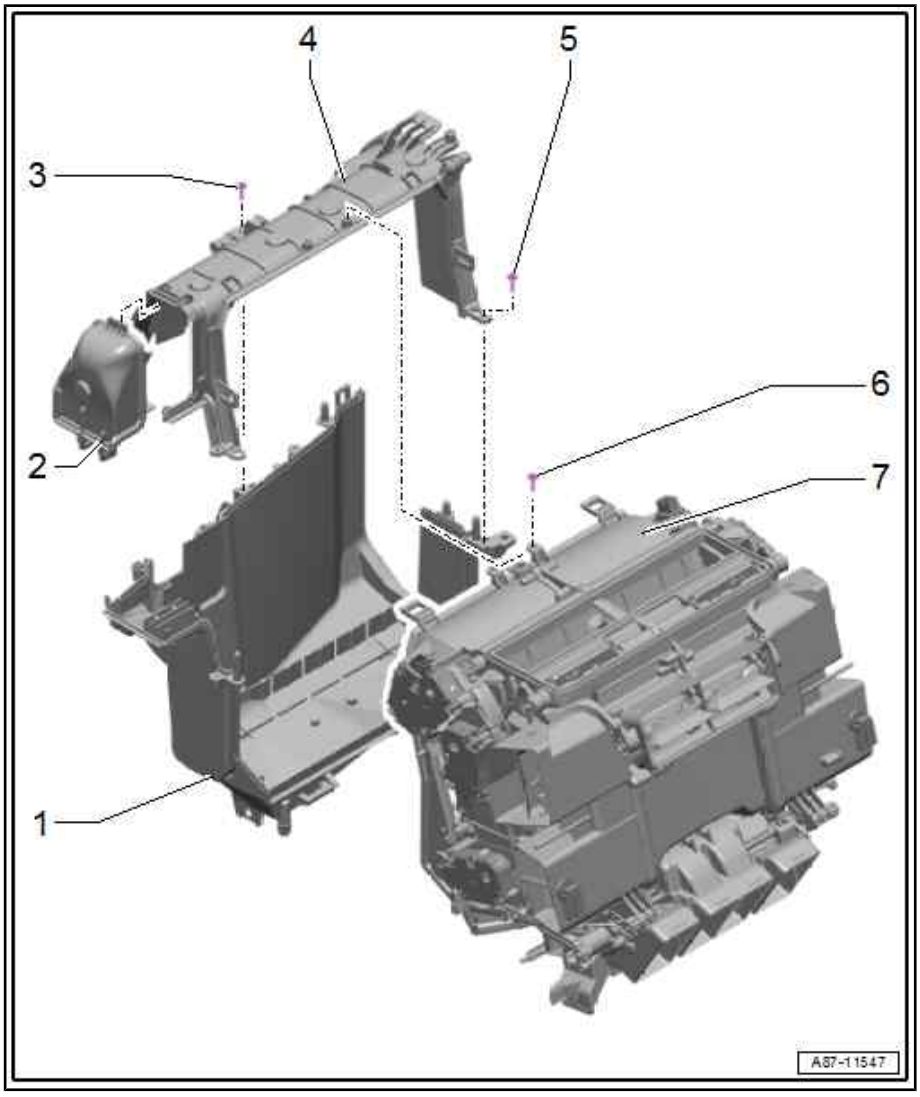
- ❑ 2x
- ❑ 2 Nm

**6 - Bolt**

- ❑ 2x
- ❑ 2 Nm

**7 - Air distribution housing**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Flaps, partitions ⇒ page 393
- ❑ Actuating lever for flaps ⇒ page 331

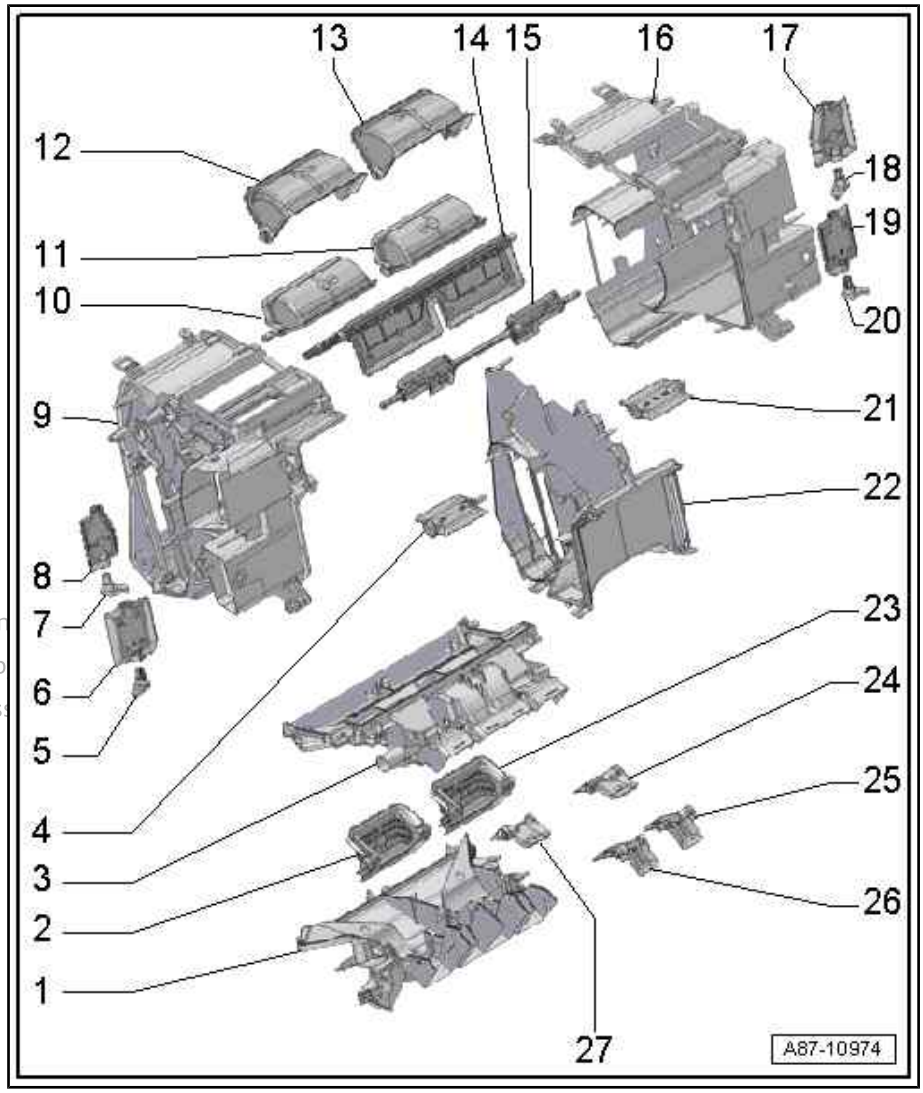



## 5.2 Exploded view - flaps and partitions in air distribution housing

**Note**

- *The air distribution housing of the air conditioning unit must not be dismantled. If dismantled, the air distribution housing must be renewed.*
- *The air distribution housing is dismantled in the illustration to show the internal flaps.*
- *Various temperature flap shafts are interconnected via a connecting rod, actuating arm and cam plates. These are then jointly actuated by one control motor.*
- *Renew only the components supplied with the repair kit. For repair kit refer to ⇒ Electronic parts catalogue .*

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**1 - Air distribution housing (bottom section)**

- For rear footwell vent and centre console vent

**2 - Temperature flap (left-side)**

- For rear footwell vent and centre console vent

**3 - Air distribution housing (top section)**

- For rear footwell vent and centre console vent

**4 - Flap (left-side) for centre dash panel vent**

**5 - Actuating lever**

- For actuation of flap for front footwell vent

**6 - Flap (left-side) for front footwell vent**

**7 - Actuating lever**

- For actuation of flap for dash panel vent (side)

**8 - Flap (left-side) for dash panel vent (side)**

**9 - Air distribution housing (left-side)**

**10 - Warm air flap (left-side)**

- From heat exchanger

**11 - Warm air flap (right-side)**

- From heat exchanger

**12 - Cold air flap (left-side)**

- From evaporator

**13 - Cold air flap (right-side)**

- From evaporator

**14 - “Defroster” flaps**

- To windscreen

**15 - “Indirect ventilation” flaps**

- To dash panel (top)

**16 - Air distribution housing (right-side)**

**17 - Flap (right-side) for dash panel vent (side)**

**18 - Actuating lever**

- For actuation of flap for dash panel vent (side)

**19 - Flap (right-side) for front footwell vent**

**20 - Actuating lever**

- For actuation of flap for front footwell vent

**21 - Flap (right-side) for centre dash panel vent**

**22 - Air distribution housing (centre)**

- For separation of air to left and right vents

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**23 - Temperature flap (right-side)**

- ❑ For rear footwell vent and centre console vent

**24 - Flap (right-side) for rear footwell vent**

**25 - Flap (right-side) for air duct (rear)**

- ❑ For centre console vent

**26 - Flap (left-side) for air duct (rear)**

- ❑ For centre console vent

**27 - Flap (left-side) for rear footwell vent**

## 5.3 Exploded view - heater and air conditioning unit

**1 - Coolant pipe for heat exchanger**

- ❑ Coolant supply from engine

**2 - Coolant pipe for heat exchanger**

- ❑ Coolant return to engine

**3 - O-ring**

- ❑ Renew

**4 - Clamp**

- ❑ 2 Nm

**5 - Bracket for coolant pipes**

- ❑ For heat exchanger

**6 - Bolt**

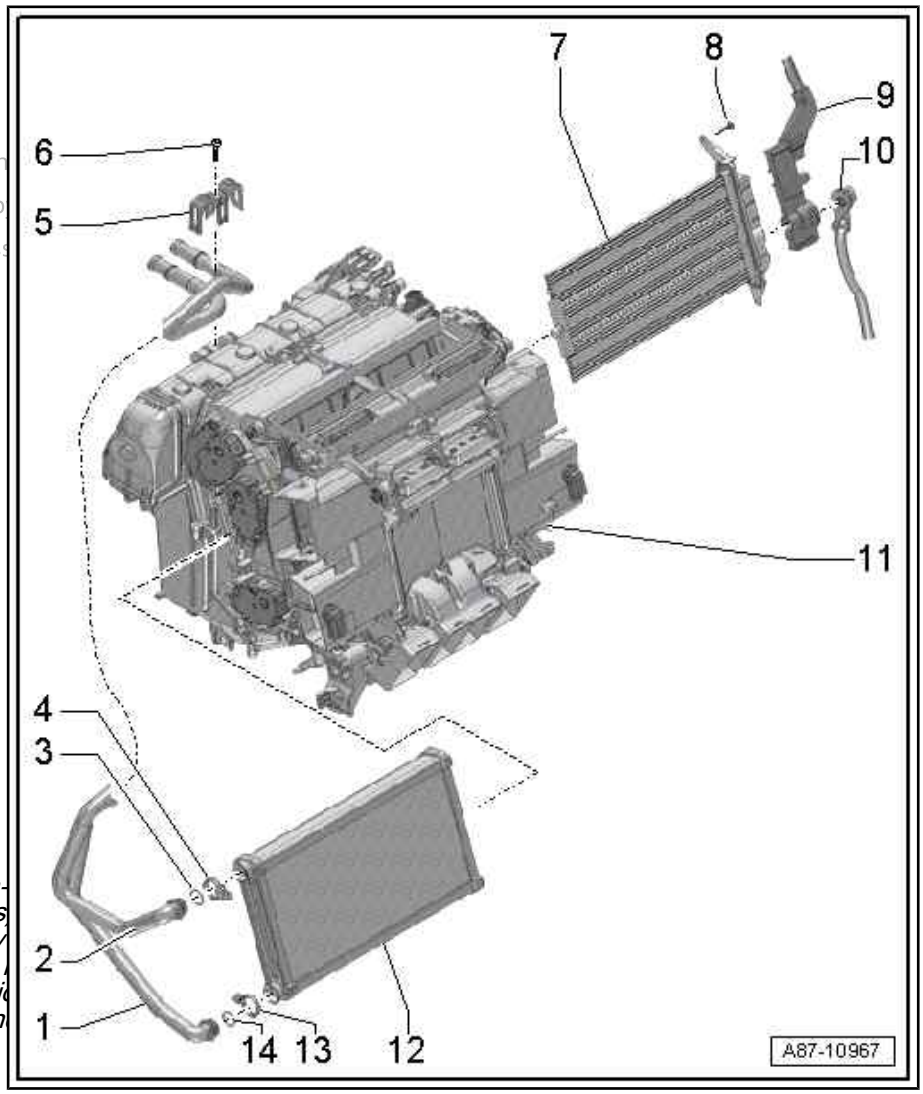
- ❑ 2 Nm

**7 - Auxiliary air heater element - Z35-**

- ❑ For vehicles with TDI engine and for vehicles with high-voltage system (hybrid vehicles with petrol engine)

**Note**

- ♦ *Vehicles with a high- tem (hybrid vehicles engine are currently with an auxiliary air ment - Z35- to provi mentary heating fun* ⇒ page 424 .




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- *On vehicles with a petrol engine, the electric supplementary heating ( auxiliary air heater element - Z35- ) is activated by a signal from the operating unit ( Climatronic control unit - J255- ) by way of the local data bus (via the same output by which the fresh air blower control unit - J126- is activated) to the auxiliary air heater control unit - J604- . In the event of problems with the fresh air blower control unit - J126- or the fresh air blower - V2- on these vehicles, also check the auxiliary air heater control unit - J604- ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

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- ❑ Vehicles with auxiliary heater are currently not fitted with a heating element
- ❑ Checking ⇒ page 424
- ❑ Removing and installing ⇒ page 427

**8 - Bolt**

- ❑ 2x
- ❑ 2 Nm

**9 - Electrical wire**

- ❑ For auxiliary air heater element - Z35-

**10 - Earth wire**

- ❑ For supplementary heater
- ❑ Nut, 9 Nm

**11 - Air distribution housing**

- ❑ The opening for the supplementary heater is sealed on vehicles with petrol engine or TDI engine with no auxiliary air heater element - Z35-
- ❑ Removing and installing air conditioning unit ⇒ page 460
- ❑ Exploded view ⇒ page 392

**12 - Heat exchanger**

- ❑ Removing and installing ⇒ page 476

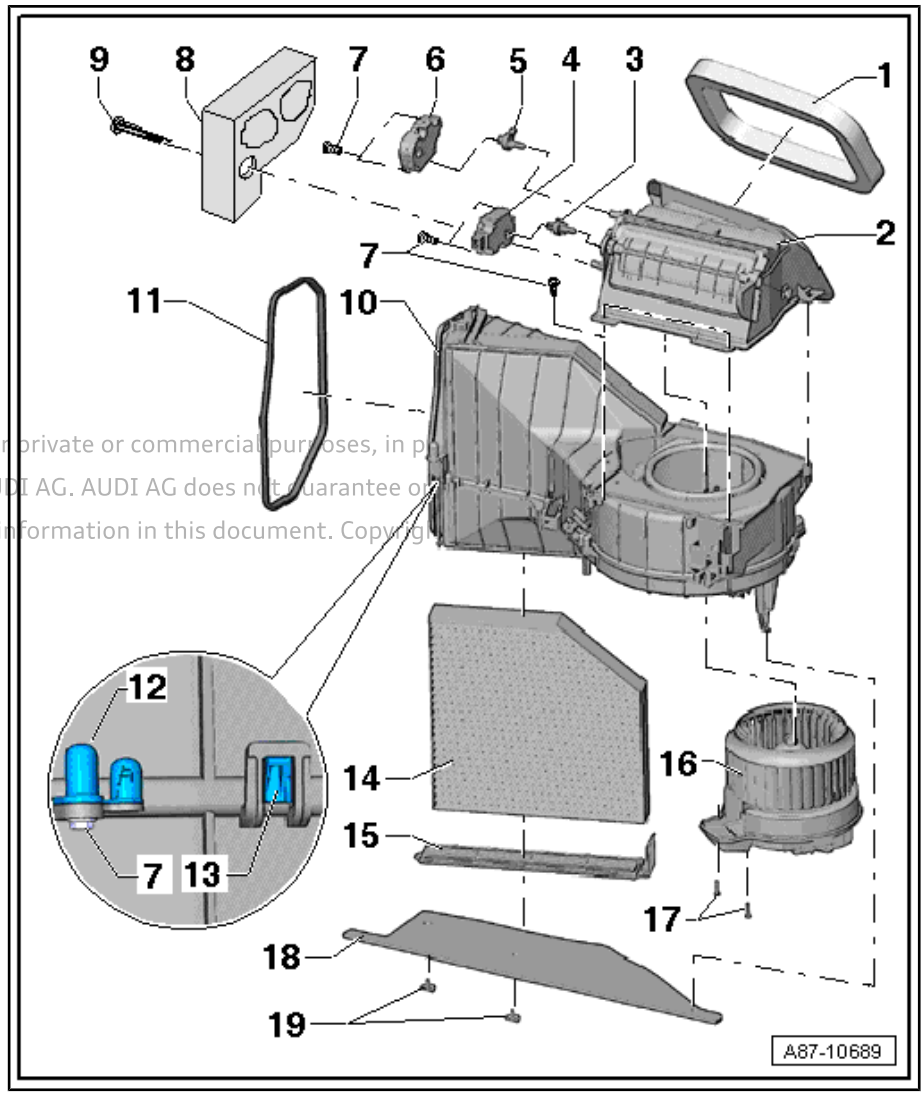
**13 - Clamp**

- ❑ 2 Nm

**14 - O-ring**

- ❑ Renew

## 5.4 Exploded view - air intake box of heater and air conditioning unit




**1 - Foam seal**

- ❑ Renew if damaged

**2 - Air intake duct**

- ❑ With air flow/fresh air and air recirculation flap
- ❑ Do not dismantle
- ❑ Removing and installing ⇒ page 467

**3 - Connecting element**

- ❑ Between air recirculation flap control motor - V113- and air recirculation flap
- ❑ Do not dismantle
- ❑ Coat mountings with small amount of grease ⇒ Electronic parts catalogue

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**4 - Air recirculation flap control motor - V113-**

- ❑ Removing and installing ⇒ page 360

**5 - Connecting element**

- ❑ Between air flow flap control motor - V71- and air flow/fresh air flap
- ❑ Do not dismantle
- ❑ Coat mountings with small amount of grease ⇒ Electronic parts catalogue

**6 - Air flow flap control motor - V71-**

- ❑ Removing and installing ⇒ page 343

**7 - Bolt**

- ❑ Tightening torque:

- ♦ For control motors: 1 Nm
- ♦ For intake duct: 1 Nm
- ♦ For air intake box: 1 Nm

**8 - Noise insulation cover**

**9 - Bracket**

**10 - Air intake box**

- ❑ Do not dismantle
- ❑ Removing and installing ⇒ page 468

**11 - Foam seal**

- ❑ Renew if damaged
- ❑ For sealing the joint between the intake duct and the air conditioning unit (bonded onto intake duct)

**12 - Attachment point**

**Note**

*If necessary, air intake box can be secured additionally with bolts -item 7-.*

**13 - Fasteners of air intake box**

- Between top and bottom sections

**Note**

*If fasteners no longer hold parts in place properly, additionally bolt top and bottom sections of air intake box together at attachment points -item 12-.*

**14 - Dust and pollen filter**

- Different versions ⇒ Electronic parts catalogue
- Notes on version with activated charcoal filter insert ⇒ page 96
- Observe replacement intervals ⇒ Maintenance tables
- Removing and installing ⇒ page 472

**15 - Slot cover for dust and pollen filter**

**Note**

*Depending on the version, a foam strip may be glued onto the slot cover to insulate the gap next to the cover ⇒ Item 18 (page 398)
⇒ page 472.*

**16 - Fresh air blower - V2-**

- With fresh air blower control unit - J126-
- Different versions ⇒ Electronic parts catalogue
- Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)
- Removing and installing ⇒ page 474

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**17 - Bolt**

- 3x
- 1 Nm

**18 - Cover**

**19 - Quick-release fastener**

- 2x
- 0.5 Nm

## 5.5 Exploded view - evaporator housing

**Note**

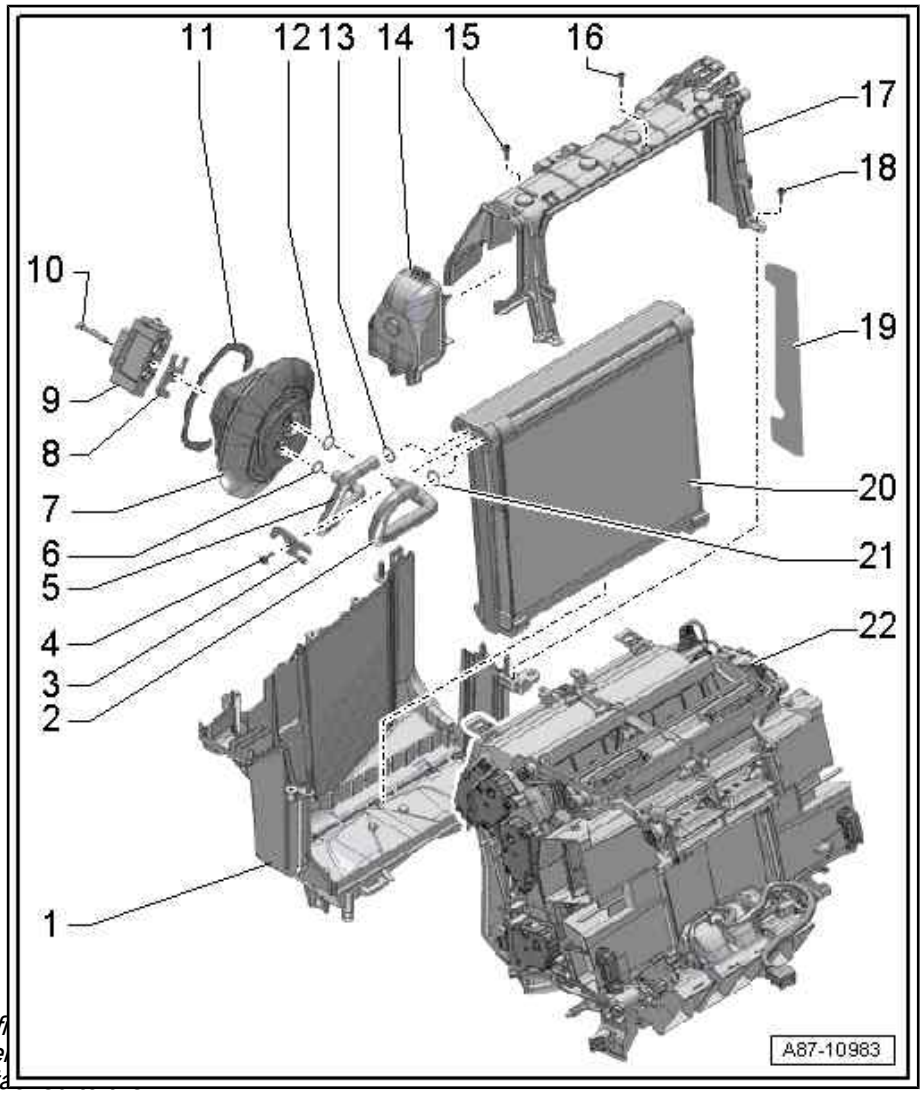
*The following illustration shows an evaporator housing with evaporator as fitted at the workshop on air conditioners with refrigerant R134a. On vehicles with refrigerant R1234yf, separable connections are no longer permitted in the passenger compartment. For this reason, the evaporator with fixed refrigerant pipes ⇒ Item 20 (page 402) is available as a replacement part for these vehicles ( ⇒ Item 2 (page 399) and ⇒ Item 5 (page 400) ) ⇒ Electronic parts catalogue .*

**1 - Evaporator housing (bottom section)**

- ❑ Removing and installing ⇒ page 403

**2 - Refrigerant pipe to evaporator**

- ❑ The evaporator is manufactured with the refrigerant pipes permanently attached. If a repair is required, the available replacement evaporators for vehicles with refrigerant R134a have refrigerant pipes which are attached at a connecting point ⇒ page 406 and ⇒ Electronic parts catalogue
- ❑ Removing and installing for vehicles with refrigerant R134a ⇒ page 406
- ❑ Not supplied for vehicles with refrigerant R1234yf (and vehicles with refrigerant R134a for which the evaporator is not available with a connecting point for the refrigerant pipes)




**Note**

- ♦ *On vehicles with refi R1234yf, the refrige are permanently atta evaporator; as no separable connections are permitted in the passenger compartment, evaporators with connecting points for the refrigerant pipes must not be installed on these vehicles.*

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- *On vehicles which use refrigerant R1234yf, no separable connections in the refrigerant circuit (e.g. between the refrigerant lines and the evaporator) are permitted in the passenger compartment. On these vehicles, the heater and air conditioning unit (with the evaporator housing) must therefore always be removed, and the evaporator must be renewed (as a complete unit) together with the refrigerant lines ⇒ Electronic parts catalogue and ⇒ page 403 .*

**3 - Retainer**

- ❑ From repair kit for evaporator
- ❑ For connecting refrigerant pipes to evaporator

**Note**

*Only on vehicles with refrigerant R134a; further notes ⇒ Item 2 (page 399)*

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**4 - Bolt**

- ❑ From repair kit for evaporator
- ❑ 5 Nm

**Note**

*Only on vehicles with refrigerant R134a; further notes ⇒ Item 2 (page 399)*

**5 - Refrigerant pipe to evaporator**

- ❑ From repair kit for evaporator
- ❑ 5 Nm

**Note**

*Only on vehicles with refrigerant R134a; further notes ⇒ Item 2 (page 399)*

**6 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate lightly with refrigerant oil ⇒ page 97

**7 - Grommet**

- ❑ With support ring; for sealing opening for refrigerant lines through plenum chamber partition panel
- ❑ Removing and installing ⇒ page 405

**8 - Retainer**

- ❑ For fixing refrigerant line in position and securing expansion valve

**9 - Expansion valve**

- ❑ Exploded view ⇒ page 155

**10 - Bolt**

- ❑ Tightening torque ⇒ page 155

**11 - Support ring**

- ❑ Increases contact pressure of grommet to plenum chamber partition panel

**12 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate lightly with refrigerant oil ⇒ page 97

**13 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate lightly with refrigerant oil ⇒ page 97

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**Note**

*Only on vehicles with refrigerant R134a; further notes*
*⇒ Item 2 (page 399)*

**14 - Cover**

- ❑ For refrigerant pipes to evaporator
- ❑ Different versions ⇒ Electronic parts catalogue

**15 - Bolt**

- ❑ 4x
- ❑ Tightening torque ⇒ page 392

**16 - Bolt**

- ❑ 2x
- ❑ Tightening torque ⇒ page 392

**17 - Evaporator housing (top section)**

- ❑ Removing and installing ⇒ page 403

**18 - Bolt**

- ❑ 2x
- ❑ Tightening torque ⇒ page 392

**19 - Cover**

- ❑ For evaporator
- ❑ Can be renewed separately if necessary (only on vehicles with refrigerant R134a for which the evaporator is not available with a connecting point for the refrigerant pipes); for repair kit refer to ⇒ “5.6.3 Removing and installing evaporator”, page 406 and ⇒ Electronic parts catalogue .
- ❑ Bonded into evaporator housing during installation of replacement evaporator (only for vehicles with refrigerant R134a) ⇒ “5.6.3 Removing and installing evaporator”, page 406 .
- ❑ Removing and installing (only for vehicles with refrigerant R134a) ⇒ page 406
- ❑ Not possible to remove and install on vehicles with refrigerant R1234yf (and vehicles with refrigerant R134a for which the evaporator is not available with a connecting point for the refrigerant pipes) ⇒ page 403 .

**Note**

- ♦ *The evaporator is manufactured with the refrigerant pipes permanently attached. If a repair is required, the available replacement evaporators for vehicles with refrigerant R134a have refrigerant pipes which are attached at a connecting point ⇒ “5.6.3 Removing and installing evaporator”, page 406 and ⇒ Electronic parts catalogue*

- *On vehicles which use refrigerant R1234yf, no separable connections in the refrigerant circuit (e.g. between the refrigerant lines and the evaporator) are permitted in the passenger compartment. On these vehicles, the heater and air conditioning unit (with the evaporator housing) must therefore always be removed, and the evaporator must be renewed (as a complete unit) together with the refrigerant lines ⇒ Electronic parts catalogue and ⇒ page 403 .*

**20 - Evaporator**

- ❑ The evaporator is manufactured with the refrigerant pipes permanently attached. If a repair is required, the available replacement evaporators for vehicles with refrigerant R134a have refrigerant pipes which are attached at a connecting point ⇒ “5.6.3 Removing and installing evaporator”, page 406 and ⇒ Electronic parts catalogue
- ❑ Removing and installing for vehicles with refrigerant R134a ⇒ page 406
- ❑ Removing and installing for vehicles with refrigerant R1234yf (and vehicles with refrigerant R134a for which the evaporator is not available with a connecting point for the refrigerant pipes) ⇒ page 403

**Note**

- *On vehicles with refrigerant R1234yf, the refrigerant pipes are permanently attached to the evaporator; as no separable connections are permitted in the passenger compartment, evaporators with connecting points for the refrigerant pipes must not be installed on these vehicles.*
- *On vehicles which use refrigerant R1234yf, no separable connections in the refrigerant circuit (e.g. between the refrigerant lines and the evaporator) are permitted in the passenger compartment. On these vehicles, the heater and air conditioning unit (with the evaporator housing) must therefore always be removed, and the evaporator must be renewed (as a complete unit) together with the refrigerant lines ⇒ Electronic parts catalogue and ⇒ page 403 .*

**21 - O-ring**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate lightly with refrigerant oil ⇒ page 97

**Note**

*Only on vehicles with refrigerant R134a, further notes ⇒ Item 2 (page 399)*

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**22 - Air distribution housing**

- ❑ Different versions ⇒ Electronic parts catalogue

- ❑ Flaps, partitions ⇒ page 393
- ❑ Actuating lever for flaps ⇒ page 331

## 5.6 Removing and installing evaporator

⇒ "5.6.1 Removing and installing evaporator housing", page 403

⇒ "5.6.2 Removing and installing grommet for refrigerant lines", page 405

⇒ "5.6.3 Removing and installing evaporator", page 406

### 5.6.1 Removing and installing evaporator housing

**WARNING**

*Danger from escaping pressurised refrigerant.*

*Danger of frostbite on skin and other parts of the body.*

- *Extract the refrigerant and then immediately open up the refrigerant circuit.*
- *Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.*

**Note**

- *Specific tools are required when discharging the refrigerant circuit, and this work may only be performed by qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , and ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 00 ; Laws and regulations .*
- *Proceed as follows if the evaporator is not available separately, or if it is to be renewed together with the evaporator housing for other reasons ( ⇒ page 406 and ⇒ Electronic parts catalogue ):*
- *The evaporator can only be renewed together with the refrigerant pipes (e.g. on vehicles with refrigerant R1234yf) ⇒ page 403 and ⇒ Electronic parts catalogue .*
- *The evaporator is manufactured with the refrigerant pipes permanently attached. If a repair is required, the available replacement evaporators for vehicles with refrigerant R134a have refrigerant pipes which are attached at a connecting point ⇒ page 406 and ⇒ Electronic parts catalogue*

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### Removing

– Remove air conditioning unit
⇒ “5.11 Removing and installing heater and air conditioning unit”, page 460 .

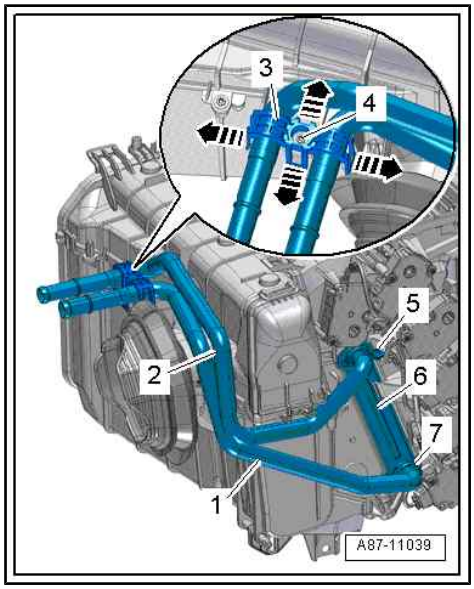
– Remove bolt -4-.

– Release retaining tabs -arrows- and detach bracket -3- for coolant pipes.

– Unscrew bolts and detach clamps -5 and 7-.

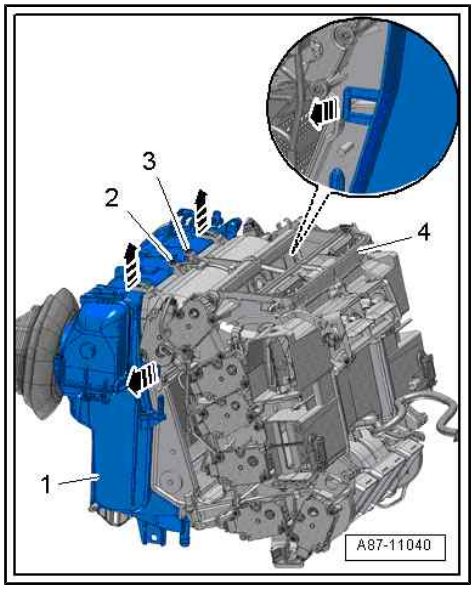
– If fitted, open plastic clamps ⇒ page 479 .

– Pull coolant pipes -1 and 2- out of heat exchanger -6- and detach.




– Remove bolts -2, 3-.

– Release retaining tabs -arrows- and detach evaporator housing -1- from air distribution housing -4-.




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### Installing

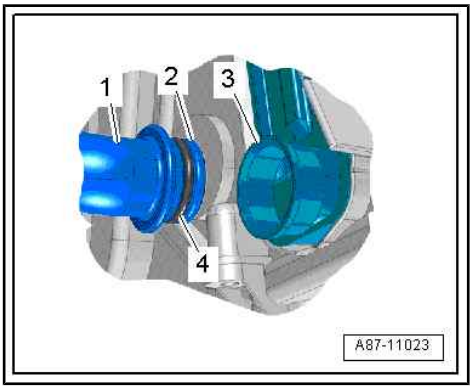
Install in reverse order of removal; note the following:

– Check connection -3- of heat exchanger and coolant pipes -2- for damage or dirt.

– Clean and smooth sealing surface for O-ring.

– Coat new O-ring -4- lightly with coolant (or lubricate lightly with silicone grease) and attach to coolant pipe -1-.

– Slide coolant pipes into heat exchanger as far as stop.




**Caution**

*Risk of leaks at heat exchanger.*

- *Crushed O-rings and coolant pipes that are not fitted straight or are not attached fully will lead to leaks.*

– Fit new screw-type clamps -B- at connection between coolant pipe and heat exchanger.

– Tighten bolt to specified torque.

– Check that screw-type clamps are seated correctly on connections of heat exchanger and coolant pipes. They must not make contact with air distribution housing or other components.

– Install air conditioning unit
⇒ “5.11 Removing and installing heater and air conditioning unit”, page 460 .

### Tightening torques

- ⇒ “5.5 Exploded view - evaporator housing”, page 399

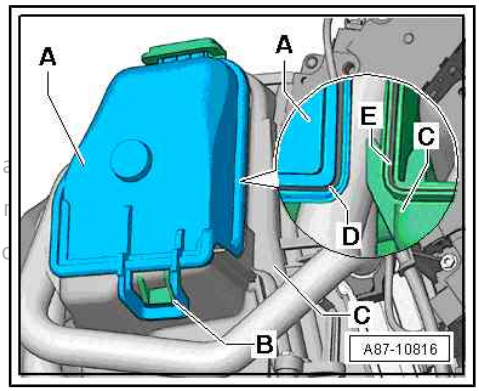
## 5.6.2 Removing and installing grommet for refrigerant lines

### Removing

– Remove expansion valve ⇒ page 190 .

– Remove evaporator housing ⇒ page 403 .

– Release retaining tab -B- and disengage cover -A- at evaporator housing -C-.




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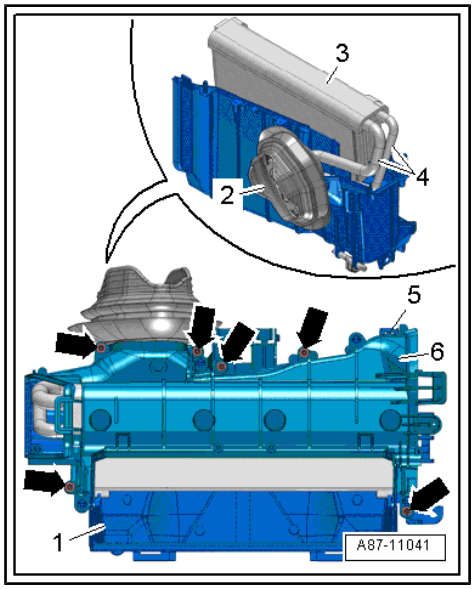
– Remove bolts -arrows-.
– Release retaining tab -5- and detach top section of evaporator housing -6- from bottom section -1-.
– Pull evaporator -3- slightly out of bottom section of evaporator housing and detach grommet -2- from refrigerant lines -4-.

**Installing**

Installation is carried out in reverse sequence.

**Tightening torques**

◆ ⇒ “5.1 Exploded view - attachments for heater and air conditioning unit and air intake box”, page 392




## 5.6.3 Removing and installing evaporator

Only possible on certain vehicles with refrigerant R134a ⇒ Electronic parts catalogue and
⇒ “5.5 Exploded view - evaporator housing”, page 399 .

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**Caution**

***Only open or remove after discharging the refrigerant circuit; 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; Rep. gr. 87 ; General information on air conditioning systems , and ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .***

**Note**

◆ *On vehicles which use refrigerant R1234yf, no separable connections in the refrigerant circuit (e.g. between the refrigerant lines and the evaporator) are permitted in the passenger compartment. On these vehicles, the air conditioning unit (with the evaporator housing) must therefore always be removed, and the evaporator must be renewed (as a complete unit) together with the refrigerant lines ⇒ Electronic parts catalogue and ⇒ “5.5 Exploded view - evaporator housing”, page 399 .*

◆ *If the evaporator is not available as a replacement part, it must be renewed together with the evaporator housing. Removing and installing evaporator housing ⇒ Electronic parts catalogue and ⇒ “5.5 Exploded view - evaporator housing”, page 399*

◆ *On right-hand drive vehicles, the evaporator can currently only be renewed together with the evaporator housing. Removing and installing evaporator housing ⇒ page 403*

**Special tools and workshop equipment required**

◆ Pliers - T40147-
◆ Strong carpet knife (blade firmly and securely seated in handle)

### Removing

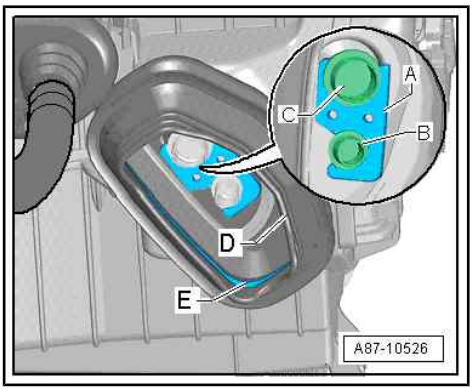
If the evaporator is available separately (only for refrigerant R134a) ⇒ Electronic parts catalogue , proceed as follows:

– Move front seats as far back as they will go.

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Remove expansion valve ⇒ page 190 .

– Detach retainer -A- from refrigerant lines -B and C-.

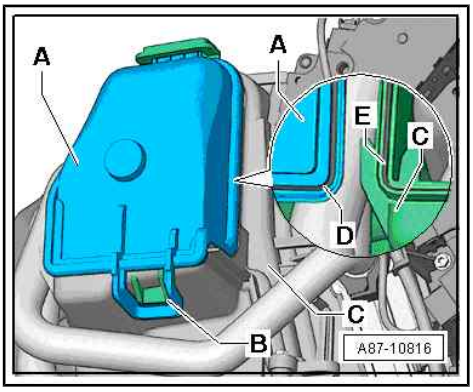



– Remove footwell vent (driver side) ⇒ page 494 .

– Remove steering column ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering column; Removing and installing steering column .

– Remove pedal cluster ⇒ Brake system; Rep. gr. 46 ; Brake pedal; Removing and installing mounting bracket .

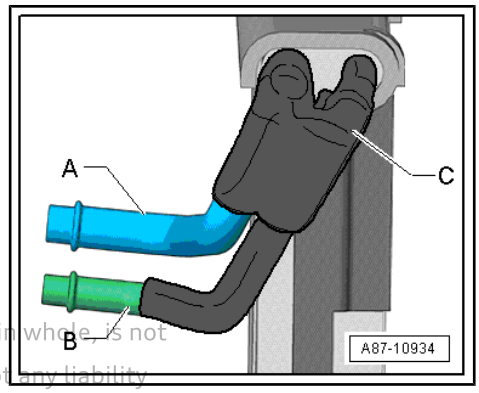
– Release retaining tab -B- and disengage cover -A- for refrigerant lines at evaporator housing -C-.




**Note**

*Take care not to damage the sealing lip -E- on the evaporator housing in the course of further work.*

– Detach butyl mat -C- from refrigerant lines -A and B-.




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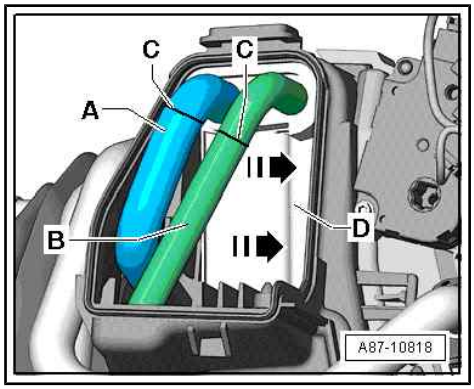
– Cut through refrigerant lines -A and B- at locations marked -C- using pliers - T40147- .

– Bend remaining section of refrigerant line -A- at evaporator towards rear (as seen in direction of travel) far enough so that evaporator can be pulled out of housing.

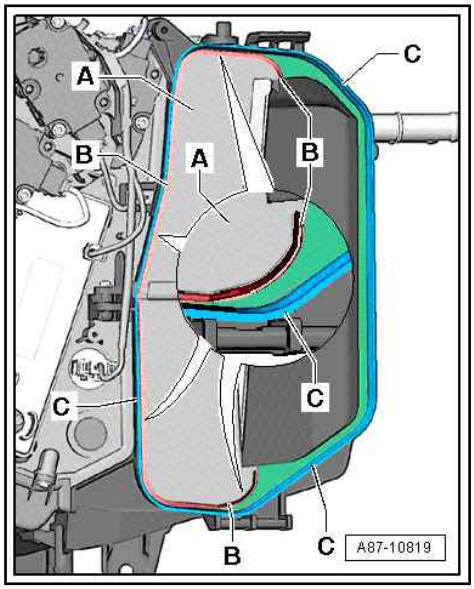
– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .

– Remove footwell vent (front passenger side) ⇒ page 494 .

– Remove air intake box ⇒ page 468 .




– Using a sharp knife (e.g. strong carpet knife with blade firmly and securely attached in handle), cut wall of housing -A- (right side of evaporator housing) out of air conditioning unit at cutting line marked -B-.

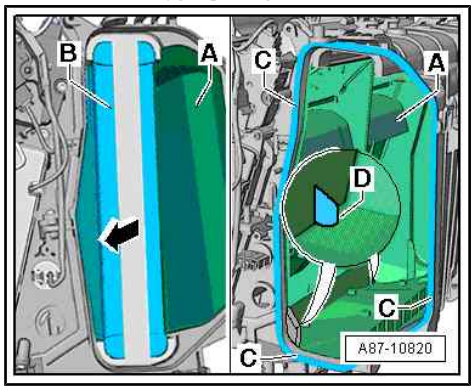



**Note**

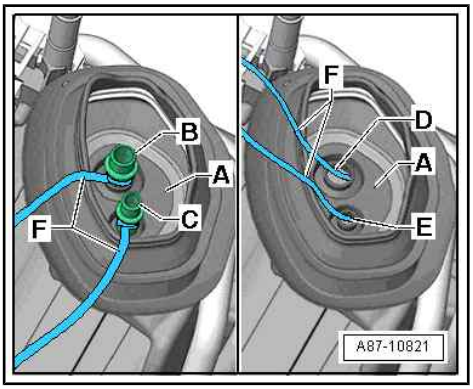
- *Take care not to damage the sealing lip on the air conditioning unit -C- when cutting out the housing wall -A- in the course of further work.*
- *If the connection between the housing wall -A- and the air conditioning unit cannot be separated with a carpet knife at the cutting line -B- (material too thick), you can separate the connection carefully at the cutting line -B- using an electric cutter - V.A.G 1561A- and a 25 mm offset blade - V.A.G 1561/4- or a saw blade, dia. 63 mm - V.A.G 1561/25- or similar. While doing so, make sure the sealing lip on the air conditioning unit -C- is not damaged.*
- *If the evaporator has already been renewed (partition bonded in in place of housing wall -A-), cut out this partition at the bonding line (marked cutting line -B-) using the electric cutter - V.A.G 1561A- . After taking out the evaporator, carefully remove any residual adhesive from the evaporator housing.*

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– Pull evaporator -B- out of evaporator housing -A- in direction of -arrow-.



– Attach a thin cord -F- to each of the separated refrigerant lines -B and C-.




**Note**

*The cord -F- is intended as a help when inserting the new refrigerant lines.*

– Apply lubricant to leadthroughs -D and E- in grommet -A- for refrigerant lines -B and C-.

**Caution**

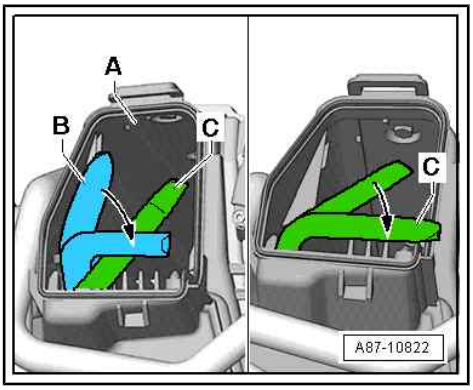
***Risk of damage to grommet.***

- ***A damaged grommet can only be renewed after the air conditioning unit has been removed.***
- ***Together with a second mechanic, slide the refrigerant lines out of the grommet into the passenger compartment.***

– Turn separated refrigerant line -B- in direction of -arrow-, unfasten from grommet and remove from evaporator housing -A-.

– Turn separated refrigerant line -C- in direction of -arrow-, unfasten from grommet and remove from evaporator housing -A-.

– Unfasten insertion cord from refrigerant lines.




## Installing

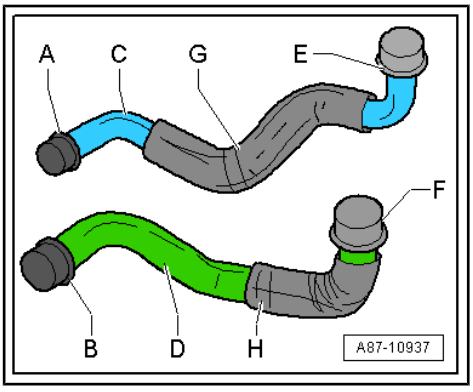
Install in reverse order of removal; note the following:

### Tightening torques

- ⇒ “5.1 Exploded view - attachments for heater and air conditioning unit and air intake box”, page 392

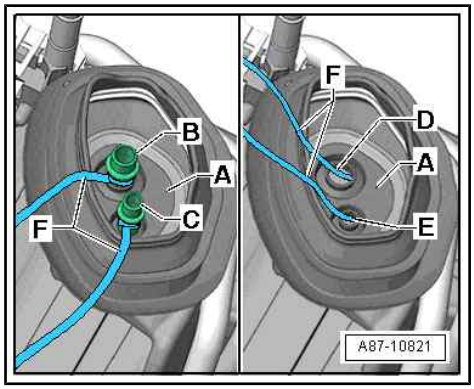
**Note**

- *There are protective caps -A, B, E and F- on the new refrigerant lines -C and D- to prevent damage to connections and ingress of dirt when installing.*
- *For noise insulation, butyl mats -G and H- are wrapped around the refrigerant lines. Take care not to damage or trap butyl mat.*
- *The refrigerant lines are installed with protective caps through the grommet to the plenum chamber.*




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– Attach insertion cord to new refrigerant lines -B and C-.




**Note**

*Make sure the two cords do not become twisted in the installation slot of the air conditioning unit.*

– Coat refrigerant lines, protective caps and leadthroughs -D and E- in grommet -A- with lubricant.

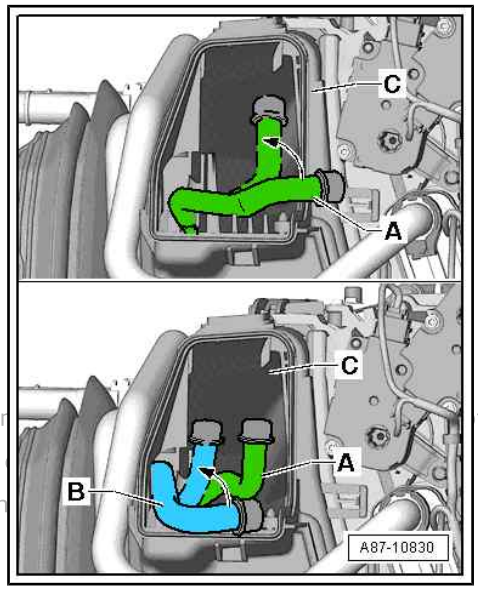
**Caution**

***Risk of damage to grommet.***

- ***A damaged grommet can only be renewed after the air conditioning unit has been removed.***
- ***Together with a second mechanic, slide the refrigerant lines through the grommet outwards.***

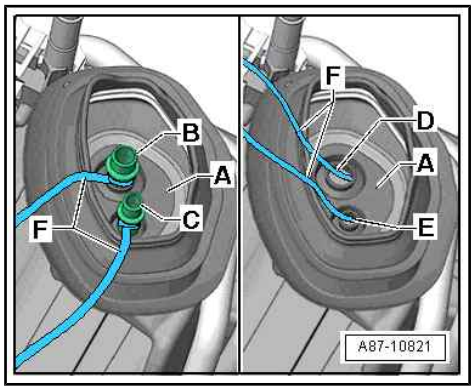
– Insert refrigerant line -A- (thinner pipe) in evaporator housing -C-, turn it anti-clockwise and guide it through smaller opening into grommet to plenum chamber.

– Insert refrigerant line -B- (thicker pipe) in evaporator housing -C-, turn it anti-clockwise and guide it through larger opening into grommet to plenum chamber.

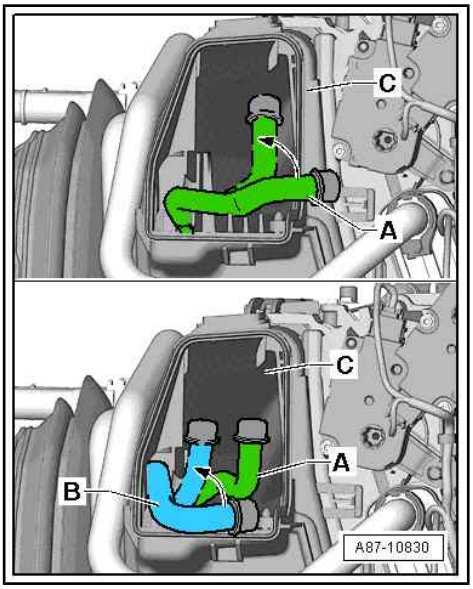



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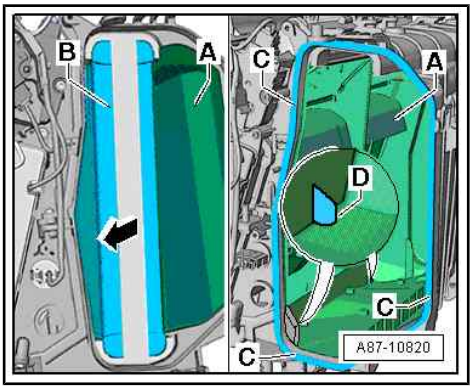
– You can have a second mechanic pull the cord -F- carefully to make it easier to insert the line in the correct opening -E or D- of the grommet.



– Position the refrigerant pipes -A and B- so that they will not be damaged and will not get in the way when you are installing the evaporator.




– Check evaporator housing -A- for dirt through evaporator installation slot and clean if necessary.



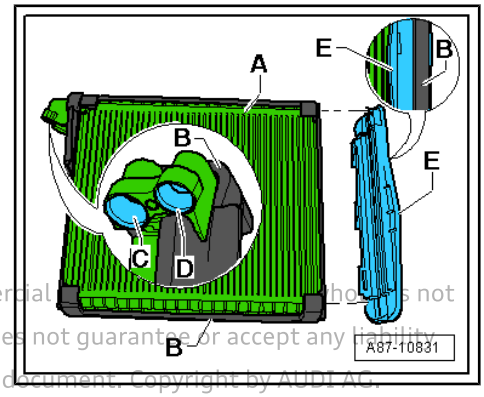

**Note**

*When doing so pay attention to the two condensation drains -D- (left and right) in the air conditioning unit.*

– Foam strips -B- attached to evaporator -A- and cover -E- must be bonded on all around - check for damage.

– Check connections -C and D- for dirt and damage.

– Fit cover in correct position on evaporator -A-.

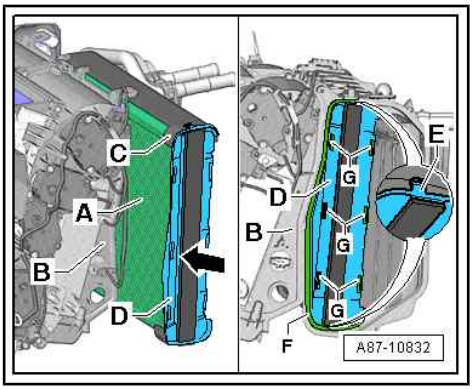



**Note**

*The cover is included in the evaporator repair kit ⇒ Electronic parts catalogue .*

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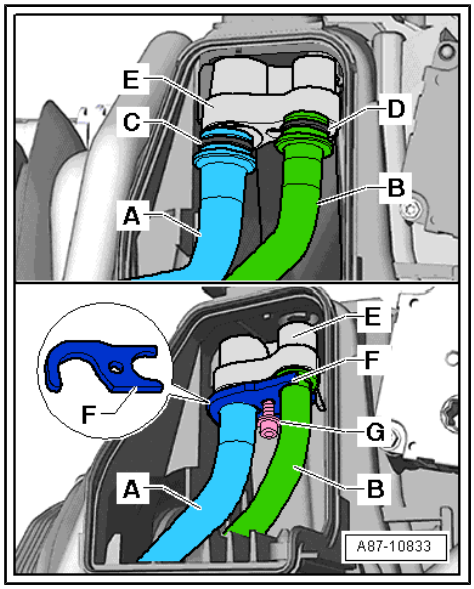
– Slide evaporator -A- with cover -D- into slot of evaporator housing -B- as far as stop; make sure retainers -E- engage.




**Note**

- *While doing so, make sure the foam strip -C- is not damaged and does not come loose.*
- *The air conditioner output may be reduced if the foam strip is not bonded on properly.*

– Detach protective caps from refrigerant pipes -A and B-.
– Check refrigerant lines and connections at evaporator -E- for damage and dirt.

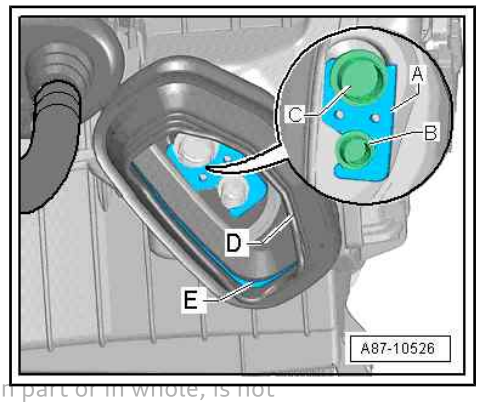



**Note**

- *Even minor damage (scratches) or slight contamination (a hair) in the connection area may be enough to cause leaks.*
- *The O-rings are pre-assembled on the refrigerant lines at the factory.*
- *The refrigerant lines, O-rings, bracket and bolt are included in the evaporator repair kit ⇒ Electronic parts catalogue .*
- *Coat O-rings lightly with refrigerant oil before fitting ⇒ page 97 .*

– Insert refrigerant lines in connections of evaporator -E- and slide in as far as stop.
– Insert retainer -F- and tighten bolt -G- by hand until it makes contact.
- It must still be possible to turn the refrigerant lines.
- There must be no strain between the retainer and the refrigerant lines.

– Install retainer -A- at refrigerant lines -B and C-.
– Install expansion valve to align the two refrigerant lines, but do not tighten bolts ⇒ page 190 .
– Check that support ring -E- is correctly seated in grommet.
- Projection on support ring must face outwards.



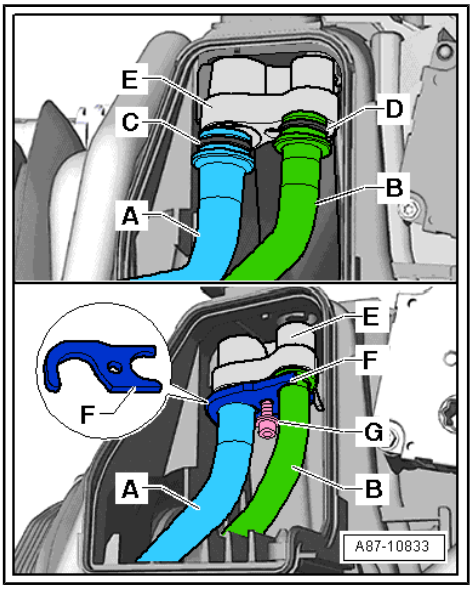

**Note**

- *Check that grommet for evaporator is correctly seated at lead-through in plenum chamber partition panel.*
- *Water will ingress into passenger compartment if grommet is damaged or not fitted correctly.*

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– Tighten bolt -G-. Tightening torque
⇒ “5.1 Exploded view - attachments for heater and air conditioning unit and air intake box”, page 392

– Install expansion valve ⇒ page 190 .




– Check cover -A- and renew if damaged.

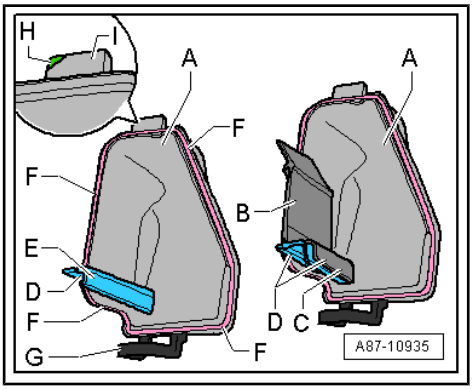
♦ Retaining tab -G- must not be strained.

♦ Groove -F- all around cover must not be damaged.

– After renewing evaporator, cover must be adjusted. To do so, remove partition -B- and front section of guide -C-.

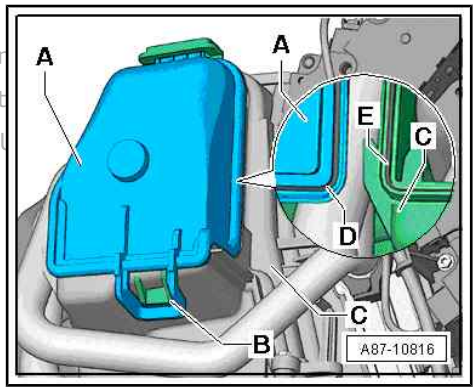
– Rear section of guide -D- must not be damaged.

– Retaining tab -J- must be bevelled at corner -H-, as shown in illustration.




– Insert cover -A- at evaporator housing and press on until it engages audibly.

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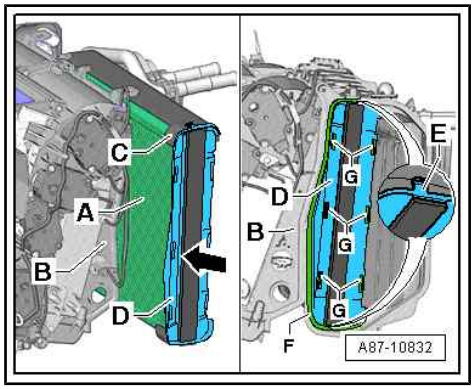

**Note**

♦ *When inserting the cover, take care not to trap any foam sections or the butyl mat.*

♦ *Even very small leaks at the "tongue-and -groove" joint -D, E- between the cover and the evaporator housing can lead to whistling noises caused by escaping air. For this reason, lubricate the connection points lightly with silicone grease or similar to completely seal the connection points. For silicone grease, refer to ⇒ Electronic parts catalogue*

– Protect floor covering beneath installation slot for evaporator to prevent soiling floor covering with adhesive sealant.

– Clean evaporator housing -B- and cover -D- at locations marked -F- and -G- (and dry if necessary).
– Carefully seal connection points between evaporator housing and inserted partition with silicone adhesive sealant. For silicone adhesive sealant, refer to ⇒ Electronic parts catalogue




**Note**

*If the connection points between the air conditioning unit, the evaporator and the partition are not sealed properly, condensate may run out of the air conditioning unit into the footwell, e.g. when cornering.*

– Remove any surplus adhesive sealant (adhesive sealant may only be applied in area -D-). Remove any excess adhesive sealant from groove -G-.
– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.
– Perform basic setting.
– Perform final control diagnosis.
– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

## 5.7 Cleaning evaporator

⇒ “5.7.1 Cleaning evaporator with an ultrasonic A/C cleaner”, page 414

⇒ “5.7.2 Cleaning evaporator using pressure-feed spray gun V.A.G 1538 and spray lance”, page 416

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### 5.7.1 Cleaning evaporator with an ultrasonic A/C cleaner

**Note**

*There are numerous evaporator cleaning methods with different effects available on the market. For the cleaning method for e.g. the evaporator currently checked and approved by Audi, use an ultrasonic A/C cleaner and a pressure-feed spray gun. Other methods checked and approved by Audi and the corresponding information can be found e.g. in the “Audi ServiceNet” ( ⇒ page 3 ).*

**Special tools and workshop equipment required**

- Ultrasonic A/C cleaner - VAS 6189A- (for currently available ultrasonic A/C cleaners, refer to ⇒ Electronic parts catalogue )
- Cleaning fluid - VAS 6189/1- ⇒ Electronic parts catalogue
- Vacuum cleaner attachment - VAS 6288-
- Vacuum cleaner (commercially available)

**Procedure**

– Check whether the air conditioning unit evaporator is really the source of the odour by switching from fresh air to air recirculation mode
⇒ “1.2 Notes on odours in vehicles with air conditioner”, page 2 .

– Check that cowl panel trim and plenum chamber cover are not damaged and are installed properly ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover.

– Check and if necessary clean water drains and plenum chamber ⇒ page 505 .

– Remove dust and pollen filter ⇒ page 472 .

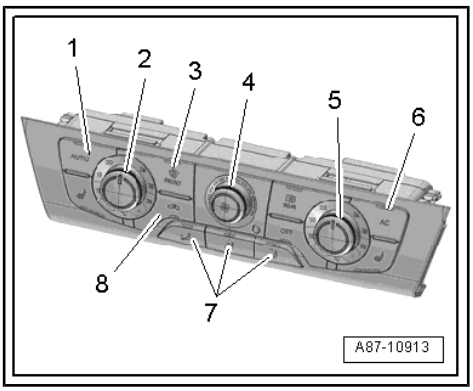
– Clean installation slot for dust and pollen filter ⇒ page 473 .

– Seal opening for dust and pollen filter at air conditioning unit.

– Start engine.

– Open dash panel vents and close windows and sunroof.

**Air conditioner (“basic” version):**




– Activate “air recirculation mode” on operating unit ( Climatronic control unit - J255- ) and switch off air conditioner compressor.

• Lamp in button -8- is on.

• Lamp in button -6- is off.

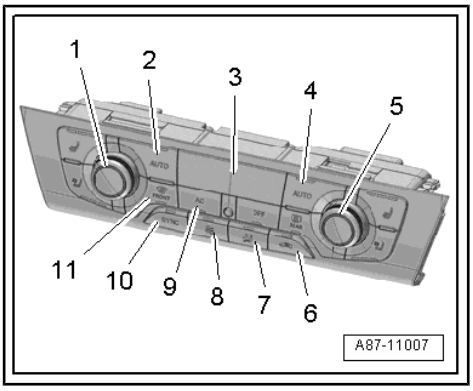
– Set lowest possible temperature.

• Rotary temperature controls -2, 5- on “cold” stop.

– Using air distribution buttons -7-, set direction of air flow to “dash panel vents”.

– Set rotary fresh air blower control -4- to lowest blower speed.

**Air conditioner (“deluxe” version):**




– Activate “air recirculation mode” on operating unit ( Climatronic control unit - J255- ) and switch off air conditioner compressor.

• Lamp in button -6- is on.

• Lamp in button -9- is off.

– Set lowest possible temperature.

• Rotary temperature controls -1, 5- on “cold” stop.

– Using air distribution button -7- and rotary controls -1, 5-, set direction of air flow to “dash panel vents”.

– Using fresh air blower button -9- and rotary controls, set lowest possible blower speed.

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– Set lowest possible temperature on rear Climatronic operating unit - E265- .

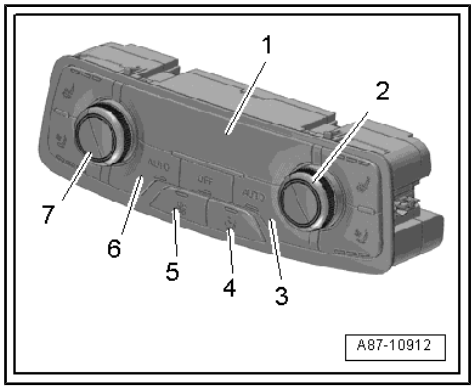
• Rotary temperature controls -2, 7- on “cold” stop.

– Using air distribution button -4- and rotary controls -2, 7-, set direction of air flow to “centre console vents”.

– Using fresh air blower button -5- and rotary controls, set lowest possible blower speed.

**All vehicles (continued):**

– Shake bottle of cleaning fluid - VAS 6189/1- and pour fluid into ultrasound A/C cleaner - VAS 6189A- .




**Note**

*For information on how to use the ultrasound A/C cleaner, refer to the ⇒ Operating instructions of -VAS 6189A- .*

– Position ultrasound A/C cleaner - VAS 6189A- in front passenger's footwell.

– Start up ultrasound A/C cleaner - VAS 6189A- (in accordance with operating instructions) and position outlet hose so that vapour emerging is drawn in by fresh air blower - V2- via opening for air recirculation of air conditioning unit (in passenger's footwell behind 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 of the ultrasonic A/C cleaner - VAS 6189A- .*

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– Switch off ultrasonic A/C cleaner - VAS 6189A- .

– Open vehicle doors and vent vehicle for at least 10 minutes.

– Remove ultrasound A/C cleaner - VAS 6189A- from vehicle and clean it.

– Switch off ignition.

– Install dust and pollen filter ⇒ page 472 .

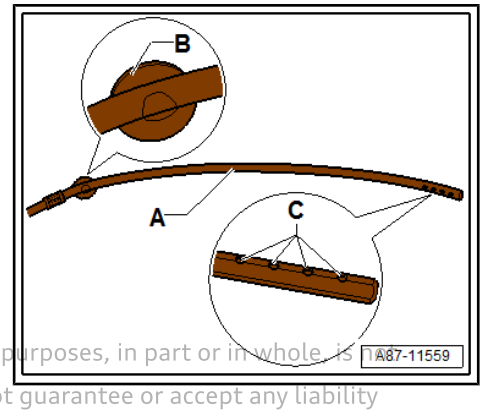
## 5.7.2 Cleaning evaporator using pressure-feed spray gun - V.A.G 1538- and spray lance

**Note**

*There are numerous evaporator cleaning methods with different effects available on the market. For the cleaning method for e.g. the evaporator currently checked and approved by Audi, use an ultrasonic A/C cleaner and a pressure-feed spray gun. Other methods checked and approved by Audi and the corresponding information can be found e.g. in the “Audi ServiceNet” ( ⇒ page 3 ).*

**Special tools and workshop equipment required**

- Pressure-feed spray gun - V.A.G 1538- (for currently available pressure-feed spray guns, refer to ⇒ Electronic parts catalogue )
- Probe for evaporator cleaning, straight - V.A.G 1538/5- -A- (short version: approx. 500 mm, curved or probe - VAS1538/9- as specified for this vehicle); for currently available probes, refer to ⇒ Electronic parts catalogue




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- Cleaning solution for evaporator in air conditioner "D 600 100 A2" (for currently available cleaning fluids, refer to ⇒ Electronic parts catalogue )
- Vacuum cleaner (commercially available)

**WARNING**

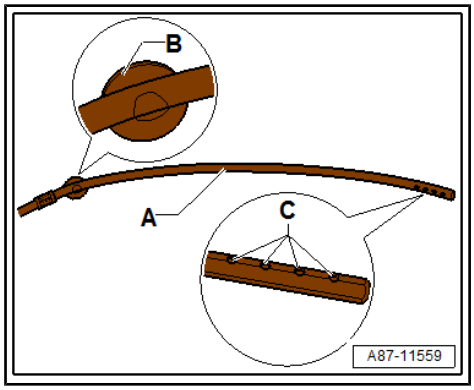
***Other materials can form deposits in the air conditioning unit.***

- ***Only use pressure-feed spray guns and spray lances that have not been used with other fluids.***

**Note**

- *The vacuum cleaner is only required if dirt has accumulated in the plenum chamber or the intake shaft of the air conditioner, or if dirt has entered the evaporator housing through the dust and pollen filter.*
- *It is advisable to have several short and long spray lances at hand, as a straight lance is required for some vehicles, while for other vehicles it must be curved or bent into different shapes. It is not a good idea to change the shape of the spray lance repeatedly as this will damage it.*

Recommended bend radius of spray lance VAG 1538/5 (short) -A- for this vehicle




**Note**

- *The guide washer -B- is fitted opposite the holes -C- on the spray lance; this allows you to identify the spray direction even when the spray lance is inserted.*
- *Spray lance V.A.G 1538/5 -A- with this bend radius is also compatible with the following additional vehicles, for example: Audi A4 from 2008 onwards, Audi A5 from 2008 onwards, Audi Q5 from 2010 onwards, Audi A3 from model year 2013 onwards, Audi A6 from 2011 onwards, Audi A7 from 2011 onwards and Audi A8 from 2010 onwards.*

**Preparations**

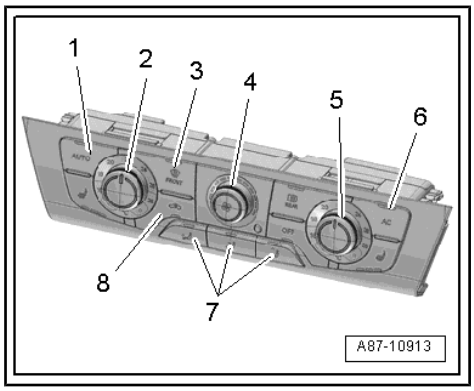
– Switch on ignition.

– Open all dash panel vents.

– Switch on air conditioner.

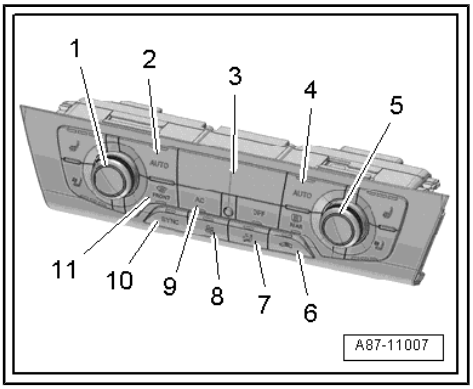
– Check whether the air conditioning unit evaporator is really the source of the odour by switching from fresh air to air recirculation mode
⇒ “1.2 Notes on odours in vehicles with air conditioner”, page 2 .

Air conditioner (“basic” version):




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Air conditioner (“deluxe” version):




**Note**

- *Identify the cause or origin of the odour before cleaning the evaporator.*
- *Even if the cause of the odour is not inside the evaporator (e.g. contamination in the dust and pollen filter), it is worth cleaning the evaporator after eliminating the cause of the odour (the evaporator absorbs odours from the air which passes through it).*

– Set air conditioner to air recirculation mode.

– Switch off ignition (this also switches off air conditioner and fresh air blower - V2- ).

– Remove cover beneath glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .

– Remove and check dust and pollen filter; renew if necessary after cleaning evaporator ⇒ page 472 .

**Note**

*We recommend renewing the used dust and pollen filter every time the evaporator is cleaned.*

– Check the area between the installation slot for the dust and pollen filter and the fresh air blower - V2- in the evaporator housing for contamination and clean it if necessary ⇒ page 472 .

– Check plenum chamber and water drain of plenum chamber and clean if necessary ⇒ page 505 .

**Note**

*Prior to cleaning, check and, if necessary, clean the water drains in the plenum chamber as described in the Workshop Manual.*

– Place a drip tray under vehicle to collect cleaning fluid draining from condensation drain (for location of condensation drain opening, refer to ⇒ page 484 ).

– Cover floor in passenger footwell with waterproof sheeting and absorbent paper.

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Cleaning evaporator

**WARNING**

*The cleaning fluid is flammable, vapours can combine with the air to form an explosive mixture.*

- *Keep away from ignitions sources; do not smoke.*
- *Use the cleaning fluid only in well ventilated areas.*

*Cleaning fluid poses a potential health hazard!*

*Wear safety goggles to protect your eyes.*

- *Use safety equipment such as safety goggles and gloves.*
- *Keep an eye-bath to hand.*
- *Should cleaning fluid come into contact with your eyes, rinse them thoroughly with cold or lukewarm water for about 15 minutes.*
- *Then apply eye drops and consult a doctor immediately, even if your eyes do not hurt.*
- *Inform the doctor which cleaning fluid made contact with your eyes.*

*Wear rubber gloves to protect your hands.*

- *Use safety equipment such as safety goggles and gloves.*
- *If cleaning fluid comes into contact with your hands or skin, wash with water and soap and then rinse thoroughly.*

*Never swallow cleaning fluid, and do not inhale cleaning fluid vapours.*

- *Use the cleaning fluid only in well ventilated areas.*
- *If liquid cleaning agent has been swallowed, do not induce vomiting; consult a doctor immediately.*
- *Inform the doctor which type of cleaning agent was swallowed.*

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**Caution**

*Cleaning fluid can cause damage to the vehicle.*

- *Ensure that fluid does not come into contact with electronic components.*
- *Do not spray cleaning fluid into the air ducts in or leading to the vehicle interior!*
- *Thoroughly clean any components in the passenger compartment which have come into contact with the cleaning fluid.*

- The ignition (and therefore the air conditioner) is switched off.
- Preliminary work has been carried out and affected components are removed ⇒ page 418 .

– Connect spray lance to pressure-feed spray gun and fill with 1 litre of cleaning solution for air conditioner evaporators.

– Set compressed-air supply for pressure-feed spray gun to a pressure of approx. 7.5 bar (minimum pressure 5 bar / maximum pressure 10 bar).

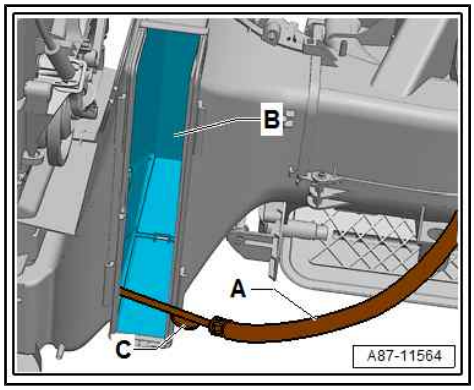
**Note**

*Setting this pressure on the compressed-air supply means that the spray lance has an operating pressure between 3.5 and 4 bar.*

– Connect pressure-feed spray gun VAS 1538 to compressed-air supply.

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– Insert spray lance -A- through opening for removed dust and pollen filter -B- and into evaporator housing with spray direction towards evaporator.




**Note**

*The spray direction is fixed by the guide washer -C- on the spray lance -A-.*

**Caution**

***Ensure that no cleaning fluid escapes from the evaporator housing of the air conditioning unit into the passenger compartment during cleaning.***

- ***Cover the area under the spray lance in the evaporator housing with absorbent paper.***
- ***After spraying about 0.1 to 0.2 litres of cleaning fluid, check that it actually drains through the condensation drain and into the drip tray under the vehicle. If the fluid only drips out, the condensation drain must be cleaned before the cleaning process can continue*** ***⇒ page 484*** ***.***

– Clean and rinse evaporator and surrounding area of housing with cleaning solution by operating metering lever on pressure-feed spray gun and moving spray lance -A- back and forth.

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**Note**

- *The dirty cleaning agent runs out through the condensation drain.*
- *During the cleaning process, always check that the cleaning fluid is flowing out through the condensation drain.*

– Use entire contents of pressure-feed spray gun to clean evaporator.

– Remove drip tray and dispose of collected cleaning agent.

**Note**

*Used cleaning agent can be disposed of e.g. via the wastewater disposal system (observe official local regulations) ⇒ Audi ServiceNet, HSO Environmental Protection (or ⇒ Volkswagen ServiceNet, Handbooks, Service Handbook; Environmental Protection, Emission Control ).*

Allow at least 30 minutes for cleaning solution to take effect.

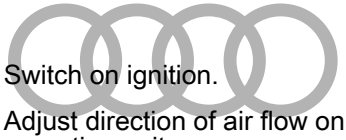
**Note**

*The removed components can be installed again during this time.*

– Re-install all components previously removed.

– Open all doors or open the windows.

– Open all vents in dash panel and in vehicle interior.



- Switch on ignition.
- Adjust direction of air flow on all vents using air conditioner operating unit.
- Set fresh air blower - V2- to maximum speed on air conditioner operating unit.
- Then start engine and switch on air conditioner (indicator lamp in AC or A/C button lights up).
- Allow air conditioner to run on this setting for approx. 10 minutes (air conditioner compressor is switched on), switching vent temperature setting on air conditioner operating unit from cold to warm and back several times.

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## 5.8 Checking auxiliary air heater element - Z35-

⇒ “5.8.1 Checking activation of electric auxiliary air heater”, page 424

⇒ “5.8.2 Design and operation of the auxiliary air heater element Z35 ”, page 425

⇒ “5.8.3 Starting conditions for electric auxiliary air heater”, page 426

### 5.8.1 Checking activation of electric auxiliary air heater

**Fitted on vehicles with TDI engine and vehicles with high-voltage system (Audi A6 hybrid vehicles with petrol engine)**

**Note**

- *Vehicles with a TDI engine and no auxiliary heater and vehicles with a high-voltage system (Audi A6 hybrid vehicles with petrol engine) are fitted with an electric supplementary air heater ⇒ Audi sales literature .*
- *Vehicles with TDI engine and “auxiliary heater” as optional equipment are currently not fitted with an electrical auxiliary air heater element - Z35- for supplementary heating. In this case, the auxiliary heater assumes the function of auxiliary air heater ⇒ Auxiliary/supplementary heater; Rep. gr. 82 ; Coolant circuit with auxiliary/supplementary heater; Connection diagram - coolant hoses .*
- *Except for Audi A6 hybrid vehicles, vehicles with petrol engine are currently not fitted with a supplementary heater (an “auxiliary heater” fitted as optional equipment is not activated as a supplementary heater).*
- *Vehicles with a high-voltage system (Audi A6 hybrid) and petrol engine are currently equipped with an auxiliary air heater element - Z35- ⇒ page 424 .*
- *Audi A6 e-tron vehicles are currently provided with a high-voltage heater (PTC) - Z115- ⇒ “7.11 Removing and installing high-voltage heater (PTC) Z115 , with J848 - Audi A6 e-tron only”, page 536 .*
- *On vehicles with a petrol engine, the electric supplementary heating ( auxiliary air heater element - Z35- ) is activated by a signal from the operating unit ( Climatronic control unit - J255- ) by way of the local data bus (via the same output by which the fresh air blower control unit - J126- is activated) to the auxiliary air heater control unit - J604- . In the event of problems with the fresh air blower control unit - J126- or the fresh air blower - V2- on these vehicles, also check the auxiliary air heater control unit - J604- ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *Make sure you have the correct version of -J126- ; on vehicles with high-voltage system (hybrid vehicles) and petrol engine, for instance, additional information is transmitted via the local data bus to activate -J604- ⇒ Electronic parts catalogue .*
- *On vehicles with a start/stop system, the auxiliary air heater element - Z35- is deactivated while the stop function is active (to protect the battery).*

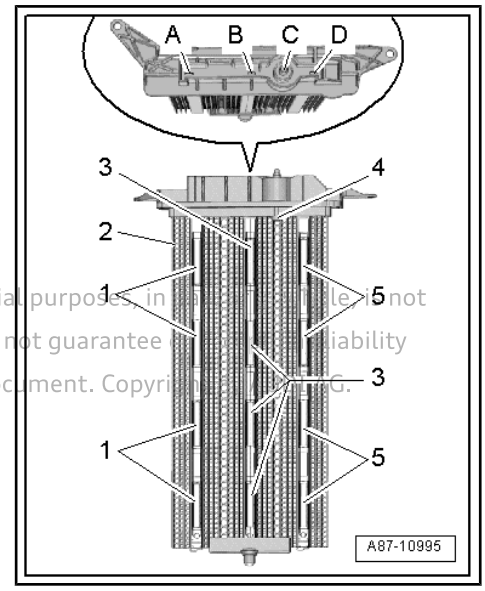
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- *The auxiliary air heater element - Z35- is activated again via the engine control unit after the engine has been re-started by the automatic start function ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

- Heat energy is supplied to the air after it has left the heat exchanger if there is a request from the operating unit ( Climatronic control unit - J255- ).
- The auxiliary air heater element - Z35- is activated by the low heat output relay - J359- and the high heat output relay - J360- by way of the corresponding engine control unit (or the auxiliary air heater control unit - J604- on vehicles with petrol engine) when a request is transmitted by the operating unit ( Climatronic control unit - J255- ). The corresponding information is exchanged between the operating unit ( Climatronic control unit - J255- ) and the engine control unit / -J604- via the data bus ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- The procedure for checking the activation of the electric auxiliary air heater is described in ⇒ Vehicle diagnostic tester ("Guided Fault Finding" for air conditioner on -J255- ).
- The function "Read measured values" for the air conditioner on -J255- indicates that the request for activation of the supplementary heater (electric supplementary heater or auxiliary heater as supplementary heater) is being transmitted to the engine control unit / -J604- or auxiliary heater as supplementary heater ⇒ Vehicle diagnostic tester ("Guided Fault Finding").

## 5.8.2 Design and operation of the auxiliary air heater element -Z35-

### Design and function




- The auxiliary air heater element - Z35- is made up of several layers of resistor elements -1, 3, 5-. Given simultaneous activation via all 3 inputs -A, B, D-, these can attain a combined heat output of approx. 1000 W. These resistor elements have a positive temperature coefficient (the resistance increases with temperature so that the current draw and thus the heat output decrease).
- The heater resistor elements -1, 3, 5- are activated via contacts -A, B, D- at the housing; the current is discharged via earth connection -C-.
- The auxiliary air heater element - Z35- is designed so that a current greater than 35 A cannot flow via any of the contacts -A, B or D- when it is switched on. Immediately after the heater is switched on, the resistance of the heater elements -1, 3 and 5- increases and the current decreases.
- To attain the maximum heat output of approx. 1000 W (3 x 333 W), the temperature of the heater elements must be low and sufficient current must be supplied by the alternator.
- Voltage is switched by way of the low heat output relay - J359- via wire -B- to the heater resistor elements -3- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Voltage is switched by way of the high heat output relay - J360- via wires -A, D- to the heater resistor elements -1, 5- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- The resistance of the heater elements depends on the temperature and is between 0.2 and 5 Ω (measured between connections -A, B, D- and earth connection -C-).

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## 5.8.3 Starting conditions for electric auxiliary air heater

**Cut-in criteria for activation of electric auxiliary air heater**

**Note**

- *Certain air conditioner functions (e.g. activation of the supplementary heating system) can be switched on and off via the MMI system (Multi Media Interface) using the "A/C" function on the "Car" / "Car systems" menu. In addition, the operation of the air conditioner can also be influenced by the settings on the MMI (Multi Media Interface) in the "A/C" function of the "Car" / "Car systems" menu. Therefore, if there are problems with these components, first check the settings on the MMI ⇒ Infotainment/MMI Operating Manual .*
- *These cut-in criteria in the operating unit ( Climatronic control unit - J255- ) must be met so that a request can be transmitted to the corresponding engine control unit/auxiliary heater.*
- *In order to be able to activate the engine control unit / -J604- and thus energise the supplementary air heater -Z35- or to activate the auxiliary heater control unit - J364- of the auxiliary heater for operation as a supplementary heater, -J255- must be correctly coded ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *On vehicles with high-voltage system (hybrid vehicles) and petrol engine, it is important that the correct version of the operating unit ( Climatronic control unit - J255- ) is installed, so that the request for activation of the supplementary heater is transmitted on the data bus to the auxiliary air heater control unit - J604- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *Checking the activation of the auxiliary air heater element - Z35- depends on the engine version. For vehicles with a diesel engine this can be found in the Guided Fault Finding for the engine fitted in the particular vehicle. For vehicles with a petrol engine, this can be found in the Guided Fault Finding for the air conditioner ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *The auxiliary air heater control unit - J604- fitted on vehicles with certain petrol engines has no diagnosis capability at present ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

– On vehicles with TDI engine, for instance, the following conditions must be met before -J255- is able to transmit a request for activation of the supplementary heater via the data bus to the engine control unit:

- Engine running for at least 8 seconds and engine speed above 500 rpm
- Engine temperature below 75 °C
- Calculated ambient temperature below 8 °C
- Electrical system voltage above 12.2 V and onboard supply control unit - J519- not transmitting any request preventing activation
- No faults stored in -J255-
- No faults stored in engine control unit and alternator load less than 30 … 77 % (depending on engine speed, with only -Z35- activated)

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- Due to the setting and the measured temperatures, -J255- has calculated that additional heating output is required to reach the temperature specified for the passenger compartment.
- -J255- has calculated that more than 90 % of the air is being routed through the heat exchanger of the air conditioning unit.
- The engine control unit has not detected any faults at -Z35- and is not transmitting any corresponding information via the local data bus to -J255- .

**Shut-off criteria for activation of electric auxiliary air heater**

**Note**

*The activation is shut off as soon as one of the cut-in criteria is no longer met in the operating unit ( Climatronic control unit - J255- ) or in the corresponding engine control unit, or if one of the shut-off criteria is detected.*

– -J255- deactivates the request for activation of the electric supplementary heater to the engine control unit (to auxiliary air heater control unit - J604- ) if:

- One of the cut-in criteria no longer met
- The calculated ambient temperature is above 11 °C.
- The capacity utilisation of the alternator is above 95 % (only with activation of -Z35- ).
- -J255- has calculated that less than 60 % of the air is being routed through the heat exchanger of the air conditioning unit (position of temperature flaps).

## 5.9 Removing and installing auxiliary air heater element - Z35-

**Removing**

– Move front right seat to rearmost position.

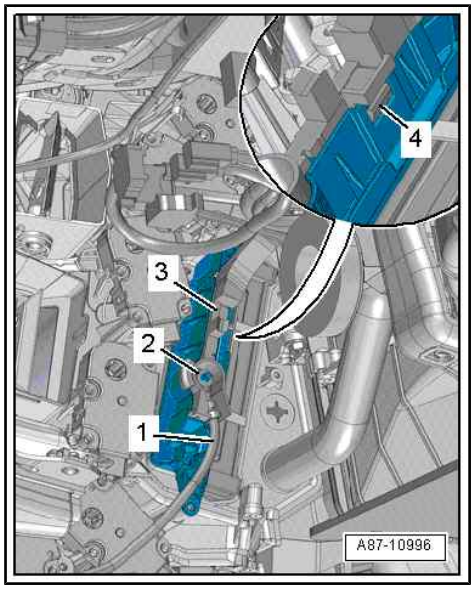
– Switch off ignition.

– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .

– Remove footwell vent (passenger side) ⇒ page 494 .

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– Unscrew nut -2- and detach earth wire -1-.
– Release retaining tab -4- and unplug electrical connector -3-.



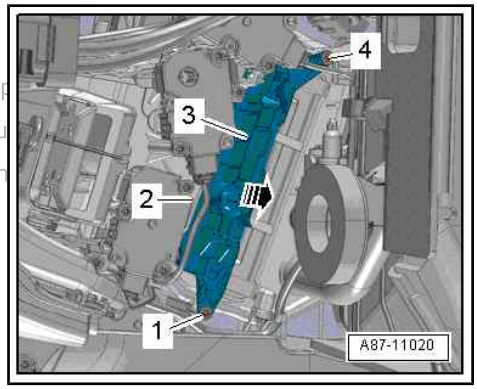

– Remove bolts -1, 4-.

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**WARNING**

***Risk of burns.***

- ***The auxiliary air heater element - Z35- may be hot if it was in operation prior to removal.***
- ***Do not touch the hot cooling surface of the auxiliary air heater element -Z35- .***




– Pull heating element -3- out of air distribution housing -2- -arrow-.

**Installing**

Install in reverse order of removal; note the following:

**Tightening torques**

- ⇒ “5.3 Exploded view - heater and air conditioning unit”, page 395

– Clean area around heater element in slot prior to installation.

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.
– Check activation and operation via engine control unit.

## 5.10 Checking heating output of actuation of temperature flaps of air conditioner

⇒ "5.10.1 Requirements for checking heating output and actuation of temperature flaps of air conditioner", page 429

⇒ "5.10.2 Checking heating output and actuation of temperature flaps - basic version", page 437

⇒ "5.10.3 Checking heating output and actuation of temperature flaps - deluxe version", page 448

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### 5.10.1 Requirements for checking heating output and actuation of temperature flaps of air conditioner

**On vehicles with high-voltage system (hybrid vehicles and Audi A6 e-tron)**

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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Working with ignition switched on or high-voltage system active

**DANGER!**

*When working on a vehicle with the ignition switched on or while the drive system is active, the engine can start unexpectedly and exhaust fumes can cause a health hazard in closed rooms. Moving parts can trap or draw in parts of the body and/or clothing (safety hazard).*

*Before switching on the ignition, perform the following steps:*

- *Move selector lever to position P*
- *Activate parking brake*
- *Switch off ignition*
- *Open bonnet*
- *Connect battery charger (e.g. battery charger - VAS 5095A- ) to jump-start connections of 12 V electrical system*
- *Switch on ignition*

– To minimise the number of automatic engine starts when the vehicle's drive system is active during test and measurement work, charge the vehicle batteries e.g. with the battery

charger 60A - VAS 5904- in battery standby mode ⇒ Electrical system; General information; Rep. gr. 27 ; Battery; Charging battery and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

– For test and measurement work that requires the vehicle's drive system to be active (READY) or the ignition to be switched on, move the selector lever to position “P”, activate the parking brake and take care to keep well clear of the engine when it is running. Set up any tools needed so that they cannot come into contact with moving parts.

**Note**

- *Also move the selector lever to position “P” and activate the parking brake before performing test and measurement work for which the ignition must be switched on but where the vehicle's drive system does not need to be active (READY).*
- *The status of the drive system (READY) is shown by the control unit in dash panel insert - J285- via the “power meter” ⇒ Owner's Manual .*
- *Activating and deactivating drive system ⇒ Owner's Manual (note display of control unit in dash panel insert - J285- ).*

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Additionally on Audi A6 e-tron

– Event memory of thermal management control unit - J1024- has been interrogated and erased ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

**Note**

*On Audi A6 e-tron vehicles, further components are installed in the engine coolant circuit ( high-voltage heater (PTC) - Z115- , thermal management coolant pump 2 - V618- etc.). These components (which are activated and monitored by -J1024- ) ensure that sufficient heat is available in electric mode to heat up the passenger compartment*
*⇒ “7.3 Incorporation of air conditioner into coolant circuit of high-voltage system - Audi A6 e-tron only”, page 520* .

**All vehicles**

- Coolant circuit has been bled as specified ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
- Engine warm (coolant temperature above 80 °C)
- Radiator and condenser clean (clean if necessary)
- All air ducts, covers and seals OK and properly installed
- Air flow through dust and pollen filter not impeded by dirt ⇒ page 472
- Air intake of air conditioning unit (in fresh air and air recirculation mode) not impeded by dirt or retrofitted components.
- Air outlet from rear footwell vents (beneath front seats) not obstructed by floor mats or other objects (check).
- Vehicles with “deluxe” version of the air conditioner: air duct for glove box cooling fitted as specified ⇒ page 497 (connection for glove box cooling is sealed off on “basic” version of air conditioner).
- Vehicle not exposed to direct sunlight

- Event memory of operating unit ( Climatronic control unit - J255- , and if applicable of rear Climatronic operating unit - E265- ) interrogated and erased, basic setting performed and coding of -J255- (and -E265- , if fitted) checked ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Adaption of -J255- (and if applicable -E265- ) checked ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Vehicles with “basic” air conditioner: following air conditioner settings made in MMI (Multi Media Interface) via “A/C” function in “Car” / “Car systems” menu (if possible): Air flow “A/C mode medium”.
- Vehicles with “deluxe” version air conditioner: following air conditioner settings made in MMI (Multi Media Interface) by way of “A/C” function in “Car” / “Car systems” menu (if possible): Auto recirculation “Off”, Air flow “A/C mode medium” and footwell temperature “medium” (upward-pointing arrow).

**Note**

- *The functions for setting the air conditioner in the MMI (Multi Media Interface) (“A/C” function in “Car” / “Car systems” menu) vary depending on the version of the air conditioner, the production period and the vehicle model (some functions are not provided on all models) ⇒ Owner's Manual .*
- *For example, on USA models with a “basic” version air conditioner, there is currently no provision for making settings by way of the MMI ⇒ Owner's Manual .*

- Open all vents in dash panel and rear centre console.
- On “deluxe” version, open vents in B-pillars.
- Bonnet closed

**On vehicles with high-voltage system (hybrid vehicles and Audi A6 e-tron)**

- Ignition on and drive system activated (READY), the engine only starts or runs if warmer coolant is required to attain the set temperature in the passenger compartment or e.g. the drive battery - A2- (hybrid battery) is not sufficiently charged.

**DANGER!**

***When working on a vehicle with the ignition switched on or while the drive system is active, the engine can start unexpectedly and exhaust fumes can cause a health hazard in closed rooms. Moving parts can trap or draw in parts of the body and/or clothing (safety hazard).***

***Before switching on the ignition, perform the following steps:***

- ***Move selector lever to position P***
- ***Activate parking brake***
- ***Switch off ignition***
- ***Open bonnet***
- ***Connect battery charger (e.g. battery charger - VAS 5095A- ) to jump-start connections of 12 V electrical system***
- ***Switch on ignition***

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- With the ignition on and “warm” selected on air conditioner operating unit ( Climatronic control unit - J255- ; readout“HI” on display of air conditioner operating unit and MMI), the following components (if fitted) are activated ⇒ page 433 .

**Vehicles without high-voltage system**

- Engine running
- With the engine running and “warm” selected on -J255- (e.g. readout “HI” on display of -J255- and -E265- on “deluxe” air conditioner for driver and front passenger side), the following components (if fitted) are activated ⇒ page 433 .

**All vehicles**

- With the engine running (drive system active/READY on vehicles with high-voltage system) and “warm” selected on air conditioner operating unit ( Climatronic control unit - J255- ; readout “HI” on display of air conditioner operating unit and MMI), the following components (if fitted) are activated as follows:

– Coolant shut-off valve - N82- (if fitted) is not activated.

– Vehicles with auxiliary heater: Heater coolant shut-off valve - N279- is not activated.

– Coolant circulation pump - V50- (if fitted) is activated.

– Vehicles with auxiliary heater: Circulation pump - V55- is activated.

**Additionally on Audi A6 e-tron**

– Thermal management coolant pump 2 - V618- is activated.

– High-voltage heater (PTC) - Z115- is activated (depending on coolant temperature and ambient temperature).

– Coolant changeover valve 3 - N634- is activated (depending on coolant temperature and ambient temperature).

**Note**

- *Operation of -Z115- , -N634- and -V618- can be checked e.g. by activating them via the thermal management control unit -J1024- and interrogating temperature senders -G903- and -G908- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *-N634- is activated if the coolant temperature in the engine is lower than a specified value ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- *-N634- has the same design and function as the heater coolant shut-off valve - N279- on vehicles with an auxiliary heater.*
- *If -N634- does not close fully while activated, this may result in insufficient heat output.*

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**All vehicles**

**Note**

- *If the coolant shut-off valve - N82- / heater coolant shut-off valve - N279- is activated, the passenger compartment is not heated ⇒ Vehicle diagnostic tester ("Guided Fault Finding"). Operation of coolant shut-off valve: -N82- ⇒ page 523 , -N279- ⇒ page 525*
- *If -N82- / -N279- does not open fully when not activated, problems may also be encountered with a lack of heat output.*
- *If, on vehicles fitted with an auxiliary heater, the circulation pump - V55- is activated and the heater coolant shut-off valve - N279- is not, refer to ⇒ Auxiliary/supplementary heater; Rep. gr. 82 ; Overview of fitting locations - auxiliary/supplementary heater; Overview of fitting locations - components not located in passenger compartment .*
- *If fitted, the potentiometer for rear temperature selection - G538- is set to "warm". -G538- is only fitted in the rear centre console of a certain country-specific version on vehicles with an air conditioner of "basic" type.*

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For checking the heating output it is recommended to call up the displays for the following measured values of -J255- :

- Measured values of following temperature sensors: Vent temperature senders -G150- / -G151- , footwell vent temperature senders -G261- / -G262- , evaporator output temperature sender - G263- )
- Activation of the following components: fresh air blower - V2- , radiator fan - V7- , radiator fan 2 - V177-
- Activation of the following components (if fitted): coolant circulation pump - V50- , coolant shut-off valve - N82-
- Activation and measured values of the following components (on Audi A6 e-tron vehicles): thermal management coolant pump 2 - V618- , high-voltage heater (PTC) - Z115- , coolant temperature sender 2 for thermal management - G903- , coolant temperature sender 7 for thermal management - G908- (all in thermal management control unit - J1024- ) ⇒ Vehicle diagnostic tester ("Guided Fault Finding")
- Activation of the following components on vehicles with auxiliary heater: Circulation pump - V55- , heater coolant shut-off valve - N279-
- Activation of the air conditioner compressor regulating valve - N280- (compressor shut-off criteria and actual compressor current) on vehicles with no high-voltage system
- Activation of electrical air conditioner compressor - V470- (compressor shut-off criteria and compressor speed) on vehicles with high-voltage system
- Coolant temperature and ambient temperature
- Measured value of refrigerant pressure sender ( -G395- / -G65- )

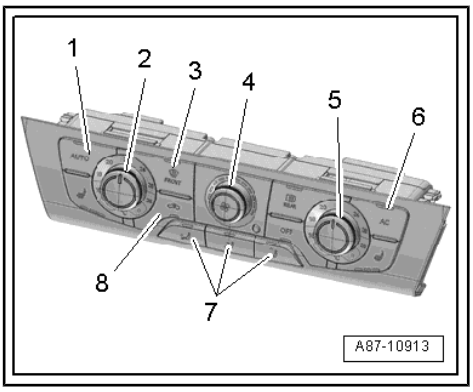
**Note**

*Different designation (depending on vehicle). On the A6 e-tron, the sender -G395- is referred to as the high-pressure sender - G65- . On this vehicle, it exchanges data with the thermal management control unit - J1024- . On all vehicles except the Audi A6 e-tron, this sender is referred to as the refrigerant pressure and temperature sender - G395- . On these vehicles, it exchanges data with the operating unit ( Climatronic control unit - J255- ) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

### Checking

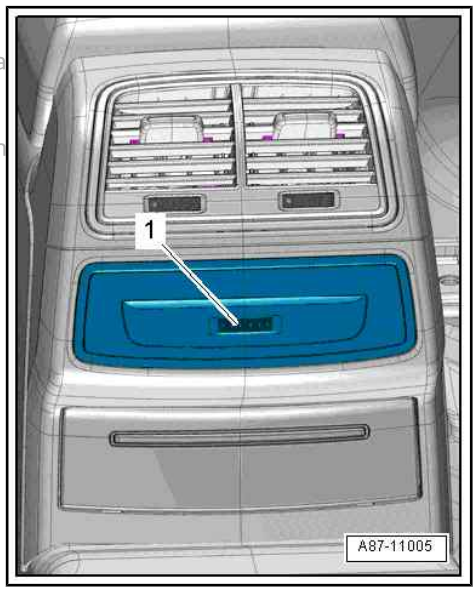
Following settings made on operating unit ( Climatronic control unit - J255- ), “basic” version:

- “Auto” mode - lamp in AUTO button -1- on
- Temperature setting “cold” – both rotary controls -2, 5- on “cold” stop
- Air conditioner compressor on – lamp in AC button -6- on
- Fresh air blower -4- set to “maximum speed”




If fitted, potentiometer for rear temperature selection - G538- -item 1- set to “cold” stop

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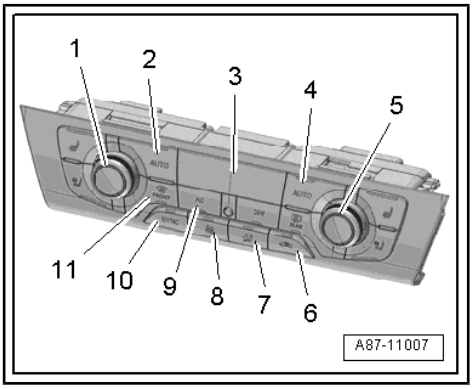



**Note**

*The potentiometer for rear temperature selection - G538- is only fitted in the rear centre console of a certain country-specific version on vehicles with an air conditioner of “basic” type.*

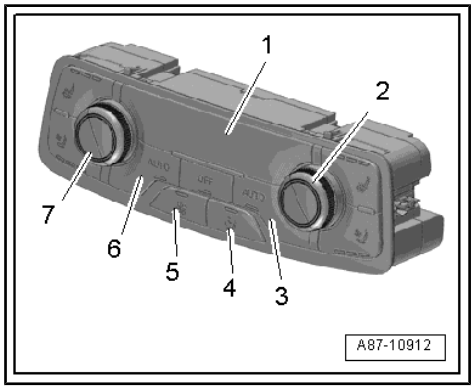
Following settings made on operating unit ( Climatronic control unit - J255- ), “deluxe” version:

- “Auto” mode – lamps in both AUTO buttons -2, 4- on
- Temperature setting “cold” via rotary controls -1, 5- – display “LO” for driver and front passenger side in display -3- of -J255- and in display of Multi Media Interface
- Air conditioner compressor on – lamp in AC button -9- on
- Setting for fresh air blower -8- “maximum speed” – display on -J255- and Multi Media Interface display at speed setting “10” or higher



Following settings made on rear Climatronic operating unit - E265- (if fitted):

- “Auto” mode – lamps in both AUTO buttons -3, 6- on
- Temperature setting “cold” via rotary controls -2, 7- – display “LO” for left and right side in display -1-
- Setting for fresh air blower -5- “maximum speed” – display speed “5” or higher




**Note**

- *Manual alteration of the fresh air blower speed causes the lamps in the AUTO buttons to go out.*
- *The maximum possible fresh air blower speed depends on several factors (electrical system voltage etc.).*

– Activation and operation of supplementary heater OK on vehicles with TDI engine and vehicles with high-voltage system (hybrid vehicles and Audi A6 e-tron vehicles with petrol engine).

**Note**

- *The type of supplementary heater depends on the vehicle equipment. Vehicles with TDI engine and no “auxiliary heater” as optional extra and vehicles with high-voltage system (hybrid vehicles with petrol engine) are fitted with an auxiliary air heater element - Z35- (Audi A6 hybrid) or a high-voltage heater (PTC) - Z115- (Audi A6 e-tron). Vehicles with an auxiliary heater (as optional extra) on which the auxiliary heater is activated as a supplementary heater are currently not fitted with -Z35- (auxiliary heater activated as supplementary heater ⇒ page 427 ).*
- *If there are problems with insufficient heating output at low ambient temperatures on vehicles with TDI engine, check the settings in the MMI for the supplementary heater as well as the activation and operation of the auxiliary/supplementary heater ⇒ page 424 or ⇒ Auxiliary/supplementary heater; Rep. gr. 82 ; Auxiliary/supplementary heater (depending on vehicle equipment).*
- *Certain air conditioner functions can be switched on and off via the MMI system (Multi Media Interface) using the “A/C” function on the “Car” / “Car systems” menu. In addition, the operation of the air conditioner can also be influenced by the settings on the MMI (Multi Media Interface) in the “A/C” function of the “Car” / “Car systems” menu. Therefore, if there are problems with these components, first check the settings on the MMI ⇒ Infotainment/MMI Operating Manual .*
- *Vehicles with a high-voltage system (hybrid vehicles) and petrol engine are currently equipped with a auxiliary air heater element - Z35- (Audi A6 hybrid) or a high-voltage heater (PTC) - Z115- (Audi A6 e-tron) ⇒ page 424 .*

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**Functions with engine running (not hybrid vehicles) / drive system activated (vehicles with high-voltage system):**

**Note**

*On vehicles with a high-voltage system (hybrid vehicles or Audi A6 e-tron) and vehicles with a start/stop system, the engine may only run if additional heating output is required to attain the set temperature.*

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– Radiator fan(s) ( radiator fan - V7- and radiator fan 2 - V177- ) running (activation and speed governed by pressure in refrigerant circuit and engine temperature)

**Note**

*Depending on the version of the operating unit ( Climatronic control unit - J255- or thermal management control unit - J1024- ), the radiator fan(s) ( radiator fan - V7- and radiator fan 2 - V177- ) is/are only activated when a certain pressure is exceeded in the refrigerant circuit (currently a pressure of approx. 9 bar upwards). Activation of the radiator fan(s) is displayed in the "Read measured values" function ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

– The fresh air blower runs at maximum speed.

**Note**

*The maximum possible fresh air blower speed depends on several factors (electrical system voltage etc.).*

– The air conditioner switches to air recirculation mode (approx. 1 minute after the engine is started, the air flow/fresh air flap is closed and the air recirculation flap is opened; air is drawn in from the passenger compartment by the fresh air blower - V2- underneath the dash panel / behind the glove box).

**Note**

*If any of these requirements is not satisfied, interrogate the event memory, perform final control diagnosis and read out the corresponding measured value ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

If the above requirements are fulfilled, check the heat output and actuation of the temperature flaps: "basic" version ⇒ page 437 , "deluxe" version ⇒ page 448 .

## 5.10.2 Checking heating output and actuation of temperature flaps - "basic" version

**Note**

*The "basic" version air conditioner is currently not available for vehicles with high-voltage system (Audi A6 hybrid vehicles).*

### On vehicles with high-voltage system (Audi A6 e-tron)

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

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**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

DANGER!

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

Working with ignition switched on or high-voltage system active

DANGER!

*When working on a vehicle with the ignition switched on or while the drive system is active, the engine can start unexpectedly and exhaust fumes can cause a health hazard in closed rooms. Moving parts can trap or draw in parts of the body and/or clothing (safety hazard).*

*Before switching on the ignition, perform the following steps:*

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- *Move selector lever to position P*
- *Activate parking brake*
- *Switch off ignition*
- *Open bonnet*
- *Connect battery charger (e.g. battery charger - VAS 5095A- ) to jump-start connections of 12 V electrical system*
- *Switch on ignition*

– To minimise the number of automatic engine starts when the vehicle's drive system is active during test and measurement work, charge the vehicle batteries e.g. with the battery

charger 60A - VAS 5904- in battery standby mode ⇒ Electrical system; General information; Rep. gr. 27 ; Battery; Charging battery and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

– For test and measurement work that requires the vehicle's drive system to be active (READY) or the ignition to be switched on, move the selector lever to position “P”, activate the parking brake and take care to keep well clear of the engine when it is running. Set up any tools needed so that they cannot come into contact with moving parts.

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**Note**

- *Also move the selector lever to position “P” and activate the parking brake before performing test and measurement work for which the ignition must be switched on but where the vehicle's drive system does not need to be active (READY).*
- *The status of the drive system (READY) is shown by the control unit in dash panel insert - J285- via the “power meter” ⇒ Owner's Manual .*
- *Activating and deactivating drive system ⇒ Owner's Manual (note display of control unit in dash panel insert - J285- ).*

– Activate drive system (observe display in control unit in dash panel insert - J285- ) ⇒ Owner's Manual .

**All vehicles**

Requirements satisfied ⇒ page 429

– Close bonnet.

– Close doors, bonnet, windows, sun roof and rear lid.

– Open all vents in dash panel and rear centre console.

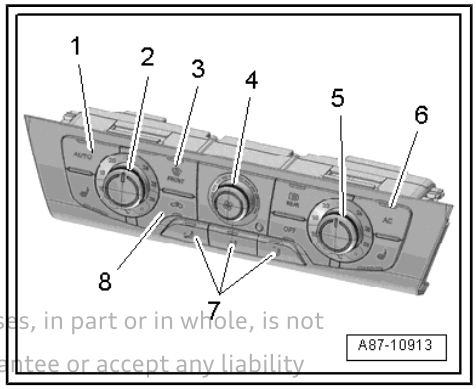
– Switch on ignition and activate drive system (READY); engine starts automatically if required (on vehicles with start/stop system and Audi A6 e-tron vehicles).

– Start engine (not on Audi A6 e-tron vehicles).

**Note**

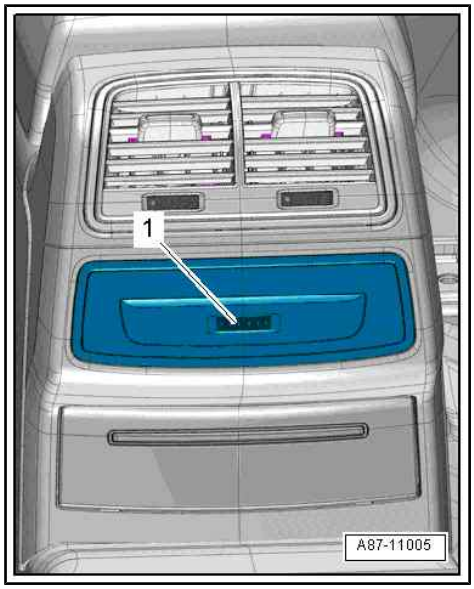
- *The potentiometer for rear temperature selection - G538- is only fitted in the rear centre console in a certain country-specific version.*
- *The temperature flaps for the rear vents are activated (by the rear temperature flap control motor - V137- ) via a characteristic curve stored in the operating unit ( Climatronic control unit - J255- ). If there is a considerable difference between the settings for the left and right sides in -J255- and/or the setting for the potentiometer for rear temperature selection - G538- , the temperature flaps for the rear vents are no longer moved to the end stops. The temperature flaps for the temperature of the air from the rear vents are then only actuated such that this air tends to be slightly warmer or colder than for the front vents, depending on the setting on -G538- .*

Following settings made on operating unit ( Climatronic control unit - J255- ):




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- “Auto” mode - lamp in AUTO button -1- on
- Temperature setting “cold” – both rotary controls -2, 5- on “cold” stop
- Air conditioner compressor on – lamp in AC button -6- on
- Fresh air blower -4- set to “maximum speed”
- Set direction of air flow to “footwell” and “dash panel vents” using buttons -7-.
- If fitted, potentiometer for rear temperature selection - G538- -item 1- set to “cold” stop




**Note**

- ♦ *The indicator lamp in the AUTO button goes out when the air flow direction and/or the fresh air blower speed is/are altered manually.*
- ♦ *The maximum possible fresh air blower speed depends on several factors (electrical system voltage etc.).*
- ♦ *Vents in dash panel and rear centre console open*

– Select “Read measured values” function for air conditioner on -J255- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Operate air conditioner at maximum cooling output for several minutes.

- Air conditioner compressor on - lamp in AC button on

– Compare measured value of -G263- to measured values of -G150- , -G151- , -G261- and -G262- .

**Specifications:**

- ♦ After 5 minutes, the measured values of the temperature sensors (downstream of the heat exchanger) -G150- , -G151- , -G261- , -G262- and the measured air temperature from the rear centre console vents must not be more than 9 °C higher than the value for -G263- .

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**Note**

*Due to the design of the air conditioning unit and the routing of air flow in the vehicle there is always a certain increase in the temperature of the air as it is conveyed from the evaporator to the vents.*

– If the required values for the front temperature sensors are not reached, perform the fault finding measures to be taken if there is an increase in temperature downstream of the evaporator ⇒ page 448 .

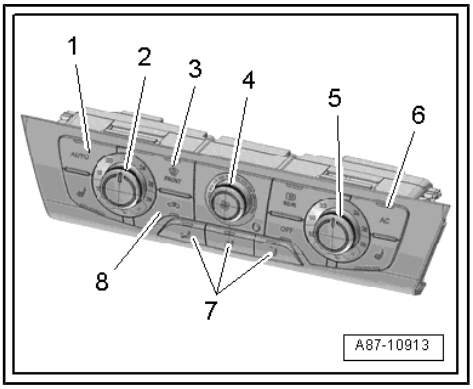
**Note**

*If the measured value for one or two temperature sensors differs from the measured values of the other temperature sensors, check this temperature sensor and the control motor which actuates the temperature flap upstream of this temperature sensor ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

– If the required values for the air from the rear centre console vent are not reached, perform fault finding
⇒ “3.7.6 Fault finding if air conditioner cooling output is OK at front, but required values are not attained at rear - basic version”, page 59 .

Following settings made on operating unit ( Climatronic control unit - J255- ):

- Temperature setting “warm” – both rotary controls -2, 5- on “warm” stop




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- If fitted, potentiometer for rear temperature selection - G538- -item 1- set to “warm” stop

– Read off measured values displayed for the various temperature sensors -G150- , -G151- , -G261- and -G262- .

**Specifications:**

♦ The measured temperature for all temperature sensors should increase to a value above 50 °C (depending on current engine temperature).

**Note**

*On vehicles with no coolant circulation pump - V50- / circulation pump - V55- , it may be necessary to increase the engine speed slightly to approx. 1400 rpm to ensure the required flow of coolant through the heating system heat exchanger in the air distribution housing.*

If specified values are attained at all temperature sensors:

♦ Continuation of check (checking partition for temperature regulation between left and right sides in air conditioning unit ⇒ page 446 ).

If the required values are not attained at any of the temperature sensors (even at increased engine speed):

♦ If fitted, check activation and operation of coolant circulation pump - V50- and coolant shut-off valve - N82- ( thermal management coolant pump 2 - V618- on Audi A6 e-tron vehicles) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

♦ Vehicles with auxiliary heater: Check activation and operation of circulation pump - V55- and heater coolant shut-off valve - N279- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

♦ Check incorporation of air conditioner into coolant circuit ⇒ page 509 .

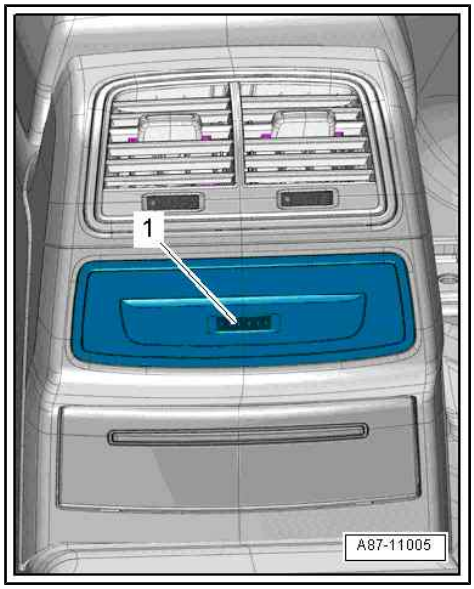
♦ Check that coolant circuit is properly bled ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

♦ Check heating output of air conditioner at an engine speed of 1500 to 2000 rpm (i.e. repeat test at a higher engine speed). If the required heating output is attained at this engine speed, the fault is not in the air conditioning unit, but in the coolant circuit (incorporation of air conditioner into coolant circuit, delivery rate of engine's coolant pump, flow of coolant through heat exchanger of air conditioning unit, incorporation of -V50- / -N82- or -V55- / -N279- into coolant circuit, or similar) ⇒ page 509 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

♦ Check thermostat in engine (engine coolant may not warm up properly if thermostat is defective) ⇒ Engine, mechanics; Rep. gr. 19 ; Coolant pump/thermostat assembly; Checking thermostat

♦ Check engine coolant pump for correct operation (if coolant pump is faulty or if -V50- / -V55- (or thermal management coolant pump 2 - V618- on Audi A6 e-tron vehicles) is not incorporated correctly, there may not be enough coolant flowing through the heat exchanger for heater in the air distribution housing) ⇒ Engine, mechanics; Rep. gr. 19 ; Coolant pump/thermostat assembly; Exploded view - electric coolant pump .

If specified values are not attained at just one or two temperature sensors:

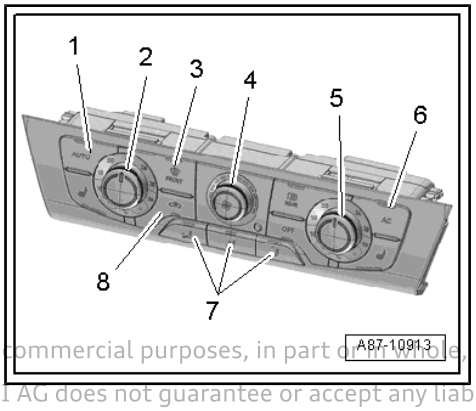



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- Check that coolant circuit is properly bled ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
- Check activation and operation of the various control motors for temperature flaps in air conditioning unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)
- Check measured values of the various temperature sensors ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- If the temperatures determined in the “cold” setting are too high, perform the fault finding measures to be taken if there is a temperature increase downstream of the evaporator ⇒ page 448 .
- Check the foam seal at the heating system heat exchanger of the air distribution housing if the temperatures determined in the “warm” setting are too low or there is an excessive difference between the left and right sides ⇒ page 476 .
- On vehicles with an auxiliary air heater element - Z35- , check the partition between the left and right side in the air distribution housing through the -Z35- installation slot ⇒ page 427 .

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**Continuation of heating output check for air conditioning unit (checking partition for temperature regulation between left and right sides in air conditioning unit)**




– Using rotary control -5- on operating unit ( Climatronic control unit - J255- ), set temperature for passenger side (front and rear) to “cold”.
– Leave temperature setting for driver side (front and rear) on “warm”.
– Select “Read measured values” function for air conditioner on -J255- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– Operate air conditioner in this setting for several minutes.

• Air conditioner compressor on - lamp in AC button -6- on

– Compare measured value of evaporator output temperature sender - G263- to measured values of -G150- , -G151- , -G261- and -G262- .

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**Note**

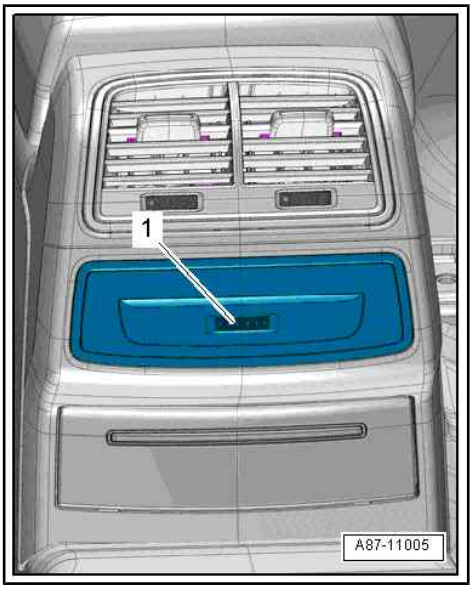
- *If the temperature setting for one side (driver or passenger side) is “warm”, the specified outflow temperature at the evaporator is regulated by the operating unit ( Climatronic control unit - J255- ) to a higher value (up to approx. 10 °C).*
- *The temperature of the air emerging from the rear vents is regulated by the operating unit ( Climatronic control unit - J255- ).*

**Specifications:**

- At -G150- and -G261- the temperature should remain above 45 °C (depending on current engine temperature).
- Within 5 minutes, the temperature at -G151- and -G262- should drop to a value which must not exceed the measured value of the evaporator output temperature sender - G263- by more than 15 °C.
- With the operating unit set to “warm” for one side and “cold” for the other, the air for the vent in the rear centre console is no longer regulated (maximum heating).
- The temperatures displayed in the “Read measured values” function for the temperature sensors on one side ( -G150- and -G261- as well as -G151- and -G262- ) settle at a similar level within 5 minutes (temperature difference in each case less than 9 °C).

If the readings match the specifications, the check is complete for vehicles with no potentiometer for rear temperature selection -G538- .

**Vehicles with potentiometer for rear temperature selection - G538- :**




– Set temperature for right side to “warm” on -J255- and wait several minutes.

– Measure temperature of air emerging from rear centre console vent.

– On -G538- , set thumbwheel -1- to “cold”.

• Temperature of air emerging from rear centre console vents decreases.

– On -G538- , set thumbwheel to “warm”.

• Temperature of air emerging from rear centre console vents increases again.

**Note**

*Depending on the setting on -G538- and -J255- , the temperature of the air from the rear centre console vent is only regulated as slightly “cooler” or “warmer” than that from the dash panel vents.*

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– Check operation of -G538- ⇒ Vehicle diagnostic tester (“Guided Fault Finding” for -J255- ).

Check is complete if specifications are attained.

**All versions (continued):**

**Note**

*After setting the temperature for the driver side to “cold” and for the passenger side to “warm”, this check can be repeated with the opposite measured values.*

Check the following if readings do not match specifications:

♦ Check activation and operation of the various control motors for temperature flaps in air conditioning unit (depending on where specifications were not attained) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

♦ Check foam seal at heating system heat exchanger of air conditioning unit (depending on where specifications were not attained) ⇒ page 476 .

♦ Check that coolant circuit is properly bled ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

♦ On vehicles with an auxiliary air heater element - Z35- , check the partition between the left and right side in the air conditioning unit through the installation slot for -Z35- ⇒ page 427 .

♦ If fitted, check activation and operation of coolant circulation pump - V50- and coolant shut-off valve - N82- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

♦ On vehicles with auxiliary heater, check activation and operation of circulation pump - V55- and heater coolant shut-off valve - N279- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

- Check engine coolant pump for correct operation (if coolant pump is faulty or if -V50- / -V55- (or thermal management coolant pump 2 - V618- on Audi A6 e-tron vehicles) is not incorporated correctly, there may not be enough coolant flowing through the heat exchanger for heater in the front and rear air conditioning unit) ⇒ Engine, mechanics; Rep. gr. 19 ; Coolant pump/thermostat assembly; Exploded view - coolant pump .
- Check incorporation of air conditioner into coolant circuit ⇒ page 509 .

**Fault finding if temperature increases downstream of evaporator - in air conditioning unit**

– Use e.g. hose clamps (up to 40 mm) - 3093- to clamp off the two coolant hoses going to heat exchanger of air conditioning unit ⇒ page 476 .

– Repeat check of heating output and actuation of temperature flaps with “cold” setting selected on operating unit ⇒ page 437 .

– Compare measured value of evaporator output temperature sender - G263- to measured values of -G150- , -G151- , -G261- and -G262- .

– Do the measured values of the temperature sensors correspond with each other (with coolant hoses clamped off), and are the specified values attained?

↓ yes ↓

– Detach hose clamps (up to 40 mm) - 3093- from both coolant hoses.

↓

– Check activation and operation of temperature flap control motor -V158- / -V159- and rear temperature flap control motor -V137- and actuation of corresponding temperature flap ⇒ “6.2 Air intake and air outlet openings”, page 492 .

↓

- Actuation and operation of temperature flaps OK?

↓ yes ↓

– Check operation of temperature flap causing increase in temperature increase in “cold” setting ⇒ “5.2 Exploded view - flaps and partitions in air distribution housing”, page 393 .

– Check heating output and actuation of temperature flaps again ⇒ page 437 .

↓ no ↓

– Check that sender with deviating measured value is installed correctly, and check electrical connections for contact resistance ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

– Eliminate cause of incorrect measured value; renew defective sender if necessary.

↓ no ↓

– Eliminate cause of malfunction ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

– Check heating output and actuation of temperature flaps again ⇒ page 437 .

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## 5.10.3 Checking heating output and actuation of temperature flaps - “deluxe” version

**On vehicles with high-voltage system (hybrid vehicles and Audi A6 e-tron)**

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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DANGER!

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

Working with ignition switched on or high-voltage system active

DANGER!

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*When working on a vehicle with the ignition switched on or while the drive system is active, the engine can start unexpectedly and exhaust fumes can cause a health hazard in closed rooms. Moving parts can trap or draw in parts of the body and/or clothing (safety hazard).*

*Before switching on the ignition, perform the following steps:*

- *Move selector lever to position P*
- *Activate parking brake*
- *Switch off ignition*
- *Open bonnet*
- *Connect battery charger (e.g. battery charger - VAS 5095A- ) to jump-start connections of 12 V electrical system*
- *Switch on ignition*

– To minimise the number of automatic engine starts when the vehicle's drive system is active during test and measurement work, charge the vehicle batteries e.g. with the battery

charger 60A - VAS 5904- in battery standby mode ⇒ Electrical system; General information; Rep. gr. 27 ; Battery; Charging battery and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

– For test and measurement work that requires the vehicle's drive system to be active (READY) or the ignition to be switched on, move the selector lever to position “P”, activate the parking brake and take care to keep well clear of the engine when it is running. Set up any tools needed so that they cannot come into contact with moving parts.

**Note**

- *Also move the selector lever to position “P” and activate the parking brake before performing test and measurement work for which the ignition must be switched on but where the vehicle's drive system does not need to be active (READY).*
- *The status of the drive system (READY) is shown by the control unit in dash panel insert - J285- via the “power meter” ⇒ Owner's Manual .*
- *Activating and deactivating drive system ⇒ Owner's Manual (note display of control unit in dash panel insert - J285- ).*

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– Activate drive system (observe display in control unit in dash panel insert - J285- ) ⇒ Owner's Manual .

**All vehicles**

Requirements satisfied ⇒ page 429

– Close bonnet.

– Close doors, bonnet, windows, sun roof and rear lid.

– Open all vents in dash panel and rear centre console.

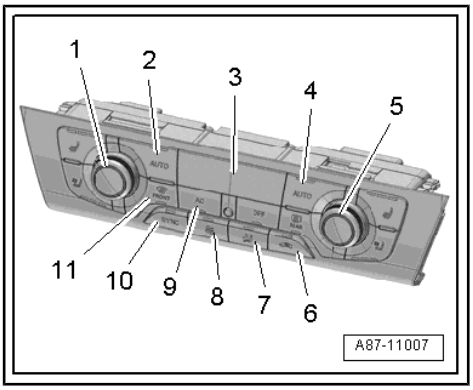
– Open vents in B-pillars.

– Close vent for glove box cooling in glove box.

– Switch on ignition and activate drive system (READY); engine starts automatically if required (on vehicles with start/stop system and vehicles with high-voltage system).

– Start engine (not on vehicles with high-voltage system).

Following settings made on operating unit ( Climatronic control unit - J255- ):



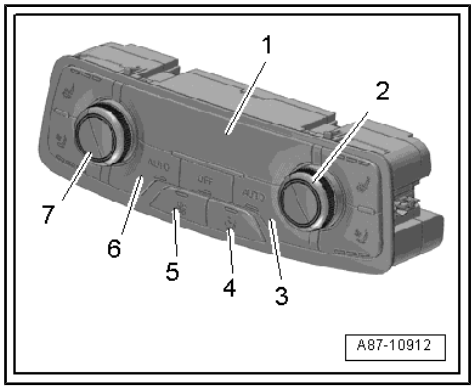

- “Auto” mode – lamps in both AUTO buttons -2, 4- on
- Temperature setting “cold” via rotary controls -1, 5- – display “LO” for driver and front passenger side in display -3- of -J255- and in display of Multi Media Interface
- Air conditioner compressor on – lamp in AC button -9- on
- Setting for fresh air blower -8- “maximum speed” – display on -J255- and Multi Media Interface display at speed setting “10” or higher

**Note**

*When you press the SYNC button -10- on -J255- , the settings for the driver side are also applied for the front passenger side and for -E265- .*

Following settings made on rear Climatronic operating unit -E265- :

- "Auto" mode – lamps in both AUTO buttons -3, 6- on
- Temperature setting "cold" via rotary controls -2, 7- – display "LO" for left and right side in display -1-
- Setting for fresh air blower -5- "maximum speed" – display speed "5" or higher
- Using button -4- and rotary controls -2, 7-, set direction of air flow to "centre console vents" and "B-pillar vents" – -E265- display.




**Note**

- ♦ *The indicator lamps in the two AUTO buttons go out when the direction of air flow and/or the fresh air blower speed is/are altered manually.*
- ♦ *The maximum possible fresh air blower speed depends on several factors (electrical system voltage etc.).*
- ♦ *Vents in dash panel, B-pillars and rear centre console open*

– Select "Read measured values" function for air conditioner on -J255- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").

– Operate air conditioner at maximum cooling output for several minutes.

- Air conditioner compressor on - lamp in AC button on

– Compare measured value of -G263- to measured values of -G150- , -G151- , -G261- and -G262- .

**Specifications:**

- ♦ After 5 minutes, the measured values for the temperature sensors (downstream of the heat exchanger) -G150- , -G151- , -G261- and -G262- must not be more than 9 °C higher than the value for -G263- (note down measured value of -G263- ).

**Note**

*Due to the design of the air conditioning unit and the routing of air flow in the vehicle there is always a certain increase in the temperature of the air as it is conveyed from the evaporator to the vents.*

If the required values for the front temperature sensors are not reached, perform the fault finding measures to be taken if there is an increase in temperature downstream of the evaporator ⇒ page 459 .

**Note**

*If the measured value for one or two temperature sensors differs from the measured values of the other temperature sensors, check this temperature sensor and the control motor which actuates the temperature flap upstream of this temperature sensor ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

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– Terminate “Guided Fault Finding” for air conditioner on -J255- , and select “Read measured values” function on rear Climatronic operating unit - E265- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– Compare determined measured value of -G263- determined previously to measured values of -G635- , -G636- , -G637- and -G638- .

**Specifications:**

◆ The measured values displayed for -G635- , -G636- , -G637- and -G638- must not be more than 9 °C higher than the measured value displayed for the evaporator output temperature sender - G263- .

If the required values are not attained, perform fault finding measures ⇒ page 60 .

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Following settings made on operating unit ( Climatronic control unit - J255- ):

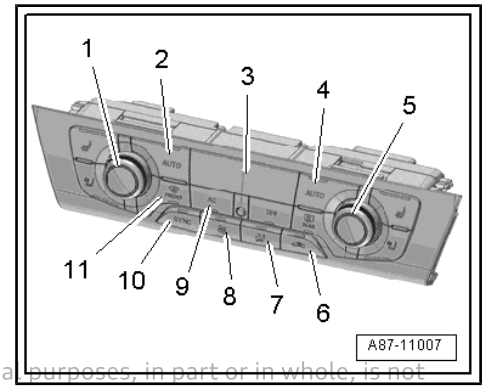
– Using rotary controls -1, 5- on operating unit ( Climatronic control unit - J255- ), set temperature for driver and passenger sides to “warm”.

• “HI” on display -3- of -J255- and rear Climatronic operating unit - E265-

– Press SYNC button -10- on -J255- .

• The settings for the front driver side are also applied for the passenger side and on -E265- .

• The display for the temperature settings changes for all vents from “LO” to “HI” (driver and passenger side, rear left and right).




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**Note**

*If the temperature selected for the driver side on -J255- is not applied for all vents, press the SYNC button on -J255- again.*

– Select “Read measured values” function for air conditioner on -J255- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Read off measured values displayed for the various temperature sensors -G150- , -G151- , -G261- and -G262- .

**Specifications:**

♦ The measured temperature for all temperature sensors should increase to a value above 50 °C (depending on current engine temperature).

**Note**

♦ *On vehicles with no coolant circulation pump - V50- / circulation pump - V55- , it may be necessary to increase the engine speed slightly to approx. 1400 rpm to ensure the required flow of coolant through the heating system heat exchanger in the air distribution housing.*

♦ *On vehicles with start/stop system and vehicles with high-voltage system, reduce the speed of the fresh air blower - V2- if applicable. With the engine stopped and maximum fresh air blower speed, the delivery of the coolant circulation pump - V50- may not always be sufficient to attain the required heat output.*

♦ *On vehicles with start/stop system and vehicles with high-voltage system (Audi A6 hybrid vehicles), the flow of coolant through the heating system heat exchanger in the air conditioning unit is maintained by the coolant circulation pump - V50- when the engine is stopped.*

♦ *On vehicles with high-voltage system (Audi A6 e-tron vehicles), the flow of coolant through the heating system heat exchanger in the air conditioning unit is maintained by the thermal management coolant pump 2 - V618- when the engine is stopped.*

If specified values are attained at all temperature sensors:

♦ Continuation of check (checking rear heating output for vehicles with a rear Climatronic operating unit - E265- ⇒ page 456 ).

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If the required values are not attained at any of the temperature sensors (even at increased engine speed or reduced blower speed at -V2- ):

- If fitted, check activation and operation of coolant circulation pump - V50- and coolant shut-off valve - N82- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Vehicles with auxiliary heater: Check activation and operation of circulation pump - V55- and heater coolant shut-off valve - N279- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Check activation and measured values of the following components (on Audi A6 e-tron vehicles): thermal management coolant pump 2 - V618- , high-voltage heater (PTC) - Z115- , coolant temperature sender 2 for thermal management - G903- , coolant temperature sender 7 for thermal management - G908- (all in thermal management control unit - J1024- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Check incorporation of air conditioner into coolant circuit ⇒ page 509 .
- Check that coolant circuit is properly bled ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
- Check heating output of air conditioner at an engine speed of 1500 to 2000 rpm (i.e. repeat check at a higher engine speed). If the required heating output is attained at this engine speed, the fault is not in the air conditioning unit, but in the coolant circuit (incorporation of air conditioner into coolant circuit, delivery rate of engine's coolant pump, flow of coolant through heat exchanger of front air conditioning unit, incorporation of -V50- / -N82- or -V55- / -N279- into coolant circuit, or similar) ⇒ page 509 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
- Check thermostat in engine (engine coolant may not warm up properly if thermostat is defective) ⇒ Engine, mechanics; Rep. gr. 19 ; Coolant pump/thermostat assembly; Checking thermostat
- Check engine coolant pump for correct operation (if coolant pump is faulty or if -V50- / -V55- is not incorporated correctly, there may not be enough coolant flowing through the heat exchanger for heater in the air distribution housing) ⇒ Engine, mechanics; Rep. gr. 19 ; Coolant pump/thermostat assembly; Exploded view - coolant pump .

If specified values are not attained at just one or two temperature sensors:

- Check that coolant circuit is properly bled ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
- Check activation and operation of the various control motors for temperature flaps in air conditioning unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)
- Check measured values of the various temperature sensors ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- If the temperatures determined in the “cold” setting are too high, perform the fault finding measures to be taken if there is a temperature increase downstream of the evaporator ⇒ page 459 .
- Check the foam seal at the heating system heat exchanger of the air distribution housing if the temperatures determined in the “warm” setting are too low or there is an excessive difference between the left and right sides ⇒ page 476 .

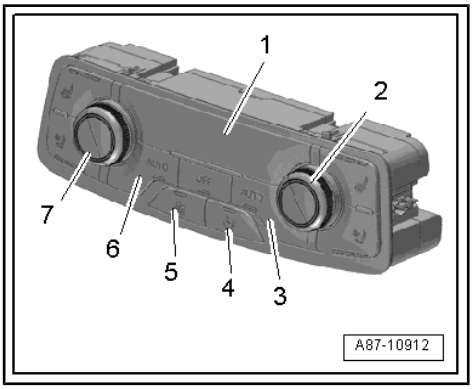
- On vehicles with an auxiliary air heater element - Z35- , check the partition between the left and right side in the air distribution housing through the installation slot for -Z35- ⇒ page 427 .

**Additional check for vehicles with rear Climatronic operating unit - E265- (checking rear heating output)**

Heating output and actuation of temperature flaps of front air conditioner checked and OK ⇒ page 448

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– Set air distribution at -E265- via button -4- so that approx. the same volume of air flows out of vents in B-pillars and in rear centre console – display -1- of -E265- .
– Read off measured values displayed in “Read measured values” function for the various temperature sensors -G635- , -G636- , -G637- and -G638- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).




**Note**

*You can also measure the temperature of the air emerging from the rear centre console vents (left and right) with a commercially available thermometer.*

**Specifications:**

- The measured temperature for all temperature sensors should increase to a value above 50 °C (depending on current engine temperature).

**Note**

- *On vehicles with no coolant circulation pump - V50- / circulation pump - V55- (not on Audi A6 e-tron vehicles), the engine speed must be increased slightly to approx. 1400 rpm to ensure the required flow of coolant through the heating system heat exchanger in the air distribution housing.*
- *On vehicles with start/stop system and vehicles with high-voltage system, reduce the speed of the fresh air blower - V2- if applicable. With the engine stopped and maximum fresh air blower speed, the delivery of the coolant circulation pump - V50- ( thermal management coolant pump 2 - V618- on the Audi A6 e-tron) may not always be sufficient to attain the required heat output.*

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If specified values are attained at all temperature sensors:

- Continuation of check (checking partition for temperature regulation between left and right sides in air conditioning unit ⇒ page 458 ).

If the required values are not attained at just one or at several of the temperature sensors (even at increased engine speed):

- Check activation and operation of control motors in air duct for rear vent and in air conditioning unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Check measured values of the various temperature sensors in air ducts (rear) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

**Note**

- *As the air cooled by the air conditioning unit has to flow through the air duct under the centre console to the rear, it may take a while before the air at the rear vent attains the required values.*
- *If the required temperature is not attained at one of the temperature sensors, alter the setting on -E265- so that more air flows past this temperature sensor.*

**Continuation of heating output check for air conditioning unit (checking partition for temperature regulation between left and right sides in air conditioning unit)**

– Using rotary controls on operating unit ( Climatronic control unit - J255- ) and rear Climatronic operating unit - E265- , set temperature for passenger side (front and rear) to “cold”.

• “LO” on display of -J255- and -E265- for passenger side

– Leave temperature setting for driver side (front and rear) on “warm”.

• “HI” on display of -J255- and -E265- for driver side

– Terminate “Guided Fault Finding” for -E265- and select “Read measured values” function on Climatronic control unit - J255- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Operate air conditioner in this setting for several minutes.

• Air conditioner compressor on - lamp in AC button on

– Compare measured value of evaporator output temperature sender - G263- to measured values of -G150- , -G151- , -G261- and -G262- .

**Note**

- *If the temperature setting for one side (driver or passenger side) is “warm”, the specified outflow temperature at the evaporator is regulated by the operating unit ( Climatronic control unit - J255- ) to a higher value (up to approx. 10 °C).*
- *Even if a rear Climatronic operating unit - E265- is fitted, the temperature of the air flowing out of the rear vents is regulated by the operating unit ( Climatronic control unit - J255- ).*

**Specifications:**

- At -G150- and -G261- the temperature should remain above 45 °C (depending on current engine temperature).
- Within 5 minutes, the temperature at -G151- and -G262- should drop to a value which must not exceed the measured value of the evaporator output temperature sender - G263- by more than 15 °C.
- The temperature on the left side settles to a higher level than on the right side at the rear centre console vent.
- The temperatures displayed in the “Read measured values” function for the temperature sensors on one side ( -G150- and -G261- as well as -G151- and -G262- ) settle at a similar level within 5 minutes (temperature difference in each case less than 9 °C).

– Note down measured value of evaporator output temperature sender - G263- .

– Terminate “Guided Fault Finding” for air conditioner on -J255- , and select “Read measured values” function on rear Climatronic operating unit - E265- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Compare measured value of -G263- to measured values of -G635- , -G636- , -G637- and -G638- .

**Specifications:**

- At -G635- and -G637- the temperature should remain above 45 °C (depending on current engine temperature).

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- Within 5 minutes, the temperature at -G636- and -G638- should drop to a value which must not exceed the measured value of the evaporator output temperature sender - G263- by more than 15 °C.
- The temperatures displayed in the “Read measured values” function for the temperature sensors on one side ( -G635- / -G637- and -G636- / -G638- ) settle at a similar level within 5 minutes (temperature difference in each case less than 9 °C).

Check is complete if specifications are attained.

**Note**

*After setting the temperature for the driver side to “cold” and for the passenger side to “warm”, this check can be repeated with the opposite measured values.*

Check the following if results do not match specifications:

- Check activation and operation of the various control motors for temperature flaps in air conditioning unit (depending on where specifications were not attained) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Check activation and operation of the two control motors in air duct (rear) and measured values of the various temperature sensors in air ducts (rear) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Check foam seal at heating system heat exchanger of air conditioning unit (depending on where specifications were not attained) ⇒ page 476 .
- Check that coolant circuit is properly bled ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
- On vehicles with an auxiliary air heater element - Z35- , check the partition between the left and right side in the air conditioning unit through the installation slot for -Z35- ⇒ page 427 .
- If fitted, check activation and operation of coolant circulation pump - V50- and coolant shut-off valve - N82- ( thermal management coolant pump 2 - V618- on Audi A6 e-tron vehicles) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- On vehicles with auxiliary heater, check activation and operation of circulation pump - V55- and heater coolant shut-off valve - N279- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Check engine coolant pump for correct operation (if coolant pump is faulty or if -V50- / -V55- (or thermal management coolant pump 2 - V618- on Audi A6 e-tron vehicles) is not incorporated correctly, there may not be enough coolant flowing through the heat exchanger for heater in the front and rear air conditioning unit) ⇒ Engine, mechanics; Rep. gr. 19 ; Coolant pump/thermostat assembly; Exploded view - coolant pump .
- Check incorporation of air conditioner into coolant circuit ⇒ page 509 .

**Fault finding if temperature increases downstream of evaporator - in air conditioning unit**

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– Use e.g. hose clamps (up to 40 mm) - 3093- to clamp off the two coolant hoses going to heat exchanger of air conditioning unit ⇒ page 476 .

– Repeat check of heating output and actuation of temperature flaps with “LO” set on front and rear operating unit ⇒ page 448 .

– Compare the measured value of the evaporator output temperature sender - G263- to the measured values of -G150- , -G151- , -G261- and -G262- (note permissible difference) ⇒ page 448 .

– Compare the measured values of -G635- , -G636- , -G637- , -G638- to the previously measured value of the evaporator output temperature sender - G263- (note permissible difference) ⇒ page 448 .

– Do the measured values of the temperature sensors coincide with the coolant hoses pinched off and are the required values attained (note permissible difference) ⇒ page 448 ?

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↓ yes

– Detach hose clamps (up to 40 mm) - 3093- from both coolant hoses.

↓

Check activation and operation of temperature flap control motor -V158- / -V159- and rear temperature flap control motor -V313- / -V314- as well as actuation of corresponding temperature flap ⇒ “6.2.2 Air routing in air intake unit and air conditioning unit”, page 493 .

↓

• Actuation and operation of temperature flaps OK?

↓ yes

– Check operation of temperature flap causing increase in temperature ⇒ “5.2 Exploded view - flaps and partitions in air distribution housing”, page 393 .

– Check heating output and actuation of temperature flaps again ⇒ “5.10.3 Checking heating output and actuation of temperature flaps - deluxe version”, page 448 .

↓ no

– Check that sender with deviating measured value is installed correctly, and check electrical connections for contact resistance ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

– Eliminate cause of incorrect measured value; renew defective sender if necessary.

↓ no

– Eliminate cause of malfunction ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

– Check heating output and actuation of temperature flaps again ⇒ “5.10.3 Checking heating output and actuation of temperature flaps - deluxe version”, page 448 .

## 5.11 Removing and installing heater and air conditioning unit

**WARNING**

*Danger from escaping pressurised refrigerant.*

*Danger of frostbite on skin and other parts of the body.*

- *Extract the refrigerant and then immediately open up the refrigerant circuit.*
- *Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.*

**Note**

*Specific tools are required when discharging the refrigerant circuit, and this work may only be performed by qualified personnel ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 00 ; Laws and regulations .*

**Special tools and workshop equipment required**

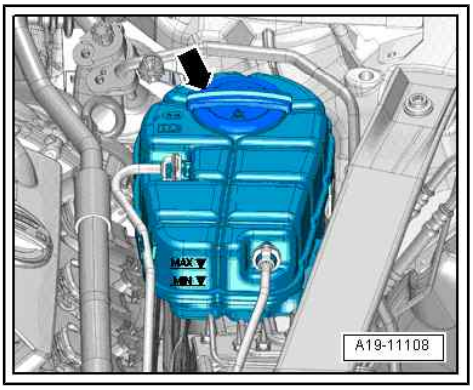
- Hose clamps up to 25 mm - 3094-
- Engine bung set - VAS 6122-
- Hose clip pliers - VAS 6362-
- Commercially available compressed-air gun

**Removing**

**WARNING**

***Risk of scalding due to hot steam and hot coolant.***

- ***The cooling system is under pressure when the engine is hot.***
- ***To relieve pressure, cover coolant expansion tank cap with a cloth and open carefully.***



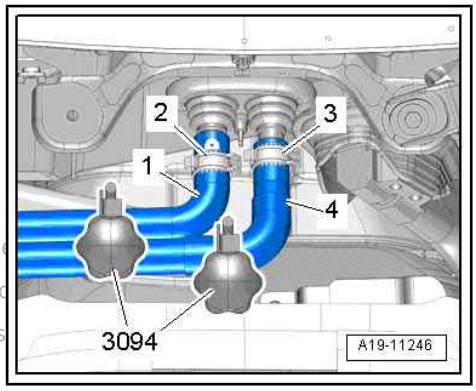

– Open cap -arrow- on coolant expansion tank.

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioners with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with the air conditioner service station .

– Remove body brace ⇒ Running gear, axles, steering; Rep. gr. 40 ; Suspension strut, upper links; Removing and installing body brace .

– Cover area beneath connections for coolant hoses in plenum chamber e.g. with absorbent paper.

– Mark arrangement of coolant hoses.




**Note**

*To prevent coolant from running into the plenum chamber when the coolant hoses are disconnected, place a container beneath the corresponding coolant hose.*

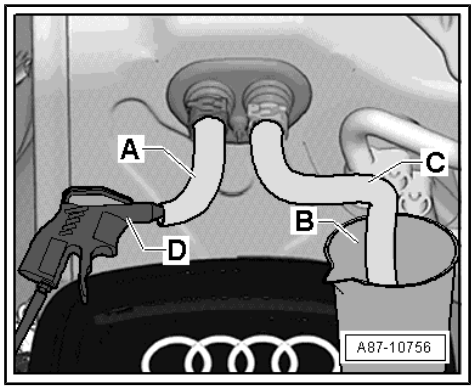
– Clamp off coolant hoses -1, 4- with hose clamps -3094- , release hose clips -2 and 3- and detach coolant hoses from heat exchanger.

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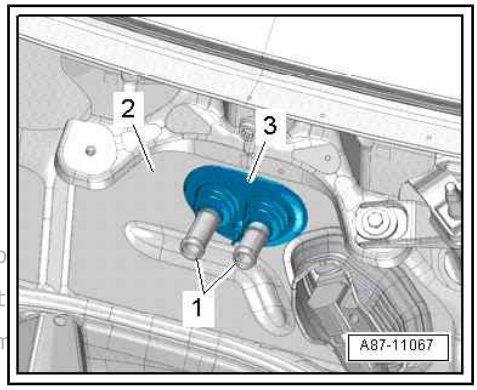
– Attach a short hose -A, C- to both connections.

• Insert compressed-air gun -D- in end of one of the hoses.

– Hold container -B- under second hose and carefully blow coolant out of heat exchanger with compressed-air gun.

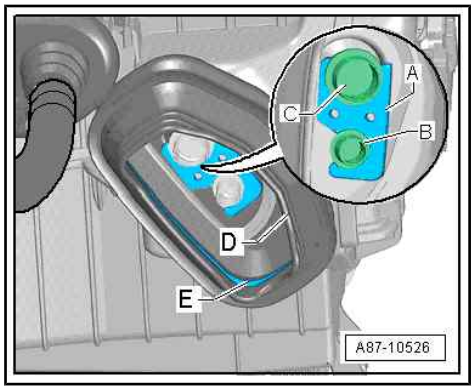



– Unfasten grommet -3- from mounting on plenum chamber partition panel -2- and detach from connections -1- for heat exchanger.




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– Unfasten grommet -D- to air conditioning unit from mounting at plenum chamber partition panel.




**Caution**

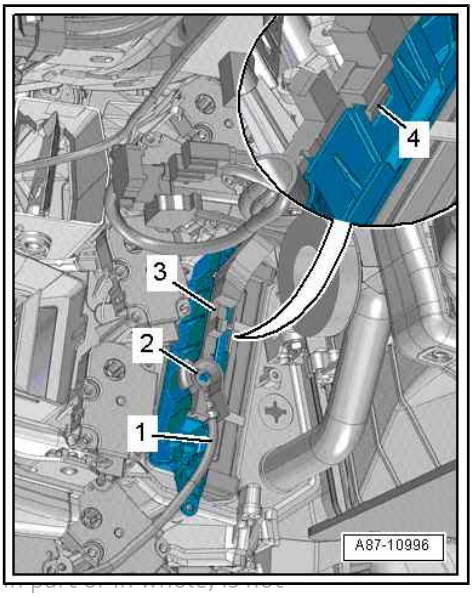
***Risk of irreparable damage to grommet.***

- ***The grommet is connected to the air conditioning unit and can only be detached after dismantling the air conditioning unit.***

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

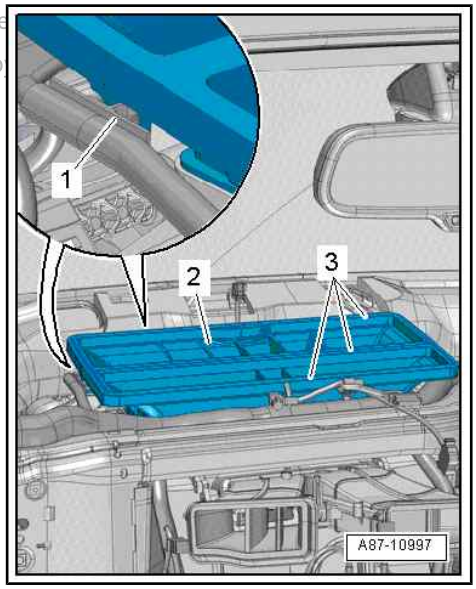
– Remove air intake box
⇒ “5.12.3 Removing and installing air intake box”, page 468 .

– Unscrew nut -2- and detach earth wire -1-.
– Release retaining tab -4- and unplug electrical connector -3-.

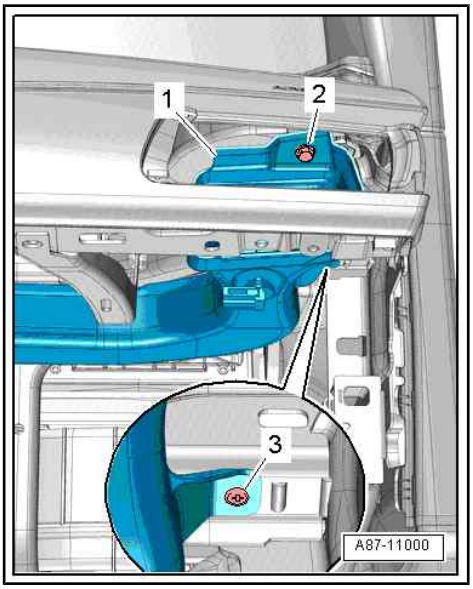



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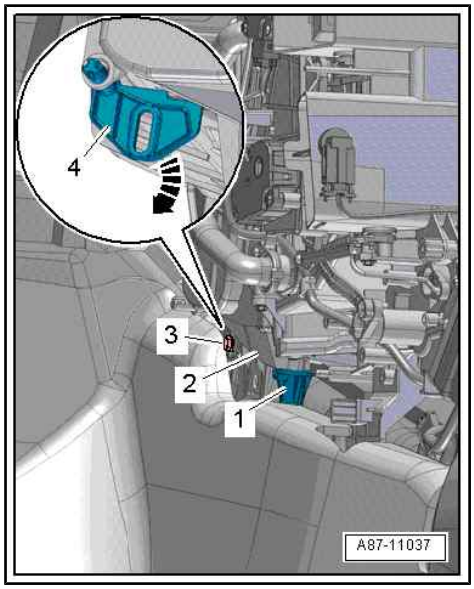
– Lift out air duct -2-.
– Move electrical wiring harness -1- clear.



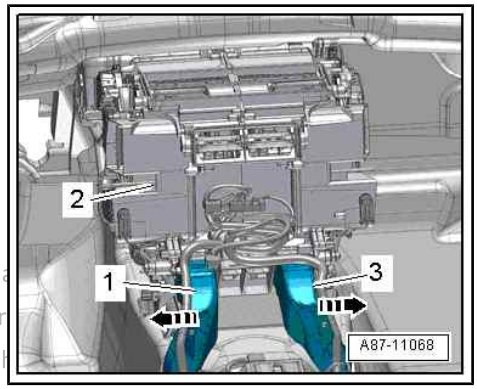

– Unplug electrical connector at right vent temperature sender -G151- .
– Remove bolt -3- from fastener.
– Detach air duct for dash panel vent -1-.
– Remove central tube ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Removing and installing central tube for dash panel .
– Remove air duct (rear)
⇒ “6.8.4 Removing and installing air duct (rear)”, page 498 .



– Disconnect condensation drain hoses -1- (left and right) from connection of air conditioning unit -2-.
– Unscrew bolt -3- and swivel tab -4- in direction of -arrow- to release.




– Detach air ducts -1 and 3- for footwell vents (rear) at air distribution housing -2- and swivel to the side -arrows-.
– Pull air distribution housing slightly to rear and take it out to right side.




**Installing**

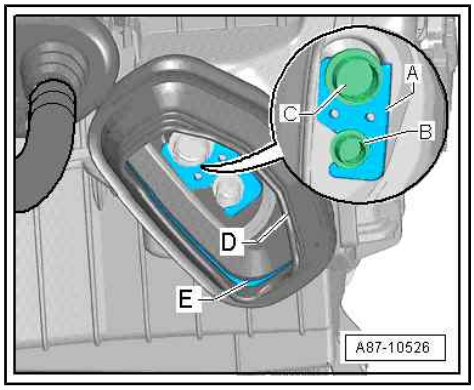
Install in reverse order of removal; note the following:

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**Note**

*Before installing, check all seals at air conditioning unit for damage and renew damaged seals.*

– Insert support ring -E- in grommet -D-.
• Projection on support ring must face outwards.
– Coat grommet with lubricant.
– Insert air conditioning unit and engage central tube at mountings (left and right).
– Bolt air conditioning unit onto central tube by hand until it makes contact.
– Insert grommet in plenum chamber partition panel.

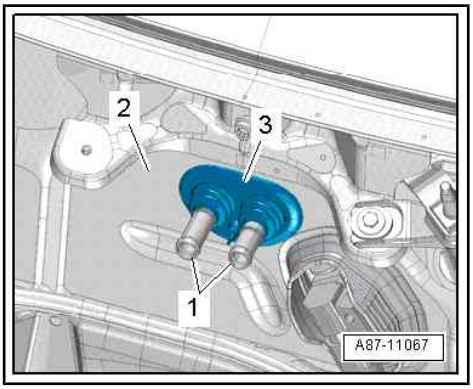



**Note**

♦ *Check that grommet for evaporator is correctly seated at lead-through in plenum chamber partition panel.*
♦ *Water will ingress into passenger compartment if grommet is damaged or not fitted correctly.*

– Install retainer -A- at refrigerant lines -B and C-.
– Install expansion valve
⇒ “2.10 Removing and installing expansion valve”, page 190 .

– Slide grommet -3- over connections -1- for heat exchanger and insert in plenum chamber partition panel -2-.




**Note**

- *Check that grommet for heat exchanger is correctly seated at leadthrough in plenum chamber partition panel.*
- *Water will ingress into passenger compartment if grommet is damaged or not fitted correctly.*

– Install condensation drain hose
⇒ “5.16 Removing and installing condensation drain”, page 483 .

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– Slide tab -3- as far as possible in direction of -arrow A- and then swivel upwards -arrow B-.

• You must feel tab engage in ribs -4- on air conditioning unit -1-.

– Tighten bolt -2-.

– Install central tube ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Removing and installing central tube for dash panel .

– Install air intake box ⇒ “5.12.3 Removing and installing air intake box”, page 468 .

– Connect electrical wiring to auxiliary air heater element ⇒ “5.9 Removing and installing auxiliary air heater element Z35 ”, page 427 .

– Install air duct (rear) ⇒ “6.8.4 Removing and installing air duct (rear)”, page 498 .

– Install air ducts for footwell vents (rear) ⇒ “6.8.6 Removing and installing air duct for footwell vent (rear)”, page 499 .

– Install air duct for dash panel vent (passenger side) ⇒ “6.8.2 Removing and installing air duct for dash panel vent (passenger side)”, page 497 .

– Install body brace ⇒ Running gear, axles, steering; Rep. gr. 40 ; Suspension strut, upper links; Removing and installing body brace .

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station .

– Fill up and bleed coolant circuit ⇒ “7.14 Bleeding coolant circuit”, page 548 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

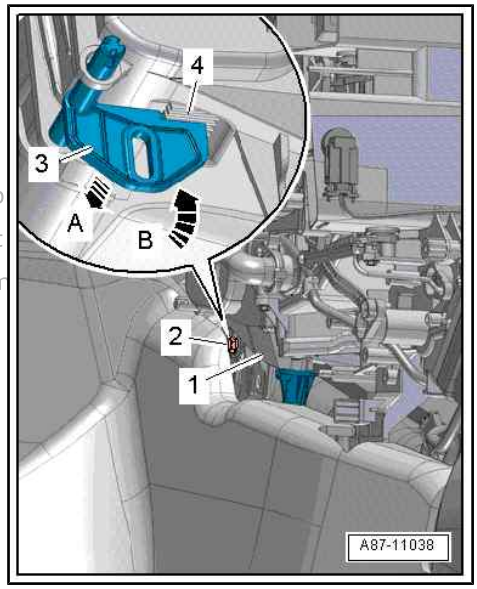
After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

– Perform basic setting.

– Perform final control diagnosis.

– Start up air conditioner after charging refrigerant circuit ⇒ “2.18 Starting up air conditioner after charging refrigerant circuit”, page 232 .




**Note**

*Observe notes on starting up air conditioner after installing air conditioner compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems , or ⇒ Air conditioner with refrigerant R1234yf - General notes; Rep. gr. 87 ; Working with the air conditioner service station; Starting up air conditioner after charging refrigerant circuit .*

– Check air conditioner operation, and direction and distribution of air flow from defroster vent to windscreen.

– Check that direction of air flow corresponds with position of switch.

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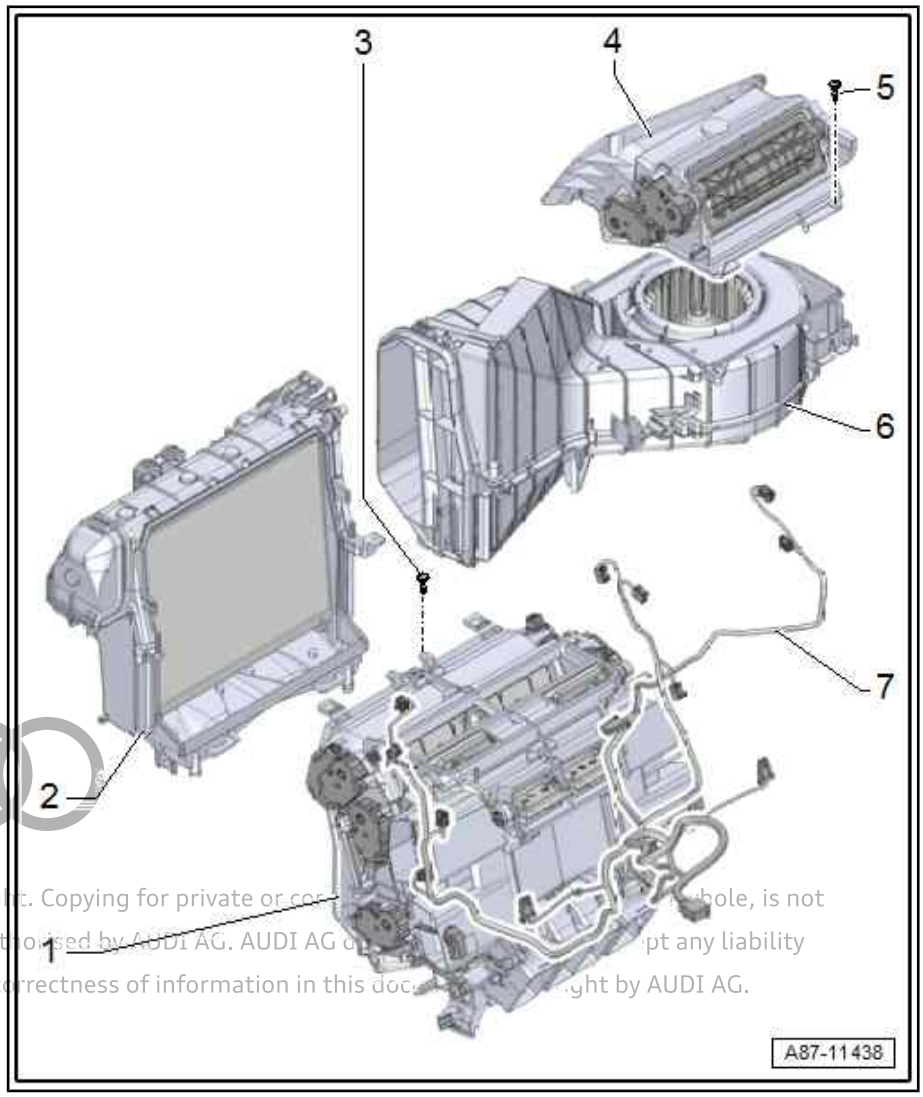
## 5.12 Dismantling and assembling heater and air conditioning unit

⇒ “5.12.1 Overview of fitting locations - dismantling and assembling heater and air conditioning unit”, page 467

⇒ “5.12.2 Removing and installing intake duct”, page 467

⇒ “5.12.3 Removing and installing air intake box”, page 468

### 5.12.1 Overview of fitting locations - dismantling and assembling heater and air conditioning unit




**1 - Air distribution housing**

- ❑ With or without auxiliary air heater element - Z35- , depending on equipment
- ❑ Removing and installing ⇒ “5.11 Removing and installing heater and air conditioning unit”, page 460

**2 - Evaporator housing**

- ❑ Removing and installing ⇒ “5.6.1 Removing and installing evaporator housing”, page 403

**3 - Bolt**

- ❑ 2x
- ❑ Tightening torque ⇒ “5.1 Exploded view - attachments for heater and air conditioning unit and air intake box”, page 392

**4 - Air intake box**

- ❑ Removing and installing ⇒ “5.12.3 Removing and installing air intake box”, page 468

**5 - Bolt**

- ❑ Tightening torque ⇒ “5.4 Exploded view - air intake box of heater and air conditioning unit”, page 397

**6 - Air intake duct**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Exploded view ⇒ “5.4 Exploded view - air intake box of heater and air conditioning unit”, page 397

**7 - Electrical wiring harness**

- ❑ Different versions ⇒ Electronic parts catalogue

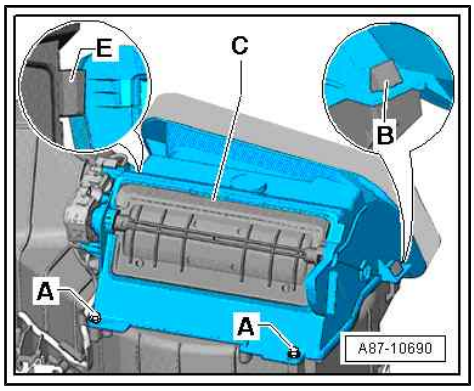
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### 5.12.2 Removing and installing intake duct

**Removing**

– Observe general notes ⇒ page 22 .

– Move front right seat to rearmost position.
– Switch off ignition.
– Remove air intake box ⇒ page 468 .
– Unscrew bolts -A-.
– Release locking lug -B- and detach intake duct -C- to the front.




**Installing**

Install in reverse order of removal; note the following:

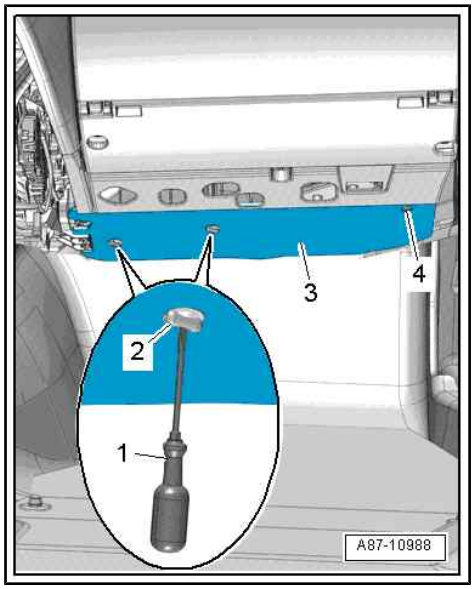
– Insert intake duct at guide -E-. Locking lug must engage in mounting.
– Tighten bolts -A- to specified torque ⇒ page 397 .
– Install air intake box ⇒ page 468 .

## 5.12.3 Removing and installing air intake box

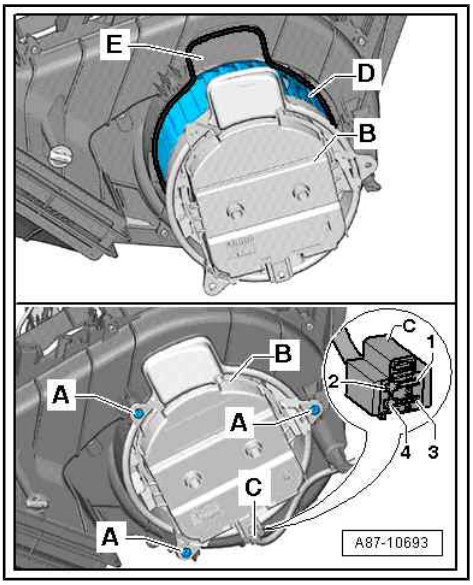
**Removing**

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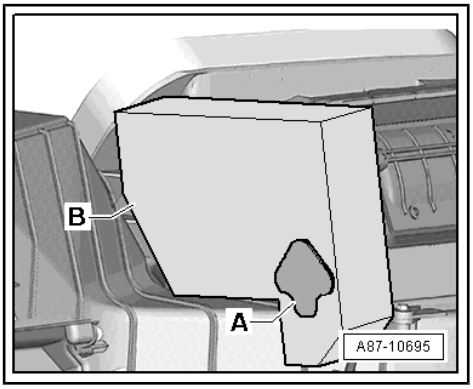
– Observe general notes ⇒ page 22 .
– Move front right seat to rearmost position.
– Switch off ignition.
– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .
– Remove footwell vent (passenger side) ⇒ page 494 .
– Vehicles with “deluxe” air conditioner: Remove air duct for glove box cooling ⇒ page 497 .
– Unfasten quick-release fastener -2- with screwdriver -1-.
– Disengage cover -3- at bracket -4- and detach.



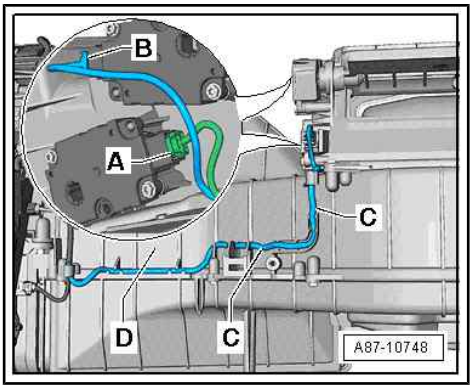
– Unplug electrical connector -C- at fresh air blower -B-.



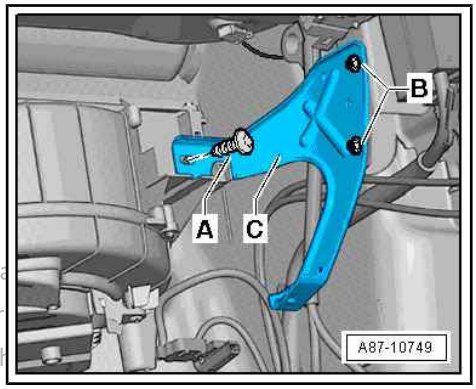

– Release bracket -A- and detach noise insulation cover -B-.




– Mark electrical connectors -A, B- and control motors.
– Unplug electrical connectors and move clear wiring harness -C- at air intake box -D-.

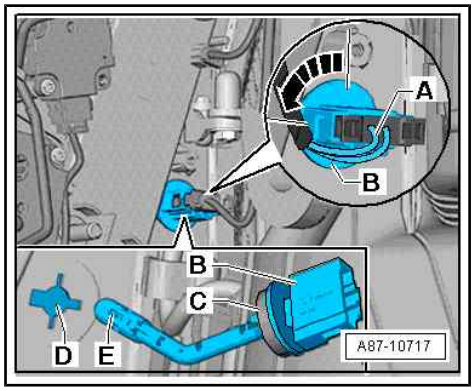



– Remove bolts -A and B-.
– Detach bracket -C-.

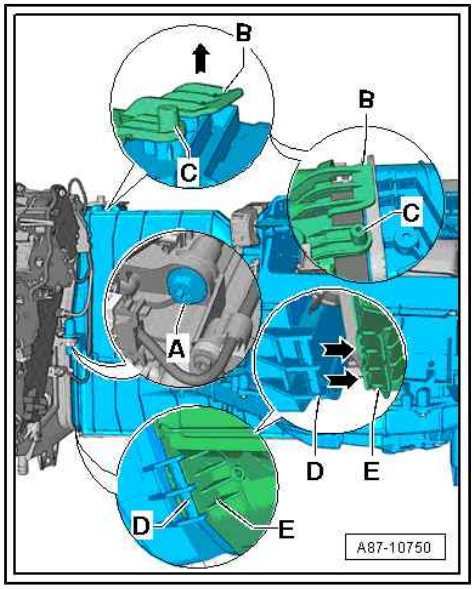



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– Unplug electrical connector -A- at evaporator output temperature sender - G263- -B-.




– Remove bolt -A-.
– Insert screwdriver in guide at top of air intake box and release retaining tab -B- -top arrow-; at the same time pull air intake box -E- downwards on right side and disengage it at air distribution housing -D- -bottom arrows-.

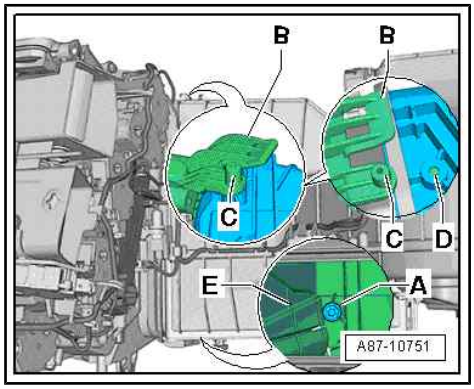



**Note**

*If the air intake box cannot be released, the air distribution housing and air intake box have been secured with a bolt at attachment point -C- next to the retaining tab.*

**Vehicles with additional bolt at air intake box:**

– Remove dust and pollen filter ⇒ page 472 .
– Remove bolt -A- at attachment point -C- via installation slot for dust and pollen filter -E-.




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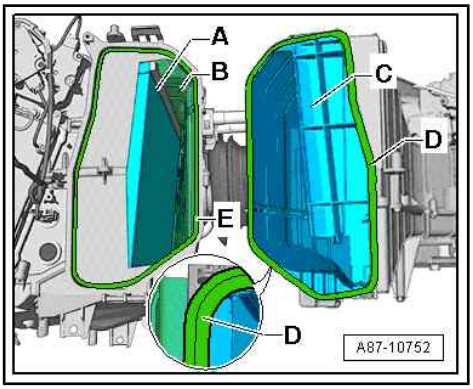
### Installing

Install in reverse order of removal; note the following:

– Check evaporator -A-, air duct housing -B- and air intake box -C- for dirt and clean if necessary.

– Check foam seal -D- attached to air intake box for damage and renew if necessary.

– Check contact surface/chamfer -E- at air distribution housing for damage.



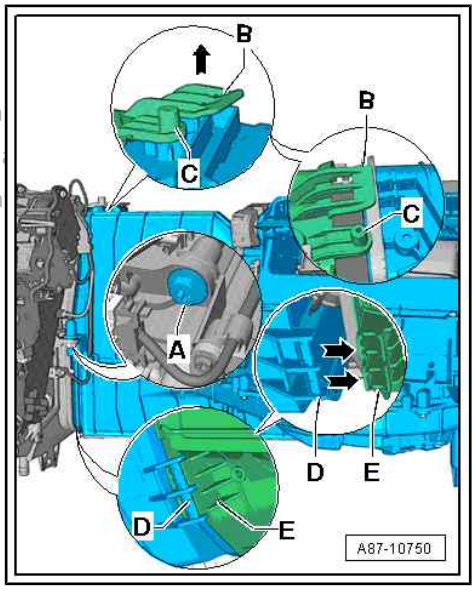

**Note**

- *If the foam seal or the contact surface/chamfer are damaged, air may escape at this point and cause noise when the air conditioner is in operation.*
- *If the air distribution housing and air intake box have not been properly assembled, air may escape at the joint and cause noise when the air conditioner is in operation.*
- *If the contact surface/chamfer is damaged, fill the damaged area e.g. with silicone adhesive sealant ⇒ Electronic parts catalogue .*

– Insert lower lugs of air intake box -E- in mounting on air distribution housing -D- and swivel upwards.

• When inserting, air intake box must engage audibly in retaining tab -B- on air distribution housing.

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**Note**

*If the retaining tab -B- does not engage immediately, pull the air intake box to the rear in the area of the top retaining tab and at the same time press the right side forwards and upwards.*

**Caution**

***Risk of leaks at joints.***

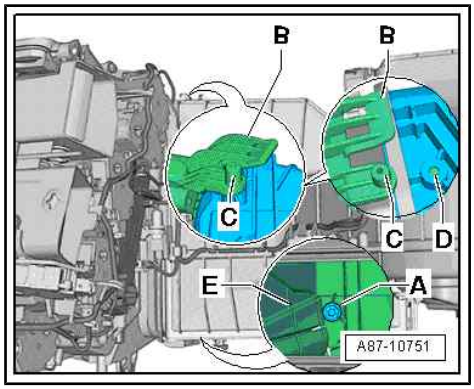
- ***When assembling the air intake box and the air conditioning unit, proceed carefully and do not exert much pressure.***
- ***If force is applied when assembling the air intake box and air conditioning unit, the tabs on the air intake box could be permanently deformed, causing a whistling noise during air conditioner operation due to minor leaks at the joints.***

**Vehicles with additional bolt at air intake box:**

– Fit bolt on air distribution housing through installation slot for dust and pollen filter and tighten.

**All versions (continued):**

If the air intake box can no longer be locked in position at the air distribution housing, the air intake box must be bolted to the air distribution housing through the installation slot for the dust and pollen filter.




– Remove air intake box again.
– Remove dust and pollen filter ⇒ page 472 .
– At attachment point -D-, drill a ∅ 4 mm hole.
– Re-install air intake box.
– Screw in bolt -A- at attachment point -C- by reaching into installation slot for dust and pollen filter -E-.

**Note**

*It is important to make sure you are using the correct version of the bolt -A- as the attachment point -C- could be damaged if the bolt is too large ⇒ Electronic parts catalogue .*

– Route electrical wiring harness so that it cannot come into contact with moving components (e.g. control motor lever).

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.
– Perform basic setting.
– Perform final control diagnosis.

## 5.13 Removing and installing dust and pollen filter

⇒ “5.13.1 Notes on dust and pollen filter”, page 472

⇒ “5.13.2 Removing and installing dust and pollen filter”, page 473

## 5.13.1 Notes on dust and pollen filter

**Note**

- *Observe replacement intervals ⇒ Maintenance tables .*
- *Different versions: Vehicles with the “basic” air conditioner version are currently also fitted with a dust and pollen filter with activated charcoal filter insert. A dust and pollen filter with no activated charcoal filter insert may be installed for this version at a later date (introduction not yet finalised). Vehicles with a “deluxe” air conditioner are always fitted with a dust and pollen filter with active charcoal filter insert ⇒ Electronic parts catalogue .*
- *On vehicles with special equipment for driving schools you may have to remove the additional pedals (some driving school pedals have detachable connections); refer to ⇒ Fitting instructions for equipment for driving schools .*

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## 5.13.2 Removing and installing dust and pollen filter

**Special tools and workshop equipment required**

- Vacuum cleaner (commercially available)

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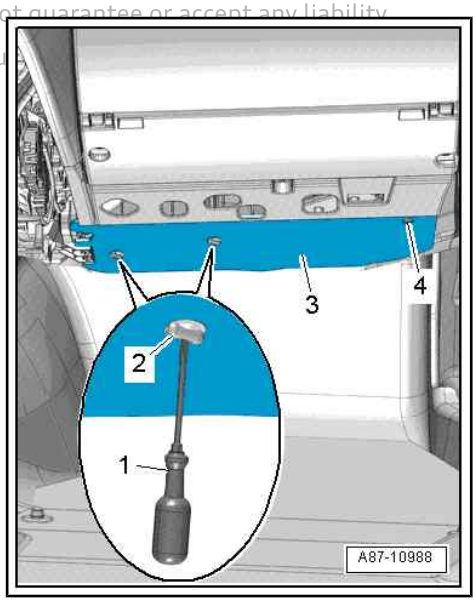
**Removing**

– Move front right seat to rearmost position.

– Unfasten quick-release fastener -2- with screwdriver -1-.

– Disengage cover -3- at bracket -4- and detach.

– Cover floor covering in front passenger's footwell below the dust and pollen filter with paper (to catch any dirt which may fall out).




– Release retaining tab -B-, swivel cover -A- for aperture down and detach.

– Pull dust and pollen filter -D- out of housing -E- -arrow-.

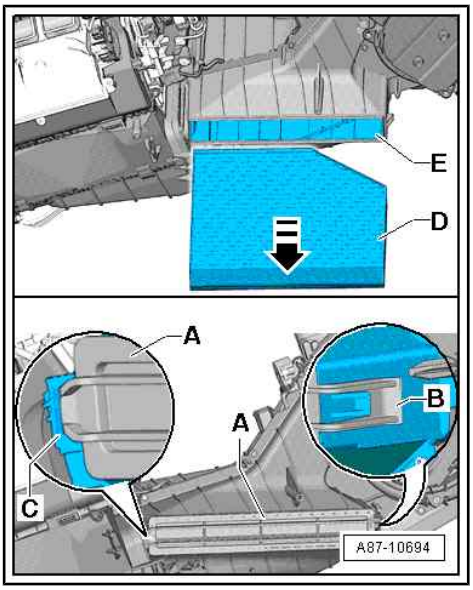
**Installing**

Install in reverse order of removal; note the following:

– Clean the area around the dust and pollen filter in the heater aperture before fitting a new filter, e.g. with a vacuum cleaner.

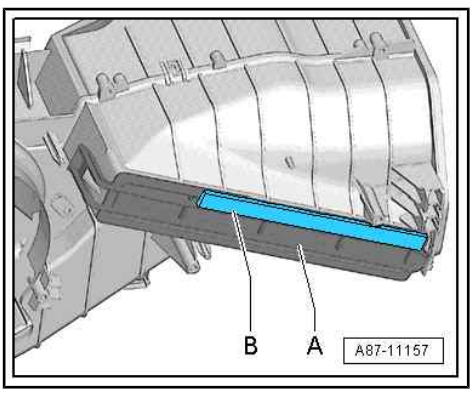
– Insert dust and pollen filter so that diagonally cut side faces fresh-air blower.

– Engage cover for aperture at air intake box -C- and press it on so that it engages audibly.




**Note**

*Depending on the version, a foam strip -B- may be glued onto the slot cover -B- to insulate the gap next to the cover.*



## 5.14 Removing and installing fresh air blower - V2-

⇒ "5.14.1 Notes on fresh air blower V2 with fresh air blower control unit J126 ", page 474

⇒ "5.14.2 Removing and installing fresh air blower V2 with fresh air blower control unit J126 ", page 474

### 5.14.1 Notes on fresh air blower - V2- with fresh air blower control unit - J126-

**Note**

- *Vehicles with a high-voltage system (hybrid vehicles) and petrol engine are currently equipped with an auxiliary air heater element - Z35- to provide a supplementary heating function ⇒ page 424 .*
- *On vehicles with a petrol engine, the electric supplementary heating ( auxiliary air heater element - Z35- ) is activated by a signal from the operating unit ( Climatronic control unit - J255- ) by way of the local data bus (via the same output by which the fresh air blower control unit - J126- is activated) to the auxiliary air heater control unit - J604- . In the event of problems with the fresh air blower control unit - J126- or the fresh air blower - V2- on these vehicles, also check the auxiliary air heater control unit - J604- ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *Make sure you have the correct version of -J126- ; on vehicles with high-voltage system (hybrid vehicles) and petrol engine, for instance, additional information is transmitted via the local data bus to activate -J604- ⇒ Electronic parts catalogue .*

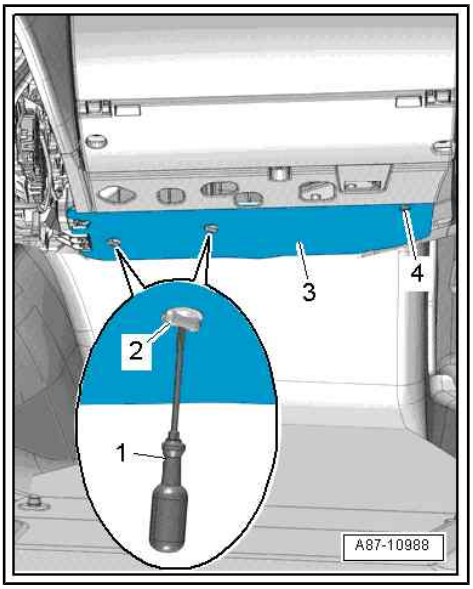
### 5.14.2 Removing and installing fresh air blower - V2- with fresh air blower control unit - J126-

**Removing**

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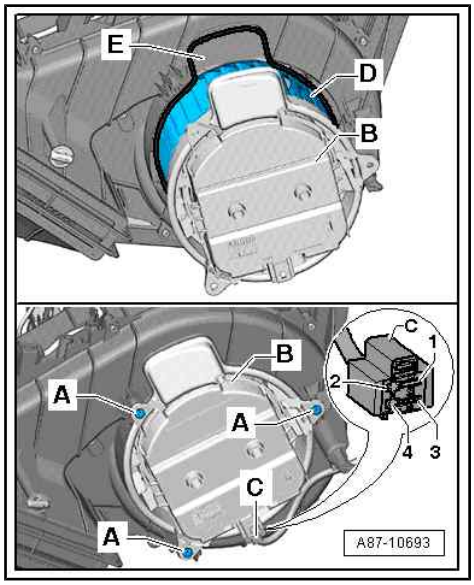
– Observe general notes ⇒ page 22 .
– Move front right seat to rearmost position.
– Switch off ignition.
– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .

– Unfasten quick-release fastener -2- with screwdriver -1-.
– Disengage cover -3- at bracket -4- and detach.




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– Unplug electrical connector -C-.




**Note**

*To release the connector, press down the catch using a small screwdriver or similar.*

– Unscrew bolts -A-.

**WARNING**

***Risk of burns.***

- ***The fresh air blower - V2- with fresh air blower control unit - J126- may be hot if it was in operation prior to removal.***
- ***Do not touch the hot cooling surface of the fresh air blower control unit - J126- .***

– Pull fresh air blower -B- out of air intake box -E-.

**Caution**

***Risk of fan wheel imbalance.***

- ***Do not touch the fan wheel of the fresh air blower -V2- . Applying force to the fan wheel or moving the balancing weights attached to the fan wheel could cause imbalance and therefore lead to operating problems.***

**Note**

- *Depending on the vehicle version (thickness and type of foam beneath floor covering in area of fresh air blower), it may not always be possible to remove the fresh air blower from the air intake box and re-install it without squashing the wheel fan. However, even a brief application of force can be sufficient to damage the fresh air blower.*
- *Should it not be possible to take the fresh air blower out of the air intake box without squashing the wheel fan, the air intake box must be removed ⇒ page 468 .*

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### Installing

Install in reverse order of removal; note the following:

– Tighten bolts to specified torque ⇒ page 397 .

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

– Perform basic setting.

– Perform final control diagnosis.

## 5.15 Removing and installing heat exchanger

### Special tools and workshop equipment required

- Hose clamps up to 25 mm - 3094-

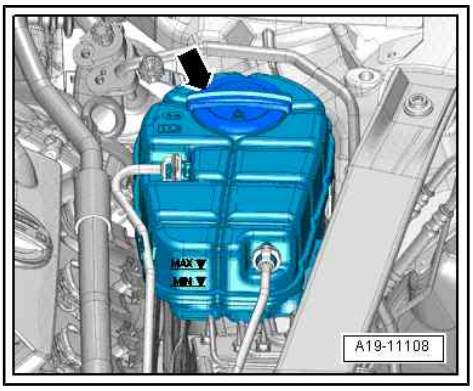
- Engine bung set - VAS 6122-
- Hose clip pliers - VAS 6362-

**Removing**

**WARNING**

*Risk of scalding due to hot steam and hot coolant.*

- *The cooling system is under pressure when the engine is hot.*
- *To relieve pressure, cover coolant expansion tank cap with a cloth and open carefully.*




– Open cap -arrow- on coolant expansion tank.

– Observe general notes
⇒ “1.7.1 General notes on control motors”, page 22 .

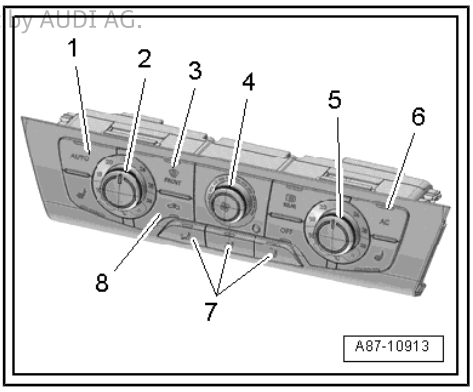
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– Move front seats as far back as they will go.

**Air conditioner (“basic” version):**

– Using button -3-, set direction of air delivery to “Windscreen”.

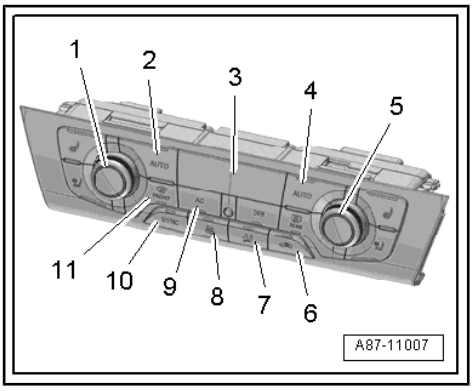
• The air should emerge from the windscreen “defroster vent”.



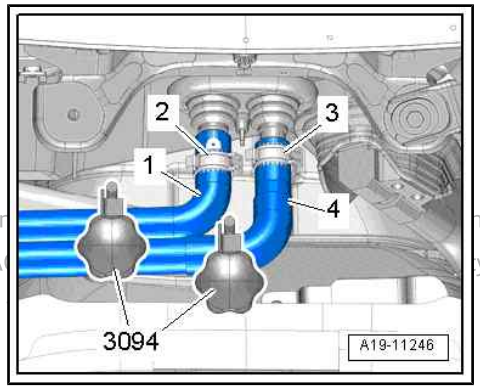

**Air conditioner (“deluxe” version):**

– Using button -11-, set direction of air delivery to “Windscreen”.

• The air should emerge from the windscreen “defroster vent”.



**All vehicles (continued):**



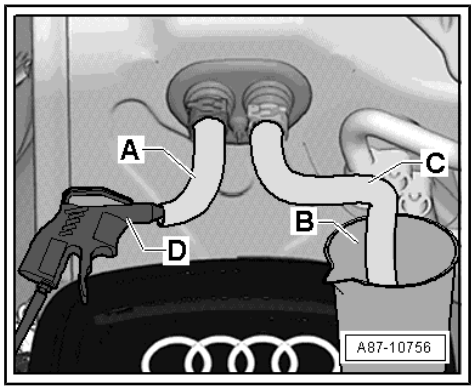

- On vehicles with high-voltage system (Audi A6 e-tron), switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .
- Switch off ignition.
- Remove body brace ⇒ Running gear, axles, steering; Rep. gr. 40 ; Suspension strut, upper links; Removing and installing body brace .
- Cover area beneath connections for coolant hoses in plenum chamber e.g. with absorbent paper.
- Mark arrangement of coolant hoses.

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**Note**

*To prevent coolant from running into the plenum chamber when the coolant hoses are disconnected, place a container beneath the corresponding coolant hose.*

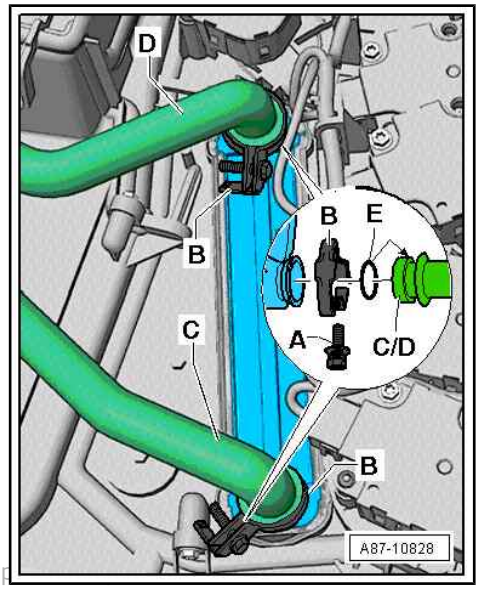
- Clamp off coolant hoses -1, 4- with hose clamps -3094- , release hose clips -2 and 3- and detach coolant hoses from heat exchanger.




- Attach a short hose -A, C- to both connections.
- Insert compressed-air gun -D- in end of one of the hoses.
- Hold container -B- under second hose and carefully blow coolant out of heat exchanger with compressed-air gun.
- Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .
- Remove footwell vent (driver side) ⇒ “6.3 Removing and installing footwell vent (driver side)”, page 494 .
- Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .
- Remove footwell vent (front passenger side) ⇒ “6.4 Removing and installing footwell vent (front passenger side)”, page 494 .
- Remove air intake box ⇒ “5.12.3 Removing and installing air intake box”, page 468 .
- Protect floor covering in area beneath heat exchanger with waterproof sheeting and absorbent paper.

**Note**

*Screw-type metal clamps were fitted at the heat exchanger connections at the start of production. In future a version with plastic clamps may also be fitted (introduction not yet finalised).*




**Screw-type metal clamps:**

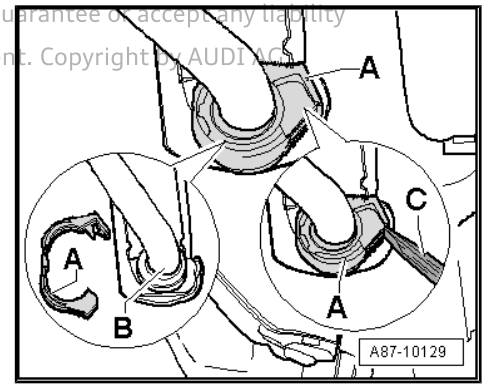
– Unscrew bolts -A-.

– Detach clamps -B-.

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**Plastic clamps:**

– Use a screwdriver -C- or similar to unfasten and detach clamps -A-.

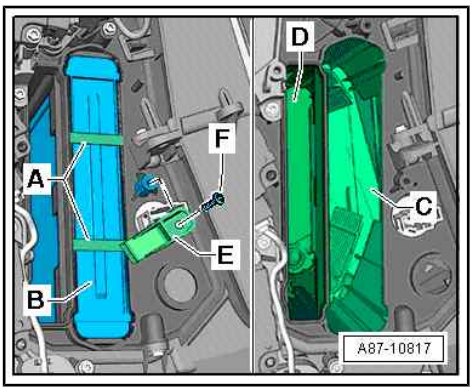



**All versions (continued):**

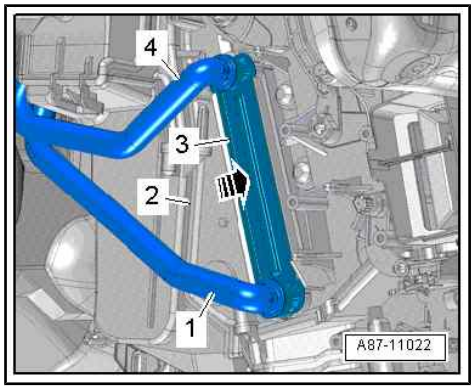
– Remove auxiliary air heater element ⇒ “5.9 Removing and installing auxiliary air heater element Z35 ”, page 427 .

– Completely remove the two retainers -A- on right side of air distribution housing.

– If fitted, remove bolt -F- and detach bracket for heat exchanger -E-.



– Place a collector under coolant pipes -1, 4-.
– Pull coolant pipes out of heat exchanger -3- and carefully swivel to one side.
– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .
– Press heat exchanger out of air distribution housing -2- in direction of -arrow-.

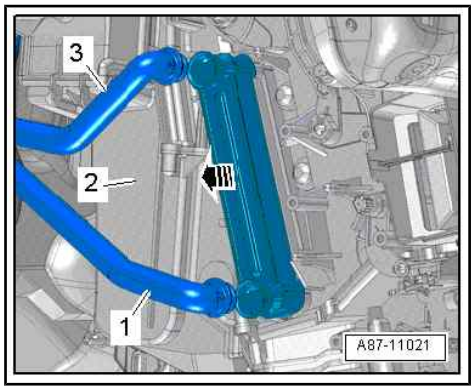



**Note**

*Depending on the version, it may not be possible to remove the heat exchanger towards the passenger side. It must then be removed towards the driver's footwell.*

**Removing heat exchanger towards driver's footwell:**

– Remove steering column ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering column; Removing and installing steering column .
– Remove pedal cluster ⇒ Brake system; Rep. gr. 46 ; Brake pedal; Removing and installing mounting bracket .
– Remove bracket for control motors (left-side): “basic” version ⇒ “4.24.1 Removing and installing bracket for control motors V107 / V108 / V110 - basic version”, page 387 , “deluxe” version ⇒ “4.24.3 Removing and installing bracket for control motors V110 / V299 - deluxe version”, page 389 .
– Hold a collector under coolant pipes.
– Pull coolant pipes -1, 3- out of heat exchanger and carefully swivel to side.
– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .
– Pull heat exchanger out of air distribution housing -2- in direction of -arrow-.

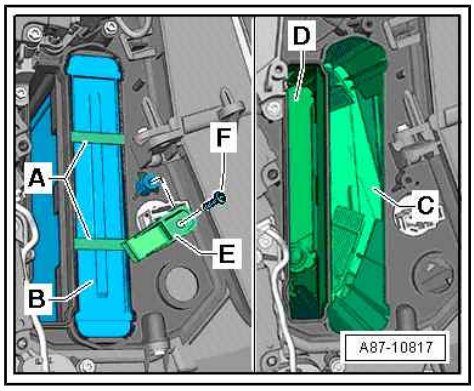



**Installing**

Install in reverse order of removal; note the following:

**Tightening torques**

◆ ⇒ “7.1 Overview of fitting locations - engine coolant circuit”, page 509



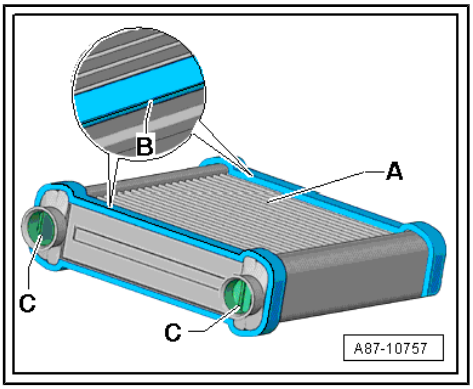

**Note**

*Renew O-rings.*

– Check heater slot -C- for dirt (heat exchanger removed).
– Remove any dirt or residual coolant.
– Vehicles with TDI engine: With auxiliary air heater element -D- removed, check heating element slot for dirt and clean if necessary.

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– Check foam seals -B- attached to heat exchanger -A- for damage and renew if necessary.




**Note**

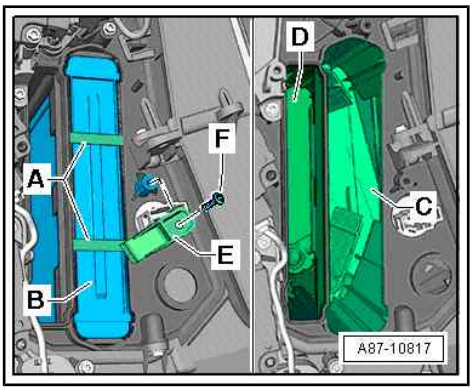
- *The foam seal may curl up when it is inserted if it has not been bonded on properly.*
- *Cold air may flow past the heat exchanger if the foam seal is damaged or not properly fitted.*

– Carefully slide heat exchanger into air conditioning unit as far as it will go.

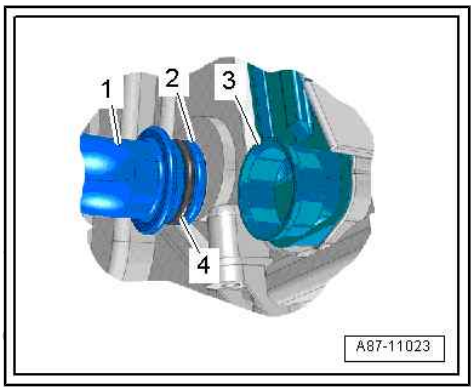
**Note**

*When inserting the heat exchanger, take care not to damage the connections and coolant pipes.*

– Position bracket for heat exchanger -E- on air distribution housing and tighten bolt -F- to specified torque.




– Check connection -3- of heat exchanger and coolant pipes -2- for damage or dirt.
– Clean and smooth sealing surface for O-ring.
– Coat new O-ring -4- lightly with coolant (or lubricate lightly with silicone grease) and attach to coolant pipe -1-.
– Slide coolant pipes into heat exchanger as far as stop.




**Caution**

***Risk of leaks at heat exchanger.***

- ***Crushed O-rings and coolant pipes that are not fitted straight or are not attached fully will lead to leaks.***

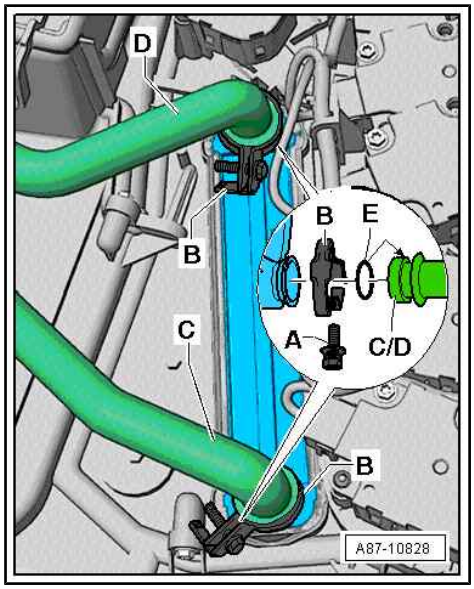
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**Screw-type metal clamps:**

– Fit new screw-type clamps -B- at connection between coolant pipe and heat exchanger.

– Tighten bolt -A- to 2 Nm.

– Check that screw-type clamps are seated correctly on connections of heat exchanger and coolant pipes. They must not make contact with air distribution housing or other components.

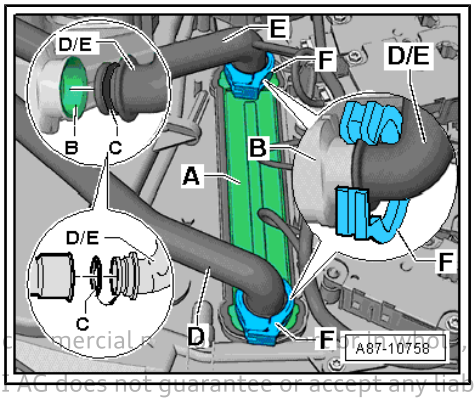



**Plastic clamps:**

**Caution**

*Danger of scalding.*

- *Plastic clamps must only be used once as the clamping force of a used clamp is no longer sufficient (the coolant pipe would be pressed out of the heat exchanger by the coolant pressure).*




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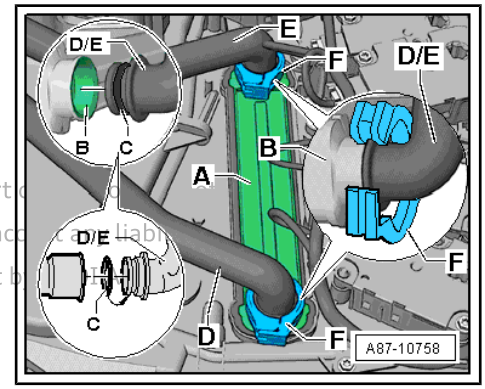
– Fit new plastic clamps -F- at connection of coolant pipe to heat exchanger and squeeze together.

– Check that clamps are attached properly and that they are engaged at connections between heat exchanger and coolant pipes.

**All versions (continued):**

– Fill up and bleed coolant circuit
⇒ “7.14 Bleeding coolant circuit”, page 548 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

**Checking connections on heat exchanger for leaks:**




- Use e.g. hand pump of cooling system tester - V.A.G 1274/- to carefully increase pressure in coolant circuit.
- Check coolant circuit for leaks, paying particular attention to connection between coolant pipes -D, E- and heat exchanger -A-.

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**Note**

- *When bleeding the coolant circuit, take particular care to ensure that the heat exchanger is bled completely. If there are still air bubbles in the heat exchanger, there may be complaints about a lack of heating output in winter or about differences in the temperature of the air flowing out of the vents with the same setting in control mode*
  *⇒ "5.10 Checking heating output of actuation of temperature flaps of air conditioner", page 429 .*
- *Depending on the vehicle equipment and engine, there is heat insulation on the coolant hoses; the insulation must not be damaged and must be re-attached after installation.*

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester ("Guided Fault Finding"):

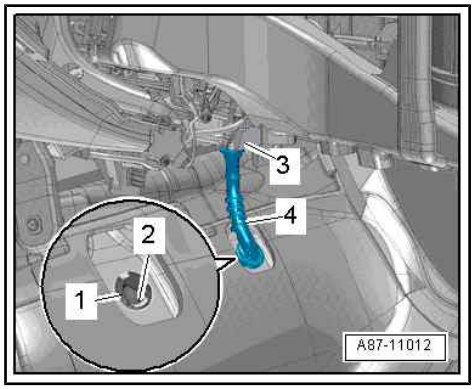
- Read out event memory and delete any entries displayed.
- Perform basic setting.
- Perform final control diagnosis.
- Adjust different settings for air outflow direction to different vents on operating unit ( Climatronic control unit - J255- ) and check whether the volume of air blown out of the vents changes in accordance with the different settings.

## 5.16 Removing and installing condensation drain

**Removing**

- Driver side: Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .
- Front passenger side: Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .
- Remove dash panel cover (bottom) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .
- Carefully press floor covering to the side and protect area beneath condensation drain hose with waterproof sheeting and absorbent paper.

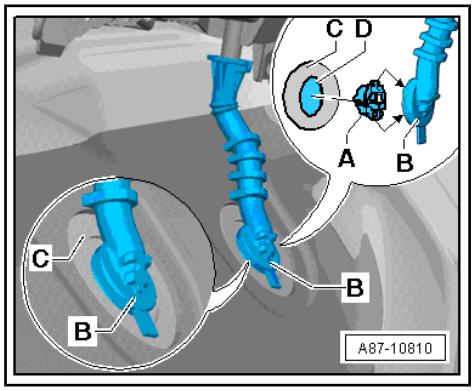
– Detach condensation drain hose -4- at air conditioning unit -3- and at bracket -1-.
– Release retaining tab -2- inwards and detach bracket.




**Installing**

Install in reverse order of removal; note the following:

– Insert bracket -A- in condensation drain hose -B-.
• Make sure that bracket fits uniformly in condensation drain hose.
– Insert bracket with condensation drain hose into body opening -C- so it engages audibly.
• The condensation drain must be properly positioned on the bracket and tensioned against the body.
– If not sufficiently tensioned, seal the joint between the body and the bracket with silicone adhesive sealant or similar ⇒ Electronic parts catalogue .

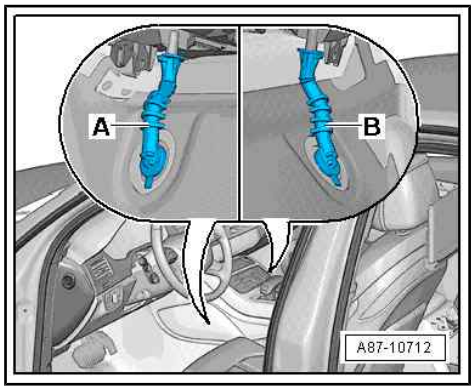



**Note**

- *Install condensation drain hose so that it is neither twisted nor crushed.*
- *When fitting floor covering, make sure that it does not squash condensation drain hose.*
- *If a condensation drain hose is not fitted securely enough at the connection for the air conditioning unit, secure it with e.g. a hose clip to prevent it from slipping. Hose clip ⇒ Electronic parts catalogue*

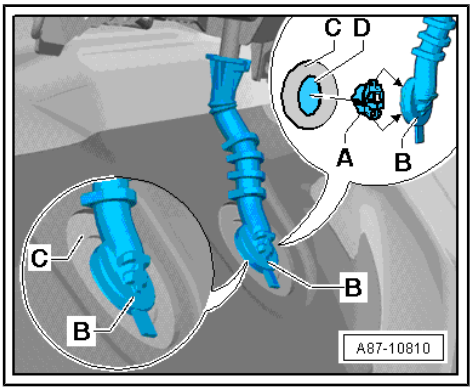
## 5.17 Checking condensation drain

The air conditioner condensation drain hoses -A, B- are clipped in on the left and right of the transmission tunnel.




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**Procedure**




– Driver side: Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/ covers/trim panels; Removing and installing dash panel cover (driver side) .

– Front passenger side: Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .

– Remove dash panel cover (bottom) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .

– Carefully fold back floor covering in vicinity of condensation drain hose until hose is visible.

– Bracket -A- must be completely clipped into body opening -D-.

– The condensation drain -B- must be properly positioned on the bracket and tensioned against the body -C-.

• If not sufficiently tensioned, seal the joint between the body and the bracket with silicone adhesive sealant or similar ⇒ Electronic parts catalogue .

– If the bracket with the condensation drain hose is properly positioned in the body opening, the condensation drain hose must be checked for dirt.

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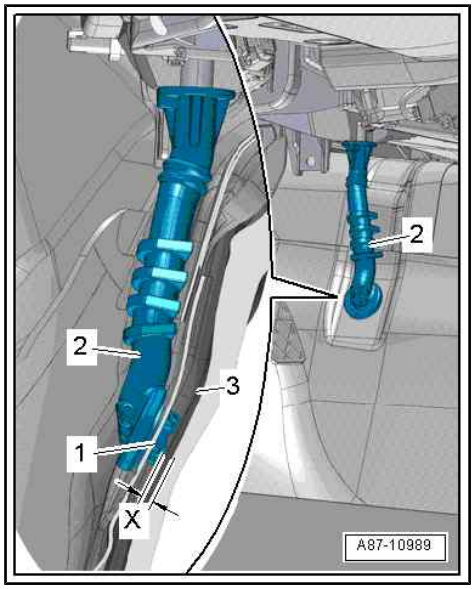
– Remove condensation drain hose ⇒ page 483 .

– Check distance between condensation drain opening -1- and heat shield -3-.

• The clearance (dimension -x-) must be sufficient to allow condensate to drain out of condensation drain hose -2-.

– Check for dirt in condensation drain of air conditioning unit and clean with a piece of wire if necessary.

• The cross-section of the condensation drain hose must not be constricted (squashed).




If there are problems with moisture in the passenger compartment, check the following components in addition to the condensation drain:

• Water drain for plenum chamber ⇒ page 505 .

• Check that cowl panel trim and plenum chamber cover are not damaged and are installed properly ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .

• Dust and pollen filter for dirt and correct installation ⇒ page 472

• Forced ventilation vents in luggage compartment ⇒ page 501 .

• Activation and operation of air recirculation flap (e.g. in “Final control diagnosis”) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)

If there is a problem with moisture in the passenger compartment which only occurs when the air conditioner compressor is switched on under certain ambient conditions, also check the temperature of the air flowing out of the evaporator ⇒ page 57 and ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

• Read out measured value for evaporator output temperature sender - G263- .

– Check temperature of air flowing out of evaporator under usage conditions described by customer or with the following settings on operating unit:

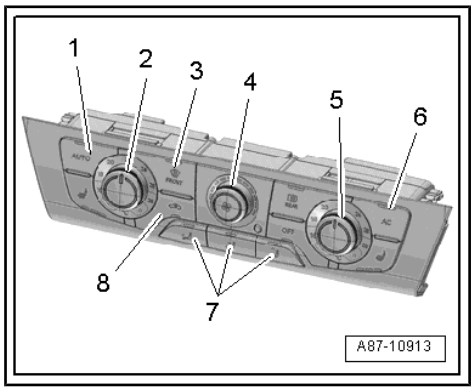
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**Air conditioner (“basic” version):**

– Settings on operating unit ( Climatronic control unit - J255- ):

• “Auto” mode, air conditioner compressor switched on (lamps in buttons -1, 6- on), rotary temperature controls -2, 5- on “cold” stop

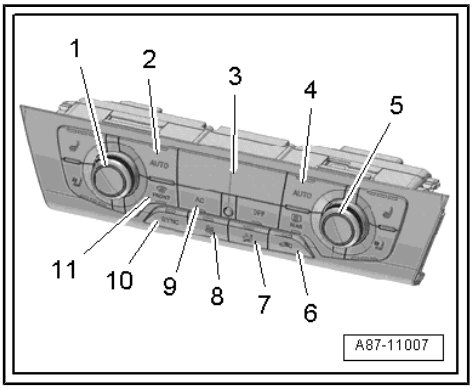
• Medium fresh air blower speed with a voltage of approx. 7 V at fresh air blower - V2- , fresh air mode (lamp in `air recirculation button` -8- not lit), dash panel vents open.



**Air conditioner (“deluxe” version):**

– Settings on operating unit ( Climatronic control unit - J255- ):

- “Auto” mode, air conditioner compressor switched on (lamps in buttons -2, 4- on), rotary temperature controls -1, 5- on “cold” stop
- Medium fresh air blower speed with a voltage of approx. 7 V at fresh air blower - V2- , fresh air mode (lamp in `air recirculation button` -6- not lit), dash panel vents open.




**All vehicles (continued):**

– If the measured value of the evaporator output temperature sender - G263- is too low (at an ambient temperature above 0 °C, colder than 0 °C for a lengthy period) or too high (greater than e.g. 10 °C although the air conditioner is functioning properly), refer to information on checking cooling output ⇒ page 45 and ⇒ page 57 .

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# 6 Air duct system

⇒ “6.1 Exploded view - routing of air flow and air distribution in passenger compartment”, page 488

⇒ “6.2 Air intake and air outlet openings”, page 492

⇒ “6.3 Removing and installing footwell vent (driver side)”, page 494

⇒ “6.4 Removing and installing footwell vent (front passenger side)”, page 494

⇒ “6.5 Removing and installing rear footwell vent”, page 495

⇒ “6.6 Removing and installing air duct for defroster vent”, page 495

⇒ “6.7 Removing and installing air duct for dash panel vent (centre)”, page 496

⇒ “6.8 Removing and installing air ducts”, page 496

⇒ “6.9 Checking forced ventilation vents in passenger compartment”, page 501

⇒ “6.10 Removing and installing forced ventilation vents in passenger compartment”, page 503

⇒ “6.11 Removing and installing fresh air intake”, page 504

⇒ “6.12 Checking plenum chamber water drain”, page 505

⇒ “6.13 Cleaning plenum chamber water drain”, page 507

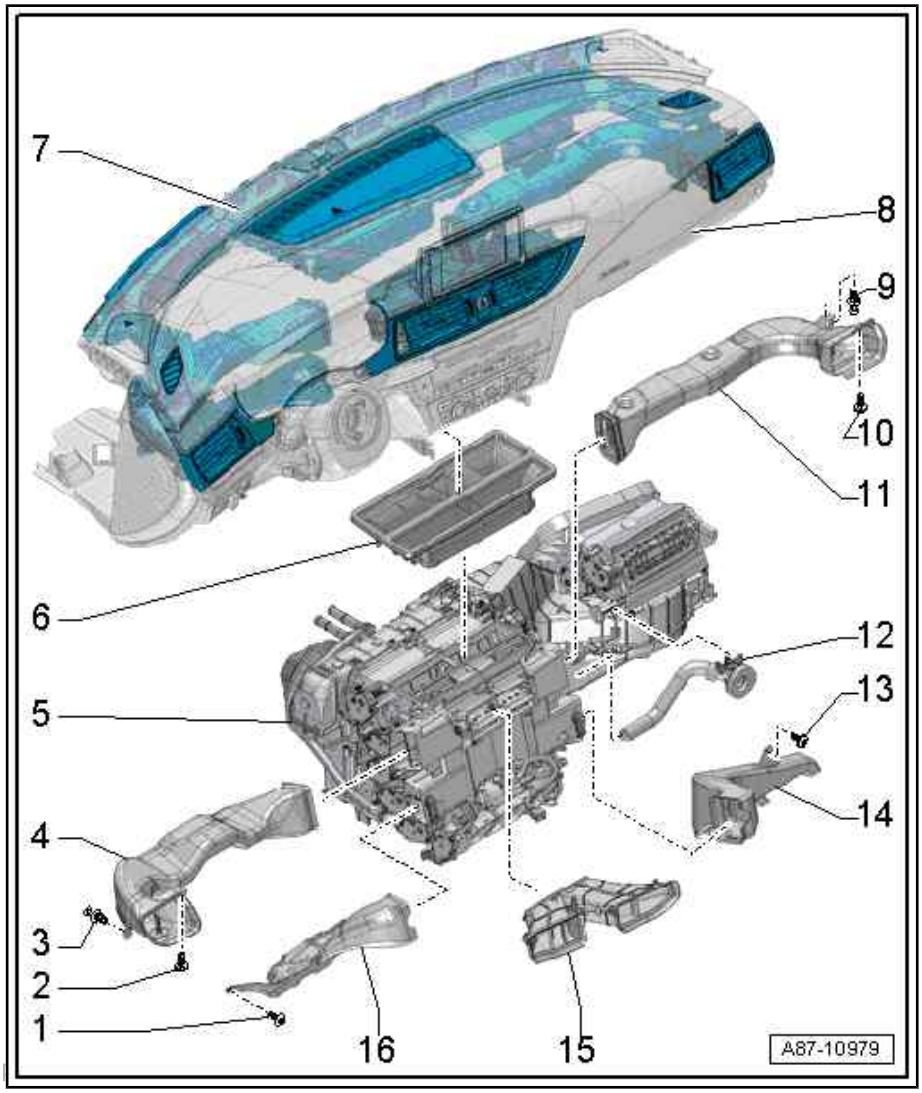
## 6.1 Exploded view - routing of air flow and air distribution in passenger compartment

⇒ “6.1.1 Exploded view - routing of air flow and air distribution in passenger compartment (front)”, page 488

⇒ “6.1.2 Exploded view - routing of air flow and air distribution in passenger compartment (rear)”, page 490

### 6.1.1 Exploded view - routing of air flow and air distribution in passenger compartment (front)

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**1 - Bolt**

- ❑ 1.5 Nm

**2 - Bolt**

- ❑ 1.5 Nm

**3 - Fastener**

**4 - Air duct (left-side) - driver side**

- ❑ To dash panel vent
- ❑ Removing and installing ⇒ page 496

**5 - Air conditioning unit**

- ❑ Air inlet and vents of air conditioning unit ⇒ page 488
- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ With or without auxiliary air heater element - Z35- , depending on equipment
- ❑ Removing and installing ⇒ page 460

**6 - Air duct, defroster vent, “indirect ventilation” vent**

- ❑ Air flow to windscreen and for “indirect ventilation” will be uneven or insufficient if foam seal is squashed
- ❑ Removing and installing ⇒ page 495

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**7 - Air duct**

- ❑ To defroster vents and “indirect ventilation” vent
- ❑ Forms part of dash panel and cannot be renewed separately
- ❑ Removing and installing dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel

**8 - Dash panel**

- ❑ With air duct to defroster vents and “indirect ventilation” vent
- ❑ Removing and installing dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel

**9 - Fastener**

**10 - Bolt**

- ❑ 1.5 Nm

**11 - Air duct (right-side) - front passenger side**

- ❑ To dash panel vent
- ❑ Removing and installing ⇒ page 497

**12 - Air duct for glove box cooling**

- ❑ For “deluxe” air conditioner only
- ❑ Check foam seal for glove box for damage
- ❑ Removing and installing ⇒ page 497

**13 - Bolt**

- ❑ 1.5 Nm

**14 - Air duct to footwell vent (right-side) - front passenger side**

- ❑ Removing and installing ⇒ page 494

**15 - Air duct to centre dash panel vent**

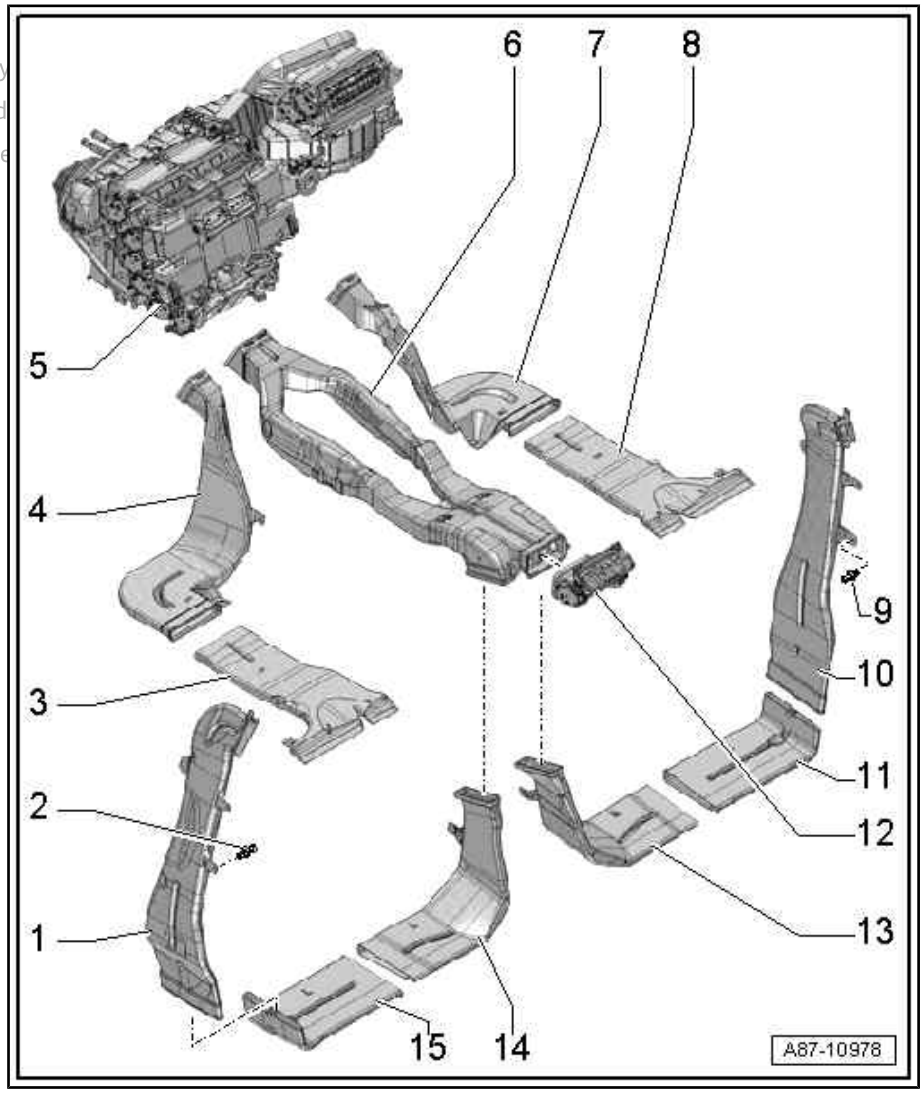
- ❑ Removing and installing ⇒ page 496

**16 - Air duct for footwell vent (left-side) - driver side**

- ❑ Removing and installing ⇒ page 494

## 6.1.2 Exploded view - routing of air flow and air distribution in passenger compartment (rear)

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**1 - Air duct at B-pillar (left-side)**

- ❑ "Deluxe" version only
- ❑ Removing and installing ⇒ page 500

**2 - Fastener**

**3 - Footwell vent (rear left)**

- ❑ Removing and installing ⇒ page 495

**4 - Air duct (left-side)**

- ❑ For footwell vent (rear)
- ❑ Removing and installing ⇒ page 499

**5 - Air conditioning unit**

- ❑ Air inlet and vents of air conditioning unit ⇒ page 488
- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ With or without auxiliary air heater element - Z35- , depending on equipment
- ❑ Removing and installing ⇒ page 460

**6 - Air duct (rear)**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ "Basic" version air conditioner: with air duct to rear vent
- ❑ "Deluxe" version air conditioner: with air duct to rear vent and air ducts for B-pillar vents
- ❑ Removing and installing ⇒ page 498

**7 - Air duct (right-side)**

- ❑ For footwell vent (rear)
- ❑ Removing and installing ⇒ page 499

**8 - Footwell vent (rear right)**

- ❑ Removing and installing ⇒ page 495

**9 - Fastener**

**10 - Air duct at B-pillar (right-side)**

- ❑ Country-specific version with control unit for air ionisation system - J897-
- ❑ “Deluxe” version only
- ❑ Removing and installing ⇒ page 500

**11 - Air duct to vent in B-pillar (right-side)**

- ❑ “Deluxe” version only
- ❑ Removing and installing ⇒ page 500

**12 - Air duct to rear vent**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ “Deluxe” version: with rear left chest vent control motor - V315- , rear right chest vent control motor - V316-
- ❑ Removing and installing ⇒ page 499

**Note**

*“Deluxe” version: Potentiometer in rear left chest vent - G630- and potentiometer in rear right chest vent - G631- are installed in centre console vent. For check procedure, refer to ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

**13 - Air duct to vent in B-pillar (right-side)**

- ❑ “Deluxe” version only
- ❑ Removing and installing ⇒ page 500

**14 - Air duct to vent in B-pillar (left-side)**

- ❑ “Deluxe” version only
- ❑ Removing and installing ⇒ page 500

**15 - Air duct to vent in B-pillar (left-side)**

- ❑ “Deluxe” version only
- ❑ Removing and installing ⇒ page 500

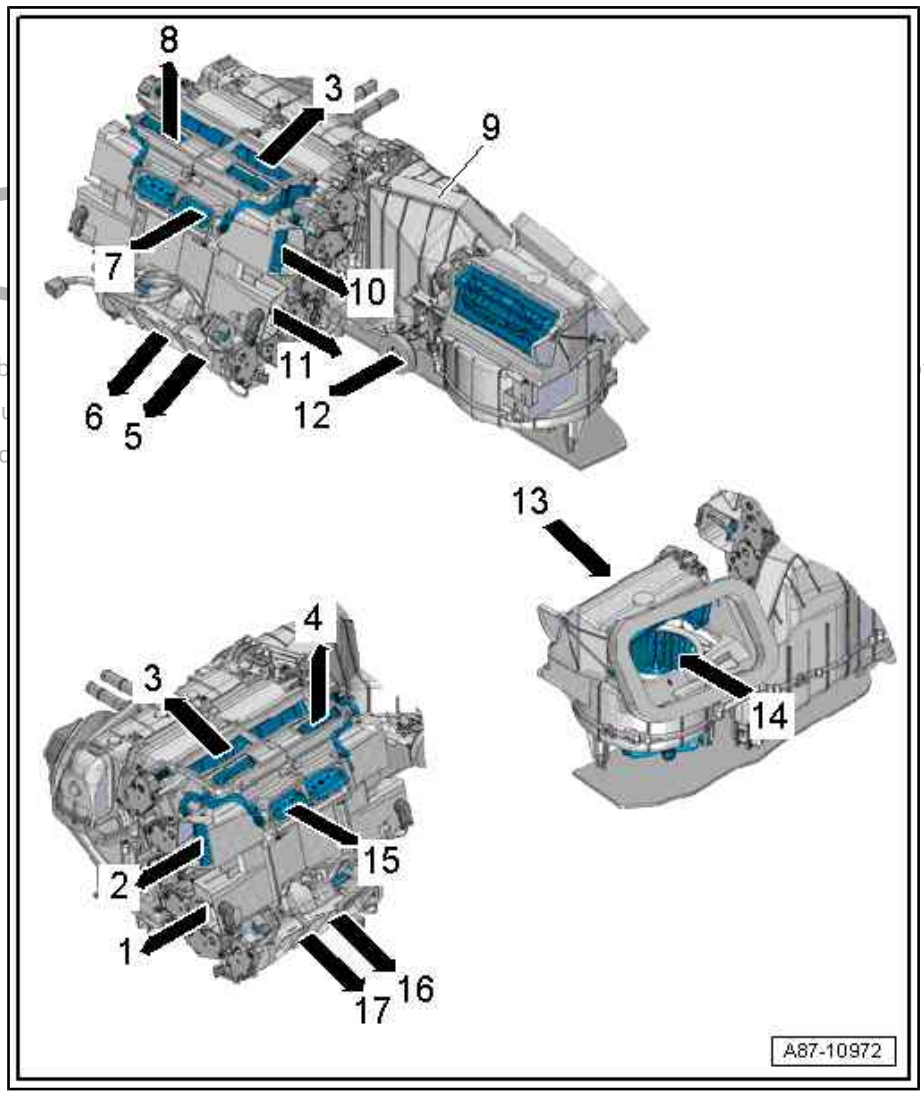
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## 6.2 Air intake and air outlet openings

⇒ “6.2.1 Air intake and air outlet openings”, page 492

⇒ “6.2.2 Air routing in air intake unit and air conditioning unit”, page 493

### 6.2.1 Air intake and air outlet openings




**1 - To footwell vent (driver side)**

**2 - To dash panel vent (driver side)**

**3 - To dash panel air duct**

- ❑ With air duct to windscreen, side window defroster vents (left and right)

**4 - To dash panel air duct**

- ❑ With air duct to dash panel (centre right) - “indirect ventilation”

**5 - To rear footwell vent (passenger side)**

**6 - To air duct in rear centre console**

- ❑ “Basic” version air conditioner: with air duct to rear vent (passenger side)
- ❑ “Deluxe” version air conditioner: with air duct to rear vent (passenger side) and air duct for B-pillar vent (passenger side)

**7 - To air duct for dash panel vent (centre)**

- ❑ With air duct to dash panel vent (passenger side)

**8 - To dash panel air duct**

- ❑ With air duct to dash panel (centre left) - “indirect ventilation”

**9 - Air conditioning unit**

- ❑ Different versions (“basic” and “deluxe”) ⇒ Electronic parts catalogue

**10 - To dash panel vent (passenger side)**

**11 - To footwell vent (passenger side)**

**12 - To glove box**

- ❑ “Deluxe” air conditioner only
- ❑ To glove box cooling
- ❑ “Basic” version: glove box cooling connection at air conditioning unit is sealed off

**13 - Air inlet from passenger compartment**

- ❑ Air recirculation mode

**14 - Air inlet from plenum chamber**

- ❑ Fresh air mode

**15 - To air duct for dash panel vent (centre)**

- ❑ With air duct to dash panel vent (driver side)

**16 - To air duct in rear centre console**

- ❑ “Basic” air conditioner: with air duct to rear vent (driver side)
- ❑ “Deluxe” air conditioner: with air duct to rear vent (driver side) and air duct for B-pillar vent (driver side)

**17 - To rear footwell vent (driver side)**

## 6.2.2 Air routing in air intake unit and air conditioning unit

**A - To footwell vent (left-side)**

**B - To dash panel vent (left-side)**

**C - To vent in dash panel - “indirect ventilation”**

- ❑ Via air duct fitted in dash panel to dash panel vent

**D - To defroster vents**

- ❑ Via air duct fitted in dash panel to windscreen and to side windows (left and right)

**E - To glove box cooling**

- ❑ “Deluxe” air conditioner only

**F - To dash panel vent (centre)**

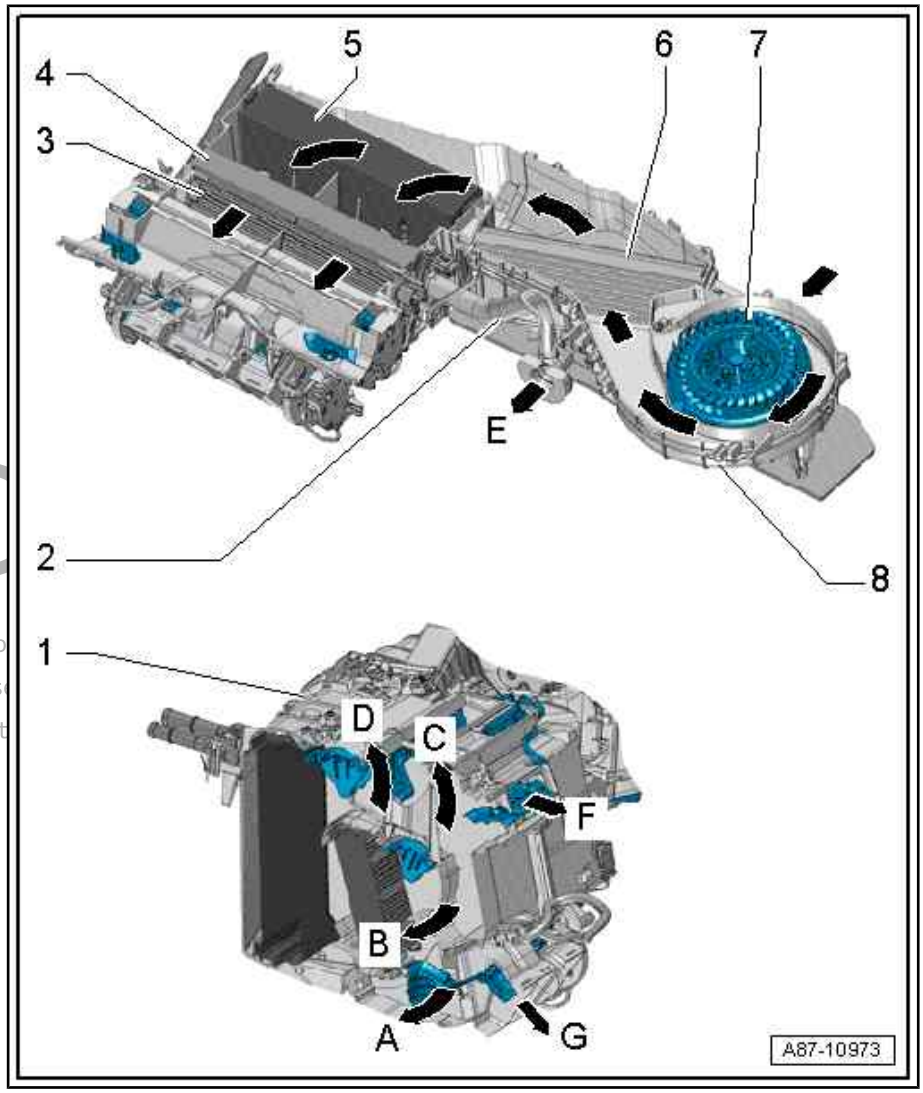
**G - To vents (rear)**

- ❑ To rear footwell vents (left and right)
- ❑ To rear vent in centre console

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**1 - Air distribution housing**

- ❑ Different versions (“basic” and “deluxe”) ⇒ Electronic parts catalogue
- ❑ With auxiliary air heater element - Z35- , de-



pending on equipment

**2 - Air duct for glove box cooling**

- ❑ “Deluxe” air conditioner only

**3 - Auxiliary air heater element - Z35-**

- ❑ Depending on equipment ⇒ Electronic parts catalogue
- ❑ For vehicles with TDI engine
- ❑ Vehicles with auxiliary heater are currently not fitted with a heating element

**4 - Heat exchanger for heater**

**5 - Evaporator**

**6 - Dust and pollen filter**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ page 472

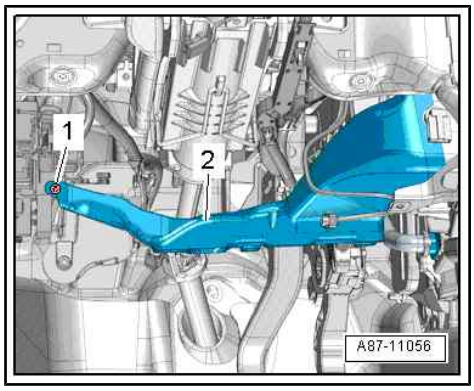
**7 - Fresh air blower - V2-**

- ❑ With fresh air blower control unit - J126-

**8 - Air intake box**

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## 6.3 Removing and installing footwell vent (driver side)




### Removing

– Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .

– Remove bolt -1-.

– Detach footwell vent -2-.

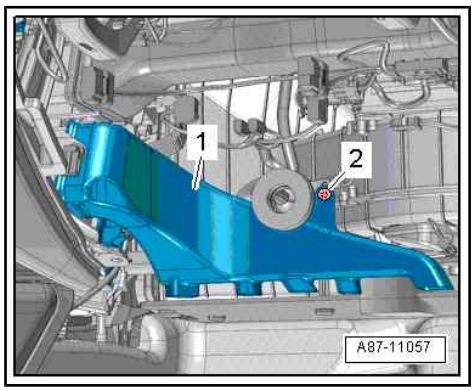
### Installing

Installation is carried out in reverse sequence.

### Tightening torques

◆ ⇒ “6.1 Exploded view - routing of air flow and air distribution in passenger compartment”, page 488

## 6.4 Removing and installing footwell vent (front passenger side)




### Removing

– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .

– Remove bolt -2-.

– Detach footwell vent -1-.

### Installing

Installation is carried out in reverse sequence.

### Tightening torques

◆ ⇒ “6.1 Exploded view - routing of air flow and air distribution in passenger compartment”, page 488

## 6.5 Removing and installing rear footwell vent

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### Removing

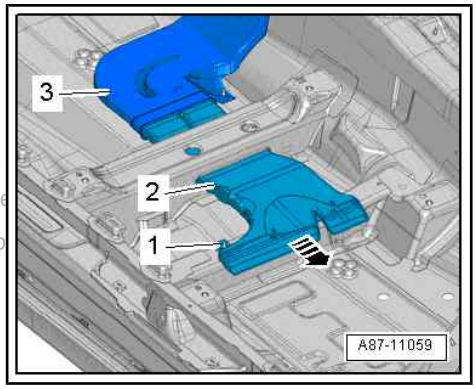
– Remove air duct (rear) ⇒ page 498 .

– Remove floor covering ⇒ General body repairs, interior; Rep. gr. 70 ; Passenger compartment trim panels; Removing and installing floor covering .

– If fitted, remove rear footwell vent temperature sender ⇒ page 620 .

– Release rear footwell vent -2- from fastener -1- at body.

– Detach rear footwell vent from air duct -3- -arrow-.




### Installing

Installation is carried out in reverse sequence.

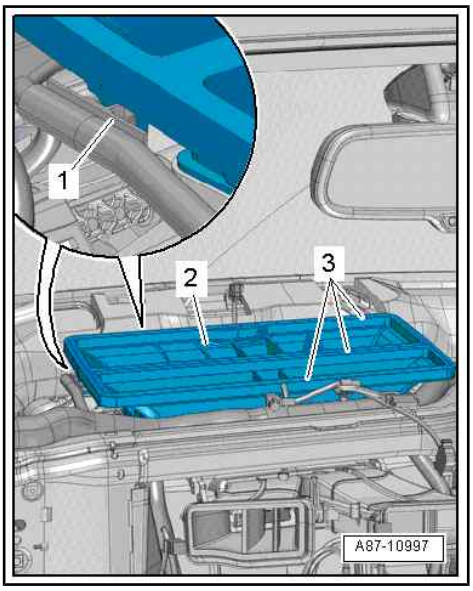
## 6.6 Removing and installing air duct for defroster vent

### Removing

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

– Release fasteners on air duct -2- and remove air duct -2- upwards.

– Move electrical wiring harness -1- clear.




### Installing

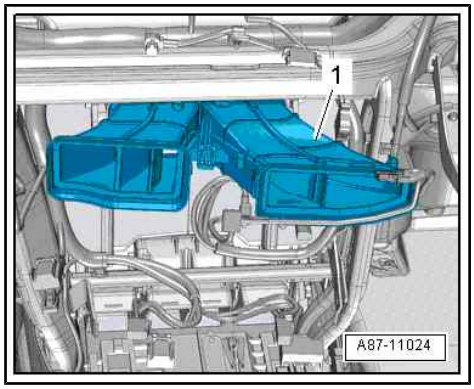
Install in reverse order of removal; note the following:

– Renew damaged or defective foam seals -3-.

**Note**

- *Take care not to squash the foam seal on the air duct when inserting the dash panel, as otherwise the flow of air to the windscreen or for "indirect ventilation" will be uneven or insufficient.*
- *After installing the dash panel, check the direction and distribution of air flow from the defroster vent and "indirect ventilation" to the windscreen.*

## 6.7 Removing and installing air duct for dash panel vent (centre)




**Removing**

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

– Detach air duct for centre dash panel vent -1-.

**Installing**

Install in reverse order of removal; note the following:

– Make sure that guides at air duct are correctly positioned in mountings.

## 6.8 Removing and installing air ducts

⇒ “6.8.1 Removing and installing air duct for dash panel vent (driver side)”, page 496

⇒ “6.8.2 Removing and installing air duct for dash panel vent (passenger side)”, page 497

⇒ “6.8.3 Removing and installing air duct for glove box cooling”, page 497

⇒ “6.8.4 Removing and installing air duct (rear)”, page 498

⇒ “6.8.5 Removing and installing air duct for rear vent”, page 499

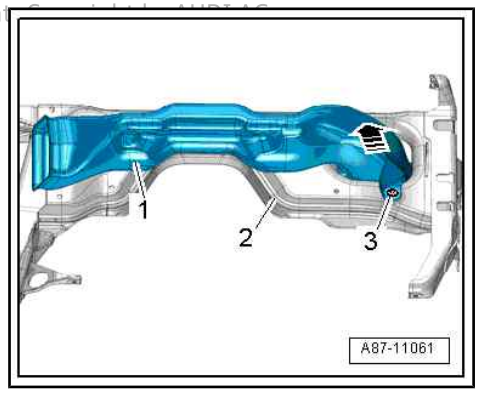
⇒ “6.8.6 Removing and installing air duct for footwell vent (rear)”, page 499

⇒ “6.8.7 Removing and installing air duct for B-pillar”, page 500

⇒ “6.8.8 Removing and installing air ducts to B-pillar vent”, page 500

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### 6.8.1 Removing and installing air duct for dash panel vent (driver side)




**Removing**

– Remove central tube ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Removing and installing central tube for dash panel .

– Remove bolt -3- from fastener.

– Guide air duct for dash panel vent -1- out of central tube -2- -arrow-.

**Installing**

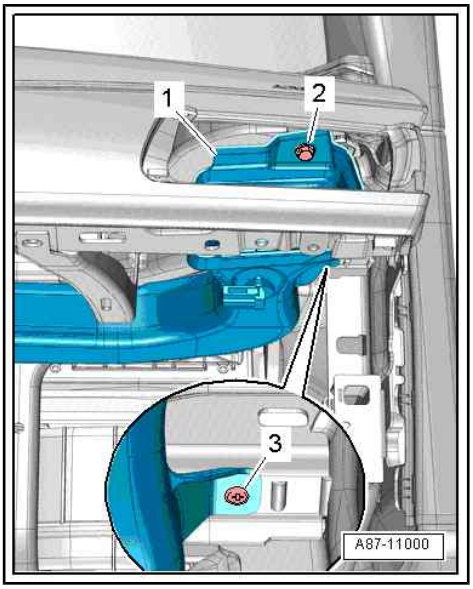
Install in reverse order of removal; note the following:

– When fitting central tube, make sure air duct is pushed evenly onto mounting on air distribution housing.

**Note**

*If the air duct is not correctly positioned on the mounting, noise may occur as a result of escaping air, or the warm/cold air emerging may influence the air conditioner control function.*

## 6.8.2 Removing and installing air duct for dash panel vent (passenger side)




### Removing

– Remove fuse holder with fuse carrier on dash panel (right-side) ⇒ Electrical system; Rep. gr. 97 ; Relay carriers, fuse carriers, electronics boxes; Overview of fitting locations - Relay carriers, fuse carriers, electronics boxes .

– Remove dash panel vent (passenger side) ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel vent .

– Remove bolt -2-.

– Remove right vent temperature sender - G151- ⇒ page 619 .

– Remove bolt -3- from fastener.

– Detach air duct for dash panel vent -1-.

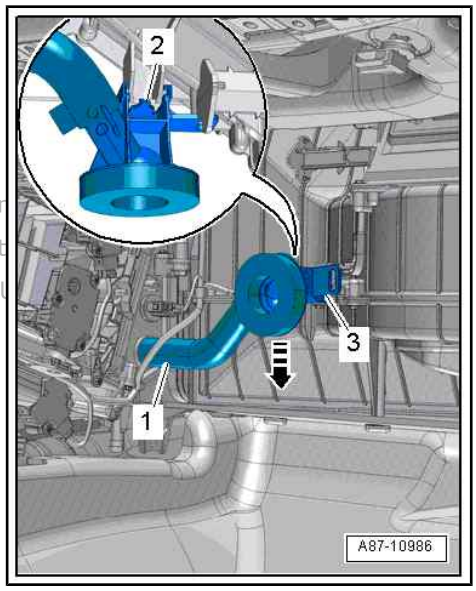
### Installing

Installation is carried out in reverse sequence.

### Tightening torques

♦ ⇒ “6.1 Exploded view - routing of air flow and air distribution in passenger compartment”, page 488

## 6.8.3 Removing and installing air duct for glove box cooling




### Removing

– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .

– Remove footwell vent (front passenger side) ⇒ page 494 .

– Release locking lug -2- and pull air duct -3- downwards out of mounting -arrow-.

– Detach air duct hose -1- at connection.

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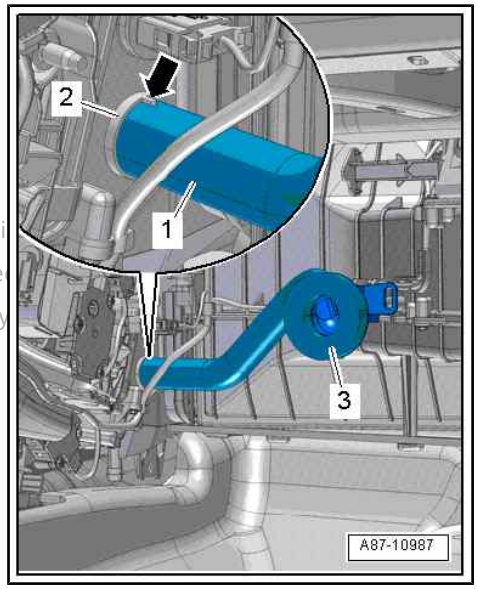
### Installing

Install in reverse order of removal; note the following:

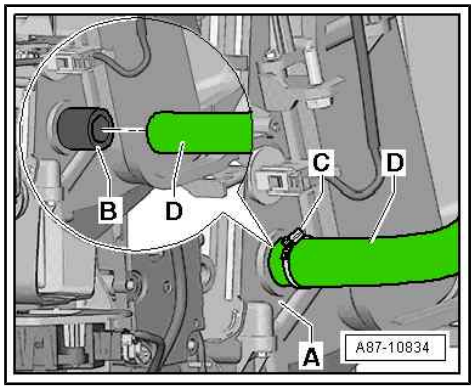
**Note**

- *If the foam seal is damaged or not making proper contact with the glove box, this may cause problems with noise.*
- *If the air duct hose is not properly connected to the air conditioning unit, this may result in noise at the connection.*

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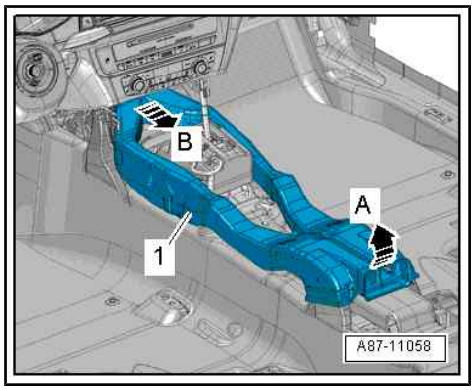

- Renew foam seal -3- if damaged or defective.
- Air duct hose -1- can only be pressed on as far as stop in one position -arrow- on connection -2-.
- Air duct must be pressed on until it engages audibly.




- If air duct hose -D- is loose at connection -B-, it must be secured with a hose clip -C-. Hose clip ⇒ Electronic parts catalogue
- Install footwell vent (front passenger side) ⇒ page 494 .

## 6.8.4 Removing and installing air duct (rear)

### Removing



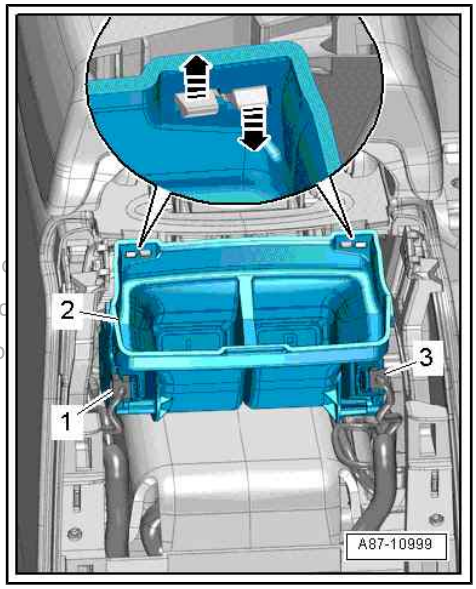

- Remove centre console and bracket (front) for centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing bracket for centre console .
- If fitted, remove rear chest vent temperature sender ⇒ page 622 .
- Swivel air duct -1- upwards at rear -arrow B- and release it from fastener at air distribution housing -arrow A-.
- Detach air duct (rear).

### Installing

Installation is carried out in reverse sequence.

## 6.8.5 Removing and installing air duct for rear vent

### Removing

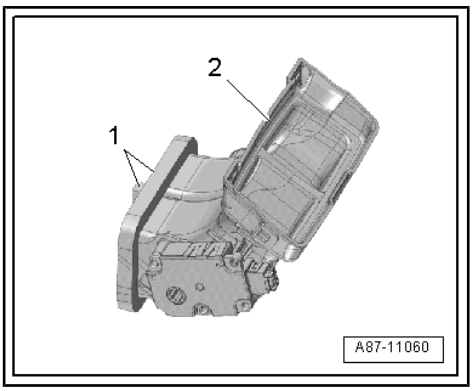



– Remove centre console cover (rear) and centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console cover .
– Release retaining tabs -arrows-.
– Pull air duct -2- off air duct (rear).
– If fitted, unplug electrical connectors -1, 3-.
– With the “deluxe” version air conditioner, renewing the air duct involves removing the control motors: control motor -V315- ⇒ page 377 , control motor -V316- ⇒ page 379 .

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### Installing

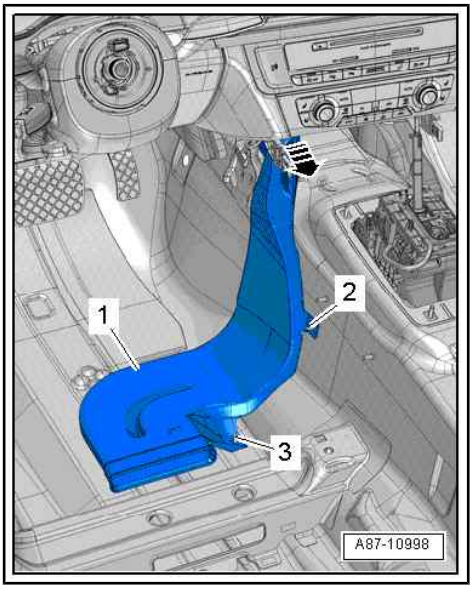
Install in reverse order of removal; note the following:




– Renew damaged or defective foam seals -1- at air duct -2-.

## 6.8.6 Removing and installing air duct for foot-well vent (rear)

### Removing



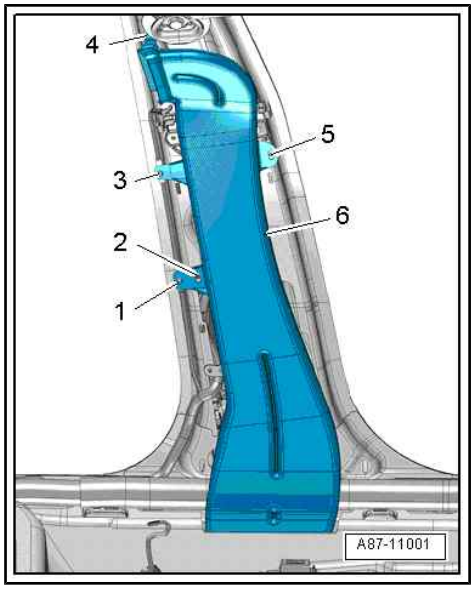

– Remove footwell vent (rear) ⇒ page 495 .
– Move electrical wiring harness clear.
– Release air duct -1- from fasteners -2, 3-.
– Detach air duct at air distribution housing -arrow-.

### Installing

Installation is carried out in reverse sequence.

## 6.8.7 Removing and installing air duct for B-pillar

### Removing




**Note**

*The illustration shows the left side.*

- Remove B-pillar trim (top) ⇒ General body repairs, interior; Rep. gr. 70 ; Passenger compartment trim panels; Removing and installing B-pillar trim .
- Move electrical wiring harness -1, 3- clear.
- If fitted, remove control unit for air ionisation system - J897- on air duct (right-side) ⇒ page 623 .
- Remove bolts -2, 4, 5- from fasteners.
- Lift out air duct -6-.

### Installing

Installation is carried out in reverse sequence.

## 6.8.8 Removing and installing air ducts to B-pillar vent

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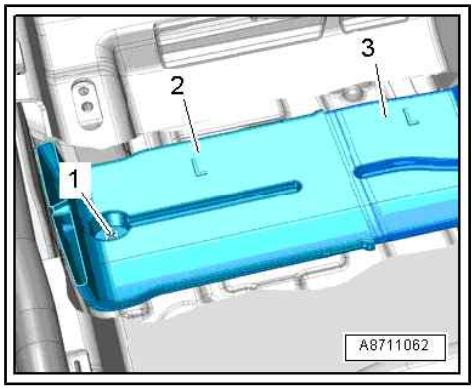
### Removing

- Move front seat as far forwards and upwards as it will go.
- Remove air duct for B-pillar ⇒ page 500 .
- Remove centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .
- Remove rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/ individual seats .
- Carefully lift floor covering.

**Note**

- *Make sure that floor covering does not tear at openings.*
- *The illustration shows the left side.*

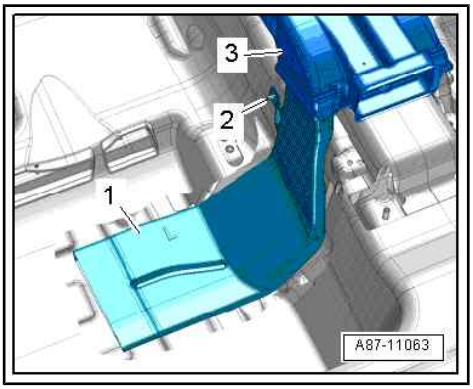
- Release air duct -2- from fastener -1- and pull off at air duct -3- to air duct (rear).



– Release air duct -1- to air duct (rear) -3- from fastener and detach.

**Installing**

Installation is carried out in reverse sequence.




## 6.9 Checking forced ventilation vents in passenger compartment

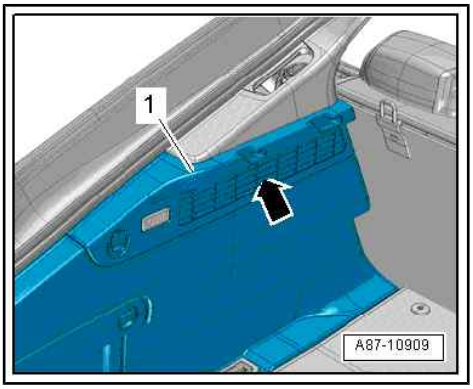
⇒ "6.9.1 Checking ventilation slots in luggage compartment", page 501

⇒ "6.9.2 Checking forced ventilation frame from inside", page 502

### 6.9.1 Checking ventilation slots in luggage compartment

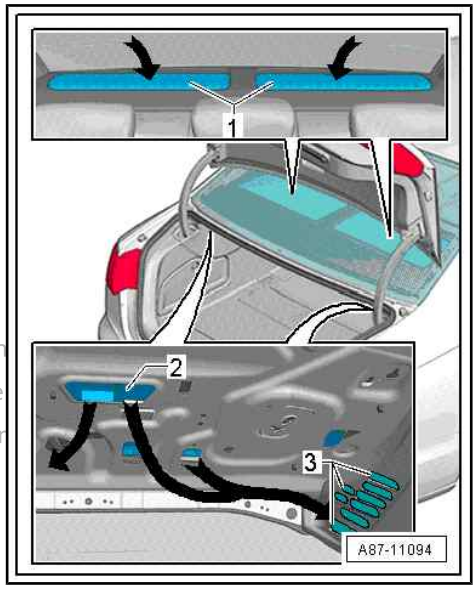
**Test sequence**

– Check flow of air through ventilation openings -arrow- in luggage compartment side trim -1- (both sides).




**Note**

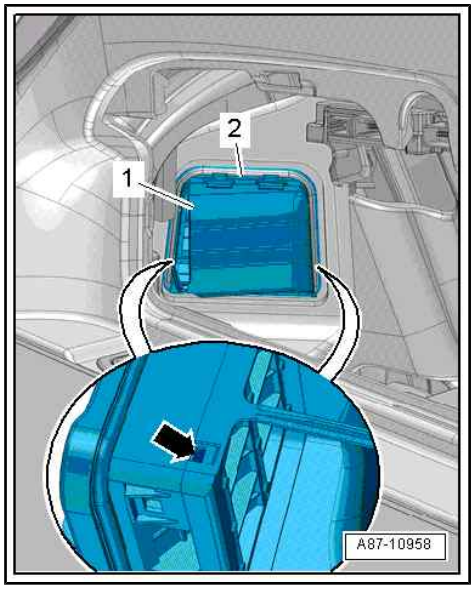
- *If the air ducts to the forced ventilation frames are blocked or obstructed, the windows may mist up.*
- *Different versions and layout. Shown on Audi A7 in illustration.*
- *On the Audi A6 Saloon, forced ventilation is implemented via two ventilation grilles -1- in the rear shelf and via openings in the luggage compartment back panel -2- and in the luggage compartment side trim (left and right) -3- to the forced ventilation frame.*
- *On the Audi A6 Avant, forced ventilation is implemented in the same way through the ventilation openings integrated in the luggage compartment side trim in the area of the rear side windows.*




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## 6.9.2 Checking forced ventilation frame from inside

**Test sequence**




**Note**

- *Gummed up sealing lips could cause the windows to mist up.*
- *The sealing lip in the ventilation frame must move freely and close automatically.*
- *If the air ducts to the ventilation frames are sealed off or blocked, the windows may mist up.*

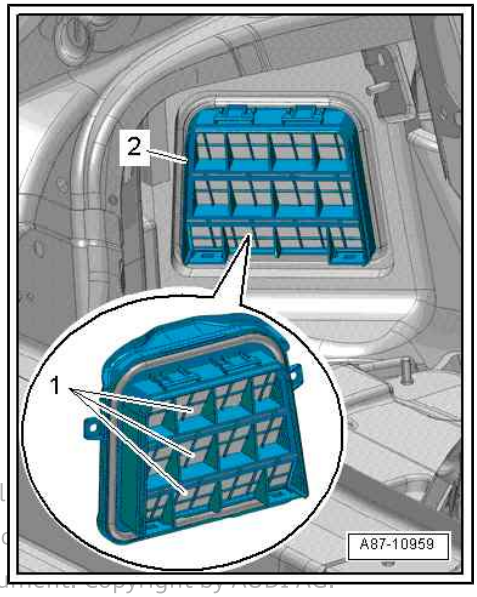
– Open cover in luggage compartment side trim.

**Note**

*If, on certain versions, there is no cover on one side of the luggage compartment side trim, the luggage compartment side trim may have to be removed for the checking procedure ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Removing and installing luggage compartment side trim .*

– If fitted, detach cover -1- at top of ventilation frame -2-.
– Release cover at side -arrow- and detach.

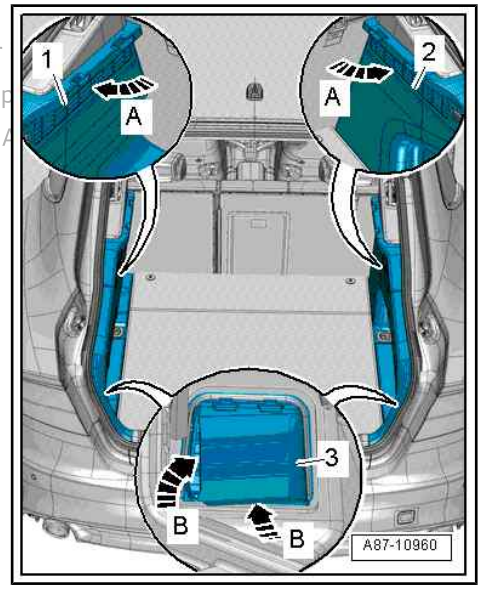
– Check that ventilation frame -2- is not blocked, and check that sealing lips -1- are functioning properly.




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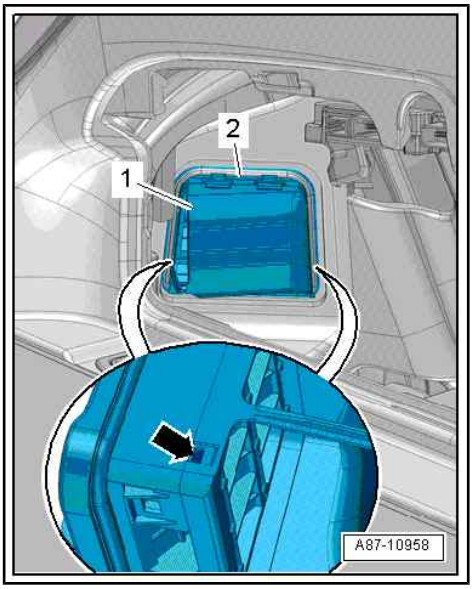
– To ensure proper ventilation of passenger compartment, ventilation openings in luggage compartment must not be blocked.
– It must be possible for the air -arrows A- to flow to the outside -arrows B- via ventilation openings -1, 2- in the luggage compartment side trim beneath cover -3- to the forced ventilation frames.



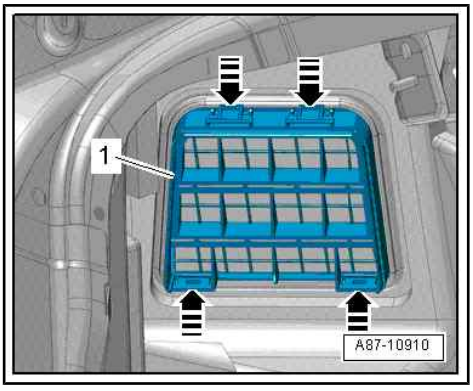

## 6.10 Removing and installing forced ventilation vents in passenger compartment

**Removing**

– Remove bumper cover (rear) ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (rear); Removing and installing bumper cover .
– Open cover in luggage compartment side trim.
– Detach cover -1- at top of ventilation frame -2-.
– Release cover at side -arrow- and detach.




– Release retaining clips -arrows- and press forced ventilation frame -1- outwards.



**Installing**

Install in reverse order of removal; note the following:

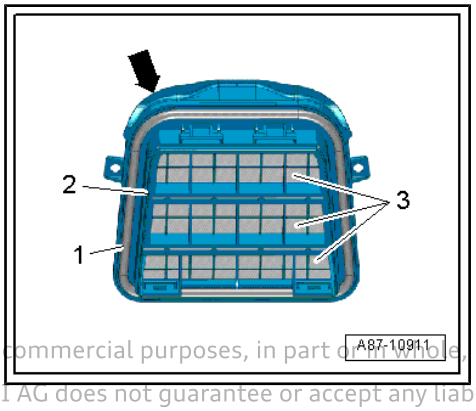
– Check seal -1- for damage.

– The sealing lips -3- only close properly if the ventilation frame -2- has been installed in the correct position.

• The large radius -arrow- is at the top.

– When installing, press ventilation frame into opening at body until all the retaining tabs engage properly.

– Re-attach cover at ventilation frame.




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## 6.11 Removing and installing fresh air intake

⇒ “6.11.1 Notes on fresh air intake”, page 504

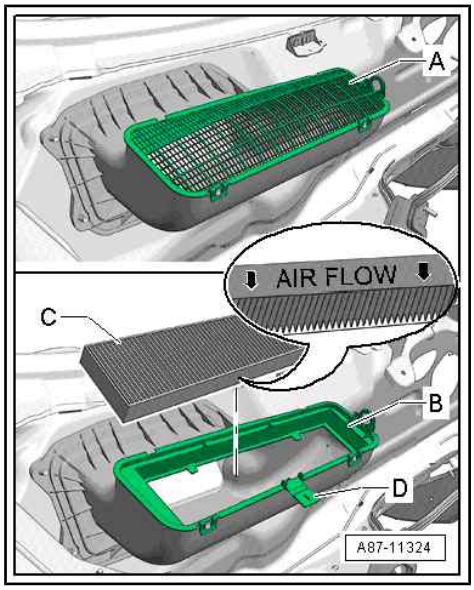
⇒ “6.11.2 Removing and installing fresh air intake grille”, page 505

⇒ “6.11.3 Removing and installing fresh air intake”, page 505

### 6.11.1 Notes on fresh air intake

**Note**

- *Depending on the version, a dust filter -C- may be fitted in the filter mounting -B- instead of the grille -A- in vehicles for certain countries with a high dust level in the ambient air (e.g. for China). The dust filter -C- is designed to stop the fresh air blower - V2- from drawing in dust and sand. For correct version refer to ⇒ Electronic parts catalogue .*
- *Make sure that no dirt falls into the intake duct of the air conditioning unit when removing the dust filter -C-.*
- *The dust filter -C- is held in position in the filter mounting -B- by tab -D-.*
- *Observe replacement interval for dust filter -C- ⇒ Maintenance tables .*
- *Clean the intake duct and the area surrounding the dust filter -C- in the plenum chamber before installing a new filter.*
- *When installing the dust filter -C-, observe the direction of air flow -arrows-.*



## 6.11.2 Removing and installing fresh air intake grille

**Removing**

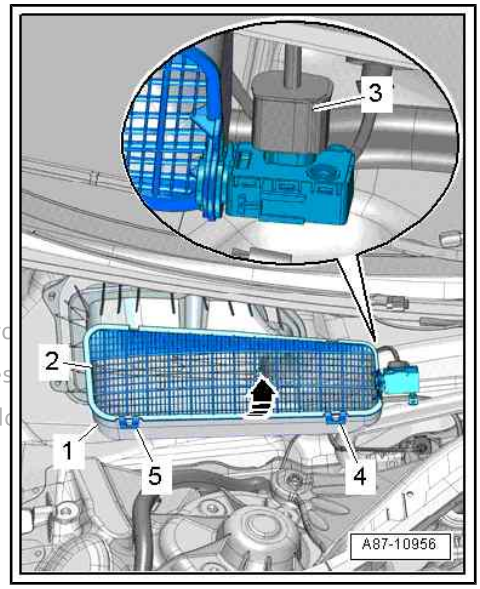
– Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .

– Release retaining tabs -4 and 5-.

– Swivel fresh air intake grille -2- in direction of -arrow- and disengage at intake duct -1-.

– Unplug electrical connector -3-.

– Detach fresh air intake grille.




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**Installing**

Installation is carried out in reverse sequence.

## 6.11.3 Removing and installing fresh air intake

**Removing**

– Remove fresh air intake grille ⇒ page 505 .

– Remove nuts -arrows-.

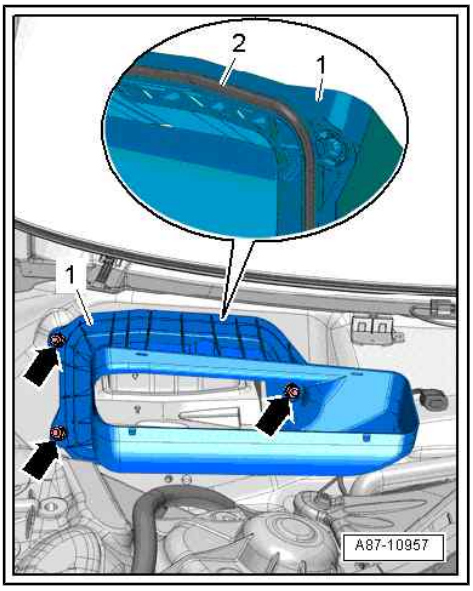
– Take intake duct -1- out of plenum chamber.

**Installing**

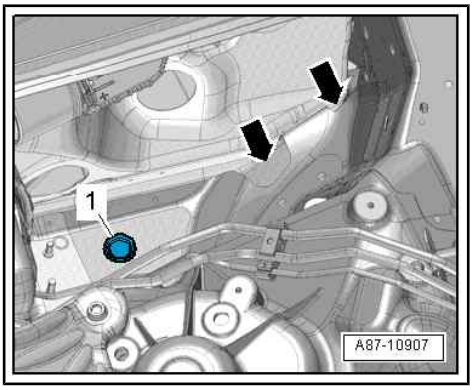
Install in reverse order of removal; note the following:

– Check bonded seal -2- between intake duct and body for damage.

– Install fresh air intake grille ⇒ page 505 .

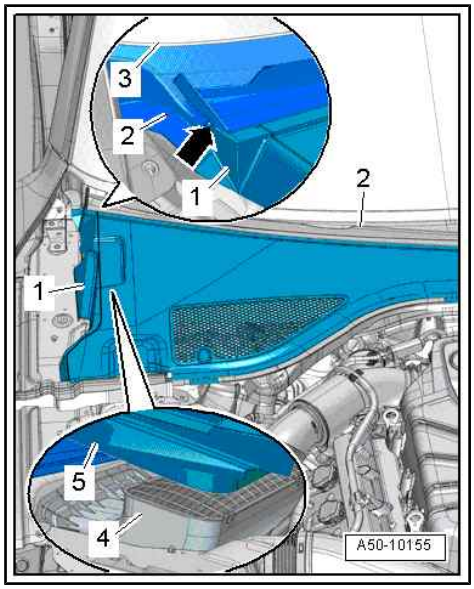



## 6.12 Checking plenum chamber water drain



**Note**

- *Drainage of water out of the plenum chamber may be obstructed by deposits such as leaves or pine needles accumulating in the water drains -arrows- and in the grommets -1- and valves. The water level in the plenum chamber then rises if the vehicle is taken to a car wash or in the event of heavy rain; water enters the air conditioning unit via the intake duct and is blown onto the evaporator by the fresh air blower together with the air delivered.*
- *The illustration shows the water drains -arrows- and the grommet -1- with valve for the water drain on the driver side with the brake servo removed.*
- *If the water drains -arrows- and/or the grommets -1- with valve are clogged with leaves or pine needles, the drains may freeze up in winter and prevent water drainage. 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.*
- *Water may flow into the fresh air intake duct if the cowl panel trim -2- and/or the plenum chamber cover -1- is/are damaged or not properly fitted. This may result in complaints about odour from the heater/air conditioner and/or moisture in the passenger compartment.*

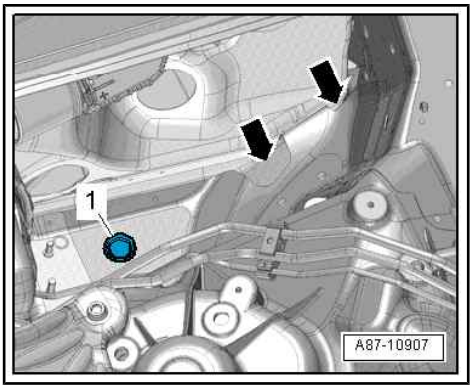



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## 6.13 Cleaning plenum chamber water drain

**Procedure**

– Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .




**Note**

- *Use a commercially available illuminated endoscope or similar to check inaccessible water drains. A version with a flexible, waterproof swan neck is most practical.*
- *Use a commercially available flexible gripper tool or similar to loosen and remove coarse dirt when cleaning inaccessible water drains. Then rinse out the remaining dirt.*

**Driver side:**

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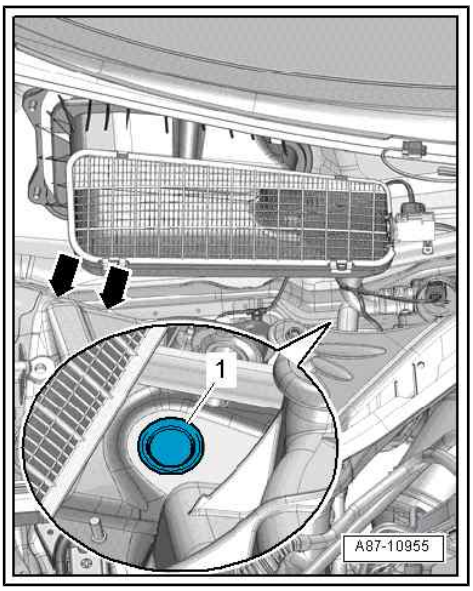
– Remove electronics box in plenum chamber ⇒ Electrical system; Rep. gr. 97 ; Relay carriers, fuse carriers, electronics boxes; Removing and installing electronics box .
– Check water drains -arrows- for dirt.
• The water must be able to drain off.
– Clean water drains if obstructed with dirt.
– Check grommet -1- with valve for dirt and proper operation.
• The valve in the grommet must not be gummed up or blocked by dirt.
– Clean grommet with valve if gummed up or dirty.

**Note**

*Shown in illustration with brake servo removed.*

**Front passenger side:**

– Check water drains -arrows- for dirt.
• The water must be able to drain off.
– Clean water drains if obstructed with dirt.
– Check grommet -1- with valve for dirt and proper operation.
• The valve in the grommet must not be gummed up or blocked by dirt.
– Clean grommet with valve if gummed up or dirty.

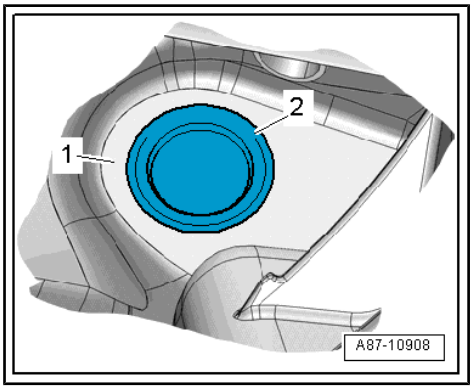


**Both sides of vehicle (continued):**

– If a grommet -2- is damaged, it must be renewed. To do so, pull grommet out of body opening -1-.

– Insert new grommet in body opening and check water drain.

• The valve of the grommet must not be gummed up and the water must drain off.




**Note**

*If the water still does not drain off in the area around the grommets, remove the heat shield (top) for the tunnel and clean the area around the grommet ⇒ General body repairs, exterior; Rep. gr. 66 ; Strips / covers / extensions / trim panels; Removing and installing heat shield for floor .*

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# 7 Coolant circuit

⇒ “7.1 Overview of fitting locations - engine coolant circuit”, page 509

⇒ “7.2 Removing and installing coolant circulation pump V50 ”, page 517

⇒ “7.3 Incorporation of air conditioner into coolant circuit of high-voltage system - Audi A6 e-tron only”, page 520

⇒ “7.4 Removing and installing coolant shut-off valve N82 ”, page 523

⇒ “7.5 Removing and installing heater coolant shut-off valve N279 ”, page 525

⇒ “7.6 Removing and installing bracket for V50 and N82 / N279 ”, page 528

⇒ “7.7 Removing and installing bracket with V618 and N634 - Audi A6 e-tron only”, page 529

⇒ “7.8 Exploded view - bracket for V618 and N634 , Audi A6 e-tron only”, page 532

⇒ “7.9 Removing and installing thermal management coolant pump 2 V618 - Audi A6 e-tron only”, page 533

⇒ “7.10 Removing and installing coolant changeover valve 3 N634 - Audi A6 e-tron only”, page 534

⇒ “7.11 Removing and installing high-voltage heater (PTC) Z115 , with J848 - Audi A6 e-tron only”, page 536

⇒ “7.12 Removing and installing coolant temperature sender 2 for thermal management G903 - Audi A6 e-tron only”, page 545

⇒ “7.13 Removing and installing coolant temperature sender 7 for thermal management G908 - Audi A6 e-tron only”, page 547

⇒ “7.14 Bleeding coolant circuit”, page 548

## 7.1 Overview of fitting locations - engine coolant circuit

⇒ “7.1.1 Incorporation into coolant circuit - vehicles without auxiliary heater”, page 509

⇒ “7.1.2 Incorporation into coolant circuit - vehicles with auxiliary heater”, page 512

⇒ “7.1.3 Incorporation into coolant circuit - Audi A6 e-tron”, page 513

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### 7.1.1 Incorporation into coolant circuit - vehicles without auxiliary heater

**Note**

*The arrows indicate the direction of coolant flow.*

**1 - Heat exchanger**

- For heater (of air conditioning unit)
- Removing and installing ⇒ page 476

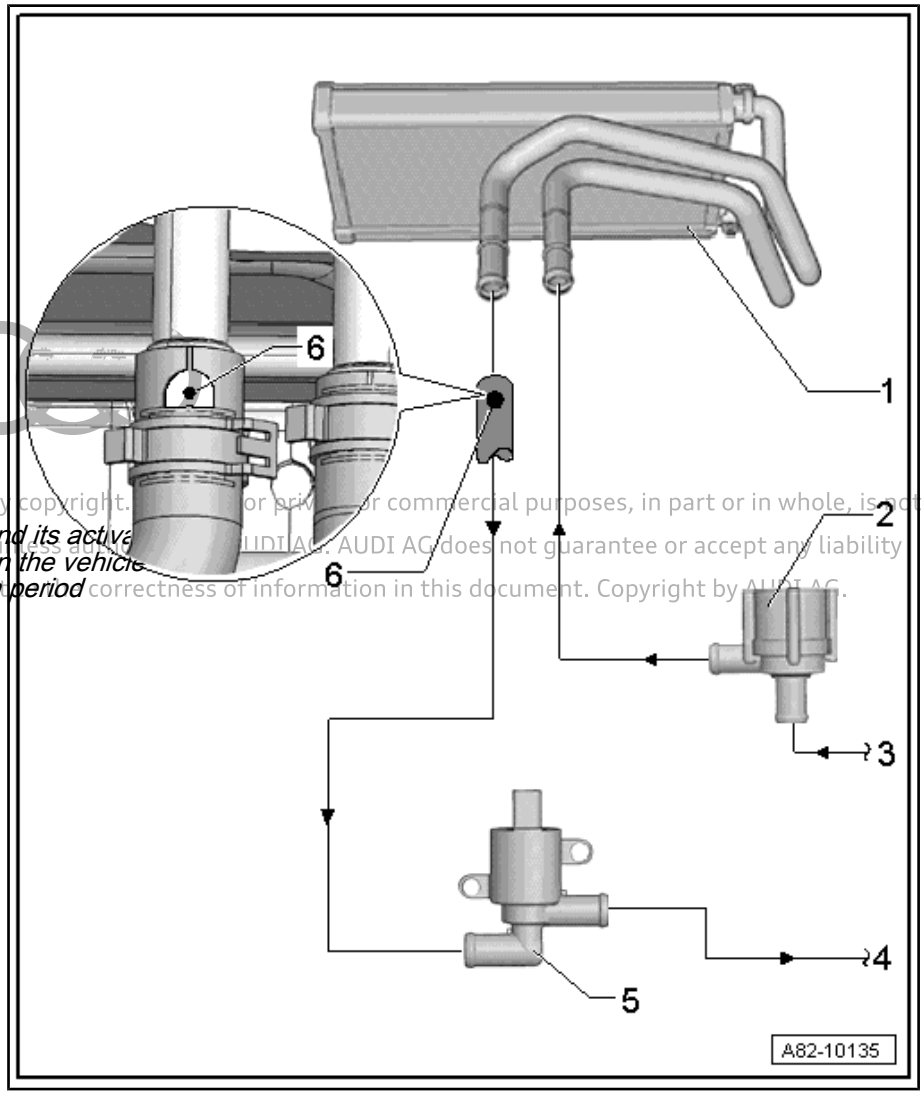
**2 - Coolant circulation pump - V50-**

- Different versions and activation; pay attention to correct version and assignment ⇒ page 517 and ⇒ Electronic parts catalogue

**Note**

*The version of -V50- and its activation differ depending on the vehicle version and production period ⇒ page 517 .*

- Installed on vehicles with certain engines and equipment
- Further notes ⇒ “1.1.1 Overview of fitting locations - components not located in passenger compartment, component group 1”, page 108
- Function ⇒ page 517
- Removing and installing ⇒ page 517




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**Note**

- *Currently, the pump is fitted on all vehicles with no auxiliary heater (optional extra); discontinuation of the pump for certain engines has not yet been finalised.*
- *If fitted, the coolant circulation pump - V50- assists the engine coolant pump to ensure an adequate, uniform flow of coolant through the heat exchanger of the air conditioning unit.*
- *-V50- can be fitted in different locations. On most vehicles it is installed in the plenum chamber. On vehicles with a high-voltage system (hybrid vehicles) it is located between the plenum chamber partition panel and the engine.*

- *The activation of -V50- differs. On most vehicles, it is activated directly by the air conditioner operating unit ( Climatronic control unit - J255- ). On vehicles with a high-voltage system (hybrid vehicles), activation occurs after a request from -J255- via the corresponding engine control unit ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

Current flow diagrams, Electrical fault finding and Fitting locations. Duplication for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

**3 - Coolant supply from engine**

- ❑ Incorporation of air conditioner into engine coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses

**4 - Coolant return to engine**

- ❑ Incorporation of air conditioner into engine coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses

**5 - Coolant shut-off valve - N82-**

- ❑ Fitted depending on engine
- ❑ Function ⇒ page 523
- ❑ Removing and installing ⇒ page 523

**Note**

- *-N82- is activated directly by operating unit ( Climatronic control unit - J255- ).*
- *The heat exchanger is shut off from the engine coolant circuit according to the engine/gearbox version: for some versions, the heat exchanger is not shut off; for other versions it is shut off in conjunction with the heating or cooling of the gear oil.*
- *Currently the shut-off valve is only fitted on vehicles with certain engines and engine/gearbox combinations and only on vehicles with no auxiliary heater (optional extra).*
- *-N82- is currently not fitted in vehicles with an engine with regulated coolant circuit (e.g. vehicles with a regulated coolant pump and a coolant valve for cylinder head - N489- ). On engines with a regulated coolant pump, the engine control unit activates the coolant pump to regulate coolant circulation ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .*

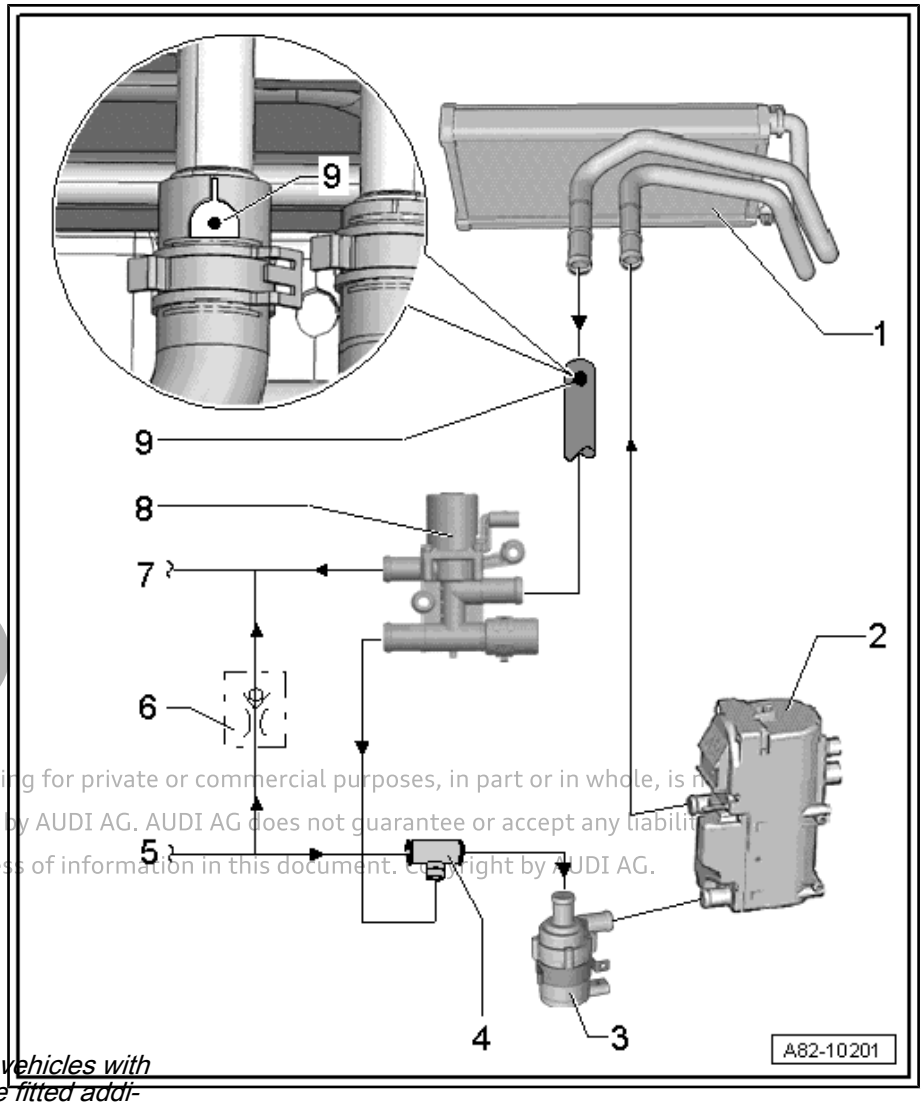
**6 - Bleeder hole**

- ❑ In coolant hose
- ❑ Bleeding ⇒ page 548

## 7.1.2 Incorporation into coolant circuit - vehicles with auxiliary heater

**Note**

*The arrows indicate the direction of coolant flow.*




**1 - Heat exchanger**

- For heater (of air conditioning unit)
- Removing and installing ⇒ page 476

**2 - Auxiliary heater**

- Check activation of circulation pump - V55- and heater coolant shut-off valve -N279- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Removing and installing ⇒ Auxiliary/supplementary heater; Rep. gr. 82 ; Auxiliary/supplementary heater; Removing and installing auxiliary/supplementary heater

**3 - Circulation pump - V55-**

- Checking activation ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode
- Removing and installing ⇒ Auxiliary/supplementary heater; Rep. gr. 82 ; Auxiliary/supplementary heater; Removing and installing circulation pump - V55-

**Note**

*Depending on engine, vehicles with auxiliary heater may be fitted additionally with coolant circulation pump - V50- ; for further information refer to ⇒ “1.1.1 Overview of fitting locations - components not located in passenger compartment, component group 1”, page 108 .*

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**4 - Outlet in coolant supply to auxiliary heater**

- Different versions ⇒ Electronic parts catalogue
- While the heater coolant shut-off valve - N279- is activated, the coolant is conveyed directly from the heat exchanger into the auxiliary heater. The engine is then not incorporated into the air conditioner coolant circuit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

**5 - Coolant supply from engine**

- Incorporation of air conditioner into engine coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses

- While the heater coolant shut-off valve - N279- is activated, the coolant is conveyed directly from the heat exchanger into the auxiliary heater. The engine is then not incorporated into the air conditioner coolant circuit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

**6 - Non-return valve with restrictor**

- Depending on equipment version
- Pay attention to direction of coolant flow when installing

**7 - Coolant return to engine**

- Incorporation of air conditioner into engine coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- While the heater coolant shut-off valve - N279- is activated, the coolant is conveyed directly from the heat exchanger into the auxiliary heater. The engine is then not incorporated into the air conditioner coolant circuit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

**8 - Heater coolant shut-off valve - N279-**

- Different versions, with 3 or 4 connections for coolant hoses. On the version with 4 connections, one connection is sealed with a cap. For correct version refer to ⇒ Electronic parts catalogue
- Checking activation ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode
- In auxiliary heating mode, the heater coolant shut-off valve - N279- is activated until the coolant temperature in the auxiliary heater exceeds a certain temperature value ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- If the engine is started while the auxiliary heater is in operation, the auxiliary heater control unit - J364- determines (according to the coolant temperature measured in the engine and the auxiliary heater) whether activation of -N279- is maintained or whether it is switched off ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Function ⇒ page 525
- Removing and installing ⇒ page 526

**9 - Bleeder hole**

- In coolant hose
- Bleeding ⇒ page 548

## 7.1.3 Incorporation into coolant circuit - Audi A6 e-tron

**Note**

*The arrows indicate the direction of coolant flow when the coolant changeover valve 3 - N634- is not activated.*

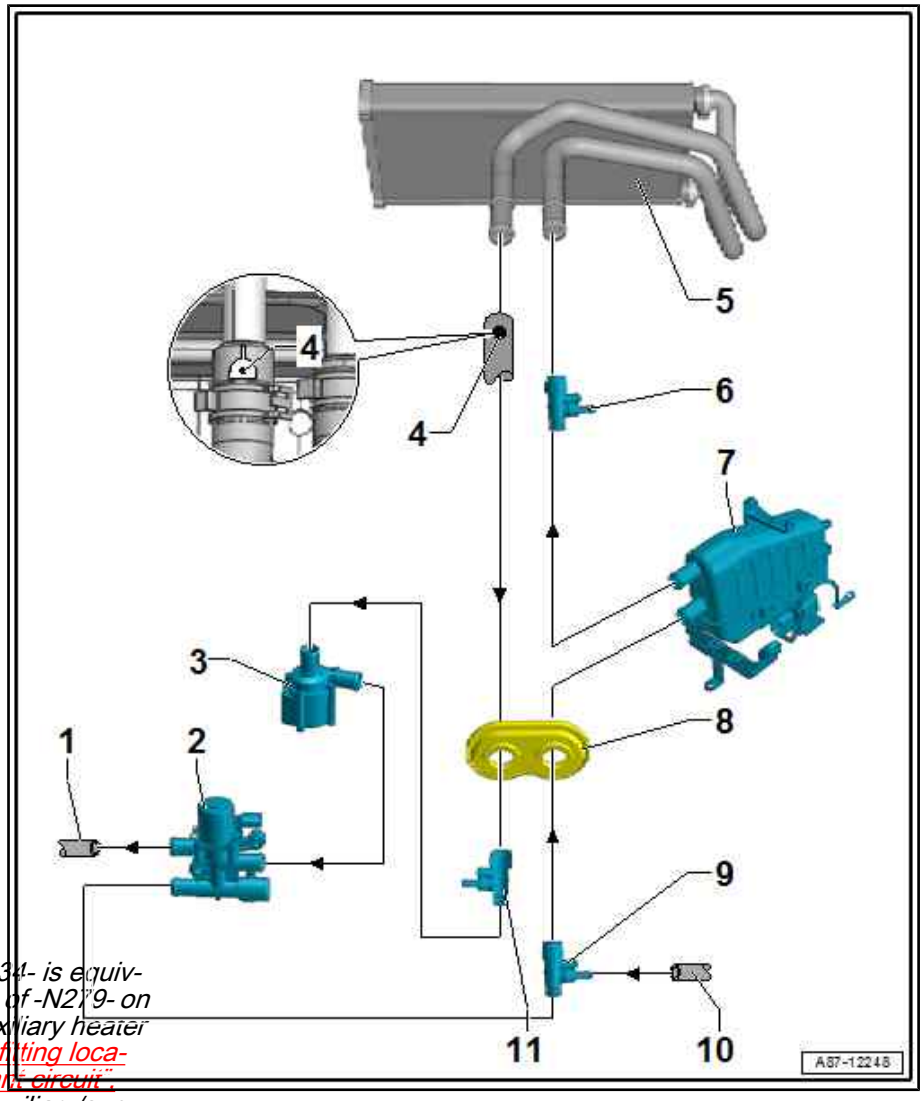
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**1 - Coolant return to engine**

- ❑ Incorporation of heater and air conditioner into engine coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses

**2 - Coolant changeover valve**
**3 - N634-**

- ❑ Incorporation of heater and air conditioner into engine coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- ❑ Check activation of -N634- ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode (for -J1024- ).
- ❑ Removing and installing ⇒ “7.7 Removing and installing bracket with V618 and N634 - Audi A6 e-tron only”, page 529




**Note**

- *The function of -N634- is equivalent to the function of -N279- on vehicles with an auxiliary heater ⇒ “7.1 Overview of fitting locations - engine coolant circuit”, page 509 and ⇒ Auxiliary/supplementary heater; Rep. gr. 82 ; Coolant circuit with auxiliary/supplementary heater; Connection diagram - coolant hoses .*
- *The designation and activation of this valve varies depending on the vehicle equipment. On vehicles without “auxiliary/supplementary heater” as optional extra, it is referred to as -N634- and is activated by the thermal management control unit - J1024- . On vehicles with “auxiliary/supplementary heater” as an optional extra, it is known as -N279- and is activated by the auxiliary heater control unit - J364- ⇒ Auxiliary/supplementary heater; Rep. gr. 82 ; Coolant circuit with auxiliary/supplementary heater; Connection diagram - coolant hoses and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .*

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### 3 - Thermal management coolant pump 2 - V618-

- ❑ Only installed on Audi A6 e-tron
- ❑ Removing and installing
⇒ “7.9 Removing and installing thermal management coolant pump 2 V618 - Audi A6 e-tron only”, page 533

**Note**

- *-V618- is activated via thermal management control unit - J1024- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations*
- *Check correct installation position and operation of -V618- if there is a problem with insufficient heat output from the heater and air conditioning unit with the engine running, regardless of whether -Z115- is activated ⇒ Current flow diagrams, Electrical fault finding and Fitting locations and ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

### 4 - Bleeder hole

- ❑ In coolant hose
- ❑ Bleeding ⇒ page 548

### 5 - Heat exchanger

- ❑ For heater (of air conditioning unit)
- ❑ Removing and installing ⇒ page 476

### 6 - Coolant temperature sender 7 for thermal management - G908-

- ❑ Only installed on Audi A6 e-tron
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 547 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- ❑ Incorporated into coolant circuit ⇒ “7.1 Overview of fitting locations - engine coolant circuit”, page 509 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- ❑ Different versions. For correct version refer to ⇒ Electronic parts catalogue .

**Note**

- *To remove: Release pressure in coolant circuit, remove plenum chamber cover, unscrew bolt (tightening torque: 8 Nm) and detach -G908- from bracket ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .*
- *Lubricate new O-ring with coolant before installing ⇒ Electronic parts catalogue .*
- *Transmits measured coolant temperature to thermal management control unit - J1024-*

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**7 - High-voltage heater (PTC) - Z115- (with high-voltage heater (PTC) control unit - J848- )**

- ❑ Only installed on Audi A6 e-tron
- ❑ For all work on -Z115- (and on vehicles with high-voltage system), note additional warnings for working on such vehicles ⇒ page 31 and ⇒ Engine, mechanics; Rep. gr. 00 ; Safety precautions; Safety precautions when working on high-voltage vehicles .
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Incorporated into engine coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- ❑ Removing and installing ⇒ “7.11 Removing and installing high-voltage heater (PTC) Z115 , with J848 - Audi A6 e-tron only”, page 536

**Note**

- *-Z115- has a nominal power of approx. 5000 watts. The nominal power is only produced at low coolant temperatures.*
- *Further notes ⇒ “3.10.5 Checking supplementary heating - Audi A6 e-tron”, page 94*

**8 - Leadthrough for coolant lines through plenum chamber partition panel**

**9 - Outlet in coolant supply to high-voltage heater (PTC) - Z115-**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ While the coolant changeover valve 3 - N634- is activated, the coolant is conveyed from the heat exchanger in the air conditioning unit into -Z115- . The engine is then not incorporated into the air conditioner coolant circuit ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode

**10 - Coolant supply from engine**

- ❑ Incorporation of heater and air conditioner into engine coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- ❑ While the coolant changeover valve 3 - N634- is activated, the coolant is conveyed from the heat exchanger in the air conditioning unit into -Z115- . The engine is then not incorporated into the air conditioner coolant circuit ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode

**11 - Coolant temperature sender 2 for thermal management - G903-**

- ❑ Only installed on Audi A6 e-tron
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 545 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- ❑ Incorporated into coolant circuit ⇒ “7.1 Overview of fitting locations - engine coolant circuit”, page 509 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- ❑ Different versions. For correct version refer to ⇒ Electronic parts catalogue .

**Note**

*Transmits measured coolant temperature to thermal management control unit - J1024-*

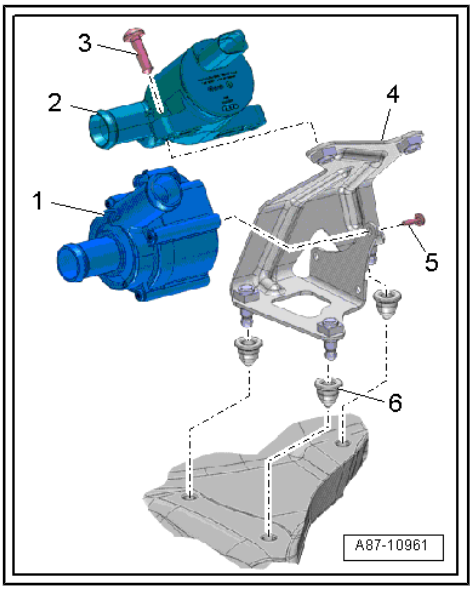
## 7.2 Removing and installing coolant circulation pump - V50-

⇒ "7.2.1 Operation of coolant circulation pump V50 ", page 517

⇒ "7.2.2 Removing and installing coolant circulation pump V50 ", page 517

### 7.2.1 Operation of coolant circulation pump - V50-

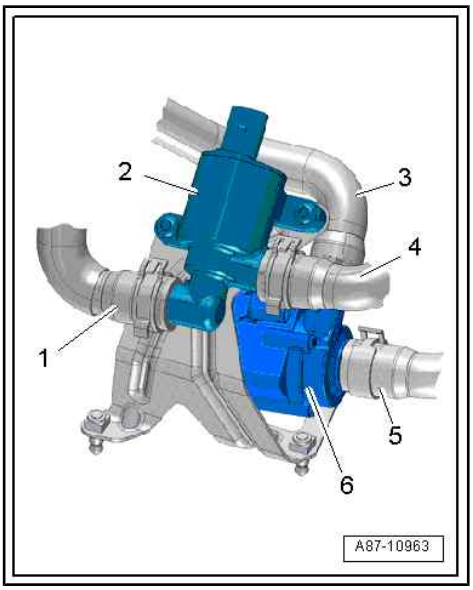
**Operation**




- The bracket -4- for the coolant circulation pump - V50- -item 1- and for the coolant shut-off valve - N82- -item 2- is connected to the body by way of clip nuts -6- to reduce noise.
- The coolant shut-off valve - N82- and the coolant circulation pump - V50- are connected directly to the bracket.
- The coolant circulation pump - V50- helps the engine coolant pump to circulate the coolant. It is activated by the operating unit ( Climatronic control unit - J255- ) to ensure an adequate, even flow of coolant through the heat exchanger.

**Note**

- *Whether the coolant shut-off valve - N82- and the coolant circulation pump - V50- are fitted depends on the engine and equipment.*
- *Vehicles with an auxiliary heater have no -V50- / -N82- ; their functions are performed by the circulation pump - V55- / heater coolant shut-off valve - N279- ⇒ Auxiliary/supplementary heater; Rep. gr. 82 ; Auxiliary/supplementary heater; Overview of fitting locations - Auxiliary/supplementary heater .*




- When -V50- -item 6- is running, coolant is drawn in from the engine via coolant hose -5- and pumped through coolant hose -3- to the heat exchanger for heater (air conditioning unit).
- The coolant flows back to the engine through coolant hose -4- via return hose -1- of heat exchanger and coolant shut-off valve - N82- -item 2- (depending on engine version and vehicle equipment).
- With the ignition switched on, -V50- is activated directly by the operating unit ( Climatronic control unit - J255- ) depending on the coolant temperature and the setting on the operating unit.
- On vehicles with a start/stop system, -V50- (and coolant shut-off valve - N82- ) are also activated directly by the operating unit ( Climatronic control unit - J255- ).
- If faults have been stored for these components in the operating unit ( Climatronic control unit - J255- ), please pay attention to the version, coding and adaption of -J255- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").

### 7.2.2 Removing and installing coolant circulation pump - V50-

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**Special tools and workshop equipment required**

- Hose clamps up to 25 mm - 3094-

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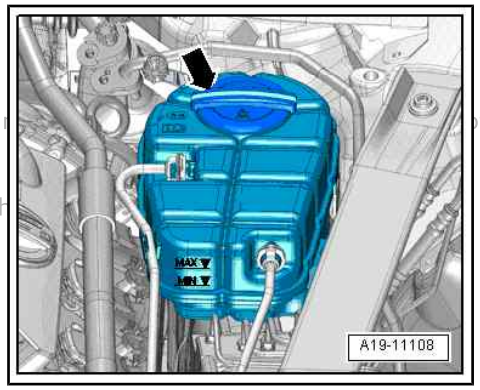
- Hose clip pliers - VAS 6340-

**Removing**

**WARNING**

***Risk of scalding due to hot steam and hot coolant.***

- ***The cooling system is under pressure when the engine is hot.***
- ***To relieve pressure, cover coolant expansion tank cap with a cloth and open carefully.***




– Open cap -arrow- on coolant expansion tank.

– Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .

– Remove fresh air intake duct ⇒ page 505 .

– Mark arrangement of coolant hoses.

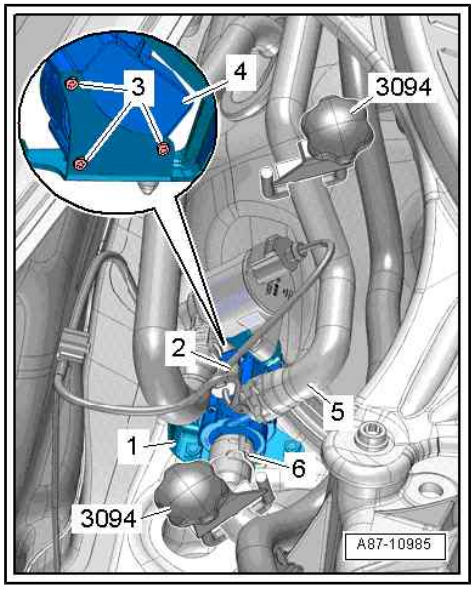
– Cover area underneath pump with absorbent cloth or absorbent paper.

– Clamp off coolant hoses -5, 6- with hose clamps -3094- , release hose clips and detach coolant hoses from pump.

– Unplug electrical connector -2-.

– Pull bracket -1- out of clip nuts.

– Remove bolts -3- and detach pump -4-.




**Installing**

Install in reverse order of removal; note the following:

**Note**

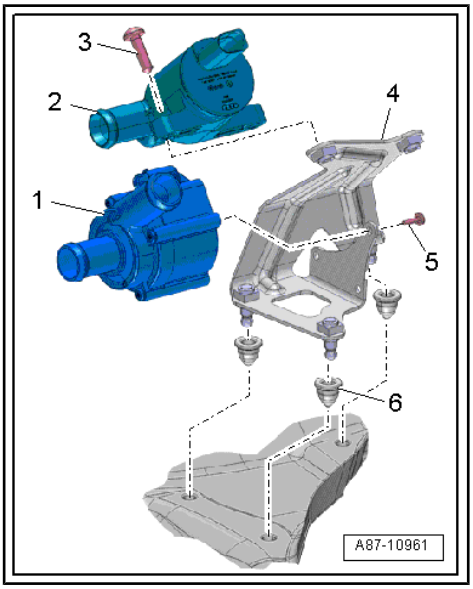
- *Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Electronic parts catalogue .*
- *Make sure these components do not come into direct contact with the body or other parts.*

– When fitting coolant hoses, make sure that as little air as possible remains in pump and coolant hoses ⇒ page 548 .

**Caution**

- ***Note direction of coolant flow at coolant circulation pump - V50- / coolant shut-off valve - N82- .***
- ***Pay attention to correct layout of coolant hoses at coolant circulation pump - V50- / coolant shut-off valve - N82- .***
- ***If coolant hoses are interchanged, heating in passenger compartment may fail due to coolant flowing in the incorrect direction.***
- ***Crushed coolant hoses may lead to failure of the passenger compartment heating on account of inadequate coolant flow.***

– Tighten bolts -5- to 1.5 Nm.
– Bracket -4- must be pressed completely into clip nuts -6-.
– Install fresh air intake duct ⇒ page 505 .
– Check coolant level and bleed coolant circuit; observe notes ⇒ page 548 .
– Check activation and operation of coolant circulation pump -V50- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).




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## 7.3 Incorporation of air conditioner into coolant circuit of high-voltage system - Audi A6 e-tron only

⇒ "7.3.1 Notes on incorporation of air conditioner into coolant circuit of high-voltage system", page 520

⇒ "7.3.2 Incorporation of air conditioner into coolant circuit of high-voltage system", page 521

### 7.3.1 Notes on incorporation of air conditioner into coolant circuit of high-voltage system

**Note**

- *Topping up coolant and bleeding coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system (vehicles with high-voltage system).*
- *Incorporation of heat exchanger for high-voltage battery into refrigerant circuit ⇒ page 521*
- *If there is a problem because the components of the high-voltage system are not cooled and the air conditioner cooling output is OK, check that the high-voltage battery heat exchanger is cooled down ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode (for air conditioner and hybrid battery energy management system). Make sure that the coolant for the high-voltage battery heat exchanger is actually being cooled. The temperature of the coolant upstream and downstream of the high-voltage battery heat exchanger is measured by the coolant temperature sender 1 for thermal management - G902- . The measured values from this sender can be read out via the thermal management control unit - J1024- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *In order for the coolant in the high-voltage battery heat exchanger to be cooled, the air conditioner must be functioning correctly and the electrical air conditioner compressor - V470- must be activated.*
- *To check the cooling function of the coolant in the high-voltage battery heat exchanger and the high-voltage system components, certain routines are stored in the thermal management control unit - J1024- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *In order for the coolant cooled by the high-voltage battery heat exchanger to cool the high-voltage system components ( hybrid battery unit - AX1- , power and control electronics for electric drive - JX1- etc.), the function, incorporation and activation of the coolant pump for high-voltage battery - V590- installed in the coolant circuit must be OK ⇒ page 521 and ⇒ Vehicle diagnostic tester ("Guided Fault Finding"). If no faults can be found here in the refrigerant circuit, check the entire coolant circuit of the high-voltage system, the other components installed in this circuit, and their activation and function ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses (Connection diagram for coolant hoses - high-voltage system cooling components) and ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode (for the air conditioner and hybrid battery energy management system).*

## 7.3.2 Incorporation of air conditioner into coolant circuit of high-voltage system

**Note**

*The following illustration only shows an overview of the components of the high-voltage system coolant circuit. For information on other components not illustrated here, refer to ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses (Connection diagram - coolant hoses, cooling components for high-voltage system).*

**1 - Control unit for high-voltage battery charging unit - J1050-**

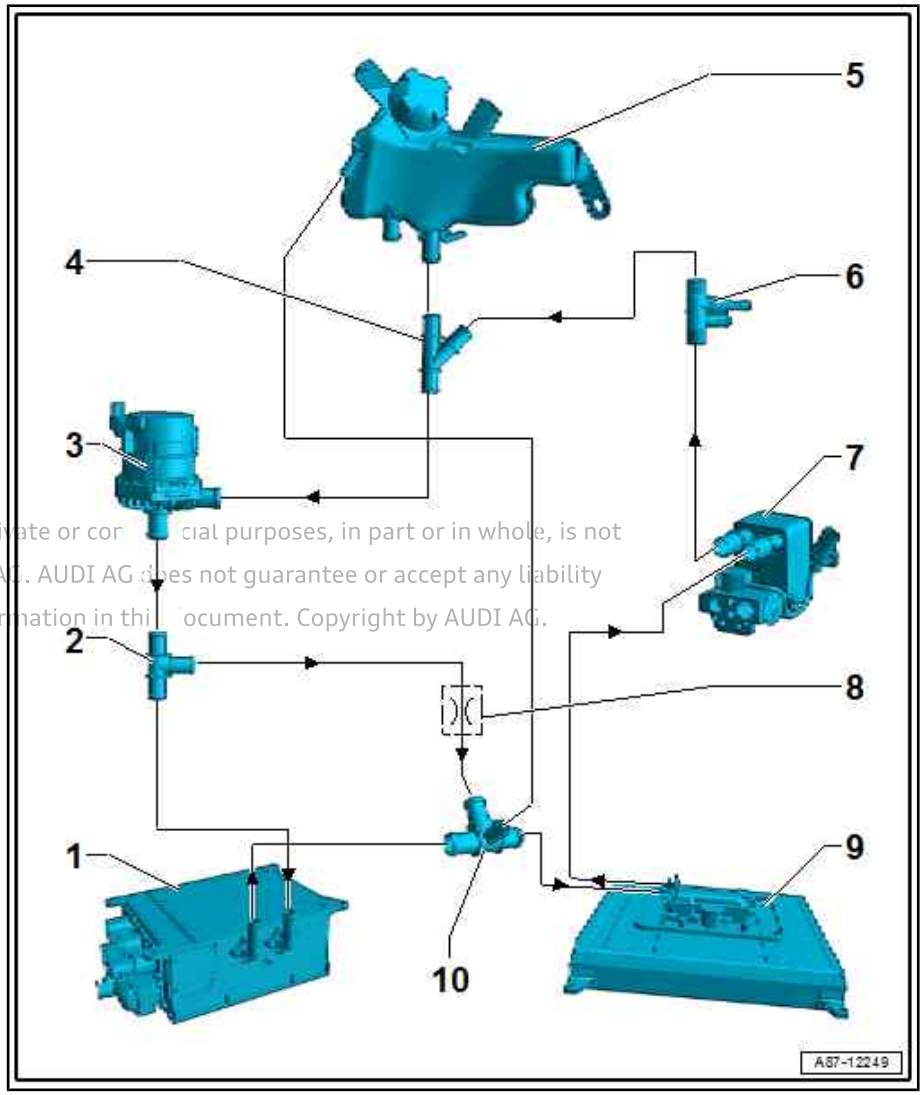
- ❑ Fitting location, function, removing and installing ⇒ Engine, mechanics; Rep. gr. 93 ; Charging unit for high-voltage battery
- ❑ Checking operation ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)

**2 - T connection in coolant supply to -J1050-**

- ❑ Different versions ⇒ Electronic parts catalogue

**3 - Coolant pump for high-voltage battery - V590-**

- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 562 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses (Connection diagram - coolant hoses, cooling components for high-voltage system).




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**Note**

- ♦ *Activated by battery regulation control unit - J840- (via coolant pump relay - J235- ).*
- ♦ *Checking activation and function ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode*

- *For further information, refer to ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .*

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**4 - Outlet in coolant supply to -V590-**

- ❑ Different versions ⇒ Electronic parts catalogue

**5 - Coolant expansion tank for high-voltage battery cooling system**

- ❑ Removing and installing ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .
- ❑ Incorporation into coolant circuit; draining and filling cooling system ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- ❑ With coolant shortage indicator sender 2 - G837-

**6 - Coolant temperature sender 1 for thermal management - G902-**

- ❑ Incorporation in coolant circuit of high-voltage system ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses (Connection diagram - coolant hoses, cooling components for high-voltage system)
- ❑ Checking operation ⇒ Vehicle diagnostic tester (“Guided Fault Finding” for air conditioner and hybrid battery energy management system)
- ❑ Removing and installing ⇒ page 560 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses (Connection diagram - coolant hoses, cooling components for high-voltage system).

**Note**

- *Transmits measured coolant temperature to thermal management control unit - J1024-*
- *For further information, refer to ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

**7 - High-voltage battery heat exchanger**

- ❑ Removing and installing ⇒ page 199

**Note**

- *Via this heat exchanger, the coolant supplied to the hybrid battery unit - AX1- and/or the control unit for high-voltage battery charging unit - J1050- is cooled when necessary by the air conditioner refrigerant circuit.*
- *Incorporation in air conditioner refrigerant circuit ⇒ “2.1.3 System overview - refrigerant circuit, Audi A6 e-tron (vehicles with high-voltage system)”, page 141*
- *For further information, refer to ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

**8 - Restrictor**

- ❑ Removing and installing ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses (Connection diagram - coolant hoses, cooling components for high-voltage system).

**Note**

- *The diameter of the opening in the restrictor is approx. 6 mm.*
- *Depending on version, a restrictor is inserted in the connecting hose or one of the two T connections has a corresponding opening.*
- *For further information, refer to ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses (Connection diagram - coolant hoses, cooling components for high-voltage system).*

**9 - Hybrid battery unit - AX1-**

- ❑ Operation, removing and installing ⇒ Rep. gr. 93 ; High-voltage battery unit
- ❑ Checking operation ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)

**10 - Double T connection in coolant supply to -AX1-**

- ❑ With outlet to coolant expansion tank (for bleeding procedure)

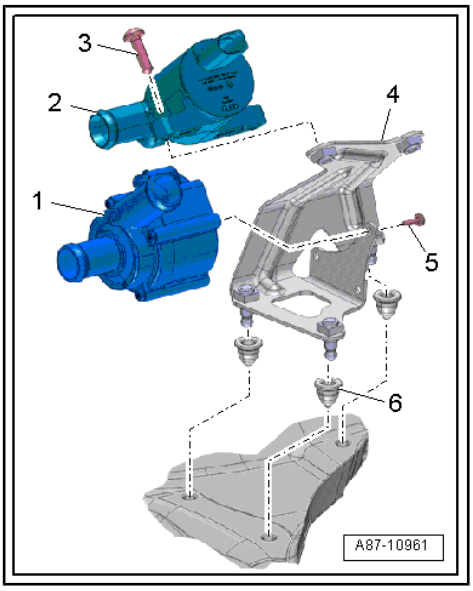
## 7.4 Removing and installing coolant shut-off valve - N82-

⇒ “7.4.1 Operation of coolant shut-off valve N82 ”, page 523

⇒ “7.4.2 Removing and installing coolant shut-off valve N82 ”, page 523

### 7.4.1 Operation of coolant shut-off valve - N82-

**Operation**




- The bracket -4- for the coolant circulation pump - V50- -item 1- and for the coolant shut-off valve - N82- -item 2- is connected to the body by way of clip nuts -6- to reduce noise.
- The coolant shut-off valve - N82- and the coolant circulation pump - V50- are connected directly to the bracket.
- The air conditioner regulation system only activates the coolant shut-off valve - N82- in certain air conditioner settings (e.g. in “OFF” mode or if maximum cooling output is required). In this case, the engine speed must then be below 5000 rpm, and the coolant temperature must be below 95 °C.
- If the coolant circuit to the heat exchanger of the air conditioner is shut off, the engine will heat up more quickly when the coolant is cold.
- When it is not activated, the coolant shut-off valve - N82- is open; to allow the electrical function of the valve to be checked, it is activated for a short period of time at certain intervals (e.g. for 1 second every twentieth engine start).

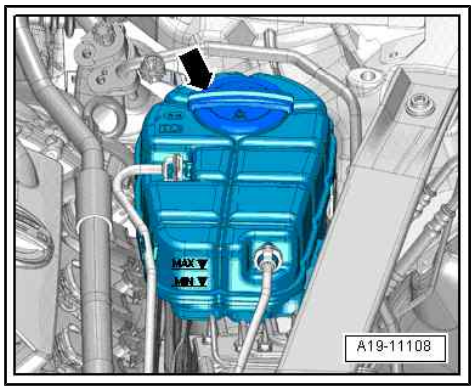
### 7.4.2 Removing and installing coolant shut-off valve - N82-

**Special tools and workshop equipment required**

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- Hose clamps up to 25 mm - 3094-
- Hose clip pliers - VAS 6340-

**Removing**




**WARNING**

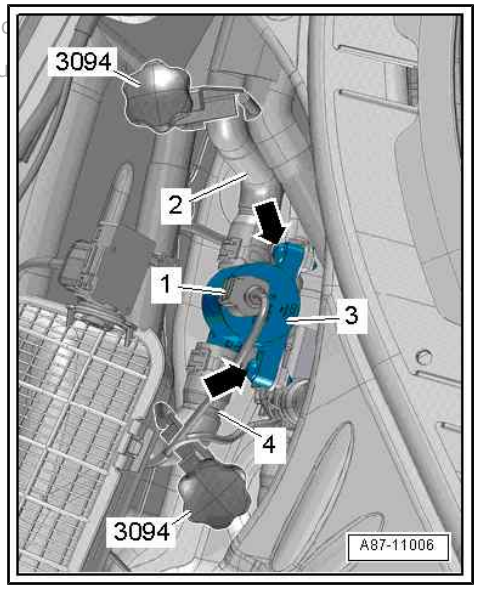
*Risk of scalding due to hot steam and hot coolant.*

- *The cooling system is under pressure when the engine is hot.*
- *To relieve pressure, cover coolant expansion tank cap with a cloth and open carefully.*

– Open cap -arrow- on coolant expansion tank.

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– Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .




– Unplug electrical connector -1-.

– Mark arrangement of coolant hoses.

– Cover area underneath shut-off valve with absorbent cloth or absorbent paper.

– Clamp off coolant hoses -2, 4- with hose clamps -3094- , release hose clips and detach from shut-off valve.

– Remove bolts -arrows- and detach shut-off valve -3-.

**Installing**

Install in reverse order of removal; note the following:

**Note**

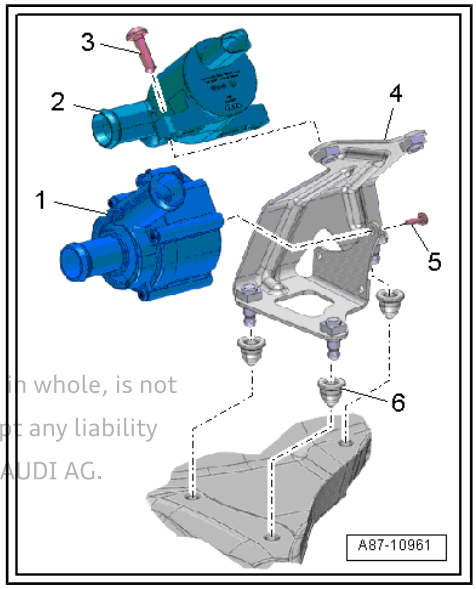
- *Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Electronic parts catalogue .*
- *Make sure these components do not come into direct contact with the body or other parts.*

– When fitting coolant hoses, make sure that as little air as possible remains in shut-off valve and coolant hoses ⇒ page 548 .

**Caution**

- *The direction of coolant flow is marked at the coolant shut-off valve - N82- / coolant circulation pump - V50- .*
- *Pay attention to correct layout of coolant hoses at coolant shut-off valve - N82- / coolant circulation pump - V50- .*
- *If coolant hoses are interchanged, heating in passenger compartment may fail due to coolant flowing in the incorrect direction.*
- *Crushed coolant hoses may lead to failure of the passenger compartment heating on account of inadequate coolant flow.*

– Tighten bolts -3- to 8 Nm.
– Check coolant level and bleed coolant circuit; observe notes ⇒ page 548 .
– Check actuation and operation of coolant shut-off valve - N82- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).




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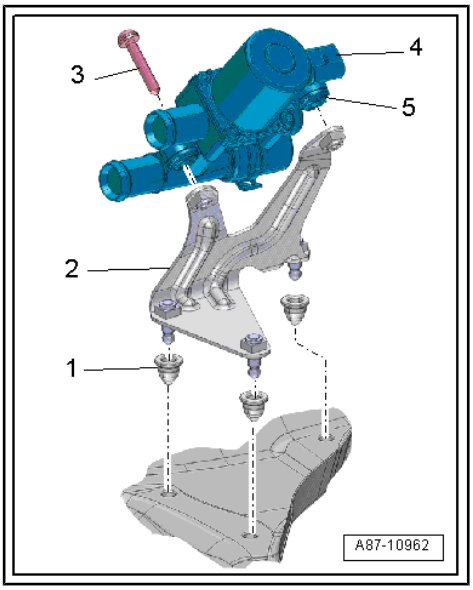
## 7.5 Removing and installing heater coolant shut-off valve - N279-

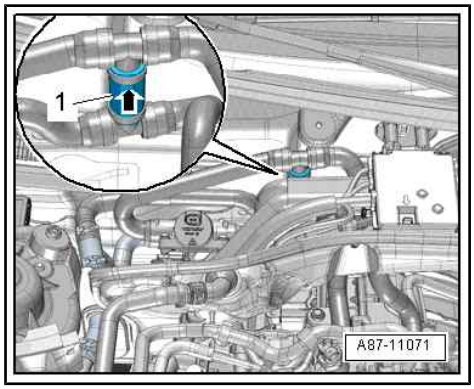
⇒ “7.5.1 Operation of heater coolant shut-off valve N279 ”, page 525

⇒ “7.5.2 Removing and installing heater coolant shut-off valve N279 ”, page 526

### 7.5.1 Operation of heater coolant shut-off valve - N279-

**Operation**






- To reduce noise, the bracket -2- for the heater coolant shut-off valve - N279- -item 4- is connected to the body by way of clip nuts -1-.
- The heater coolant shut-off valve - N279- is provided with rubber elements -5- to provide damping in the holes with which it is attached to the bracket.
- With the auxiliary heater switched off, the air conditioner regulation system only activates -N279- (by way of the auxiliary heater control unit - J364- ) in certain air conditioner settings (e.g. in “OFF” mode or if maximum cooling output is required). In this case, the engine speed must then be below 5000 rpm, and the coolant temperature must be below 95 °C.
- If the engine coolant circuit to the heat exchanger of the air conditioning unit is shut off, the engine will heat up more quickly when the coolant is cold.
- The engine coolant circuit to the heat exchanger of the air conditioning unit is shut off from the engine coolant circuit according to the engine/gearbox version; for some versions, the heat exchanger is not shut off; for other versions it is shut off in conjunction with the heating or cooling of the gear oil.
- Depending on the model and the engine, the vehicle may additionally be fitted with a non-return valve with restrictor in the coolant circuit. A certain amount of coolant in the small circuit flows back to the engine via this non-return valve even when -N279- is activated ⇒ Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .
- When the auxiliary heater is switched on, -N279- is activated depending on the coolant temperature in the engine and in the auxiliary heater ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- If there are problems with insufficient heating of the passenger compartment in auxiliary heating mode or with the engine running, check the incorporation of -N279- into the coolant circuit and activation by the auxiliary heater control unit - J364- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- If fitted, check direction of coolant flow -arrow- at non-return valve -1- with restrictor ⇒ page 509 and ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

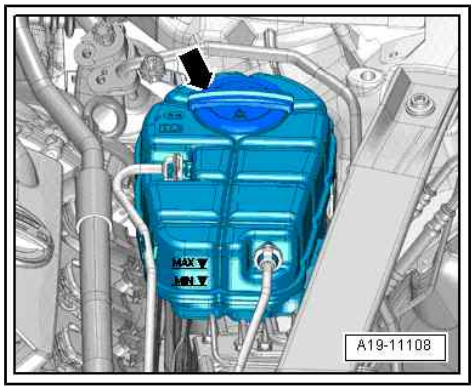
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## 7.5.2 Removing and installing heater coolant shut-off valve - N279-

**Special tools and workshop equipment required**

- Hose clamps up to 25 mm - 3094-
- Hose clip pliers - VAS 6340-

**Removing**



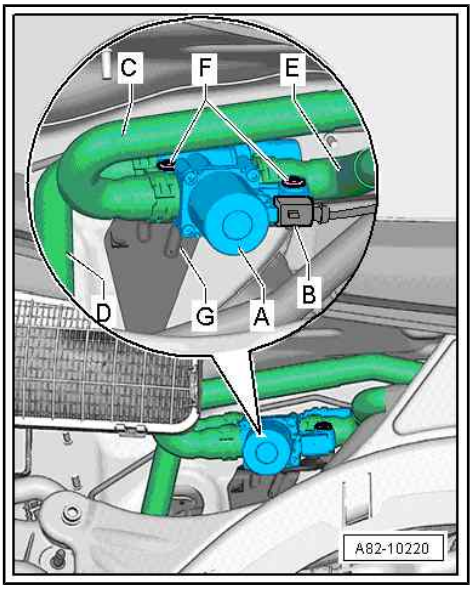

**WARNING**

*Risk of scalding due to hot steam and hot coolant.*

- *The cooling system is under pressure when the engine is hot.*
- *To relieve pressure, cover coolant expansion tank cap with a cloth and open carefully.*

– Open cap -arrow- on coolant expansion tank.

– Switch off auxiliary heater.
– Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .
– Remove fresh air intake duct ⇒ page 505 .
– Unplug electrical connector -B-.
– Mark arrangement of coolant hoses.
– Cover area underneath shut-off valve with absorbent cloth or absorbent paper.
– Clamp off coolant hoses -C, D, E- with hose clamps -3094- , release hose clips and detach from shut-off valve.
– Remove bolts -F- and detach shut-off valve -A- from bracket -G-.




### Installing

Install in reverse order of removal; note the following:

**Note**

- *Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Electronic parts catalogue .*
- *Make sure these components do not come into direct contact with the body or other parts.*

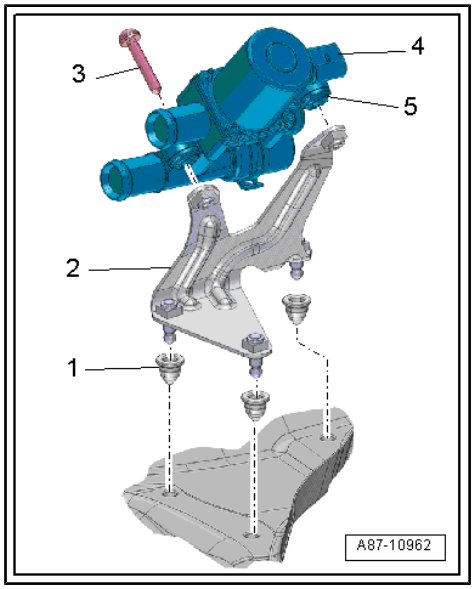
– When fitting coolant hoses, make sure that as little air as possible remains in shut-off valve and coolant hoses ⇒ page 548 .

**Caution**

- ***Direction of coolant flow is marked at heater coolant shut-off valve - N279- .***
- ***Ensure correct assignment of coolant hoses at heater coolant shut-off valve - N279- .***
- ***If coolant hoses are interchanged, heating in passenger compartment may fail due to coolant flowing in the incorrect direction.***
- ***Crushed coolant hoses may lead to failure of the passenger compartment heating on account of inadequate coolant flow.***

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– Tighten bolts -3- to 8 Nm.
– Check coolant level and bleed coolant circuit; observe notes ⇒ page 548 .
– Check actuation and operation of heater coolant shut-off valve - N279- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

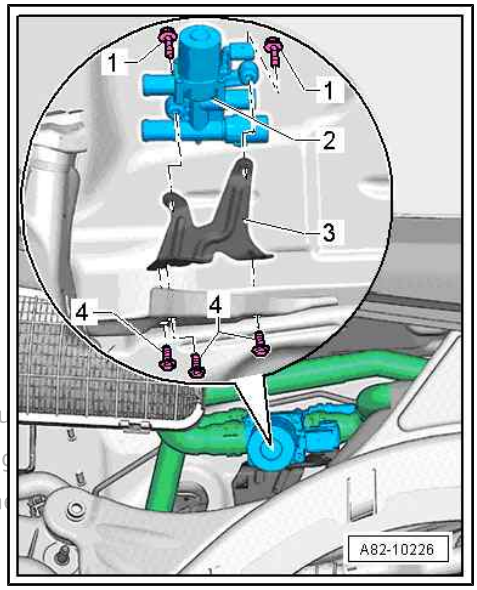



## 7.6 Removing and installing bracket for -V50- and -N82- / -N279-

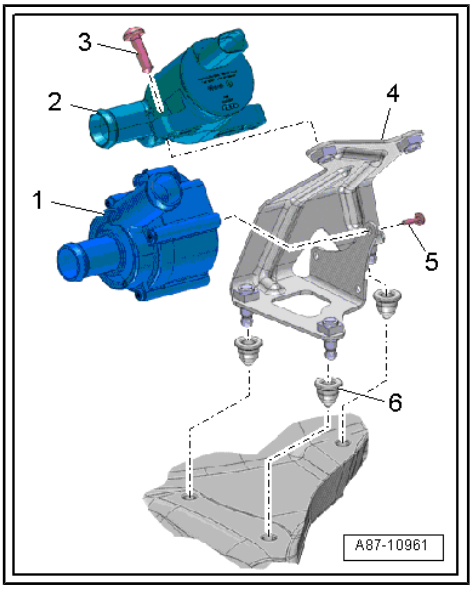
**Note**

*There are different versions of this bracket -3- with different methods of attachment. The bracket shown in this illustration is secured with the bolts -4- (tightening torque 6 Nm).*

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**Removing**




– Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .
– On vehicles with coolant circulation pump - V50- remove fresh air intake duct ⇒ page 505 .
– Unplug electrical connector.
– Remove bolts -3- and detach coolant shut-off valve -2-.
– Pull bracket -4- out of clip nuts -6-.
– Remove bolts -5- and detach -V50- -item 1-.

**Installing**

Install in reverse order of removal; note the following:

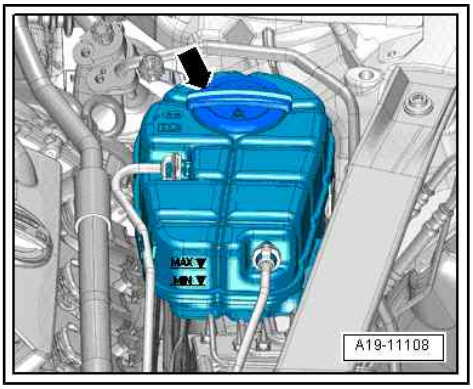
– Tighten bolts -3- to 8 Nm and bolts -5- to 1.5 Nm.
– The bracket must be pressed fully into the clip nuts.
– On vehicles with -V50- fit fresh air intake duct ⇒ page 505 .

## 7.7 Removing and installing bracket with -V618- and -N634- - Audi A6 e-tron only

**Special tools and workshop equipment required**

- Hose clamps up to 25 mm - 3094-
- Hose clip pliers - VAS 6340-

**Removing**

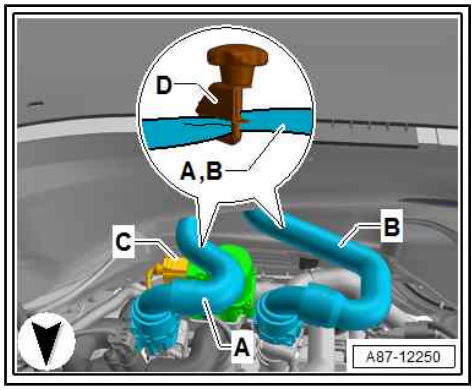



> **WARNING**
>
> *Risk of scalding due to hot steam and hot coolant.*
>
> - *The cooling system is under pressure when the engine is hot.*
> - *To relieve pressure, cover coolant expansion tank cap with a cloth and open carefully.*

– On vehicles with high-voltage system, switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .
– Switch off ignition.
– Open cap -arrow- on engine coolant expansion tank.
– Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .

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– Use hose clamps -3094- -D- (or similar) to pinch off coolant hoses -A, B-.



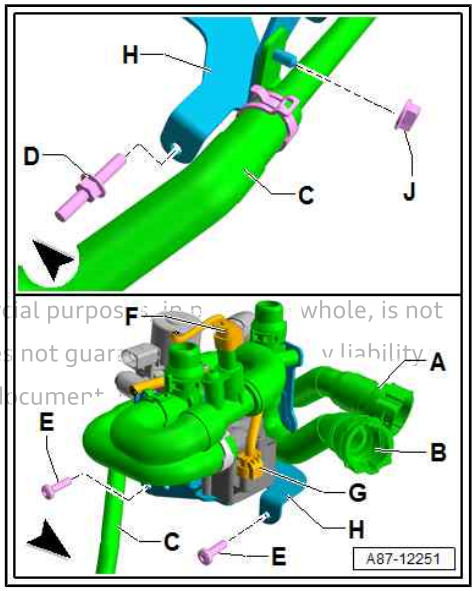

**Note**

- *The coolant hoses -A, B- can be pinched off in the engine compartment (or in the plenum chamber) as illustrated.*
- *Pinching off the coolant hoses -A, B- prevents coolant from escaping from the heat exchanger in the air conditioning unit and from the high-voltage heater (PTC) - Z115- .*

– Drain coolant from engine coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
– Cover area under shut-off valve -N634- and pump -V618- with absorbent cloth or absorbent paper.
– Mark positions of coolant hoses -A, B-.
– Disconnect coolant hoses -A, B-.
– Unplug electrical connector -C-.

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– Unplug electrical connectors -F, G-.
– Remove bolts -E- and centre hex stud -D-.
– Remove nut -J-.
– Mark coolant hoses -A, B- and detach from connections to engine coolant hoses.
– Detach coolant pipe -C- from bracket -H-.
– Detach bracket -H- with shut-off valve -N634- , coolant hoses and pump -V618-.




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**Installing**

Install in reverse order of removal; note the following:

**Note**

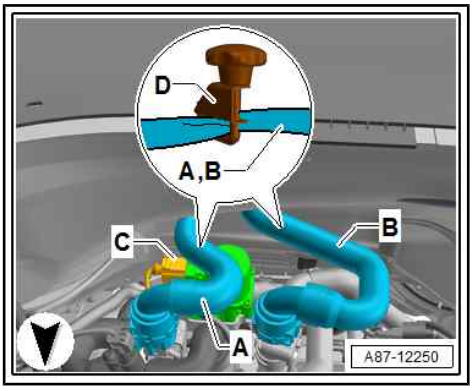
- *Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Electronic parts catalogue .*
- *Make sure these components do not come into direct contact with the body or other parts.*

**Caution**

- ***Direction of coolant flow is marked at heater coolant shut-off valve - N279- .***
- ***Ensure correct assignment of coolant hoses at shut-off valve -N634- , coolant hoses and pump -V618- .***
- ***If coolant hoses are interchanged, heating in passenger compartment may fail due to coolant flowing in the incorrect direction.***
- ***Crushed coolant hoses may lead to failure of the passenger compartment heating on account of inadequate coolant flow.***

– Tighten bolts -E, D- and nut -J- to 8 Nm.
– Top up coolant ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

– Detach hose clamps -3094- -D- from coolant hoses -A, B-.
– Bleed coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
– Check activation and operation of shut-off valve -N634- and pump -V618- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

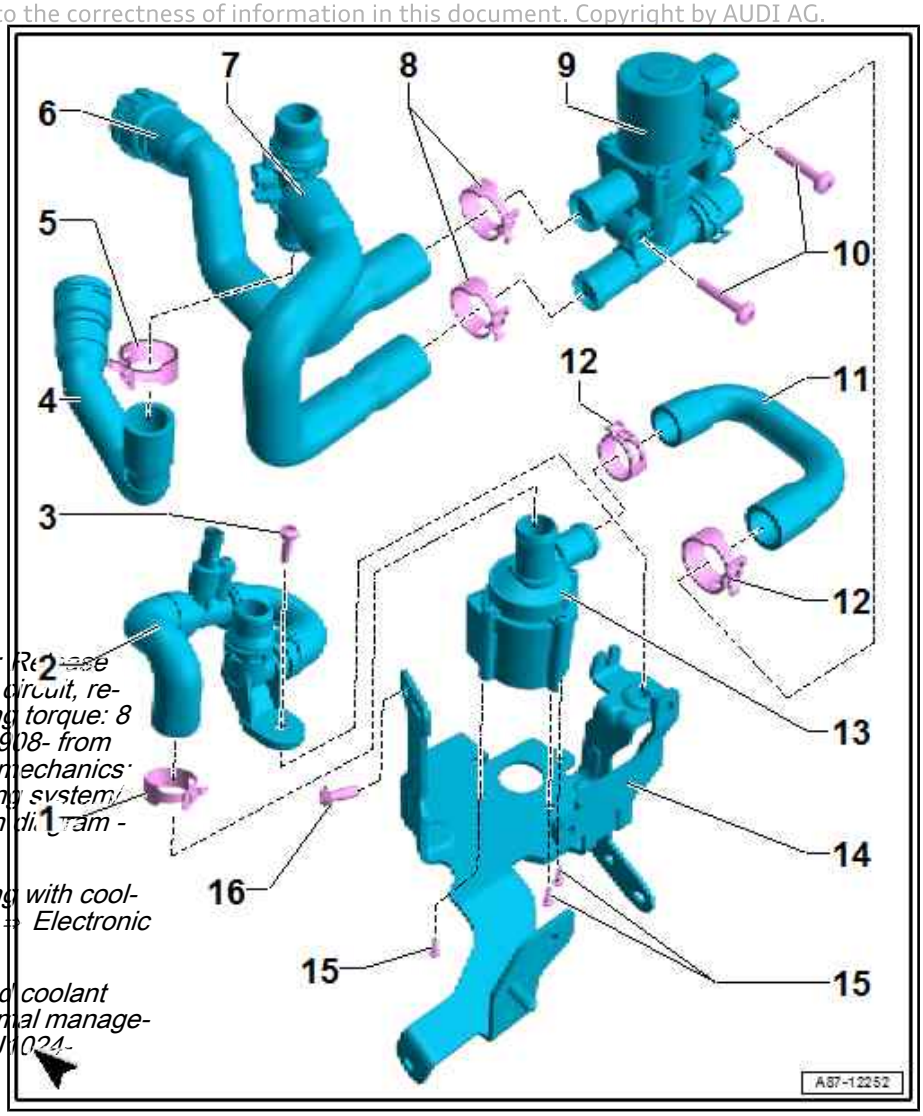


# 7.8 Exploded view - bracket for -V618- and -N634- , Audi A6 e-tron only

**Note**

*Removing bracket with coolant hoses, -V618- and -N634- ⇒ page 529 .*

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**1 - Clamp**

**2 - Coolant hose with -G908- , bracket and connection for plug-in connector**

- ❑ Coolant return from heat exchanger in air conditioning unit
- ❑ Ensure correct installation position
- ❑ Removing and installing coolant temperature sender 7 for thermal management - G908- ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses

**Note**

- ♦ *To remove -G908- : Release pressure in coolant circuit, remove bolt (tightening torque: 8 Nm) and detach -G908- from bracket ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .*
- ♦ *Lubricate new O-ring with coolant before installing ⇒ Electronic parts catalogue .*
- ♦ *Transmits measured coolant temperature to thermal management control unit - J1024-*

**3 - Bolt**

- ❑ Tightening torque: 8 Nm

**4 - Coolant hose with connection for plug-in connector**

- ❑ Coolant supply from engine
- ❑ Ensure correct installation position

**5 - Clamp**

**6 - Coolant hose with connection for plug-in connector**

- ❑ Coolant return to engine
- ❑ Ensure correct installation position

**7 - Coolant hose with bracket and connections for plug-in connector and coolant hose**

- ❑ Ensure correct installation position

**8 - Clamps**

**9 - Coolant changeover valve 3 - N634-**

- ❑ Removing and installing ⇒ page 534
- ❑ Ensure correct installation position and connection of coolant hoses
- ❑ Check activation of -N634- ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode (for -J1024- ).

**10 - Bolt**

- ❑ Tightening torque: 8 Nm

**11 - Coolant hose**

**12 - Clamps**

**13 - Thermal management coolant pump 2 - V618-**

- ❑ Removing and installing ⇒ page 533
- ❑ Ensure correct installation position and connection of coolant hoses
- ❑ Check activation of -V618- ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode (for -J1024- ).

**14 - Bracket for -V618- and -N634-**

- ❑ Removing and installing ⇒ page 529

**15 - Bolts**

- ❑ Tightening torque: 1.5 Nm

**16 - Bolt**

- ❑ Tightening torque: 8 Nm

## 7.9 Removing and installing thermal management coolant pump 2 - V618- - Audi A6 e-tron only

**Special tools and workshop equipment required**

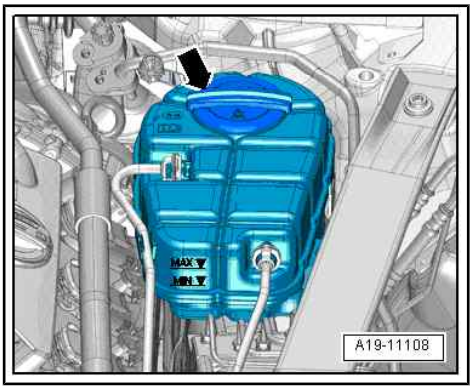
- ♦ Hose clamps up to 25 mm - 3094-
- ♦ Hose clip pliers - VAS 6340-

**Removing**

**WARNING**

***Risk of scalding due to hot steam and hot coolant.***

- ♦ ***The cooling system is under pressure when the engine is hot.***
- ♦ ***To relieve pressure, cover coolant expansion tank cap with a cloth and open carefully.***




– On vehicles with high-voltage system, switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

– Switch off ignition.

– Open cap -arrow- on engine coolant expansion tank.

– Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .

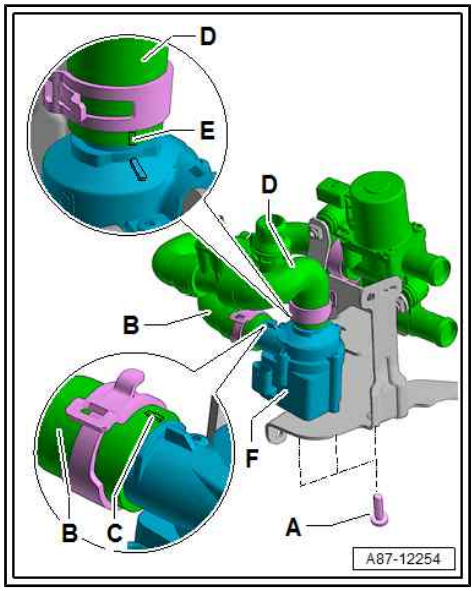
– Remove bracket with -V618- and -N634- ⇒ page 529 .

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– Unfasten clamps and detach coolant hoses -B, D-.

– Remove bolts -A- (tightening torque ⇒ “7.8 Exploded view - bracket for V618 and N634 , Audi A6 e-tron only”, page 532 ).

– Detach pump -V618- -F- from bracket.




**Installing**

Install in reverse order of removal; note the following:

– Connect coolant hoses -B, D-; pay attention to markings on connections for pump -V618- -F- and on coolant hoses -C, E-.

– Secure coolant hoses -B, D- with clamps.

– Install bracket with -V618- and -N634- ⇒ page 529 .

– Bleed coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

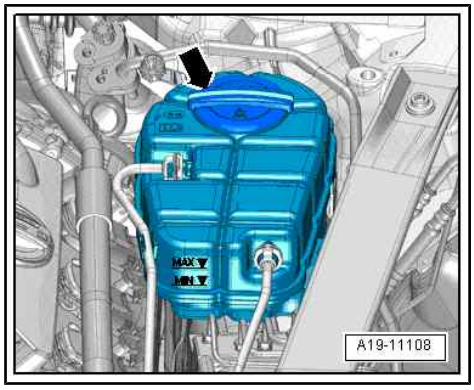
– Check activation and operation of shut-off valve -N634- and pump -V618- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 7.10 Removing and installing coolant changeover valve 3 - N634- - Audi A6 e-tron only

**Special tools and workshop equipment required**

- Hose clamps up to 25 mm - 3094-
- Hose clip pliers - VAS 6340-

**Removing**




**WARNING**

*Risk of scalding due to hot steam and hot coolant.*

- *The cooling system is under pressure when the engine is hot.*
- *To relieve pressure, cover coolant expansion tank cap with a cloth and open carefully.*

– On vehicles with high-voltage system, switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

– Switch off ignition.

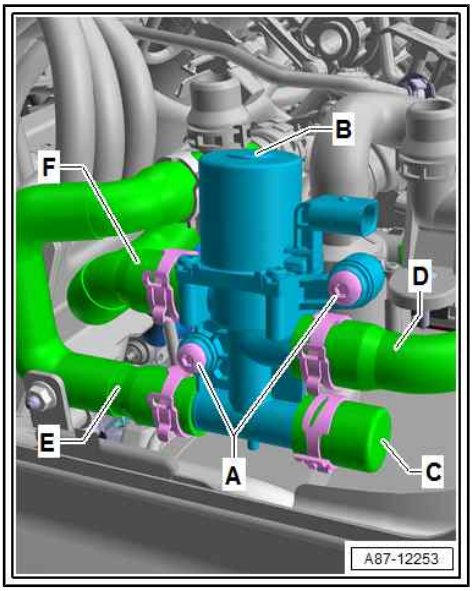
– Open cap -arrow- on engine coolant expansion tank.

– Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .

– Remove bracket with -V618- and -N634- ⇒ page 529 .

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– Unfasten clamps and detach coolant hoses -D, E, F-.
– Remove bolts -A- (tightening torque ⇒ “7.8 Exploded view - bracket for V618 and N634 , Audi A6 e-tron only”, page 532 ).
– Remove changeover valve -N634- -B-.



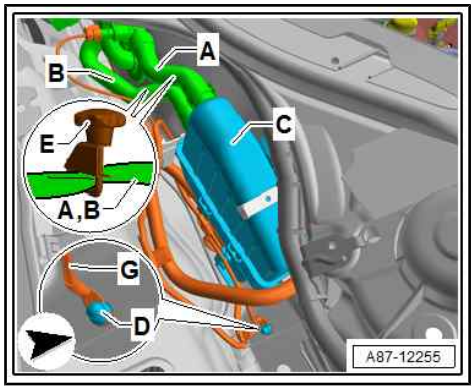

**Installing**

Install in reverse order of removal; note the following:

– Check that cap -C- is not damaged and is seated correctly.
– Install bracket with -V618- and -N634- ⇒ page 529 .
– Bleed coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
– Check activation and operation of shut-off valve -N634- and pump -V618- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

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## 7.11 Removing and installing high-voltage heater (PTC) - Z115- , with -J848- - Audi A6 e-tron only




**Note**

*The high-voltage heater (PTC) - Z115- -C- is installed together with the bracket in the plenum chamber, in the vicinity of the fresh air intake of the air conditioner.*

For all work on vehicles with a high-voltage system (Audi A6 e-tron), note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Rep. gr. 00 ; Safety precautions; Safety precautions when working on high-voltage vehicles .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 36 and note “General warning instructions for work on the high-voltage system” ⇒ Rep. gr. 93 ; High-voltage components .

**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

**WARNING**

***Working on vehicles with high-voltage wiring:***

- ***Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.***
- ***High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.***
- ***The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.***

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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The following procedure requires work to be performed on the high-voltage system; de-energising high-voltage system ⇒ page 31 , ⇒ Rep. gr. 93 ; De-energising high-voltage system and ⇒ Rep. gr. 00 ; Safety precautions; Safety precautions when working on high-voltage vehicles .

– On vehicles with high-voltage system, switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .
– Switch off ignition.
– De-energise high-voltage system ⇒ Rep. gr. 93 ; De-energising high-voltage system .

### De-energising high-voltage system

**DANGER!**

*High voltage can cause fatal injury.*

*Danger of severe or fatal injuries from electric shock.*

- *The high-voltage system may only be de-energised by a suitably qualified person (Audi high-voltage technician).*
- *It must be definitely confirmed that the high-voltage system is de-energised. The system may only be de-energised using the vehicle diagnostic tester via "Guided Fault Finding".*
- *The qualified person (Audi high-voltage technician) confirms that the system is de-energised and uses the locking cap - T40262- to ensure that the system cannot be re-energised. As an additional precaution, the ignition key and the maintenance connector for high-voltage system -TW- are then stored in a safe place by the qualified person.*
- *The qualified person (Audi high-voltage technician) marks the vehicle by attaching the appropriate warning signs.*

**Note**

- *De-energising high-voltage system:*
- *Connect vehicle diagnostic tester.*
- *Select* `Guided Fault Finding` *mode.*
- *Using the* `Go to` *key, select the following menu items in succession*
- `Function/component selection`
- `Body`
- `Electrical system`
- `Self-diagnosis compatible systems`
- `8C - Hybrid battery management -J840`
- `8C - Hybrid battery management, functions`
- `51 - De-energise high-voltage system (Rep. gr. 93)`

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### Special tools and workshop equipment required

- Five-point star bit (TS30H) with centre hole (commercially available)
- Hose clamps up to 25 mm - 3094-
- Engine bung set - VAS 6122-
- Cooling system tester - V.A.G 1274 B-
- Spring-type clip pliers - VAS 5024A-

### Removing

– De-energise high-voltage system ⇒ Rep. gr. 93 ; De-energising high-voltage system .

– Switch off ignition.

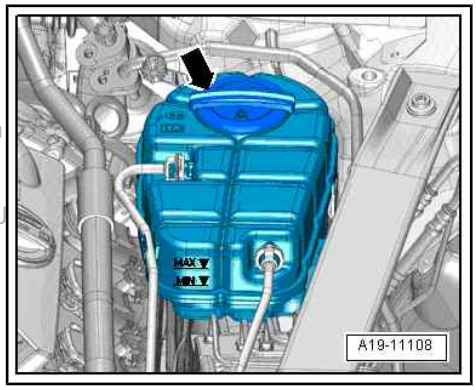
**WARNING**

*Risk of scalding due to hot steam and hot coolant.*

- *The cooling system is under pressure when the engine is hot.*
- *To relieve pressure, cover coolant expansion tank cap with a cloth and open carefully.*

– Open cap -arrow- on coolant expansion tank for engine coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/ coolant; Draining and filling cooling system .

– Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .

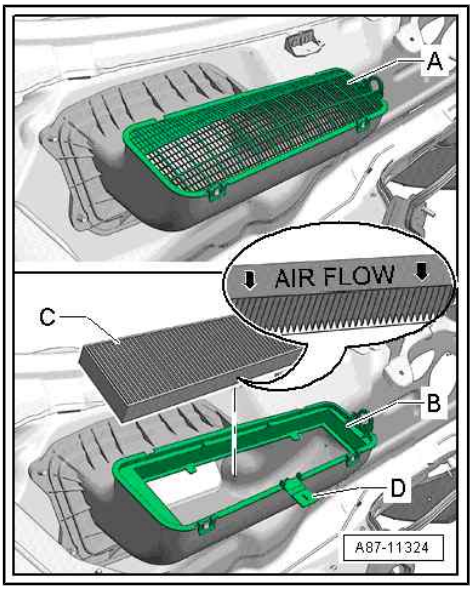



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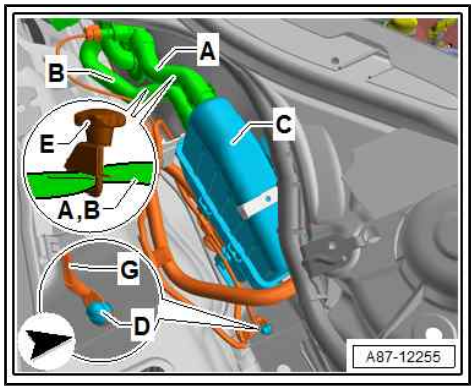
– Remove fresh air intake -B- ⇒ page 504 .

**Note**

*Depending on the version, a dust filter -C- may be fitted in the filter mounting -B- instead of the grille -A- in vehicles for certain countries with a high dust level in the ambient air (e.g. for China). The dust filter -C- is designed to stop the fresh air blower - V2- from drawing in dust and sand. For correct version refer to ⇒ Electronic parts catalogue .*



– Protect plenum chamber in area under -Z115- -C- with water-proof sheeting and absorbent paper.




**Note**

*To stop coolant running into the plenum chamber when coolant hoses -A- and -B- are disconnected:*

– Mark coolant hoses -A- and -B- (coolant hoses -A- leading to heat exchanger in air conditioning unit and coolant hose -B- for coolant supply from engine).

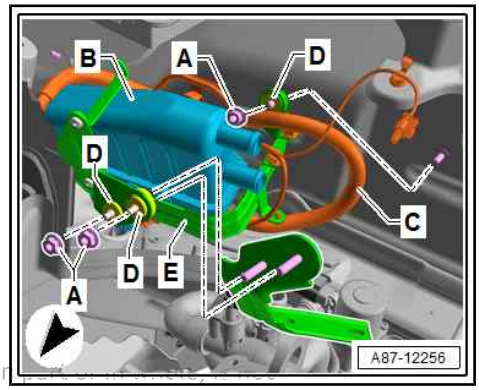
– Use hose clamps -3094- -E- to pinch off coolant hoses -A- and -B-.

– Detach coolant hoses -A- and -B- from connections to -Z115- -C-.

– Seal off connections to -Z115- -C- with a plug, e.g. from engine bung set - VAS 6122- .

– Unscrew nut -D- (tightening torque: 8 Nm) and disconnect earth wire -G-.

– Unscrew nuts -A- (tightening torque: 8 Nm).



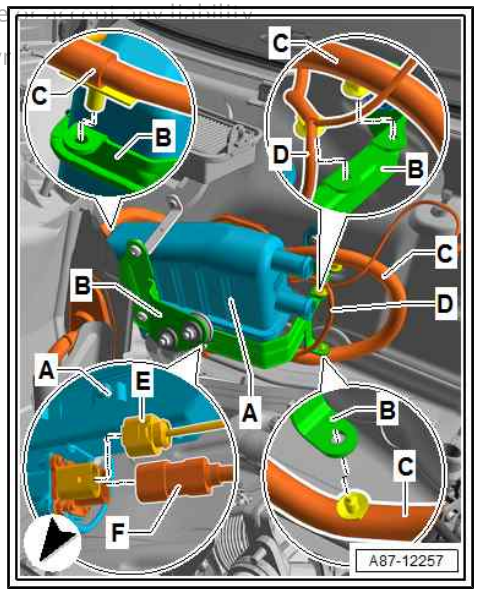

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– Detach electrical wires -C, D- from bracket -B- and from -Z115- -A-.

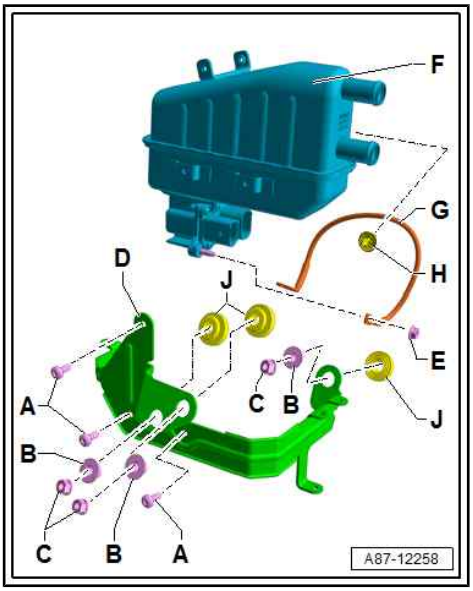
– Detach electrical connectors -E- (for low voltage) and -F- (high-voltage wire) from connections for -Z115- -A- ⇒ Rep. gr. 93 ; High-voltage wires; Overview of fitting locations - high-voltage wires .

– Cover high-voltage wire connector -F- and mating plug at -Z115- -A- to prevent damage and contamination (e.g. with clean plugs from engine bung set - VAS 6122- ).

– Remove -Z115- -A- with bracket -B-.



– Remove nut -E- (tightening torque: 8 Nm) and disconnect earth wire -G-.
– Remove bolts -A- (tightening torque: 8 Nm).




**Note**

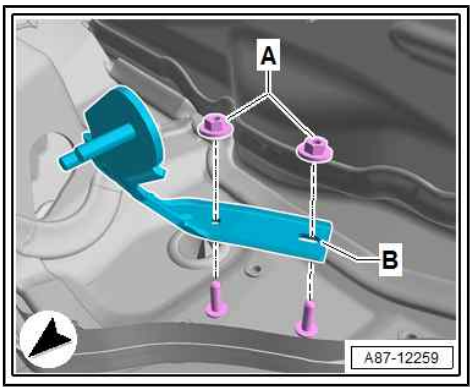
- *Depending on version, bracket -D- may be screwed in with special thread-forming M6x12 pan-head bolts -A- with a differently shaped head. Use a five-point star bit (TS30H) with centre hole (commercially available) to remove and install these bolts.*
- *The nuts with washers -C- are removed together with the bracket -D- and -Z115- -F-.*

– Unfasten -Z115- -F- from bracket -D-.

### Installing

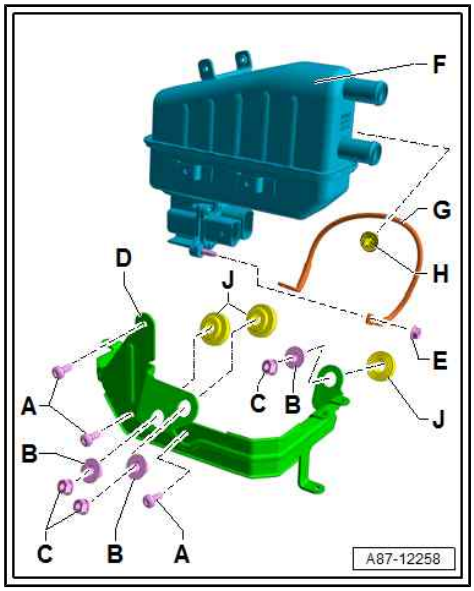
Installation is carried out in reverse order; note the following:

– Check bracket -B- for dirt and clean if necessary ⇒ Electrical system; General information; Rep. gr. 97 ; Contact surface cleaning set -VAS 6410- .
– If removed, check bracket -B- and corresponding attachment points for dirt before installation and clean if necessary (tightening torque for nuts -A-: 8 Nm).




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– Check that decoupling elements -J- and guide sleeves -B- are installed correctly.
– Check attachment point for earth wire -G- on -Z115- -F- before bolting on and clean if necessary ⇒ Electrical system; General information; Rep. gr. 97 ; Contact surface cleaning set -VAS 6410- .




**Note**

*The attachment point for the earth wire -G- on -Z115- -F- must be checked before installation. The contact surfaces must be clean and free from rust and grease. If this is not the case, treat the contact surfaces accordingly with the contact surface cleaning set - VAS 6410- ⇒ Electrical system; General information; Rep. gr. 97 ; Contact surface cleaning set -VAS 6410- .*

– Fit -Z115- -F- to bracket -E- (tightening torque for bolts -A-: 8 Nm).

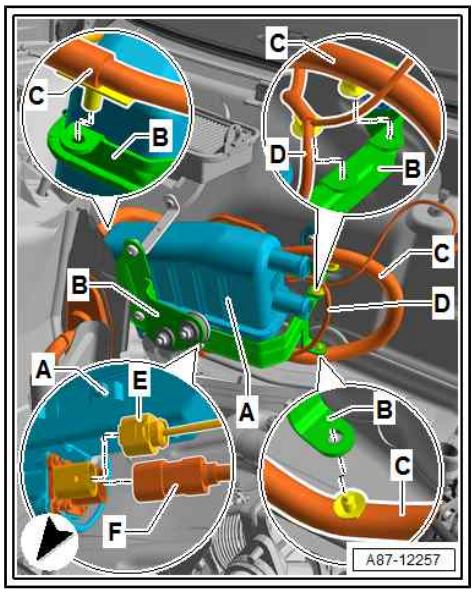
**Note**

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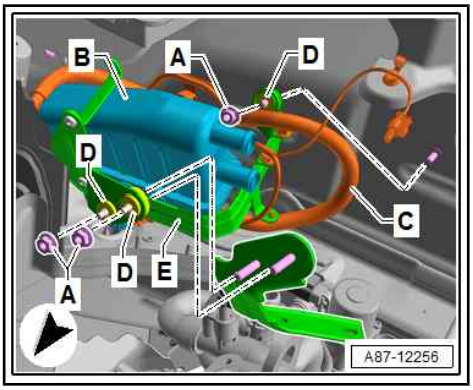
*Bracket -E- is bolted to the high voltage heater (PTC) - Z115- -F- with thread-forming M6x12 pan-head bolts -A-. If a new -Z115- -F- is installed, note that the holes are not threaded yet. To make it easier to screw in the bolts when installing a new -Z115- -A-, lightly coat bolts -A- with lubricant before installation.*

– Fit earth wire -G- (tightening torque for nut -E-: 8 Nm) and secure to bracket -D- with clip -H-.

– Attach electrical connectors -E- (for low voltage) and -F- (high-voltage wires) to connections for -Z115- -A- ⇒ Rep. gr. 93 ; High-voltage wires; Overview of fitting locations - high-voltage wires .
– Secure electrical wires -C, D- at bracket -B- and at -Z115- -A-.

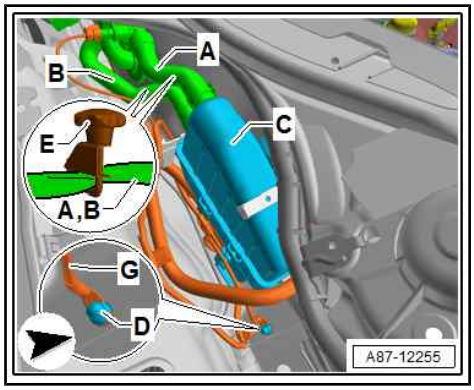


– Fit -Z115- -B- with bracket -E-; make sure that electrical wires -C- are routed correctly.
– Check that guide sleeves -D- (in decoupling elements) are seated correctly.
– Install nuts -A- (tightening torque: 8 Nm).




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– Check attachment point for earth wire -G- before bolting on and clean if necessary ⇒ Electrical system; General information; Rep. gr. 97 ; Contact surface cleaning set -VAS 6410- .




**Note**

*The attachment point for the earth wire -G- must be checked before installation. The contact surfaces must be clean and free from rust and grease. If this is not the case, treat the contact surfaces accordingly with the contact surface cleaning set - VAS 6410- ⇒ Electrical system; General information; Rep. gr. 97 ; Contact surface cleaning set -VAS 6410- .*

– Secure earth wire -G- with nut -D- (tightening torque: 8 Nm).
– Fit coolant hose -B- to connection to -Z115- -C- in correct position.

**Note**

*The high-voltage heater (PTC) - Z115- -C- is not designed for a particular direction of coolant flow. However, the coolant hoses must be connected in the correct position to enable -Z115- -C- to be bled. Therefore, coolant hose -A- (supply to heat exchanger in air conditioning unit) must be connected to the upper connection of -Z115- -C-.*

– If necessary, fill coolant into coolant expansion tank for engine ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
– Detach hose clamps -3094- -E- at coolant hose -B- and allow coolant to flow into -Z115- -C-.

**Note**

*If the coolant does not flow into -Z115- -C-, screw e.g. the hand pump of the cooling system tester - V.A.G 1274/- onto the filler neck of the coolant expansion tank and carefully press coolant out of the coolant expansion tank into -Z115- -C- using the hand pump.*

– As soon as coolant emerges from the open connection of -Z115- -C-, attach coolant hose -A- to connection to -Z115- -C-.
– Detach hose clamps -3094- -E- from coolant hose -A-.

**Note**

*This procedure completely bleeds the cooling system. If there is still air in the cooling system for other reasons, it may be necessary to bleed the cooling system again after installing all the components removed earlier ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .*

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– Re-install all removed/unfastened components.
– If necessary, add more coolant to coolant expansion tank for engine ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
– Re-energise power supply of high-voltage system ⇒ Rep. gr. 93 ; Re-energising high-voltage system .

Re-energising high-voltage system

**DANGER!**

*High voltage can cause fatal injury.*

*Danger of severe or fatal injuries from electric shock.*

- *The high-voltage system may only be re-energised by a suitably qualified person (Audi high-voltage technician).*
- *The system may only be re-energised using the vehicle diagnostic tester via "Guided Fault Finding".*
- *The vehicle is then made ready for operation again by the qualified person (Audi high-voltage technician).*
- *The qualified person (Audi high-voltage technician) marks the vehicle by attaching the appropriate warning signs.*

**Note**

- *Re-energising high-voltage system:*
- *Connect vehicle diagnostic tester.*
- *Select* `Guided Fault Finding` *mode.*
- *Using the* `Go to` *key, select the following menu items in succession*
- `Function/component selection`
- `Body`
- `Electrical system`
- `Self-diagnosis compatible systems`
- `8C - Hybrid battery management -J840`
- `8C - Hybrid battery management, functions`
- `51 - Re-energise high-voltage system (Rep. gr. 93)`

– Switch on ignition.

– Finally, interrogate event memory of thermal management control unit - J1024- and operating and display unit for front air conditioning system - E87- , and erase any entries displayed
⇒ Vehicle diagnostic tester ("Guided Fault Finding").

– Finally, after installing high-voltage heater (PTC) - Z115- , switch on ignition and activate drive system (READY - engine does not have to be running), set heater and air conditioning unit to maximum heating output and allow it to run in this setting for 2 minutes.

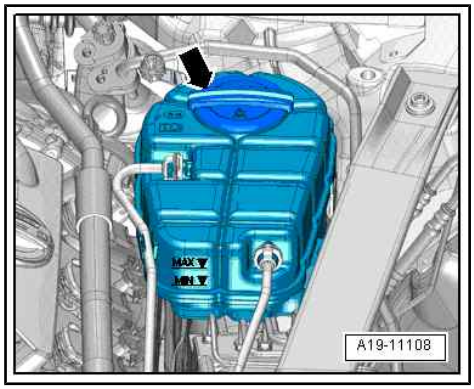
## 7.12 Removing and installing coolant temperature sender 2 for thermal management - G903- - Audi A6 e-tron only

**Special tools and workshop equipment required**

- Hose clamps up to 25 mm - 3094-
- Hose clip pliers - VAS 6340-

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### Removing




**WARNING**

*Risk of scalding due to hot steam and hot coolant.*

- *The cooling system is under pressure when the engine is hot.*
- *To relieve pressure, cover coolant expansion tank cap with a cloth and open carefully.*

– On vehicles with high-voltage system, switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

– Switch off ignition.

– Open cap -arrow- on engine coolant expansion tank.

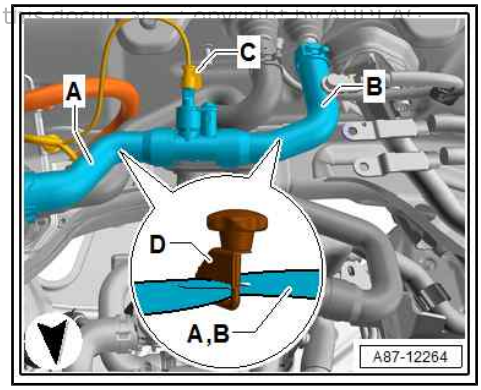
– Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .

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– Use hose clamps -3094--D- (or similar) to pinch off coolant hoses -A, B-.

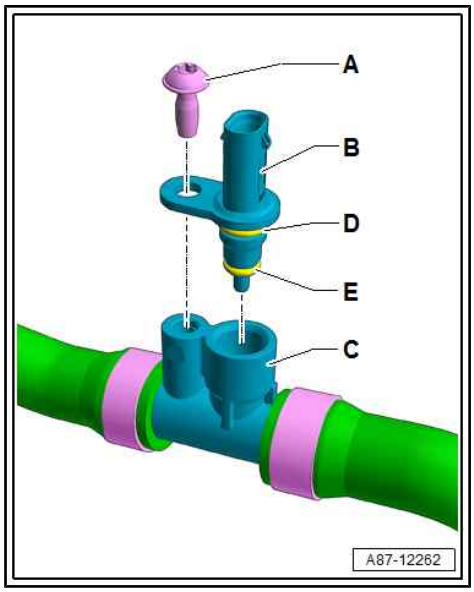
– Use an absorbent cloth or absorbent paper to cover area beneath -G903- .

– Unplug electrical connector -C-.




– Unscrew bolts -A- (tightening torque: 5 Nm).

– Remove -G903- -B- from connection -C-.




### Installing

Install in reverse order of removal; note the following:

– Renew O-rings -D, E-.

– Lubricate O-rings -D, E- with coolant.

– Before installing -G903- -B-, check connection -C- for dirt or damage.

– Top up coolant ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

– Bleed coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

– Finally, interrogate event memory of thermal management control unit - J1024- and operating and display unit for front air conditioning system - E87- , and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

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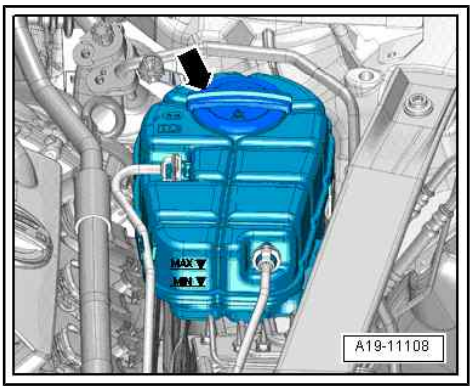
## 7.13 Removing and installing coolant temperature sender 7 for thermal management - G908- - Audi A6 e-tron only

**Special tools and workshop equipment required**

- Hose clamps up to 25 mm - 3094-
- Hose clip pliers - VAS 6340-

**Removing**

> **WARNING**
>
> *Risk of scalding due to hot steam and hot coolant.*
>
> - *The cooling system is under pressure when the engine is hot.*
> - *To relieve pressure, cover coolant expansion tank cap with a cloth and open carefully.*




– On vehicles with high-voltage system, switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

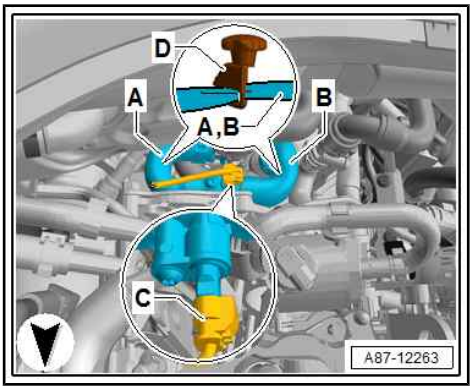
– Switch off ignition.

– Open cap -arrow- on engine coolant expansion tank.

– Use hose clamps -3094- -D- (or similar) to pinch off coolant hoses -A, B-.

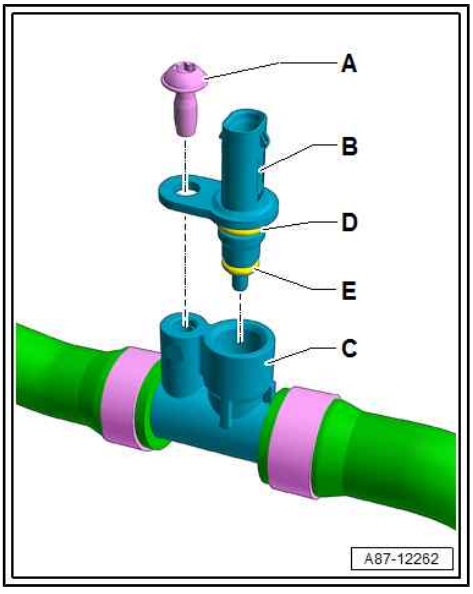
– Use an absorbent cloth or absorbent paper to cover area beneath -G908- .

– Unplug electrical connector -C-.




– Unscrew bolts -A- (tightening torque: 5 Nm).

– Remove -G908- -B- from connection -C-.




**Installing**

Install in reverse order of removal; note the following:

– Renew O-rings -D, E-.

– Lubricate O-rings -D, E- with coolant.

– Before installing -G908- -B-, check connection -C- for dirt or damage.

– Top up coolant ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

– Bleed coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

– Finally, interrogate event memory of thermal management control unit - J1024- and operating and display unit for front air conditioning system - E87- , and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 7.14 Bleeding coolant circuit

⇒ “7.14.1 Bleeding coolant circuit of engine”, page 548

⇒ “7.14.2 Bleeding coolant circuit for high-voltage system components - Audi A6 e-tron”, page 548

### 7.14.1 Bleeding coolant circuit of engine

- The steps for removing the components of the heater and air conditioning unit described in this Workshop Manual ensure that only a small quantity of air enters the coolant circuit. Therefore it is not necessary to completely drain and re-fill the system with coolant after removing and installing these components. It is sufficient to fill up and bleed the coolant circuit ⇒ Engine; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
- However, if a large quantity of coolant has escaped due to another problem, e.g. a leaking hose, the coolant circuit must be bled completely ⇒ Engine; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

**Requirement**

– Most of the coolant circuit is filled with coolant; only a few air bubbles remain at a few locations in the coolant circuit.

– Fill up and bleed coolant circuit ⇒ Engine; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

### 7.14.2 Bleeding coolant circuit for high-voltage system components - Audi A6 e-tron

**Note**

*The coolant circuit for the high-voltage system is an independent circuit which is not connected to the engine coolant circuit. If necessary, this coolant circuit must be bled in a separate procedure ⇒ “9 Components for cooling high-voltage system - Audi A6 e-tron”, page 559 , ⇒ “7.3.2 Incorporation of air conditioner into coolant circuit of high-voltage system”, page 521 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .*

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– Completely assemble coolant circuit for high-voltage system components.

– Fill coolant into coolant circuit for high-voltage system components ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

– Activate coolant pump for high-voltage battery - V590- via - J1024- and let it run for a while ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system , and ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– If necessary, add more coolant to coolant expansion tank of high-voltage system.

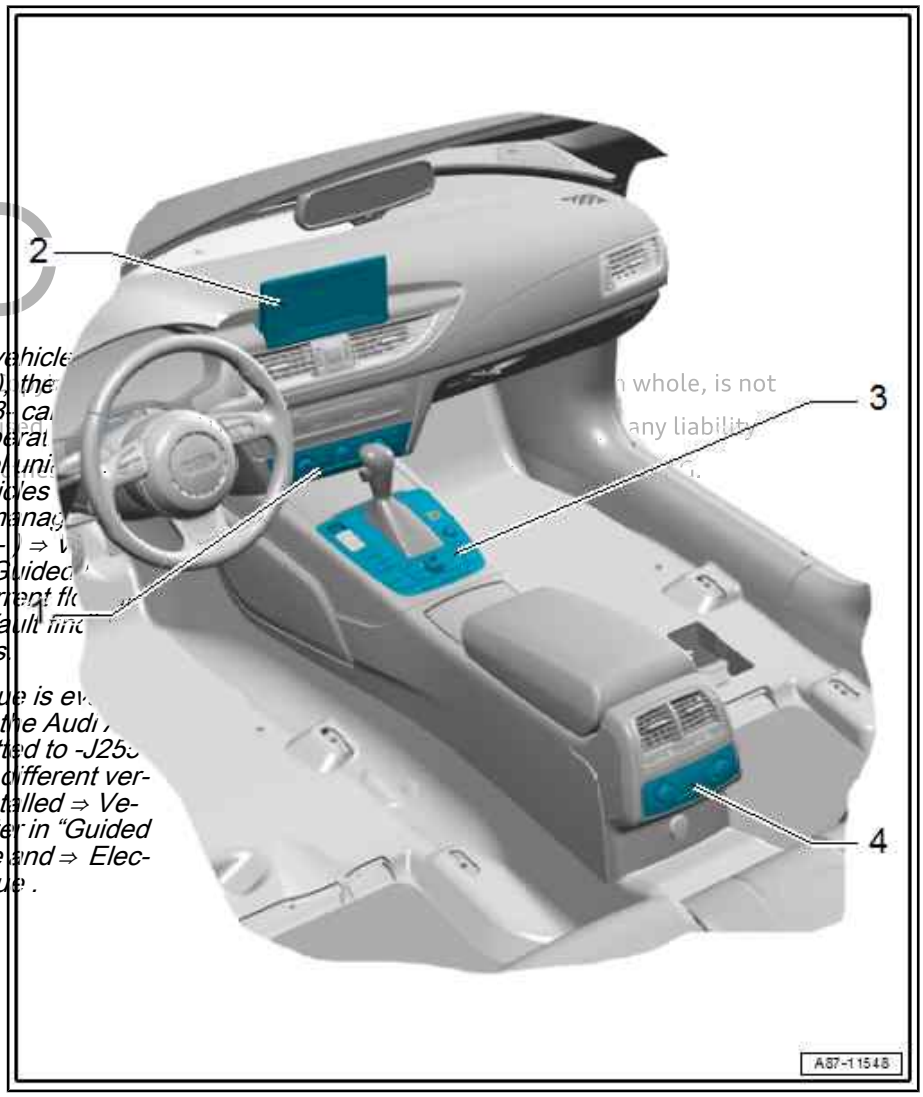
# 8 Operating and display unit

⇒ “8.1 Overview of fitting locations - operating and display unit”, page 549

⇒ “8.2 Overview - operating and display unit”, page 550

⇒ “8.3 Removing and installing operating and display unit”, page 556

## 8.1 Overview of fitting locations - operating and display unit




**1 - Air conditioner operating and display unit**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ Overview ⇒ page 550
- ❑ Removing and installing ⇒ page 556

**Note**

- ♦ *On Audi A6 e-tron vehicle… pending on version), the… ured value of -G263- ca… evaluated by the operat… ( Climatronic control uni… (as on all other vehicles … series) or thermal manag… control unit - J1024- ) ⇒ … diagnostic tester (“Guided … Finding”) and ⇒ Current flo… agrams, Electrical fault find… and Fitting locations.*
- ♦ *If the measured value is ev… ated by -J1024- on the Audi … e-tron (and transmitted to -J25… via the data bus), a different version of -J255- is installed ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode and ⇒ Electronic parts catalogue .*

**2 - Display unit for front information display and operating unit control unit - J685-**

- ❑ Multi Media Interface (MMI) display
- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ The MMI display indicates certain functions selected on the operating unit ( Climatronic control unit - J255- ) (and various additional air conditioner functions) ⇒ Infotainment/MMI Owner's Manual

**3 - Multimedia system operating unit - E380-**

- ❑ Different versions ⇒ Electronic parts catalogue
- ❑ For the various air conditioner functions to be selected and indicated on the display of the Multi Media Interface (MMI), the correct version of the operating unit ( Climatronic control unit - J255- ) must be installed, coded and adapted
- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)

**4 - Operating and display unit for rear air conditioning system - E265-**

- ❑ Overview ⇒ page 550

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❑ Removing and installing ⇒ page 558

## 8.2 Overview - operating and display unit

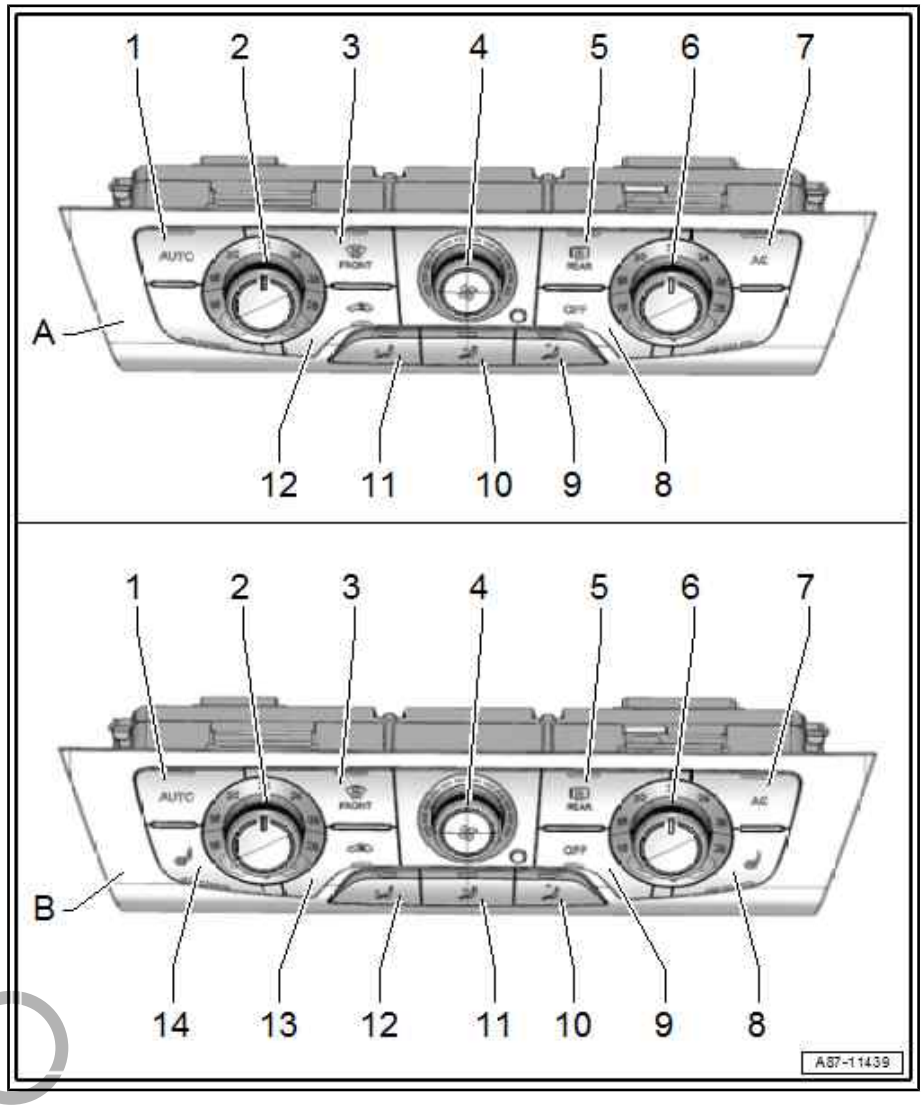
⇒ “8.2.1 Overview - front operating and display unit, basic version”, page 550

⇒ “8.2.2 Overview - front operating and display unit, deluxe version”, page 552

⇒ “8.2.3 Overview - rear operating and display unit”, page 555

### 8.2.1 Overview - front operating and display unit, “basic” version

General notes ⇒ “1.6 Operating unit”, page 16




**A - Operating unit ( Climatronic control unit - J255- ) for vehicles without seat heating**

❑ With infrared temperature and sunlight penetration sensor which measures temperature and sunlight penetration on operating and display unit

**1 - Auto button for automatic air conditioner control**

❑ If LED lights up, “automatic control” is selected

**2 - Rotary temperature control (driver side)**

**3 - Button for defrost mode**

❑ If LED lights up, “defrost mode” is selected

**4 - Rotary control for fresh air blower - V2-**

❑ For setting blower speed

**5 - Heated rear window button**

❑ If LED lights up, “Rear window heating on” is selected

**6 - Rotary temperature control (front passenger side)**

**7 - A/C button for air conditioner compressor**

❑ If LED lights up, “air con-

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ditioner compressor on”
is selected.

**8 - OFF button for switching heating/climate control off**

- ❑ If LED lights up, “OFF” is selected

**9 - Button for setting air distribution - dash panel/defroster vents**

- ❑ LEDs indicate selected function

**10 - Button for setting air distribution - dash panel vents**

- ❑ LEDs indicate selected function

**11 - Button for setting air distribution - footwell vent**

- ❑ LEDs indicate selected function

**12 - Button for air recirculation mode**

- ❑ If LED lights up, “air recirculation mode” is selected
- ❑ The “air recirculation mode” function is cancelled on pressing the button for defrost mode (air to windscreen)

**B - Operating unit ( Climatronic control unit - J255- ) for vehicles with seat heating**

- ❑ With infrared temperature and sunlight penetration sensor which measures temperature and sunlight penetration on operating and display unit

**1 - Auto button for automatic air conditioner control**

- ❑ If LED lights up, “automatic control” is selected

**2 - Rotary temperature control (driver side)**

**3 - Button for defrost mode**

- ❑ If LED lights up, “defrost mode” is selected

**4 - Rotary control for fresh air blower - V2-**

- ❑ For setting blower speed

**5 - Heated rear window button**

- ❑ If LED lights up, “Rear window heating on” is selected

**6 - Rotary temperature control (front passenger side)**

**7 - A/C button for air conditioner compressor**

- ❑ If LED lights up, “air conditioner compressor on” is selected.

**8 - Seat heating button (right-side)**

- ❑ LEDs indicate selected setting
- ❑ Selected setting is reduced by one level after a pre-set time has elapsed ⇒ page 5

**9 - OFF button for switching heating/climate control off**

- ❑ If LED lights up, “OFF” is selected

**10 - Button for setting air distribution - dash panel/defroster vents**

- ❑ LEDs indicate selected function

**11 - Button for setting air distribution - dash panel vents**

- ❑ LEDs indicate selected function

**12 - Button for setting air distribution - footwell vent**

- ❑ LEDs indicate selected function

**13 - Button for air recirculation mode**

- ❑ If LED lights up, “air recirculation mode” is selected
- ❑ The “air recirculation mode” function is cancelled on pressing the button for defrost mode (air to windscreen)

**14 - Seat heating button (left-side)**

- ❑ LEDs indicate selected setting

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❑ Selected setting is reduced by one level after a pre-set time has elapsed ⇒ page 5

## 8.2.2 Overview - front operating and display unit, “deluxe” version

General notes ⇒ “1.6 Operating unit”, page 16

**A - Operating unit ( Climatronic control unit - J255- ) for vehicles without seat heating/seat ventilation**

❑ With infrared temperature and sunlight penetration sensor which measures temperature and sunlight penetration on operating and display unit

**1 - Rotary temperature control (driver side)**

**2 - Auto button for automatic air conditioner control (left-side)**

❑ If LED lights up, “automatic control” is selected

**3 - A/C button for air conditioner compressor**

❑ If LED lights up, “air conditioner compressor on” is selected.

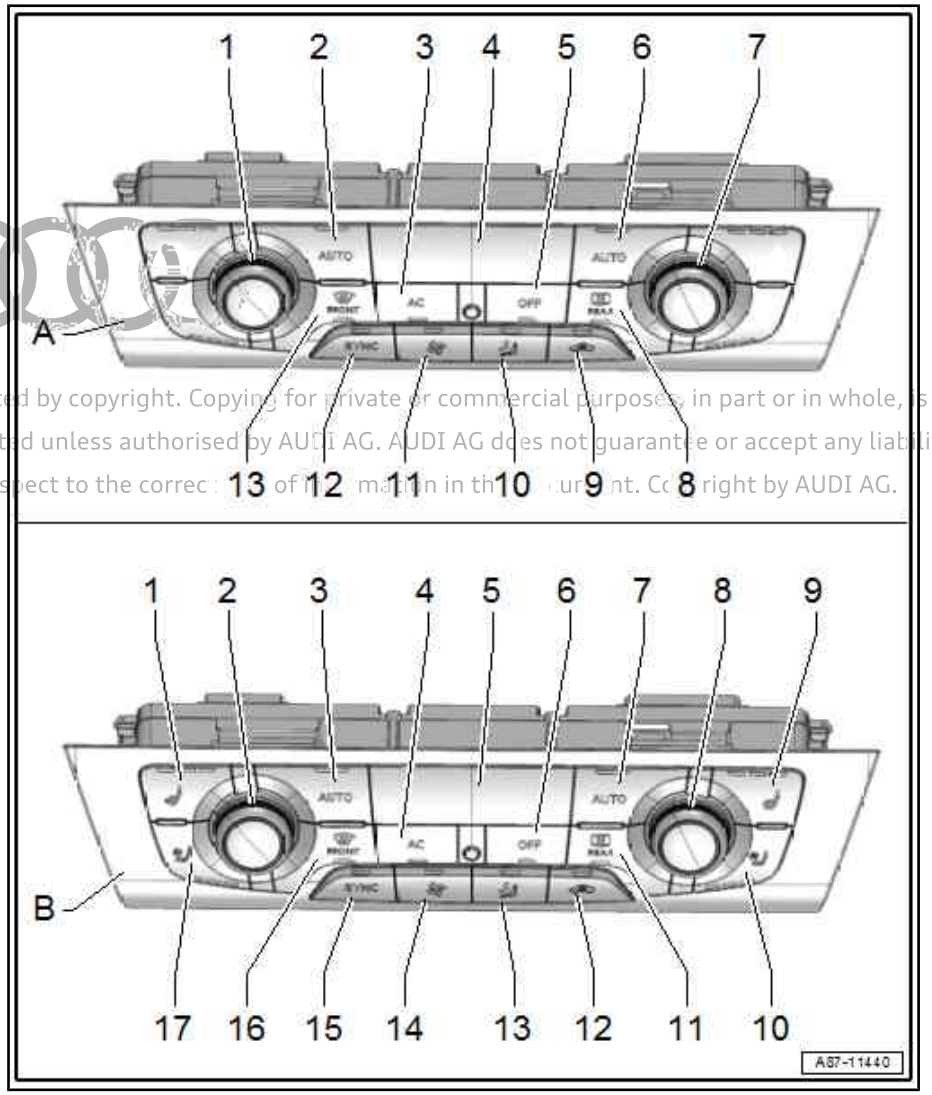
**4 - Display**

**5 - OFF button for switching heating/climate control off**

❑ If LED lights up, “OFF” is selected

**6 - Auto button for automatic air conditioner control (right-side)**

❑ If LED lights up, “automatic control” is selec-




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ted

**7 - Rotary temperature control (front passenger side)**

**8 - Heated rear window button**

- ❑ If LED lights up, “Rear window heating on” is selected

**9 - Button for air recirculation mode**

- ❑ If LED lights up, “air recirculation mode” is selected
- ❑ The “air recirculation mode” function is cancelled on pressing the button for defrost mode (air to windscreen)

**10 - Button for setting air distribution**

- ❑ Selected function for “air distribution” indicated on display

**11 - Button for fresh air blower - V2-**

- ❑ For setting blower speed

**12 - SYNC button**

- ❑ If LED lights up, “SYNC” is selected
- ❑ When button is pressed, settings for front driver side are applied for front passenger side and, if fitted, also for rear operating and display unit.

**13 - Button for defrost mode**

- ❑ If LED lights up, “defrost mode” is selected

**B - Operating unit ( Climatronic control unit - J255- ) for vehicles with seat heating/seat ventilation**

- ❑ With infrared temperature and sunlight penetration sensor which measures temperature and sunlight penetration on operating and display unit

**1 - Seat heating button (left-side)**

- ❑ LEDs indicate selected setting
- ❑ Selected setting is reduced by one level after a pre-set time has elapsed ⇒ page 5

**2 - Rotary temperature control (driver side)**

**3 - Auto button for automatic air conditioner control (left-side)**

- ❑ If LED lights up, “automatic control” is selected

**4 - A/C button for air conditioner compressor**

- ❑ If LED lights up, “air conditioner compressor on” is selected.

**5 - Display**

**6 - OFF button for switching heating/climate control off**

- ❑ If LED lights up, “OFF” is selected

**7 - Auto button for automatic air conditioner control (right-side)**

- ❑ If LED lights up, “automatic control” is selected

**8 - Rotary temperature control (front passenger side)**

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**9 - Seat heating button (right-side)**

- ❑ LEDs indicate selected setting
- ❑ Selected setting is reduced by one level after a pre-set time has elapsed ⇒ page 5

**10 - Seat ventilation button (right-side)**

- ❑ LEDs indicate selected setting
- ❑ Selected setting is reduced by one level after a pre-set time has elapsed ⇒ page 10

**11 - Heated rear window button**

- ❑ If LED lights up, “Rear window heating on” is selected

**12 - Button for air recirculation mode**

- ❑ If LED lights up, “air recirculation mode” is selected
- ❑ The “air recirculation mode” function is cancelled on pressing the button for defrost mode (air to windscreen)

**13 - Button for setting air distribution**

- ❑ Selected function for “air distribution” indicated on display

**14 - Button for fresh air blower - V2-**

- ❑ For setting blower speed

**15 - SYNC button**

- ❑ If LED lights up, “SYNC” is selected
- ❑ When button is pressed, settings for front driver side are applied for front passenger side and, if fitted, also for rear operating and display unit.

**16 - Button for defrost mode**

- ❑ If LED lights up, “defrost mode” is selected

**17 - Seat ventilation button (left-side)**

- ❑ LEDs indicate selected setting
- ❑ Selected setting is reduced by one level after a pre-set time has elapsed ⇒ page 10

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## 8.2.3 Overview - rear operating and display unit

General notes ⇒ “1.6 Operating unit”, page 16

**A - Rear Climatronic operating and display unit - E265- for vehicles without seat heating/ seat ventilation**

**1 - Rotary temperature control (driver side)**

**2 - OFF button for switching heating/climate control off**

- ❑ If LED lights up, “OFF” is selected

**3 - Display**

**4 - Rotary temperature control (front passenger side)**

**5 - Auto button for automatic air conditioner control (right-side)**

- ❑ If LED lights up, “automatic control” is selected

**6 - Button for setting air distribution**

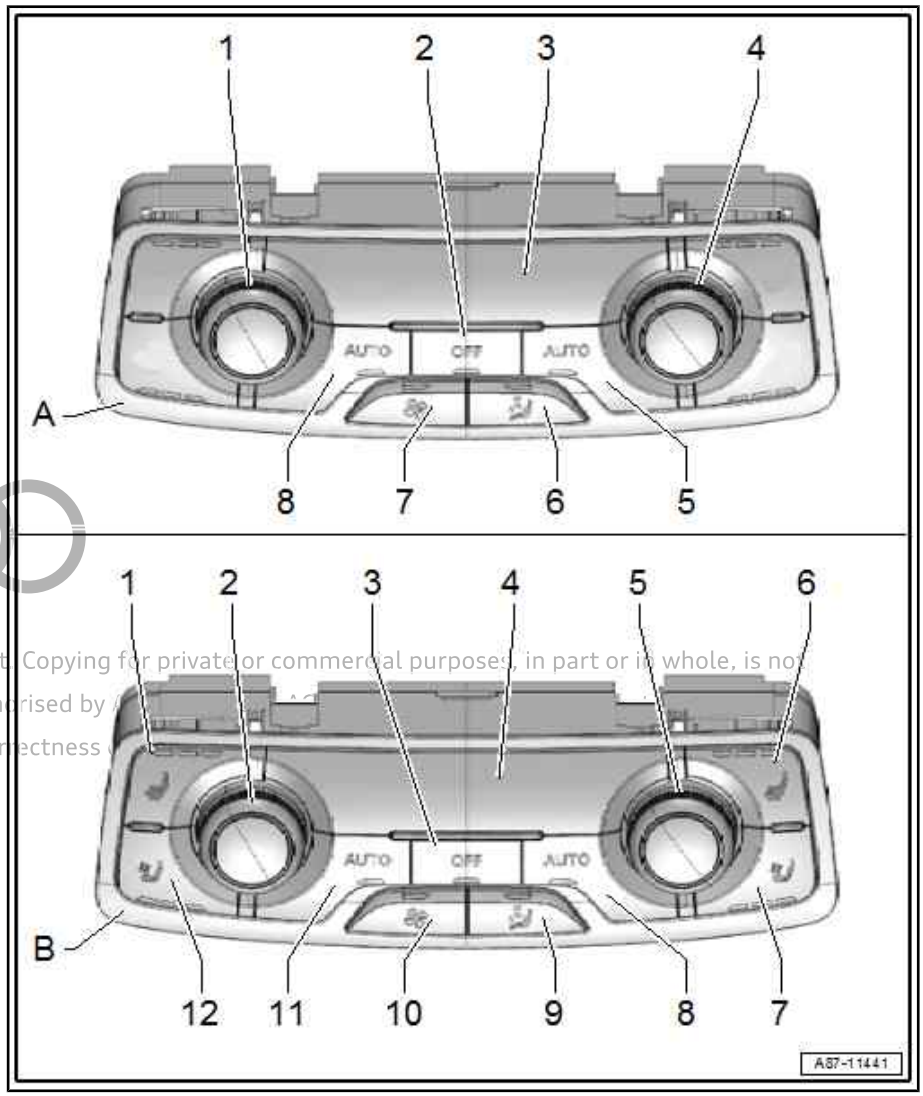
- ❑ Selected function for “air distribution” indicated on display

**7 - Button for rear fresh air blower - V80-**

- ❑ For setting blower speed

**8 - Auto button for automatic air conditioner control (left-side)**

- ❑ If LED lights up, “auto-




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matic control” is selected

**B - Rear Climatronic operating and display unit - E265- for vehicles with seat heating/seat ventilation**

**1 - Seat heating button (left-side)**

- ❑ LEDs indicate selected setting

**2 - Rotary temperature control (driver side)**

**3 - OFF button for switching heating/climate control off**

- ❑ If LED lights up, “OFF” is selected

**4 - Display**

**5 - Rotary temperature control (front passenger side)**

**6 - Seat heating button (right-side)**

- ❑ LEDs indicate selected setting

**7 - Seat ventilation button (right-side)**

- ❑ LEDs indicate selected setting

**8 - Auto button for automatic air conditioner control (right-side)**

- ❑ If LED lights up, “automatic control” is selected

**9 - Button for setting air distribution**

- ❑ Selected function for “air distribution” indicated on display

**10 - Button for rear fresh air blower - V80-**

- ❑ For setting blower speed

**11 - Auto button for automatic air conditioner control (left-side)**

- ❑ If LED lights up, “automatic control” is selected

**12 - Seat ventilation button (left-side)**

- ❑ LEDs indicate selected setting

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## 8.3 Removing and installing operating and display unit

⇒ “8.3.1 Removing and installing operating unit ( Climatronic control unit J255 )”, page 556

⇒ “8.3.2 Removing and installing rear Climatronic operating unit E265 ”, page 558

### 8.3.1 Removing and installing operating unit ( Climatronic control unit - J255- )

– If operating unit ( Climatronic control unit - J255- ) is renewed, select “Replace control unit” ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

**Note**

- *On Audi A6 e-tron vehicles (depending on version), the measured value of -G263- can be evaluated by the operating unit ( Climatronic control unit - J255- (as on all other vehicles in this series) or thermal management control unit - J1024- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *If the measured value is evaluated by -J1024- on the Audi A6 e-tron (and transmitted to -J255- via the data bus), a different version of -J255- is installed ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode and ⇒ Electronic parts catalogue .*

### Special tools and workshop equipment required

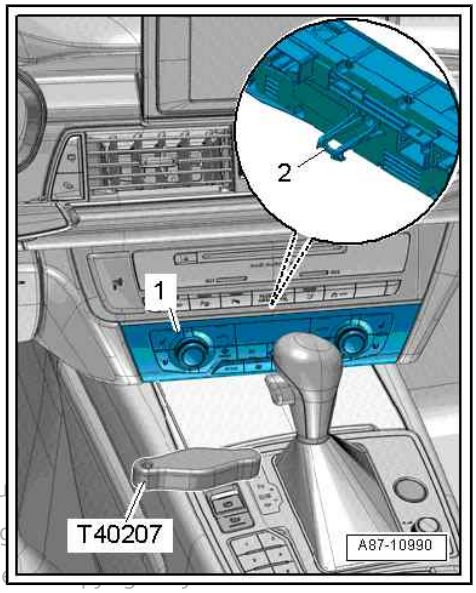
- Removal wedge - 3409-

### Removing

– Observe general notes ⇒ page 22 .

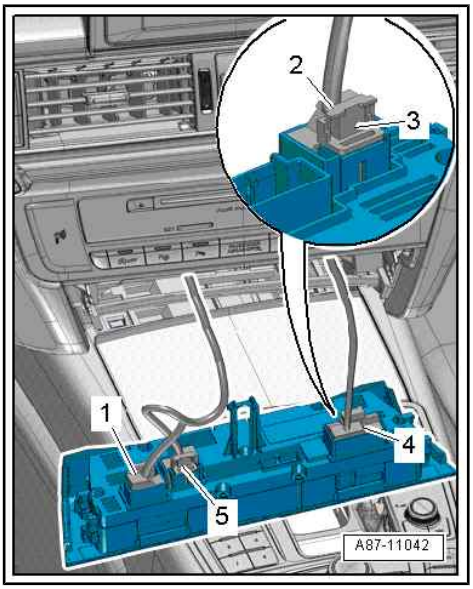
– Carefully pull operating unit -1- out of guides (left and right) as far as the first detent using hook - T40207- .

– Tilt operating unit downwards slightly and disengage retaining hook -2- at dash panel.




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– Unplug electrical connectors -1, 4, 5- by sliding locking element -2- upwards and pressing catch -3- inwards.




### Installing

Install in reverse order of removal; note the following:

– When renewing the operating unit ( Climatronic control unit - J255- ), take care to select the correct version ⇒ Electronic parts catalogue .

After installing the operating unit ( Climatronic control unit - J255- ), always perform the following steps ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Read out event memory, erase it if necessary, and check again.

## 8.3.2 Removing and installing rear Climatronic operating unit - E265-

– If rear Climatronic operating unit - E265- is renewed, select “Replace control unit” ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

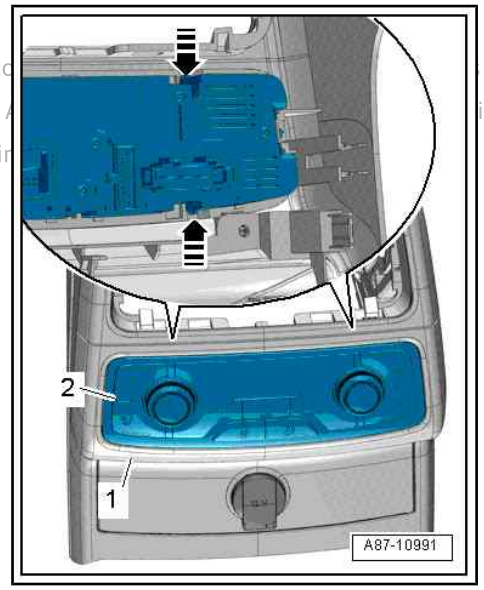
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### Removing

– Remove centre console trim (rear) ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Exploded view - centre console .

– Release retaining tabs (left and right) -arrows-.

– Press operating unit -2- out of cover (rear) -1-.




### Installing

Install in reverse order of removal; note the following:

– When renewing a rear Climatronic operating unit - E265- , take care to select the correct version ⇒ Electronic parts catalogue .

After installing rear Climatronic operating unit - E265- always perform the following steps ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

– Read out event memory, erase it if necessary, and check again.

# 9 Components for cooling high-voltage system - Audi A6 e-tron

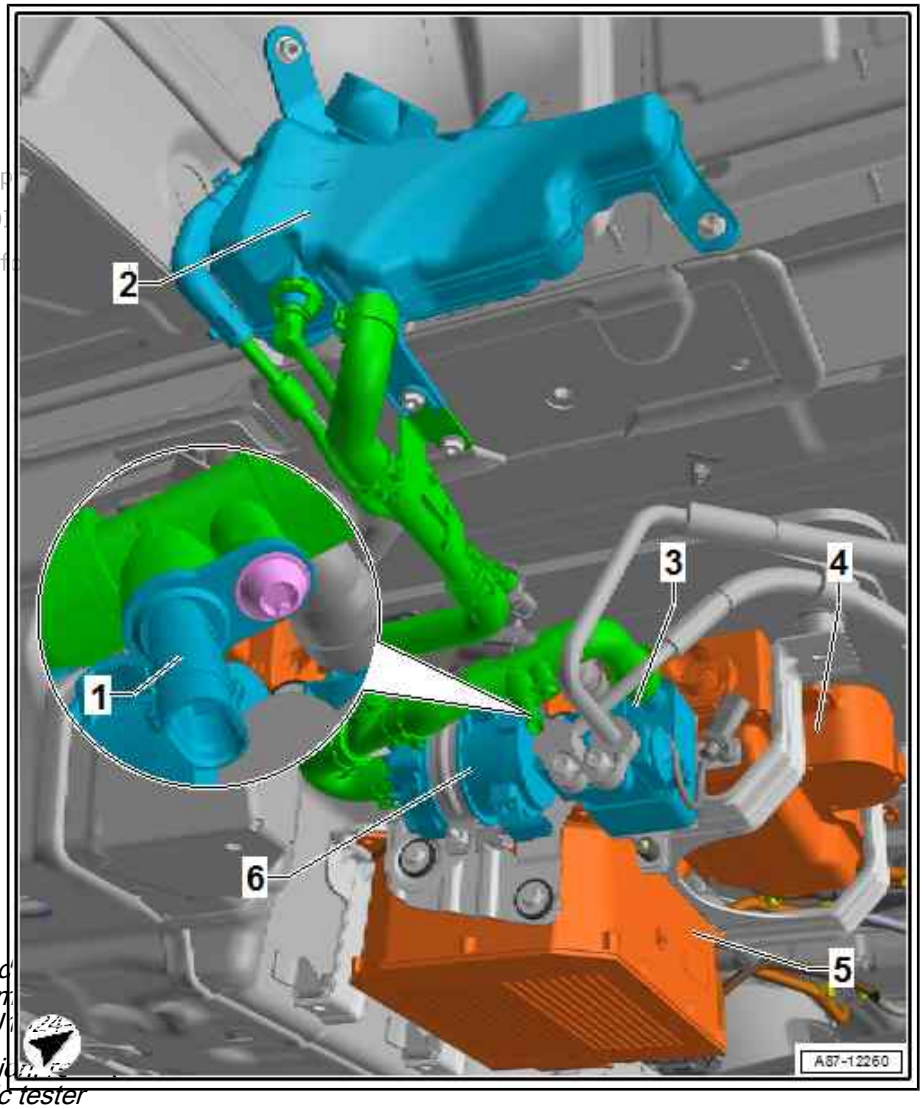
⇒ "9.1 Overview of fitting locations - components for cooling high-voltage system, Audi A6 e-tron", page 559

⇒ "9.2 Removing and installing coolant temperature sender 1 for thermal management G902 ", page 560

⇒ "9.3 Removing and installing coolant pump for high-voltage battery V590 ", page 562

## 9.1 Overview of fitting locations - components for cooling high-voltage system, Audi A6 e-tron

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**1 - Coolant temperature sender 1 for thermal management - G902-**

- ❑ Incorporation in coolant circuit of high-voltage system ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses (Connection diagram - coolant hoses, cooling components for high-voltage system)
- ❑ Checking operation ⇒ Vehicle diagnostic tester ("Guided Fault Finding" for air conditioner and hybrid battery energy management system)
- ❑ Removing and installing ⇒ page 560 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses (Connection diagram - coolant hoses, cooling components for high-voltage system).

**Note**

- ♦ *Transmits measured temperature to thermal management control unit - J*
- ♦ *For further information ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

**2 - Coolant expansion tank for high-voltage battery cooling system**

- ❑ Removing and installing ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .
- ❑ Incorporation into coolant circuit; draining and filling cooling system ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses
- ❑ With coolant shortage indicator sender 2 - G837-

**3 - High-voltage battery heat exchanger**

- ❑ Removing and installing ⇒ page 199

**Note**

- ♦ *Via this heat exchanger, the coolant supplied to the hybrid battery unit - AX1- and/or the control unit for high-voltage battery charging unit - J1050- is cooled when necessary by the air conditioner refrigerant circuit.*
- ♦ *Incorporation in air conditioner refrigerant circuit ⇒ “2.1.3 System overview - refrigerant circuit, Audi A6 e-tron (vehicles with high-voltage system)”, page 141*
- ♦ *For further information, refer to ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

**4 - Control unit for high-voltage battery charging unit - J1050-**

- ❑ Fitting location, operation, removing and installing ⇒ ; Rep. gr. 93 ; Charging unit for high-voltage battery
- ❑ Checking operation ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)

**5 - Hybrid battery unit - AX1-**

- ❑ Operation, removing and installing ⇒ Rep. gr. 93 ; High-voltage battery unit
- ❑ Checking operation ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)

**6 - Coolant pump for high-voltage battery - V590-**

- ❑ Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Removing and installing ⇒ page 562 and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses (Connection diagram - coolant hoses, cooling components for high-voltage system).

**Note**

- ♦ *Activated by battery regulation control unit - J840- (via coolant pump relay - J235- ).*
- ♦ *Checking activation and function ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode*
- ♦ *For further information, refer to ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .*

## 9.2 Removing and installing coolant temperature sender 1 for thermal management - G902-

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**Removing**

– Switch on ignition.

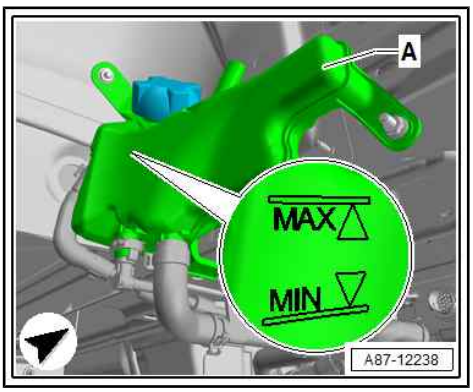
**WARNING**

*Risk of scalding due to hot steam and hot coolant.*

- *The cooling system is pressurised when the high-voltage system is warm.*
- *To relieve pressure, cover the filler cap on the coolant expansion tank for the high-voltage system with a cloth and open carefully.*

– Remove rear wheel housing liner (right-side) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (rear) .

– Carefully open filler cap on coolant expansion tank -A- for high-voltage system.




**Note**

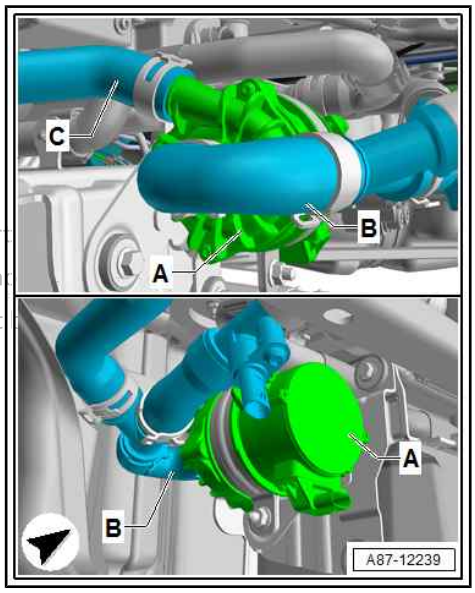
*There are different versions and different layouts of the coolant expansion tank -A- ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .*

– Drain coolant from coolant circuit of high-voltage system ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

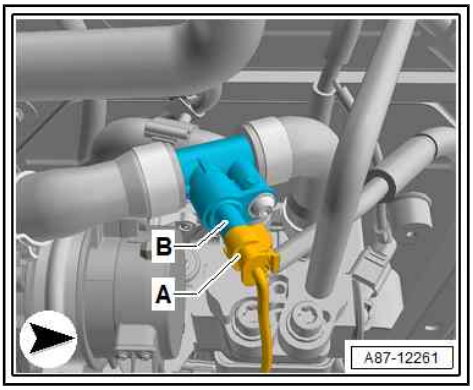
**Note**

*To drain coolant, disconnect coolant hose -B- from coolant pump for high-voltage battery - V590- -A- ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .*

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– Unplug connector -A- from -G902- -B-.

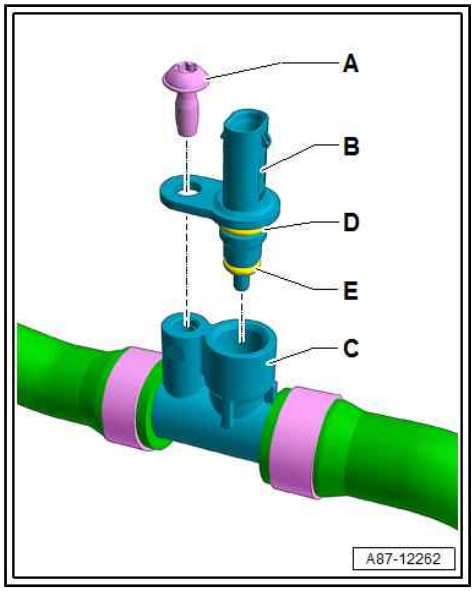


– Unscrew bolts -A- (tightening torque: 5 Nm).
– Remove -G902- -B- from connection -C-.

**Installing**

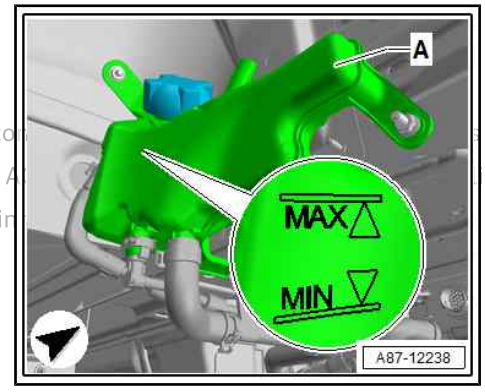
Install in reverse order of removal; note the following:

– Renew O-rings -D, E-.
– Lubricate O-rings -D, E- with coolant.
– Before installing -G902- -B-, check connection -C- for dirt or damage.




– Fill coolant into coolant expansion tank -A- for coolant circuit of high-voltage system and bleed coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

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**Note**

*Special procedures are required for bleeding the coolant circuit of the high-voltage system. For example, the coolant pump for high-voltage battery - V590- must be activated (e.g. via the thermal management control unit - J1024- ) ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .*

– Re-install remaining components removed previously in reverse order and/or re-attach detached components.
– Switch on ignition.
– Interrogate event memory of thermal management control unit - J1024- and erase any faults displayed ⇒ Vehicle diagnostic tester ("Guided Fault Finding").

## 9.3 Removing and installing coolant pump for high-voltage battery - V590-

**Removing**

– Switch on ignition.

**WARNING**

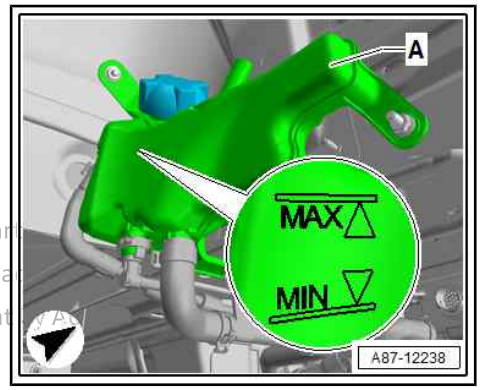
***Risk of scalding due to hot steam and hot coolant.***

- ***The cooling system is pressurised when the high-voltage system is warm.***
- ***To relieve pressure, cover the filler cap on the coolant expansion tank for the high-voltage system with a cloth and open carefully.***

– Remove rear wheel housing liner (right-side) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (rear) .

– Remove cross brace and diagonal strut (rear) for easier access ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 42 ; Subframe; Exploded view - subframe .

– Carefully open filler cap on coolant expansion tank -A- for high-voltage system.




**Note**

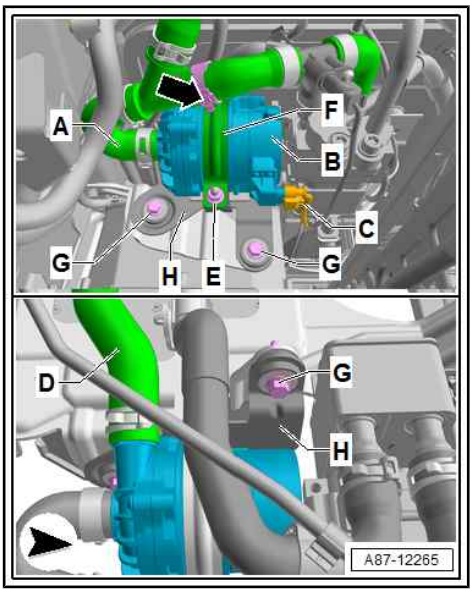
*There are different versions and different layouts of the coolant expansion tank -A- ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .*

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– Drain coolant from coolant circuit of high-voltage system ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

**Note**

*To drain coolant, disconnect coolant hose -A- from coolant pump for high-voltage battery - V590- -B- ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .*




– Disconnect coolant hoses - A, D-.

– Unplug connector -C- from -V590- -B-.

– Unscrew nut -E- (tightening torque: 5 Nm) and detach -V590- -B- with clip -F-.

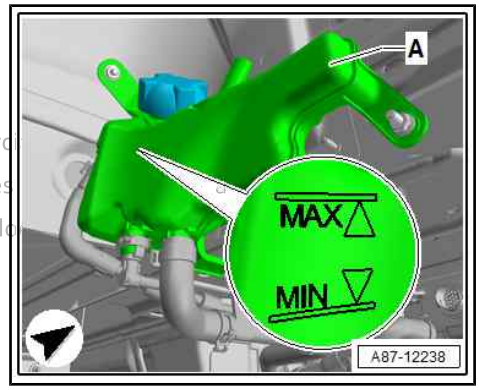
**Note**

*To remove bracket -H-, unscrew bolts -G- (tightening torque: 8 Nm).*

### Installing

Install in reverse order of removal; note the following:

– Fill coolant into coolant expansion tank -A- for coolant circuit of high-voltage system and bleed coolant circuit ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .




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**Note**

*Special procedures are required for bleeding the coolant circuit of the high-voltage system. For example, the coolant pump for high-voltage battery - V590- must be activated (e.g. via the thermal management control unit - J1024- ) ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode and ⇒ Engine, mechanics; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .*

– Re-install remaining components removed previously in reverse order and/or re-attach detached components.
– Switch on ignition.
– Interrogate event memory of thermal management control unit - J1024- and erase any faults displayed ⇒ Vehicle diagnostic tester ("Guided Fault Finding").

# 10 Components for cooling high-voltage battery - Audi A6 hybrid

⇒ “10.1 Overview of fitting locations - components not located in passenger compartment”, page 565

⇒ “10.2 Overview of fitting locations - components in passenger compartment (rear)”, page 567

⇒ “10.3 Exploded view - battery cooling module”, page 568

⇒ “10.4 Exploded view - routing of air flow and air distribution”, page 571

⇒ “10.5 Air intake and air outlet openings”, page 573

⇒ “10.6 Removing and installing refrigerant shut-off valve ( N516 / V424 )”, page 574

⇒ “10.7 Removing and installing air ducts - Audi A6 hybrid”, page 581

⇒ “10.8 Moving battery cooling module into service position - Audi A6 hybrid”, page 590

⇒ “10.9 Removing and installing battery cooling module - Audi A6 hybrid”, page 593

⇒ “10.10 Removing and installing battery fan 1 V457 - Audi A6 hybrid”, page 596

⇒ “10.11 Removing and installing temperature sensors for evaporator - Audi A6 hybrid”, page 598

⇒ “10.12 Checking condensation drain for battery cooling module - Audi A6 hybrid”, page 602

⇒ “10.13 Removing and installing condensation drain for battery cooling module - Audi A6 hybrid”, page 604

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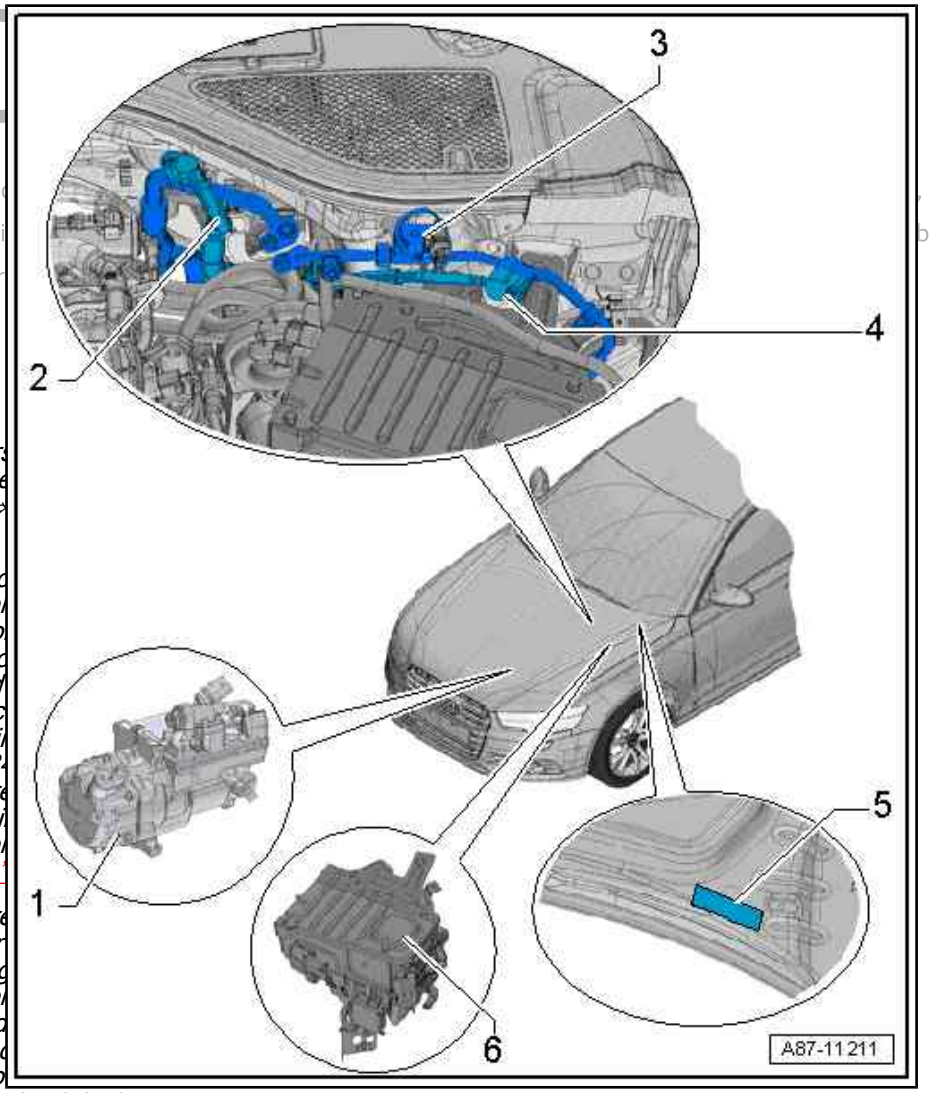
## 10.1 Overview of fitting locations - components not located in passenger compartment

**Note**

*The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

**1 - Electrically driven air conditioner compressor**

- ❑ With control unit for air conditioning compressor - J842- and electrical air conditioner compressor - V470-
- ❑ Detaching and attaching air conditioner compressor at bracket (vehicles with 4-cyl. engine) ⇒ page 259




**Note**

- *The compressor ver fer depending on the period and engine ⇒ parts catalogue .*
- *The air conditioner c are available as repl parts with different o please observe the c the compressor and part number ⇒ Elec catalogue and ⇒ Ai with refrigerant R13 87 ; Capacities for re R134a/refrigerant oi proved refrigerant o* *⇒ "4 Technical data"*
- *There may be differe ant oil capacities for ant circuit depending of air conditioner co The reason for the c quantities in the air c compressor for an o identical refrigerant circuit is the design of the actual compressor; please note the different oil quantities. Too much oil in the refrigerant circuit results in higher pressures and a reduction in the cooling output of the air conditioner. Insufficient oil can cause lubrication problems in the air conditioner compressor ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Capacities for refrigerant R134a/refrigerant oil and approved refrigerant oils and* *⇒ "4 Technical data", page 99* *.*
- *When fitting refrigerant lines and the corresponding retainers, make sure there is adequate clearance from other components (such as belts and engine pulleys).*

**2 - Connection of refrigerant line to evaporator in battery cooling module**

- ❑ Low-pressure side

**WARNING**

*The refrigerant circuit must be discharged before slackening off the bolts at the connection point.*

**3 - Refrigerant shut-off valve ( -N516- / -V424- )**

- Different designations, depending on vehicle ( refrigerant shut-off valve 1 for hybrid battery - N516- for Audi A6 hybrid and refrigerant shut-off valve - V424- for Audi A6 e-tron) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Fitted in plenum chamber (left-side)
- Checking ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)

**Note**

*The shut-off valve -N516- / -V424- is activated, for example, if the battery needs to be cooled but the air conditioner is not set to cooling mode for the passenger compartment (valve open when not activated).*

- Removing and installing ⇒ page 577

**4 - Connection of refrigerant line to evaporator in battery cooling module**

- High-pressure side

**WARNING**

*The refrigerant circuit must be discharged before slackening off the bolts at the connection point.*

**5 - Label**

- Indicates type of refrigerant and specified capacity ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Capacities for refrigerant R134a/refrigerant oil and approved refrigerant oils and ⇒ “4 Technical data”, page 99

**6 - Power and control electronics for electric drive - JX1-**

- For all work on the power and control electronics for electric drive - JX1- and on vehicles with a high-voltage system, pay attention to the additional warnings for such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system

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## 10.2 Overview of fitting locations - components in passenger compartment (rear)

**Note**

- ⇒ “10.5 Air intake and air outlet openings”, page 573
- ⇒ “10.3 Exploded view - battery cooling module”, page 568

**1 - Temperature sensor after evaporator for hybrid battery - G757-**

- ❑ Exploded view ⇒ page 568

**2 - Air recirculation flap 1 control motor for hybrid battery - V479-**

- ❑ Exploded view ⇒ page 568

**3 - Expansion valve with refrigerant shut-off valve 2 for hybrid battery - N517-**

- ❑ Exploded view ⇒ page 568

**4 - Refrigerant lines**

- ❑ To refrigerant shut-off valve 2 for hybrid battery - N517-
- ❑ Exploded view ⇒ page 157

**5 - Nut**

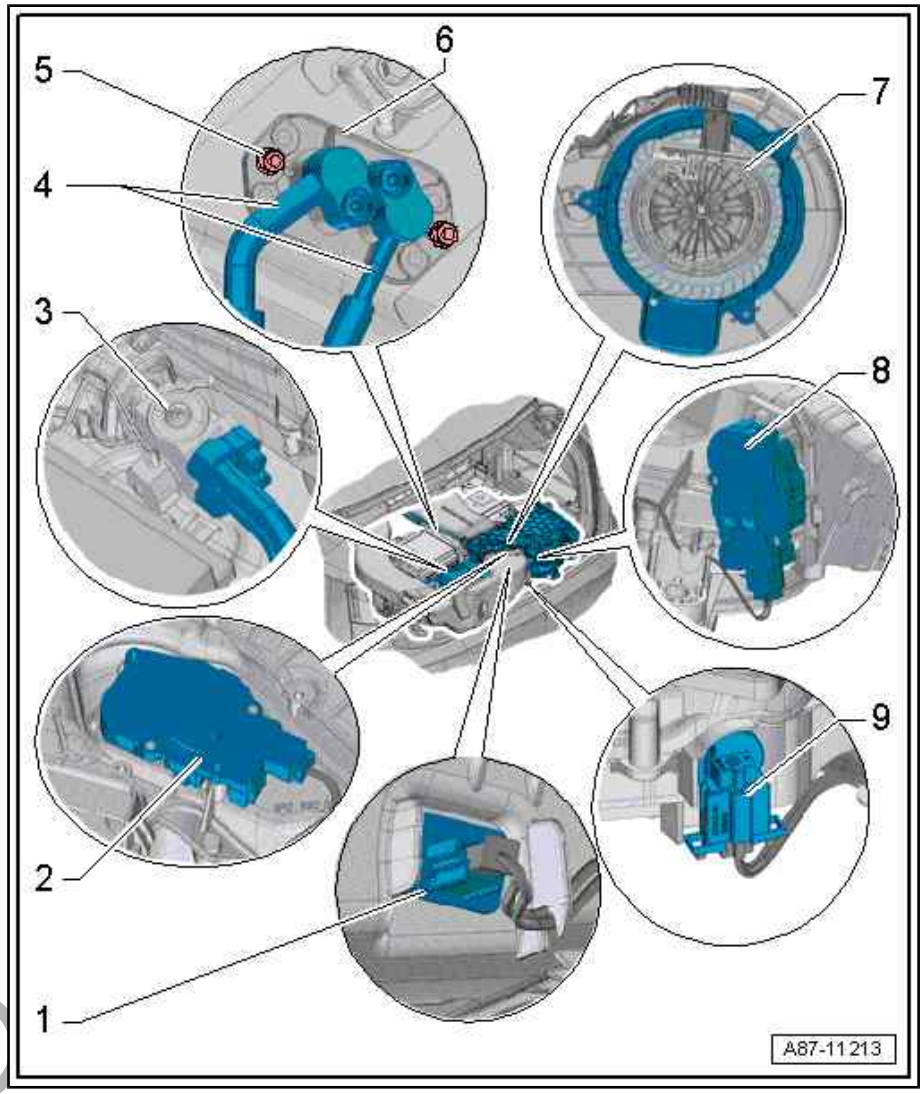
- ❑ 2x
- ❑ Tightening torque ⇒ page 157

**6 - Leadthrough for refrigerant lines into luggage compartment**

- ❑ Exploded view ⇒ page 157

**7 - Battery fan 1 - V457-**

- ❑ Exploded view ⇒ page 568




**8 - Air recirculation flap 2 control motor for hybrid battery - V480-**

- ❑ Exploded view ⇒ page 568

**9 - Temperature sensor before evaporator for hybrid battery - G756-**

- ❑ Exploded view ⇒ page 568

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## 10.3 Exploded view - battery cooling module

**On vehicles with high-voltage system (Audi A6 hybrid)**

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

**DANGER!**

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*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

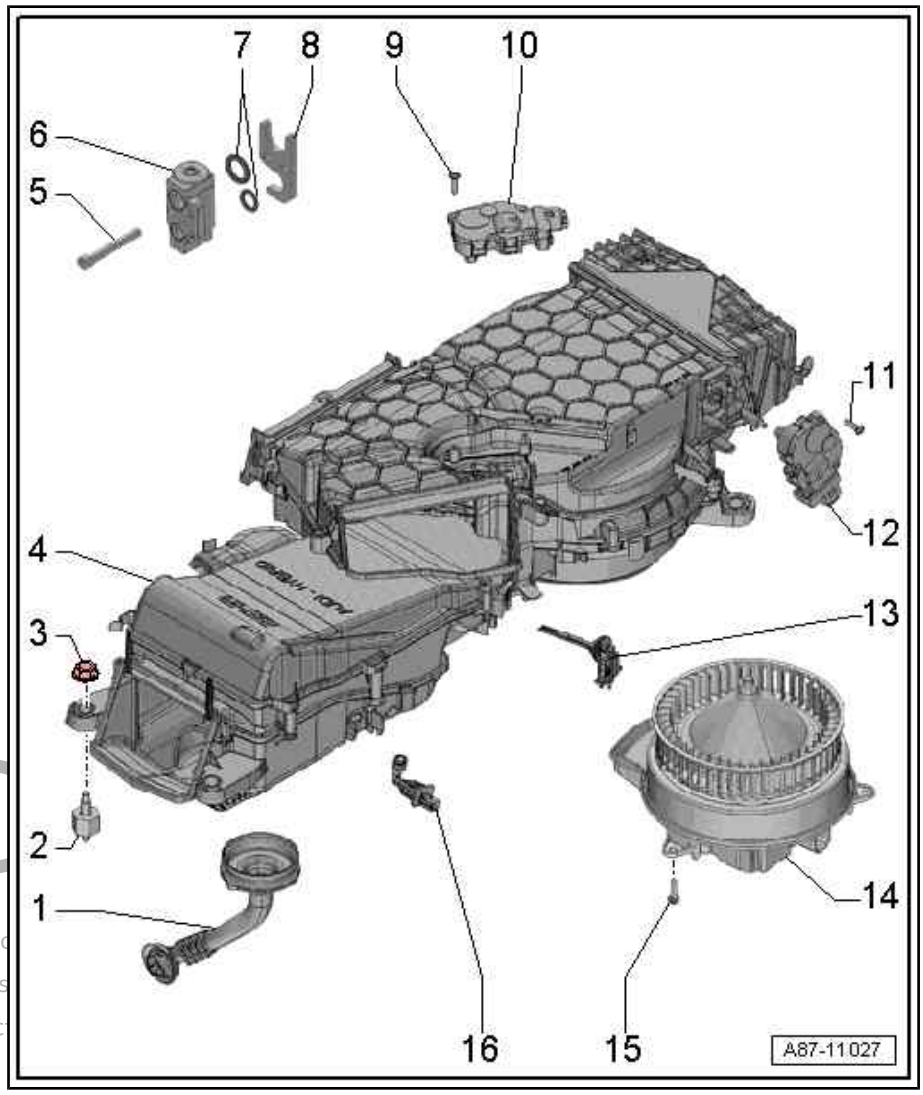
- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

**Note**

*Components are activated by the battery regulation control unit - J840- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ;

General warning instructions for work on the high-voltage system .




**1 - Condensation drain**

- ❑ Checking, removing and installing ⇒ page 604

**2 - Bonded rubber mounting**

**3 - Nut**

- ❑ 9 Nm

**4 - Battery cooling module**

- ❑ Moving to service position ⇒ page 590
- ❑ Removing and installing ⇒ page 593

**5 - Bolt**

- ❑ 10 Nm

**6 - Expansion valve with refrigerant shut-off valve 2 for hybrid battery - N517-**

- ❑ Removing and installing ⇒ page 193

**7 - O-rings**

- ❑ Renew; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Before installing, lubricate with refrigerant oil ⇒ page 97

**8 - Retaining clip**

**9 - Bolt**

- ❑ Tightening torque ⇒ page 343

**10 - Air recirculation flap 1 control motor for hybrid battery - V479-**

- ❑ Exploded view ⇒ page 343

**11 - Bolt**

- ❑ Tightening torque ⇒ page 343

**12 - Air recirculation flap 2 control motor for hybrid battery - V480-**

- ❑ Exploded view ⇒ page 343

**13 - Temperature sensor before evaporator for hybrid battery - G756-**

- ❑ Removing and installing ⇒ page 598

**14 - Battery fan 1 - V457-**

- ❑ Removing and installing ⇒ page 596

**15 - Bolt**

- ❑ 1.5 Nm

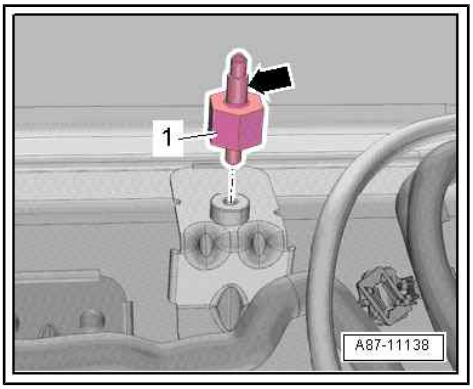
**16 - Temperature sensor after evaporator for hybrid battery - G757-**

- ❑ Removing and installing ⇒ page 600

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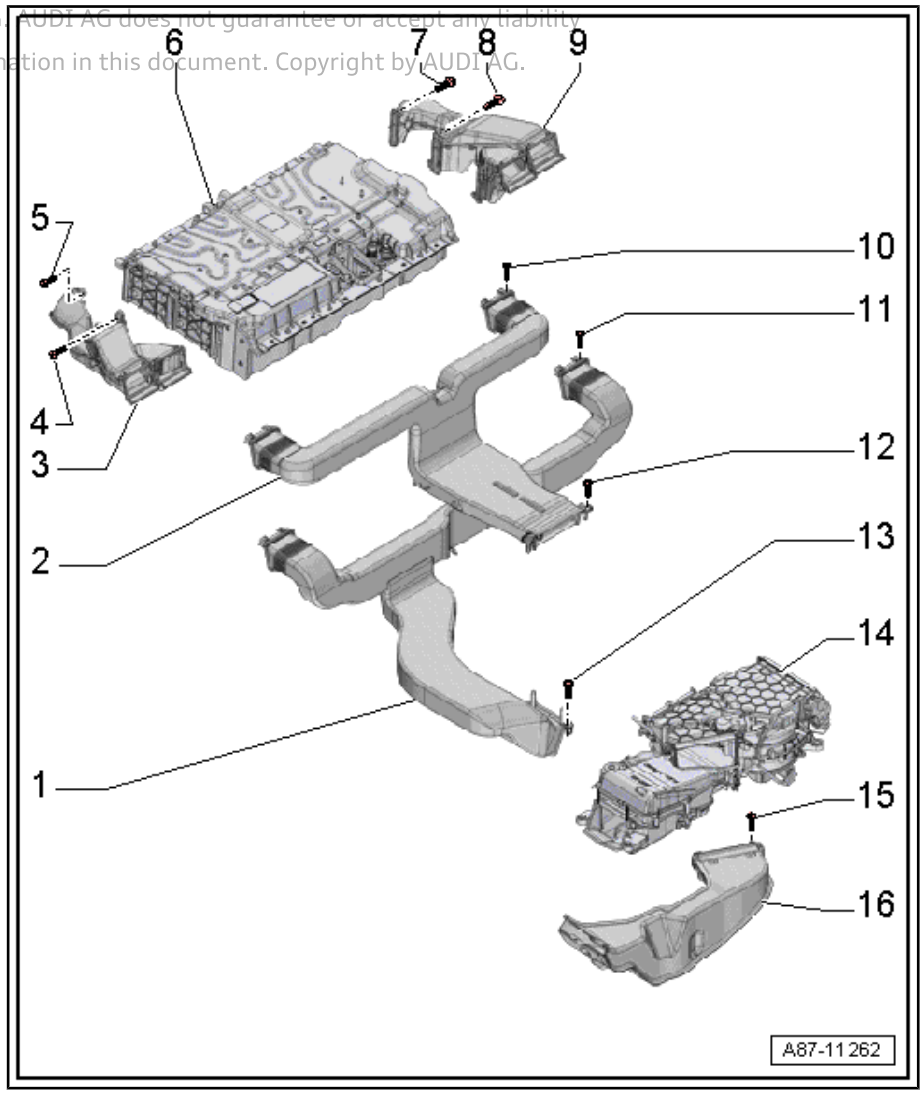
**Bonded rubber mounting - installation position**

- The collar -arrow- on the bonded rubber mounting -1- faces upwards.




## 10.4 Exploded view - routing of air flow and air distribution

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**1 - Air inlet duct for drive battery**

- ❑ If the fasteners no longer hold or one of the retaining tabs breaks off, the air duct can also be secured with a bolt at the battery cooling module and with bolts at the air ducts.
- ❑ Removing and installing ⇒ page 586

**2 - Air outlet duct (front) for drive battery**

- ❑ If the fasteners no longer hold or if one of the retaining tabs breaks off, the air duct can also be secured with bolts at the battery cooling module.
- ❑ Removing and installing ⇒ page 584

**3 - Air duct (left-side)**

- ❑ If the fasteners no longer hold, the air duct must be secured with an additional bolt. To do so, remove drive battery ⇒ Electrical system, hybrid; Rep. gr. 93 ; High-voltage battery unit; Removing and installing high-voltage battery .
- ❑ Removing and installing ⇒ page 588

**4 - Bolt**

- ❑ 2x
- ❑ 2 Nm

**5 - Bolt**

- ❑ If the air duct fasteners no longer hold, the air duct must be secured with an additional bolt. To do so, remove drive battery ⇒ Electrical system, hybrid; Rep. gr. 93 ; High-voltage battery unit; Removing and installing high-voltage battery .

**6 - Drive battery - A2-**

- ❑ For work on -A2- , such as removal and installation, de-energisation of the system etc., refer to ⇒ Electrical system, hybrid; Rep. gr. 93 ; High-voltage battery unit; Removing and installing high-voltage battery .

**7 - Bolt**

- ❑ If the air duct fasteners no longer hold, the air duct must be secured with an additional bolt

**8 - Bolt**

- ❑ 2x
- ❑ 2 Nm

**9 - Air duct (right-side)**

- ❑ If the fasteners no longer hold, the air duct must be secured with an additional bolt. To do so, remove drive battery ⇒ Electrical system, hybrid; Rep. gr. 93 ; High-voltage battery unit; Removing and installing high-voltage battery .
- ❑ Removing and installing ⇒ page 588

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**10 - Bolt**

- ❑ If the air duct fasteners no longer hold, the air duct must be secured with an additional bolt

**11 - Bolt**

- ❑ If the air duct fasteners no longer hold, the air duct must be secured with an additional bolt

**12 - Bolt**

- ❑ If the air duct fasteners no longer hold, the air duct must be secured with an additional bolt

**13 - Bolt**

- ❑ If the air duct fasteners no longer hold, the air duct must be secured with an additional bolt

**14 - Battery cooling module**

**15 - Bolt**

- ❑ If the air duct fasteners no longer hold, the air duct must be secured with an additional bolt.

**16 - Air outlet duct (rear) for drive battery**

- ❑ If any of the retaining tabs break off, the air duct can also be secured with bolts at the battery cooling module.
- ❑ Removing and installing ⇒ page 581

## 10.5 Air intake and air outlet openings

**A - To air outlet duct (rear)**

**B - To air inlet duct**

- ❑ For drive battery

**C - To air duct for drive battery**

**D - To air outlet duct (front)**

- ❑ Air outlet from drive battery

**E - To air duct for drive battery**

- ❑ Air outlet from drive battery

**F - To drive battery**

**G - To battery cooling module**

**H - Air inlet from area below luggage compartment floor panel**

**J - To forced ventilation vent (left-side)**

- ❑ Exploded view ⇒ page 113

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**1 - Air inlet duct**

- ❑ For drive battery

**2 - Air duct (left-side)**

- ❑ To air inlet and outlet duct

**3 - Air duct (right-side)**

- ❑ To air inlet and outlet duct

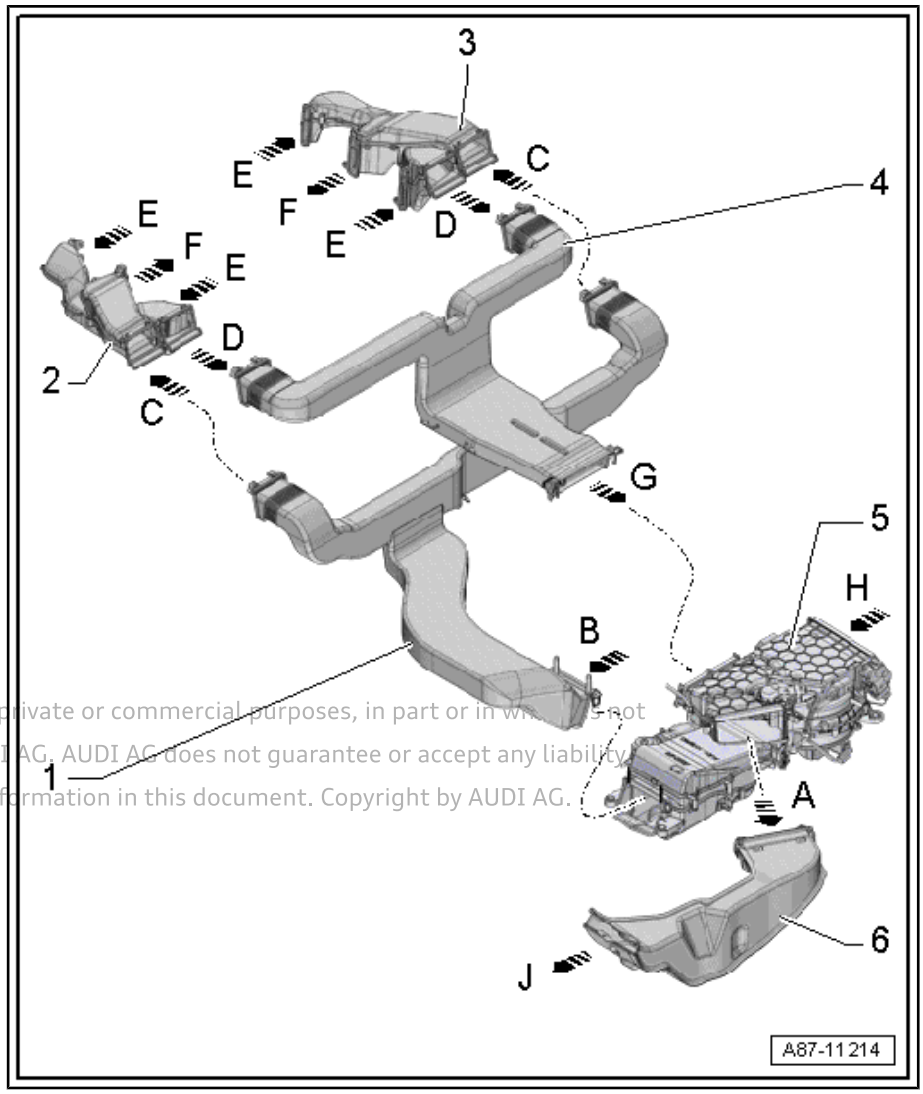
**4 - Air outlet duct (front)**

- ❑ For drive battery

**5 - Battery cooling module**

**6 - Air outlet duct (rear)**

- ❑ From battery cooling module



## 10.6 Removing and installing refrigerant shut-off valve ( -N516- / -V424- )

⇒ "10.6.1 Detaching and attaching refrigerant line from refrigerant shut-off valve ( N516 / V424 ) - vehicles with high-voltage system", page 574

⇒ "10.6.2 Removing and installing refrigerant shut-off valve ( N516 / V424 )", page 577

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### 10.6.1 Detaching and attaching refrigerant line from refrigerant shut-off valve ( -N516- / -V424- ) - vehicles with high-voltage system

**Note**

- *Different designations, depending on vehicle ( refrigerant shut-off valve 1 for hybrid battery - N516- for Audi A6 hybrid and refrigerant shut-off valve - V424- for Audi A6 e-tron) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

**WARNING**

***Working on vehicles with high-voltage wiring:***

- ***Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.***
- ***High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.***
- ***The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.***

**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

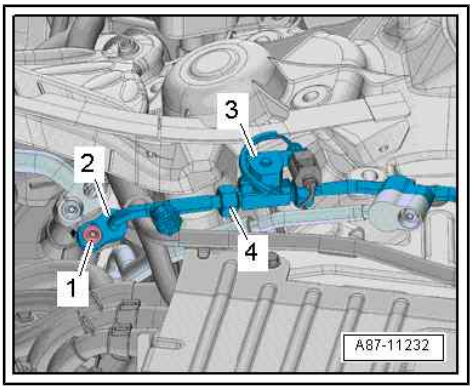
- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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### Special tools and workshop equipment required

- Engine bung set - VAS 6122-

### Removing




– On vehicles with high-voltage system (Audi A6 e-tron), switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

– Switch off ignition.

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Counterhold shut-off valve 1 -item 3- and unscrew union nut -4-.

– Remove bolt -1- and disconnect refrigerant line -2- from internal heat exchanger and from shut-off valve 1.

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

### Installing

Install in reverse order of removal; note the following:

### Tightening torques

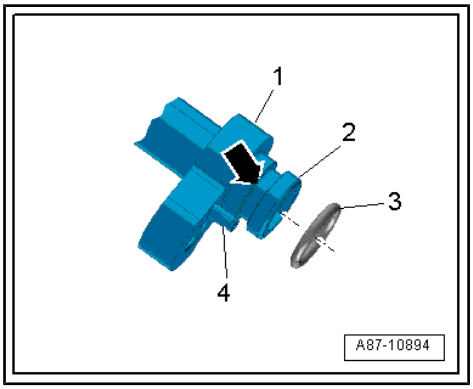
- ⇒ “2.4.1 Exploded view - refrigerant lines, expansion valve, internal heat exchanger”, page 155

– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .

– If fitted, check that dowel pin -4- is not damaged and is seated correctly.

– Check guide ring -2- at refrigerant line connection for damage.

– Insert O-ring -3- in groove -arrow- in connection for refrigerant line -1-.

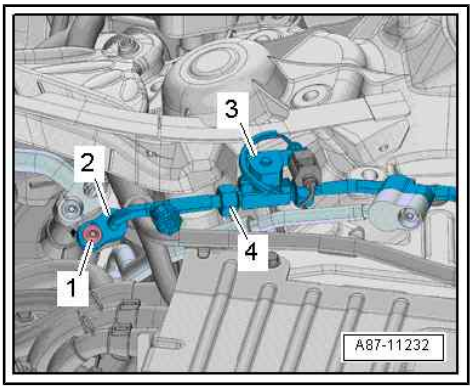



**Note**

- *Observe fitting instructions for O-rings ⇒ page 97 .*
- *After attaching, check routing of refrigerant lines. They must be inserted in brackets provided and should not make contact with other components.*

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– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .
– Screw on union nut -4- by hand until it makes contact, then tighten fully.




**Note**

*When tightening the union nuts, make sure not to strain the refrigerant lines.*

– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .
– Re-install remaining components removed previously in reverse order and/or re-attach detached components.
– Switch on ignition.

Audi A6 hybrid

– Interrogate event memory of operating unit ( Climatronic control unit - J255- ) and control unit for air conditioning compressor - J842- and erase any faults displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

Audi A6 e-tron

– Interrogate event memory of thermal management control unit - J1024- and erase any faults displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

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All vehicles

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

*Also observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

## 10.6.2 Removing and installing refrigerant shut-off valve ( -N516- / -V424- )

**Note**

- *Different designations, depending on vehicle ( refrigerant shut-off valve 1 for hybrid battery - N516- for Audi A6 hybrid and refrigerant shut-off valve - V424- for Audi A6 e-tron) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *The vehicles in this series with high-voltage systems are currently all fitted with refrigerant circuits charged with refrigerant R134a.*

### Vehicles with high-voltage system (hybrid vehicles)

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage

⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

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**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

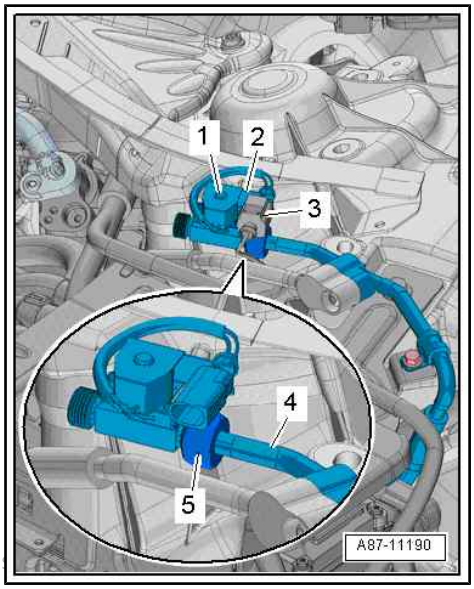
- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

**Special tools and workshop equipment required**

- Engine bung set - VAS 6122-

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### Removing




– On vehicles with high-voltage system (Audi A6 e-tron), switch off (deactivate) auxiliary air conditioner function ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

– Switch off ignition.

– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

**WARNING**

***Danger from escaping pressurised refrigerant.***

***Danger of frostbite on skin and other parts of the body.***

- ***Extract the refrigerant and then immediately open up the refrigerant circuit.***
- ***Extract the refrigerant again if more than 10 minutes have passed since the initial extraction and the refrigerant circuit has not been opened up. Renewed evaporation leads to the build-up of pressure in the refrigerant circuit.***

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– Remove refrigerant line from refrigerant shut-off valve 1 for hybrid battery ⇒ page 574 .

– Unplug electrical connector -3- and remove from bracket -2-.

– Counterhold shut-off valve 1 -item 1- and unscrew union nut -5-.

– Detach shut-off valve ( -N516- / -V424- ) from refrigerant line -4-.

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

### Installing

Install in reverse order of removal; note the following.

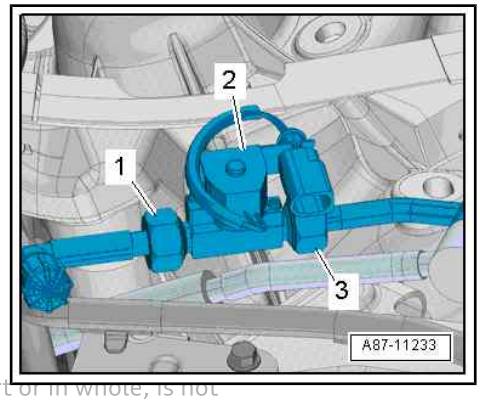
### Tightening torques

♦ ⇒ “2.4.1 Exploded view - refrigerant lines, expansion valve, internal heat exchanger”, page 155

**Note**

♦ *Observe fitting instructions for O-rings ⇒ page 97 .*

♦ *After attaching, check routing of refrigerant lines. They must be inserted in brackets provided and should not make contact with other components.*




– Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .
– Screw in union nut by hand until it makes contact.
– Install refrigerant line at refrigerant shut-off valve 1 for hybrid battery ⇒ page 574 .
– Counterhold shut-off valve 1 -item 2- and tighten union nuts -1 and 3- fully.

**Note**

*When tightening the union nuts, make sure not to strain the refrigerant lines.*

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– Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .
– Re-install remaining components (removed earlier).
– Switch on ignition.

Audi A6 hybrid

– Interrogate event memory of operating unit ( Climatronic control unit - J255- ) and control unit for air conditioning compressor - J842- and erase any faults displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

Audi A6 e-tron

– Interrogate event memory of thermal management control unit - J1024- and erase any faults displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

All vehicles

– Start up air conditioner after charging refrigerant circuit ⇒ page 232 .

**Note**

*Also observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

## 10.7 Removing and installing air ducts - Audi A6 hybrid

⇒ “10.7.1 Removing and installing air outlet duct (rear) for drive battery A2 ”, page 581

⇒ “10.7.2 Removing and installing air outlet duct (front) for drive battery A2 ”, page 584

⇒ “10.7.3 Removing and installing air inlet duct for drive battery A2 ”, page 586

⇒ “10.7.4 Removing and installing air ducts (left and right) at drive battery A2 ”, page 588

## 10.7.1 Removing and installing air outlet duct (rear) for drive battery - A2-

**Vehicles with high-voltage system (hybrid vehicles)**

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles

⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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**Removing**

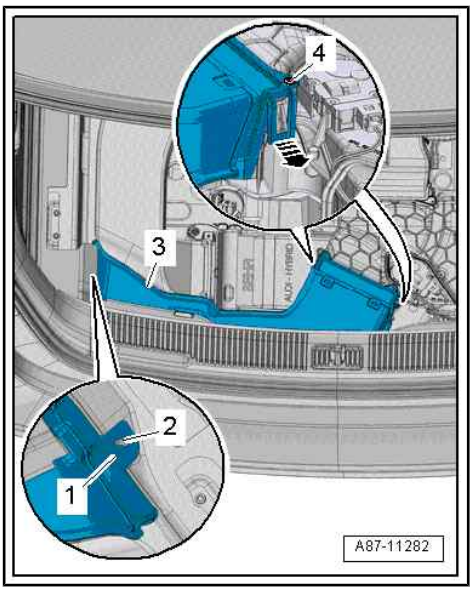
– Switch off ignition.

– Remove luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Exploded view - luggage compartment floor .

– If fitted, remove bolts -4- (left and right).

– Disengage locating tab -1- from threaded pin -2-.

– Release retaining tabs (left and right) -arrow- and take out air outlet duct (rear) -3- to the right.



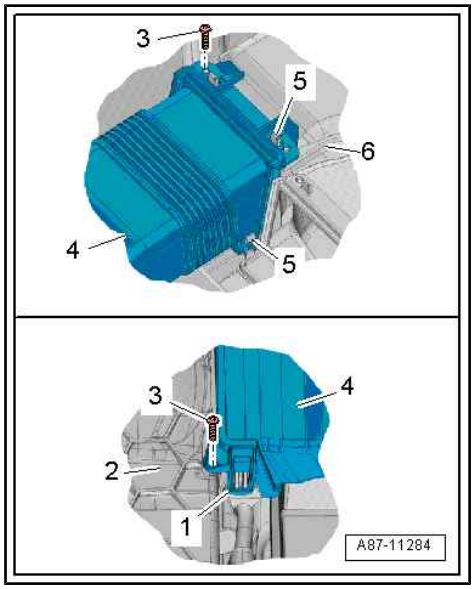
**Installing**

Install in reverse order of removal; note the following.

**Note**

*If one of the retaining tabs -1 or 5- breaks off, the air duct -4- can also be secured with bolts -3- at the battery cooling module -2- and at the air duct -6-.*

- Press air duct onto battery cooling module and onto air duct at drive battery, making sure that retaining tabs engage audibly.
- Re-install all remaining components (removed earlier).




## 10.7.2 Removing and installing air outlet duct (front) for drive battery - A2-

**Vehicles with high-voltage system (hybrid vehicles)**

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

**WARNING**

***Working on vehicles with high-voltage wiring:***

- ***Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.***
- ***High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.***
- ***The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.***

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

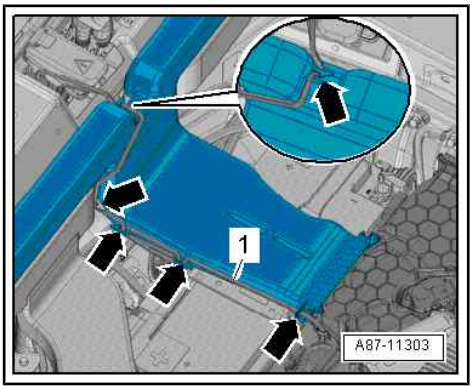
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### Removing

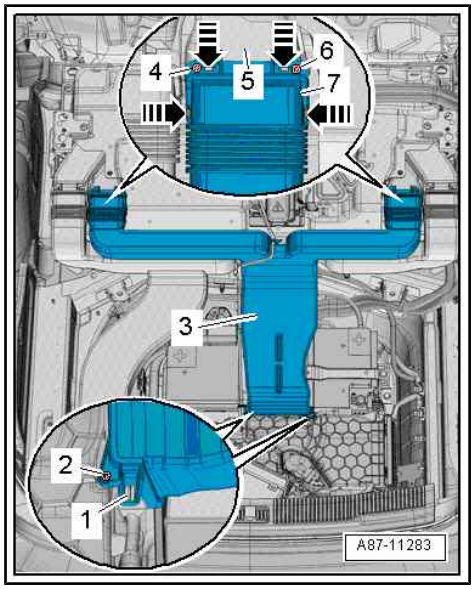
– Switch off ignition.

– Remove luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Exploded view - luggage compartment floor .

– Move electrical wiring harness -1- clear -arrows-.



– If fitted, remove bolts -2, 4 and 6-.
– Release retaining tabs (left and right) -1- and detach air outlet duct (front) -3- from battery cooling module.
– Carefully unclip front air outlet duct -7- from fasteners -arrows- of air duct -5- and detach.
– Take out front air outlet duct.

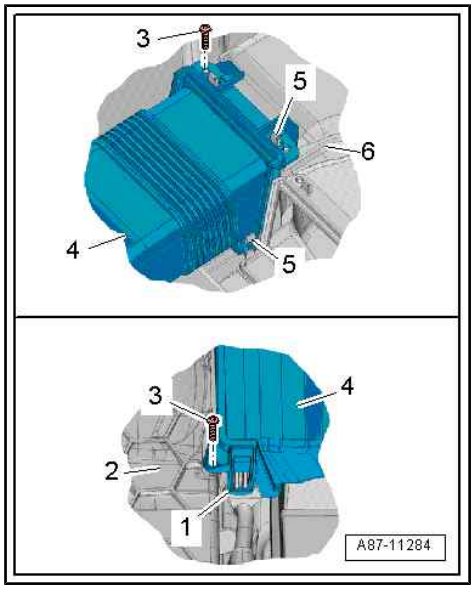



**Installing**

Install in reverse order of removal; note the following.

**Note**

*If one of the retaining tabs -1 or 5- breaks off, the air duct -4- can also be secured with bolts -3- at the battery cooling module -2- and at the air duct -6-.*




– Press air duct onto battery cooling module and onto air duct at drive battery, making sure that retaining tabs engage audibly.
– For electrical connections and routing, refer to ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
– Re-install all remaining components (removed earlier).
– Switch on ignition.
– Interrogate event memory of air conditioner operating unit ( Climatronic control unit - J255- ) and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 10.7.3 Removing and installing air inlet duct for drive battery - A2-

**Vehicles with high-voltage system (hybrid vehicles)**

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

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WARNING

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

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WARNING

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

DANGER!

*Risk of fatal injury if high-voltage components are damaged.*

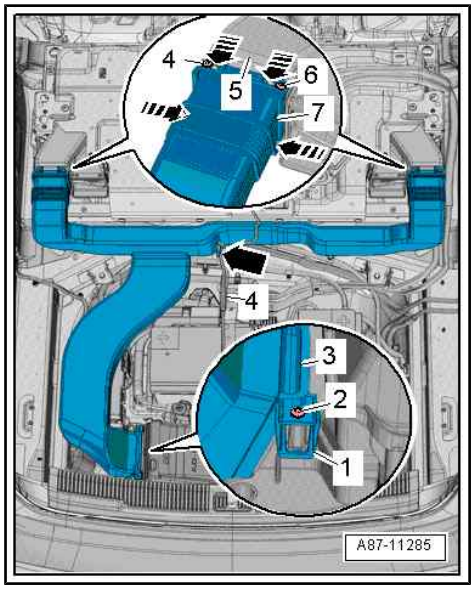
*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

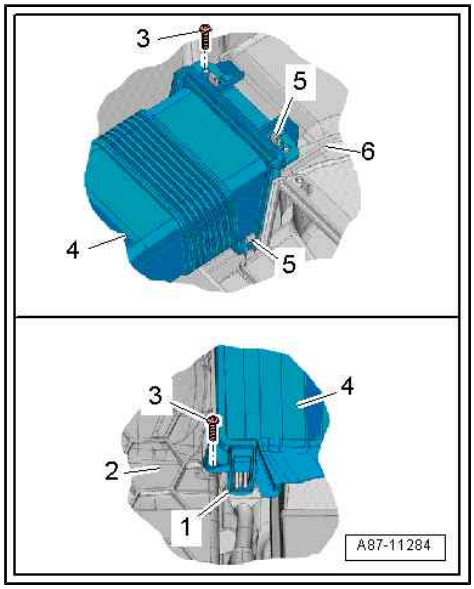
### Removing




- Switch off ignition.
- Remove luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Exploded view - luggage compartment floor .
- Remove air outlet duct (rear) for drive battery ⇒ page 581 .
- Remove air outlet duct (front) for drive battery ⇒ page 584 .
- If fitted, remove bolts -2, 4 and 6- (left and right).
- Release retaining tabs -1- and detach air inlet duct -3- from battery cooling module.
- Carefully unclip air inlet duct -7- from fasteners -arrows- of air ducts -5- and detach.

### Installing

Install in reverse order of removal; note the following.




**Note**

*If one of the retaining tabs -1 or 5- breaks off, the air duct -4- can also be secured with bolts -3- at the battery cooling module -2- and at the air duct -6-.*

- Press air duct onto battery cooling module and onto air duct at drive battery, making sure that retaining tabs engage audibly.
- Re-install all remaining components (removed earlier).
- Switch on ignition.
- Interrogate event memory of air conditioner operating unit ( Climatronic control unit - J255- ) and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 10.7.4 Removing and installing air ducts (left and right) at drive battery - A2-

**Vehicles with high-voltage system (hybrid vehicles)**

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

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WARNING

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

WARNING

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

DANGER!

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

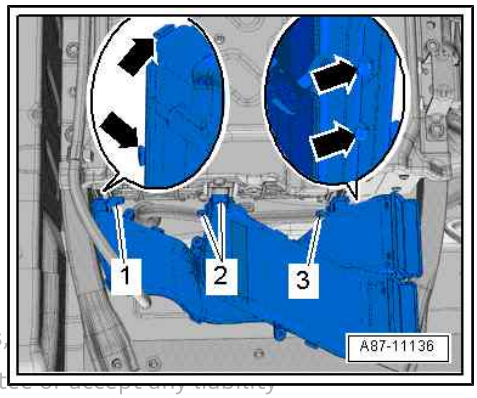
- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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**Removing**

– Switch off ignition.

– Remove luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Exploded view - luggage compartment floor .




**Note**

*Removal of the air ducts involves taking out the drive battery on vehicles with the additional threaded fasteners -1- and -3-.*

**Vehicles with additional threaded fasteners for air ducts:**

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– Remove drive battery ⇒ Electrical system, hybrid; Rep. gr. 93 ; High-voltage battery unit; Removing and installing high-voltage battery .

– Remove bolts -1, 2 and 3- and detach air ducts.

**Vehicles without additional threaded fasteners for air ducts:**

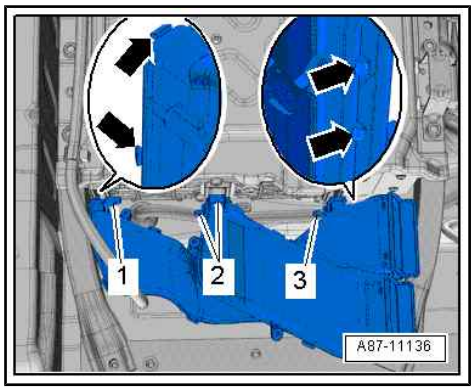
– Remove cover for drive battery ⇒ Electrical system, hybrid; Rep. gr. 93 ; High-voltage battery unit; Removing and installing high-voltage battery .

– Remove corresponding bracket (front) for luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Exploded view - luggage compartment floor .

– Remove bolts -2- and carefully unclip air ducts from fasteners.

**Installing**

Install in reverse order of removal; note the following.




**Caution**

***If the air duct fasteners no longer hold, the air ducts must be secured with additional bolts -1, 3-. To do so, remove drive battery ⇒ Electrical system, hybrid; Rep. gr. 93 ; High-voltage battery unit; Removing and installing high-voltage battery .***

– Re-install all remaining components (removed earlier).

– Switch on ignition.

– Interrogate event memory of air conditioner operating unit ( Climatronic control unit - J255- ) and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 10.8 Moving battery cooling module into service position - Audi A6 hybrid

**Vehicles with high-voltage system (hybrid vehicles)**

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ;

General warning instructions for work on the high-voltage system .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

***Risk of fatal injury if high-voltage components are damaged.***

***Observe the following when working in the vicinity of high-voltage components or wiring:***

- ***It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.***
- ***Before starting work, visually inspect the high-voltage components in the areas involved.***
- ***Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.***
- ***Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.***
- ***Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .***
- ***Visually inspect all potential equalisation lines.***

***Check the following when making the visual inspection:***

- ***There must be no external damage on any component.***
- ***The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.***
- ***There must be no unusual deformation of the high-voltage wiring.***
- ***All high-voltage components must be identified by a red warning sticker.***

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### Moving battery cooling module to service position

– Switch off ignition.

– Remove luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Exploded view - luggage compartment floor .

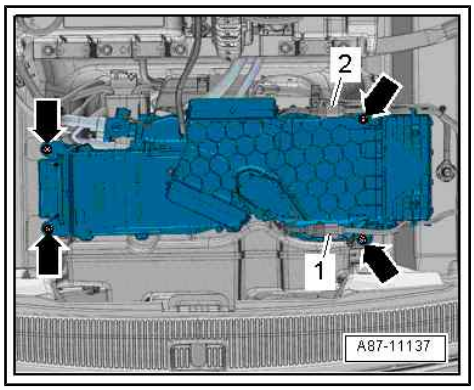
– Remove air outlet duct (rear) for drive battery ⇒ page 581 .

– Remove air outlet duct (front) for drive battery ⇒ page 584 .

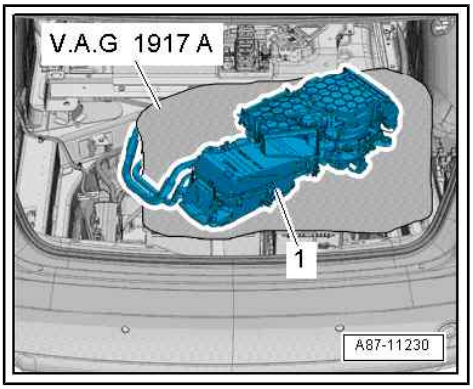
– Remove air ducts to battery cooling module ⇒ page 586 .

– Unplug and move clear connectors -1, 2-.

– Remove nuts -arrows-.



– Cover batteries -A- / -A1- using Audi wing protector - V.A.G 1917A- -2- or similar.
– Detach battery cooling module -1- and set down as shown on covered batteries.




**Caution**

*Risk of damage to refrigerant lines and hoses*

- *Do not stretch, kink or bend refrigerant lines and hoses.*

### Installing

Install in reverse order of removal; note the following.

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– Re-install removed components.
– Switch on ignition.
– After installation, interrogate event memory of operating and display unit ( Climatronic control unit - J255- ) and battery regulation control unit - J840- and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 10.9 Removing and installing battery cooling module - Audi A6 hybrid

**Note**

*The vehicles in this series with high-voltage systems are all fitted with refrigerant circuits charged with refrigerant R134a.*

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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**Special tools and workshop equipment required**

- Engine bung set - VAS 6122-

### Removing

– Switch off ignition.

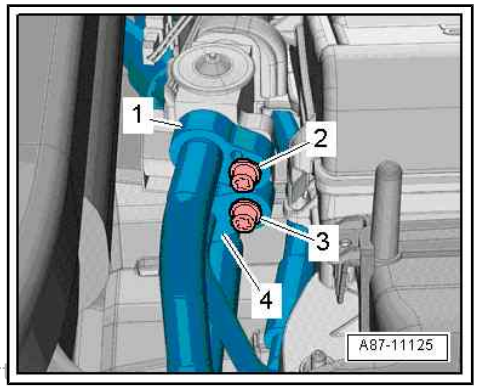
– Discharge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .

– Remove air inlet duct for drive battery ⇒ page 586 .

– Remove bolt -2- and disconnect refrigerant line -1-.

– Remove bolt -3- and disconnect refrigerant line -4-.

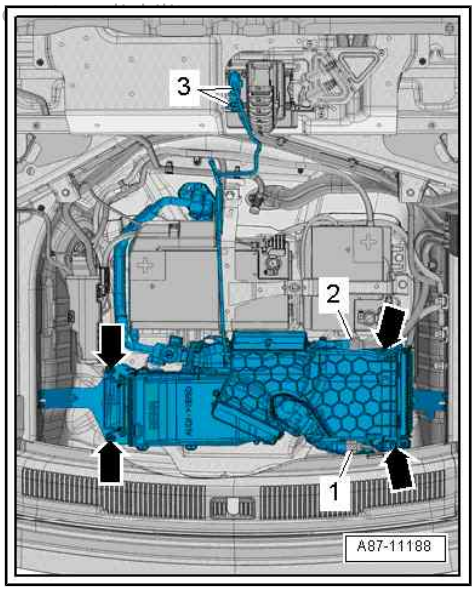
– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .




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– Unplug and move clear electrical connectors -1, 2 and 3-.

– Unscrew nuts -arrows- and detach battery cooling module.




### Installing

#### Tightening torques

♦ ⇒ “2.4.2 Exploded view - refrigerant lines (front), vehicles with high-voltage system”, page 157

Install in reverse order of removal; note the following.

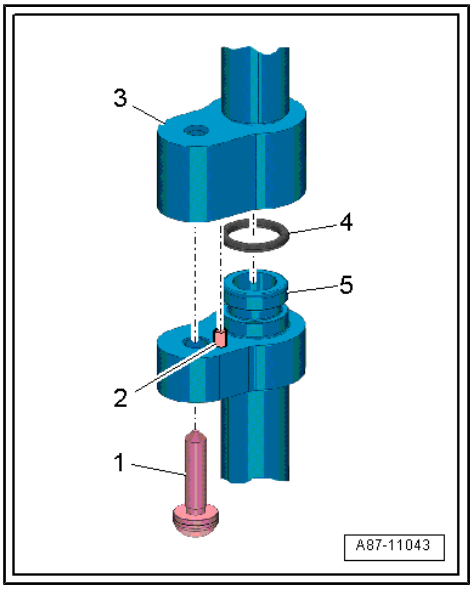
**Note**

♦ *Observe fitting instructions for O-rings ⇒ page 97 .*

♦ *After attaching, check routing of refrigerant lines. They must be inserted in brackets provided and should not make contact with other components.*

♦ *When installing, also pay attention to condensation drain of battery cooling module ⇒ page 604 .*

- Renew O-rings; for correct version, refer to ⇒ Electronic parts catalogue .
- Clean refrigerant line connections -3 and 5- and check for damage.
- Make sure that O-rings -4- are correctly seated in grooves of corresponding mounting.
- Check that dowel pin -2- (not fitted on all connections) is not damaged and is seated correctly.
- Tighten bolts -1-.
- Install refrigerant lines to battery cooling module in luggage compartment ⇒ page 181 .
- Re-install remaining components (removed earlier).
- For electrical connections and routing, refer to ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Evacuate and charge refrigerant circuit ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; Refrigerant circuit .
- Switch on ignition.
- Interrogate event memory of operating and display unit ( Climatronic control unit - J255- ) and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Start up air conditioner after charging refrigerant circuit ⇒ page 232 .




**Note**

*Also observe notes on starting up air conditioner after charging ⇒ Air conditioner with refrigerant R134a; Rep. gr. 87 ; General information on air conditioning systems .*

## 10.10 Removing and installing battery fan 1 - V457- - Audi A6 hybrid

**Vehicles with high-voltage system (hybrid vehicles)**

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

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**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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**Note**

- *Supplied with power via fan enabling relay - J937- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations*
- *Activated by battery regulation control unit - J840- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)*

**Removing**

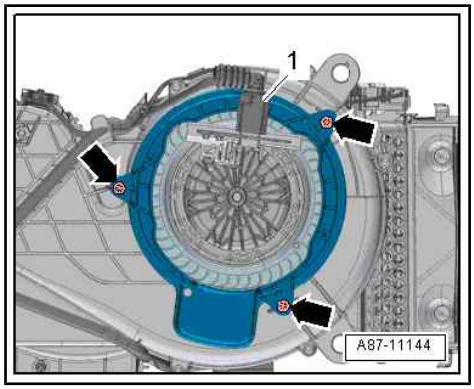
– Switch off ignition.

– Remove luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Exploded view - luggage compartment floor .

– Move battery cooling module to service position ⇒ page 590 .

– Push back rubber sleeve -1- at electrical connector and unplug connector.

– Remove bolts -arrows- and detach battery fan 1 - V457- .




**Installing**

Install in reverse order of removal; note the following.

– Re-install remaining components (removed earlier).

– Switch on ignition.

– After installation, interrogate event memory of operating unit ( Climatronic control unit - J255- ) and battery regulation control unit - J840- and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 10.11 Removing and installing temperature sensors for evaporator - Audi A6 hybrid

⇒ “10.11.1 Removing and installing temperature sensor before evaporator for hybrid battery G756 ”, page 598

⇒ “10.11.2 Removing and installing temperature sensor after evaporator for hybrid battery G757 ”, page 600

## 10.11.1 Removing and installing temperature sensor before evaporator for hybrid battery - G756-

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

***Safety hazard: the engine can start unexpectedly.***

***Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.***

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**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

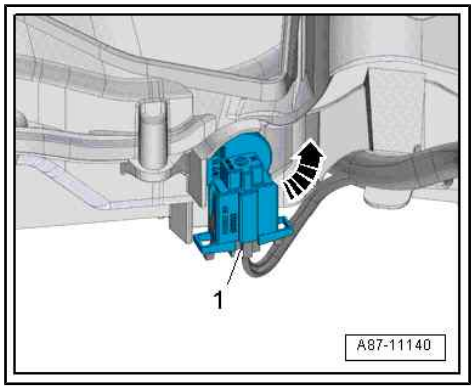
**Removing**

– Switch off ignition.

– Remove luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Exploded view - luggage compartment floor .

– Remove rear cross panel trim ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Removing and installing lock carrier trim .

– Turn temperature sensor anti-clockwise -arrow- and detach.
– Unplug electrical connector -1-.




**Installing**

Install in reverse order of removal; note the following.

– Check any seals for damage and proper attachment.
– Re-install remaining components (removed earlier).
– Switch on ignition.
– After installation, interrogate event memory of operating unit ( Climatronic control unit - J255- ) and battery regulation control unit - J840- and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 10.11.2 Removing and installing temperature sensor after evaporator for hybrid battery - G757-

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

**Removing**

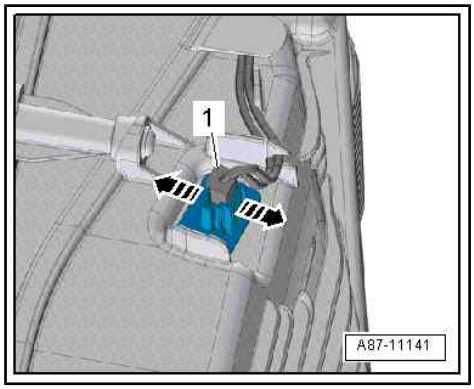
– Switch off ignition.

– Remove luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Removing and installing luggage compartment floor .

– Remove rear cross panel trim ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Removing and installing lock carrier trim .

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– Release temperature sensor after evaporator for hybrid battery - G757- from fastener by moving it back and forth -arrows- and detach.
– Unplug electrical connector -1-.




**Installing**

Install in reverse order of removal; note the following.

– Check any seals for damage and proper attachment.
– Re-install remaining components (removed earlier).
– Switch on ignition.
– After installation, interrogate event memory of operating unit ( Climatronic control unit - J255- ) and battery regulation control unit - J840- and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 10.12 Checking condensation drain for battery cooling module - Audi A6 hybrid

**Vehicles with high-voltage system (hybrid vehicles)**

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

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### Checking

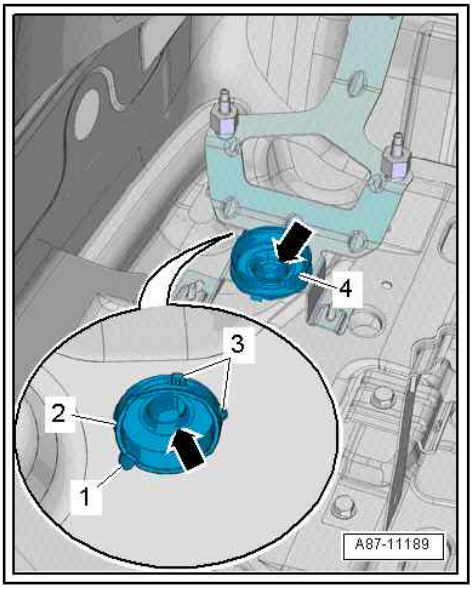
– Switch off ignition.

– Remove luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Removing and installing luggage compartment floor .

– Move battery cooling module to service position ⇒ page 590 .

– Check condensation drain -4- for dirt -arrows- and proper installation.

- Tab -1- on support ring -2- must face outwards.
- Fasteners -3- must be correctly engaged.




### Re-energising high-voltage system

– Switch on ignition.

– After installation, interrogate event memory of operating and display unit ( Climatronic control unit - J255- ) and battery regulation control unit - J840- and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## 10.13 Removing and installing condensation drain for battery cooling module - Audi A6 hybrid

**Vehicles with high-voltage system (hybrid vehicles)**

For all work on vehicles with a high-voltage system, note the additional warning instructions for working on such vehicles ⇒ page 31 and ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

For the following steps, work in the vicinity of high-voltage system components is necessary. Therefore, perform a visual inspection of the high-voltage components and wiring to check for damage ⇒ page 31 and note ⇒ Electrical system, hybrid; Rep. gr. 93 ; General warning instructions for work on the high-voltage system .

**WARNING**

*Safety hazard: the engine can start unexpectedly.*

*Before carrying out general work on a vehicle with high-voltage electrical system, switch off the ignition and remove the ignition key from the vehicle.*

**WARNING**

*Working on vehicles with high-voltage wiring:*

- *Do not support yourself or tools on high-voltage wiring or associated components --> this can damage the insulation.*
- *High-voltage wiring must not be excessively bent or kinked --> this can damage the insulation.*
- *The round high-voltage connectors are colour-coded with an external coloured ring and are provided with mechanical coding or guide lugs. It is important to observe this coding when joining up the round high-voltage connectors; otherwise the connectors can be damaged.*

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**DANGER!**

*Risk of fatal injury if high-voltage components are damaged.*

*Observe the following when working in the vicinity of high-voltage components or wiring:*

- *It is not permitted to use cutting or forming tools, other sharp-edged tools or heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.*
- *Before starting work, visually inspect the high-voltage components in the areas involved.*
- *Before working in the engine compartment, visually inspect the power and control electronics for electric drive - JX1- , electric drive motor - V141- , air conditioner compressor - V470- and high-voltage wiring.*
- *Before working on the vehicle underbody, visually inspect the high-voltage wiring and covers.*
- *Before working on the rear section of the vehicle, visually inspect the high-voltage wiring and the electronics box with the maintenance connector for high-voltage system - TW- .*
- *Visually inspect all potential equalisation lines.*

*Check the following when making the visual inspection:*

- *There must be no external damage on any component.*
- *The insulation of the high-voltage wiring and potential equalisation lines must not be damaged.*
- *There must be no unusual deformation of the high-voltage wiring.*
- *All high-voltage components must be identified by a red warning sticker.*

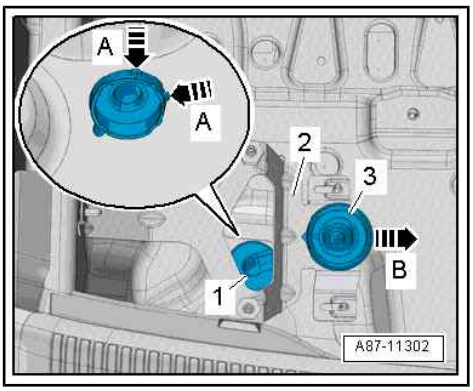
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### Removing

– Move battery cooling module to service position ⇒ page 590 .

– Carefully release fasteners -arrows A- of plastic ring and press condensation drain -1- into battery recess.

– Guide condensation drain -3- out of retaining bracket -2- -arrow B-.




### Installing

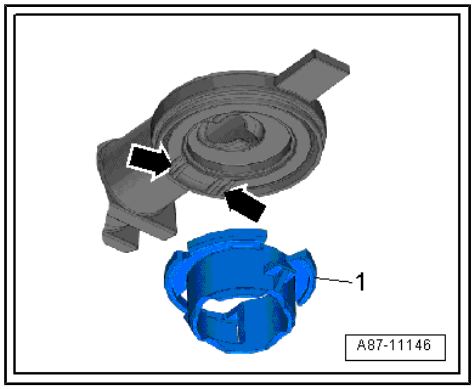
Install in reverse order of removal; note the following.

**Note**

- *Renew the condensation drain if the plastic ring is damaged.*
- *Seal the plastic ring with silicone compound if slightly out of shape.*

– Pay attention to installation position when fitting plastic ring:

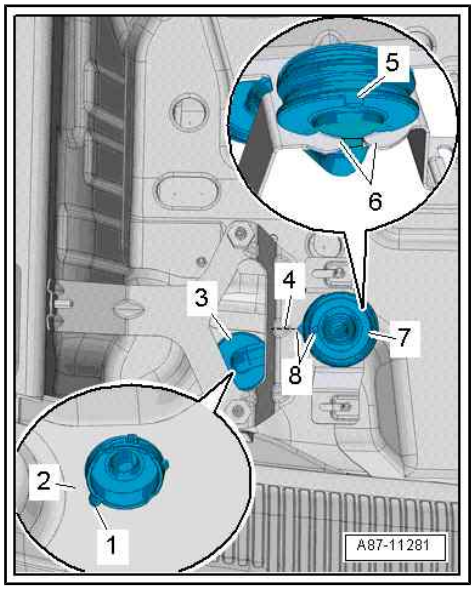
• The lug -1- on the plastic ring must be positioned between the two marks on the condensation drain -arrows-.




– Guide condensation drain -7- into retainer so that it engages; lug -5- must fit in recess -6-.

– Fit condensation drain -1- into body opening and press in until it engages audibly.

• The guide lug -2- must be on the outside of the body -3-, as shown in the illustration.




**Note**

♦ *If the grommet does not completely seal off the battery recess, apply silicone adhesive sealant - D 176 001 A3- or similar at this location ⇒ Electronic parts catalogue .*

♦ *The bonding surface must be clean and free from grease when applying the silicone adhesive sealant.*

– Check that condensation drain is correctly positioned.

• Lugs -8- must face bead -4- in retainer.

**Re-energising high-voltage system**

– Switch on ignition.

– After installation, interrogate event memory of operating and display unit ( Climatronic control unit - J255- ) and battery regulation control unit - J840- and erase any entries displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

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# 11 Further control components

⇒ “11.1 Removing and installing sunlight penetration photosensor G107 ”, page 607

⇒ “11.2 Operation of air quality sensor G238 ”, page 608

⇒ “11.3 Removing and installing air quality sensor G238 ”, page 617

⇒ “11.4 Removing and installing ambient temperature sensor G17 ”, page 618

⇒ “11.5 Removing and installing left vent temperature sender G150 ”, page 619

⇒ “11.6 Removing and installing right vent temperature sender G151 ”, page 619

⇒ “11.7 Removing and installing left footwell vent temperature sender G261 ”, page 620

⇒ “11.8 Removing and installing right footwell vent temperature sender G262 ”, page 620

⇒ “11.9 Removing and installing vent temperature sender for rear footwell G637 / G638 ”, page 620

⇒ “11.10 Removing and installing rear chest vent temperature sender G635 / G636 ”, page 622

⇒ “11.11 Removing and installing control unit for air ionisation system J897 ”, page 623

⇒ “11.12 Removing and installing evaporator output temperature sender G263 ”, page 623

⇒ “11.13 Removing and installing thermal management control unit J1024 - Audi A6 e-tron”, page 624

⇒ “11.14 Fuse for electrical air conditioner compressor V470 ”, page 626

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## 11.1 Removing and installing sunlight penetration photosensor - G107-

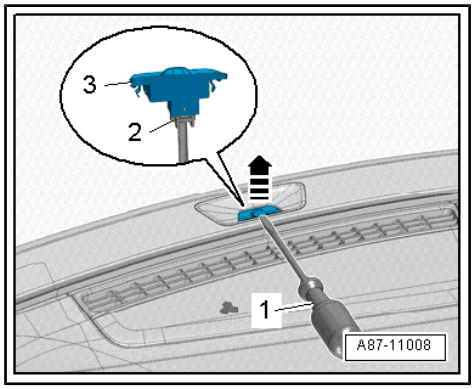
**Note**

- *If the photosensor installed has not been matched to this operating unit (supplies a different signal from the one stored in the operating unit for this vehicle), the operating unit cannot evaluate the signal from the photosensor and there will be problems with air conditioner control ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode and ⇒ Electronic parts catalogue .*
- *“Read measured values” ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode for air conditioner.*

**Removing**

– Using a small screwdriver -1-, carefully prise photosensor -3- out of defroster vent (top front) -arrow-.

– Unplug electrical connector -2-.




**Installing**

Install in reverse order of removal; note the following:

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

## 11.2 Operation of air quality sensor - G238-

⇒ “11.2.1 Operation of air quality sensor G238 and humidity sender in fresh air intake duct G657 ”, page 608

⇒ “11.2.2 Checking air quality sensor G238 ”, page 612

⇒ “11.2.3 Checking humidity sender in fresh air intake duct G657 ”, page 617

### 11.2.1 Operation of air quality sensor -G238- and humidity sender in fresh air intake duct -G657-

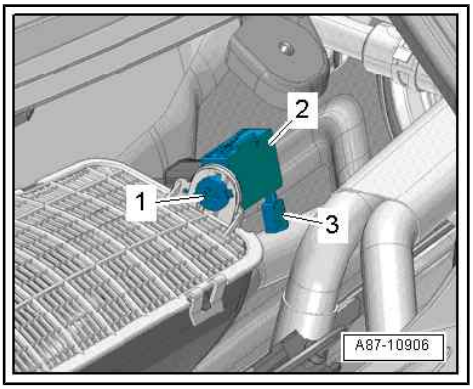
Depending on equipment, air quality sensor - G238- is either a separate unit or combined with humidity sender in fresh air intake duct - G657- in one housing. For correct version refer to ⇒ Electronic parts catalogue .

**Note**

- *Equipment version with “basic” air conditioner: fitted only with humidity sender in fresh air intake duct - G657-*
- *Equipment version with “deluxe” air conditioner: fitted with humidity sender in fresh air intake duct - G657- with an air quality sensor - G238- integrated additionally into housing*

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**Operation of air quality sensor -G238- :**




- -G238- -item 2- uses one sensor each to determine the NOx (nitrogen oxide) and the CO (carbon monoxide) content of the air flowing past and exchanges this information with the on-board supply control unit - J519- via the data bus.
- The measured value of -G238- is evaluated by -J519- and transmitted to the operating unit ( Climatronic control unit - J255- ) via the data bus. When it detects a request, -J255- switches on air recirculation mode if there is no shut-off criterion ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

**Note**

- *Certain air conditioner functions (including e.g. regulation of “automatic air recirculation mode”) can be activated and de-activated on the MMI (Multi Media Interface) using the “A/C” function on the “Car” / “Car systems” menu.*
- *The value measured by -G238- is not displayed directly on all versions of the front operating and display unit ( Climatronic control unit - J255- ). Some versions of -J255- may only display the measured value as a status indicating whether the heater and air conditioning unit is in fresh air mode or recirculated air mode ⇒ "Guided Fault Finding" function of vehicle diagnostic, testing and information system VAS 5051 .*
- After the ignition is switched on, it takes -G238- approx. 2 minutes to reach its operating temperature; the function of -G238- is restricted during the warm-up phase.
- -G238- detects pollutants in the ambient atmosphere (generally petrol and/or diesel emissions) and causes -J255- to switch the air conditioner to air recirculation mode.
- The operating unit ( Climatronic control unit - J255- ) recognises the nature and level of the air pollution from the signal it receives from -G238- (“deluxe” version). In addition, -J255- receives the sensitivity setting from the multimedia system operating unit - E380- via the data bus. -J255- then uses this information to determine if and when to switch the air conditioner to air recirculation mode.

Example:

– At ambient temperatures above approx. +2 °C, even a slight increase in the pollutant concentration causes the system to switch to air recirculation mode when requested to do so by -G238- .

– At ambient temperatures below approx. –1 °C with the air conditioner compressor switched off, switch-over only occurs if there is a major increase in pollutant concentration for approx. 15 seconds. If the pollutant concentration increases again within roughly 2 minutes, -J255- does not switch to “Automatic air recirculation mode” during this period.

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• Lamp in AC button is off.

• The maximum duration of “automatic air recirculation” is restricted to approx. 15 seconds by -J255- to prevent the windows from misting up on the inside.

– A decrease in concentration results in the air conditioner being switched back to fresh air mode.

• The duration of “automatic air recirculation mode” depends on the version of -J255- and the setting on -E380- .

– At ambient temperatures below approx. +10 °C and with maximum sensitivity set on -E380- , the system remains in “automatic air recirculation mode” for e.g. approx. 30 sec. After this period, the system switches to fresh air mode. If there is a renewed increase in the pollutant concentration within approx. 2 minutes, -J255- does not switch to “automatic air recirculation mode” within this period.

- The “automatic air recirculation” function can be deactivated at any time. If the function is active, the air conditioner compressor will be switched on even at ambient temperatures below + 2 °C when there is a request for “automatic air recirculation”. However, at temperatures below approx. - 5 °C, compressor operation is no longer possible.
- If “automatic air recirculation” mode has been set on the MMI (Multi Media Interface), the air conditioner compressor may be switched on down to temperatures of approx. -5 °C.
- To prevent the air conditioner from constantly operating in air recirculation mode in areas with a persistently high level of pollutant emissions, -G238- is adaptive (sensitivity is matched to environmental conditions).
- If the pollutant level in the ambient air remains relatively high for a lengthy period, -G238- starts to adapt to the change in ambient conditions via an adaption program, with the result that a request for air recirculation is generally applied for less than 12 minutes if the ambient air pollution remains the same. If there are several consecutive peak pollutant levels, the air conditioner may also operate in air recirculation mode for a longer period.
- It takes the air conditioner compressor a certain length of time to re-position the flaps. To prevent gaseous pollutants from entering the passenger compartment together with the fresh air drawn in before the air flow/fresh air flaps can close (and the air recirculation flaps can open) when there is a sudden increase in pollutant levels (e.g. when driving through a cloud of diesel emissions), the vehicle is fitted with a dust and pollen filter with an activated charcoal layer. Once a filter is saturated with pollutants, it can no longer perform this function and must be renewed.
- To prevent the air flow/fresh air flap and the air recirculation flap from being switched too frequently, switching does not take place immediately if there is a slight increase in the pollutant level in the ambient atmosphere ( -G238- does not transmit a request to -J255- ). In such cases, the filter effect of the activated charcoal layer in the dust and pollen filter is enough.
- To prevent the air flow/fresh air and air recirculation flaps from being switched too frequently, a request from -G238- for “automatic air recirculation mode” is applied for at least 25 sec. (minimum dwell time) even if the pollutant concentration in the air has decreased to such an extent that air recirculation mode would no longer be necessary.
- To demist the windscreen, rear window and door windows as quickly as possible, -J255- does not permit air recirculation in “Defrost” mode (a request from -G238- is not implemented).
- After the ignition is switched on, the air quality sensor - G238- requires about 2 minutes before it is ready for operation (warm-up time). During this period, no request is transmitted to the operating unit ( Climatronic control unit - J255- ) for “Automatic air recirculation mode”.

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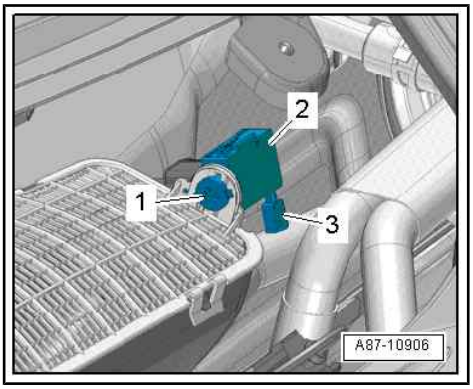
- When the ignition is switched on, certain ambient influences (e.g. high pollutant content in the air) during the warm-up phase of the air quality sensor - G238- may result in a fault being stored for the -G238- in the onboard supply control unit - J519- although the sensor is OK. In this case, proceed as follows:

– Switch off ignition for at least two minutes.

– Switch on ignition and wait at least two minutes.

– Read out event memory of onboard supply control unit - J519- . If a static fault is still displayed for the air quality sensor - G238- , perform “Guided Fault Finding” (⇒ Vehicle diagnostic tester). If -G238- is no longer displayed as being faulty or if the fault becomes sporadic, -G238- is OK (and requires no further attention). Erase the event memory.

**Operation of humidity sender in fresh air intake duct -G657- :**




-G657- -item 3- is located in one housing -2- together with -G238- -item 1-.

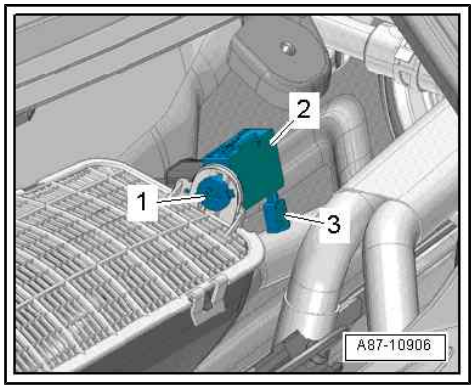
- -G657- is a highly sensitive electronic component which could be damaged irreparably by direct exposure to liquids, solvents, fuels and certain chemical compounds.
- Direct contact with water can impair the function of -G657- to such an extent that the values for humidity levels can no longer be measured correctly (either temporarily or permanently, depending on the composition of the fluid). Sensors that have come into contact with such substances must not be installed in the vehicle.
- -G657- determines the temperature and the moisture content of the air flowing past and exchanges information with the onboard supply control unit - J519- via the data bus.
- The measured value of -G657- is evaluated by -J519- and transmitted to the operating unit ( Climatronic control unit - J255- ) via the data bus.

**Note**

*Certain air conditioner functions (including e.g. regulation of “automatic air recirculation mode”) can be activated and deactivated on the MMI (Multi Media Interface) using the “A/C” function on the “Car” / “Car systems” menu. In addition, the operation of the air conditioner can also be influenced by the settings on the MMI (Multi Media Interface) in the “A/C” function of the “Car” / “Car systems” menu. Therefore, if there are problems with these components, first check the settings on the MMI ⇒ Infotainment/MMI Operating Manual .*

- -J255- uses the measured values to calculate the current relative humidity of the fresh air drawn in. The calculated humidity value then indicates whether there is a risk of the windscreen, rear window and door windows misting up from the inside. If this is the case, -J255- takes corrective action by altering various characteristic curves. This may involve reducing the evaporator temperature (by activating air conditioner compressor), increasing the response thresholds for the request for “automatic air recirculation mode” or preventing engine shut-off via the start/stop function etc.
- After the ignition is switched on, it takes -G657- approx. 2 minutes to reach its operating temperature; the function of -G657- is restricted during the warm-up phase.

## 11.2.2 Checking air quality sensor - G238-




**Note**

- *After switching on the ignition, it takes -G238- -3- approx. 2 minutes to reach its operating temperature.*
- *Operation is restricted during the warm-up phase, and a fault may be indicated under certain ambient conditions. Only renew -G238- -item 2- if -G238- is permanently entered as being defective. If the fault display for -G238- changes from "static" to "sporadic" after the ignition is switched off and on again (wait at least 2 minutes in each case), -G238- is OK and the event memory entry requires no further attention (erase event memory) ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- *Certain air conditioner functions (including e.g. regulation of "automatic air recirculation mode") can be activated and deactivated on the MMI (Multi Media Interface) using the "A/C" function on the "Car" / "Car systems" menu. In addition, the operation of the air conditioner can also be influenced by the settings on the MMI (Multi Media Interface) in the "A/C" function of the "Car" / "Car systems" menu. Therefore, if there are problems with these components, first check the settings on the MMI ⇒ Infotainment/MMI Operating Manual .*

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**Special tools and workshop equipment required**

- Vehicle diagnostic tester
- Commercially available gas lighter

**Test requirements**

– The vehicle must be stationary in a clean atmosphere.

• Away from running engines, air extractor outlets etc.

– The engine compartment and plenum chamber must be clean.

• Not contaminated with oil or fuel.

– The engine compartment and plenum chamber must not have been sprayed with solvent-based cleaning agents or anti-corrosion material.

– "Automatic air recirculation" must be switched on.

**Note**

*The "automatic air recirculation" function can be activated and deactivated via the "AC" function in the "Car" / "Car systems" menu of the MMI (Multi Media Interface) ⇒ Infotainment/MMI Operating Manual .*

**Checking operation**

– Remove air quality sensor - G238- . Leave connector plugged in ⇒ page 617 .

– Start engine.

– Set -J255- to "Auto" mode.

– Use MMI (Multi Media Interface) to set -J255- to automatic air recirculation mode ⇒ Infotainment/MMI Operating Manual .

• -G238- is ready for operation after a warm-up period of 2 minutes.

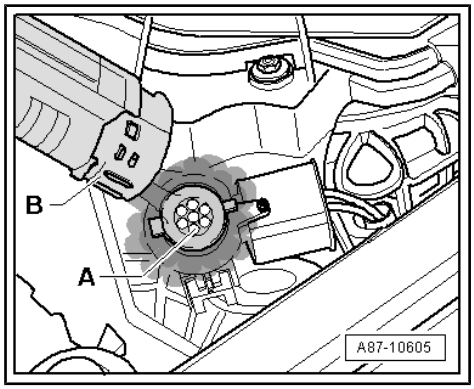
– Read out event memory of operating unit ( Climatronic control unit - J255- ) and select “Read measured values” ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– Read measured values for air quality sensor - G238- . The air pollution measured by air quality sensor - G238- is displayed.
  • Value for NOx (nitrogen oxide) and CO (carbon monoxide) content of air
  • For explanatory notes on possible displays, refer to ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

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**Note**

*The value measured by -G238- is not displayed directly on all versions of the front operating and display unit ( Climatronic control unit - J255- ). Some versions of -J255- may only display the measured value as a status indicating whether the heater and air conditioning unit is in fresh air mode or recirculated air mode ⇒ "Guided Fault Finding" function of vehicle diagnostic, testing and information system VAS 5051 .*

– Allow a small quantity of gas from cigarette lighter -B- to flow past section -A- of -G238- (from above).




**Note**

*The air quality sensor - G238- reacts when exposed to cigarette lighter gas. Cigarette lighter gas is heavier than air. Therefore - G238- must be removed and the gas applied from above.*

– Read measured values for air quality sensor - G238- .

• Specification: In the display zones, the measured values for the “CO content” change with respect to the initial value and thus indicate that the sensor for the “CO content” in the air quality sensor - G238- is functioning properly and that the electronics of -G238- are correctly evaluating the measured values.

**Note**

- *There is currently no provision for checking the sensor for “NOx” content with workshop equipment. However, if the composition of the air surrounding the sensor changes, the value displayed for the “NOx” content will also change.*
- *The value measured by -G238- is not displayed directly on all versions of the front operating and display unit ( Climatronic control unit - J255- ). Some versions of -J255- may only display the measured value as a status indicating whether the heater and air conditioning unit is in fresh air mode or recirculated air mode ⇒ "Guided Fault Finding" function of vehicle diagnostic, testing and information system VAS 5051 .*

– Wait briefly (approx. 1 minute, depending on amount of gas applied to sensor).

– Read measured values for air quality sensor - G238- .

• Specification: The measured values in the display zones should return to the initial levels, indicating that both sensors are functioning properly and the sensor electronics are evaluating the measured values correctly.

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**Note**

*Due to changes in pollutant levels, the values currently displayed may differ from those measured initially.*

– Read out the display with the measured values for the air conditioner operating status (air recirculation/fresh air mode).

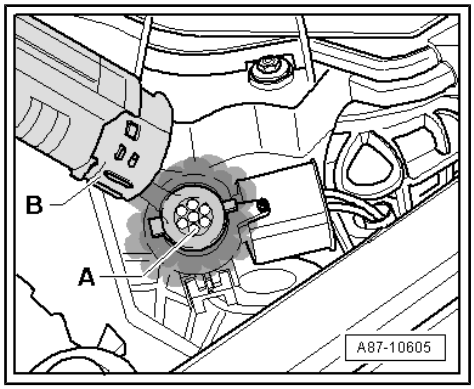
• Specification: The display zone shows that the air conditioner is operating in fresh air mode.

**Note**

- *If a value other than “fresh air mode” is displayed in the “Read measured values” function, air recirculation mode has already been requested (e.g. because of a request for “maximum cooling output” or “manual air recirculation mode”). Select a mode in which air recirculation is not requested.*
- *If the “Read measured values” function indicates that the air quality sensor - G238- is already requesting “automatic air recirculation mode”, clean the plenum chamber (if necessary) or move the vehicle to an area with a cleaner ambient atmosphere.*

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– Allow a small quantity of gas from cigarette lighter -B- to flow past section -A- of -G238- (from above).
– Read measured values for air quality sensor - G238- .
– Read out display for air recirculation/fresh air mode.
• Specifications: Air recirculation mode requested and air conditioner operating in air recirculation mode.




**Note**

♦ *Should the "Read measured values" function indicate that the air quality sensor - G238- is requesting "automatic air recirculation mode", but that this request cannot be implemented by the operating unit ( Climatronic control unit - J255- ) due to a shut-off criterion, eliminate the cause of the shut-off criterion (if applicable).*

♦ *To prevent the air flow/fresh air and air recirculation flaps from being switched too frequently, a request from the air quality sensor - G238- for "automatic air recirculation mode" is applied for at least 25 seconds (minimum dwell time) even if the pollutant concentration in the air has decreased again to such an extent that air recirculation mode would no longer be necessary.*

– Wait briefly (approx. 1 minute, depending on amount of gas applied to sensor).
• Specification: Air recirculation mode no longer being requested and air conditioner operating in fresh air mode again.
– Install air quality sensor - G238- ⇒ page 617 .

**Proceed as follows if the air quality sensor - G238- functions properly in this test but a customer complaint has been received:**

– Check dust and pollen filter for dirt ⇒ page 472 .
– Select "Read measured values" ⇒ Vehicle diagnostic tester ("Guided Fault Finding").

**Note**

*A second person is required to read out the values displayed while the other is driving.*

**Observe safety instructions ⇒ Vehicle diagnostic tester ("Guided Fault Finding").**

– Alternately read out displays in "Read measured values" function for measured values of air quality sensor - G238- and request for air recirculation/fresh air mode.
– Start by driving vehicle into an area with a relatively clean atmosphere.
• Specification: System operating in fresh air mode.
– Then drive vehicle into an area where the atmosphere is polluted (e.g. onto an uphill road with heavy commercial traffic).
• Specification: The displays in the various zones should change, e.g. when driving through a cloud of diesel emissions.

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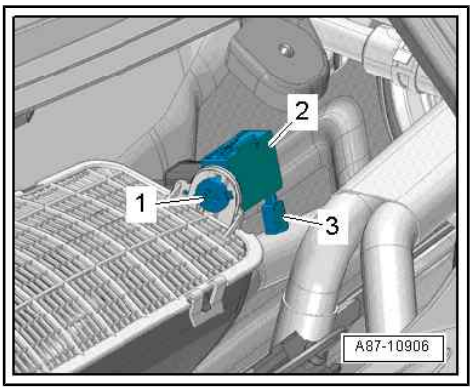
**Note**

*Also refer to description of operation of -G238- / -G657-*
⇒ *page 608* .

## 11.2.3 Checking humidity sender in fresh air intake duct - G657-

**Note**

- *After the ignition is switched on, it takes -G657- -item 3- approx. 2 minutes to reach its operating temperature; the function is restricted during the warm-up phase.*
- *Operation of -G657- can only be checked via "Guided Fault Finding" routine. In this routine, measured values of -G657- are evaluated via "Read measured values" function and compared to temperature and humidity measured at fitting location of -G657- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*




## 11.3 Removing and installing air quality sensor - G238-

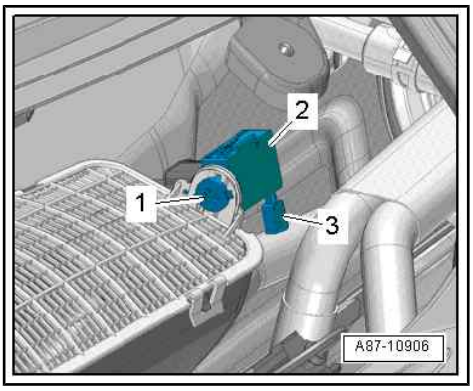
⇒ "11.3.1 Removing and installing air quality sensor G238 with humidity sender in fresh air intake duct G657 ", page 617

## 11.3.1 Removing and installing air quality sensor - G238- with humidity sender in fresh air intake duct - G657-

Depending on equipment, air quality sensor - G238- -item 1- is either a separate unit or combined with humidity sender in fresh air intake duct - G657- -item 3- in one housing -2-. For correct version refer to ⇒ Electronic parts catalogue .

**Note**

- *Equipment version with "basic" air conditioner: fitted only with humidity sender in fresh air intake duct - G657-*
- *Equipment version with "deluxe" air conditioner: fitted with humidity sender in fresh air intake duct - G657- with an air quality sensor - G238- integrated additionally into housing*



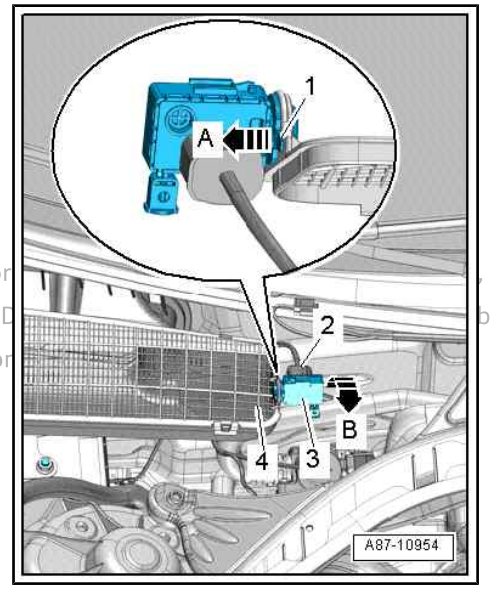
### Removing

– Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .

– Release retaining tab -1- -arrow A- and turn housing -3- for -G238- / -G657- anti-clockwise -arrow B-.

– Take housing out of fresh air intake grille -4-.

– Unplug electrical connector -2-.




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**Note**

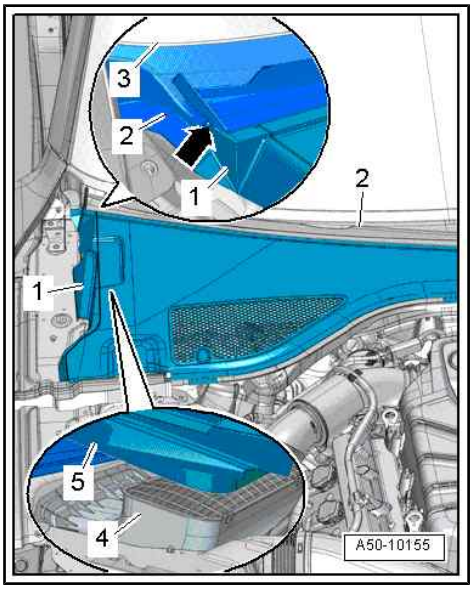
*Following removal, do not set down air quality sensor - G238- with humidity sender in fresh air intake duct - G657- in areas where it could come into contact with solvents, fuels or certain chemical compounds (liquids or vapours).*

### Installing

Install in reverse order of removal; note the following:

**Note**

- *It is important that the cowl panel trim -2- and the plenum chamber cover with cover frame -5- for the intake duct are not damaged so that no water runs into the air conditioning unit via the intake duct -4- when the plenum chamber cover is installed -1-.*
- *The cowl panel trim at the plenum chamber cover must be engaged fully in the windscreen frame -3-.*
- *The plenum chamber cover must be inserted properly and fully in the mounting -arrow- for the cowl panel trim.*




## 11.4 Removing and installing ambient temperature sensor - G17-

**Note**

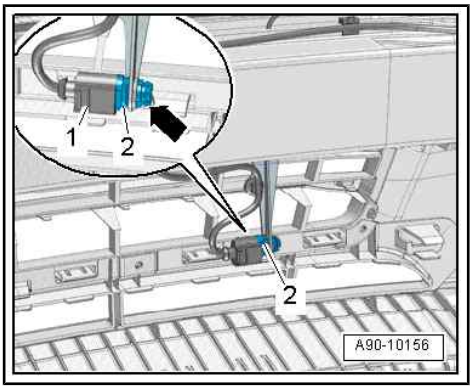
*The measured value is evaluated by the onboard supply control unit - J519- and transmitted via the data bus to the operating unit ( Climatronic control unit - J255- ) (and the control unit in dash panel insert - J285- ) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

**Removing**

– Remove lock carrier cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing attachments .

– Carefully compress retaining clips -arrow- and pull ambient temperature sensor - G17- -item 2- out of bracket.

– Unplug electrical connector -1-.




**Installing**

Install in reverse order of removal; note the following:

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

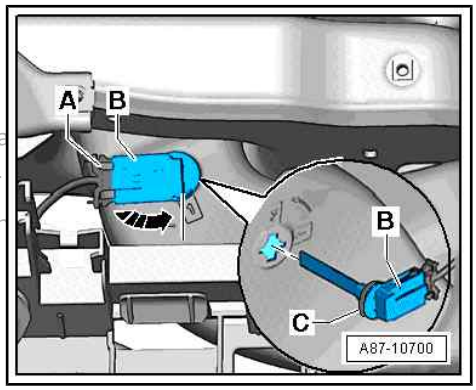
## 11.5 Removing and installing left vent temperature sender - G150-

**Removing**

– Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .

– Unplug electrical connector -A-.

– Turn vent temperature sender -B- anti-clockwise -arrow- and pull it out of the mounting.




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**Installing**

Install in reverse order of removal; note the following:

– Renew seal -C- if damaged or defective.

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

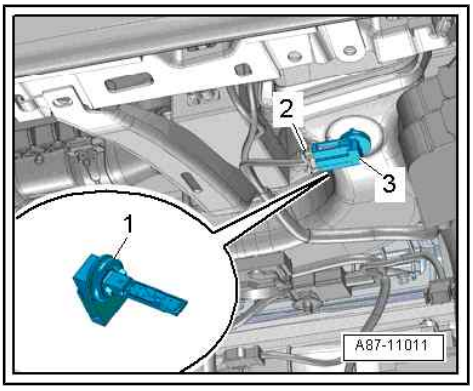
## 11.6 Removing and installing right vent temperature sender - G151-

**Removing**

– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .

– Unplug electrical connector -1-.

– Turn temperature sender -3- anti-clockwise and pull it out of the mounting.




**Installing**

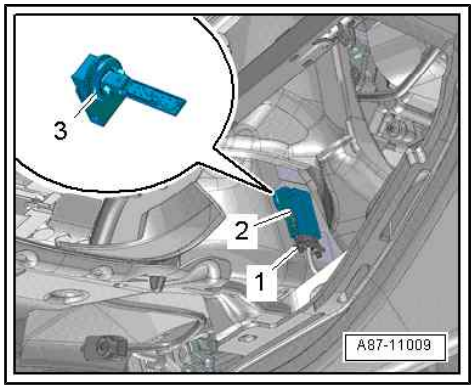
Install in reverse order of removal; note the following:

– Renew seal -2- if damaged or defective.

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

## 11.7 Removing and installing left footwell vent temperature sender - G261-




**Removing**

– Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .

– Turn temperature sender -2- anti-clockwise and pull it out of the mounting.

– Unplug electrical connector -1-.

**Installing**

Install in reverse order of removal; note the following:

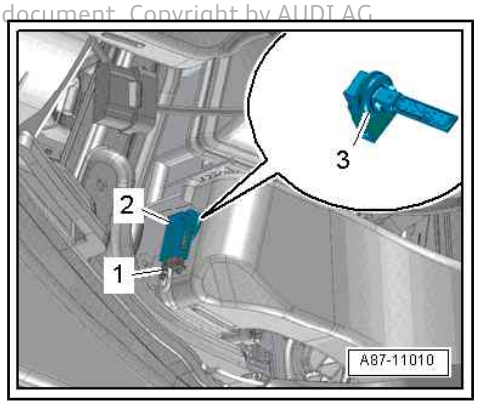
– Renew seal -3- if damaged or defective.

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

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## 11.8 Removing and installing right footwell vent temperature sender - G262-




**Removing**

– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .

– Turn temperature sender -1- anti-clockwise and pull it out of the mounting.

– Unplug electrical connector -2-.

**Installing**

Install in reverse order of removal; note the following:

– Renew seal -3- if damaged or defective.

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

## 11.9 Removing and installing vent temperature sender for rear footwell -G637- / -G638-

**Special tools and workshop equipment required**

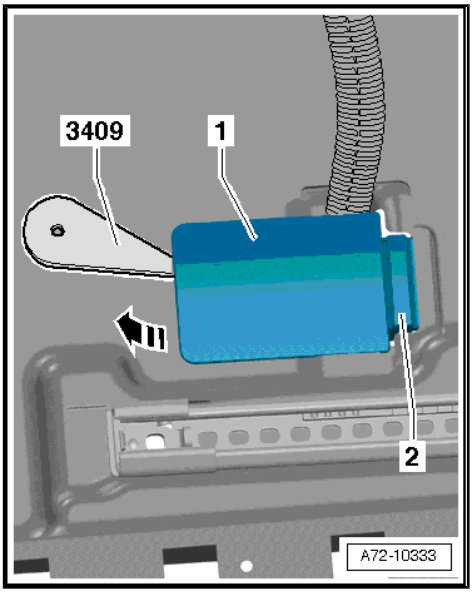
♦ Removal wedge - 3409-

### Removing

– Move relevant front seat as far forwards and upwards as it will go.

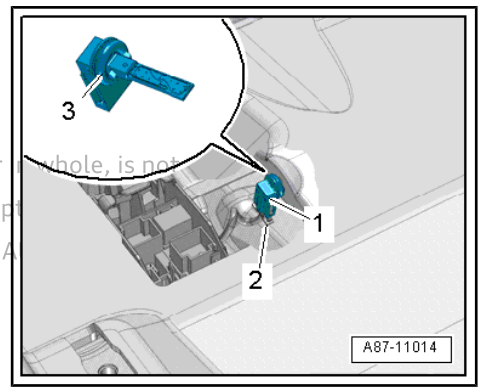
– Using removal wedge - 3409- unclip cover -1- at front and pull it off connector point -2- in direction of -arrow-.

– Carefully lift floor covering on inside of connector point.




– Under raised floor covering, turn vent temperature sender -1- anti-clockwise and pull it out of mounting.

– Unplug electrical connector -2-.




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**Note**

*If the electrical connectors prevent access to the vent temperature sender, unplug the electrical connectors for the front seat; observe the safety instructions ⇒ General body repairs, interior; Rep. gr. 00 ; Safety precautions; Safety precautions when working on pyrotechnic components .*

### Installing

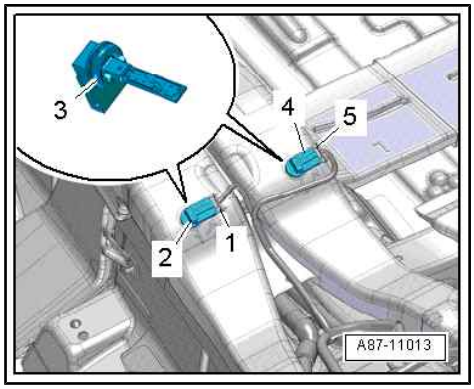
Install in reverse order of removal; note the following:

– Renew seal -3- if damaged or defective.

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

## 11.10 Removing and installing rear chest vent temperature sender -G635- / -G636-




### Removing

– Remove centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .

– Mark connectors -1- and -5-.

**Note**

*If the connectors -1- and -5- are interchanged, the control unit will detect each measured value incorrectly and there will be problems with air conditioner control ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

– Unplug electrical connector -1-, turn vent temperature sender -G635- -item 2- anti-clockwise and pull it out of the mounting.

– Unplug electrical connector -5-, turn vent temperature sender -G636- -item 4- anti-clockwise and pull it out of the mounting.

### Installing

Install in reverse order of removal; note the following:

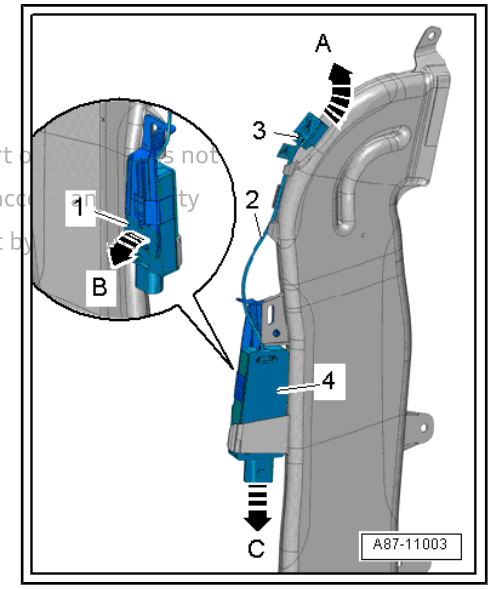
– Renew seal -3- if damaged or defective.

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

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## 11.11 Removing and installing control unit for air ionisation system - J897-




### Removing

**Note**

*Country-specific version ("deluxe" versions only)*

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– Move front right seat as far forwards as possible.
– Remove air duct for B-pillar (right-side) ⇒ page 500 .
– Turn ioniser -3- anti-clockwise -arrow A- and pull it out of mounting.
– Move electrical wiring harness -2- clear.
– If attached, remove adhesive strip.
– Release retaining tab -1- -arrow B- and pull control unit -4- for air ionisation system downwards out of mounting -arrow C-.

### Installing

Install in reverse order of removal; note the following:

**Note**

- *The ioniser neutralises any odours air flowing past.*
- *On vehicles with no air ionisation system, seal off installation opening in air duct (air-tight) with e.g. adhesive tape if necessary.*

– Renew seal on ioniser if damaged or defective.
– Install air duct for B-pillar (right-side) ⇒ page 500 .

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester ("Guided Fault Finding"):

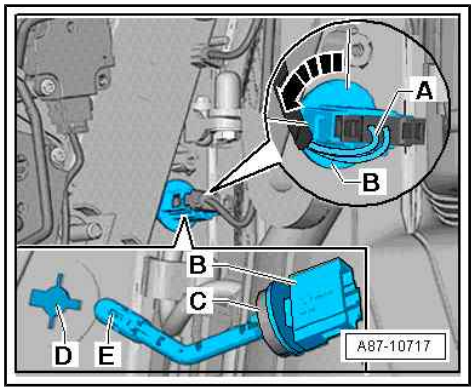
– Read out event memory and delete any entries displayed.

## 11.12 Removing and installing evaporator output temperature sender - G263-

**Note**

- *On Audi A6 e-tron vehicles (depending on version), the measured value of -G263- can be evaluated by the operating unit ( Climatronic control unit - J255- (as on all other vehicles in this series) or thermal management control unit - J1024- ) ⇒ Vehicle diagnostic tester ("Guided Fault Finding") and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- *If the measured value is evaluated by -J1024- on the Audi A6 e-tron (and transmitted to -J255- via the data bus), a different version of -J255- is installed ⇒ Vehicle diagnostic tester in "Guided Fault Finding" mode and ⇒ Electronic parts catalogue .*

**Removing**




– Remove glove box ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing glove box .
– Remove footwell vent (front passenger side) ⇒ page 494 .
– Unplug electrical connector -A-.
– Turn vent temperature sender -B- anti-clockwise -arrow- and pull it out of mounting -D-.

**Installing**

Install in reverse order of removal; note the following:

– Renew seal -C- if damaged or defective.

After completing the repairs, perform the following work on the operating unit ⇒ Vehicle diagnostic tester (“Guided Fault Finding”):

– Read out event memory and delete any entries displayed.

## 11.13 Removing and installing thermal management control unit - J1024- - Audi A6 e-tron

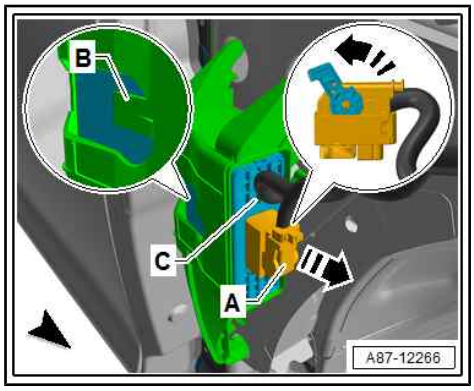
**Note**

*-J1024- is only installed in vehicles with high-voltage system (Audi A6 e-tron).*

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**Removing control unit -J1024-**

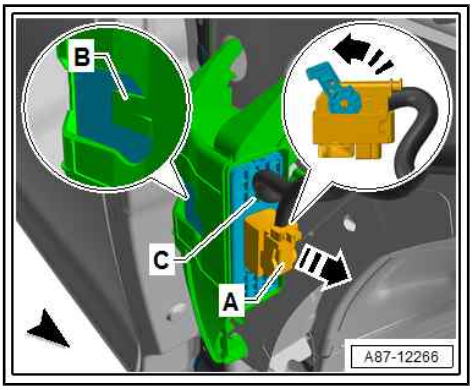
– Switch off ignition.
– Remove wheel housing liner (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
– Release and detach connector -A-.
– Release catch -B- and remove thermal management control unit - J1024- -C- -arrow-.



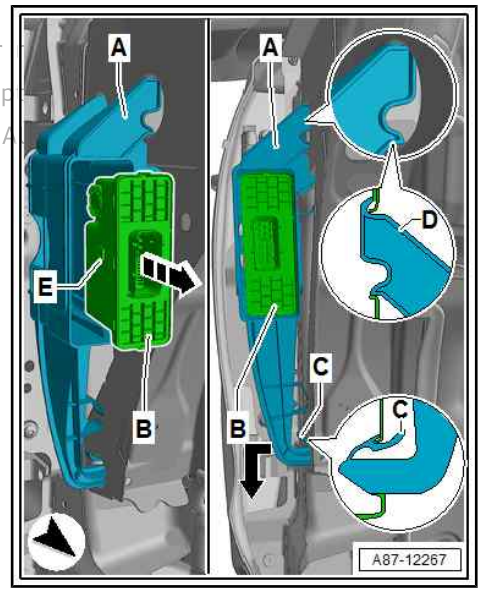

**Removing retainer for control unit -J1024- (and power unit mounting control unit - J931- )**

– Switch off ignition.
– Remove wheel housing liner (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .

– Release and detach connector -A-.




– Release catch -C- for bracket -A-.
– Pivot bracket -A- (with control unit -B-) carefully towards wing, detach downwards from mounting -D- and remove -arrow-.



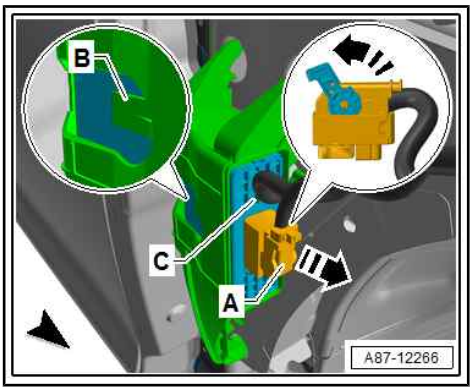

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**Installing**

Installation is carried out in the reverse order; note the following:

– Check bracket -A- for damage and ensure that installed control unit -B- has engaged correctly (at retaining tab -E-).

– Insert thermal management control unit - J1024- -C- and check that fastener -B- is seated correctly.
– Check that connector -A- is correctly seated and engaged.
– Interrogate event memory of thermal management control unit - J1024- and erase any faults displayed ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
– Check basic setting for -J1024- and perform setting if necessary ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).



## 11.14 Fuse for electrical air conditioner compressor - V470-

**Note**

- *The electrical air conditioner compressor - V470- is supplied with electric power via a fuse fitted in the power and control electronics for electric drive - JX1- ⇒ Electrical system, hybrid; Rep. gr. 93 ; Power and control electronics for electric drive (Audi A6 hybrid), or ⇒ Engine; Rep. gr. 93 ; Power and control electronics for electric drive; Removing and installing power and control electronics for electric drive (Audi A6 e-tron).*
- *Checking power supply for electrical air conditioner compressor - V470- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

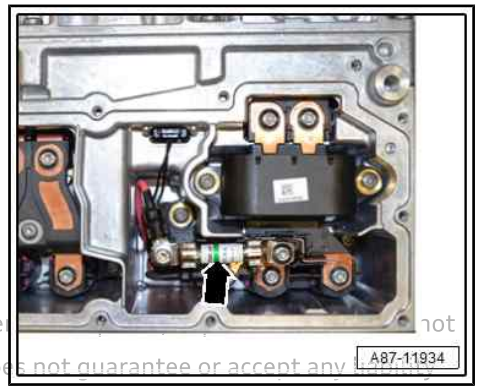
### Audi A6 hybrid

The fuse for the electrical air conditioner compressor - V470- is fitted in the power and control electronics for electric drive - JX1- ⇒ Electrical system, hybrid; Rep. gr. 93 ; Power and control electronics for electric drive and ⇒ Electronic parts catalogue .

– If necessary, renew fuse or power and control electronics for electric drive ⇒ Electrical system, hybrid; Rep. gr. 93 ; Power and control electronics for electric drive .

### Audi A6 e-tron

The fuse -arrow- for the electrical air conditioner compressor - V470- is fitted in the power and control electronics for electric drive - JX1- and cannot currently be renewed separately (introduction of fuse as replacement part not yet finalised) ⇒ Electronic parts catalogue .




– If necessary, renew fuse or power and control electronics for electric drive ⇒ Engine; Rep. gr. 93 ; Power and control electronics for electric drive; Removing and installing power and control electronics for electric drive .

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