

## Workshop Manual

Audi A4 2015 ➤ , Audi A4 Avant 2015 ➤ ,  
Audi A4 China 2016 ➤ ,  
Audi A4 allroad quattro 2016 ➤ ,  
Audi A5 2016 ➤ , Audi Q5 2017 ➤ ,  
Audi Q5 China 2019 ➤

### Auxiliary/supplementary heater

Edition 04.2018

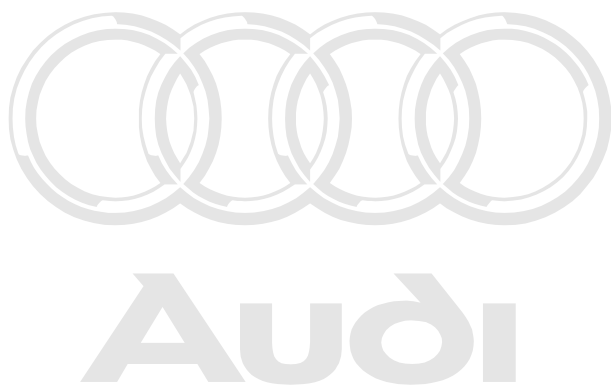
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## List of Workshop Manual Repair Groups

### Repair Group

00 - Technical data

82 - Auxiliary heating



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

## Contents

|                                                                                                                          |            |
|--------------------------------------------------------------------------------------------------------------------------|------------|
| <b>00 - Technical data</b>                                                                                               | <b>1</b>   |
| <b>1 General notes</b>                                                                                                   | <b>1</b>   |
| 1.1 Type plates                                                                                                          | 1          |
| 1.2 Notes on operation of auxiliary/supplementary heater on vehicles with diesel engine                                  | 2          |
| 1.3 Starting conditions for auxiliary/supplementary heater                                                               | 2          |
| 1.4 Notes on auxiliary/supplementary heater                                                                              | 3          |
| 1.5 Operating sequence for auxiliary/supplementary heater                                                                | 11         |
| 1.6 Operation of heater coolant shut-off valve N279                                                                      | 15         |
| 1.7 Rules for cleanliness when working on the auxiliary/supplementary heater and fuel system                             | 16         |
| 1.8 Overview of components for auxiliary/supplementary heater in vehicle                                                 | 18         |
| <b>2 Safety precautions</b>                                                                                              | <b>19</b>  |
| 2.1 Safety precautions when working on the fuel system                                                                   | 19         |
| 2.2 Safety precautions when working on vehicles with start/stop system                                                   | 19         |
| 2.3 Safety precautions when using testers and measuring instruments during a road test                                   | 20         |
| 2.4 Safety precautions when working on the cooling system                                                                | 20         |
| 2.5 Safety precautions when working on vehicles with auxiliary/supplementary heater                                      | 20         |
| <b>3 Repair instructions</b>                                                                                             | <b>22</b>  |
| 3.1 Rules for cleanliness                                                                                                | 22         |
| 3.2 General notes                                                                                                        | 22         |
| 3.3 General repair instructions                                                                                          | 23         |
| 3.4 Contact corrosion                                                                                                    | 24         |
| 3.5 Checking heating output                                                                                              | 24         |
| 3.6 Routing and attaching pipes, hoses and wiring                                                                        | 24         |
| 3.7 Notes on general repairs                                                                                             | 24         |
| <b>82 - Auxiliary heating</b>                                                                                            | <b>26</b>  |
| <b>1 Overview of fitting locations - auxiliary/supplementary heater</b>                                                  | <b>26</b>  |
| 1.1 Overview of fitting locations - components not located in passenger compartment                                      | 26         |
| 1.2 Overview of fitting locations - components in passenger compartment (front)                                          | 33         |
| <b>2 Auxiliary/supplementary heater</b>                                                                                  | <b>39</b>  |
| 2.1 General notes                                                                                                        | 39         |
| 2.2 Overview of fitting locations - auxiliary/supplementary heater                                                       | 40         |
| 2.3 Exploded view - components inside auxiliary/supplementary heater                                                     | 48         |
| 2.4 Removing and installing auxiliary/supplementary heater                                                               | 51         |
| 2.5 Dismantling and assembling auxiliary/supplementary heater                                                            | 62         |
| 2.6 Removing and installing air intake silencer                                                                          | 70         |
| 2.7 Removing and installing circulation pump V55                                                                         | 71         |
| 2.8 Removing and installing exhaust system for auxiliary/supplementary heater                                            | 74         |
| 2.9 Removing and installing temperature sensor G18 and temperature sensor 2 for supplementary and auxiliary heating G587 | 77         |
| 2.10 Pin assignment for auxiliary/supplementary heater                                                                   | 79         |
| 2.11 Checking electrical components on auxiliary/supplementary heater                                                    | 80         |
| <b>3 Coolant circuit with auxiliary/supplementary heater</b>                                                             | <b>88</b>  |
| 3.1 Connection diagram - coolant hoses                                                                                   | 88         |
| 3.2 Removing and installing heater coolant shut-off valve, operation                                                     | 95         |
| 3.3 Bleeding coolant circuit                                                                                             | 104        |
| 3.4 Removing and installing non-return valve for coolant                                                                 | 106        |
| <b>4 Fuel supply system</b>                                                                                              | <b>115</b> |
| 4.1 Overview of fitting locations - fuel supply system                                                                   | 115        |
| 4.2 Fuel take-off from fuel tank                                                                                         | 122        |
| 4.3 Releasing quick-release coupling at fuel line for auxiliary/supplementary heater                                     | 128        |
| 4.4 Routing of fuel line to auxiliary/supplementary heater                                                               | 129        |



|          |                                                                                     |            |
|----------|-------------------------------------------------------------------------------------|------------|
| 4.5      | Checking CO2 content in exhaust gas of auxiliary/supplementary heater .....         | 130        |
| 4.6      | Checking fuel delivery rate .....                                                   | 134        |
| 4.7      | Removing and installing metering pump V54 .....                                     | 138        |
| <b>5</b> | <b>Auxiliary/supplementary heater control .....</b>                                 | <b>142</b> |
| 5.1      | Functional description .....                                                        | 142        |
| 5.2      | Switching auxiliary/supplementary heater and auxiliary ventilation on and off ..... | 143        |
| <b>6</b> | <b>Further control components .....</b>                                             | <b>148</b> |
| 6.1      | Removing and installing ambient temperature sensor .....                            | 148        |
| 6.2      | Removing and installing remote control receiver for auxiliary heater R64 .....      | 148        |
| 6.3      | Functional description of remote control for auxiliary/supplementary heater .....   | 149        |



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## 00 – Technical data

### 1 General notes

(ARL005793; Edition 04.2018)

⇒ [“1.1 Type plates”, page 1](#)

⇒ [“1.2 Notes on operation of auxiliary/supplementary heater on vehicles with diesel engine”, page 2](#)

⇒ [“1.3 Starting conditions for auxiliary/supplementary heater”, page 2](#)

⇒ [“1.4 Notes on auxiliary/supplementary heater”, page 3](#)

⇒ [“1.5 Operating sequence for auxiliary/supplementary heater”, page 11](#)

⇒ [“1.6 Operation of heater coolant shut-off valve N279”, page 15](#)

⇒ [“1.7 Rules for cleanliness when working on the auxiliary/supplementary heater and fuel system”, page 16](#)

⇒ [“1.8 Overview of components for auxiliary/supplementary heater in vehicle”, page 18](#)

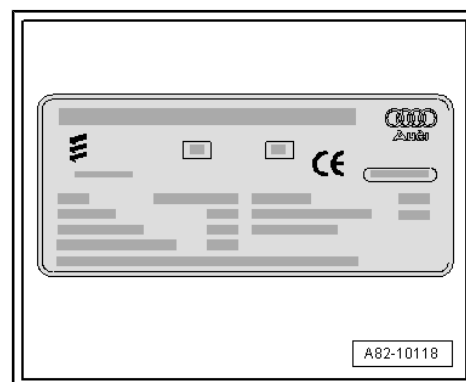
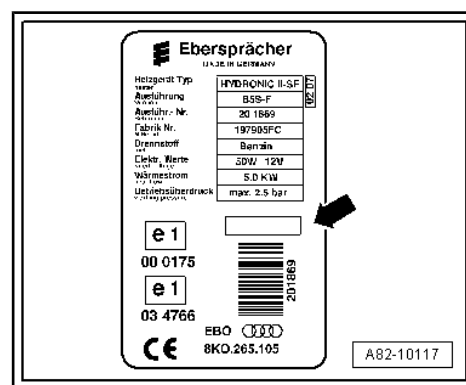
### 1.1 Type plates

#### Factory label on auxiliary/supplementary heater

- ◆ The most important technical data are entered in the top section of the factory label.
- ◆ There are different types of factory labels and type plates; the illustrations show the type plate and factory label that were valid at the start of production.
- ◆ If the auxiliary/supplementary heater is renewed, the factory label duplicate must be checked and renewed if necessary.
- ◆ The year of initial commissioning is entered below the technical data.
- ◆ The “Genuine replacement part” type plate must indicate the year of initial commissioning -arrow-.
- ◆ It is not necessary to renew the heat exchanger on auxiliary/supplementary heaters after 10 years. German legislation only requires the heat exchanger to be renewed on air heaters; it is therefore not necessary to renew the heat exchanger on this auxiliary/supplementary heater.

#### Type plate on bonnet

- ◆ A second type plate (duplicate) is attached to the bonnet on the left side of the engine compartment (as seen in direction of travel). If there is any doubt about the type of auxiliary/supplementary heater installed, always observe the type plate attached to the auxiliary/supplementary heater itself.



## 1.2 Notes on operation of auxiliary/supplementary heater on vehicles with diesel engine

Operation of the auxiliary/supplementary heater may be impaired in cold weather (usually the only conditions under which the auxiliary/supplementary heater is switched on) if vegetable or rapeseed methyl ester is used as fuel.

Reason:

- Because of their physical properties, operation with vegetable or rapeseed methyl ester fuel may result in deposits forming in the auxiliary/supplementary heater combustion chamber (burner element). These deposits can cause combustion problems if the vehicle is run with vegetable or rapeseed methyl ester fuel for lengthy periods (no flame and deflagration in combustion chamber).

## 1.3 Starting conditions for auxiliary/supplementary heater

- Coolant circuit has been bled.
- Battery condition OK: no deactivation due to low voltage
- There is enough fuel in the fuel tank.
- The auxiliary/supplementary heater is adapted in the operating and display unit for front air conditioning system - E87- . Coding ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- No fault is stored in the heater event memory.
- The ignition is off and "auxiliary/supplementary heating" mode has been set.



### Note

- ◆ *Only the main steps of the operating sequence are outlined on the following pages  
⇒ "1.4 Notes on auxiliary/supplementary heater", page 3 .*
- ◆ *Some procedures taking place during auxiliary/supplementary heater operation cannot be heard or measured ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- ◆ *Depending on the vehicle equipment, the circulation pump - V55- may also be activated when requested by the corresponding engine control unit - J623- and the operating and display unit for front air conditioning system - E87-  
⇒ page 71 and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- ◆ *Depending on the coolant temperature and the setting on - E87- , the heater coolant shut-off valve - N279- may also be activated when the auxiliary/supplementary heater is switched off ⇒ page 95 and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- ◆ *The voltages, times and frequencies given in the table are approximate values regulated by the control unit on the basis of measured values (voltage, temperature etc.)  
⇒ "1.4 Notes on auxiliary/supplementary heater", page 3 .*
- ◆ *1 hertz (Hz) corresponds to 1 pulse per second.*

## 1.4 Notes on auxiliary/supplementary heater

⇒ [“1.4.1 Notes on auxiliary/supplementary heater”, page 3](#)

⇒ [“1.4.2 Switching on auxiliary/supplementary heater”, page 4](#)

⇒ [“1.4.3 Heating mode for auxiliary/supplementary heater”, page 8](#)

### 1.4.1 Notes on auxiliary/supplementary heater

- ◆ The settings for various functions of the auxiliary/supplementary heater are adjusted via the Multi Media Interface (MMI). In the event of problems with the auxiliary/supplementary heater control function or heat output, you should therefore check these settings in the MMI ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .
- ◆ Vehicles with a petrol engine are currently not fitted with an electric supplementary air heater ⇒ Audi sales literature . On vehicles with a petrol engine which are fitted with an auxiliary/supplementary heater as optional equipment, the auxiliary/supplementary heater is activated as a supplementary heater.
- ◆ Vehicles with a diesel engine and auxiliary/supplementary heater (optional equipment) are currently not fitted with an electric supplementary air heater (depending on version) ⇒ Audi sales literature . On vehicles with a diesel engine which are not fitted with an auxiliary air heater, the auxiliary/supplementary heater is activated as a supplementary heater. However, depending on vehicle equipment and production period, a supplementary air heater may be installed at a later date (not yet finalised) on vehicles with auxiliary/supplementary heater (optional equipment). On these vehicles, the auxiliary/supplementary heater is then not activated as a supplementary heater.
- ◆ On vehicles with diesel engine which are not fitted with an auxiliary/supplementary heater, an electric supplementary heater is always fitted. Heat energy is supplied to the air immediately after it leaves the heat exchanger of the heater and air conditioning unit ⇒ Audi sales literature and ⇒ Heating, air conditioning; Rep. gr. 00 ; Repair instructions; Notes on general repair work .
- ◆ This auxiliary/supplementary heater is fitted in various vehicle models. The part number may change with each new vehicle model on which this auxiliary/supplementary heater is fitted (currently e.g. 4M0 xxx xxx on the Audi Q7, Audi A4, Audi A5 and Audi Q5). Attention must therefore be paid to correct assignment. An old auxiliary/supplementary heater version must never be installed in a vehicle that was previously fitted with a newer version ⇒ Electronic parts catalogue .
- ◆ With this version, you must make sure that it is correctly coded for the corresponding vehicle (different functions are stored in the control unit depending on the type of vehicle coded) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- ◆ If the entry “Wrong control unit fitted” is displayed after renewing the auxiliary/supplementary heater or the auxiliary heater control unit - J364- , check that the auxiliary heater control unit - J364- has been coded for the correct type of fuel (diesel or petrol) and correct if necessary ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- ◆ Depending on the selected mode (“Auxiliary/supplementary heating” or “Auxiliary ventilation”), certain faults which impair the auxiliary/supplementary heating or the auxiliary ventilation

are not stored in the event memory of the auxiliary heater control unit - J364-. Therefore, if there is a problem with the auxiliary/supplementary heater, also read out the event memory of the operating and display unit for front air conditioning system - E87- ➔ Vehicle diagnostic tester ("Guided Fault Finding").

- ◆ On vehicles which feature an auxiliary heater and "Audi connect services" as optional equipment, the operating and display unit for front air conditioning system - E87- determines whether any heat output is required to attain the temperature specified for the passenger compartment. The same also applies even if the auxiliary/supplementary heater is activated using the "Timer" function or the remote control. -E87- receives the request to switch the auxiliary/supplementary heater or the auxiliary ventilation on or off via the data bus for the Multi Media Interface (MMI, control unit for front display and information control panel - J523- ) or from control unit 1 for information electronics - J794- (e.g. via a mobile phone on vehicles with "Audi connect services") ➔ Current flow diagrams, Electrical fault finding and Fitting locations, ➔ Owner's Manual and ➔ Infotainment/MMI Operating Manual .

## 1.4.2 Switching on auxiliary/supplementary heater



### Note

- ◆ *On vehicles with diesel engines which are equipped with an auxiliary/supplementary heater as an optional extra, no auxiliary air heater element - Z35- is currently fitted ➔ Heating, air conditioning; Rep. gr. 87 ; Heater and air conditioning unit (front) . On these vehicles (without an auxiliary air heater element - Z35- ), an auxiliary/supplementary heater installed in the vehicle is activated as a supplementary heater ➔ [page 3](#) .*
- ◆ *Vehicles with petrol engines are currently not provided with an auxiliary air heater element - Z35- ➔ Heating, air conditioning; Rep. gr. 87 ; Heater and air conditioning unit (front) . However, an auxiliary/supplementary heater installed as optional equipment is activated as a supplementary heater (depending on the vehicle version) ➔ [page 3](#) .*

| No. | Operating sequence                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | <p>Cut-in signal</p> <p>Auxiliary/supplementary heater:</p> <ul style="list-style-type: none"> <li>• Signal from operating and display unit for front air conditioning system - E87- via data bus, setting is specified on Multi Media Interface (MMI, control unit for front display and information control panel - J523- )</li> <li>• Signal from remote control receiver for auxiliary heater - R64- (or from a mobile phone on vehicles with "Audi connect services").</li> <li>• Signal from vehicle diagnostic tester (via basic setting function)</li> </ul> <p>– Interrogation of -E87- (via data bus)</p> <p>Supplementary heater:</p> <ul style="list-style-type: none"> <li>• Signal from -E87- (via data bus)</li> </ul> |
| 2   | Initiating start procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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| No.                                                 | Operating sequence                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                  |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|------------------|-----------------------------------------|-------------------|--------|----------------------------------|------|---|----------------------------|-----|---------|------------|-----------------|------------------|-----------------------------------------|-------------------|--------|----------------------------------|------|---|----------------------------|-----|--------|------------|-----------------|------------------|-----------------------------------------|----------|---------|----------------------------------|--------------|---------|----------------------------|-------------|---------|------------|-----------------|------------------|-----------------------------------------|----------|---------|----------------------------------|-----------|---------|-----------------------------------------------------|-----|---------|
|                                                     | <p>Auxiliary/supplementary heater:</p> <ul style="list-style-type: none"><li>• -E87- determines that heating mode is required to attain the specified temperature in the passenger compartment.</li><li>– Checking of measured values and components by interrogating event memory, power supply, coolant temperature and checking of all electrical components and input signals ⇒ <a href="#">page 13</a></li><li>– Initiation of start procedure</li></ul> <p>Supplementary heater:</p> <ul style="list-style-type: none"><li>– Checking of measured values and components by interrogating event memory, power supply, coolant temperature and checking of all electrical components and input signals ⇒ <a href="#">page 13</a></li><li>– Initiation of start procedure</li></ul> <p>Possible deviations; start procedure not initiated</p> <p>Auxiliary/supplementary heater:</p> <ul style="list-style-type: none"><li>• -E87- determines that heating mode is not required to attain the specified temperature in the passenger compartment.</li><li>– Auxiliary ventilation (summer mode) ⇒ <a href="#">page 12</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                  |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| 3                                                   | Starting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| 3.1                                                 | Starting (diesel)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
|                                                     | <ul style="list-style-type: none"><li>• No deviation in measured values and components monitored ⇒ <a href="#">page 13</a></li><li>– Activation of circulation pump - V55- and heater coolant shut-off valve - N279-</li><li>– Voltage supplied briefly at combustion air blower - V6-</li><li>– Voltage at glow plug for heater - Q9-</li></ul> <table><tr><th>Components</th><th>Activation with</th><th>Duration approx.</th></tr><tr><td>Combustion air blower - V6- (regulated)</td><td>approx. 8 V (5 V)</td><td>5 sec.</td></tr><tr><td>Metering pump - V54- (regulated)</td><td>0 Hz</td><td>-</td></tr><tr><td>Glow plug for heater - Q9-</td><td>8 V</td><td>35 sec.</td></tr></table> <ul style="list-style-type: none"><li>– Activation of combustion air blower - V6- (supply)</li></ul> <table><tr><th>Components</th><th>Activation with</th><th>Duration approx.</th></tr><tr><td>Combustion air blower - V6- (regulated)</td><td>approx. 8 V (5 V)</td><td>7 sec.</td></tr><tr><td>Metering pump - V54- (regulated)</td><td>0 Hz</td><td>-</td></tr><tr><td>Glow plug for heater - Q9-</td><td>8 V</td><td>7 sec.</td></tr></table> <ul style="list-style-type: none"><li>– Reduced voltage at combustion air blower - V6-</li><li>– Activation of metering pump - V54- (fuel pre-supply, regulated, start-up sequence).</li></ul> <table><tr><th>Components</th><th>Activation with</th><th>Duration approx.</th></tr><tr><td>Combustion air blower - V6- (regulated)</td><td>6 to 4 V</td><td>26 sec.</td></tr><tr><td>Metering pump - V54- (regulated)</td><td>approx. 4 Hz</td><td>26 sec.</td></tr><tr><td>Glow plug for heater - Q9-</td><td>approx. 8 V</td><td>26 sec.</td></tr></table> <ul style="list-style-type: none"><li>– Increased voltage at combustion air blower - V6- (monitoring time)</li><li>– Slightly increased regulation at metering pump - V54- (fuel pre-supply, regulated)</li></ul> <table><tr><th>Components</th><th>Activation with</th><th>Duration approx.</th></tr><tr><td>Combustion air blower - V6- (regulated)</td><td>4 to 9 V</td><td>37 sec.</td></tr><tr><td>Metering pump - V54- (regulated)</td><td>4 to 5 Hz</td><td>37 sec.</td></tr><tr><td>Glow plug for heater - Q9- (pre-heating, regulated)</td><td>8 V</td><td>37 sec.</td></tr></table> | Components       | Activation with | Duration approx. | Combustion air blower - V6- (regulated) | approx. 8 V (5 V) | 5 sec. | Metering pump - V54- (regulated) | 0 Hz | - | Glow plug for heater - Q9- | 8 V | 35 sec. | Components | Activation with | Duration approx. | Combustion air blower - V6- (regulated) | approx. 8 V (5 V) | 7 sec. | Metering pump - V54- (regulated) | 0 Hz | - | Glow plug for heater - Q9- | 8 V | 7 sec. | Components | Activation with | Duration approx. | Combustion air blower - V6- (regulated) | 6 to 4 V | 26 sec. | Metering pump - V54- (regulated) | approx. 4 Hz | 26 sec. | Glow plug for heater - Q9- | approx. 8 V | 26 sec. | Components | Activation with | Duration approx. | Combustion air blower - V6- (regulated) | 4 to 9 V | 37 sec. | Metering pump - V54- (regulated) | 4 to 5 Hz | 37 sec. | Glow plug for heater - Q9- (pre-heating, regulated) | 8 V | 37 sec. |
| Components                                          | Activation with                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Duration approx. |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| Combustion air blower - V6- (regulated)             | approx. 8 V (5 V)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 5 sec.           |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| Metering pump - V54- (regulated)                    | 0 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -                |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| Glow plug for heater - Q9-                          | 8 V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 35 sec.          |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| Components                                          | Activation with                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Duration approx. |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| Combustion air blower - V6- (regulated)             | approx. 8 V (5 V)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 7 sec.           |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| Metering pump - V54- (regulated)                    | 0 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -                |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| Glow plug for heater - Q9-                          | 8 V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 7 sec.           |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| Components                                          | Activation with                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Duration approx. |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| Combustion air blower - V6- (regulated)             | 6 to 4 V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 26 sec.          |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| Metering pump - V54- (regulated)                    | approx. 4 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 26 sec.          |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| Glow plug for heater - Q9-                          | approx. 8 V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 26 sec.          |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| Components                                          | Activation with                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Duration approx. |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| Combustion air blower - V6- (regulated)             | 4 to 9 V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 37 sec.          |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| Metering pump - V54- (regulated)                    | 4 to 5 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 37 sec.          |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |
| Glow plug for heater - Q9- (pre-heating, regulated) | 8 V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 37 sec.          |                 |                  |                                         |                   |        |                                  |      |   |                            |     |         |            |                 |                  |                                         |                   |        |                                  |      |   |                            |     |        |            |                 |                  |                                         |          |         |                                  |              |         |                            |             |         |            |                 |                  |                                         |          |         |                                  |           |         |                                                     |     |         |

| No. | Operating sequence                                                                                                                                                                                                                                                 |                   |                  |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------|
|     | <ul style="list-style-type: none"> <li>– Voltage at combustion air blower - V6- slightly increased to full load</li> <li>– Clock frequency of metering pump - V54- increased to full load</li> </ul>                                                               |                   |                  |
|     | Components                                                                                                                                                                                                                                                         | Activation with   | Duration approx. |
|     | Combustion air blower - V6- (regulated)                                                                                                                                                                                                                            | approx. 9 V (5 V) | 15 sec.          |
|     | Metering pump - V54- (regulated)                                                                                                                                                                                                                                   | 5 to 8 Hz         | 15 sec.          |
|     | Glow plug for heater - Q9- (pre-heating, regulated)                                                                                                                                                                                                                | 8 V               | 15 sec.          |
|     | <ul style="list-style-type: none"> <li>– Combustion air blower - V6- set to full load</li> <li>– Clock frequency of metering pump - V54- set to full load</li> <li>– Deactivation of glow plug for heater - Q9- (start of full load operation)</li> </ul>          |                   |                  |
|     | Components                                                                                                                                                                                                                                                         | Activation with   | Duration approx. |
|     | Combustion air blower - V6- (regulated)                                                                                                                                                                                                                            | approx. 9 V (5 V) | approx. 45 sec.  |
|     | Metering pump - V54- (regulated)                                                                                                                                                                                                                                   | approx. 6 Hz      | approx. 45 sec.  |
|     | Glow plug for heater - Q9- (flame monitoring)                                                                                                                                                                                                                      | 0 V               | -                |
|     | <ul style="list-style-type: none"> <li>– Start of heating operation ⇒ <a href="#">page 8</a></li> </ul>                                                                                                                                                            |                   |                  |
|     | 3.2 Starting (petrol)                                                                                                                                                                                                                                              |                   |                  |
|     | <ul style="list-style-type: none"> <li>• No deviation in measured values and components monitored ⇒ <a href="#">page 13</a></li> </ul>                                                                                                                             |                   |                  |
|     | <ul style="list-style-type: none"> <li>– Signal for activation of circulation pump - V55- and heater coolant shut-off valve - N279-</li> <li>– Voltage supplied briefly at combustion air blower - V6-</li> <li>– Voltage at glow plug for heater - Q9-</li> </ul> |                   |                  |
|     | Components                                                                                                                                                                                                                                                         | Activation with   | Duration approx. |
|     | Combustion air blower - V6- (regulated)                                                                                                                                                                                                                            | approx. 8 V (5 V) | 5 sec.           |
|     | Metering pump - V54- (regulated)                                                                                                                                                                                                                                   | 0 Hz              | -                |
|     | Glow plug for heater - Q9- (pre-heating, regulated)                                                                                                                                                                                                                | approx. 8 V       | 5 sec.           |
|     | <ul style="list-style-type: none"> <li>– Increasing voltage at combustion air blower - V6- (supply)</li> </ul>                                                                                                                                                     |                   |                  |
|     | Components                                                                                                                                                                                                                                                         | Activation with   | Duration approx. |
|     | Combustion air blower - V6- (regulated)                                                                                                                                                                                                                            | 0 to 2 V          | 40 sec.          |
|     | Metering pump - V54- (regulated)                                                                                                                                                                                                                                   | 0 Hz              | -                |
|     | Glow plug for heater - Q9- (pre-heating, regulated)                                                                                                                                                                                                                | approx. 8 V       | 40 sec.          |
|     | <ul style="list-style-type: none"> <li>– Brief activation of metering pump - V54-</li> </ul>                                                                                                                                                                       |                   |                  |
|     | Components                                                                                                                                                                                                                                                         | Activation with   | Duration approx. |
|     | Combustion air blower - V6- (regulated)                                                                                                                                                                                                                            | approx. 2 V       | 5 sec.           |
|     | Metering pump - V54- (regulated)                                                                                                                                                                                                                                   | approx. 4 Hz      | 5 sec.           |
|     | Glow plug for heater - Q9- (pre-heating, regulated)                                                                                                                                                                                                                | approx. 8 V       | 5 sec.           |
|     | <ul style="list-style-type: none"> <li>– Increasing voltage at combustion air blower - V6-</li> <li>– Clock frequency of metering pump - V54- increased to full load</li> </ul>                                                                                    |                   |                  |
|     | Components                                                                                                                                                                                                                                                         | Activation with   | Duration approx. |
|     | Combustion air blower - V6- (regulated)                                                                                                                                                                                                                            | 2 to 4 V          | 18 sec.          |
|     | Metering pump - V54- (regulated)                                                                                                                                                                                                                                   | 2 to 3 Hz         | 18 sec.          |
|     | Glow plug for heater - Q9- (pre-heating, regulated)                                                                                                                                                                                                                | approx. 8 V       | 18 sec.          |

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| No. | Operating sequence                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                          |                  |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------------|
|     | <ul style="list-style-type: none"> <li>Increased voltage at combustion air blower - V6-</li> <li>Increased clock frequency of metering pump - V54- (start-up sequence)</li> <li>Reduced voltage at glow plug for heater - Q9-</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                          |                  |
|     | Components                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Activation with          | Duration approx. |
|     | Combustion air blower - V6- (regulated)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4 to 8 V                 | 17 sec.          |
|     | Metering pump - V54- (regulated)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3 to 6 Hz                | 17 sec.          |
|     | Glow plug for heater - Q9- (pre-heating, regulated)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | approx. 8 V              | 17 sec.          |
|     | <ul style="list-style-type: none"> <li>Increased clock frequency of metering pump - V54-</li> <li>Deactivation of glow plug for heater - Q9-</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |                  |
|     | Components                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Activation with          | Duration approx. |
|     | Combustion air blower - V6- (regulated)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 8 V (5 V)                | 20 sec.          |
|     | Metering pump - V54- (regulated)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 6 to 7 Hz (approx. 4 Hz) | 20 sec.          |
|     | Glow plug for heater - Q9-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0 V                      | -                |
|     | <ul style="list-style-type: none"> <li>Voltage at combustion air blower - V6- slightly increased to full load (monitoring time)</li> <li>Increased clock frequency of metering pump - V54- to full load (start of full load operation)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |                  |
|     | Components                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Activation with          | Duration approx. |
|     | Combustion air blower - V6- (regulated)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | approx. 9 V (5 V)        | approx. 45 sec.  |
|     | Metering pump - V54- (regulated)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 7 to 8 Hz (approx. 4 Hz) | approx. 45 sec.  |
|     | Glow plug for heater - Q9- (pre-heating, regulated)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0 V                      | -                |
|     | <ul style="list-style-type: none"> <li>Start of heating operation ➔ <a href="#">page 8</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |                  |
| 3.3 | Possible deviations, start procedure is not initiated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |                  |
|     | <ul style="list-style-type: none"> <li>Deviation in measured values and components monitored. By interrogation of event memory, power supply, coolant temperature and checking of all electrical components and input signals ➔ <a href="#">page 13</a>.</li> <li>Start procedure terminated</li> <li>Resistance of flame monitor - G64- outside specified range ➔ <a href="#">page 13</a></li> <li>Termination of process (1 x restart)</li> <li>Resistance of glow plug for heater - Q9- outside specified range even after restart Interrogation of resistance of glow plug for heater - Q9- (remains hot) ➔ <a href="#">page 13</a></li> <li>Termination of procedure (entry in event memory)/fault/off</li> </ul> |                          |                  |





## Note

- ◆ *Activation of the heater coolant shut-off valve - N279- is governed by temperature  
⇒ "1.6 Operation of heater coolant shut-off valve N279", page 15.*
- ◆ *The operating and display unit for front air conditioning system - E87- is switched on by the auxiliary heater control unit - J364- as soon as the coolant temperature in the auxiliary/supplementary heater exceeds a value of approx. 40 ... 50 °C. The exact cut-in temperature depends on the version of the auxiliary/supplementary heater. -E87- then activates the various control motors of the heater and air conditioning unit and the fresh air blower - V2- in auxiliary/supplementary heating mode.*
- ◆ *The values in brackets show the activation when the heater is started from the control interval into medium part load operation.*

## 1.4.3 Heating mode for auxiliary/supplementary heater

| No. | Operating sequence                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                                                   |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------------------|
| 1   | Full-load heating (max. heating output)                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                                                   |
|     | <ul style="list-style-type: none"> <li>• Coolant temperature in heater less than 77 °C</li> <li>• No deviation in measured values and components monitored ⇒ <a href="#">page 13</a></li> <li>• Resistance of flame monitor - G64- in specified range <ul style="list-style-type: none"> <li>– Combustion air blower - V6- set to full load</li> <li>– Clock frequency of metering pump - V54- set to full load</li> <li>– Checking of flame formation by flame monitor - G64-</li> </ul> </li> </ul> |                 |                                                   |
|     | Components                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Activation with | Duration approx.                                  |
|     | Combustion air blower - V6- (regulated)<br><small>Protected by copyright. Copying 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.</small>                                                                                                                                                           | approx. 9 V     | Until coolant temperature in heater reaches 77 °C |
|     | Metering pump - V54- (regulated)                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | approx. 8 Hz    | Until coolant temperature in heater reaches 77 °C |
|     | Glow plug for heater - Q9-                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0 V             | -                                                 |
|     | <ul style="list-style-type: none"> <li>• Coolant temperature in heater remains below 77 °C. <ul style="list-style-type: none"> <li>– Heater remains in full load operation until it is switched off.</li> </ul> </li> <li>• Coolant temperature in heater reaches 77 °C. <ul style="list-style-type: none"> <li>– Switching from full load to part load operation (coolant temperature in heater reaches 77 °C).</li> </ul> </li> </ul>                                                               |                 |                                                   |
|     | Possible deviations in full-load heating mode (max. heating output)                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                                                   |
|     | <ul style="list-style-type: none"> <li>• Voltage drops below specified shut-off voltage. <ul style="list-style-type: none"> <li>– Burn-off (entry in event memory)/fault/off.</li> </ul> </li> <li>• Flame goes out. <ul style="list-style-type: none"> <li>– Burn-off and re-start.</li> </ul> </li> </ul>                                                                                                                                                                                           |                 |                                                   |

| No. | Operating sequence                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                |                                                                        |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------------------------------|
| 2   | Part load operation (regulated, approx. 35 % to 80 % of heat output)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                |                                                                        |
| 2.  | Part load operation (diesel and petrol)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                |                                                                        |
| 1   | Switching from full load to part load operation (approx. 80 % of heat output):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                |                                                                        |
|     | <ul style="list-style-type: none"><li>• The coolant temperature in the heater increases and reaches 77 °C (79 °C and 91 °C).</li><li>• No deviation in measured values and components monitored ⇒ <a href="#">page 13</a></li><li>• <b>Resistance of flame monitor – G64- in specified range</b><ul style="list-style-type: none"><li>– <b>Reduced voltage at combustion air blower – V6-</b></li><li>– Reduced clock frequency of metering pump - V54-</li><li>– Checking of flame formation by flame monitor - G64-</li><li>– Activation of heater coolant shut-off valve - N279- , governed by temperature ⇒ <b>“1.6 Operation of heater coolant shut-off valve N279 ”, page 15</b></li></ul></li></ul> |                                                |                                                                        |
|     | Components                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Activation with                                | Duration approx.                                                       |
|     | Combustion air blower - V6- (regulated)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | from approx. 9 V to approx. 6.5 V (4.5 or 3 V) | 5 sec.                                                                 |
|     | Metering pump - V54- (regulated)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | approx. 6.5 Hz (4 or 2.5 Hz)                   | 5 sec.                                                                 |
|     | Glow plug for heater - Q9-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0 V                                            | -                                                                      |
|     | <ul style="list-style-type: none"><li>– Combustion air blower - V6- set to part load</li><li>– Clock frequency of metering pump - V54- set to part load</li><li>– Checking of flame formation by flame monitor - G64-</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                |                                                                        |
|     | Components                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Activation with                                | Duration approx.                                                       |
|     | Combustion air blower - V6- (regulated)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | approx. 6.5 V (4.5 or 3 V)                     | Until coolant temperature in heater drops below 60 °C or reaches 91 °C |
|     | Metering pump - V54- (regulated)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | approx. 6.5 Hz (4 or 2.5 Hz)                   | Until coolant temperature in heater drops below 60 °C or reaches 91 °C |
|     | Glow plug for heater - Q9-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0 V                                            | -                                                                      |
|     | <ul style="list-style-type: none"><li>• Coolant temperature in heater reaches 79 °C.</li><li>• If the coolant temperature in the heater drops below 60 °C, the heater switches to full load operation.<ul style="list-style-type: none"><li>– Heating output is reduced to medium part load operation (from approx. 80 % to approx 50 %).</li></ul></li><li>• Coolant temperature in heater reaches 81 °C.</li><li>– If the coolant temperature in the heater drops below 63 °C, the heater switches to high part load operation.<ul style="list-style-type: none"><li>– Heating output is reduced to low part load operation (from approx. 50 % to approx 35 %).</li></ul></li></ul>                      |                                                |                                                                        |

| No. | Operating sequence                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     | <ul style="list-style-type: none"> <li>Coolant temperature in heater reaches 91 °C.</li> <li>If the coolant temperature in the heater drops below 66 °C, the heater switches to medium part load operation. <ul style="list-style-type: none"> <li>Switching from part load operation to control interval</li> </ul> </li> <li>Coolant temperature in heater remains between 60 °C and 90 °C. <ul style="list-style-type: none"> <li>Heater remains in the same mode (full or regulated part load operation) until it is switched off.</li> </ul> </li> </ul> |



#### Note

- The heater operates with various heating outputs in part load operation, with approx. 3.9 kW in high part load operation, with approx. 2.5 kW in medium part load operation and with approx. 1.9 kW in low part load operation.
- The figures in brackets refer to medium and low part load operation.

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| No. | Operating sequence                                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |                  |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------|
| 3   | Control interval                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                  |
|     | <ul style="list-style-type: none"><li>Coolant temperature in heater increases and reaches 91 °C.</li><li>No deviation in measured values and components monitored ⇒ <a href="#">page 13</a></li><li>Resistance of flame monitor - G64- in specified range<ul style="list-style-type: none"><li>No regulation of combustion air blower - V6-</li><li>No regulation of metering pump - V54-</li><li>No regulation of glow plug for heater - Q9-</li></ul></li></ul> |                 |                  |
|     | Components                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Activation with | Duration approx. |
|     | Combustion air blower - V6-                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0 V             | -                |
|     | Metering pump - V54- .                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0 Hz            | -                |
|     | Glow plug for heater - Q9-                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0 V             | -                |
|     | <ul style="list-style-type: none"><li>Coolant temperature in heater remains above 45 °C.<ul style="list-style-type: none"><li>Heater remains in control interval until it is switched off.</li></ul></li><li>Coolant temperature in heater drops below 45 °C.<ul style="list-style-type: none"><li>Start from control interval into medium part load operation (heating output approx. 2.5 kW) ⇒ <a href="#">page 4</a> .</li></ul></li></ul>                     |                 |                  |



#### Note

When starting from the control interval, the times for the various procedures differ from those when re-starting, as the heater is already at operating temperature (e.g. pre-heating for 20 instead of 35 seconds, fuel delivery for 30 instead of 56 seconds) and the heating output is regulated to approx. 2.5 kW.

## 1.5 Operating sequence for auxiliary/supplementary heater

⇒ ["1.5.1 Switching off auxiliary/supplementary heater", page 11](#)

⇒ ["1.5.2 Auxiliary ventilation", page 12](#)

⇒ ["1.5.3 Measured values and components monitored during operating sequence", page 13](#)

⇒ ["1.5.4 Sequence of heating mode \(depending on required heating output\)", page 14](#)

### 1.5.1 Switching off auxiliary/supplementary heater

| No | Operating sequence                                                                                                                                                                                                                                                                                                                                                                                                                                 |                 |                  |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------|
| 1  | Shut-off signal                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                  |
|    | Auxiliary/supplementary heater: <ul style="list-style-type: none"><li>Signal from operating and display unit for front air conditioning system - E87- via data bus, setting is specified on Multi Media Interface (MMI, control unit for front display and information control panel - J523- )</li><li>Signal from remote control receiver for auxiliary heater - R64- (or from a mobile phone on vehicles with "Audi connect services")</li></ul> |                 |                  |
|    | Supplementary heater: <ul style="list-style-type: none"><li>Signal from -E87- (via data bus)</li><li>Signal from vehicle diagnostic tester (via basic setting function)</li></ul>                                                                                                                                                                                                                                                                  |                 |                  |
| 2  | Burn-off / run-on (cooling down of heater)                                                                                                                                                                                                                                                                                                                                                                                                         |                 |                  |
|    | <ul style="list-style-type: none"><li>No deviation in measured values and components monitored ⇒ <a href="#">page 13</a></li></ul>                                                                                                                                                                                                                                                                                                                 |                 |                  |
|    | 2.1 Diesel                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 |                  |
|    | <ul style="list-style-type: none"><li>Increased voltage at combustion air blower - V6-</li><li>Deactivation of metering pump - V54-</li><li>Voltage at glow plug for heater - Q9-</li></ul>                                                                                                                                                                                                                                                        |                 |                  |
|    | Components                                                                                                                                                                                                                                                                                                                                                                                                                                         | Activation with | Duration approx. |
|    | Combustion air blower - V6-                                                                                                                                                                                                                                                                                                                                                                                                                        | 6 to 9 V        | 20 sec.          |
|    | Metering pump - V54-                                                                                                                                                                                                                                                                                                                                                                                                                               | 0 Hz            | -                |
|    | Glow plug for heater - Q9- (afterglow, regulated)                                                                                                                                                                                                                                                                                                                                                                                                  | approx. 8 V     | 20 sec.          |
|    | <ul style="list-style-type: none"><li>Deactivation of glow plug for heater - Q9-</li></ul>                                                                                                                                                                                                                                                                                                                                                         |                 |                  |
|    | Components                                                                                                                                                                                                                                                                                                                                                                                                                                         | Activation with | Duration approx. |
|    | Combustion air blower - V6-                                                                                                                                                                                                                                                                                                                                                                                                                        | approx. 9 V     | 100 sec.         |
|    | Metering pump - V54-                                                                                                                                                                                                                                                                                                                                                                                                                               | 0 Hz            | -                |
|    | Glow plug for heater - Q9- (afterglow, regulated)                                                                                                                                                                                                                                                                                                                                                                                                  | 0 V             | -                |
|    | <ul style="list-style-type: none"><li>Deactivation of circulation pump - V55- and heater coolant shut-off valve - N279-</li></ul>                                                                                                                                                                                                                                                                                                                  |                 |                  |
|    | 2.2 Petrol                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 |                  |
|    | <ul style="list-style-type: none"><li>No deviation in measured values and components monitored ⇒ <a href="#">page 13</a></li><li>Increased voltage at combustion air blower - V6-</li><li>Deactivation of metering pump - V54-</li><li>Deactivation of glow plug for heater - Q9-</li></ul>                                                                                                                                                        |                 |                  |

| No. | Operating sequence                                                                  |                 |                  |
|-----|-------------------------------------------------------------------------------------|-----------------|------------------|
|     | Components                                                                          | Activation with | Duration approx. |
|     | Combustion air blower - V6-                                                         | approx. 9 V     | 0 to 120 sec.    |
|     | Metering pump - V54- .                                                              | 0 Hz            | -                |
|     | Glow plug for heater - Q9-                                                          | 0 V             | -                |
|     | – Deactivation of circulation pump - V55- and heater coolant shut-off valve - N279- |                 |                  |



### Note

- ◆ In “auxiliary/supplementary heating mode”, the auxiliary/supplementary heater is switched off automatically by the operating and display unit for front air conditioning system - E87- after a maximum of 60 minutes. The operating time of the auxiliary/supplementary heating or auxiliary ventilation (vehicle air conditioning) is specified on the Multi Media Interface (MMI, control unit for front display and information control panel - J523- ) via the hand-held remote control transmitter (or by a mobile phone on vehicles with “Audi connect services”).
- ◆ If the heater is shut off while it is in the control interval, it cuts out without burn-off and run-on.
- ◆ As the supplementary heater operates when the engine is running, it is barely noticeable during heating operation. Heater run-on is audible if the engine is switched off.

## 1.5.2 Auxiliary ventilation

| No. | Operating sequence                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | <p>Cut-in signal</p> <ul style="list-style-type: none"> <li>• Signal from remote control receiver for auxiliary heater - R64- (or from a mobile phone on vehicles with “Audi connect services”).</li> <li>– Interrogation of operating and display unit for front air conditioning system - E87- (via data bus) ⇒ <a href="#">page 4</a> .</li> <li>– Activation of -E87- “On”.</li> </ul> <p>Possible deviations</p> <ul style="list-style-type: none"> <li>• -E87- determines that heating mode is required to attain the specified temperature in the passenger compartment.</li> <li>– Auxiliary heating (winter conditions)</li> </ul> |
| 2   | <p>Shut-off signal</p> <ul style="list-style-type: none"> <li>• Shut-off signal from remote control receiver for auxiliary heater - R64- (or from a mobile phone on vehicles with “Audi connect services”).</li> <li>– Information to -E87- (via data bus)</li> <li>– Activation of -E87- off</li> </ul>                                                                                                                                                                                                                                                                                                                                    |

**Note**

- ◆ *In auxiliary ventilation mode, the auxiliary heater control unit - J364- is only required to switch the signal from the remote control receiver for auxiliary heater - R64- (or from a mobile phone on vehicles with "Audi connect services") to the data bus.*
- ◆ *If auxiliary ventilation mode has been selected in the Multi Media Interface (MMI, control unit for front display and information control panel - J523- ) or if -E87- has established that the auxiliary/supplementary heating mode is not required to attain the specified temperature in the passenger compartment, the auxiliary heater control unit - J364- is not activated.*

### 1.5.3 Measured values and components monitored during operating sequence

| Measured values and components                                          | Operating sequence                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interrogation of event memory                                           | <ul style="list-style-type: none"> <li>• No entry in event memory</li> <li>– Heating mode control sequence</li> <li>• Fault-induced interlock entered</li> <li>– Termination of procedure/fault/off</li> </ul>                                                                                                                             |
| Interrogation of voltage at heater                                      | <ul style="list-style-type: none"> <li>• Voltage greater than specified shut-off voltage</li> <li>– Heating mode control sequence</li> <li>• Voltage is less than or drops below specified shut-off voltage</li> <li>– Termination of procedure (entry in event memory)/fault/off</li> </ul>                                               |
| Interrogation of information from data bus diagnostic interface - J533- | <ul style="list-style-type: none"> <li>• Voltage greater than specified shut-off voltage</li> <li>– Heating mode control sequence</li> <li>• Voltage is less than or drops below specified shut-off voltage</li> <li>– Termination of procedure (entry in event memory)/fault/off</li> </ul>                                               |
| Monitoring of all electrical components and input signals               | <ul style="list-style-type: none"> <li>• No faults detected</li> <li>– Heating mode control sequence</li> <li>• Fault detected</li> <li>– See above<br/>⇒ <a href="#">"1.4.2 Switching on auxiliary/supplementary heater", page 4</a> and<br/>⇒ <a href="#">"1.4.3 Heating mode for auxiliary/supplementary heater", page 8</a></li> </ul> |
| Interrogation of flame monitor - G64-                                   | <ul style="list-style-type: none"> <li>• Resistance of flame monitor - G64- in specified range</li> <li>– Heating mode control sequence</li> </ul>                                                                                                                                                                                         |

| Measured values and components                                   | Operating sequence                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                  | <ul style="list-style-type: none"> <li>Resistance of flame monitor - G64- outside specified range</li> <li>– Termination of process (1 x restart)</li> <li>Resistance of flame monitor - G64- outside specified range even after start repetition</li> <li>– Termination of procedure (entry in event memory)/fault/off</li> </ul> |
| Interrogation of coolant temperature in heater (less than 81 °C) | <ul style="list-style-type: none"> <li>Coolant temperature (81 °C or less)</li> <li>– Heating mode control sequence</li> </ul>                                                                                                                                                                                                     |
|                                                                  | <ul style="list-style-type: none"> <li>Coolant temperature (greater than 81 °C)</li> <li>– Switch to control interval</li> </ul>                                                                                                                                                                                                   |



#### Note

- ♦ The resistance characteristic curve of the flame monitor - G64- enables the auxiliary heater control unit - J364- to detect whether a flame has formed in the heater.
- ♦ The heater is interlocked following three consecutive unsuccessful attempted starts involving the same fault.
- ♦ If the heater has been interlocked due to a fault, the event memory must be read out and the appropriate test routines called up ⇒ Vehicle diagnostic tester ("Guided Fault Finding").

### 1.5.4 Sequence of heating mode (depending on required heating output)

- ♦ Depending on the coolant temperature, the heating output is regulated between 5 kW in full load operation and 3.9 kW, 2.5 kW and 1.8 kW in part load operation by the auxiliary heater control unit - J364-. This is equivalent to 100 % of the possible heating output in full load operation and approx. 80 %, 50 % or 35 % in part load operation  
⇒ "1.4.2 Switching on auxiliary/supplementary heater", page 4 and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- ♦ As soon as the coolant in the heater exceeds a certain temperature, the auxiliary heater control unit - J364- deactivates heating mode and the auxiliary/supplementary heater switches to the control interval  
⇒ "1.4.2 Switching on auxiliary/supplementary heater", page 4 and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").

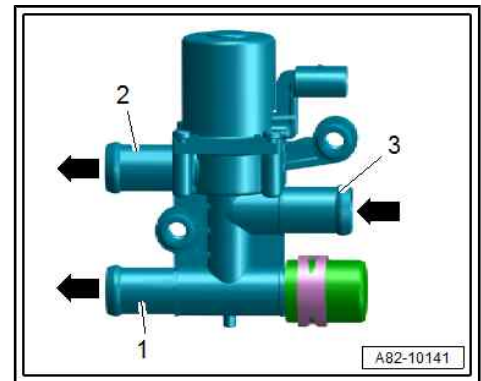
## 1.6 Operation of heater coolant shut-off valve - N279-

The heater coolant shut-off valve - N279- is activated by the auxiliary heater control unit - J364- in line with the coolant temperature and the specified request ⇒ Vehicle diagnostic tester ("Guided Fault Finding").



### Note

- ◆ Depending on the vehicle version, the sealing cap may also be fitted on connection -1-.
- ◆ If the heater coolant shut-off valve - N279- is not activated, the coolant flows via connections -2 and 3-.
- ◆ If the heater coolant shut-off valve - N279- is activated, the coolant flows via connections -1 and 3-.
- ◆ In auxiliary/supplementary heating mode, the heater coolant shut-off valve - N279- is activated permanently by the auxiliary heater control unit - J364- until the coolant temperature in the heater reaches approx. 81 °C (activation 100 %). As long as - N279- is activated, the coolant flows in the small circuit (from the auxiliary/supplementary heater, via the heater coolant shut-off valve - N279- and the heat exchangers in the heater and air conditioner unit, and back to the auxiliary/supplementary heater)  
⇒ "3 Coolant circuit with auxiliary/supplementary heater", page 88.
- ◆ If the coolant temperature in the heater is between approx. 82 °C and 88 °C, the heater coolant shut-off valve - N279- is activated by -J364- via a characteristic curve. Depending on the activation, the coolant flows in the small circuit or the large circuit (from the auxiliary/supplementary heater, via the heater coolant shut-off valve - N279- , the heat exchangers in the heater and air conditioner unit and via the engine, and back to the auxiliary/supplementary heater).
- ◆ If the coolant temperature in the heater is above approx. 88 °C, the heater coolant shut-off valve - N279- is no longer activated by the auxiliary heater control unit - J364- . The coolant flows in the large coolant circuit.
- ◆ In the auxiliary/supplementary heating mode, the coolant is conveyed via the circulation pump - V55- in the large or small coolant circuit. The circulation pump - V55- is activated by the auxiliary heater control unit - J364- .



**Note**

- ◆ *Depending on the ambient temperature and the quantity of heat emitted by the heat exchanger of the heater and air conditioner, the activation of the heater coolant shut-off valve - N279- may remain in the various operating statuses for a lengthy period.*
- ◆ *Activation of the heater coolant shut-off valve - N279- is also maintained if the engine is started with the auxiliary/supplementary heater in operation and the coolant in the engine is colder than the coolant in the auxiliary/supplementary heater.*
- ◆ *There are different versions of the heater coolant shut-off valve - N279- . Ensure correct assignment ⇒ Electronic parts catalogue .*
- ◆ *At a coolant temperature of approx. 91 °C, the auxiliary/supplementary heater switches from control mode to control interval. During the control interval, the heater coolant shut-off valve - N279- is not activated and the coolant flows in the large coolant circuit (via the engine).*
- ◆ *The display in the "Read measured values" function for activation of the heater coolant shut-off valve - N279- differs and depends on the vehicle version and the version of the auxiliary heater control unit - J364- . On this vehicle for example, currently a display of 100 % indicates that 100 % of the coolant is being delivered in the small circuit and that the heater coolant shut-off valve - N279- is being activated ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- ◆ *Depending on the vehicle version, the engine installed, the coolant temperature and the setting on the operating and display unit for front air conditioning system - E87- , the heater coolant shut-off valve - N279- may also be activated by the auxiliary heater control unit - J364- with the auxiliary/supplementary heater switched off. In this case, the activation is a response to a request from the operating and display unit for front air conditioning system - E87- or from the respective engine control unit - J623- via the data bus ⇒ Vehicle diagnostic tester ("Guided Fault Finding", "Read measured values" function).*
- ◆ *Depending on the vehicle version, the engine installed, the coolant temperature and the setting on the operating and display unit for front air conditioning system - E87- , the circulation pump - V55- may also be activated by the auxiliary heater control unit - J364- with the auxiliary/supplementary heater switched off. In this case, the activation is a response to a request from the operating and display unit for front air conditioning system - E87- or from the respective engine control unit - J623- via the data bus ⇒ Vehicle diagnostic tester ("Guided Fault Finding", "Read measured values" function).*

## 1.7 Rules for cleanliness when working on the auxiliary/supplementary heater and fuel system

- ◆ Thoroughly clean all joints and connections and the surrounding areas before disconnecting.
- ◆ Place parts that have been removed on a clean surface (use sheeting or paper, not fluffy cloths) and cover them over.
- ◆ 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).
- ◆ When fuel system is open:
  - Do not work with compressed air.
  - Do not move vehicle.
  - Do not start engine.
  - Do not switch on auxiliary/supplementary heater (also applies to switching on via “Basic setting” function of Guided Fault Finding) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
  - Further safety precautions ⇒ Rep. gr. 00 ; Safety precautions; Safety precautions when working on the fuel supply system



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## 1.8 Overview of components for auxiliary/supplementary heater in vehicle



### Note

- ◆ *Currently only the version as an auxiliary/supplementary heater is available. Operation of the auxiliary/supplementary heater as a supplementary heater is currently available for vehicles with a petrol engine or for vehicles with a diesel engine which are not fitted with an electric supplementary heater ( low heat output relay - J359- , high heat output relay - J360- and auxiliary air heater element - Z35- ) ⇒ Heating, air conditioning; Rep. gr. 87 ; Heater and air conditioning unit (front) .*
- ◆ *Vehicles with a diesel engine fitted with an auxiliary/supplementary heater as an optional extra currently have no electric supplementary heater ( low heat output relay - J359- , high heat output relay - J360- and auxiliary air heater element - Z35- ). The supplementary heating function on these vehicles is then performed by the auxiliary/supplementary heater ⇒ Heating, air conditioning; Rep. gr. 87 ; Heater and air conditioning unit (front) .*
- ◆ *Fitting locations of various relays and fuses for auxiliary/supplementary heater ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- ◆ *The Guided Fault Finding for the auxiliary/supplementary heater is performed using ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- ◆ *The Guided Fault Finding for the auxiliary/supplementary heater can only be started with the ignition switched on (the data bus diagnostic interface - J533- is only active when the ignition is on).*
- ◆ *With this version, you must make sure that it is correctly coded for the corresponding vehicle (different functions are stored in the control unit depending on the type of vehicle coded) ⇒ Electronic parts catalogue and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- ◆ *When renewing the auxiliary/supplementary heater, interrogate the encoding and adaption of the auxiliary heater control unit - J364- via the "Replace control unit" function of the Guided Fault Finding routine before removing the component ( auxiliary heater control unit - J364- is installed in heater) ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- ◆ *If the auxiliary/supplementary heater cannot be activated on a new vehicle or on a vehicle with a newly installed auxiliary/supplementary heater (depending on the version of the auxiliary heater control unit - J364- ), the component protection function may be active. If a large number of faults occurred simultaneously prior to initial commissioning, e.g. at the factory, this fault is no longer displayed although it is still active. If necessary, re-adapt the component protection function in the same way as for a newly installed auxiliary/supplementary heater to cancel the component protection ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

## 2 Safety precautions

⇒ [“2.1 Safety precautions when working on the fuel system”, page 19](#)

⇒ [“2.2 Safety precautions when working on vehicles with start/stop system”, page 19](#)

⇒ [“2.3 Safety precautions when using testers and measuring instruments during a road test”, page 20](#)

⇒ [“2.4 Safety precautions when working on the cooling system”, page 20](#)

⇒ [“2.5 Safety precautions when working on vehicles with auxiliary/supplementary heater”, page 20](#)

### 2.1 Safety precautions when working on the fuel system

#### Risk of injury - fuel system operates under high pressure

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The fuel system is pressurised. There is a risk of injury as fuel may spray out.

Before opening the fuel system:

- Put on safety goggles.
- Put on protective gloves.
- Release pressure (wrap a clean cloth around connection and open connection carefully).

#### Risk of fire due to escaping fuel

If the battery is connected, the door contact switch activates the fuel pump when the driver's door is opened. Escaping fuel may ignite, causing a fire.

- Before opening the fuel system, disconnect power supply to fuel pump.

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

#### Risk of injury - engine may start unexpectedly

The engine can start unexpectedly if the vehicle's start/stop system is activated. A message in the instrument cluster indicates whether the start/stop system is activated.

- To deactivate the start/stop system, switch off the ignition.

## 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:

### Risk of injury if test equipment is not secured

If an accident occurs and the front passenger's airbag is triggered, test equipment which is not secured adequately may be catapulted through the vehicle with potentially serious consequences.

- Secure test equipment on the rear seat with a strap.

Or

- Have a second mechanic operate test equipment on the rear seat.

## 2.4 Safety precautions when working on the cooling system

Note the following when working on the cooling system:

### Risk of scalding as hot coolant can escape

The cooling system is under pressure when the engine is hot. Risk of scalding due to hot steam and hot coolant

- Put on protective gloves.
- Put on safety goggles.
- Cover filler cap on expansion tank with a cloth and open carefully to release pressure.

## 2.5 Safety precautions when working on vehicles with auxiliary/supplementary heater

### Danger of accident and injury if the timer for the auxiliary/supplementary heater is activated

If the timer for the auxiliary/supplementary heater is activated, the auxiliary/supplementary heater may switch itself on. This may result in poisoning from exhaust gases and burn injuries from hot auxiliary/supplementary heater components; there is a risk of fire and explosion due to high temperatures.

- Deactivate timer for auxiliary/supplementary heater.

### Risk of fire and explosion from auxiliary/supplementary heater

In areas where there is a danger of fire and explosion, a fire or explosion may be caused by a spark or high temperatures in the auxiliary/supplementary heater. Risk of burn injuries.

- Switch off auxiliary/supplementary heater in areas where there is a danger of fire/explosion.

### **Risk of damage if engine is started**

If parts of the fuel system (e.g. metering pump, fuel line, fuel gauge sender) are removed or opened, there is a risk of damage to the auxiliary/supplementary heater.

- Never start the engine when parts of the fuel system are open or removed.

### **Danger from toxic exhaust gases**

Auxiliary/supplementary heater produces toxic exhaust gases. There is a risk of poisoning and of damage to the respiratory tract.

- In enclosed spaces, only switch on the auxiliary/supplementary heater if there is an exhaust extraction system.
- In enclosed spaces without an exhaust extraction system, switch off the auxiliary/supplementary heater.

### **Malfunctions due to air in fuel supply system**

After working on the fuel tank or the fuel delivery unit, the metering pump draws in air and delivers it to the auxiliary/supplementary heater. Malfunctions of the auxiliary/supplementary heater due to air in the fuel supply system for the heater are possible.

- Fill fuel take-off pipe with fuel.

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## 3 Repair instructions

⇒ [“3.1 Rules for cleanliness”, page 22](#)

⇒ [“3.2 General notes”, page 22](#)

⇒ [“3.3 General repair instructions”, page 23](#)

⇒ [“3.4 Contact corrosion”, page 24](#)

⇒ [“3.5 Checking heating output”, page 24](#)

⇒ [“3.6 Routing and attaching pipes, hoses and wiring”, page 24](#)

⇒ [“3.7 Notes on general repairs”, page 24](#)

### 3.1 Rules for cleanliness

- Thoroughly clean all joints and connections and the surrounding areas before disconnecting.
- Place parts that have been removed on a clean surface (use sheeting or paper, not fluffy cloths) and cover them over.
- 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).

When fuel system is open:

- Do not work with compressed air.
- Do not move vehicle.
- Do not start engine.
- Do not switch on auxiliary/supplementary heater (also applies to switching on via “Basic setting” function of Guided Fault Finding) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

### 3.2 General notes

⇒ [“3.2.1 General notes”, page 22](#)

⇒ [“3.2.2 Notes for vehicles with start/stop system”, page 22](#)

#### 3.2.1 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 provides information on the auxiliary/supplementary heater ⇒ [“1.1 Type plates”, page 1](#).

#### 3.2.2 Notes for vehicles with start/stop system

- ◆ A start/stop system is available as an optional extra for certain engines. Depending on the engine, vehicles with a start/stop system may not be fitted with a coolant circulation pump - V50- for the stop function ⇒ Rep. gr. 19 ; Coolant pump/thermostat assembly; Exploded view - coolant pump/thermostat .
- ◆ On vehicles with a start/stop system, activation of the coolant circulation pump - V50- (by the corresponding engine control unit - J623- or the onboard supply control unit - J519- ) and/or the circulation pump - V55- of the auxiliary/supplementary heater (by the auxiliary heater control unit - J364- ) takes place

while the stop function is active. The corresponding control unit is requested by the operating and display unit for front air conditioning system - E87- via the data bus to switch on -V50- and/or -V55- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").



#### Note

*Depending on the engine, vehicles with auxiliary/supplementary heater may be fitted with a coolant circulation pump - V55- in addition to the circulation pump - V50-. For further information, refer to ⇒ Heating, air conditioning; Rep. gr. 87 ; Coolant circuit and ⇒ Rep. gr. 19 ; Coolant pump/thermostat assembly; Exploded view - coolant pump/thermostat .*

### 3.3 General repair instructions

- ◆ Disconnect negative and positive terminals of battery - A- before starting electric welding work on the vehicle ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
- ◆ If coolant has been drained, bleed auxiliary/supplementary heater after filling cooling system ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system and ⇒ [page 104](#) .
- ◆ If parts of the fuel system have been removed or renewed, make sure that all components used for the fuel take-off to the auxiliary/supplementary heater are properly installed. The auxiliary/supplementary heater must then be switched on and operated at full load for at least 10 minutes to make sure that the fuel line is bled completely; the auxiliary/supplementary heater must be checked for correct operation.
- ◆ After performing repairs in the vicinity of the fuel line to the auxiliary/supplementary heater, check that:
  - There is no air in the fuel line to the auxiliary/supplementary heater.
  - The fuel lines are flush with the underbody and protected against mechanical damage.
  - The fuel line to the auxiliary/supplementary heater is protected against heat which could affect its operation.
  - The fuel line does not make contact with components which can become hot.
- ◆ When performing repair work in the area of the fuel delivery unit, make sure that the fuel take-off pipe for the auxiliary/supplementary heater is routed correctly in the fuel tank. If the take-off pipe is not routed correctly, the metering pump - V54- may only supply fuel if the fuel tank is completely full; if this is not the case, no fuel is supplied and the auxiliary/supplementary heater is deactivated due to a fault ⇒ [page 122](#) .
- ◆ After components of the fuel system have been removed and installed, the auxiliary/supplementary heater must be switched on and operated at full load for at least 10 minutes to make sure that the fuel line is bled completely.
- ◆ If there is not enough fuel in the fuel tank (fuel gauge in control unit in dash panel insert - J285- in "red zone"), the auxiliary heater control unit - J364- does not switch on the auxiliary/supplementary heater (activation prohibited via the data bus due to a lack of fuel).
- ◆ Prior to activation and during operation of the auxiliary/supplementary heater, the auxiliary heater control unit - J364-

interrogates the data bus diagnostic interface - J533- / battery monitor control unit - J367- via the data bus. As soon as the data bus diagnostic interface - J533- transmits a request for energy saving because the battery is no longer sufficiently charged or because the voltage of the electrical system is insufficient, the auxiliary heater control unit - J364- does not switch on the auxiliary/supplementary heater ⇒ Vehicle diagnostic tester ("Guided Fault Finding").

### 3.4 Contact corrosion

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

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 re-used, 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 Checking heating output

- ◆ Checking operation and heating output of auxiliary/supplementary heater ⇒ Vehicle diagnostic tester ("Guided Fault Finding")
- ◆ Checking heating output of heater and air conditioning unit ⇒ Heating, air conditioning; Rep. gr. 00 ; Repair instructions; Checking heating output

### 3.6 Routing and attaching pipes, hoses 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 the routing of the fuel lines and refrigerant lines. They must be inserted in the retainers provided and should not make contact with other components.

### 3.7 Notes on general repairs

- ◆ Perform self-diagnosis of auxiliary/supplementary heater using ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- ◆ If parts of the fuel system have been removed or renewed, make sure that all components used for the fuel take-off to the auxiliary/supplementary heater are properly installed.

- ◆ Before removing the coolant hoses, mark them to avoid interchanging them.

After performing repairs in the vicinity of the fuel line to the auxiliary/supplementary heater, check that:

- ◆ The fuel lines are flush with the underbody and protected against mechanical damage.
- ◆ The fuel line to the auxiliary/supplementary heater is protected against heat which could affect its operation.
- ◆ The fuel line does not make contact with components which can become hot.



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## 82 – Auxiliary heating

### 1 Overview of fitting locations - auxiliary/supplementary heater

⇒ [“1.1 Overview of fitting locations - components not located in passenger compartment”, page 26](#)

⇒ [“1.2 Overview of fitting locations - components in passenger compartment \(front\)”, page 33](#)

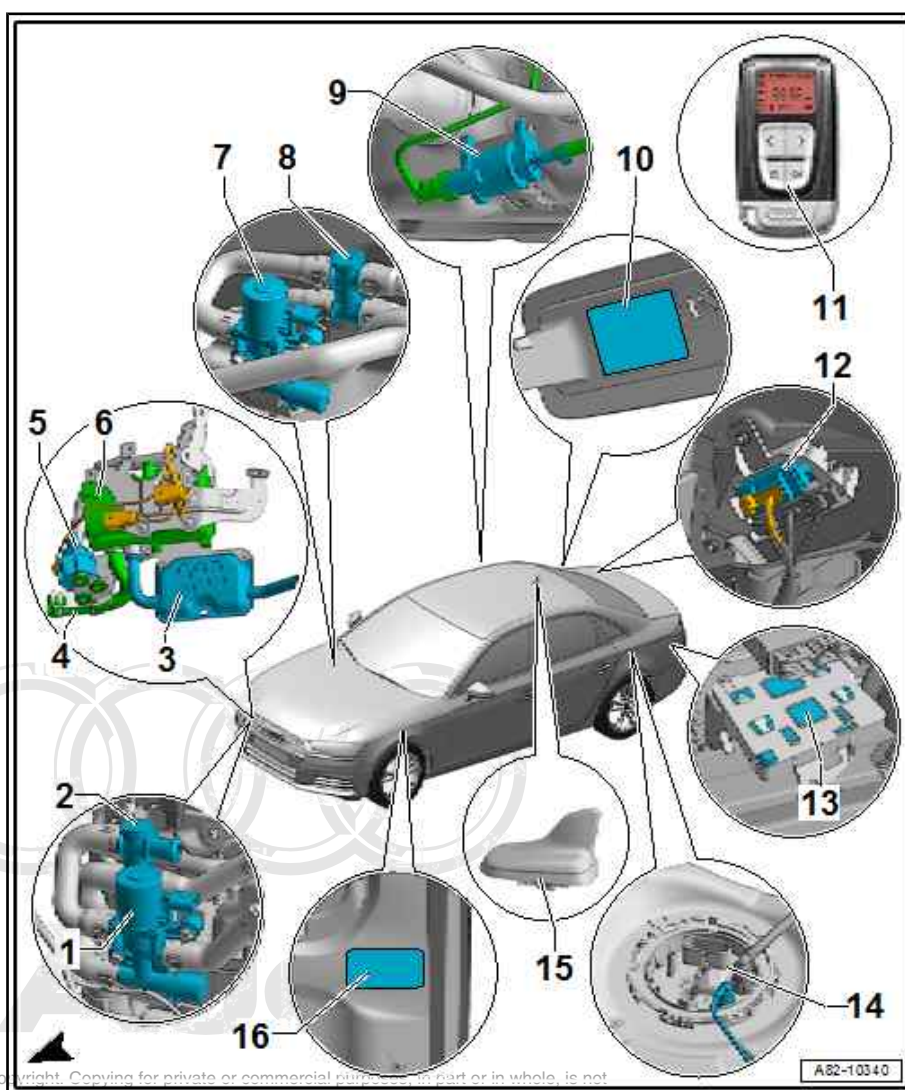
#### 1.1 Overview of fitting locations - components not located in passenger compartment

##### 1 - Heater coolant shut-off valve - N279-

- ❑ Fitting location on Audi A4 and Audi A6 models with 6-cyl. engine
- ❑ Activated in auxiliary/supplementary heating mode by auxiliary heater control unit - J364-
- ❑ Different versions. For correct version refer to ⇒ [Electronic parts catalogue](#).
- ❑ Removing and installing ⇒ [“3.2 Removing and installing heater coolant shut-off valve, operation”, page 95](#)
- ❑ Checking wiring ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)
- ❑ Operation ⇒ [“3.2.1 Operation of heater coolant shut-off valve”, page 95](#)

##### 2 - Non-return valve

- ❑ Fitting location on certain vehicles with a 6-cyl. engine
- ❑ Incorporation into coolant circuit ⇒ [“3.1 Connection diagram - coolant hoses”, page 88](#)
- ❑ Removing and installing ⇒ [“3.4 Removing and installing non-return valve for coolant”, page 106](#)



##### 3 - Exhaust silencer for auxiliary/supplementary heater

- ❑ Removing and installing ⇒ [“2.8 Removing and installing exhaust system for auxiliary/supplementary heater”, page 74](#)

**Note**

*This illustration shows the layout on an Audi A4 or Audi A5. On the Audi Q5 the layout differs slightly due to the vertically installed auxiliary/supplementary heater.*

**4 - Intake air noise insulation**

- ☐ Removing and installing ⇒ [“2.6 Removing and installing air intake silencer”, page 70](#)

**Note**

*This illustration shows the layout on an Audi A4 or Audi A5. On the Audi Q5 the layout differs slightly due to the vertically installed auxiliary/supplementary heater.*

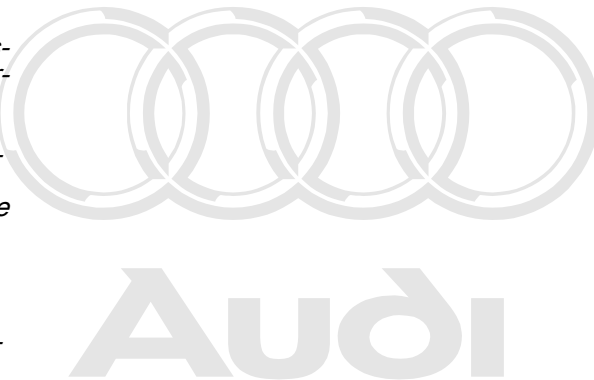
**5 - Circulation pump - V55-**

- ☐ The circulation pump - V55- is activated by the auxiliary heater control unit - J364- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations and ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- ☐ Removing and installing ⇒ [“2.7 Removing and installing circulation pump V55”, page 71](#)
- ☐ Depending on vehicle equipment, the auxiliary heater control unit - J364- may activate the circulation pump - V55- even when the auxiliary/supplementary heater is switched off due to a request received via the data bus, e.g. from the engine control unit - J623- or operating and display unit for front air conditioning system - E87- .

**Note**

◆ *On vehicles with a start/stop system, activation of the coolant circulation pump - V50- (by the corresponding engine control unit - J623- or the onboard supply control unit - J519- ) and/or the circulation pump - V55- of the auxiliary/supplementary heater (by the auxiliary heater control unit - J364- ) takes place while the stop function is active. The corresponding control unit is requested by the operating and display unit for front air conditioning system - E87- via the data bus to switch on -V50- and/or V55- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

◆ *This illustration shows the layout on an Audi A4 or Audi A5. On the Audi Q5 the layout differs slightly due to the vertically installed auxiliary/supplementary heater.*

**6 - Auxiliary/supplementary heater**

- ☐ Removing and installing  
⇒ [“2.4.1 Removing and installing auxiliary/supplementary heater - Audi A4, Audi A5”, page 51](#)
- ☐ Incorporation into coolant circuit ⇒ [“3.1 Connection diagram - coolant hoses”, page 88](#)
- ☐ Dismantling and assembling  
⇒ [“2.5 Dismantling and assembling auxiliary/supplementary heater”, page 62](#)
- ☐ Checking electrical components of auxiliary/supplementary heater ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)

- Overview of wiring and activation of auxiliary/supplementary heater  
⇒ ["2.10 Pin assignment for auxiliary/supplementary heater", page 79](#)



#### Note

- ◆ *When renewing, observe correct version (different versions for petrol and diesel engines) ⇒ [page 1](#) and ⇒ Electronic parts catalogue .*
- ◆ *This illustration shows the layout on an Audi A4 or Audi A5. On the Audi Q5 the layout differs slightly due to the vertically installed auxiliary/supplementary heater.*
- ◆ *This auxiliary/supplementary heater is fitted in various vehicle models. The part number may change with each new vehicle model on which this auxiliary/supplementary heater is installed (e.g. 4M0 xxx xxx on the Audi Q7, Audi A4, Audi A5 and Audi Q5). It is therefore important to observe the correct assignment. An old auxiliary/supplementary heater version must never be installed in a vehicle that was previously fitted with a newer version ⇒ Electronic parts catalogue .*
- ◆ *With this version, you must make sure that it is correctly coded for the corresponding vehicle (different functions are stored in the control unit depending on the type of vehicle coded) ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- ◆ *The settings for various functions of the auxiliary/supplementary heater and the heater and air conditioning unit are adjusted via the Multi Media Interface (MMI). In the event of problems with the auxiliary/supplementary heater control function or heat output, you should therefore check these settings in the MMI ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .*
- ◆ *A start/stop system is available as an optional extra for certain engines. On these versions, ensure that the correct versions of the operating and display unit for front air conditioning system - E87- and auxiliary/supplementary heater are used ⇒ Electronic parts catalogue and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

- ◆ *On vehicles with a start/stop system, activation of the coolant circulation pump - V50- (by the corresponding engine control unit - J623- or the onboard supply control unit - J519- ) and/or the circulation pump - V55- of the auxiliary/supplementary heater (by the auxiliary heater control unit - J364- ) takes place while the stop function is active. The corresponding control unit is requested by the operating and display unit for front air conditioning system - E87- via the data bus to switch on -V50- and/or -V55- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

- ◆ *If the auxiliary/supplementary heater or the auxiliary heater control unit - J364- is renewed, check the operation of at least one hand-held transmitter and re-adapt all hand-held transmitters if necessary ⇒ [page 157](#) and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

- ◆ *Checking power supply for auxiliary/supplementary heater ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

- ◆ *If the entry "Wrong control unit fitted" is displayed after renewing the auxiliary/supplementary heater or the auxiliary heater control unit - J364- , check that the auxiliary heater control unit - J364- has been coded for the correct type of fuel (diesel or petrol) and correct if necessary ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

- ◆ *Depending on the selected mode ("Auxiliary/supplementary heating" or "Auxiliary ventilation"), certain faults which impair the auxiliary/supplementary heating or the auxiliary ventilation are not stored in the event memory of the auxiliary heater control unit - J364- . Therefore, if there is a problem with the auxiliary/supplementary heater, also read out the event memory of the operating and display unit for front air conditioning system - E87- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

The auxiliary/supplementary heater is fitted with the following electrical components:

- ◆ Auxiliary heater control unit - J364-
- ◆ Temperature sensor - G18-
- ◆ Flame monitor - G64-
- ◆ Temperature sensor 2 for supplementary and auxiliary heating - G587-

- ◆ Glow plug for heater - Q9-
- ◆ Combustion air blower - V6-
- ◆ Fuel pre-heating heater element - Z66- (only with auxiliary/supplementary heater for diesel fuel)

#### 7 - Heater coolant shut-off valve - N279-

- ☐ Fitting location on Audi A4 and Audi A5 models with 4-cyl. engine and all Audi Q5 models
- ☐ Activated in auxiliary/supplementary heating mode by auxiliary heater control unit - J364- .
- ☐ Different versions. For correct version refer to ⇒ Electronic parts catalogue .
- ☐ Removing and installing  
⇒ ["3.2 Removing and installing heater coolant shut-off valve, operation", page 95](#)
- ☐ Checking wiring ⇒ Vehicle diagnostic tester ("Guided Fault Finding")
- ☐ Operation ⇒ ["3.2.1 Operation of heater coolant shut-off valve", page 95](#)

#### 8 - Non-return valve

- ☐ Fitting location on certain vehicles with a 4-cyl. engine
- ☐ Incorporation into coolant circuit ⇒ ["3.1 Connection diagram - coolant hoses", page 88](#)
- ☐ Removing and installing ⇒ ["3.4 Removing and installing non-return valve for coolant", page 106](#)

#### 9 - Metering pump - V54-

- ☐ Overview of fitting locations  
⇒ ["4.1.2 Overview of fitting locations - fuel supply system, metering pump V54 ", page 118](#)
- ☐ Fuel take-off for auxiliary/supplementary heater ⇒ ["4.2 Fuel take-off from fuel tank", page 122](#)
- ☐ Checking fuel delivery rate ⇒ ["4.6 Checking fuel delivery rate", page 134](#)
- ☐ Checking activation ⇒ Vehicle diagnostic tester ("Guided Fault Finding")
- ☐ Checking wiring ⇒ Vehicle diagnostic tester ("Guided Fault Finding")
- ☐ Some vehicle versions are fitted with noise insulation in the fuel line to the auxiliary/supplementary heater in the vicinity of the metering pump - V54- to reduce noise ⇒ ["4.7.1 General notes", page 138](#)



#### Note

*This illustration shows the layout on an Audi A4 or Audi A5. On the Audi Q5 the layout differs slightly due to a different bracket for the metering pump - V54- .*

#### 10 - Label

- ☐ On tank flap unit

#### 11 - Remote control for auxiliary/supplementary heater

- ☐ For activating and deactivating the "auxiliary/supplementary heating" or "auxiliary ventilation" function of the auxiliary/supplementary heater ⇒ ["6.3.5 Remote control for auxiliary heater", page 154](#)
- ☐ There are different versions of the remote control for auxiliary/supplementary heater (with different transmission signals, with different functions) ⇒ ["6.3.5 Remote control for auxiliary heater", page 154](#) ) ⇒ Electronic parts catalogue .
- ☐ After the battery is removed, the version of the remote control can be seen on the sticker with the part number ⇒ Electronic parts catalogue .
- ☐ Renewing battery in remote control  
⇒ ["6.3.7 Renewing battery of remote control for auxiliary heater", page 157](#)
- ☐ Adapting remote control  
⇒ ["6.3.8 Adapting remote control for auxiliary/supplementary heater", page 157](#)
- ☐ If the auxiliary/supplementary heater is renewed together with the auxiliary heater control unit - J364- , check the operation of at least one remote control and re-adapt all remote controls if necessary  
⇒ ["6.3.8 Adapting remote control for auxiliary/supplementary heater", page 157](#) and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- ☐ Indication of fault status ("Heating not possible") on display of remote control (with display)  
⇒ ["6.3.6 Display of fault conditions on remote control for auxiliary heater", page 156](#)

**Note**

- ◆ The function "Auxiliary air conditioning" ("Auxiliary/supplementary heating" or "Auxiliary ventilation") can be switched on and off via the operating and display unit for front air conditioning system - E87- , via the remote control (or via a mobile phone on vehicles with "Audi connect services") ⇒ [page 154](#) or via the Multi Media Interface (MMI, control unit for front display and information control panel - J523- ) ⇒ Infotainment/MMI Operating Manual and ⇒ [page 144](#) .
- ◆ Depending on the selected mode (*Auxiliary/supplementary heating* or *Auxiliary ventilation*), certain faults which impair the auxiliary/supplementary heating or the auxiliary ventilation are not stored in the event memory of -J364- . Therefore, if there is a problem with the auxiliary/supplementary heater, also read out the event memory of the operating and display unit for front air conditioning system - E87- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- ◆ There are different versions of the hand-held remote control transmitter and of -R64- ; ensure correct assignment of these components. Malfunctions may occur if the wrong components are installed together; refer to ⇒ ["6.3.5 Remote control for auxiliary heater", page 154](#) and ⇒ [Electronic parts catalogue](#) .

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

- ☐ Removing and installing ⇒ Communication; Rep. gr. 91 ; Telephone system; Overview of fitting locations - telephone system
- ☐ Adapting remote control for auxiliary/supplementary heater to remote control receiver for auxiliary heater - R64- ⇒ ["6.3.8 Adapting remote control for auxiliary/supplementary heater", page 157](#)
- ☐ When radio signals (switching auxiliary/supplementary heating or auxiliary ventilation on/off) are received, the remote control receiver for auxiliary heater - R64- transmits the information to the auxiliary heater control unit - J364- .
- ☐ The feedback from the remote control receiver for auxiliary heater - R64- is supplied by the auxiliary heater control unit - J364- to the hand-held remote control transmitter.
- ☐ The remote control receiver can be switched off by the auxiliary heater control unit - J364- (thus reducing the no-load current input, e.g. in transport mode, to relieve the load on the battery - A- until the vehicle is returned to the customer) ⇒ Vehicle diagnostic tester ("Guided Fault Finding", "Read measured values" function).
- ☐ In idle mode, the current input of the remote control receiver for auxiliary heater - R64- is less than 1 mA. The current input increases as soon as a transmission signal is received.



## Note

- ◆ *The function "Auxiliary air conditioning" ("Auxiliary/supplementary heating" or "Auxiliary ventilation") can be switched on and off via the operating and display unit for front air conditioning system - E87- , via the remote control (or via a mobile phone on vehicles with "Audi connect services") ⇒ [page 154](#) or via the Multi Media Interface (MMI, control unit for front display and information control panel - J523-) ⇒ [Infotainment/MMI Operating Manual and ⇒ page 144](#) .*
- ◆ *The remote control for auxiliary/supplementary heater is adapted in the remote control receiver for auxiliary heater - R64- and not in the auxiliary heater control unit - J364- .*
- ◆ *The remote control signals are only relayed by the remote control receiver for auxiliary heater - R64- . They are then processed by the auxiliary heater control unit - J364- .*
- ◆ *There are different versions of the remote control receiver for auxiliary heater - R64- and the hand-held remote control transmitter for auxiliary/supplementary heater. It is therefore important to ensure correct assignment ⇒ [page 154](#) and ⇒ [Electronic parts catalogue](#) .*
- ◆ *The hand-held remote control transmitter and the remote control receiver for auxiliary heater - R64- exchange information via the auxiliary heater aerial - R182- (fitted in the roof aerial - R216-) ⇒ [Current flow diagrams, Electrical fault finding and Fitting locations](#) .*

## 13 - Convenience system central control unit - J393-

- ☐ Activation of various vehicle systems ⇒ Vehicle diagnostic tester ("Guided Fault Finding")

## 14 - Fuel delivery unit with connection for fuel take-off for auxiliary/supplementary heater

- ☐ Different fuel delivery units depending on version of vehicle (petrol or diesel engine, front-wheel or four-wheel drive, A4, A5 or Q5) ⇒ Rep. gr. 20 ; Fuel delivery unit/fuel gauge senders; Exploded view - fuel delivery unit/fuel gauge senders
- ☐ Fuel take-off for auxiliary/supplementary heater ⇒ ["4.2 Fuel take-off from fuel tank", page 122](#)

**Note**

*After removing and installing components of the fuel system, the auxiliary/supplementary heater must be switched on and operated at full load for at least 10 minutes to ensure that the fuel line is bled completely.*

**15 - Roof aerial - R216-**

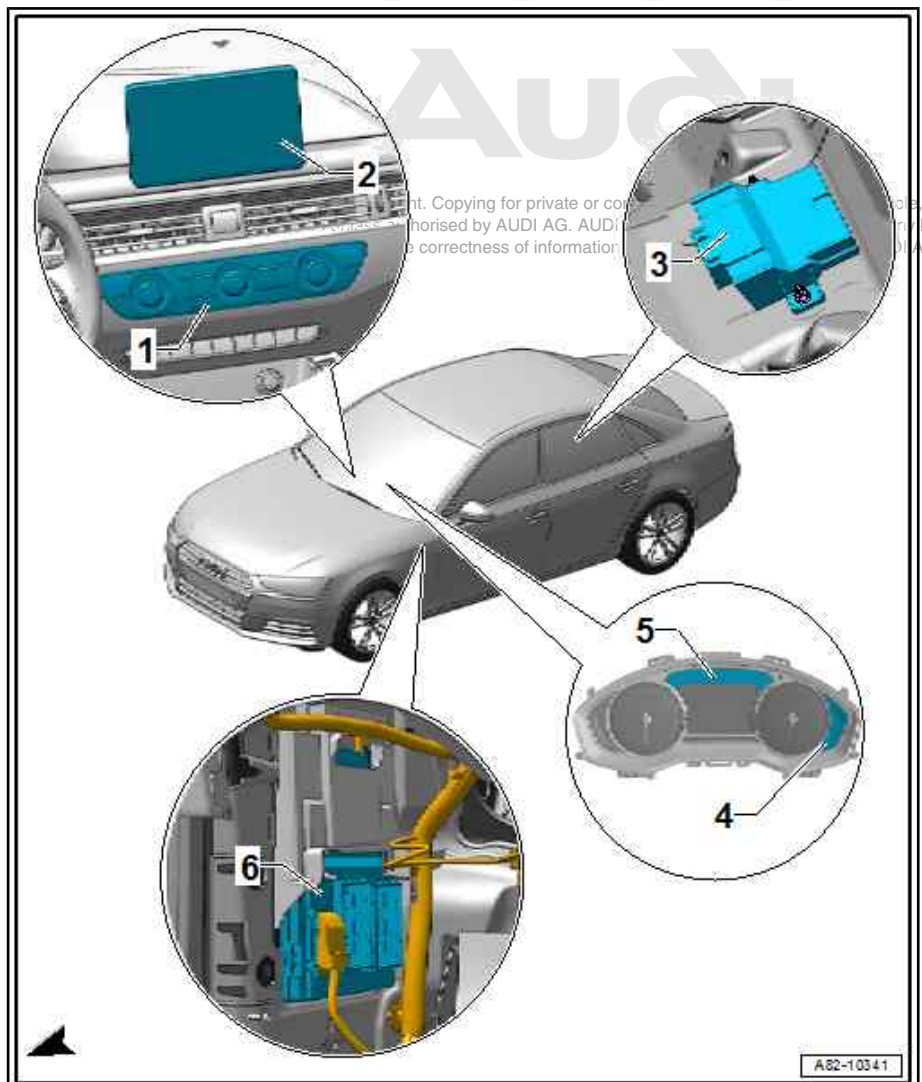
- ☐ For vehicles with remote control
- ☐ Different versions. For correct version refer to ➤ Electronic parts catalogue
- ☐ Removing and installing ➤ Communication; Rep. gr. 91 ; Aerial systems; Overview of fitting locations - aerial systems

**16 - Factory label duplicate for auxiliary/supplementary heater**

- ☐ Indicates both technical data and auxiliary/supplementary heater version.
- ☐ Bonded onto inside of bonnet

**1.2 Overview of fitting locations - components in passenger compartment (front)****1 - Operating and display unit for front air conditioning system - E87-**

- ☐ Activated via the data bus
- ☐ The settings for various functions of the auxiliary/supplementary heater and the heater and air conditioning unit are adjusted via the Multi Media Interface (MMI). In the event of problems with the auxiliary/supplementary heater control function or heat output, you should therefore check these settings in the MMI ➤ Owner's Manual , ➤ Infotainment/MMI Operating Manual and ➤ Heating, air conditioning; Rep. gr. 87 ; Operating and display unit .
- ☐ Depending on the operating status of the auxiliary/supplementary heater (auxiliary/supplementary heating mode or auxiliary ventilation mode) or on whether the timer function has been selected, one of the symbols for auxiliary/supplementary heating or auxiliary ventilation is activated permanently in the operating and display unit for front air con-



ditioning system - E87- , or both symbols flash ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

- ❑ When operating the auxiliary/supplementary heater via the "Timer" function or the remote control, this component determines the mode in which the auxiliary/supplementary heater starts up (auxiliary ventilation or auxiliary/supplementary heating) ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- ❑ For the auxiliary/supplementary heater to be activated via the "Timer" function or the remote control (hand-held transmitter), a temperature greater than "Lo" must have been set on -E87- ⇒ Heating, air conditioning; Rep. gr. 87 ; Operating and display unit .
- ❑ To de-ice the windows as quickly as possible, it is recommended to set the maximum temperature on -E87- before switching off the ignition. -E87- adopts the most recent temperature setting in auxiliary/supplementary heating mode and regulates passenger compartment temperature in line with the specified temperature setting.



#### Note

- ◆ *The function "Auxiliary air conditioning" ("Auxiliary/supplementary heating" or "Auxiliary ventilation") can be switched on and off via the operating and display unit for front air conditioning system - E87- , via the remote control (or via a mobile phone on vehicles with "Audi connect services") ⇒ [page 154](#) or via the Multi Media Interface (MMI, control unit for front display and information control panel - J523- ) ⇒ Infotainment/MMI Operating Manual and ⇒ [page 144](#) .*
- ◆ *A start/stop system is offered as an optional extra for this vehicle in combination with certain engines. On these versions, ensure that the correct versions of -E87- and of the auxiliary/supplementary heater are used ⇒ Electronic parts catalogue and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- ◆ *On vehicles with a start/stop system, the circulation pump - V55- of the auxiliary/supplementary heater is activated by the auxiliary heater control unit - J364- while the stop function is active. -J364- is requested by -E87- via the data bus to switch on the circulation pump - V55- ⇒ Vehicle diagnostic tester ("Guided Fault Finding", "Read measured values" function).*
- ◆ *Depending on the selected mode ("Auxiliary/supplementary heating" or "Auxiliary ventilation"), certain faults which impair the auxiliary/supplementary heating or the auxiliary ventilation are not stored in the event memory of the auxiliary heater control unit - J364- . Therefore, if there is a problem with the auxiliary/supplementary heater, also read out the event memory of -E87- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*



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- ◆ *There are different versions of the hand-held remote control transmitter and the remote control receiver for auxiliary heater - R64- ; make sure that these components are combined correctly with each other and with - E87- . Malfunctions may occur if the wrong components are installed together; refer to ⇒ [“6.3.5 Remote control for auxiliary heater”, page 154](#) and ⇒ [Electronic parts catalogue](#) .*
- ◆ *Additional functions of the auxiliary/supplementary heater may be controlled by the operating and display unit for front air conditioning system - E87- and control unit for front display and information control panel - J523- , depending on the version of the control units and the vehicle production period. For further information, refer to ⇒ [Owner's Manual](#) and ⇒ [Infotainment/MMI Operating Manual](#) .*

## 2 - Multi Media Interface (MMI, control unit for front display and information control panel - J523- )

- ❑ The various functions for activating the auxiliary/supplementary heater and auxiliary ventilation are entered via the Multi Media Interface (MMI, control unit for front display and information control panel - J523- ) and indicated in the corresponding display ⇒ [page 144](#) .



### Note

- ◆ *The function “Auxiliary air conditioning” (“Auxiliary/supplementary heating” or “Auxiliary ventilation”) can be switched on and off via the operating and display unit for front air conditioning system - E87- , via the remote control (or via a mobile phone on vehicles with “Audi connect services”) ⇒ [page 154](#) or via the Multi Media Interface (MMI, control unit for front display and information control panel - J523- ) ⇒ [Infotainment/MMI Operating Manual](#) and ⇒ [page 144](#) .*
- ◆ *The settings for various functions of the auxiliary/supplementary heater are adjusted via the Multi Media Interface (MMI). In the event of problems with the auxiliary/supplementary heater control function or heat output, you should therefore check these settings in the MMI ⇒ [Owner's Manual](#) and ⇒ [Infotainment/MMI Operating Manual](#) .*

- ❑ Operation of auxiliary/supplementary heater (in “Car” menu of Multi Media Interface (MMI), control unit for front display and information control panel - J523- ) and corresponding displays are described in the corresponding manual ⇒ [Infotainment/MMI Operating Manual](#) .
- ❑ If there is not enough fuel in the fuel tank (fuel gauge in red zone), the auxiliary/supplementary heater cannot be switched on (tick in Multi Media Interface (MMI, control unit for front display and information control panel - J523- ) for “Immediate auxiliary/supplementary heater activation” function and symbol for

auxiliary/supplementary heating mode in clock cannot be activated or disappear again) ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .



#### Note

- ◆ *The display of the additional functions for the auxiliary/supplementary heater and the heater and air conditioning unit depends on the encoding of the operating and display unit for front air conditioning system - E87- . If the assignment and encoding are incorrect, the various functions of the auxiliary/supplementary heater and the heater and air conditioning unit cannot be displayed or selected in the Multi Media Interface (MMI, control unit for front display and information control panel - J523- ) ⇒ Vehicle diagnostic tester ("Guided Fault Finding"), ⇒*

*Owner's Manual and ⇒ Infotainment/MMI Operating Manual .*

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- ◆ *Depending on the version of the control units and the coding of - E87- , the additional functions for the auxiliary/supplementary heater and the heater and air conditioning unit are selected and activated via the rotary pushbutton of -E87- or the operating unit of the Multi Media Interface (MMI, control unit for front display and information control panel - J523- ) ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .*
- ◆ *Depending on vehicle version, equipment, production period and the setting in the Multi Media Interface (MMI), certain auxiliary/supplementary heater functions can also be switched on and off via the programmable steering wheel button ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .*
- ◆ *Ensure correct assignment and coding of -E87- , e.g. to control unit for front display and information control panel - J523- or to control unit 1 for information electronics - J794- ⇒ Electronic parts catalogue (different versions). In the event of incorrect assignment, the various functions for the auxiliary/supplementary heater and the heater and air conditioning unit cannot be displayed and selected in the Multi Media Interface (MMI, control unit for front display and information control panel - J523- ).*

### 3 - Data bus diagnostic interface - J533-

- ☐ Checking data bus link between various control units ⇒ Vehicle diagnostic tester ("Guided Fault Finding", "Read measured values")
- ☐ Removing and installing, checking ⇒ Electrical system; Rep. gr. 97 ; Control units; Removing and installing onboard supply control unit - J519-

### 4 - Fuel gauge

- ☐ If there is not enough fuel in the fuel tank (fuel gauge in red zone), the auxiliary/supplementary heater cannot be switched on (tick in Multi Media Interface (MMI, control unit for front display and information control panel - J523- ) for "Immediate auxiliary/supplementary heater activation" function and symbol for auxiliary/supplementary heating mode in clock cannot be activated or disappear again) ⇒ Vehicle diagnostic tester ("Guided Fault Finding"), ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

### 5 - Instrument cluster display

- ☐ Installed in instrument cluster
- ☐ Depending on the operating status of the auxiliary/supplementary heater (auxiliary/supplementary heating mode or auxiliary ventilation mode) or on whether the timer function has been selected, one of the symbols for auxiliary/supplementary heating or auxiliary ventilation is activated permanently in the operating and display unit for front air conditioning system - E87- , or both symbols flash ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .
- ☐ If the vehicle is fitted with a remote control for the auxiliary/supplementary heater (currently always provided), this activates the auxiliary heater control unit - J364- . The control unit then transmits the information "Activate or deactivate auxiliary/supplementary heating or auxiliary ventilation" via the data bus to the operating and display unit for front air conditioning system - E87- ). -E87- then determines whether auxiliary/supplementary heating mode is required to attain the specified temperature or whether auxiliary ventilation mode is sufficient.



#### Note

*If the auxiliary/supplementary heater is activated via the "Timer" function or the remote control and the temperature setting on -E87- is "Lo", the auxiliary/supplementary heater only starts up if the ambient temperature is below e.g. 10 °C at the time. If the ambient temperature in this setting is above approx. 10 °C, only auxiliary ventilation mode is activated ⇒ Vehicle diagnostic tester ("Guided Fault Finding"), ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .*

### 6 - Onboard supply control unit - J519-

- ☐ Checking data bus link between various control units ⇒ Vehicle diagnostic tester ("Guided Fault Finding", "Read measured values")
- ☐ Removing and installing, checking ⇒ Electrical system; Rep. gr. 97 ; Control units; Removing and installing onboard supply control unit - J519-



Audi

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## 2 Auxiliary/supplementary heater

⇒ [“2.1 General notes”, page 39](#)

⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#)

⇒ [“2.3 Exploded view - components inside auxiliary/supplementary heater”, page 48](#)

⇒ [“2.4 Removing and installing auxiliary/supplementary heater”, page 51](#)

⇒ [“2.5 Dismantling and assembling auxiliary/supplementary heater”, page 62](#)

⇒ [“2.6 Removing and installing air intake silencer”, page 70](#)

⇒ [“2.7 Removing and installing circulation pump V55 ”, page 71](#)

⇒ [“2.8 Removing and installing exhaust system for auxiliary/supplementary heater”, page 74](#)

⇒ [“2.9 Removing and installing temperature sensor G18 and temperature sensor 2 for supplementary and auxiliary heating G587 ”, page 77](#)

⇒ [“2.10 Pin assignment for auxiliary/supplementary heater”, page 79](#)

⇒ [“2.11 Checking electrical components on auxiliary/supplementary heater”, page 80](#)

### 2.1 General notes



#### Note

- ◆ *When renewing, make sure you are installing the correct version of the auxiliary/supplementary heater (different versions for vehicles with petrol or diesel engine) ⇒ [page 3](#) and ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- ◆ *Pay attention to correct coding for the vehicle concerned (different functions are stored in the control unit depending on the type of vehicle coded) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- ◆ *Some of the auxiliary/supplementary heater components listed individually in the following exploded view are not available as separate replacement parts. They are combined in various repair sets ⇒ Electronic parts catalogue .*
- ◆ *There are different versions of the retaining clip for the temperature sensor - G18- and the temperature sensor 2 for supplementary and auxiliary heating - G587- . -J364- with part number 4xx xxx xxx must only be fitted with retaining clips with a spacer ring. It is therefore important to observe the correct assignment (matching part numbers of retaining clip and auxiliary heater control unit - J364- ) ⇒ [page 77](#) and ⇒ Electronic parts catalogue .*
- ◆ *This auxiliary/supplementary heater has different components ( auxiliary heater control unit - J364- , different glow plugs for heater - Q9- , different burner elements for diesel heaters and modified moulded seal for petrol heaters). Check the correct version and allocation of these parts prior to installation ⇒ Electronic parts catalogue .*
- ◆ *Incorporation of auxiliary/supplementary heater into vehicle electrical system ⇒ Current flow diagrams, Electrical fault finding and Fitting locations*

- ◆ *Checking components for auxiliary/supplementary heater*  
⇒ *Vehicle diagnostic tester ("Guided Fault Finding")*
- ◆ *There are different versions of the auxiliary heater control unit - J364-. These vehicles (e.g. A4, A5, Q5) must not be fitted e.g. with an auxiliary heater control unit - J364- with part number 8xx .xxx.xxx, 4Hx xxx xxx etc. In addition, the versions depend on the production period and the type of fuel (certain functions are differently matched for vehicles with petrol and diesel engine); ensure that the correct version is used*  
⇒ *"1.5 Operating sequence for auxiliary/supplementary heater", page 11* and ⇒ *Electronic parts catalogue* .

## 2.2 Overview of fitting locations - auxiliary/supplementary heater

⇒ *"2.2.1 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi A4, Audi A5", page 40*

⇒ *"2.2.2 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi Q5", page 43*

⇒ *"2.2.3 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi A4, Audi A5", page 45*

⇒ *"2.2.4 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi Q5", page 47*

### 2.2.1 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi A4, Audi A5



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**1 - Coolant hose**

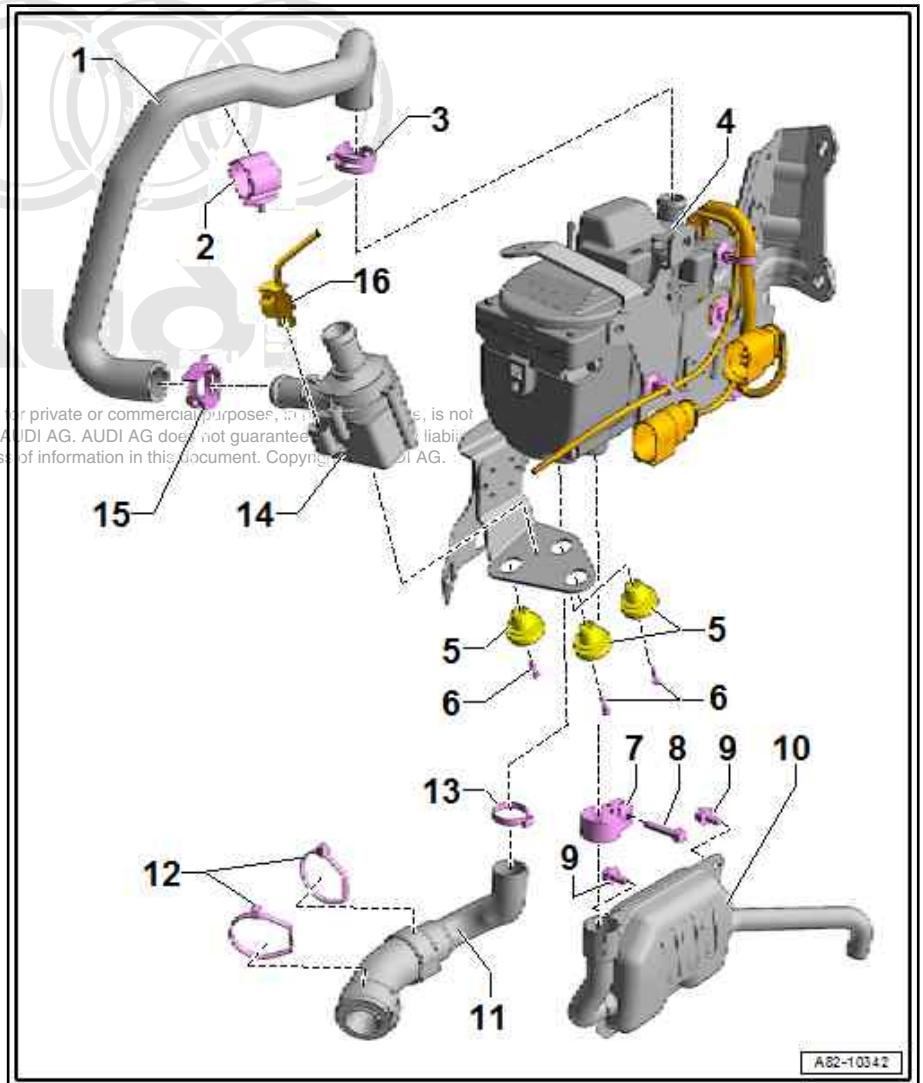
- ☐ Different versions ⇒  
Electronic parts cata-  
logue

**2 - Bracket for coolant hose****3 - Spring-type clip**

- ☐ On some coolant hose versions, the hose clips (spring-type clips) may be attached permanently to the coolant hose ⇒  
Electronic parts cata-  
logue .

**4 - Auxiliary/supplementary heater**

- ☐ With brackets  
⇒ ["2.2.3 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi A4, Audi A5", page 45](#)
- ☐ Removing and installing  
⇒ ["2.4.1 Removing and installing auxiliary/supplementary heater - Audi A4, Audi A5", page 51](#)
- ☐ Different versions. For correct version refer to ⇒  
Electronic parts cata-  
logue .
- ☐ The versions depend on the production period and the type of fuel (certain functions are differently matched for vehicles with petrol and diesel engine) ⇒ [page 1](#) and ⇒  
Electronic parts catalogue .

**5 - Rubber bush**

- ☐ 3x

**6 - Bolt**

- ☐ 3x
- ☐ 1.5 Nm

**7 - Screw-type clip****8 - Bolt**

- ☐ 8.5 Nm

**9 - Bolt**

- ☐ 2x
- ☐ 6 Nm

**10 - Exhaust silencer**

- ☐ Removing and installing  
⇒ ["2.8.1 Removing and installing exhaust system for auxiliary/supplementary heater - Audi A4, Audi A5", page 74](#)



#### Note

- ◆ *The flow of exhaust gas out of the exhaust pipe must not be obstructed.*
- ◆ *After working on the auxiliary/supplementary heater, check the end of the exhaust pipe; it must be installed so it is at a right angle to the noise insulation at the point where it passes through the noise insulation ⇒ [page 74](#) .*

### 11 - Intake air noise insulation

- ☐ Removing and installing ⇒ [“2.6 Removing and installing air intake silencer”, page 70](#)



#### Note

- ◆ *There must be an unimpeded flow of fresh air into the intake air noise insulation.*
- ◆ *Check the intake opening of the intake air noise insulation after working on the auxiliary/supplementary heater.*

### 12 - Cable ties

- ☐ 2x

### 13 - Hose clip

### 14 - Circulation pump - V55-

- ☐ Removing and installing ⇒ [“2.7 Removing and installing circulation pump V55”, page 71](#)
- ☐ Incorporation into coolant circuit ⇒ [“3.1 Connection diagram - coolant hoses”, page 88](#)

### 15 - Spring-type clip

### 16 - 3-pin connector

- ☐ To circulation pump - V55- Protected by copyright. Copying 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.
- ☐ At wiring harness for auxiliary/supplementary heater
- ☐ Pin assignment ⇒ [“2.10 Pin assignment for auxiliary/supplementary heater”, page 79](#)

## 2.2.2 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi Q5

### 1 - Coolant hose

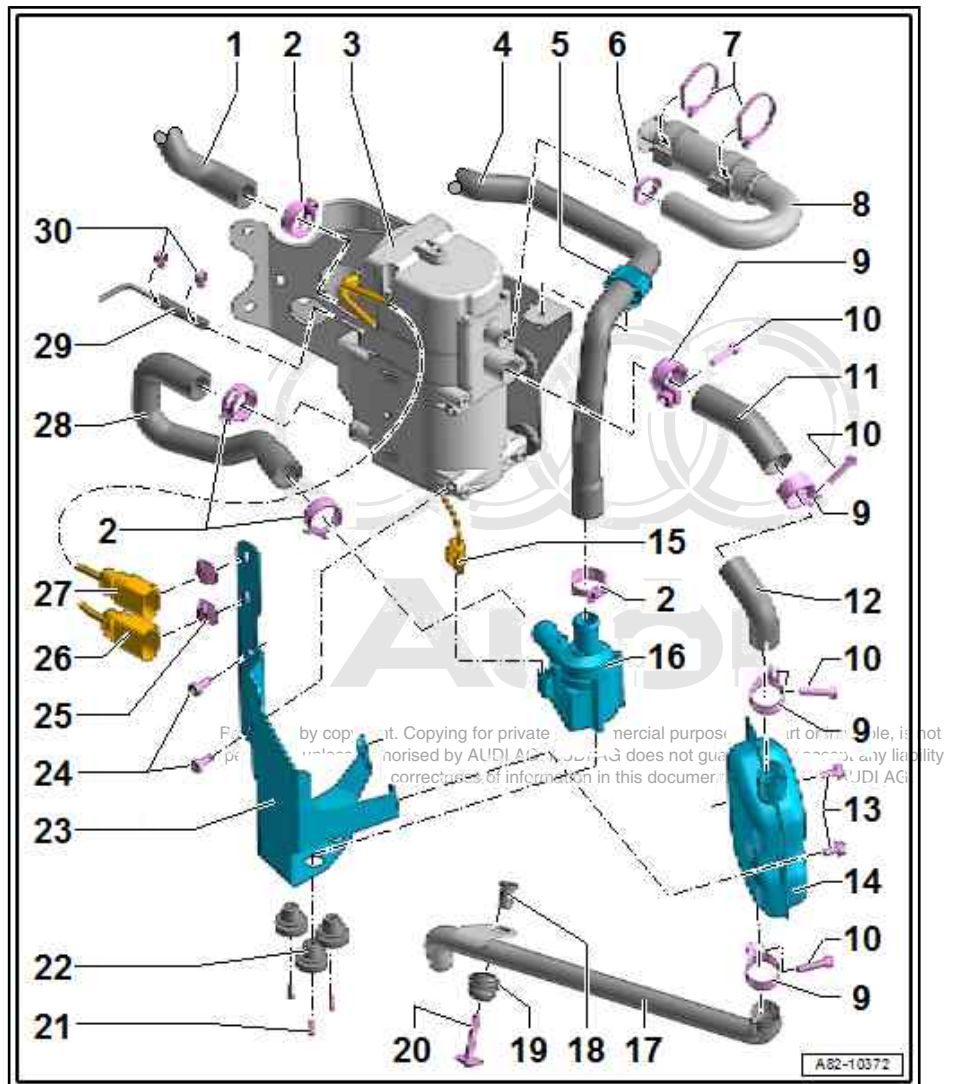
- ❑ Different versions ⇒ Electronic parts catalogue

### 2 - Spring-type clip

- ❑ On some coolant hose versions, the hose clips (spring-type clips) may be attached permanently to the coolant hose ⇒ Electronic parts catalogue .

### 3 - Auxiliary/supplementary heater

- ❑ With brackets  
⇒ [“2.2.4 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi Q5”, page 47](#)
- ❑ Removing and installing  
⇒ [“2.4.2 Removing and installing auxiliary/supplementary heater - Audi Q5”, page 57](#)
- ❑ Different versions. For correct version refer to ⇒ Electronic parts catalogue .
- ❑ The versions depend on the production period and the type of fuel (certain functions are differently matched for vehicles with petrol and diesel engine)  
⇒ [“1.1 Type plates”, page 1](#) and ⇒ Electronic parts catalogue .



### 4 - Coolant hose

- ❑ Different versions ⇒ Electronic parts catalogue

### 5 - Bracket for coolant hose

### 6 - Hose clip

### 7 - Cable ties

- ❑ 2x

### 8 - Intake air noise insulation

- ❑ Removing and installing ⇒ [“2.6 Removing and installing air intake silencer”, page 70](#)

### 9 - Screw-type clip

### 10 - Bolt

- ❑ 8.5 Nm



**11 - Exhaust flex pipe**

**12 - Exhaust pipe bend**

**13 - Bolt**

- ☐ 2x
- ☐ 6 Nm

**14 - Exhaust silencer**

- ☐ Removing and installing  
⇒ [“2.8.2 Removing and installing exhaust system for auxiliary/supplementary heater - Audi Q5”, page 76](#)

**15 - 3-pin connector**

- ☐ To circulation pump - V55-
- ☐ At wiring harness for auxiliary/supplementary heater
- ☐ Pin assignment ⇒ [“2.10 Pin assignment for auxiliary/supplementary heater”, page 79](#)

**16 - Circulation pump - V55-**

- ☐ Removing and installing ⇒ [“2.7 Removing and installing circulation pump V55”, page 71](#)
- ☐ Incorporation into coolant circuit ⇒ [“3.1 Connection diagram - coolant hoses”, page 88](#)

**17 - Exhaust pipe**

- ☐ Note assembly sequence ⇒ [page 45](#)

**18 - Sleeve**

**19 - Rubber damper**

**20 - Bolt**

- ☐ 8 Nm

**21 - Bolt**

- ☐ 3x
- ☐ 1.5 Nm

**22 - Rubber bush**

- ☐ 3x

**23 - Bracket**

**24 - Bolt**

- ☐ 8.5 Nm

**25 - Retaining clip with cable tie**

- ☐ For electrical wiring

**26 - 6-pin connector**

- ☐ To auxiliary heater control unit
- ☐ Pin assignment ⇒ [“2.10 Pin assignment for auxiliary/supplementary heater”, page 79](#)

**27 - 2-pin connector**

- ☐ Power supply for auxiliary/supplementary heater
- ☐ Pin assignment ⇒ [“2.10 Pin assignment for auxiliary/supplementary heater”, page 79](#)

**28 - Coolant hose**

- ☐ Different versions ⇒ Electronic parts catalogue

**29 - Fuel hose**

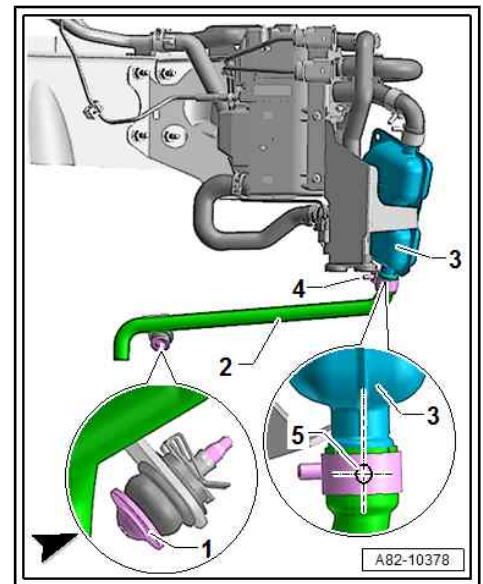
**30 - Hose clip**



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**Assembly sequence - exhaust pipe**

- Fit exhaust pipe -2- and align spot weld -5- with ridge -3- on silencer.
- Tighten bolt -1- and then bolt -4-.



### 2.2.3 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi A4, Audi A5

**1 - Bracket**

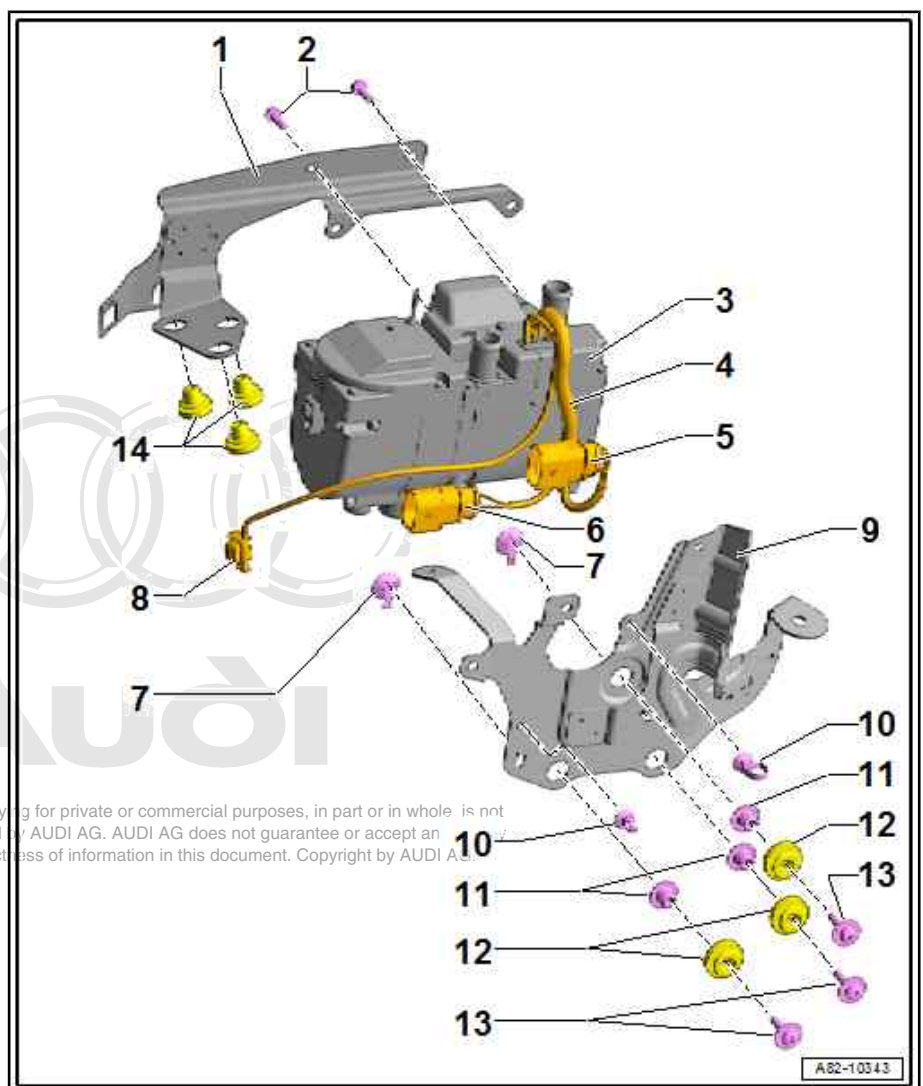
- ☐ For exhaust silencer and circulation pump - V55-

**2 - Bolt**

- ☐ 8.5 Nm

**3 - Auxiliary/supplementary heater**

- ☐ Removing and installing  
⇒ ["2.4.1 Removing and installing auxiliary/supplementary heater - Audi A4, Audi A5", page 51](#)
- ☐ Removing attachments  
⇒ ["2.2.1 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi A4, Audi A5", page 40](#)
- ☐ Different versions. For correct version refer to ⇒ Electronic parts catalogue .
- ☐ The versions depend on the production period and the type of fuel (certain functions are differently matched for vehicles with petrol and diesel engine)  
⇒ ["1.1 Type plates", page 1](#) and ⇒ Electronic parts catalogue .





#### 4 - Wiring harness for auxiliary/supplementary heater

##### 5 - 6-pin connector

- ☐ To auxiliary heater control unit
- ☐ Pin assignment ⇒ [“2.10 Pin assignment for auxiliary/supplementary heater”, page 79](#)

##### 6 - 2-pin connector

- ☐ Power supply for auxiliary/supplementary heater
- ☐ Pin assignment ⇒ [“2.10 Pin assignment for auxiliary/supplementary heater”, page 79](#)

##### 7 - Retaining clip with cable tie

- ☐ For electrical wiring

##### 8 - 3-pin connector

- ☐ To circulation pump - V55-
- ☐ Pin assignment ⇒ [“2.10 Pin assignment for auxiliary/supplementary heater”, page 79](#)

##### 9 - Bracket

- ☐ For auxiliary/supplementary heater
- ☐ Removing and installing ⇒ [“2.4.3 Removing and installing bracket”, page 62](#)

##### 10 - Bracket

- ☐ For electrical connectors

##### 11 - Guide sleeve

- ☐ 3x

##### 12 - Rubber bush

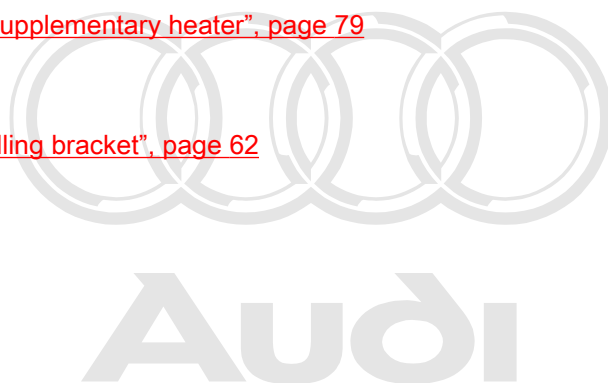
- ☐ 3x

##### 13 - Bolt

- ☐ 3x
- ☐ 6 Nm

##### 14 - Rubber bush

- ☐ 3x



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## 2.2.4 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi Q5

### 1 - Cable ties

### 2 - 6-pin connector

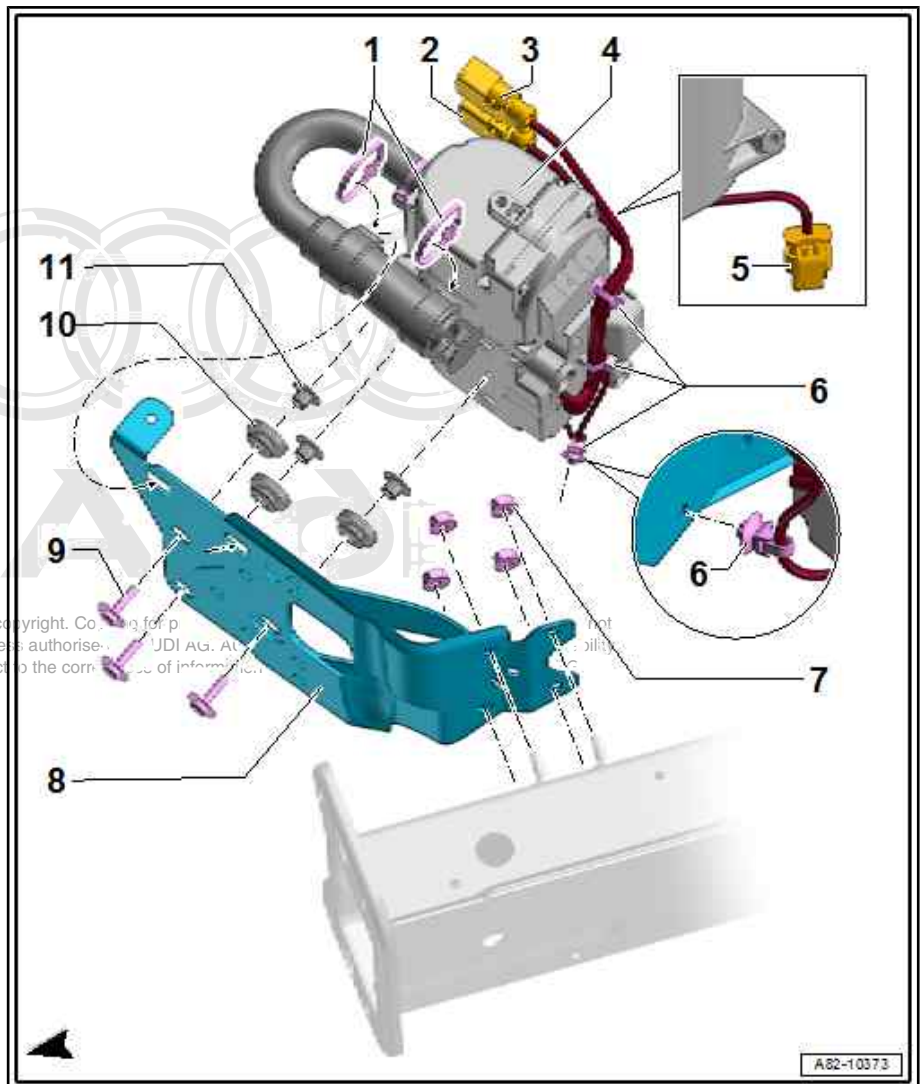
- ☐ To auxiliary heater control unit
- ☐ Pin assignment  
⇒ ["2.10 Pin assignment for auxiliary/supplementary heater", page 79](#)

### 3 - 2-pin connector

- ☐ Power supply for auxiliary/supplementary heater
- ☐ Pin assignment  
⇒ ["2.10 Pin assignment for auxiliary/supplementary heater", page 79](#)

### 4 - Auxiliary/supplementary heater

- ☐ Removing and installing  
⇒ ["2.4.2 Removing and installing auxiliary/supplementary heater - Audi Q5", page 57](#)
- ☐ Different versions. For correct version refer to ⇒ Electronic parts catalogue .
- ☐ The versions depend on the production period and the type of fuel (certain functions are differently matched for vehicles with petrol and diesel engine)  
⇒ ["1.1 Type plates", page 1](#) and ⇒ Electronic parts catalogue .



### 5 - 3-pin connector

- ☐ To circulation pump - V55-
- ☐ Pin assignment ⇒ ["2.10 Pin assignment for auxiliary/supplementary heater", page 79](#)

### 6 - Retaining clip with cable tie

- ☐ For electrical wiring

### 7 - Nut

- ☐ 3x
- ☐ 20 Nm

### 8 - Bracket

### 9 - Bolt

- ☐ 3x
- ☐ 6 Nm

### 10 - Rubber bush

- ☐ 3x

## 11 - Guide sleeve

- ☐ 3x

## 2.3 Exploded view - components inside auxiliary/supplementary heater

### 1 - Graphite seal

- ☐ Renew after removing
- ☐ Note installation position

### 2 - Flame monitor - G64-

- ☐ Removing and installing  
⇒ ["2.5.4 Removing and installing flame monitor G64", page 65](#)
- ☐ Checking ⇒ Vehicle diagnostic tester

### 3 - Heat exchanger

- ☐ Removing and installing  
⇒ ["2.5.7 Removing and installing heat exchanger", page 69](#)
- ☐ Note installation position

### 4 - Retaining clip

- ☐ For temperature sensor 2 for supplementary and auxiliary heating - G587-

### 5 - Bolt

- ☐ 3.5 Nm

### 6 - Retaining clip

- ☐ For temperature sensor - G18-
- ☐ Note installation position

### 7 - Bolt

- ☐ 3.5 Nm

### 8 - 2-pin connector

- ☐ Power supply
- ☐ At wiring harness for auxiliary/supplementary heater

### 9 - 6-pin connector

- ☐ To auxiliary heater control unit
- ☐ At wiring harness for auxiliary/supplementary heater

### 10 - Connecting element

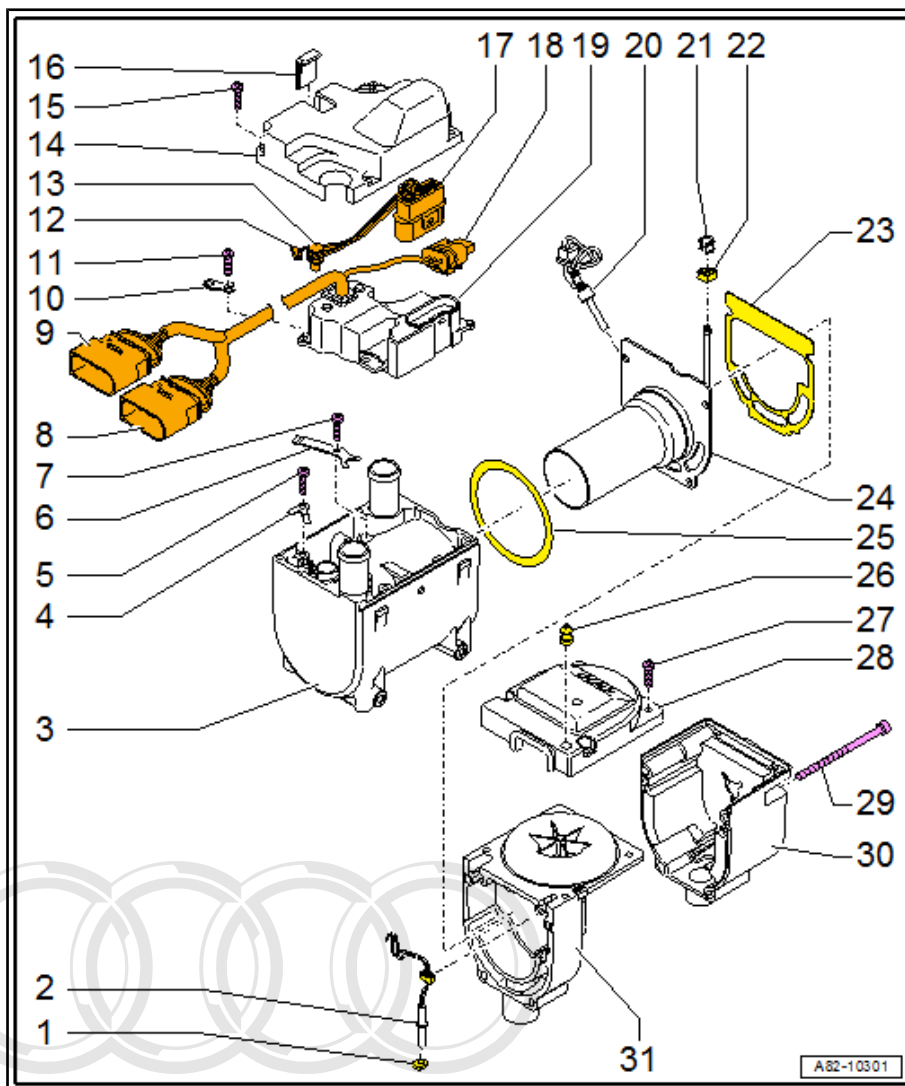
- ☐ Attached to heat exchanger housing

### 11 - Bolt

- ☐ 3.5 Nm

### 12 - Temperature sensor - G18-

- ☐ Checking ⇒ Vehicle diagnostic tester
- ☐ With O-ring (renew after removal)



- ☐ Removing and installing  
⇒ [“2.9 Removing and installing temperature sensor G18 and temperature sensor 2 for supplementary and auxiliary heating G587”, page 77](#)

### 13 - Temperature sensor 2 for supplementary and auxiliary heating - G587-

- ☐ Checking ⇒ Vehicle diagnostic tester
- ☐ Removing and installing  
⇒ [“2.9 Removing and installing temperature sensor G18 and temperature sensor 2 for supplementary and auxiliary heating G587”, page 77](#)

### 14 - Cover

- ☐ For auxiliary heater control unit - J364-
- ☐ Different versions ⇒ Electronic parts catalogue

### 15 - Bolt M4×16

- ☐ 5x
- ☐ 3 Nm

### 16 - Connection

- ☐ For routing wires in cover

### 17 - 14-pin connector

- ☐ With temperature sensor - G18- and temperature sensor 2 for supplementary and auxiliary heating - G587-
- ☐ Temperature sensors are integrated in connector and cannot be renewed separately in the event of a fault

### Contact assignment and wiring colours

- ◆ Temperature sensor - G18- : contact 10 - black, contact 11 - black
- ◆ Flame monitor - G64- : contact 1 - brown, contact 2 - brown
- ◆ Temperature sensor 2 for supplementary and auxiliary heating - G587- : contact 7 - white, contact 8 - white
- ◆ Glow plug for heater - Q9- : contact 3 - brown, contact 6 - white
- ◆ Combustion air blower - V6- : contact 13 - black, contact 14 - brown
- ◆ Fuel pre-heating heater element - Z66- : contact 9 - black, contact 12 - black

### 18 - 3-pin connector

- ☐ To circulation pump - V55-
- ☐ At wiring harness for auxiliary/supplementary heater

### 19 - Auxiliary heater control unit - J364-

- ☐ Different versions for vehicles with petrol or diesel engine. For correct version refer to ⇒ Electronic parts catalogue
- ☐ Removing and installing  
⇒ [“2.5.1 Removing and installing auxiliary heater control unit J364”, page 62](#)

### 20 - Glow plug for heater - Q9-

- ☐ Different versions. For correct version refer to ⇒ Electronic parts catalogue
- ☐ Rated voltage: 8 volts
- ☐ Checking ⇒ Vehicle diagnostic tester
- ☐ Removing and installing ⇒ [“2.5.2 Removing and installing glow plug for heater Q9”, page 63](#)

### 21 - Clip

- ☐ Cannot be renewed separately

### 22 - Seal

- ☐ Renew after removing

### 23 - Moulded gasket

- ☐ Different versions ⇒ Electronic parts catalogue
- ☐ Distinguishing features ⇒ [page 50](#)
- ☐ Renew after removing

## 24 - Burner element

- ☐ Different versions ⇒ Electronic parts catalogue
- ☐ With fuel pre-heating heater element - Z66- on vehicles with diesel engine; checking ⇒ Vehicle diagnostic tester
- ☐ If necessary, clean inside and outside with brass wire brush (spark plug brush)
- ☐ Removing and installing ⇒ ["2.5.6 Removing and installing burner element", page 68](#)

## 25 - Seal

- ☐ Renew after removing

## 26 - O-ring

- ☐ For fuel pipe
- ☐ Renew if damaged

## 27 - Bolt M4×16

- ☐ 4x
- ☐ 3 Nm

## 28 - Cover

- ☐ For combustion air blower - V6-

## 29 - Bolt M5×80

- ☐ 4x
- ☐ 6.5 Nm

## 30 - Housing

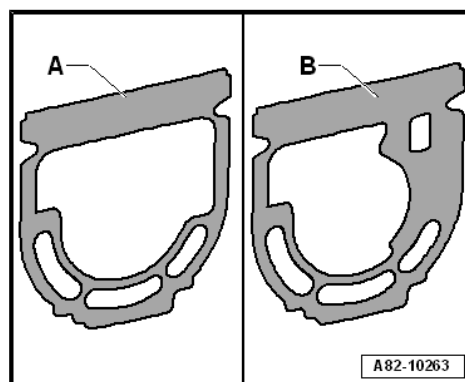
- ☐ For combustion air blower - V6-
- ☐ With connection for intake air noise insulation of auxiliary/supplementary heater  
⇒ ["2.6 Removing and installing air intake silencer", page 70](#)

## 31 - Combustion air blower - V6-

- ☐ Removing and installing ⇒ ["2.5.5 Removing and installing combustion air blower V6", page 66](#)
- ☐ Do not dismantle any further
- ☐ Connection for auxiliary/supplementary heater exhaust system  
⇒ ["2.8 Removing and installing exhaust system for auxiliary/supplementary heater", page 74](#)

## Distinguishing features of moulded gasket

- Version -A- = diesel heaters
- Version -B- = petrol heaters



## 2.4 Removing and installing auxiliary/supplementary heater

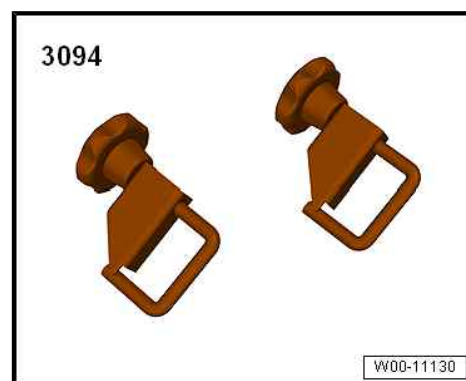
⇒ [“2.4.1 Removing and installing auxiliary/supplementary heater - Audi A4, Audi A5”, page 51](#)

⇒ [“2.4.2 Removing and installing auxiliary/supplementary heater - Audi Q5”, page 57](#)

⇒ [“2.4.3 Removing and installing bracket”, page 62](#)

### 2.4.1 Removing and installing auxiliary/supplementary heater - Audi A4, Audi A5

Special tools, testers and other devices required



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- ◆ Hose clamps up to 25 mm - 3094- (or commercially available pinch-off tools)
- ◆ Engine bung set - VAS 6122-

### Removing

- If control unit is renewed, test plan for renewal of corresponding control unit must be started before control unit is removed  
⇒ Vehicle diagnostic tester.
- Switch off ignition (and auxiliary/supplementary heater).

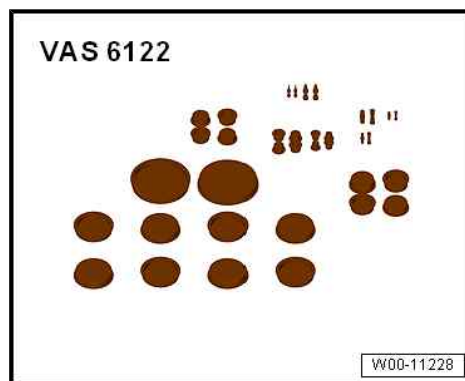


### WARNING

*The cooling system is under pressure when the engine is hot.  
Risk of scalding due to hot steam and hot coolant*

*Danger of scalding skin and other parts of the body.*

- *Put on protective gloves.*
- *Put on safety goggles.*
- *Cover filler cap on expansion tank with a cloth and open carefully to release pressure.*



- Release pressure in coolant circuit by opening cap on coolant expansion tank.
- Remove wheel housing liner (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Remove horn (right-side) ⇒ Electrical system; Rep. gr. 90 ; Horn; Removing and installing treble horn - H2- / bass horn - H7- .
- Remove exhaust system for auxiliary/supplementary heater  
⇒ ["2.8 Removing and installing exhaust system for auxiliary/supplementary heater", page 74](#) .

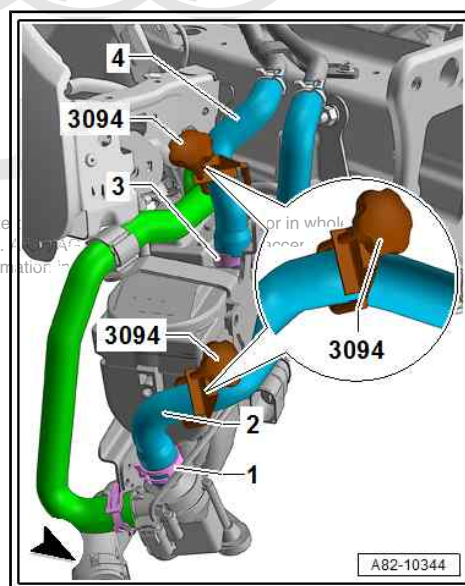
### Vehicles with 4-cyl. engine (with no heater coolant shut-off valve - N279- in vicinity of auxiliary/supplementary heater)

- Pinch off coolant hoses -2, 4- with hose clamps up to 25 mm - 3094- (or using commercially available pinch-off tools).
- Unfasten hose clips -1, 3- and detach coolant hose.



### Note

- ◆ *On some coolant hose versions, the hose clips may be attached permanently to the coolant hose ⇒ [Electronic parts catalogue](#) .*
- ◆ *Make sure that only coolant can escape from the auxiliary/supplementary heater and that the coolant circuit in the other components (engine, heat exchanger in heater and air conditioning unit etc.) remains full, so that only the auxiliary/supplementary heater has to be bled after installation ⇒ [page 104](#) .*



**Vehicles with 6-cyl. engine (with heater coolant shut-off valve - N279- -B- in vicinity of auxiliary/supplementary heater)**

- Pinch off coolant hoses -2, 4- with hose clamps up to 25 mm - 3094- (or using commercially available pinch-off tools).

 **Note**

*To enable the coolant hose -2- to be pinched off, it may first be necessary to unfasten the hose clip -1- and carefully detach the coolant hose -2- slightly from the connection at -V55- .*

- Unfasten hose clips -1, 3- and detach coolant hoses.

 **Note**

*The heater coolant shut-off valve - N279- -B- and the non-return valve -A- (if fitted) in the vicinity of the auxiliary/supplementary heater must remain in position.*

- Detach -N279- from bracket for auxiliary/supplementary heater  
⇒ ["3.2 Removing and installing heater coolant shut-off valve, operation", page 95](#) .

 **Note**

*Make sure that only coolant can escape from the auxiliary/supplementary heater and that the coolant circuit in the other components (engine, heat exchanger in heater and air conditioning unit etc.) remains full, so that only the auxiliary/supplementary heater has to be bled after installation ⇒ [page 104](#) .*

**All vehicles:**

- Unplug electrical connectors -3 and 4-.



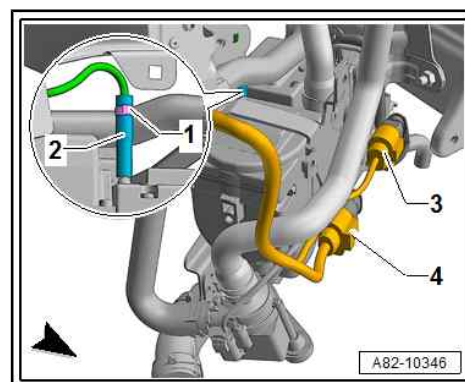
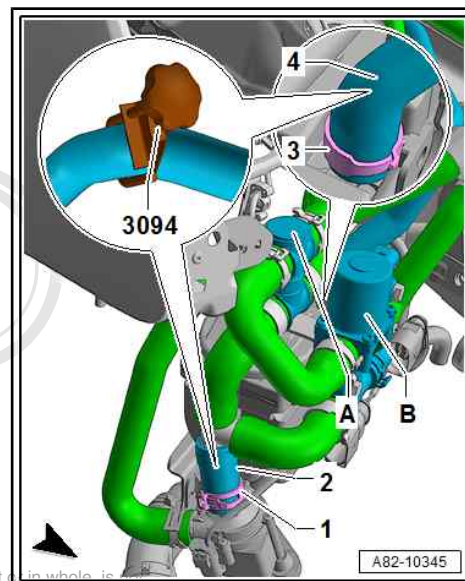
**WARNING**

*The fuel system is pressurised.*

*Risk of injury as fuel may spray out.*

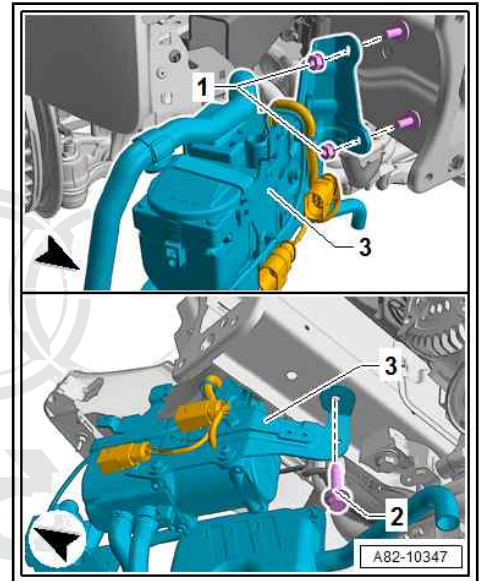
- *Put on safety goggles.*
- *Put on protective gloves.*
- *Release pressure (wrap a clean cloth around connection and open connection carefully).*

- Release hose clip -1-. Detach fuel line -2- from auxiliary/supplementary heater and seal off.

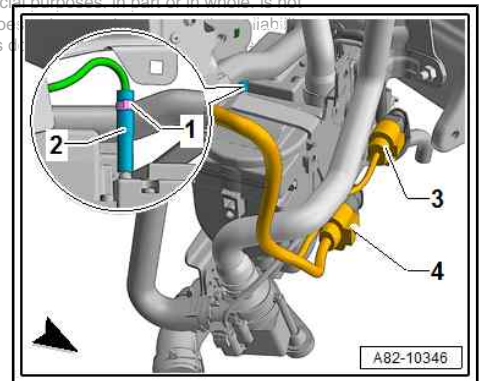




- Insert auxiliary/supplementary heater -3- with bracket.
- Screw in nuts -1- and bolts -2-.



- Press fuel line -2- on as far as possible and secure it at marked location with standard hose clip -1-. For correct type of hose clip, refer to ⇒ Electronic parts catalogue .
- Plug in electrical connectors -3, 4-.
- Fill coolant expansion tank with coolant as far as upper mark ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .



- Butt-joint coolant hose -2- onto circulation pump - V55- and secure it at marked location with standard hose clip -1-. For correct type of hose clip, refer to ➔ Electronic parts catalogue .



#### Note

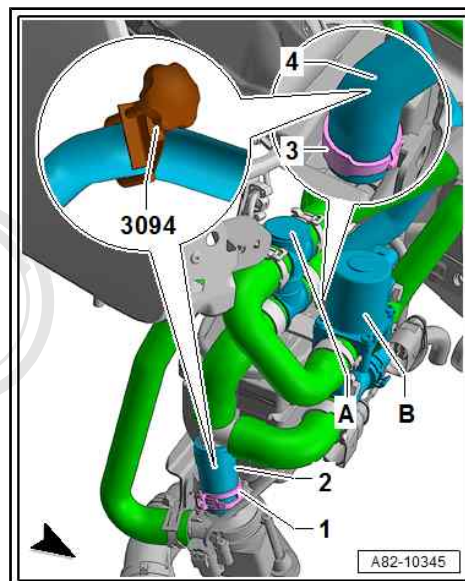
*If it is not possible to slide the pinched-off coolant hose -2- all the way onto on the connection of -V55-, start by pushing it on slightly if necessary. Then allow coolant to flow into the auxiliary/supplementary heater and, only after fitting the coolant hose -4-, remove the hose clamp up to 25 mm - 3094-, slide home the coolant hose -2- and secure with the hose clamp -1-.*

- Carefully open hose clamp up to 25 mm - 3094- at coolant hose -2- and allow coolant to flow into auxiliary/supplementary heater.

- As soon as coolant flows out of top connection for auxiliary/supplementary heater, butt-joint fuel hose -4- onto auxiliary/supplementary heater and secure it at marked location with standard hose clip -3-. For correct type of hose clip, refer to ➔ Electronic parts catalogue .

- Remove hose clamps up to 25 mm - 3094- .

- If removed previously, fit heater coolant shut-off valve - N279-B- on bracket for auxiliary/supplementary heater  
➔ [“3.2 Removing and installing heater coolant shut-off valve, operation”, page 95](#) .



#### Note

*If the coolant circuit has been drained, the circulation pump - V55- must not be started up until the coolant circuit has been filled to prevent the pump from being damaged irreparably when it is run dry.*

- Bleed coolant circuit of auxiliary/supplementary heater  
➔ [“3.3 Bleeding coolant circuit”, page 104](#) .
- Fill coolant expansion tank with coolant as far as upper mark  
➔ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .



#### Note

*Following installation, check exhaust pipe, coolant hoses, fuel line and wiring to auxiliary/supplementary heater (they must not make contact with other components).*

- Re-install components removed previously in reverse order and/or re-attach detached components.
- Check position of air intake and air intake silencer of auxiliary/supplementary heater (air inlet and exhaust outlet must not be obstructed)  
➔ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#) .
- If control unit has been renewed, test plan for renewal of control unit must be completed ➔ Vehicle diagnostic tester.
- If test plan “Replace control unit” adds more tests to the plan, these must also be performed.

- After installing auxiliary/supplementary heater, start engine and check event memory (erase any entries) ⇒ Vehicle diagnostic tester.
- It may be necessary to fill fuel line completely via function “Sub-systems, general conditions”, “Pipe filling” ⇒ Vehicle diagnostic tester.
- After renewing auxiliary/supplementary heater components, switch on auxiliary/supplementary heater and allow it to run for at least 10 minutes at full load before the vehicle is returned to the customer. There may still be traces of factory lubricant (or similar) in the components which would evaporate following initial activation as soon as the components become hot.
- After test run, check event memory again and erase it or eliminate any faults ⇒ Vehicle diagnostic tester.
- If required after renewing specific components: “Check CO<sub>2</sub> content of exhaust gas” ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ [page 130](#) .

#### Tightening torques

| Component                                                                   | Tightening torque |
|-----------------------------------------------------------------------------|-------------------|
| Bolts and nuts for securing auxiliary heater bracket to longitudinal member | 20 Nm             |

- ◆ ⇒ [“2.2.1 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi A4, Audi A5”, page 40](#)

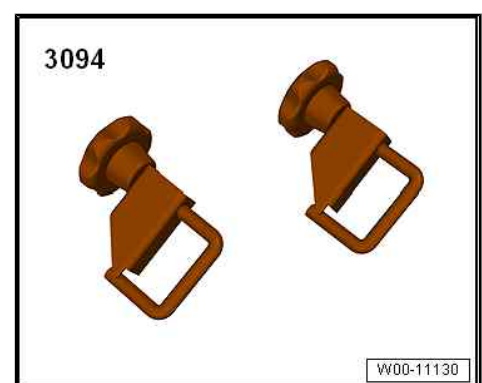
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front)

- ◆ ⇒ Electrical system; Rep. gr. 90 ; Horn; Exploded view - horn

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## 2.4.2 Removing and installing auxiliary/supplementary heater - Audi Q5

#### Special tools, testers and other devices required



- ◆ Hose clamps up to 25 mm - 3094- (or commercially available pinch-off tools)
- ◆ Engine bung set - VAS 6122-

### Removing

- If control unit is renewed, test plan for renewal of corresponding control unit must be started before control unit is removed  
⇒ Vehicle diagnostic tester.
- Switch off ignition (and auxiliary/supplementary heater).

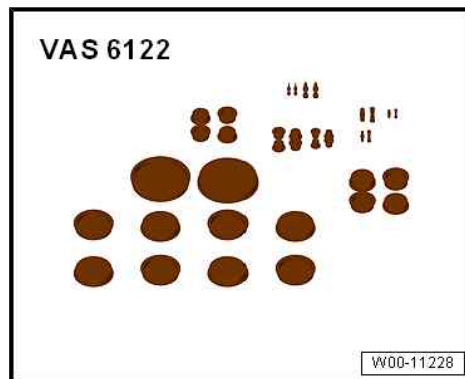


### WARNING

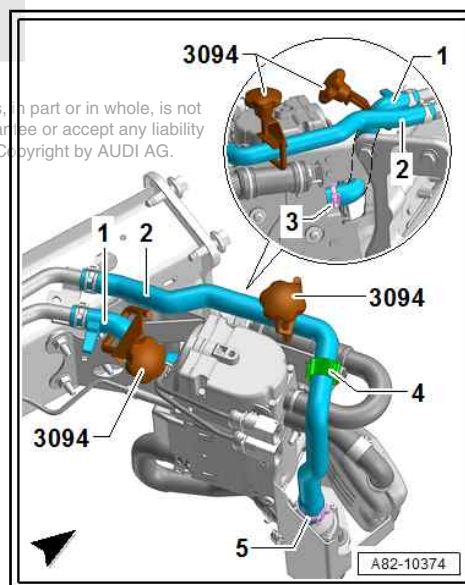
*The cooling system is under pressure when the engine is hot.  
Risk of scalding due to hot steam and hot coolant*

*Danger of scalding skin and other parts of the body.*

- *Put on protective gloves.*
- *Put on safety goggles.*
- *Cover filler cap on expansion tank with a cloth and open carefully to release pressure.*



- Release pressure in coolant circuit by opening cap on coolant expansion tank.
- Remove wheel housing liner and wheel spoiler (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Remove air intake grille (front right) ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Exploded view - bumper cover .
- Pinch off coolant hoses -1, 2- with hose clamps up to 25 mm - 3094- (or using commercially available pinch-off tools).
- Release hose clips -3, 5- and open bracket -4-.
- Detach coolant hoses -1, 2-.



- Unplug electrical connectors -3 and 4-.

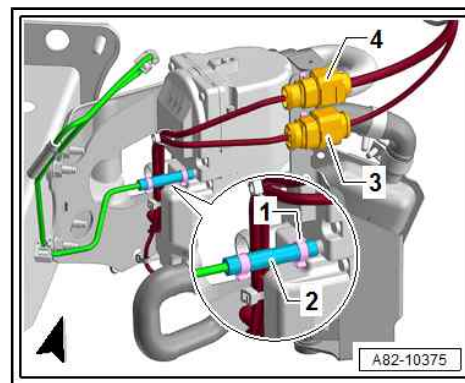


## WARNING

*The fuel system is pressurised.*

*Risk of injury as fuel may spray out.*

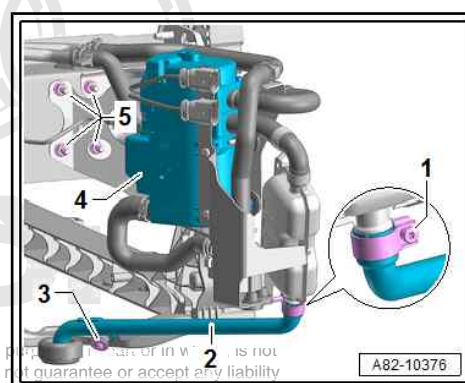
- *Put on safety goggles.*
- *Put on protective gloves.*
- *Release pressure (wrap a clean cloth around connection and open connection carefully).*



- Release hose clip -1-, detach fuel line -2- from auxiliary/supplementary heater and seal off.
- Remove bolt -3- for exhaust pipe.
- Loosen bolt -1- and detach exhaust pipe -2-.
- Unscrew nuts -5- and remove auxiliary heater.

## Installing

Installation is carried out in reverse order; note the following:

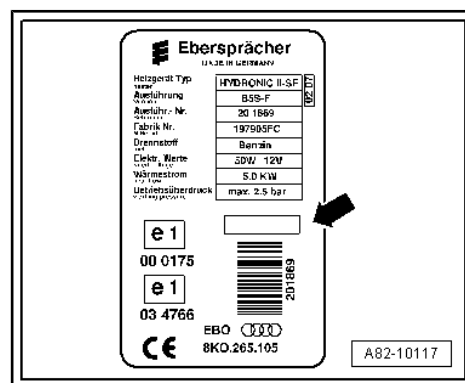


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## Note

- ◆ *When renewing, make sure you install the correct auxiliary/supplementary heater version (different versions for vehicles with petrol or diesel engine) ⇒ "1.1 Type plates", page 1 .*
- ◆ *If the auxiliary/supplementary heater has been renewed, the year of initial commissioning for the newly installed heater must be entered on the heater type plate -arrow- and on the new "duplicate type plate" (illustration shows type plate for an auxiliary/supplementary heater in a vehicle with petrol engine, as used at the start of production).*
- ◆ *This auxiliary/supplementary heater is fitted in various vehicle models. The part number may change with each new vehicle model on which this auxiliary/supplementary heater is installed (e.g. 4M0 xxx xxx on the Audi Q7, Audi A4, Audi A5 and Audi Q5). It is therefore important to observe the correct assignment. An old auxiliary/supplementary heater version must never be installed in a vehicle that was previously fitted with a newer version ⇒ Electronic parts catalogue .*
- ◆ *If the assignment of -J364- (type plate) differs from that displayed by the vehicle diagnostic tester, check the display in the "Read measured values" function ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

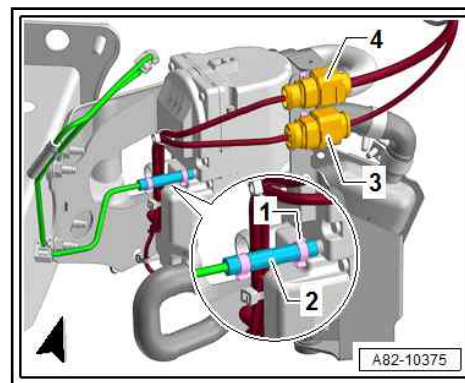




- Push on fuel line -2- as far as it will go and secure at marked location with hose clip -1-.
- Plug in electrical connectors -3, 4-.
- Fill coolant expansion tank with coolant as far as upper mark  
⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

**Note**

*If the coolant circuit has been drained, the circulation pump - V55- must not be started up until the coolant circuit has been filled to prevent the pump from being damaged irreparably when it is run dry.*



- Bleed coolant circuit of auxiliary/supplementary heater  
⇒ [“3.3 Bleeding coolant circuit”, page 104](#) .
- Fill coolant expansion tank with coolant as far as upper mark  
⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

**Note**

*Following installation, check exhaust pipe, coolant hoses, fuel line and wiring to auxiliary/supplementary heater (they must not make contact with other components).*

- Re-install components removed previously in reverse order and/or re-attach detached components.
- Check position of air intake and air intake silencer of auxiliary/supplementary heater (air inlet and exhaust outlet must not be obstructed)  
⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#) .
- If control unit has been renewed, test plan for renewal of control unit must be completed ⇒ Vehicle diagnostic tester.
- If test plan “Replace control unit” adds more tests to the plan, these must also be performed.
- After installing auxiliary/supplementary heater, start engine and check event memory (erase any entries) ⇒ Vehicle diagnostic tester.
- It may be necessary to fill fuel line completely via function “Sub-systems, general conditions”, “Pipe filling” ⇒ Vehicle diagnostic tester.
- After renewing auxiliary/supplementary heater components, switch on auxiliary/supplementary heater and allow it to run for at least 10 minutes at full load before the vehicle is returned to the customer. There may still be traces of factory lubricant (or similar) in the components which would evaporate following initial activation as soon as the components become hot.
- After test run, check event memory again and erase it or eliminate any faults ⇒ Vehicle diagnostic tester.
- If required after renewing specific components: “Check CO<sub>2</sub> content of exhaust gas” ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and  
⇒ [“4.5 Checking CO<sub>2</sub> content in exhaust gas of auxiliary/supplementary heater”, page 130](#) .

## Tightening torques

- ◆ ⇒ [“2.2.4 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi Q5”, page 47](#)
- ◆ ⇒ [“2.2.2 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi Q5”, page 43](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front)

## 2.4.3 Removing and installing bracket

### Removing

- Remove auxiliary/supplementary heater  
⇒ [“2.4 Removing and installing auxiliary/supplementary heater”, page 51](#) .
- Detach attachments from auxiliary/supplementary heater  
⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#) .
- Detach bracket from auxiliary/supplementary heater  
⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#) .

### Installing

Installation is carried out in reverse sequence.

## Tightening torques

- ◆ ⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#)
- ◆ ⇒ [“2.4.1 Removing and installing auxiliary/supplementary heater - Audi A4, Audi A5”, page 51](#)

## 2.5 Dismantling and assembling auxiliary/supplementary heater

⇒ [“2.5.1 Removing and installing auxiliary heater control unit J364”, page 62](#)

⇒ [“2.5.2 Removing and installing glow plug for heater Q9”, page 63](#)

⇒ [“2.5.3 Removing and installing fuel pre-heating heater element Z66”, page 65](#)

⇒ [“2.5.5 Removing and installing combustion air blower V6”, page 66](#)

⇒ [“2.5.6 Removing and installing burner element”, page 68](#)

⇒ [“2.5.7 Removing and installing heat exchanger”, page 69](#)

### 2.5.1 Removing and installing auxiliary heater control unit - J364-

#### Special tools and workshop equipment required

- ◆ Release tool - VAS 1978/18-

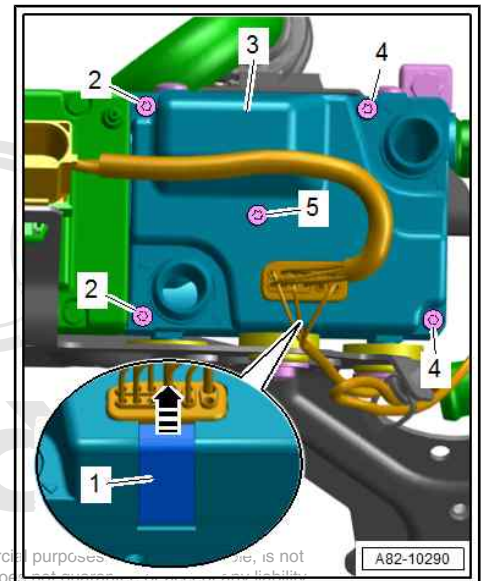


#### Note

Select the “Replace control unit” function for the control unit if it is being renewed ⇒ Vehicle diagnostic tester.

## Removing

- Remove auxiliary/supplementary heater  
⇒ [“2.4 Removing and installing auxiliary/supplementary heater”, page 51](#) .
- Detach attachments from auxiliary/supplementary heater  
⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#) .
- Detach bracket from auxiliary/supplementary heater  
⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#) .
- Release connection -1- and detach upwards -arrow-.
- Remove bolts -2, 4, 5-.
- Detach cover -3- and guide out wiring harness.



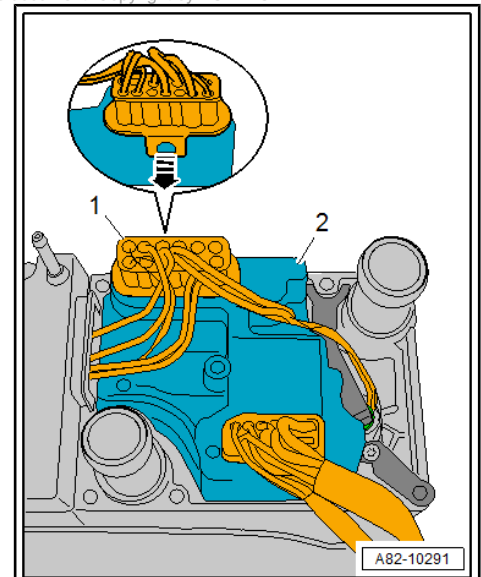
- Release fastener -arrow- and unplug electrical connector -1-.
- Detach auxiliary heater control unit -2-.

## Installing

Install in reverse order of removal; note the following.

### Tightening torques

- ◆ ⇒ [“2.3 Exploded view - components inside auxiliary/supplementary heater”, page 48](#)
- ◆ ⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#)
- ◆ ⇒ [“2.4.1 Removing and installing auxiliary/supplementary heater - Audi A4, Audi A5”, page 51](#)



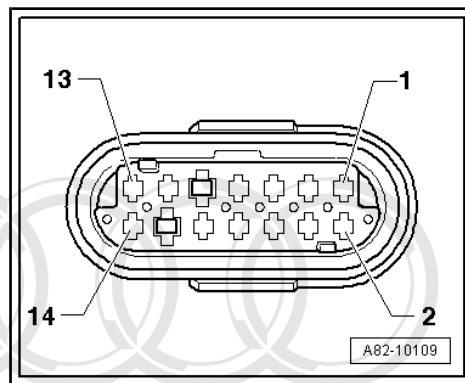
## 2.5.2 Removing and installing glow plug for heater - Q9-

### Special tools and workshop equipment required

- ◆ Release tool - VAS 1978/18-

## Removing

- Remove auxiliary/supplementary heater  
⇒ ["2.4 Removing and installing auxiliary/supplementary heater", page 51](#) .
- Detach attachments from auxiliary/supplementary heater  
⇒ ["2.2 Overview of fitting locations - auxiliary/supplementary heater", page 40](#) .
- Detach bracket from auxiliary/supplementary heater  
⇒ ["2.2 Overview of fitting locations - auxiliary/supplementary heater", page 40](#) .
- Remove combustion air blower  
⇒ ["2.5.5 Removing and installing combustion air blower V6 ", page 66](#) .
- Unpin electrical wires from contacts 3 and 6 of connector housing.
- Vehicles with TDI engine: Pull wires -C- for fuel pre-heating heater element - Z66- out of seal -A- towards one side.
- Pull glow plug for heater - Q9- -B- out of burner element -D-



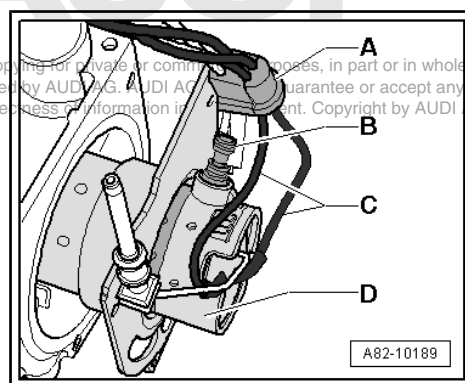
## Installing

Install in reverse order of removal; note the following.



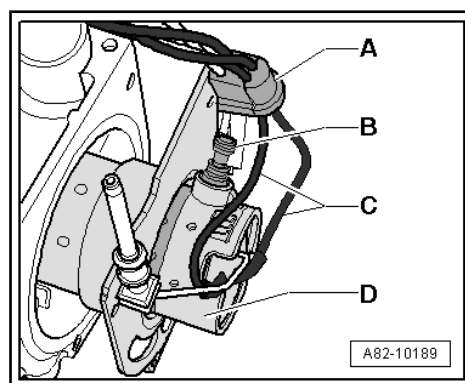
### Note

- ◆ *There are different versions of the glow plug for heater - Q9-. It is therefore important to observe the correct assignment ⇒ Electronic parts catalogue .*
- ◆ *If the glow plug for heater - Q9- is faulty, check and clean the burner element. Renew the burner element if deposits have formed which affect heating operation and cannot be removed with workshop equipment.*
- ◆ *Before fitting, check the leads to the glow plug for heater - Q9-. They must not be damaged or show signs of overheating (risk of short circuit).*
- Ensure that wires to glow plug for heater - Q9- -B- and wires -C- to fuel pre-heating heater element - Z66- are correctly routed and attached, and check position of seal -A-.



## Tightening torques

- ◆ ⇒ ["2.3 Exploded view - components inside auxiliary/supplementary heater", page 48](#)
- ◆ ⇒ ["2.2 Overview of fitting locations - auxiliary/supplementary heater", page 40](#)
- ◆ ⇒ ["2.4.1 Removing and installing auxiliary/supplementary heater - Audi A4, Audi A5", page 51](#)



## 2.5.3 Removing and installing fuel pre-heating heater element - Z66-



### Note

Only fitted on vehicles with auxiliary/supplementary heater version for diesel fuel.

The fuel pre-heating heater element is located in the burner element and cannot be renewed separately in the event of a fault.

- Remove auxiliary/supplementary heater  
⇒ [“2.4 Removing and installing auxiliary/supplementary heater”, page 51](#) .
- Detach attachments from auxiliary/supplementary heater  
⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#) .
- Detach bracket from auxiliary/supplementary heater  
⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#) .
- Removing and installing burner element  
⇒ [“2.5.6 Removing and installing burner element ”, page 68](#)

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### Tightening torques

- ◆ ⇒ [“2.3 Exploded view - components inside auxiliary/supplementary heater”, page 48](#)
- ◆ ⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#)
- ◆ ⇒ [“2.4.1 Removing and installing auxiliary/supplementary heater - Audi A4, Audi A5”, page 51](#)

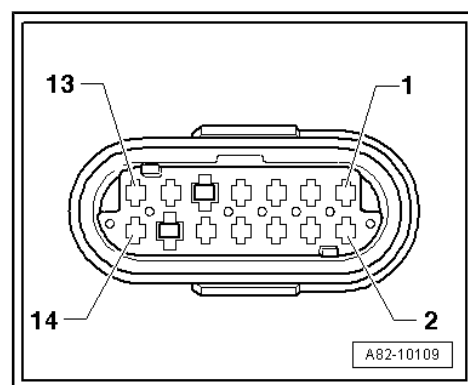
## 2.5.4 Removing and installing flame monitor - G64-

### Special tools and workshop equipment required

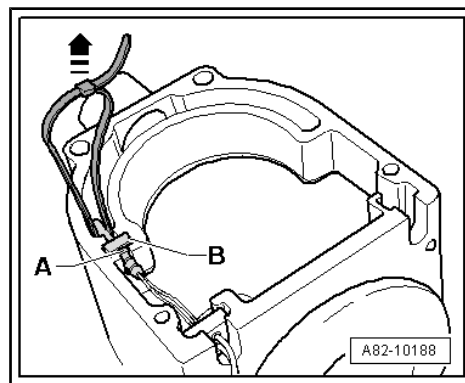
- ◆ Release tool - VAS 1978/18-

### Removing

- Remove auxiliary/supplementary heater  
⇒ [“2.4 Removing and installing auxiliary/supplementary heater”, page 51](#) .
- Detach attachments from auxiliary/supplementary heater  
⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#) .
- Detach bracket from auxiliary/supplementary heater  
⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#) .
- Remove combustion air blower  
⇒ [“2.5.5 Removing and installing combustion air blower V6 ”, page 66](#) .
- Unpin electrical wires from contacts 1 and 2 of connector housing.



- Use a commercially available cable tie to pull flame monitor - V6- -A- together with graphite seal -B- out of housing for combustion air blower - G64- -arrow-.



## Installing

Install in reverse order of removal; note the following.

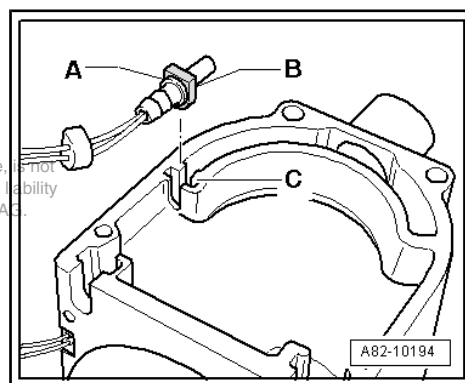


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**Renew seals after removing.**

- Fit new graphite seal -B- on flame monitor - G64- -A-.
- The burrless side of the graphite seal must face the collar of the flame monitor - G64- .
- Insert flame monitor - G64- in groove -item C- in housing for combustion air blower - V6- .



### Caution

*The sealing surfaces may become damaged.*

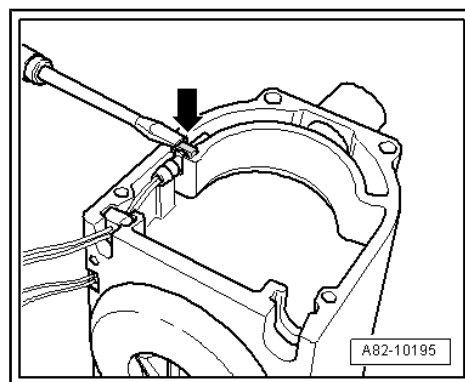
*This may lead to heater malfunctions.*

*Do not use any other sharp-edged tools.*

- Use a screwdriver to press in graphite seal in direction of -arrow-.

## Tightening torques

- ◆ ⇒ [“2.3 Exploded view - components inside auxiliary/supplementary heater”, page 48](#)
- ◆ ⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#)
- ◆ ⇒ [“2.4.1 Removing and installing auxiliary/supplementary heater - Audi A4, Audi A5”, page 51](#)



## 2.5.5 Removing and installing combustion air blower - V6-

### Special tools and workshop equipment required

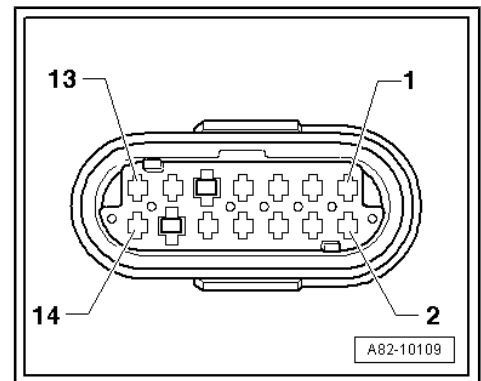
- ◆ Release tool - VAS 1978/18-

### Removing

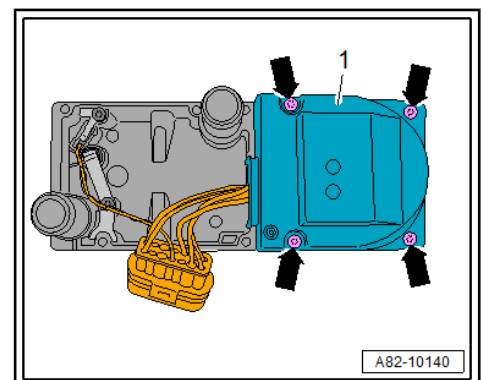
- Remove auxiliary/supplementary heater  
⇒ [“2.4 Removing and installing auxiliary/supplementary heater”, page 51](#) .

- Detach attachments from auxiliary/supplementary heater  
⇒ ["2.2 Overview of fitting locations - auxiliary/supplementary heater", page 40](#) .
- Detach bracket from auxiliary/supplementary heater  
⇒ ["2.2 Overview of fitting locations - auxiliary/supplementary heater", page 40](#) .
- Remove auxiliary heater control unit  
⇒ ["2.5.1 Removing and installing auxiliary heater control unit J364", page 62](#) .
- If renewing combustion air blower: Unpin electrical wires from contacts 13 and 14 of connector housing.

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- Remove bolts -arrows-.
- Detach cover -1-.

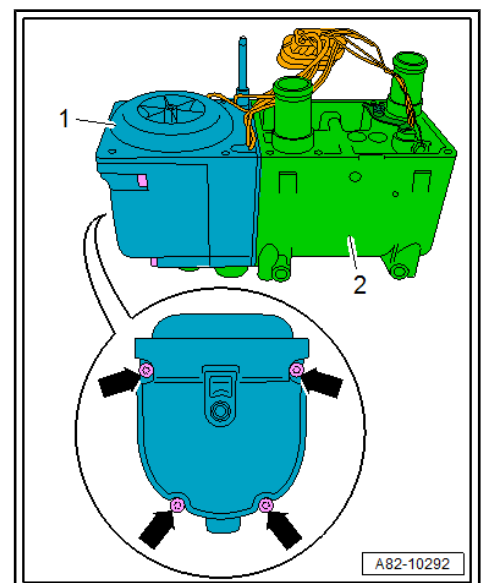


- Remove bolts -arrows-.
- Detach combustion air blower -1- from heat exchanger -2-.



#### Note

*The burner element must be detached if it is still secured to the combustion air blower.*



- Detach cover -1- from combustion air blower -2- in direction of -arrow-.
- If renewing combustion air blower, also remove the following components:
- ♦ Flame monitor ⇒ [page 65](#)

### Installing

Install in reverse order of removal; note the following.



#### Note

*Renew seals after removing.*

### Tightening torques

- ♦ ⇒ ["2.3 Exploded view - components inside auxiliary/supplementary heater", page 48](#)
- ♦ ⇒ ["2.2 Overview of fitting locations - auxiliary/supplementary heater", page 40](#)
- ♦ ⇒ ["2.4.1 Removing and installing auxiliary/supplementary heater - Audi A4, Audi A5", page 51](#)

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## 2.5.6 Removing and installing burner element

### Removing

- Remove auxiliary/supplementary heater  
⇒ ["2.4 Removing and installing auxiliary/supplementary heater", page 51](#) .
- Detach attachments from auxiliary/supplementary heater  
⇒ ["2.2 Overview of fitting locations - auxiliary/supplementary heater", page 40](#) .
- Detach bracket from auxiliary/supplementary heater  
⇒ ["2.2 Overview of fitting locations - auxiliary/supplementary heater", page 40](#) .
- Remove combustion air blower ⇒ [page 66](#) .
- Remove glow plug for heater - Q9- ⇒ [page 63](#) .
- Pull burner element -B- out of heat exchanger -A-.

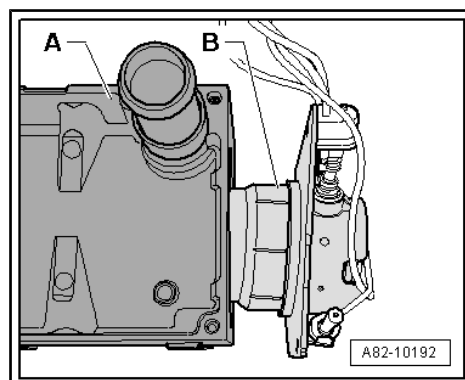
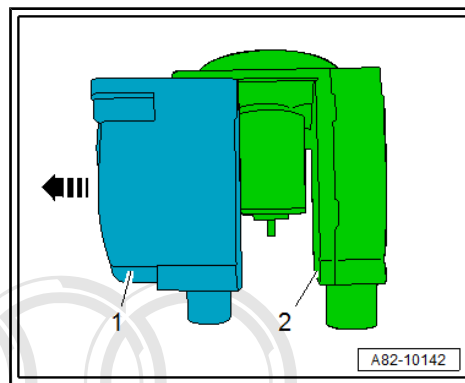
### Installing

Install in reverse order of removal; note the following.



#### Note

- ♦ *Renew seals after removing.*
- ♦ *If the burner element is faulty, also renew the glow plug for heater - Q9- .*

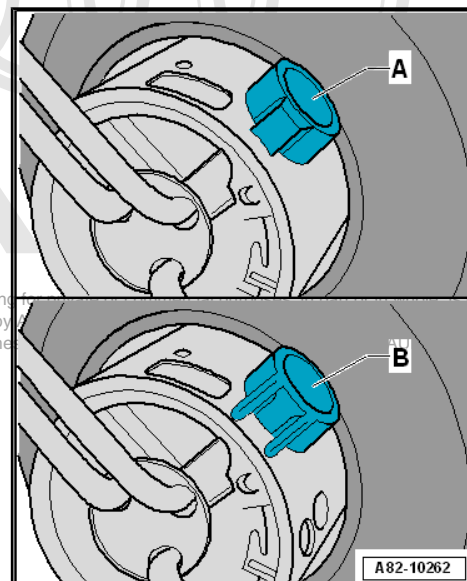


There are different versions of the burner element for diesel heaters (versions -A- and -B-). You can tell the difference by looking at the connection piece for the glow plug for heater - Q9-. Version -B- is fitted on these vehicles with diesel heaters ⇒ Electronic parts catalogue .



#### Note

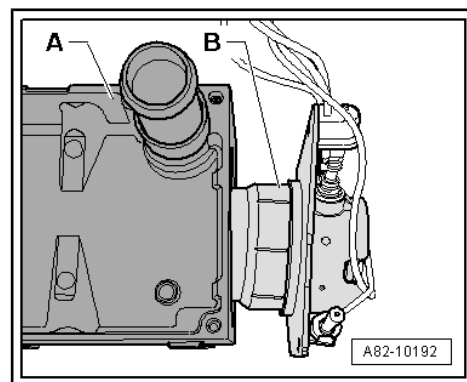
*If a version -A- burner element is installed in a diesel heater which previously had a version -B- burner element, the concentration of CO<sub>2</sub> in the exhaust gases will change.*



- If necessary, clean inside and outside of burner element -B- with a brass wire brush (spark plug brush).
- If necessary, clean inside of heat exchanger -A- with a brass wire brush (spark plug brush).
- Check sealing surfaces at burner element -B- and heat exchanger -A- for damage.

#### Tightening torques

- ◆ ⇒ [“2.3 Exploded view - components inside auxiliary/supplementary heater”, page 48](#)
- ◆ ⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#)
- ◆ ⇒ [“2.4.1 Removing and installing auxiliary/supplementary heater - Audi A4, Audi A5”, page 51](#)



## 2.5.7 Removing and installing heat exchanger

### Procedure

- Remove auxiliary/supplementary heater  
⇒ [“2.4 Removing and installing auxiliary/supplementary heater”, page 51](#) .
- Detach attachments from auxiliary/supplementary heater  
⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#) .
- Detach bracket from auxiliary/supplementary heater  
⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#) .
- Remove burner element  
⇒ [“2.5.6 Removing and installing burner element”, page 68](#) .
- If necessary, clean inside of heat exchanger with brass wire brush (spark plug brush).
- Check sealing surfaces on heat exchanger for damage.

### Tightening torques

- ◆ ⇒ [“2.3 Exploded view - components inside auxiliary/supplementary heater”, page 48](#)
- ◆ ⇒ [“2.2 Overview of fitting locations - auxiliary/supplementary heater”, page 40](#)

- ♦ ⇒ ["2.4.1 Removing and installing auxiliary/supplementary heater - Audi A4, Audi A5", page 51](#)

## 2.6 Removing and installing air intake silencer



### Note

*The illustration shows the attachment methods and locations on the Audi A4 and Audi A5; they are similar on the Audi Q5*  
⇒ ["2.2.2 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi Q5", page 43](#) .

### Removing

- Switch off ignition (and auxiliary/supplementary heater).

#### A4, A5

- Remove wheel spoiler (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .

#### Q5

- Remove air intake grille (front right) ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Exploded view - bumper cover .
- Release hose clip -1-.
- Cut open cable tie -2-.
- Detach intake air noise insulation -3- from bracket for heater unit.

### Installing

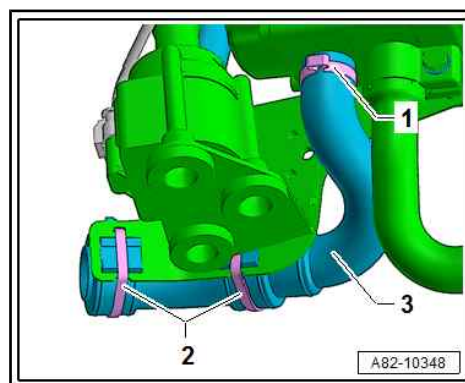
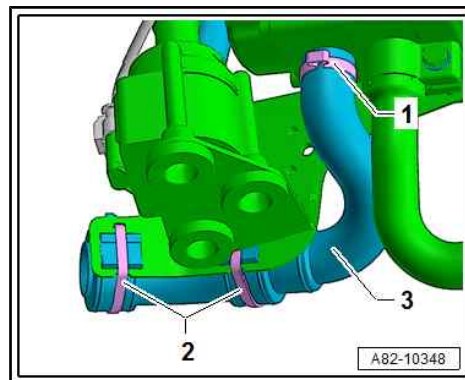
Install in reverse order of removal; note the following.

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### Note

- ♦ *Fit all cable ties in their original positions when installing.*
- ♦ *Secure all hose connections with standard hose clamps ⇒ Electronic parts catalogue .*
- ♦ *There must be an unimpeded flow of fresh air through the intake air noise insulation into the heater.*
- ♦ *Check the intake opening of the intake air noise insulation after working on the auxiliary/supplementary heater.*



## 2.7 Removing and installing circulation pump - V55-

⇒ [“2.7.1 General notes”, page 71](#)

⇒ [“2.7.2 Removing and installing circulation pump V55”, page 72](#)

### 2.7.1 General notes



#### Note

- ◆ Depending on vehicle equipment, the circulation pump - V55- may also be activated by the auxiliary heater control unit - J364- when a request is transmitted by the engine control unit - J623- or the operating and display unit for front air conditioning system - E87- via the data bus ⇒ Vehicle diagnostic tester (“Guided Fault Finding”) and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- ◆ On vehicles with a start/stop system but no coolant circulation pump - V50- , the circulation pump - V55- of the auxiliary/supplementary heater is activated by the auxiliary heater control unit - J364- while the stop function is active. The auxiliary heater control unit - J364- is requested by -E87- via the data bus to switch on the circulation pump - V55- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- ◆ The circulation pump - V55- is incorporated into the auxiliary/supplementary heater hoses. 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.
- ◆ When removing the circulation pump - V55- , only clamp off, release and disconnect the coolant hoses at the circulation pump - V55- so that the entire engine coolant circuit does not have to be bled.
- ◆ Depending on the engine, vehicles with auxiliary/supplementary heater may be fitted with a coolant circulation pump - V55- in addition to the circulation pump - V50- . For further information, refer to ⇒ Heating, air conditioning; Rep. gr. 87 ; Coolant circuit and ⇒ Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .

## 2.7.2 Removing and installing circulation pump - V55-

### Special tools, testers and other devices required

- ◆ Hose clamps up to 25 mm - 3094- (or commercially available pinch-off tools)

### Removing

- Switch off ignition (and auxiliary/supplementary heater).



#### WARNING

*The cooling system is under pressure when the engine is hot. Risk of scalding due to hot steam and hot coolant*

*Danger of scalding skin and other parts of the body.*

- Put on protective gloves.
- Put on safety goggles.
- Cover filler cap on expansion tank with a cloth and open carefully to release pressure.

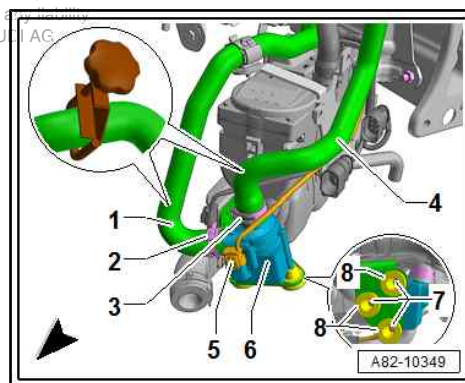


- Release pressure in the coolant circuit by opening the cap on the coolant expansion tank ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
- Remove wheel spoiler (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Vehicles with auxiliary radiator (side): Remove auxiliary/supplementary heater  
⇒ ["2.4.1 Removing and installing auxiliary/supplementary heater - Audi A4, Audi A5", page 51](#) .
- Pinch off coolant hoses -1, 4- with hose clamps up to 25 mm - 3094- (or using commercially available pinch-off tools).
- Unfasten hose clips -2, 3- and detach coolant hoses from - V55- -6-.



#### Note

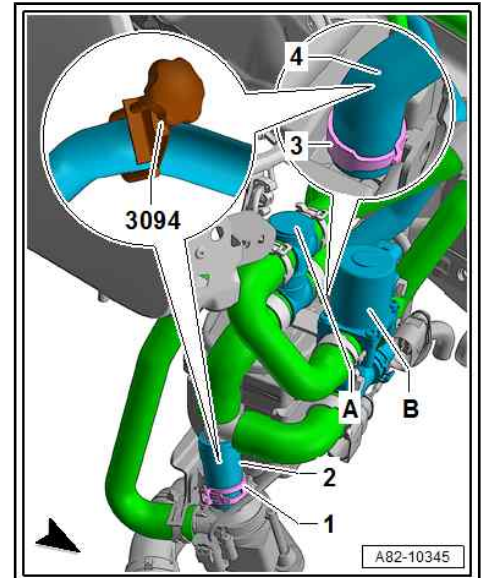
- ◆ The illustration shows the fitting locations on Audi A4 and Audi A5 models with 4-cyl. engine. On the Audi Q5 the auxiliary heater is installed vertically, but the removal and installations procedures are similar  
⇒ ["2.2.2 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi Q5", page 43](#) .
- ◆ On some coolant hose versions, the hose clips may be attached permanently to the coolant hose ⇒ *Electronic parts catalogue* .



**A4 and A5 models with 6-cyl. engine (with heater coolant shut-off valve - N279- -B- in vicinity of auxiliary/supplementary heater)**

 **Note**

*To enable the coolant hose -2- to be pinched off, it may first be necessary to unfasten the hose clip -1- and carefully detach the coolant hose -2- slightly from the connection at -V55-.*



**All vehicles:**

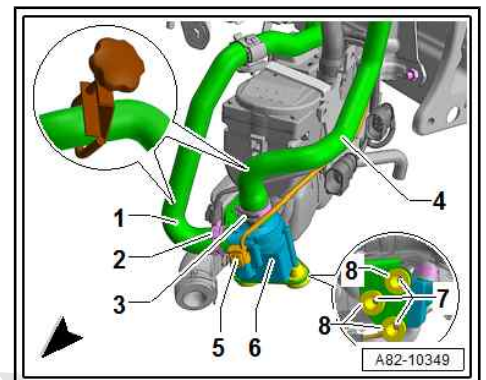
- Unplug electrical connector -5-.
- Remove bolts -7-.
- Detach circulation pump -6- from bracket.

**Installing**

Install in reverse order of removal; note the following.

 **Note**

- ◆ *If the coolant circuit has been drained, a new circulation pump - V55- must not be started up until the coolant circuit has been filled to prevent the pump from being damaged irreparably when it is run dry.*
- ◆ *As only a small quantity of coolant escapes from the coolant circuit during removal of the circulation pump - V55- (as described above), coolant runs into the circulation pump - V55- following installation and after removing the hose clamps (additionally open the coolant expansion tank cap), and there is no danger that the pump will run dry.*



- Check that rubber bush -8- is seated correctly in bracket.
- Only plug electrical connector in at circulation pump - V55- after filling coolant circuit.
- Bleed coolant circuit ⇒ ["3.3 Bleeding coolant circuit", page 104](#).

**Tightening torques**

- ◆ ⇒ ["2.2 Overview of fitting locations - auxiliary/supplementary heater", page 40](#)
- Re-install components removed previously in reverse order and/or re-attach detached components.

## 2.8 Removing and installing exhaust system for auxiliary/supplementary heater

⇒ "2.8.1 Removing and installing exhaust system for auxiliary/supplementary heater - Audi A4, Audi A5", page 74

⇒ "2.8.2 Removing and installing exhaust system for auxiliary/supplementary heater - Audi Q5", page 76

### 2.8.1 Removing and installing exhaust system for auxiliary/supplementary heater - Audi A4, Audi A5

#### Removing

- Switch off ignition (and auxiliary/supplementary heater).
- Remove wheel spoiler (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .



#### WARNING

*The exhaust system can become extremely hot. This can cause injuries.*

*Danger of burns to hands and other parts of the body.*

- Allow exhaust system to cool down.

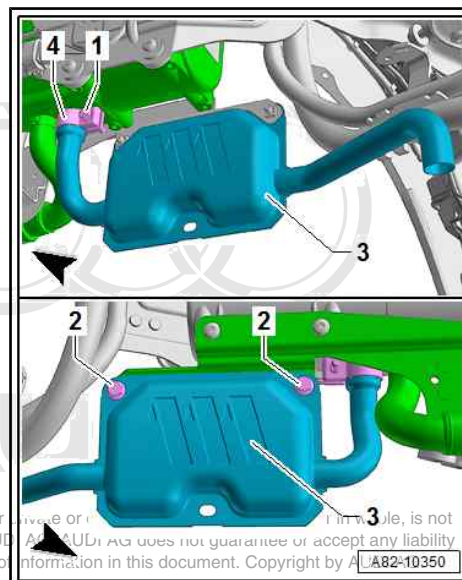
- Loosen bolt -1-.
- Remove bolts -2-.
- Detach exhaust system -3- downwards.

#### Installing

Install in reverse order of removal; note the following

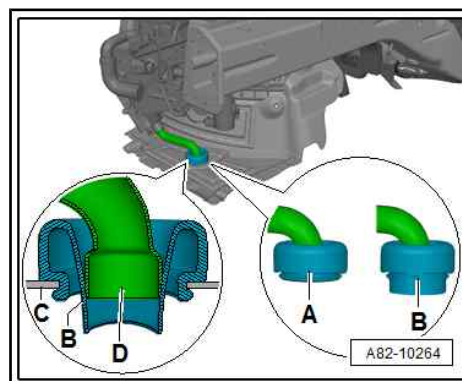
- Slide screw-type clip -4- onto exhaust system -3- as shown
- Install exhaust system -3-.

Check the following after installation:

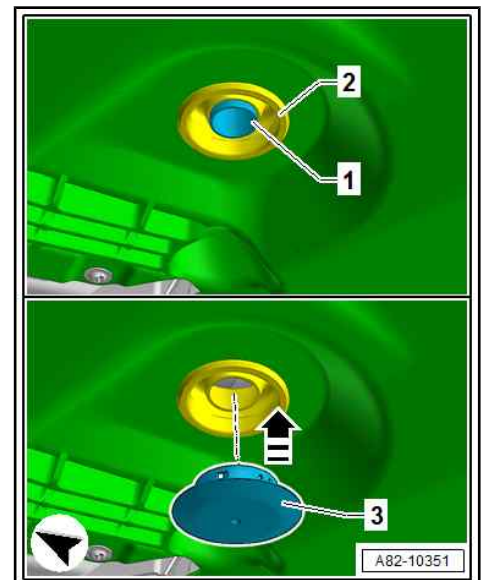
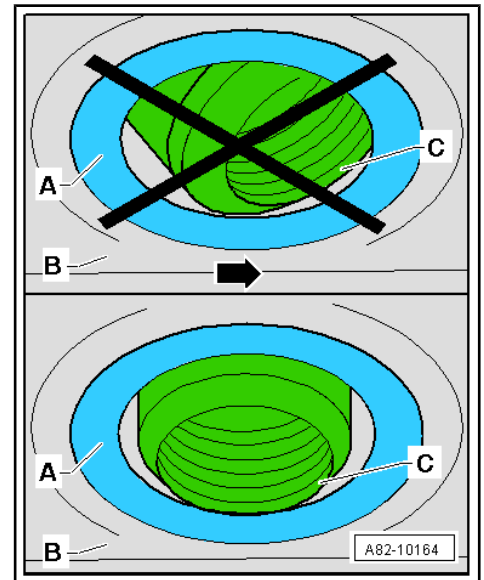


#### Note

- ◆ There are different versions of the rubber grommets -A, B- in the noise insulation -C-.
- ◆ Version -B- has a slightly longer opening for the exhaust pipe -D-.
- ◆ On version -A- the exhaust pipe -D- ends at the opening or projects slightly out of it (see next illustration).

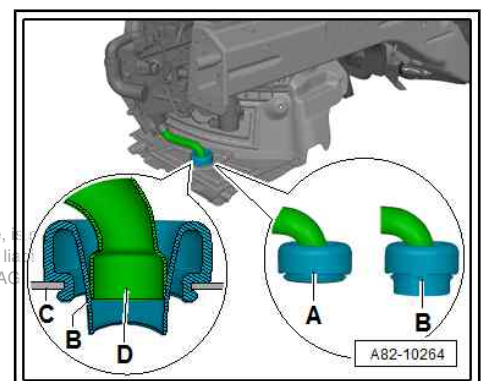


- Rubber grommet in noise insulation -A- must be positioned in noise insulation -B- so that it is free of tension, and exhaust pipe must either end flush with rubber grommet -A- or project slightly out of rubber grommet -A-.
- After working on the auxiliary/supplementary heater or the noise insulation, check the end of the exhaust pipe -C-; it must be installed so it is at a right angle to the noise insulation -B- at the point where it passes through the grommet -A- fitted in the noise insulation.
- End of exhaust pipe -C- must not face in direction of travel -arrow-; otherwise air stream could cause increased counter-pressure in exhaust system while vehicle is in motion.
- After fitting noise insulation, check exhaust pipe -1- and position of grommet -2-. There must be an unimpeded flow of exhaust gas out of the auxiliary/supplementary heater.



### Note

- ◆ On vehicles with no auxiliary/supplementary heater, the opening in the noise insulation is sealed with cap -3-.
- ◆ This rubber grommet -B- is longer than the old one; this improves the flow characteristics at the exhaust pipe when the vehicle is travelling with the auxiliary/supplementary heater running. It therefore protrudes somewhat further out of the noise insulation -C- than rubber grommet -A-. The position of the exhaust pipe -D- is the same with both rubber grommets.



### Tightening torques

- ◆ ⇒ ["2.2.1 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi A4, Audi A5", page 40](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66; Wheel housing liners; Exploded view - wheel housing liner (front)
- Re-install components removed previously in reverse order and/or re-attach detached components.

## 2.8.2 Removing and installing exhaust system for auxiliary/supplementary heater - Audi Q5

### Removing

- Switch off ignition (and auxiliary/supplementary heater).
- Remove wheel spoiler (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Remove air intake grille (front right) ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Exploded view - bumper cover .



### WARNING

**The exhaust system can become extremely hot. This can cause injuries.**

**Danger of burns to hands and other parts of the body.**

- Allow exhaust system to cool down.

- Loosen bolt -3-.
- Remove bolts -4- and -5-.
- Pull exhaust system -1- off auxiliary/supplementary heater and remove downwards.

### Installing

Install in reverse order of removal; note the following.

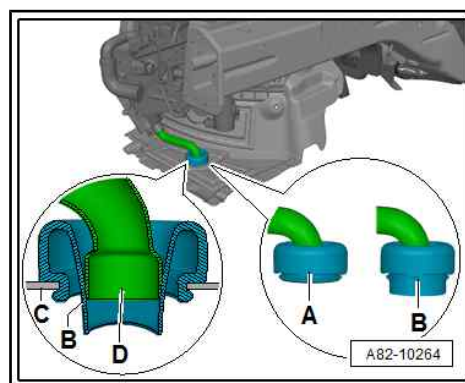
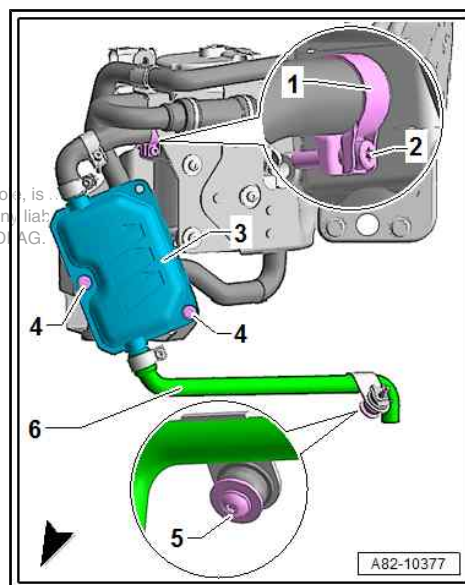
- Fit screw-type clip -2- onto exhaust system as shown.

Check the following after installation:

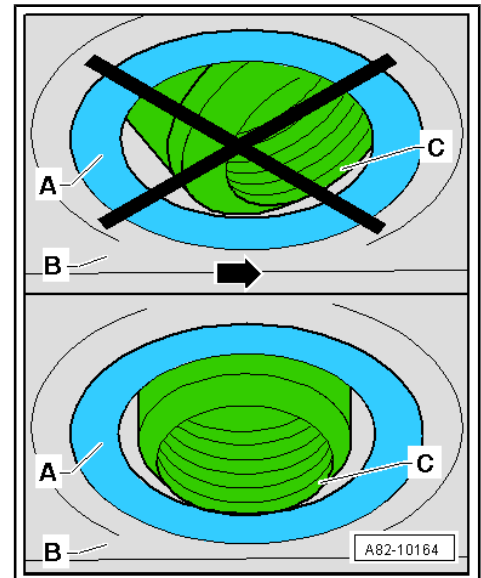


### Note

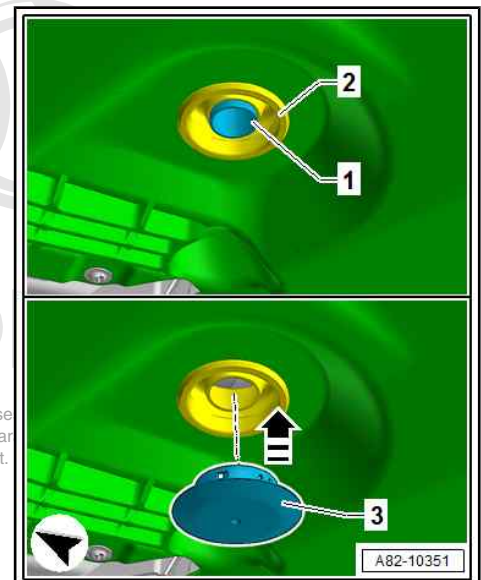
- ♦ The illustration shows the fitting locations on the Audi A4 and Audi A5; the locations and procedures for the Audi Q5 are basically the same.
- ♦ There are different versions of the rubber grommets -A, B- in the noise insulation -C-.
- ♦ Version -B- has a slightly longer opening for the exhaust pipe -D-.
- ♦ On version -A- the exhaust pipe -D- ends at the opening or projects slightly out of it (see next illustration).



- Rubber grommet in noise insulation -A- must be positioned in noise insulation -B- so that it is free of tension, and exhaust pipe must either end flush with rubber grommet -A- or project slightly out of rubber grommet -A-.
- After working on the auxiliary/supplementary heater or the noise insulation, check the end of the exhaust pipe -C-; it must be installed so it is at a right angle to the noise insulation -B- at the point where it passes through the grommet -A- fitted in the noise insulation.
- End of exhaust pipe -C- must not face in direction of travel -arrow-; otherwise air stream could cause increased counter-pressure in exhaust system while vehicle is in motion.



- After fitting noise insulation, check exhaust pipe -1- and position of grommet -2-. There must be an unimpeded flow of exhaust gas out of the auxiliary/supplementary heater.

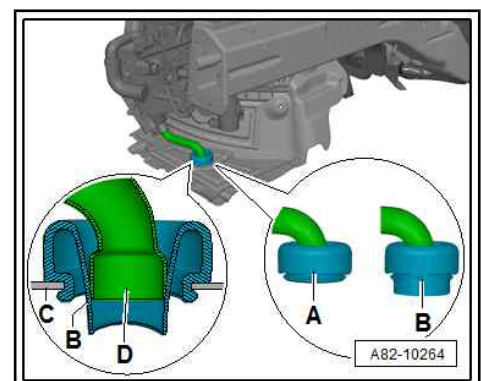


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#### Note

- ◆ On vehicles with no auxiliary/supplementary heater, the opening in the noise insulation is sealed with cap -3-.
- ◆ This rubber grommet -B- is longer than the old one; this improves the flow characteristics at the exhaust pipe when the vehicle is travelling with the auxiliary/supplementary heater running. It therefore protrudes somewhat further out of the noise insulation -C- than rubber grommet -A-. The position of the exhaust pipe -D- is the same with both rubber grommets.



#### Tightening torques

- ◆ ⇒ ["2.2.2 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi Q5", page 43](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66; Wheel housing liners; Exploded view - wheel housing liner (front)

## 2.9 Removing and installing temperature sensor - G18- and temperature sensor 2

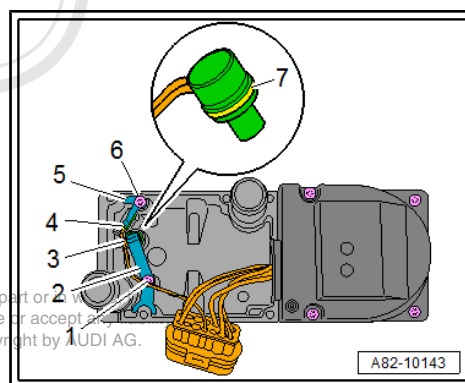
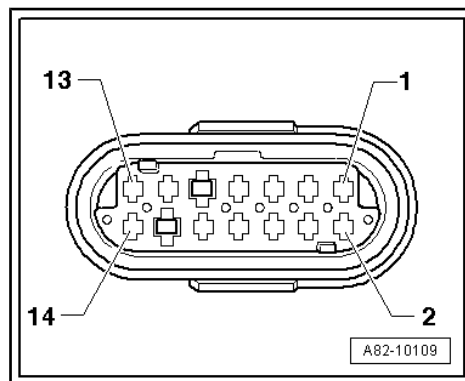
## for supplementary and auxiliary heating - G587-

### Special tools and workshop equipment required

- ◆ Release tool - VAS 1978/18-

### Removing

- Remove auxiliary/supplementary heater  
⇒ ["2.4 Removing and installing auxiliary/supplementary heater", page 51](#) .
- Detach attachments from auxiliary/supplementary heater  
⇒ ["2.2.1 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi A4, Audi A5", page 40](#) or  
⇒ ["2.2.2 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi Q5", page 43](#) .
- Detach bracket from auxiliary/supplementary heater  
⇒ ["2.2.3 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi A4, Audi A5", page 45](#) or  
⇒ ["2.2.4 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi Q5", page 47](#) .
- Remove control unit  
⇒ ["2.5.1 Removing and installing auxiliary heater control unit J364", page 62](#) .
- If renewing temperature sensor and/or temperature sensor 2, unpin electrical wires from contacts on connector housing (except pins 7, 8, 10 and 11).
- Remove bolts -1, 6-.
- Release retaining clips -2 and 5-.
- Pull out temperature sensor - G18- -item 3-.
- Detach temperature sensor 2 for supplementary and auxiliary heating - G587- -item 4-.
- Remove connector housing with temperature sensors.



### Installing

Install in reverse order of removal, note the following.



#### Note

*Renew O-ring after removal.*

- Clean connection area and temperature sensor - G18- and check for damage.
- Coat new O-ring -7- with small quantity of coolant.

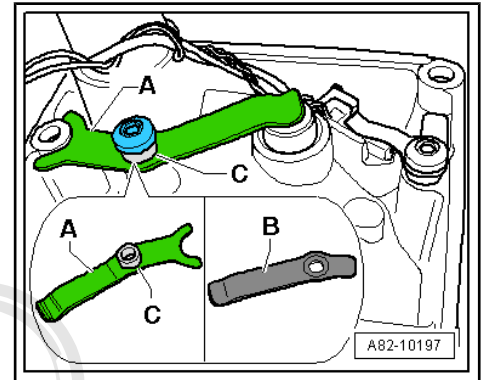
- Make sure that retaining clip -A- is always fitted with a spacer ring -C-.
- Spacer ring must face upwards.



#### Caution

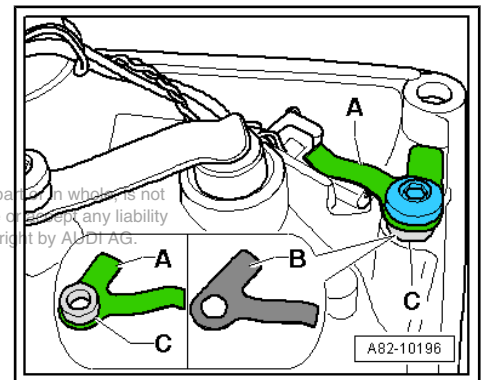
***If a retaining clip has not been properly fitted or the wrong version is used, coolant will escape when the pressure increases in the coolant circuit.***

- ◆ ***If a retaining clip has not been properly fitted, -G18- may work loose from its mounting.***
- ◆ ***Ensure correct assignment and proper fitting of the retaining clip.***



- Make sure that retaining clip -A- is always fitted with a spacer ring -C-.
- Spacer ring must face downwards.

There are different versions of the retaining clip for the temperature sensor - G18- and the temperature sensor 2 for supplementary and auxiliary heating - G587- with part number 4xx xxx xxx must only be fitted with retaining clips -A- with a spacer ring -C-. Attention must therefore be paid to correct assignment (matching part numbers of retaining clip and auxiliary heater control unit - J364- ) ⇒ Electronic parts catalogue .



## 2.10 Pin assignment for auxiliary/supplementary heater

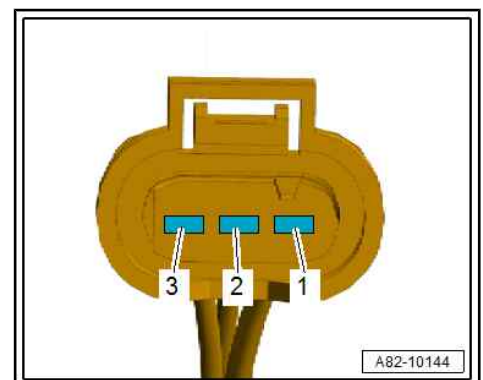


#### Note

*Incorporation of auxiliary/supplementary heater into vehicle electrical system ⇒ Current flow diagrams, Electrical fault finding and Fitting locations*

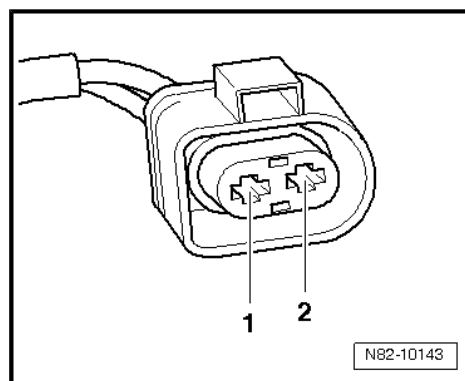
**Assignment of contacts in 3-pin connector (wire from auxiliary heater control unit - J364- to circulation pump - V55- )**

- 1 - Earth connection to circulation pump - V55-
- 2 - Power supply, terminal 30
- 3 - Activation of circulation pump - V55-



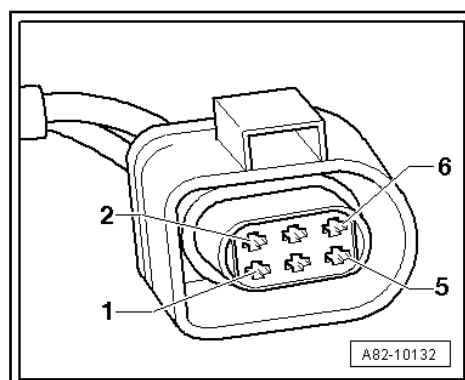
### Assignment of contacts in 2-pin connector (in-vehicle wiring to auxiliary heater control unit - J364- )

- 1 - Power supply, terminal 30
- 2 - Earth connection



### Assignment of contacts in 6-pin connector (in-vehicle wiring to auxiliary heater control unit - J364- )

- 1 - Data line to data bus (high-speed CAN bus)
- 2 - Data line to data bus (low-speed CAN bus)
- 3 - Activation of heater coolant shut-off valve - N279-
- 4 - Activation of metering pump - V54-
- 5 - Earth connection
- 6 - Data line from remote control receiver for auxiliary heater - R64-



## 2.11 Checking electrical components on auxiliary/supplementary heater

⇒ [“2.11.1 Checking activation and electrical connections of auxiliary/supplementary heater”, page 80](#)

⇒ [“2.11.2 Checking components of auxiliary/supplementary heater”, page 81](#)

⇒ [“2.11.3 Checking glow plug for heater Q9 ”, page 81](#)

⇒ [“2.11.4 Checking combustion air blower V6 ”, page 82](#)

⇒ [“2.11.5 Checking flame monitor G64 ”, page 83](#)

⇒ [“2.11.6 Checking temperature sensor G18 ”, page 84](#)

⇒ [“2.11.7 Checking temperature sensor 2 for supplementary and auxiliary heating G587 ”, page 85](#)

⇒ [“2.11.8 Checking fuel pre-heating heater element Z66 ”, page 86](#)

### 2.11.1 Checking activation and electrical connections of auxiliary/supplementary heater



#### Note

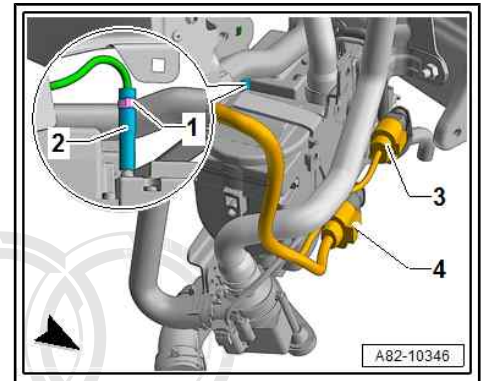
- ◆ The “Electrical check” function is not described in this Workshop Manual. The procedure for checking individual components is only outlined briefly in this Workshop Manual.
- ◆ Perform electrical check as described in Guided Fault Finding  
⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Switch off ignition (and auxiliary/supplementary heater).

- Remove wheel spoiler (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Unplug electrical connectors -3 and 4-

**Note**

Disregard items -1 and 2-

- Perform electrical checks as described in “Guided Fault Finding” ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).



## 2.11.2 Checking components of auxiliary/supplementary heater

**Note**

- ♦ The “Electrical check” function is not described in this Workshop Manual. The procedure for checking individual components is only outlined briefly in this Workshop Manual.
- ♦ Perform electrical check as described in Guided Fault Finding ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

### Summary of electrical checks to be performed

| Component checked                                                    | Side                         |
|----------------------------------------------------------------------|------------------------------|
| Glow plug for heater - Q9-                                           | ⇒<br><a href="#">page 81</a> |
| Combustion air blower - V6-                                          | ⇒<br><a href="#">page 82</a> |
| Flame monitor - G64-                                                 | ⇒<br><a href="#">page 83</a> |
| Temperature sensor - G18-                                            | ⇒<br><a href="#">page 84</a> |
| Temperature sensor 2 for supplementary and auxiliary heating - G587- | ⇒<br><a href="#">page 85</a> |
| Fuel pre-heating heater element - Z66-                               | ⇒<br><a href="#">page 86</a> |

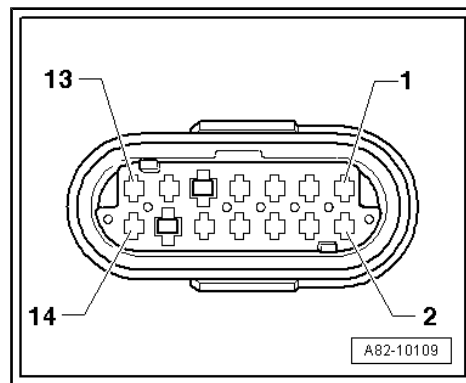
## 2.11.3 Checking glow plug for heater - Q9-

**Note**

- ♦ The “Electrical check” function is not described in this Workshop Manual. The procedure for checking individual components is only outlined briefly in this Workshop Manual.
- ♦ Perform electrical check as described in Guided Fault Finding ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## Procedure

- Remove auxiliary/supplementary heater  
⇒ [“2.4 Removing and installing auxiliary/supplementary heater”, page 51](#) .
- Detach attachments from auxiliary/supplementary heater  
⇒ [“2.2.1 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi A4, Audi A5”, page 40](#) or  
⇒ [“2.2.2 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi Q5”, page 43](#) .
- Detach bracket from auxiliary/supplementary heater  
⇒ [“2.2.3 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi A4, Audi A5”, page 45](#) or  
⇒ [“2.2.4 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi Q5”, page 47](#) .
- Unplug connector from control unit  
⇒ [“2.5.1 Removing and installing auxiliary heater control unit J364”, page 62](#) .
- Measure resistance at connector between contact “3” and heater housing.



## Specification:

∞ Ω

- Measure resistance at connector between contacts “3” and “6”.

## Specification:

Less than 1 Ω

## Rated value:

0.42 - 0.63 Ω~ (at 20 + / -2 °C)



### Note

- ◆ *Resistances of less than 1 Ω cannot be measured as exactly as required using workshop equipment. Therefore this test can only be used to detect major damage to the component.*
- ◆ *If a voltage of 9 V is applied to the glow plug for heater - Q9-, the power input is between 9 and 20 A.*

## 2.11.4 Checking combustion air blower - V6-



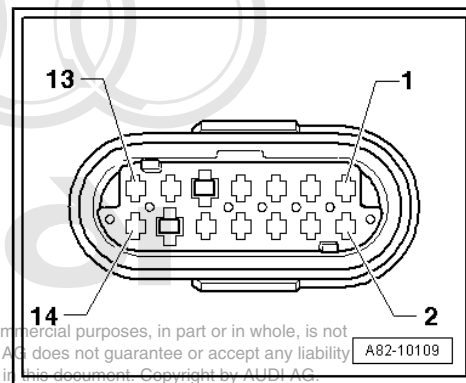
### Note

- ◆ *The “Electrical check” function is not described in this Workshop Manual. The procedure for checking individual components is only outlined briefly in this Workshop Manual.*
- ◆ *Perform electrical check as described in Guided Fault Finding ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

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## Procedure

- Remove auxiliary/supplementary heater  
⇒ [“2.4 Removing and installing auxiliary/supplementary heater”, page 51](#) .
- Detach attachments from auxiliary/supplementary heater  
⇒ [“2.2.1 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi A4, Audi A5”, page 40](#) or  
⇒ [“2.2.2 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi Q5”, page 43](#) .
- Detach bracket from auxiliary/supplementary heater  
⇒ [“2.2.3 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi A4, Audi A5”, page 45](#) or  
⇒ [“2.2.4 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi Q5”, page 47](#) .
- Unplug connector from control unit  
⇒ [“2.5.1 Removing and installing auxiliary heater control unit J364 ”, page 62](#) .
- Measure resistance at connector between contact “13” and heater housing.



## Specification:

$\infty \Omega$



### Note

- ◆ If a voltage of 12 V is applied to the combustion air blower - V6- the power input is between 2 and 3 A.
- ◆ The internal resistance of the combustion air blower - V6- is between 3 and 6  $\Omega$  (40  $\Omega$  if the combustion air blower has not been in operation for a lengthy period). Resistances of less than 10  $\Omega$  cannot be measured as exactly as required using workshop equipment. Therefore this internal resistance test can only be used to detect major damage to the component.

## 2.11.5 Checking flame monitor - G64-

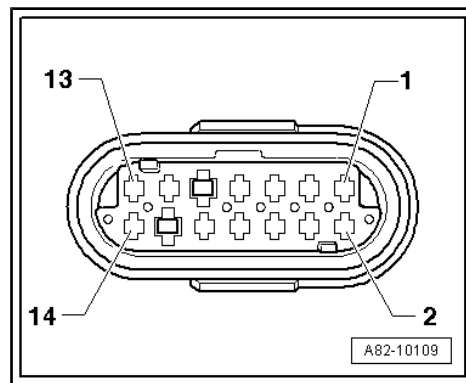


### Note

- ◆ The “Electrical check” function is not described in this Workshop Manual. The procedure for checking individual components is only outlined briefly in this Workshop Manual.
- ◆ Perform electrical check as described in Guided Fault Finding  
⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

## Procedure

- Remove auxiliary/supplementary heater  
⇒ [“2.4 Removing and installing auxiliary/supplementary heater”, page 51](#) .
- Detach attachments from auxiliary/supplementary heater  
⇒ [“2.2.1 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi A4, Audi A5”, page 40](#) or  
⇒ [“2.2.2 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi Q5”, page 43](#) .
- Detach bracket from auxiliary/supplementary heater  
⇒ [“2.2.3 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi A4, Audi A5”, page 45](#) or  
⇒ [“2.2.4 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi Q5”, page 47](#) .
- Unplug connector from control unit  
⇒ [“2.5.1 Removing and installing auxiliary heater control unit J364”, page 62](#) .
- Measure resistance at connector between contact “2” and contact “1” at brown wires.



## Evaluation:

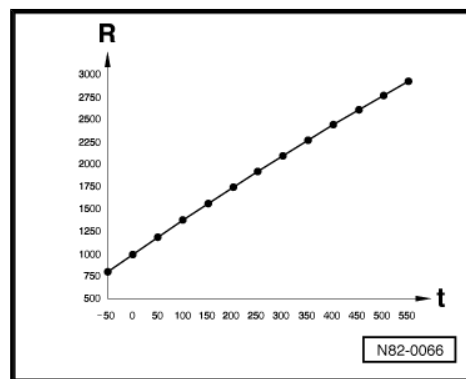
R = Resistance in  $\Omega$  (ohms)

t = Temperature in  $^{\circ}\text{C}$  (degrees Celsius)

- Measure resistance at current temperature.

## Evaluation:

- ◆ Resistance value greater than 3040  $\Omega$  = open circuit (defective)
- ◆ Resistance value less than 780  $\Omega$  = short circuit (defective)

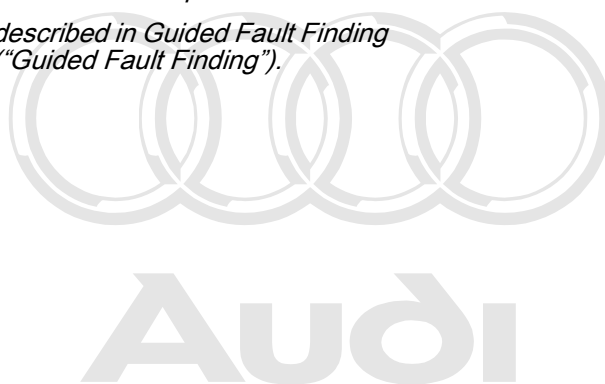


## 2.11.6 Checking temperature sensor - G18-



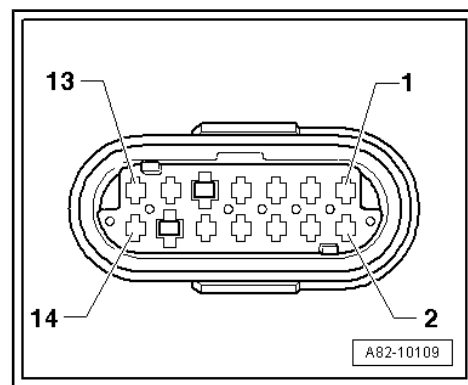
### Note

- ◆ The “Electrical check” function is not described in this Workshop Manual. The procedure for checking individual components is only outlined briefly in this Workshop Manual.
- ◆ Perform electrical check as described in Guided Fault Finding  
⇒ Vehicle diagnostic tester (“Guided Fault Finding”).



## Procedure

- Remove auxiliary/supplementary heater  
⇒ [“2.4 Removing and installing auxiliary/supplementary heater”, page 51](#) .
- Detach attachments from auxiliary/supplementary heater  
⇒ [“2.2.1 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi A4, Audi A5”, page 40](#) or  
⇒ [“2.2.2 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi Q5”, page 43](#) .
- Detach bracket from auxiliary/supplementary heater  
⇒ [“2.2.3 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi A4, Audi A5”, page 45](#) or  
⇒ [“2.2.4 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi Q5”, page 47](#) .
- Unplug connector from control unit  
⇒ [“2.5.1 Removing and installing auxiliary heater control unit J364”, page 62](#) .
- Measure resistance at connector between contact “10” and contact “11” at black wires.



## Evaluation:

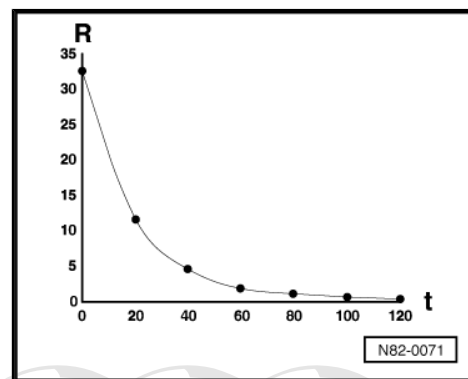
R = Resistance in kΩ (kiloohms)

t = Temperature in °C (degrees Celsius)

- Measure resistance at current temperature.

## Evaluation:

- ◆ Resistance value greater than 2 MΩ (megaohms) = open circuit (defective)
- ◆ Resistance less than 50 Ω = short circuit (defective)



## 2.11.7 Checking temperature sensor 2 for supplementary and auxiliary heating - G587-



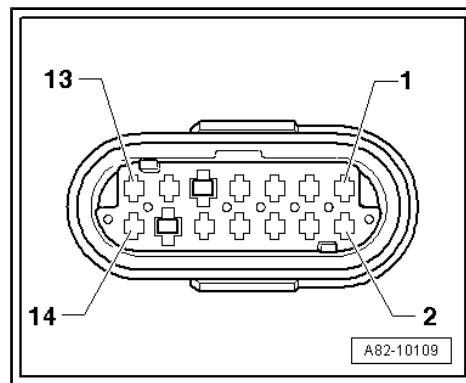
### Note

- ◆ The “Electrical check” function is not described in this Workshop Manual. The procedure for checking individual components is only outlined briefly in this Workshop Manual.
- ◆ Perform electrical check as described in Guided Fault Finding  
⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

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## Procedure

- Remove auxiliary/supplementary heater  
⇒ [“2.4 Removing and installing auxiliary/supplementary heater”, page 51](#) .
- Detach attachments from auxiliary/supplementary heater  
⇒ [“2.2.1 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi A4, Audi A5”, page 40](#) or  
⇒ [“2.2.2 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi Q5”, page 43](#) .
- Detach bracket from auxiliary/supplementary heater  
⇒ [“2.2.3 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi A4, Audi A5”, page 45](#) or  
⇒ [“2.2.4 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi Q5”, page 47](#) .
- Unplug connector from control unit  
⇒ [“2.5.1 Removing and installing auxiliary heater control unit J364”, page 62](#) .
- Measure resistance at connector between contact “7” and contact “8” at white wires.



## Evaluation:

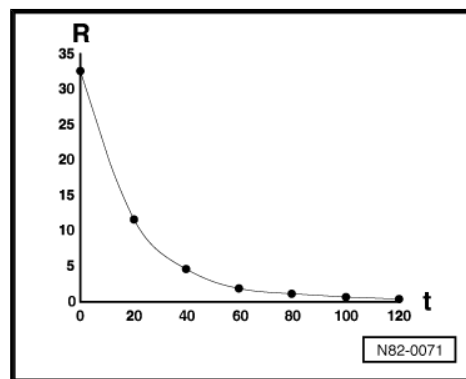
R = Resistance in kΩ (kiloohms)

t = Temperature in °C (degrees Celsius)

- Measure resistance at current temperature.

## Evaluation:

- ◆ Resistance value greater than 2 MΩ (megaohms) = open circuit (defective)
- ◆ Resistance less than 50 Ω = short circuit (defective)



## 2.11.8 Checking fuel pre-heating heater element - Z66-



### Note

- ◆ The “Electrical check” function is not described in this Workshop Manual. The procedure for checking individual components is only outlined briefly in this Workshop Manual.
- ◆ Perform electrical check as described in Guided Fault Finding  
⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- ◆ -Z66- is only fitted on an auxiliary/supplementary heater for diesel.

## Procedure

- Remove auxiliary/supplementary heater  
⇒ [“2.4 Removing and installing auxiliary/supplementary heater”, page 51](#) .
- Detach attachments from auxiliary/supplementary heater  
⇒ [“2.2.1 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi A4, Audi A5”, page 40](#) or  
⇒ [“2.2.2 Overview of fitting locations - attachments for auxiliary/supplementary heater, Audi Q5”, page 43](#) .
- Detach bracket from auxiliary/supplementary heater  
⇒ [“2.2.3 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi A4, Audi A5”, page 45](#) or  
⇒ [“2.2.4 Overview of fitting locations - bracket for auxiliary/supplementary heater, Audi Q5”, page 47](#) .
- Unplug connector from control unit  
⇒ [“2.5.1 Removing and installing auxiliary heater control unit J364 ”, page 62](#) .
- Measure resistance at connector between contact “9” and contact “12” at white wires.

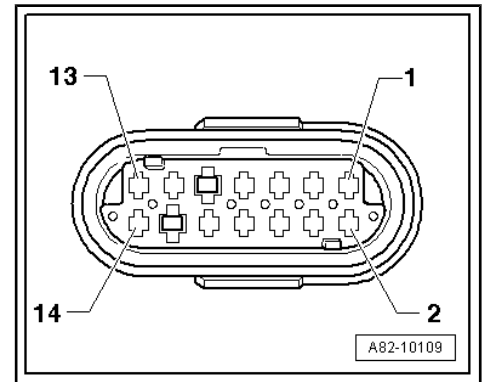
## Specification:

0.79 - 0.97  $\Omega$  (ohms at 23 + / -5 °C)



### Note

*Resistances of less than 1  $\Omega$  cannot be measured as exactly as required using workshop equipment. Therefore this test can only be used to detect major damage to the component.*



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### 3 Coolant circuit with auxiliary/supplementary heater

⇒ ["3.1 Connection diagram - coolant hoses", page 88](#)

⇒ ["3.2 Removing and installing heater coolant shut-off valve, operation", page 95](#)

⇒ ["3.3 Bleeding coolant circuit", page 104](#)

#### 3.1 Connection diagram - coolant hoses

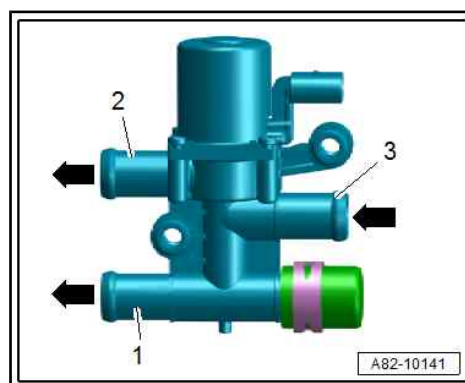
⇒ ["3.1.1 General notes", page 88](#)

⇒ ["3.1.2 Connection diagram - coolant hoses, vehicles with petrol engine", page 88](#)

⇒ ["3.1.3 Connection diagram - coolant hoses, vehicles with TDI engine", page 91](#)

##### 3.1.1 General notes

- ◆ When the heater coolant shut-off valve - N279- is activated (e.g. in auxiliary/supplementary heating mode with cold coolant and the ignition switched off), the coolant is drawn in by the circulation pump - V55- from the heat exchangers of the front heater and air conditioning unit (the coolant flows via the connections -3- and -1-). If the heater coolant shut-off valve - N279- is not activated (e.g. with warm coolant and ignition switched on), the coolant is drawn in by the circulation pump - V55- from the engine and flows from the heat exchanger of the front heater and air conditioning unit via the heater coolant shut-off valve - N279- and back to the engine (the coolant flows via the connections -3- and -2-). The method of incorporating the heater coolant shut-off valve - N279- in the coolant circuit depends on the engine version.
- ◆ Bleeding coolant circuit  
⇒ ["3.3 Bleeding coolant circuit", page 104](#) and ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
- ◆ For information on components not mentioned here, refer to ⇒ Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .
- ◆ Incorporation of heater and air conditioning unit into coolant circuit ⇒ Heating, air conditioning; Rep. gr. 87 ; Coolant circuit .



#### Note

*The numbers marking the connections on the heater coolant shut-off valve - N279- depend on the version and may differ from the numbering shown in this illustration.*

##### 3.1.2 Connection diagram - coolant hoses, vehicles with petrol engine



#### Note

*Arrows show direction of coolant flow.*

### 1 - Coolant supply from engine

- ❑ Incorporating heater and air conditioning unit into engine coolant circuit ⇒ Rep. gr. 19 ; Cooling system/coolant; Connection diagram for coolant hoses

### 2 - Coolant return to engine

- ❑ Incorporating heater and air conditioning unit into engine coolant circuit ⇒ Rep. gr. 19 ; Cooling system/coolant; Connection diagram for coolant hoses

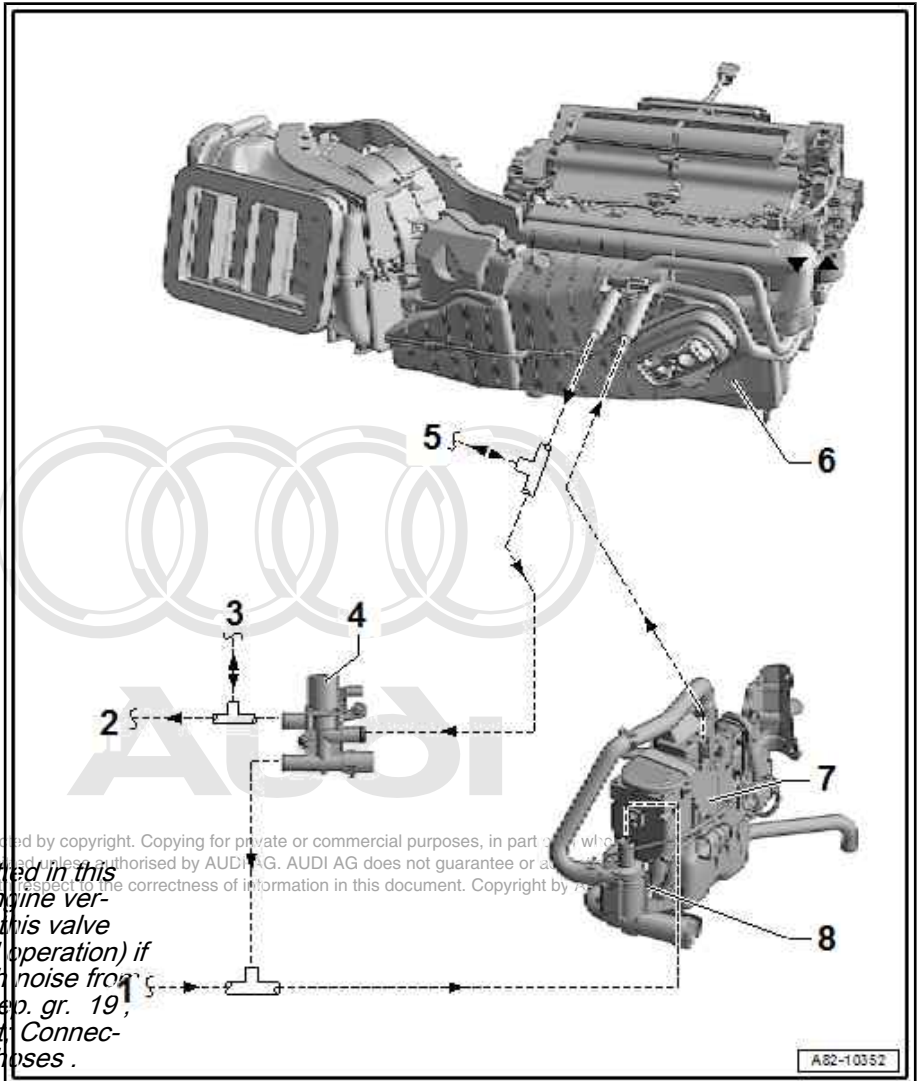
### 3 - Connection in coolant circuit

- ❑ Incorporation depending on engine (e.g. to coolant expansion tank on 6-cylinder engines) ⇒ Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses



#### Note

*A non-return valve is fitted in this connection on some engine versions. Pay attention to this valve (proper installation and operation) if there are problems with noise from the coolant circuit ⇒ Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses.*



### 4 - Heater coolant shut-off valve - N279-

- ❑ Removing and installing  
⇒ [“3.2 Removing and installing heater coolant shut-off valve, operation”, page 95](#) and ⇒ Heating, air conditioning; Rep. gr. 87 ; Coolant circuit



#### Note

*Different fitting locations, depending on engine version and vehicle model*

*⇒ [“3.2 Removing and installing heater coolant shut-off valve, operation”, page 95](#)*

- ❑ Vehicles with an auxiliary/supplementary heater are fitted with a heater coolant shut-off valve - N279-. Vehicles with certain engines with no auxiliary/supplementary heater are fitted with a coolant shut-off valve - N82- (different version). The designation is thus also different ⇒ Heating, air conditioning; Rep. gr. 87 ; Coolant circuit and ⇒ Electronic parts catalogue .
- ❑ Different fitting locations depending on engine  
⇒ [“3.2 Removing and installing heater coolant shut-off valve, operation”, page 95](#)
- ❑ Direction of coolant through heater coolant shut-off valve - N279- ⇒ [“3.1.1 General notes”, page 88](#)
- ❑ Checking activation and operation of heater coolant shut-off valve - N279- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)

## 5 - Connection in coolant circuit

- ❑ Incorporation depending on engine (e.g. to coolant expansion tank on 4-cylinder engines) ⇒ Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses



### Note

*A non-return valve is fitted in this connection on some engine versions. Pay attention to this valve (proper installation and operation) if there are problems with noise from the coolant circuit ⇒ Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .*

## 6 - Heater and air conditioning unit

- ❑ With heat exchanger
- ❑ Removing and installing heat exchanger ⇒ Heating, air conditioning; Rep. gr. 87 ; Heater and air conditioning unit (front); Removing and installing heat exchanger

## 7 - Auxiliary/supplementary heater

- ❑ Checking activation of circulation pump - V55- and heater coolant shut-off valve - N279- ⇒ Vehicle diagnostic tester ("Guided Fault Finding")

## 8 - Circulation pump - V55-

- ❑ Incorporated into auxiliary/supplementary heater hoses
- ❑ Removing and installing ⇒ ["2.7 Removing and installing circulation pump V55" , page 71](#)



### Note

- ◆ *With a start/stop system, the coolant circulation pump - V50- for maintaining the flow of coolant through the heat exchanger of the heater and air conditioning unit with the stop function active is not always fitted ⇒ Heating, air conditioning; Rep. gr. 87 ; Coolant circuit .*
- ◆ *On vehicles with a start/stop system but no coolant circulation pump - V50- , the circulation pump - V55- of the auxiliary/supplementary heater is activated by the auxiliary heater control unit - J364- while the stop function is active. The auxiliary heater control unit - J364- is requested by -E87- via the data bus to switch on the circulation pump - V55- ⇒ Vehicle diagnostic tester ("Guided Fault Finding", "Read measured values" function).*

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- ◆ *Depending on the production period, vehicles with an auxiliary/supplementary heater as an optional extra may be fitted with both pumps (coolant circulation pump - V50- and circulation pump - V55-). However, it is also possible that -V50- is not fitted and that its function is performed by -V55- ⇒ Heating, air conditioning; Rep. gr. 87; Coolant circuit, ⇒ Rep. gr. 19; Cooling system/coolant; Connection diagram - coolant hoses and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

### 3.1.3 Connection diagram - coolant hoses, vehicles with TDI engine



### Note

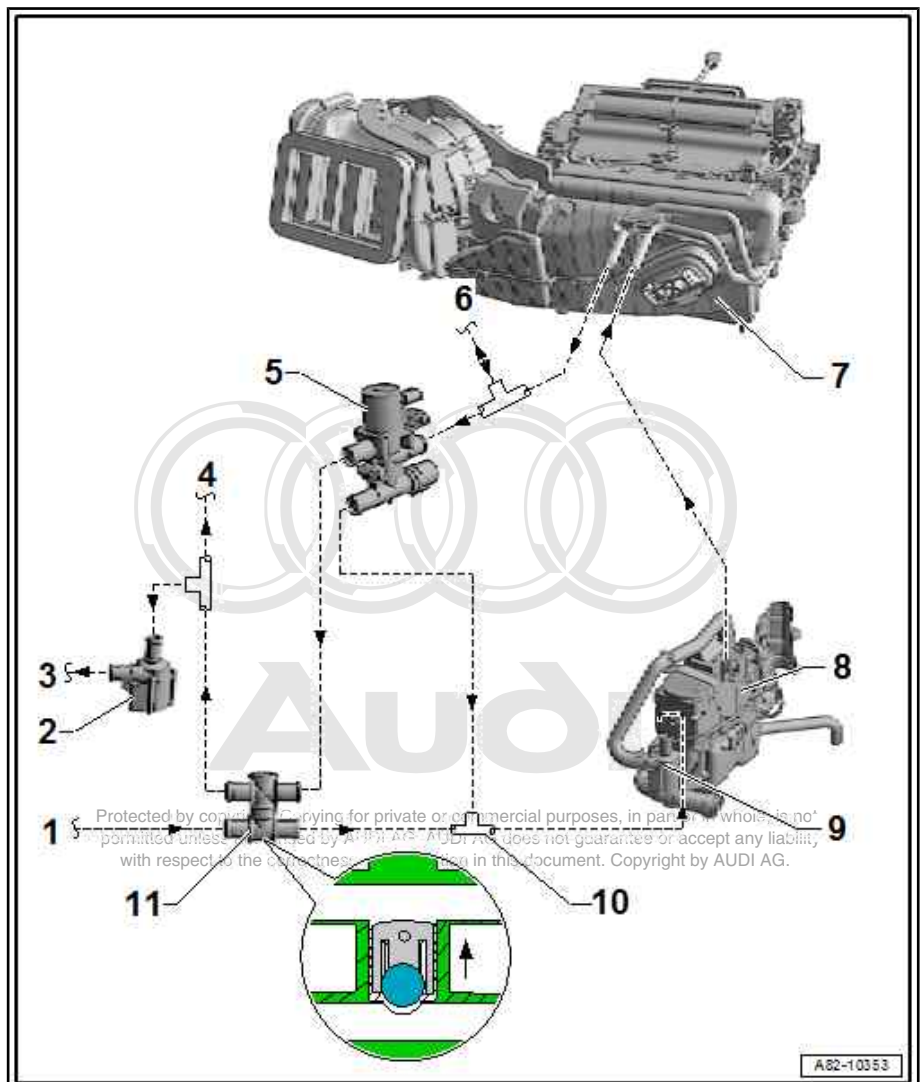
*Arrows show direction of coolant flow.*

### 1 - Coolant supply from engine

- Incorporating heater and air conditioning unit into engine coolant circuit ⇒ Rep. gr. 19 ; Cooling system/coolant; Connection diagram for coolant hoses

**2 - Coolant circulation pump - V50-**

- ❑ -V50- is currently also fitted on this vehicle (depending on the engine version). This function is then not performed by the circulation pump - V55- fitted on vehicles with an auxiliary/supplementary heater ⇒ Current flow diagrams, Electrical fault finding and Fitting locations and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- ❑ Checking operation of coolant circulation pump - V50- ⇒ Heating, air conditioning; Rep. gr. 87 ; Coolant circuit
- ❑ Removing and installing ⇒ Heating, air conditioning; Rep. gr. 87 ; Coolant circuit



**Note**

- ◆ *The activation of -V50- differs. For example, on most vehicles it is activated by the engine control unit - J623- when requested by the operating and display unit for front air conditioning system - E87- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- ◆ *The coolant circulation pump - V50- assists the engine coolant pump to ensure an adequate, uniform flow of coolant through the heat exchanger(s) of the heater and air conditioning unit.*
- ◆ *Not all vehicles with a start/stop system are fitted with the coolant circulation pump - V50- for maintaining the flow of coolant through the heat exchangers of the heater and air conditioning units when the stop function is active ⇒ Heating, air conditioning; Rep. gr. 87 ; Coolant circuit .*
- ◆ *On vehicles with a start/stop system but no coolant circulation pump - V50- , the circulation pump - V55- of the auxiliary/supplementary heater is activated by the auxiliary heater control unit - J364- while the stop function is active. The auxiliary heater control unit - J364- is requested by -E87- via the data bus to switch on the circulation pump - V55- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- ◆ *Depending on the production period, vehicles with an auxiliary/supplementary heater as an optional extra may be fitted with both pumps ( coolant circulation pump - V50- and circulation pump - V55- ). However, it is also possible that -V50- is not fitted and that its function is performed by -V55- ⇒ Heating, air conditioning; Rep. gr. 87 ; Coolant circuit , ⇒ Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

**3 - Coolant return to engine**

- ☐ Incorporating heater and air conditioning unit into engine coolant circuit ⇒ Rep. gr. 19 ; Cooling system/coolant; Connection diagram for coolant hoses

**4 - Connection in coolant circuit**

- ☐ Incorporation depending on engine (e.g. 4-cylinder engines) ⇒ Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses

**Note**

*A non-return valve is fitted in this connection on some engine versions. Pay attention to this valve (proper installation and operation) if there are problems with noise from the coolant circuit ⇒ Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .*

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

- ☐ Removing and installing  
⇒ [“3.2 Removing and installing heater coolant shut-off valve, operation”, page 95](#) and ⇒ Heating, air conditioning; Rep. gr. 87 ; Coolant circuit

**Note**

*Different fitting locations, depending on engine version and vehicle model*

⇒ [“3.2 Removing and installing heater coolant shut-off valve, operation”, page 95](#)

- ☐ Vehicles with an auxiliary/supplementary heater are fitted with a heater coolant shut-off valve - N279- . Vehicles with certain engines with no auxiliary/supplementary heater are fitted with a coolant shut-off valve - N82- (different version). The designation is thus also different ⇒ Heating, air conditioning; Rep. gr. 87 ; Coolant circuit and ⇒ Electronic parts catalogue .
- ☐ Different fitting locations depending on engine  
⇒ [“3.2 Removing and installing heater coolant shut-off valve, operation”, page 95](#)
- ☐ Direction of coolant through heater coolant shut-off valve - N279- ⇒ [“3.1.1 General notes”, page 88](#)
- ☐ Checking activation and operation of heater coolant shut-off valve - N279- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)

**6 - Connection in coolant circuit**

- ☐ Incorporation depending on engine (e.g. to coolant expansion tank on 6-cylinder engines) ⇒ Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses

**Note**

*A non-return valve is fitted in this connection on some engine versions. Pay attention to this valve (proper installation and operation) if there are problems with noise from the coolant circuit ⇒ Rep. gr. 19 ; Cooling system/coolant; Connection diagram - coolant hoses .*

**7 - Heater and air conditioning unit**

- ☐ With heat exchanger
- ☐ Removing and installing heat exchanger ⇒ Heating, air conditioning; Rep. gr. 87 ; Heater and air conditioning unit (front); Removing and installing heat exchanger

**8 - Auxiliary/supplementary heater**

- ☐ Checking activation of circulation pump - V55- and heater coolant shut-off valve - N279- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)

**9 - Circulation pump - V55-**

- ☐ Incorporated into auxiliary/supplementary heater hoses
- ☐ Removing and installing ⇒ [“2.7 Removing and installing circulation pump V55”, page 71](#)

**Note**

- ◆ *Not all vehicles with a start/stop system are fitted with the coolant circulation pump - V50- for maintaining the flow of coolant through the heat exchangers of the heater and air conditioning units when the stop function is active ⇒ Heating, air conditioning; Rep. gr. 87; Coolant circuit.*
- ◆ *On vehicles with a start/stop system but no coolant circulation pump - V50- , the circulation pump - V55- of the auxiliary/supplementary heater is activated by the auxiliary heater control unit - J364- while the stop function is active. The auxiliary heater control unit - J364- is requested by -E87- via the data bus to switch on the circulation pump - V55- ⇒ Vehicle diagnostic tester ("Guided Fault Finding", "Read measured values" function).*
- ◆ *Depending on the production period, vehicles with an auxiliary/supplementary heater as an optional extra may be fitted with both pumps ( coolant circulation pump - V50- and circulation pump - V55- ). However, it is also possible that -V50- is not fitted and that its function is performed by -V55- ⇒ Heating, air conditioning; Rep. gr. 87; Coolant circuit, ⇒ Rep. gr. 19; Cooling system/coolant; Connection diagram - coolant hoses and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*



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**10 - T-piece****11 - Non-return valve**

- ☐ Removing and installing ⇒ ["3.4 Removing and installing non-return valve for coolant", page 106](#)
- ☐ Different fitting locations depending on engine  
⇒ ["3.4 Removing and installing non-return valve for coolant", page 106](#)
- ☐ Pay attention to direction of flow -arrow-

**Note**

*In the event of problems relating to noise from the coolant circuit, ensure that this non-return valve is installed properly and functions correctly.*

## 3.2 Removing and installing heater coolant shut-off valve, operation

⇒ [“3.2.1 Operation of heater coolant shut-off valve”, page 95](#)

⇒ [“3.2.2 Removing and installing heater coolant shut-off valve - Audi A4 and Audi A5 models with 4-cyl. engine, all Audi Q5 models”, page 97](#)

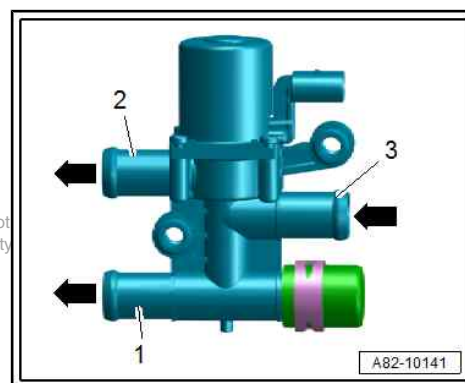
⇒ [“3.2.3 Removing and installing heater coolant shut-off valve - Audi A4 and Audi A5 models with 6-cyl. engine”, page 101](#)

### 3.2.1 Operation of heater coolant shut-off valve

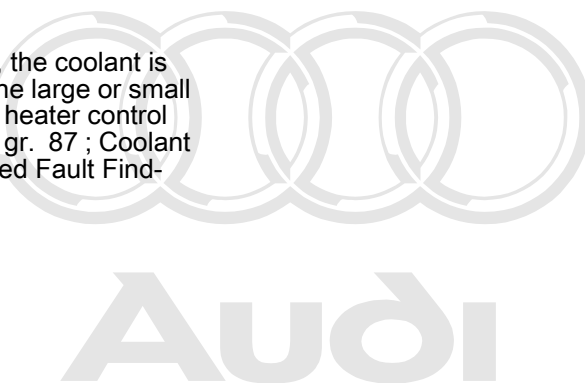


#### Note

- ◆ The fitting location, designation and version of the heater coolant shut-off valve - N279- depend on the version and equipment of the vehicle. It is therefore important to observe the correct assignment ⇒ *Electronic parts catalogue*.
- ◆ The heater coolant shut-off valve - N279- is activated by the auxiliary heater control unit - J364- in accordance with the coolant temperature and the request set ⇒ Heating, air conditioning; Rep. gr. 87; Coolant circuit and ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- ◆ If voltage is applied to the heater coolant shut-off valve - N279- (small coolant circuit), the coolant flows from the connection -3- (from the heat exchanger in the heater and air conditioning unit (front and - if fitted - rear)) to the connection -1- (to the circulation pump - V55- ).
- ◆ If voltage is not applied to -N279- (large coolant circuit), the coolant flows from the connection -3- (from the heat exchanger in the air conditioning unit) to the connection -2- (to the engine).
- ◆ There are different versions of -N279- (with 3 or 4 connections for coolant hoses). On the version with 4 connections, one connection is sealed with a cap.
- ◆ Depending on the installation position of -N279- , the cap shown may also be fitted at connection -1-.
- ◆ In auxiliary/supplementary heating mode, -N279- is activated by the auxiliary heater control unit - J364- until the coolant temperature in the auxiliary/supplementary heater has reached a specified level ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- ◆ Depending on the vehicle version, the engine installed, the coolant temperature and the setting, the operating and display unit for front air conditioning system - E87- may also be activated by the auxiliary heater control unit - J364- with the auxiliary/supplementary heater switched off. Activation is then performed in response to a request from -E87- via the data bus.
- ◆ In the event of problems with insufficient heating of the passenger compartment in auxiliary/supplementary heating mode or with the engine running, check the incorporation of -N279- into the coolant circuit and activation of -N279- by the auxiliary heater control unit - J364- ⇒ [page 88](#) and ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).



- ◆ *The numbers marking the connections on -N279- depend on the version and may differ from the numbering shown in this illustration.*
- ◆ In auxiliary/supplementary heating mode, -N279- is activated permanently by the auxiliary heater control unit - J364- until the coolant temperature in the heater reaches approx. 81 °C (activation 100 %). As long as -N279- is activated, the coolant flows in the small circuit (from the auxiliary/supplementary heater, via -N279- and the heat exchangers in the heater and air conditioning units, and back to the auxiliary/supplementary heater).
- ◆ At coolant temperatures between approx. 82 °C and approx. 88 °C in the heater unit, -N279- is activated by -J364- using a characteristic curve. Depending on the activation, the coolant flows in the small circuit or the large circuit (from the auxiliary/supplementary heater, via -N279- , the heat exchangers in the heater and air conditioning units and via the engine, and back to the auxiliary/supplementary heater).
- ◆ If the coolant temperature in the heater is above approx. 88 °C, -N279- is no longer activated by -J364- . The coolant flows in the large coolant circuit.
- ◆ In the auxiliary/supplementary heating mode, the coolant is conveyed via the circulation pump - V55- in the large or small coolant circuit. -V55- is activated by auxiliary heater control unit - J364- ⇒ Heating, air conditioning; Rep. gr. 87 ; Coolant circuit and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").



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**Note**

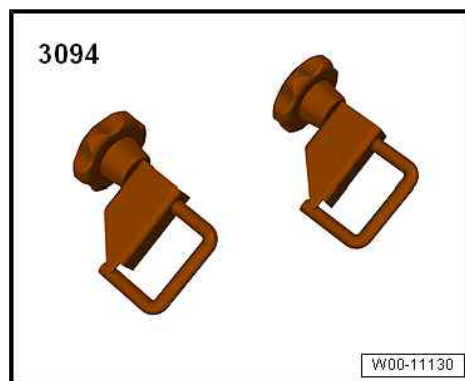
- ◆ *Depending on the ambient temperature and the quantity of heat emitted by the heat exchangers of the heater and air conditioning unit, the activation of the heater coolant shut-off valve - N279- may remain in the various operating statuses for a lengthy period.*
- ◆ *Activation of the heater coolant shut-off valve - N279- is also maintained if the engine is started with the auxiliary/supplementary heater in operation and the coolant in the engine is colder than the coolant in the auxiliary/supplementary heater.*
- ◆ *There are different versions of the heater coolant shut-off valve - N279- . Ensure correct assignment ⇒ Electronic parts catalogue .*
- ◆ *At a coolant temperature of approx. 91 °C, the auxiliary/supplementary heater switches from control mode to control interval. During the control interval, the heater coolant shut-off valve - N279- is not activated and the coolant flows in the large coolant circuit (via the engine).*
- ◆ *The display in the "Read measured values" function for activation of the heater coolant shut-off valve - N279- differs and depends on the vehicle version and the version of the auxiliary heater control unit - J364- . On this vehicle for example, currently a display of 100 % indicates that 100 % of the coolant is being delivered in the small circuit and that the heater coolant shut-off valve - N279- is being activated ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- ◆ *Depending on the vehicle version, the engine installed, the coolant temperature and the setting on -E87- , the heater coolant shut-off valve - N279- may also be activated by the auxiliary heater control unit - J364- with the auxiliary/supplementary heater switched off. In this case, the activation is a response to a request from -E87- or from the respective engine control unit - J623- via the data bus ⇒ Vehicle diagnostic tester ("Guided Fault Finding", "Read measured values" function).*
- ◆ *Depending on the vehicle version, the engine installed, the coolant temperature and the setting on -E87- , the circulation pump - V55- may also be activated by the auxiliary heater control unit - J364- with the auxiliary/supplementary heater switched off. In this case, the activation is a response to a request from -E87- or from the respective engine control unit - J623- via the data bus ⇒ Vehicle diagnostic tester ("Guided Fault Finding", "Read measured values" function).*

### 3.2.2 Removing and installing heater coolant shut-off valve - Audi A4 and Audi A5 models with 4-cyl. engine, all Audi Q5 models

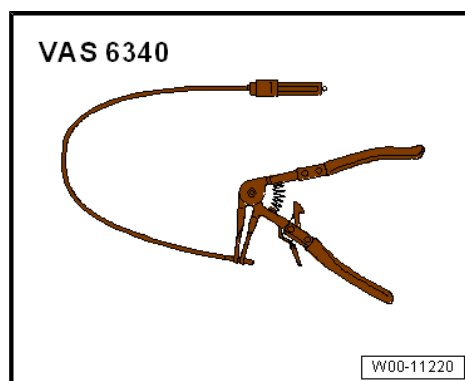
Special tools and workshop equipment required

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- ◆ Hose clamps up to 25 mm - 3094- (or commercially available pinch-off tools)



- ◆ Hose clip pliers - VAS 6340-



- ◆ Hose clip pliers - VAS 6362-



## Removing

- Switch off ignition (and auxiliary/supplementary heater).



### WARNING

*The cooling system is under pressure when the engine is hot.  
Risk of scalding due to hot steam and hot coolant*

*Danger of scalding skin and other parts of the body.*

- Put on protective gloves.
- Put on safety goggles.
- Cover filler cap on expansion tank with a cloth and open carefully to release pressure.

- Release pressure in coolant circuit by opening cap 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 .

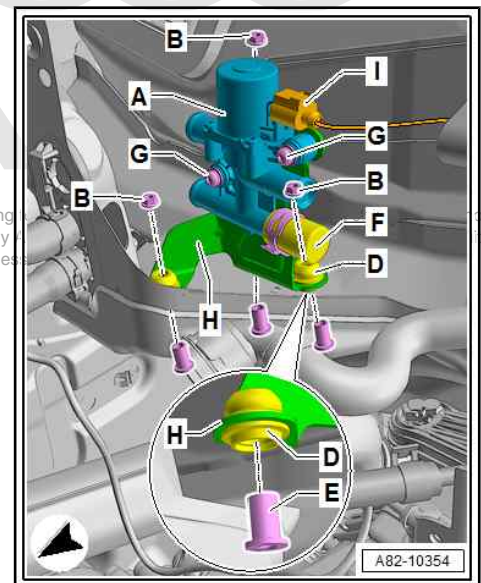
### Note

*The plenum chamber cover must be undamaged in order to prevent water from running into the heater and air conditioning unit via the intake duct when the plenum chamber cover is fitted. The plenum chamber cover must also be fully engaged in the wind-screen frame ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .*

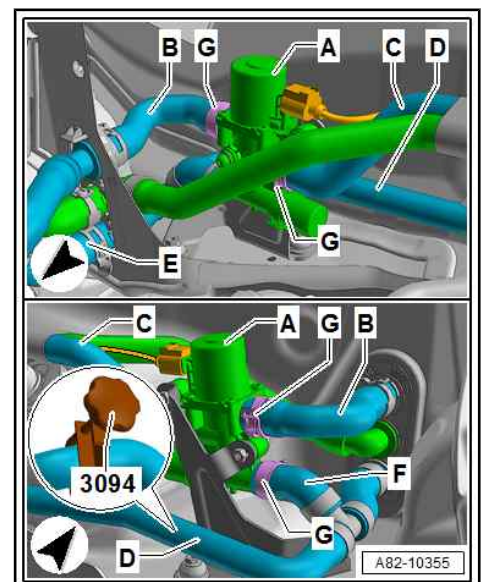
- Cover area beneath connections for coolant hoses to heater coolant shut-off valve - N279- -A- in plenum chamber with absorbent paper or similar.

### Note

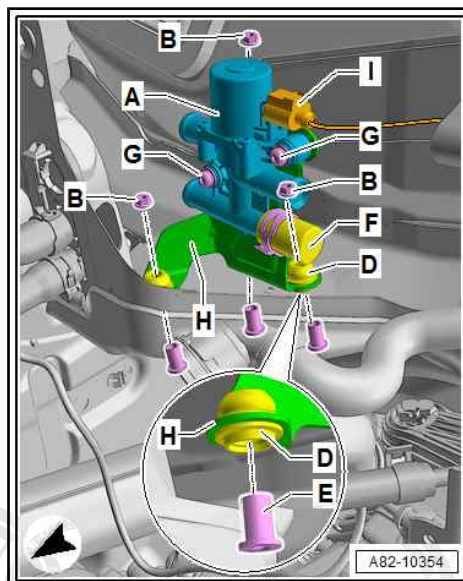
- ◆ *This will stop coolant running into the plenum chamber when the coolant hoses are disconnected.*
- ◆ *Vehicles with a 4-cylinder engine may be fitted with a non-return valve in the vicinity of the heater coolant shut-off valve - N279- -A- ⇒ [page 106](#) . The following illustrations show the arrangement on a vehicle with no non-return valve.*
- ◆ *The illustration shows the fitting location for the heater coolant shut-off valve - N279- on the Audi A4 and Audi A5. On the Audi Q5, the bracket -H- is fitted in front of the heater coolant shut-off valve - N279- -A-.*



- Pinch off coolant hoses -B, C, D, E- with hose clamps up to 25 mm - 3094- (or using commercially available pinch-off tools).
- Mark positions of coolant hoses -B, C, F- on heater coolant shut-off valve - N279- -A-.
- Unfasten hose clamps -G- and detach coolant hoses -B, C, F-.



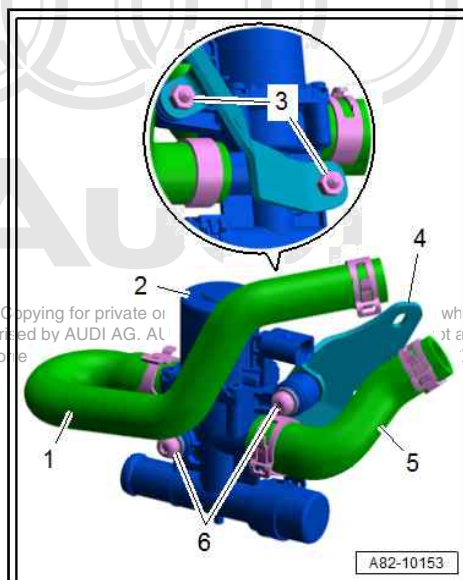
- Unplug electrical connector -I-.
  - Unscrew nuts -B- and detach heater coolant shut-off valve - N279- -A-.
- Or
- Unscrew bolts -G- and detach heater coolant shut-off valve - N279- -A- (from bracket -H-).



### Note

Depending on version, counterhold at nuts -3- when unscrewing bolts -6-.

### Installing



Install in reverse order of removal; note the following.

- Check cap -F- and corresponding hose clamp for correct positioning.
- Install heater coolant shut-off valve - N279- -A- (with bracket -H-).



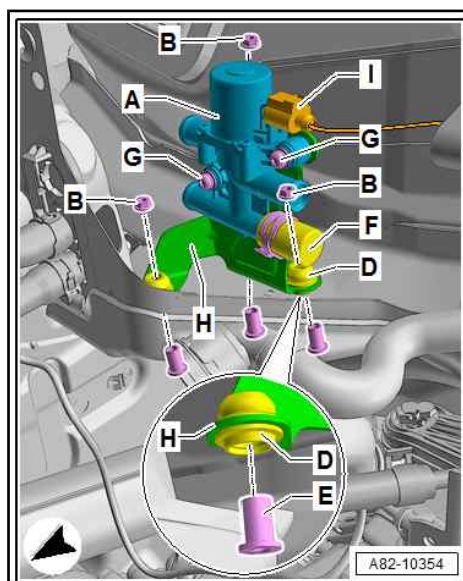
### Note

For noise insulation, bracket -H- is attached via sleeves -E- and rubber elements -D- (3x in each case).

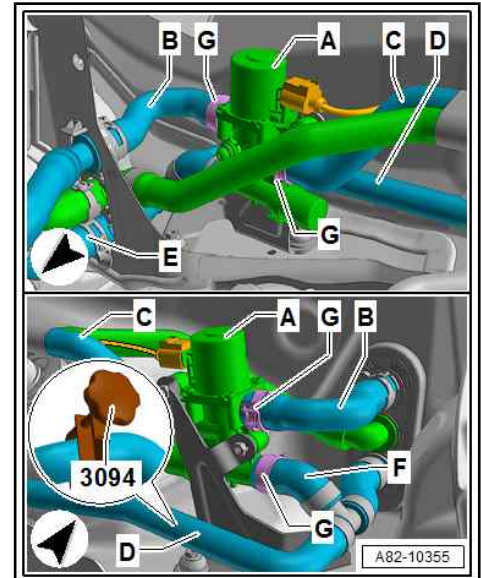


### Caution

Ensure correct assignment of coolant hoses at shut-off valve. If coolant hoses are interchanged, this can cause the heating in the passenger compartment to fail.



- Butt-joint coolant hoses -B, C, F- and secure at marked locations with standard hose clips. For correct version of hose clip refer to ➔ Electronic parts catalogue .



- Check installation position of heater coolant shut-off valve - N279- -A-, bracket -H- and all other components in this area (must not make contact with one another: noise).
- Check plenum chamber and clean if necessary.

#### Note

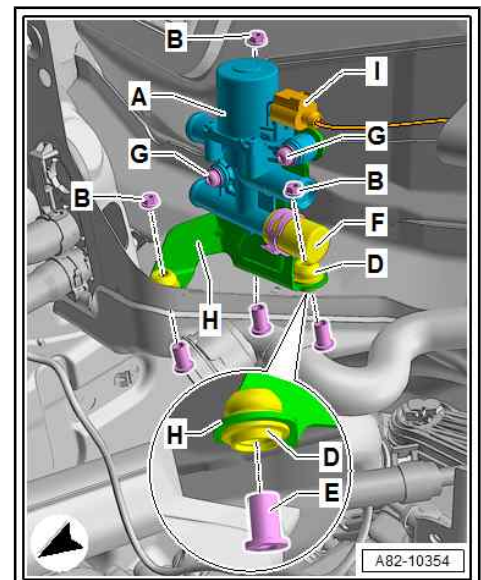
*Residual coolant in the plenum chamber could result in problems with odours.*

- To bleed the coolant circuit, start engine and activate circulation pump - V55- and heater coolant shut-off valve - N279- with ➔ Vehicle diagnostic tester ("Guided Fault Finding")  
➔ [page 104](#) .

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**If applicable, check activation and operation of heater coolant shut-off valve - N279- ➔ Vehicle diagnostic tester ("Guided Fault Finding").**

- Re-install components removed previously in reverse order and/or re-attach detached components.



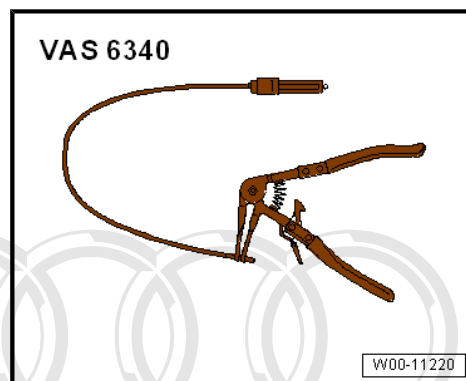
#### Tightening torques

| Tightening torque                                                   | Component |
|---------------------------------------------------------------------|-----------|
| Heater coolant shut-off valve - N279- to bracket                    | 7 Nm      |
| Bracket for heater coolant shut-off valve - N279- to plenum chamber | 8 Nm      |

### 3.2.3 Removing and installing heater coolant shut-off valve - Audi A4 and Audi A5 models with 6-cyl. engine

Special tools and workshop equipment required

# ◆ Hose clip pliers - VAS 6340-



# ◆ Hose clip pliers - VAS 6362-



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## Removing

- Switch off ignition (and auxiliary/supplementary heater).
- Release pressure in coolant circuit by opening cap on coolant expansion tank.
- Drain cooling system ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .



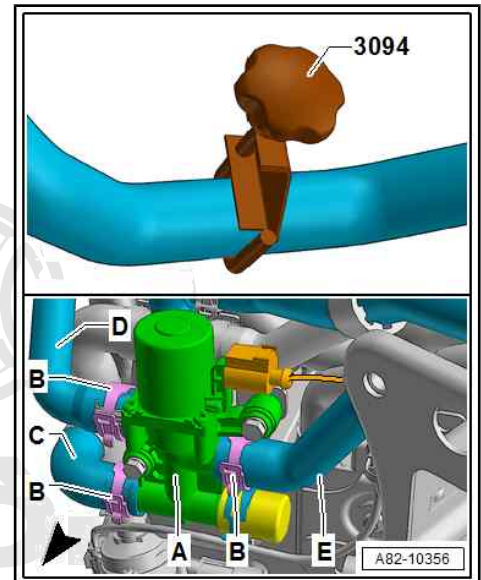
## Note

*The coolant must be drained as there is not sufficient space in this engine to clamp off the coolant hoses in the vicinity of the shut-off valve. On vehicle versions where there is enough space to clamp off the coolant hoses, there is no need to drain the coolant*

⇒ "3.2.2 Removing and installing heater coolant shut-off valve - Audi A4 and Audi A5 models with 4-cyl. engine, all Audi Q5 models", page 97 .

- Remove wheel spoiler (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Remove air intake grille (right-side) ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .

- If coolant has not been drained off, pinch off coolant hoses -C, D, E- with hose clamps up to 25 mm - 3094- (or using commercially available pinch-off tools).
- Mark positions of coolant hoses -C, D, E- on heater coolant shut-off valve - N279- -A-.
- Unfasten hose clamps -B- and detach coolant hoses -C, D, E-.

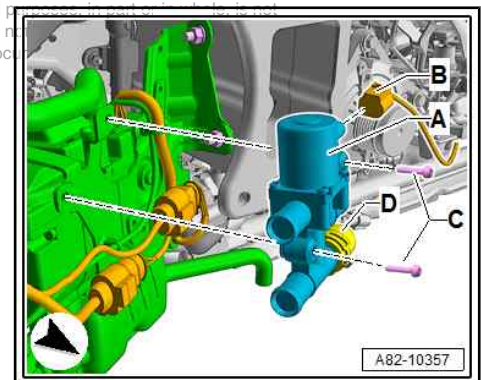


- Unplug electrical connector -B-.
- Remove bolts -C-.
- Take out heater coolant shut-off valve - N279- -A-.

#### Installing

Install in reverse order of removal; note the following.

- Check cap -D- and corresponding hose clamp for correct positioning.
- Install heater coolant shut-off valve - N279- -A-.



#### Caution

**Ensure correct assignment of coolant hoses at shut-off valve. If coolant hoses are interchanged, this can cause the heating in the passenger compartment to fail.**

- Butt-joint coolant hoses -C, D, E- and secure at marked locations with standard hose clips. For correct version of hose clip refer to ⇒ Electronic parts catalogue .
- Check installation position of heater coolant shut-off valve - N279- -A-, corresponding bracket and all other components in this area (must not make contact with one another: noise).

#### If coolant was drained off:

- Fill up with coolant and bleed coolant circuit ⇒ [page 104](#) and ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

#### If coolant was not drained off:

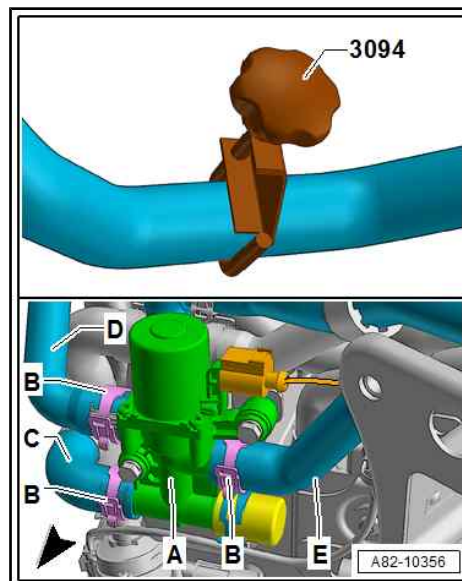
- Bleed coolant circuit ⇒ [page 104](#) .

#### All vehicles:

- To bleed coolant circuit of auxiliary/supplementary heater, start engine and activate circulation pump - V55- and heater coolant shut-off valve - N279- with ⇒ Vehicle diagnostic tester (Guided Fault Finding) ⇒ [page 104](#) .
- If applicable, check activation and operation of heater coolant shut-off valve - N279- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Re-install components removed previously in reverse order and/or re-attach detached components.

#### Tightening torques

| Tightening torque                                | Component |
|--------------------------------------------------|-----------|
| Heater coolant shut-off valve - N279- to bracket | 8 Nm      |



### 3.3 Bleeding coolant circuit



#### Note

- ◆ *Removing and installing the auxiliary/supplementary heater, the circulation pump - V55- , the non-return valve (on vehicles with a TDI engine, depending on version) and the heater coolant shut-off valve -N279- according to the description in this Workshop Manual ensures that only a small quantity of air enters the coolant circuit or remains there. It is therefore not necessary to bleed the coolant circuit fully after removing and installing the auxiliary/supplementary heater, the circulation pump - V55- and the heater coolant shut-off valve -N279- (on vehicles with a petrol engine).*
- ◆ *However, if a large quantity of coolant has escaped due to another problem, e.g. a leaking hose, or after coolant pipes have been renewed, the coolant circuit must be bled completely ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .*
- ◆ *After bleeding and filling the coolant circuit, the auxiliary/supplementary heater and the circulation pump - V55- must be bled additionally as described below.*

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## Bleeding coolant circuit of auxiliary/supplementary heater



### Note

- ◆ *The circulation pump - V55- must be completely filled with coolant to prevent the pump from being damaged irreparably when it is run dry.*
- ◆ *As only a small quantity of coolant escapes from the coolant circuit during removal and installation of the auxiliary/supplementary heater, the circulation pump - V55- and the heater coolant shut-off valve - N279- , and only a small quantity of air remains in the coolant circuit during installation (auxiliary/supplementary heater and circulation pump - V55- are already filled with coolant during installation), the system only has to be bled as described below.*



### WARNING

***The cooling system is under pressure when the engine is hot.  
Risk of scalding due to hot steam and hot coolant***

***Danger of scalding skin and other parts of the body.***

- ***Put on protective gloves.***
- ***Put on safety goggles.***
- ***Cover filler cap on expansion tank with a cloth and open carefully to release pressure.***

- Fill coolant expansion tank with coolant as far as upper mark.
- Activate circulation pump - V55- via final control diagnosis function ⇒ Vehicle diagnostic tester ("Guided Fault Finding"). This additionally bleeds the coolant return from the heat exchanger in the heater and air conditioning unit via the heater coolant shut-off valve - N279- to the circulation pump - V55-.
- Set temperature on operating and display unit for front air conditioning system - E87- to "HI" (for driver's and passenger's side).
- Switch on "Auxiliary/supplementary heater" via "AC" function in "Vehicle" (or "Car") menu of Multi Media Interface (MMI, control unit for front display and information control panel - J523- ) ⇒ Infotainment/MMI Operating Manual , via operating and display unit for front air conditioning system - E87- or e.g. via Vehicle diagnostic tester , "Basic setting" function ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- Allow auxiliary/supplementary heater to run for at least 2 minutes at full load ( circulation pump - V55- starts up and heater coolant shut-off valve - N279- is activated).
- Start engine and set temperature on -E87- to "HI" (for driver's and passenger's side).
- Run engine at high idling speed (approx. 2000 to 2500 rpm) for at least 2 minutes.
- Switch off engine and auxiliary/supplementary heater.



#### WARNING

*The cooling system is under pressure when the engine is hot.  
Risk of scalding due to hot steam and hot coolant*

*Danger of scalding skin and other parts of the body.*

- *Put on protective gloves.*
- *Put on safety goggles.*
- *Cover filler cap on expansion tank with a cloth and open carefully to release pressure.*

- Check coolant level in coolant expansion tank and top up coolant if necessary ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

### 3.4 Removing and installing non-return valve for coolant

⇒ [“3.4.1 Removing and installing non-return valve - Audi A4 and Audi A5 models with 4-cyl. engine, Audi Q5”, page 106](#)

⇒ [“3.4.2 Removing and installing non-return valve - Audi A4 and Audi A5 models with 6-cyl. engine”, page 111](#)

#### 3.4.1 Removing and installing non-return valve - Audi A4 and Audi A5 models with 4-cyl. engine, Audi Q5



#### Note

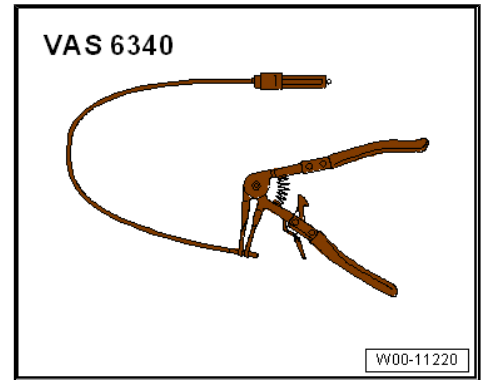
*A non-return valve for coolant is only fitted on some models; at the start of production only on vehicles with a TDI engine*  
⇒ [“3 Coolant circuit with auxiliary/supplementary heater”, page 88](#) .

#### Special tools and workshop equipment required

- ◆ Hose clamps up to 25 mm - 3094- (or commercially available pinch-off tools)



◆ Hose clip pliers - VAS 6340-



◆ Hose clip pliers - VAS 6362-



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## Note

- ◆ There are different versions -A, C- of the non-return valve. Depending on version, the coolant hoses are secured with spring-type clips -B- or pressure rings -D-. If the coolant hoses are secured with pressure rings -D-, the non-return valve must be renewed together with the corresponding coolant hoses ⇒ Electronic parts catalogue .
- ◆ When installing, pay attention to the direction of flow through the non-return valves -A, C- -arrows-.

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## Removing

- Switch off ignition (and auxiliary/supplementary heater).



## WARNING

**The cooling system is under pressure when the engine is hot. Risk of scalding due to hot steam and hot coolant**

**Danger of scalding skin and other parts of the body.**

- Put on protective gloves.
- Put on safety goggles.
- Cover filler cap on expansion tank with a cloth and open carefully to release pressure.

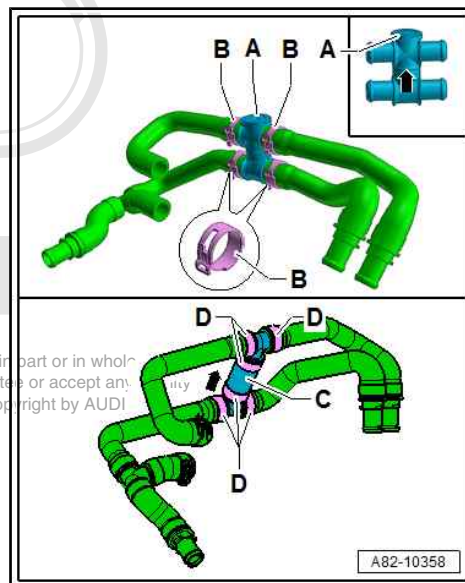
- Release pressure in coolant circuit by opening cap on coolant expansion tank.
- Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .



## Note

The plenum chamber cover must be undamaged in order to prevent water from running into the heater and air conditioning unit via the intake duct when the plenum chamber cover is fitted. The plenum chamber cover must also be fully engaged in the wind-screen frame ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .

- Check method used for attaching coolant hoses to non-return valve -A, C- (and to replacement part).



If coolant hoses are attached to non-return valve -A, C- with pressure rings -D-:

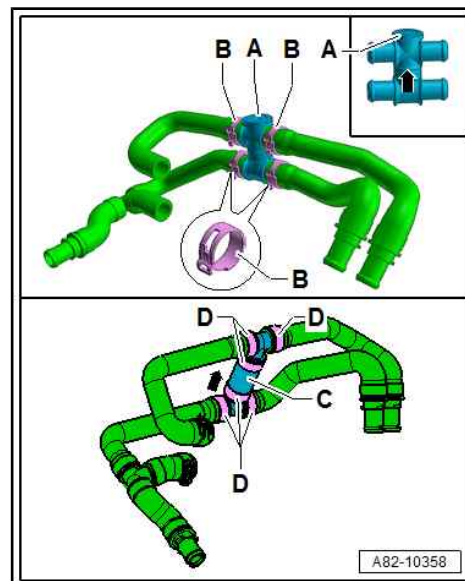
- Drain cooling system ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
- Cover area under connections for coolant hoses to non-return valve -A, C- (and heater coolant shut-off valve - N279- ⇒ [page 97](#) ) in plenum chamber with absorbent paper or similar.



#### Note

*This will stop coolant running into the plenum chamber when the coolant hoses are disconnected.*

- Remove non-return valve -A, C- together with corresponding coolant hoses.



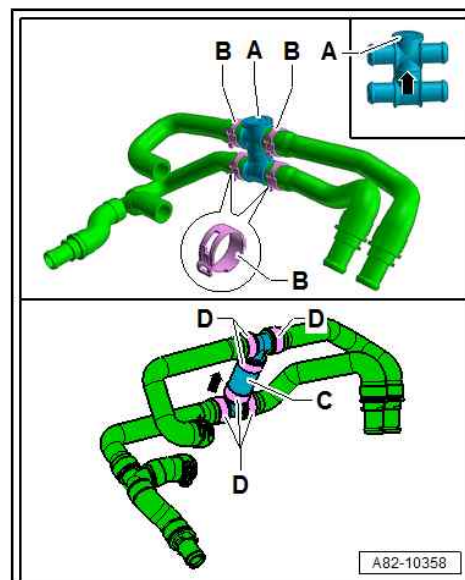
If coolant hoses are attached to non-return valve -A, C- with spring-type clips -B-:

- Check which type of non-return valve was supplied as a replacement part ⇒ Electronic parts catalogue .



#### Note

*If the non-return valve -A, C- was supplied as an assembly together with the coolant hoses, and not as a separate part, renew the entire assembly.*



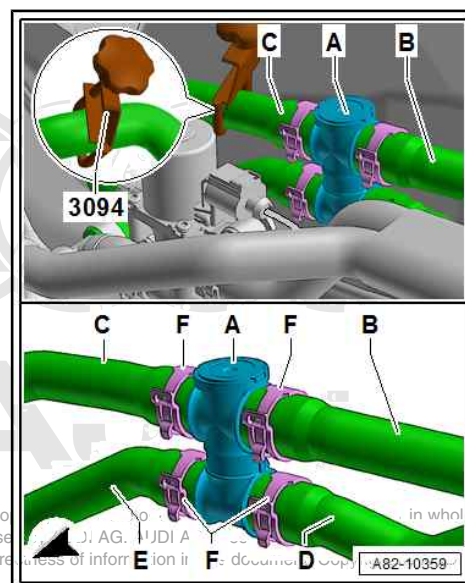
- Cover area under connections for coolant hoses to non-return valve -A- (and heater coolant shut-off valve - N279- ⇒ [page 97](#) ) in plenum chamber with absorbent paper or similar.



#### Note

*This will stop coolant running into the plenum chamber when the coolant hoses are disconnected.*

- Mark positions of coolant hoses -B, C, D, E- at non-return valve -A-.
- Pinch off coolant hoses -B, C, D, E- with hose clamps up to 25 mm - 3094- (or using commercially available pinch-off tools).
- Unfasten hose clamps -F- and disconnect coolant hoses -B, C, D, E-.



### Installing

Install in reverse order of removal; note the following.

### If non-return valve was renewed together with coolant hoses:

- Fit non-return valve -A- with coolant hoses in correct position; pay attention to direction of coolant flow  
⇒ [“3 Coolant circuit with auxiliary/supplementary heater”, page 88](#).



#### Caution

*Ensure correct assignment of coolant hoses at shut-off valve. If coolant hoses are interchanged, this can cause the heating in the passenger compartment to fail.*

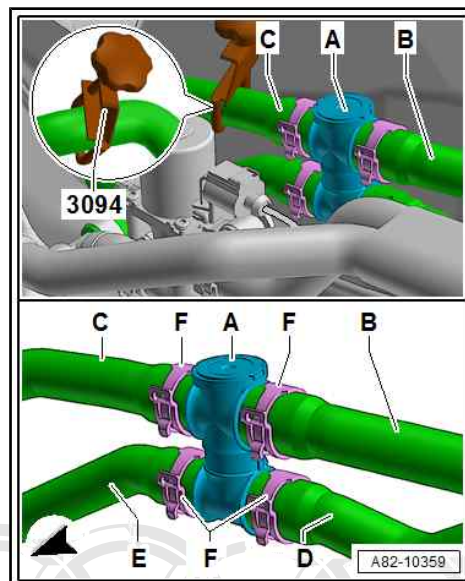
- Check installation position of non-return valve -A-, -N279- ⇒ [page 97](#) and all other components in this area (must not make contact with one another: noise).
- Check plenum chamber and clean if necessary.



#### Note

*Residual coolant in the plenum chamber could result in problems with odours.*

- Top up coolant and bleed coolant circuit ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .



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If non-return valve was renewed separately:

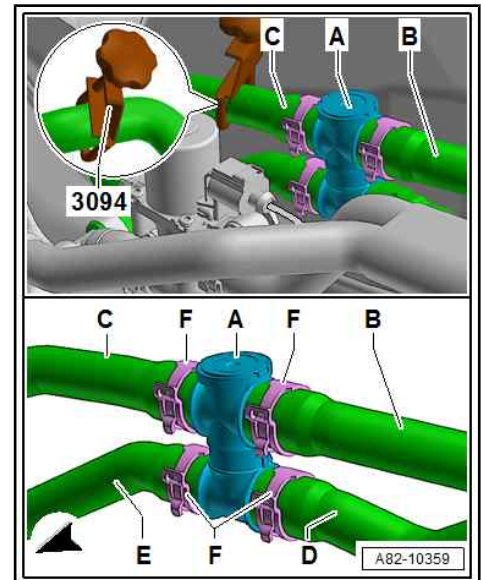
- Fit non-return valve -A- in correct position; pay attention to direction of coolant flow  
⇒ [“3 Coolant circuit with auxiliary/supplementary heater”, page 88](#).



#### Caution

*Ensure correct assignment of coolant hoses at shut-off valve. If coolant hoses are interchanged, this can cause the heating in the passenger compartment to fail.*

- Butt-joint coolant hoses -B, C, D, E- and secure at marked locations with standard hose clips -F-. For correct version of hose clip refer to ⇒ Electronic parts catalogue.
- Check installation position of non-return valve -A-, -N279- ⇒ [page 97](#) and all other components in this area (must not make contact with one another: noise).
- Check plenum chamber and clean if necessary.



#### Note

*Residual coolant in the plenum chamber could result in problems with odours.*

- Bleed coolant circuit ⇒ [page 104](#).

#### All vehicles:

- To bleed coolant circuit of auxiliary/supplementary heater, start engine and activate circulation pump - V55- and heater coolant shut-off valve - N279- with ⇒ Vehicle diagnostic tester (Guided Fault Finding) ⇒ [page 104](#).
- If applicable, check activation and operation of heater coolant shut-off valve - N279- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- Re-install components removed previously in **reverse order** and/or re-attach detached components.

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### 3.4.2 Removing and installing non-return valve - Audi A4 and Audi A5 models with 6-cyl. engine

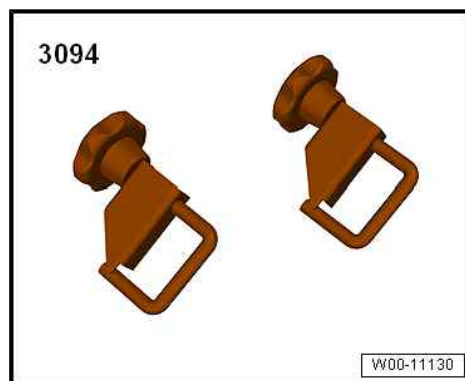


#### Note

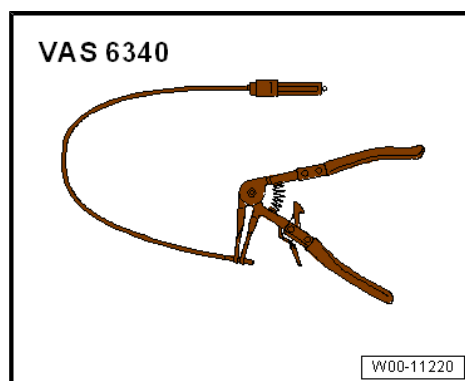
*A non-return valve for coolant is only fitted on some models; at the start of production only on vehicles with a TDI engine  
⇒ [“3 Coolant circuit with auxiliary/supplementary heater”, page 88](#).*

Special tools and workshop equipment required

- ◆ Hose clamps up to 25 mm - 3094- (or commercially available pinch-off tools)



- ◆ Hose clip pliers - VAS 6340-



- ◆ Hose clip pliers - VAS 6362-



- Switch off ignition (and auxiliary/supplementary heater).



### WARNING

*The cooling system is under pressure when the engine is hot.  
Risk of scalding due to hot steam and hot coolant*

*Danger of scalding skin and other parts of the body.*

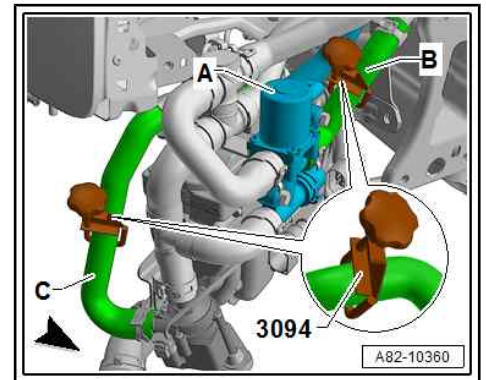
- *Put on protective gloves.*
- *Put on safety goggles.*
- *Cover filler cap on expansion tank with a cloth and open carefully to release pressure.*

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- Release pressure in coolant circuit by opening cap on coolant expansion tank.
- If necessary, drain off coolant ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

**Note**

- ◆ *The coolant must be drained off as there is not usually enough space on this engine version to pinch off the coolant hoses in the area around the shut-off valve.*
- ◆ *Coolant does not have to be drained off on vehicle models where there is sufficient space to pinch off the coolant hoses (e.g. using a small pinch-off tool)*  
 ⇒ *"3.2.2 Removing and installing heater coolant shut-off valve - Audi A4 and Audi A5 models with 4-cyl. engine, all Audi Q5 models", page 97.*
- If necessary, remove wing panel brace (right-side) ⇒ General body repairs, exterior; Rep. gr. 50 ; Wing; Removing and installing wing panel brace .
- Remove air intake grille (right-side) ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .
- Vehicles with TDI engine (if necessary): Remove fuel filter with bracket and move it to one side with lines connected ⇒ Fuel supply system; Rep. gr. 20 ; Fuel filter .
- If necessary, unfasten heater coolant shut-off valve - N279-A- from bracket for auxiliary/supplementary heater and pivot it slightly to one side  
 ⇒ *"3.2.3 Removing and installing heater coolant shut-off valve - Audi A4 and Audi A5 models with 6-cyl. engine", page 101.*
- If coolant has not been drained off, pinch off coolant hoses -B, C- with hose clamps up to 25 mm - 3094- (or using a small commercially available pinch-off tool).



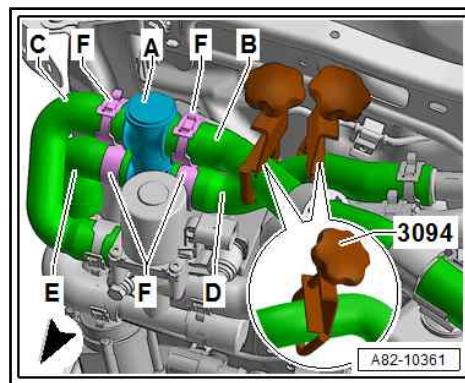
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- If coolant has not been drained off, pinch off coolant hoses -B, D- with hose clamps up to 25 mm - 3094- (or using commercially available pinch-off tools).
- Mark positions of coolant hoses -B, C, D, E- at non-return valve -A-.
- Unfasten hose clamps -F- and disconnect coolant hoses -B, C, D, E-.

### Installing

Install in reverse order of removal; note the following.

- Fit non-return valve -A- in correct position; pay attention to direction of coolant flow  
⇒ ["3 Coolant circuit with auxiliary/supplementary heater", page 88](#) .



### Caution

**Ensure correct assignment of coolant hoses at shut-off valve. If coolant hoses are interchanged, this can cause the heating in the passenger compartment to fail.**

- Butt-joint coolant hoses -B, C, D, E- and secure at marked locations with standard hose clips -F-. For correct version of hose clip refer to ⇒ Electronic parts catalogue .
- Check installation position of non-return valve -A-, -N279-  
⇒ ["3.2.2 Removing and installing heater coolant shut-off valve - Audi A4 and Audi A5 models with 4-cyl. engine, all Audi Q5 models", page 97](#) and all other components in this area (must not make contact with one another: noise).

### If coolant was drained off:

- Fill up with coolant and bleed coolant circuit  
⇒ ["3.3 Bleeding coolant circuit", page 104](#) and ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

### If coolant was not drained off:

- Bleed coolant circuit  
⇒ ["3.3 Bleeding coolant circuit", page 104](#) .

### All vehicles:

- To bleed coolant circuit of auxiliary/supplementary heater, start engine and activate circulation pump - V55- and heater coolant shut-off valve - N279- with ⇒ Vehicle diagnostic tester (Guided Fault Finding)  
⇒ ["3.3 Bleeding coolant circuit", page 104](#) .
- If applicable, check activation and operation of heater coolant shut-off valve - N279- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- Re-install components removed previously in reverse order and/or re-attach detached components.

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## 4 Fuel supply system

⇒ [“4.1 Overview of fitting locations - fuel supply system”, page 115](#)

⇒ [“4.2 Fuel take-off from fuel tank”, page 122](#)

⇒ [“4.3 Releasing quick-release coupling at fuel line for auxiliary/supplementary heater”, page 128](#)

⇒ [“4.4 Routing of fuel line to auxiliary/supplementary heater”, page 129](#)

⇒ [“4.5 Checking CO<sub>2</sub> content in exhaust gas of auxiliary/supplementary heater”, page 130](#)

⇒ [“4.6 Checking fuel delivery rate”, page 134](#)

⇒ [“4.7 Removing and installing metering pump V54 ”, page 138](#)

### 4.1 Overview of fitting locations - fuel supply system

⇒ [“4.1.1 Overview of fitting locations - fuel supply system”, page 115](#)

⇒ [“4.1.2 Overview of fitting locations - fuel supply system, metering pump V54 ”, page 118](#)

#### 4.1.1 Overview of fitting locations - fuel supply system



##### Note

*The illustration shows the layout of components on the Audi A4 and Audi A5. The layout for certain components may differ on the Audi Q5; this, however, does not influence their operation.*

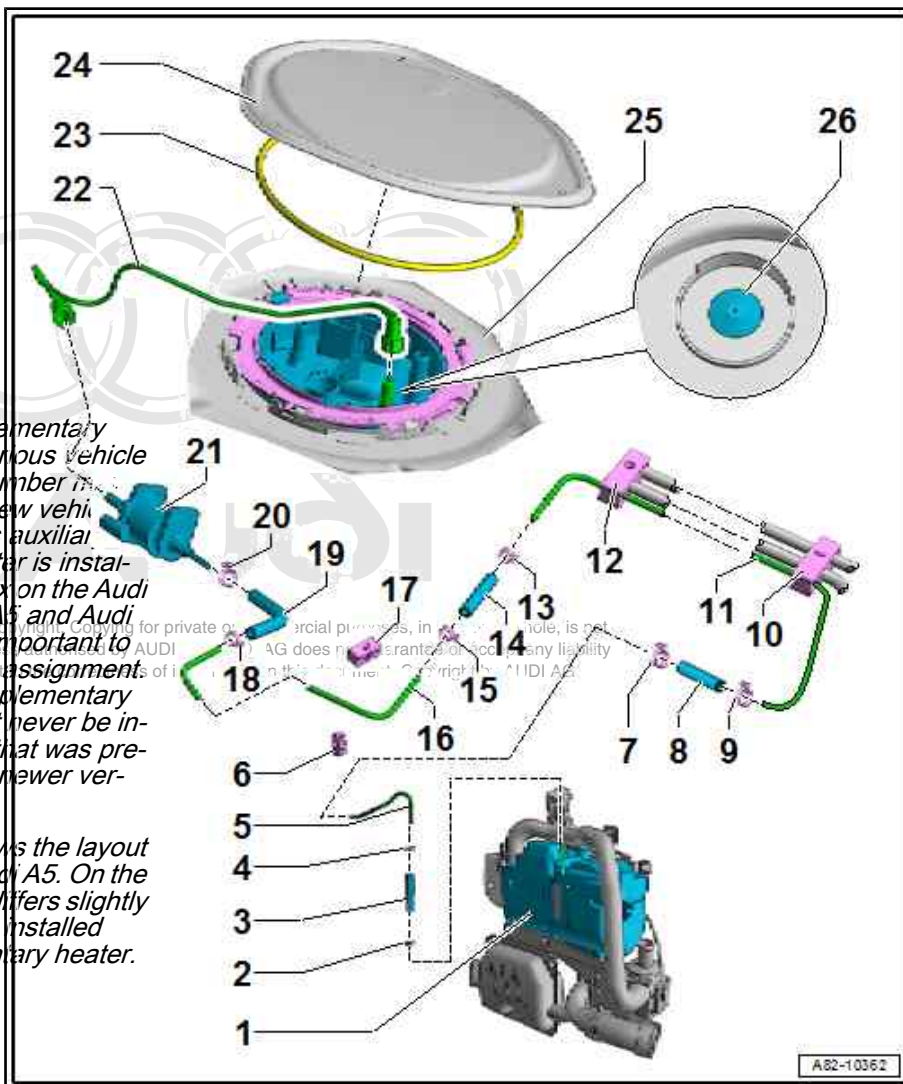
## 1 - Auxiliary/supplementary heater

- ☐ Different versions. For correct version refer to ⇒ Electronic parts catalogue
- ☐ Removing and installing ⇒ ["2.4 Removing and installing auxiliary/supplementary heater", page 51](#)



### Note

- ◆ *This auxiliary/supplementary heater is fitted in various vehicle models. The part number in change with each new vehicle model on which this auxiliary/supplementary heater is installed (e.g. 4M0 xxx xxx on the Audi Q7, Audi A4, Audi A5 and Audi Q5). It is therefore important to observe the correct assignment. An old auxiliary/supplementary heater version must never be installed in a vehicle that was previously fitted with a newer version.*
- ◆ *This illustration shows the layout on an Audi A4 or Audi A5. On the Audi Q5 the layout differs slightly due to the vertically installed auxiliary/supplementary heater.*



## 2 - Hose clip

## 3 - Fuel hose

- ☐ The individual sections must be butt-jointed to stop steam bubbles from accumulating at the connections

## 4 - Hose clip

## 5 - Fuel line

- ☐ From connection point on right of longitudinal member to auxiliary/supplementary heater
- ☐ Routing of fuel line ⇒ ["4.4 Routing of fuel line to auxiliary/supplementary heater", page 129](#)
- ☐ The individual sections must be butt-jointed to stop steam bubbles from accumulating at the connections
- ☐ Filling fuel line to metering pump - V54- with fuel (bleeding) ⇒ ["4.2.4 Filling fuel line to metering pump V54 with fuel, bleeding", page 127](#)

## 6 - Retainer for fuel lines

- ☐ Different versions
- ☐ Routing of fuel line ⇒ ["4.4 Routing of fuel line to auxiliary/supplementary heater", page 129](#)

## 7 - Hose clip or hose clamp

- ☐ Different versions

## 8 - Fuel hose

- ☐ The individual sections must be butt-jointed to stop steam bubbles from accumulating at the connections

## 9 - Hose clip or hose clamp

- ☐ Different versions

## 10 - Retainer for fuel lines

- ☐ Different versions

- ☐ Routing of fuel line ⇒ [“4.4 Routing of fuel line to auxiliary/supplementary heater”, page 129](#)

#### 11 - Fuel line

- ☐ On underbody
- ☐ Routing of fuel line ⇒ [“4.4 Routing of fuel line to auxiliary/supplementary heater”, page 129](#)
- ☐ The individual sections must be butt-jointed to stop steam bubbles from accumulating at the connections
- ☐ Filling fuel line to metering pump - V54- with fuel (bleeding)  
⇒ [“4.2.4 Filling fuel line to metering pump V54 with fuel, bleeding”, page 127](#)

#### 12 - Retainer for fuel lines

- ☐ Different versions
- ☐ Routing of fuel line ⇒ [“4.4 Routing of fuel line to auxiliary/supplementary heater”, page 129](#)

#### 13 - Hose clip or hose clamp

- ☐ Different versions

#### 14 - Fuel hose

- ☐ The individual sections must be butt-jointed to stop steam bubbles from accumulating at the connections

#### 15 - Hose clip or hose clamp

- ☐ Different versions

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#### 16 - Fuel line

- ☐ From metering pump - V54- to connection point on underbody
- ☐ Routing of fuel line ⇒ [“4.4 Routing of fuel line to auxiliary/supplementary heater”, page 129](#)
- ☐ The individual sections must be butt-jointed to stop steam bubbles from accumulating at the connections
- ☐ Filling fuel line to metering pump - V54- with fuel (bleeding)  
⇒ [“4.2.4 Filling fuel line to metering pump V54 with fuel, bleeding”, page 127](#)

#### 17 - Retainer for fuel lines

- ☐ Different versions
- ☐ Routing of fuel line ⇒ [“4.4 Routing of fuel line to auxiliary/supplementary heater”, page 129](#)

#### 18 - Hose clip or hose clamp

- ☐ Different versions

#### 19 - Fuel hose

- ☐ Some vehicle versions are fitted with a restrictor in the fuel line to reduce noise
- ☐ The individual sections must be butt-jointed to stop steam bubbles from accumulating at the connections

#### 20 - Hose clip or hose clamp

- ☐ Different versions

#### 21 - Metering pump - V54- with bracket

- ☐ Overview of fitting locations  
⇒ [“4.1.2 Overview of fitting locations - fuel supply system, metering pump V54 ”, page 118](#)
- ☐ Filling fuel line to metering pump - V54- with fuel (bleeding)  
⇒ [“4.2.4 Filling fuel line to metering pump V54 with fuel, bleeding”, page 127](#)

#### 22 - Fuel line with quick-release couplings

- ☐ From fuel delivery unit to metering pump - V54-
- ☐ Releasing quick-release coupling at fuel line for auxiliary/supplementary heater  
⇒ [“4.3 Releasing quick-release coupling at fuel line for auxiliary/supplementary heater”, page 128](#)
- ☐ Filling fuel line to metering pump - V54- with fuel (bleeding)  
⇒ [“4.2.4 Filling fuel line to metering pump V54 with fuel, bleeding”, page 127](#)

#### 23 - Seal

- ☐ Different versions
- ☐ Removing and installing ⇒ Rep. gr. 20 ; Fuel delivery unit/fuel gauge senders; Exploded view - fuel delivery unit/fuel gauge senders

## 24 - Cover

- ❑ Removing and installing ⇒ Rep. gr. 20 ; Fuel delivery unit/fuel gauge senders; Exploded view - fuel delivery unit/fuel gauge senders

## 25 - Fuel delivery unit with connection for fuel take-off for auxiliary/supplementary heater

- ❑ Removing and installing ⇒ Rep. gr. 20 ; Fuel delivery unit/fuel gauge senders; Exploded view - fuel delivery unit/fuel gauge senders
- ❑ Fuel take-off from fuel tank ⇒ ["4.2 Fuel take-off from fuel tank", page 122](#)
- ❑ Different fuel delivery units depending on version of vehicle (petrol or diesel engine) ⇒ Rep. gr. 20 ; Fuel delivery unit/fuel gauge senders; Exploded view - fuel delivery unit/fuel gauge senders
- ❑ Filling fuel line to metering pump - V54- with fuel (bleeding)  
⇒ ["4.2.4 Filling fuel line to metering pump V54 with fuel, bleeding", page 127](#)

## 26 - Base valve in fuel tank reservoir

- ❑ Base valve must be free of dirt and damage and must close properly
- ❑ Checking, removing and installing ⇒ ["4.1.3 Base valve in fuel tank reservoir", page 121](#) and ⇒ Rep. gr. 20 ; Fuel delivery unit/fuel gauge senders; Exploded view - fuel delivery unit/fuel gauge senders



### Note

- ◆ *Clean the base valve if it is dirty.*
- ◆ *In the event of a leak in the base valve, the fuel level in the reservoir drops if the fuel tank is mostly empty and no further fuel can flow into the stable zone. The metering pump - V54- can no longer draw in any liquid fuel and there may be problems with auxiliary heater operation (fault message "No flaming" or "Repeated flame abort").*

## 4.1.2 Overview of fitting locations - fuel supply system, metering pump - V54-



### Note

*The illustration shows the layout of components on the Audi A4 and Audi A5. The layout for certain components may differ on the Audi Q5; this, however, does not influence their operation.*

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## 1 - Fuel line

- ❑ From fuel delivery unit to metering pump - V54-
- ❑ Routing of fuel line  
⇒ [“4.4 Routing of fuel line to auxiliary/supplementary heater”, page 129](#)
- ❑ The individual sections must be butt-jointed to stop steam bubbles from accumulating at the connections
- ❑ Filling fuel line to metering pump - V54- with fuel (bleeding) ⇒ [page 127](#)

## 2 - Fuel tank

- ❑ Different versions depending on vehicle (front-wheel drive or four-wheel drive, petrol or diesel etc.) ⇒ Fuel supply system; Rep. gr. 20 ; Fuel tank

## 3 - Fuel delivery unit - petrol engine

- ❑ Removing and installing  
⇒ Fuel supply system, petrol engines; Rep. gr. 20 ; Fuel delivery unit/fuel gauge senders; Removing and installing fuel delivery unit/fuel gauge senders

## 4 - Suction pipe - petrol engine

- ❑ For fuel take-off for auxiliary/supplementary heater
- ❑ Fuel take-off from fuel tank ⇒ [page 122](#)

## 5 - Fuel delivery unit - TDI engine

- ❑ Removing and installing ⇒ Fuel supply system, diesel engines; Rep. gr. 20 ; Fuel delivery unit/fuel gauge senders; Removing and installing fuel delivery unit/fuel gauge senders

## 6 - Suction pipe - TDI engine

- ❑ For fuel take-off for auxiliary/supplementary heater
- ❑ Fuel take-off from fuel tank ⇒ [“4.2 Fuel take-off from fuel tank”, page 122](#)

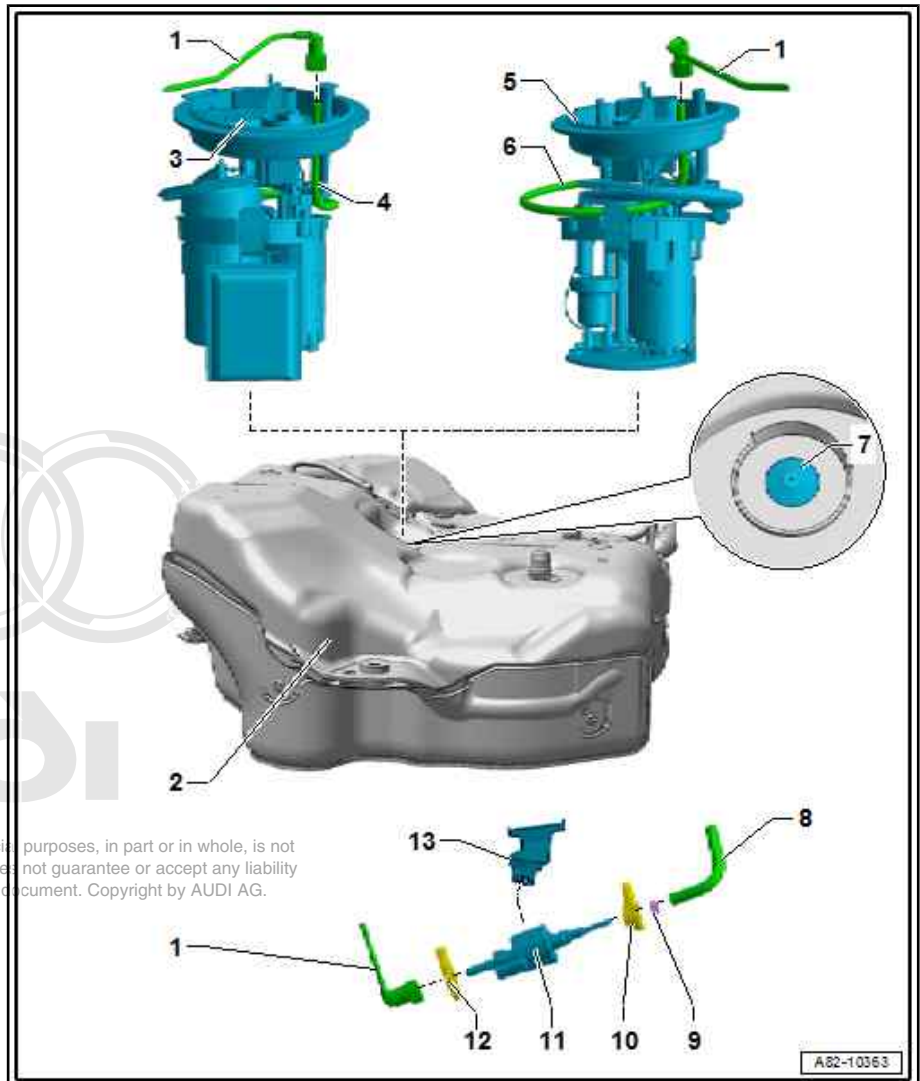
## 7 - Base valve in fuel tank reservoir

- ❑ Base valve must be free of dirt and damage and must close properly
- ❑ Checking, removing and installing ⇒ [“4.1.3 Base valve in fuel tank reservoir”, page 121](#) and ⇒ Rep. gr. 20 ; Fuel delivery unit/fuel gauge senders; Exploded view - fuel delivery unit/fuel gauge senders



### Note

- ◆ Clean the base valve if it is dirty.



- ◆ *In the event of a leak in the base valve, the fuel level in the reservoir drops if the fuel tank is mostly empty and no further fuel can flow into the stable zone. The metering pump - V54- can no longer draw in any liquid fuel and there may be problems with auxiliary heater operation (fault message "No flaming" or "Repeated flame abort").*

## 8 - Fuel hose

- ☐ Some vehicle versions are fitted with a restrictor in the fuel line to reduce noise

## 9 - Hose clip

## 10 - Rubber bush

- ☐ For metering pump

## 11 - Metering pump - V54-

- ☐ Removing and installing ⇒ ["4.7 Removing and installing metering pump V54 ", page 138](#)
- ☐ Fuel take-off for auxiliary/supplementary heater ⇒ ["4.2 Fuel take-off from fuel tank", page 122](#)
- ☐ Checking fuel delivery rate ⇒ ["4.6 Checking fuel delivery rate", page 134](#)
- ☐ Checking activation ⇒ Vehicle diagnostic tester ("Guided Fault Finding")
- ☐ Checking wiring ⇒ Vehicle diagnostic tester ("Guided Fault Finding")
- ☐ Some vehicle versions are fitted with noise insulation in the fuel line to the auxiliary/supplementary heater in the vicinity of the metering pump - V54- to reduce noise  
⇒ ["4.7 Removing and installing metering pump V54 ", page 138](#)

## 12 - Rubber bush

- ☐ For metering pump

## 13 - Bracket

- ☐ For metering pump at fuel tank
- ☐ Removing and installing ⇒ ["4.7.3 Removing and installing bracket for metering pump", page 140](#)



### Note

*This illustration shows the layout on an Audi A4 or Audi A5. On the Audi Q5 the layout differs slightly due to a different bracket for the metering pump - V54- .*

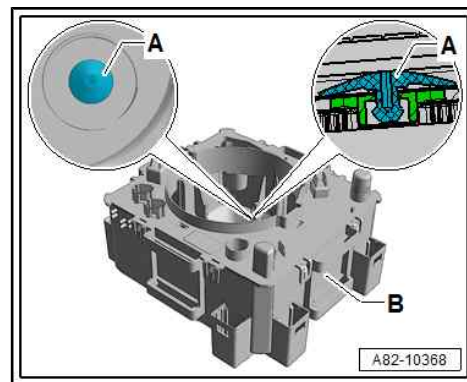
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### 4.1.3 Base valve in fuel tank reservoir



#### Note

- ◆ *In the event of a leak in the base valve -A-, the fuel level in the reservoir drops if the fuel tank is more or less empty and no further fuel can flow into the steady zone of the fuel delivery unit. The metering pump - V54- can no longer draw in any liquid fuel and there may be problems with auxiliary heater operation (fault message "No flaming" or "Repeated flame abort").*
- ◆ *If damaged, the base valve -A- must be renewed. If the base valve -A- is not available as a separate component, it may be necessary to renew the reservoir -B- or the fuel tank (different versions of components) ⇒ Electronic parts catalogue and ⇒ Fuel supply system; Rep. gr. 20 ; Fuel tank .*



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## 4.2 Fuel take-off from fuel tank

⇒ [“4.2.1 Fuel take-off from fuel tank”, page 122](#)

⇒ [“4.2.2 Fuel delivery unit in fuel tank - vehicles with petrol engine”, page 124](#)

⇒ [“4.2.3 Fuel delivery unit in fuel tank - vehicles with diesel engine”, page 126](#)

⇒ [“4.2.4 Filling fuel line to metering pump V54 with fuel, bleeding”, page 127](#)

### 4.2.1 Fuel take-off from fuel tank



#### Note

- ♦ *Air in the fuel supply to the auxiliary/supplementary heater can lead to problems with the operation of the auxiliary/supplementary heater. To stop air from being drawn in by the metering pump - V54- and conveyed to the auxiliary/supplementary heater when the auxiliary/supplementary heater is first switched on after performing repairs on the fuel tank or the fuel delivery unit, the fuel take-off pipe must be filled with fuel (bled) after performing repairs in this area ⇒ [page 127](#) .*
- ♦ *To operate the auxiliary/supplementary heater, fuel is extracted from a stable zone in the baffle housing of the fuel delivery unit in the fuel tank ⇒ Rep. gr. 20 ; Fuel delivery unit/fuel gauge senders; Exploded view - fuel delivery unit/fuel gauge senders .*
- ♦ *To ensure there is sufficient fuel for the operation of the auxiliary/supplementary heater when the engine is stopped and the fuel tank is less than 1/2 full, the fuel system pressurisation pump - G6- in the baffle housing is activated as soon as auxiliary/supplementary heating mode is started if the engine has not been running for a certain period (currently approx. 24 hours).*
- ♦ *To ensure that there is always a minimum quantity of fuel in the baffle housing, -G6- is also activated intermittently during and at the end of auxiliary/supplementary heating mode so that the baffle housing is refilled ⇒ [Vehicle diagnostic tester](#) (“Guided Fault Finding”). This also prevents the metering pump - V54- from drawing in air/fuel vapour instead of liquid fuel if the vehicle is awkwardly positioned with the fuel tank not completely full.*
- ♦ *To operate the auxiliary/supplementary heater, liquid fuel has to be drawn in with no bubbles (air or fuel vapour) from the fuel tank by the metering pump - V54- and conveyed to the auxiliary/supplementary heater. If air or vapour bubbles are conveyed by -V54- together with the liquid fuel, problems may occur during auxiliary/supplementary heater operation (e.g. flame interruption during operation or no flame formation at the start of auxiliary/supplementary heating mode ⇒ [Vehicle diagnostic tester](#) (“Guided Fault Finding”)). If there are such problems, check the fuel conveyed in auxiliary/supplementary heating mode. To do so, fit e.g. a section of transparent fuel line in the vicinity of the auxiliary/supplementary heater. If bubbles are visible in this hose during auxiliary/supplementary heater operation, determine and eliminate the cause of the bubbles in the fuel.*

- ◆ *Depending on the amount of fuel in the tank, problems may be encountered during heating operation if the fuel system pressurisation pump - G6- is not activated in auxiliary/supplementary heating mode. There may be no supply of liquid fuel and the fault "Flame abort" may be entered ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- ◆ *Vehicles with no auxiliary/supplementary heater are generally fitted with a fuel delivery unit with no additional connection for fuel take-off for auxiliary/supplementary heater and with no suction line in the fuel tank ⇒ Electronic parts catalogue .*
- ◆ Fuel delivery unit in fuel tank - vehicles with petrol engine  
⇒ ["4.2.2 Fuel delivery unit in fuel tank - vehicles with petrol engine", page 124](#)
- ◆ Fuel delivery unit in fuel tank - vehicles with diesel engine  
⇒ ["4.2.3 Fuel delivery unit in fuel tank - vehicles with diesel engine", page 126](#)
- ◆ Filling fuel line to metering pump - V54- with fuel (bleeding)  
⇒ ["4.2.4 Filling fuel line to metering pump V54 with fuel, bleeding", page 127](#)

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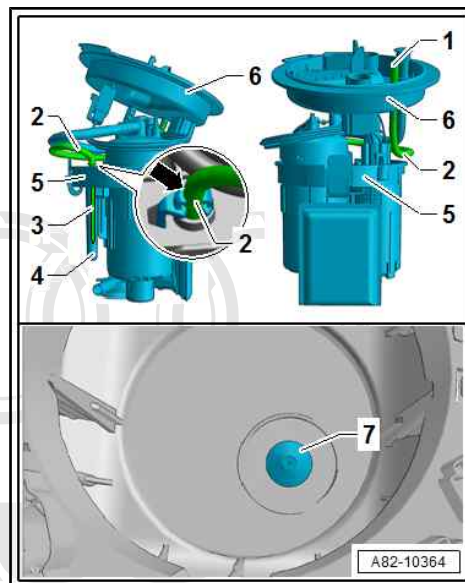
## 4.2.2 Fuel delivery unit in fuel tank - vehicles with petrol engine

The fuel for the auxiliary/supplementary heater is drawn in via the connection -1- (in the cover of the fuel delivery unit -6-), the suction line -2- and the riser -3- from a steady zone -4- of the fuel delivery unit -5-.



### Note

- ◆ To prevent an excessive drop in the fuel level in the baffle housing of the fuel delivery unit in auxiliary heating mode, the fuel system pressurisation pump - G6- is activated briefly at the start of (depending on quantity of fuel in fuel tank and period for which vehicle has been standing), during and at the end of auxiliary heating mode ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- ◆ If the fuel tank is less than 1/4 full, vapour bubbles may form in the baffle housing of the fuel delivery unit with the engine running. To prevent the metering pump - V54- drawing in air bubbles with the engine running, the riser -3- must be inserted and engaged in the steady zone -4-.
- ◆ To prevent the fuel tank from becoming completely drained in auxiliary/supplementary heating mode, the auxiliary/supplementary heater is no longer switched on if the fuel gauge in the instrument cluster is in the "red zone".
- ◆ If the auxiliary/supplementary heater functions properly when the fuel tank is completely full or when the engine is running and problems are encountered if the tank is only partially full after the engine has been stopped for a certain period (fault message "No flaming" or "Repeated flame abort"), this indicates that the suction line -2- or the riser -3- is positioned incorrectly or that the base valve -7- is leaking in the baffle housing of the fuel delivery unit ⇒ [page 115](#). If the base valve is leaking, the fuel level will drop if the fuel tank is almost empty, and no further fuel can flow into the stable zone. The fuel in the stable zone will soon be used up, and this would result in failure of the auxiliary/supplementary heater (e.g. due to flame interruption during operation). As the fuel system pressurisation pump - G6- currently is not always activated (in order to fill the baffle housing) even if the fuel tank is less than 1/2 full ⇒ [page 122](#), it might be advisable to shorten the time for which the engine must have been stopped so that -G6- is activated briefly when auxiliary heating mode is started ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- ◆ After removing and installing components of the fuel system, the fuel line to the metering pump - V54- must be filled with fuel ⇒ [page 127](#). The auxiliary/supplementary heater must then be switched on and operated at full load for at least 10 minutes to make sure the fuel line is bled completely.



If the sealing flange -6- was removed together with the fuel delivery unit -5-, perform the following steps before or during installation:

- Check base valve -7- in baffle housing of fuel tank; it must not be dirty or damaged.
- Check sealing lip of base valve -7-; it must not be damaged and must close properly.
- Check riser -2, 3-; it must be engaged in fastener -arrow-.

- When installing fuel delivery unit and sealing flange, make sure that suction line -2- is correctly routed and that riser -4- is inserted and engaged in mounting at steady zone.

**Note**

- ◆ *Clean the base valve -7- if it is dirty.*
- ◆ *The base valve -7- must be renewed if it is damaged. If the base valve -7- is not available as a separate component, it may be necessary to renew the baffle housing or the fuel tank (different versions of components) ⇒ Electronic parts catalogue and ⇒ Fuel supply system; Rep. gr. 20 ; Fuel tank .*

After installing the fuel delivery unit:

- ◆ Fill suction line -2- and fuel line to metering pump - V54- with fuel (bleed lines)  
⇒ "4.2.4 Filling fuel line to metering pump V54 with fuel, bleeding", page 127 .



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### 4.2.3 Fuel delivery unit in fuel tank - vehicles with diesel engine

The fuel for the auxiliary/supplementary heater is drawn in via the connection -1- (in the cover of the fuel delivery unit -6-), the suction line -2- and the riser -3- from a steady zone -4- of the fuel delivery unit -5-.

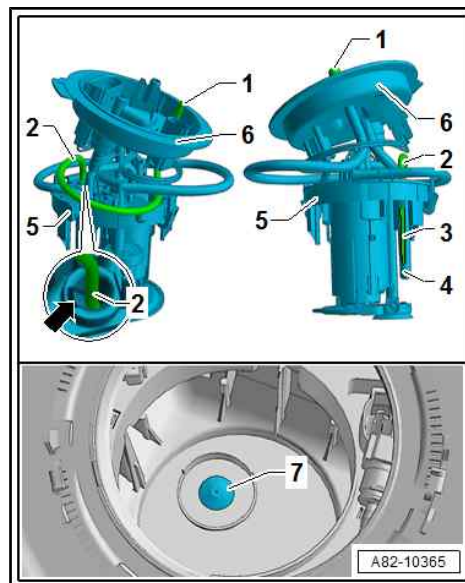


#### Note

- ◆ To prevent an excessive drop in the fuel level in the baffle housing of the fuel delivery unit in auxiliary heating mode, the fuel system pressurisation pump - G6- is activated briefly at the start of (depending on quantity of fuel in fuel tank and period for which vehicle has been standing), during and at the end of auxiliary heating mode ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- ◆ If the fuel tank is less than 1/4 full, vapour bubbles may form in the baffle housing of the fuel delivery unit with the engine running. To prevent the metering pump - V54- drawing in air bubbles with the engine running, the riser -3- must be inserted and engaged in the steady zone -4-.
- ◆ To prevent the fuel tank from becoming completely drained in auxiliary/supplementary heating mode, the auxiliary/supplementary heater is no longer switched on if the fuel gauge in the instrument cluster is in the "red zone".
- ◆ If the auxiliary/supplementary heater functions properly when the fuel tank is completely full or when the engine is running and problems are encountered if the tank is only partially full after the engine has been stopped for a certain period (fault message "No flaming" or "Repeated flame abort"), this indicates that the suction line -2- or the riser -3- is positioned incorrectly or that the base valve -7- is leaking in the baffle housing of the fuel delivery unit ⇒ [page 115](#). If the base valve is leaking, the fuel level will drop if the fuel tank is almost empty, and no further fuel can flow into the stable zone. The fuel in the stable zone will soon be used up, and this would result in failure of the auxiliary/supplementary heater (e.g. due to flame interruption during operation). As the fuel system pressurisation pump - G6- currently is not always activated (in order to fill the baffle housing) even if the fuel tank is less than 1/2 full ⇒ [page 122](#), it might be advisable to shorten the time for which the engine must have been stopped so that -G6- is activated briefly when auxiliary heating mode is started ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- ◆ After removing and installing components of the fuel system, the fuel line to the metering pump - V54- must be filled with fuel ⇒ [page 127](#). The auxiliary/supplementary heater must then be switched on and operated at full load for at least 10 minutes to make sure the fuel line is bled completely.

If the sealing flange -6- was removed together with the fuel delivery unit -5-, perform the following steps before or during installation:

- Check base valve -7- in baffle housing of fuel tank; it must not be dirty or damaged.
- Check sealing lip of base valve -7-; it must not be damaged and must close properly.
- Check riser -3-; it must be engaged in fastener -arrow-.



- When installing fuel delivery unit and sealing flange, make sure that suction line -2- is correctly routed and that riser -4- is inserted and engaged in mounting at steady zone.

**Note**

- ◆ *Clean the base valve -7- if it is dirty.*
- ◆ *The base valve -7- must be renewed if it is damaged. If the base valve -7- is not available as a separate component, it may be necessary to renew the baffle housing or the fuel tank (different versions of components) ⇒ Electronic parts catalogue and ⇒ Fuel supply system; Rep. gr. 20 ; Fuel tank .*

After installing the fuel delivery unit:

- ◆ Fill suction line -2- and fuel line to metering pump - V54- with fuel (bleed lines)  
⇒ ["4.2.4 Filling fuel line to metering pump V54 with fuel, bleeding", page 127](#) .

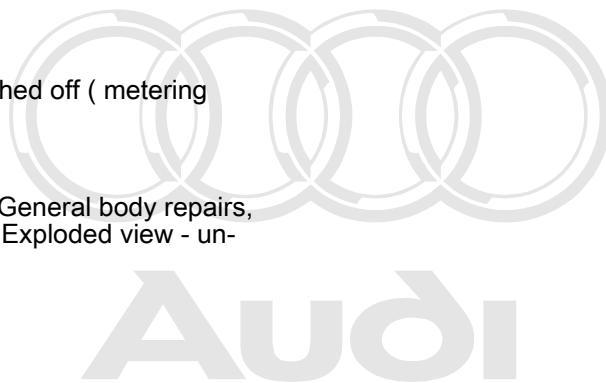
#### 4.2.4 Filling fuel line to metering pump - V54- with fuel, bleeding

**Note**

- ◆ *Air/fuel vapour in the fuel supply to the auxiliary/supplementary heater can lead to problems with the operation of the auxiliary/supplementary heater. To stop air/fuel vapour from being drawn in by the metering pump - V54- and conveyed to the auxiliary/supplementary heater when the auxiliary/supplementary heater is first switched on after performing repairs on the fuel tank or the fuel delivery unit, the fuel take-off pipe must be filled with fuel (bled) after performing repairs in this area.*
- ◆ *After working on the fuel system, switch on the auxiliary/supplementary heater and let it run for at least 10 minutes at full load to check operation.*

#### Bleeding fuel line

- Auxiliary/supplementary heater is switched off ( metering pump - V54- is not activated).
- Switch off ignition.
- Remove underbody trim (rear right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .



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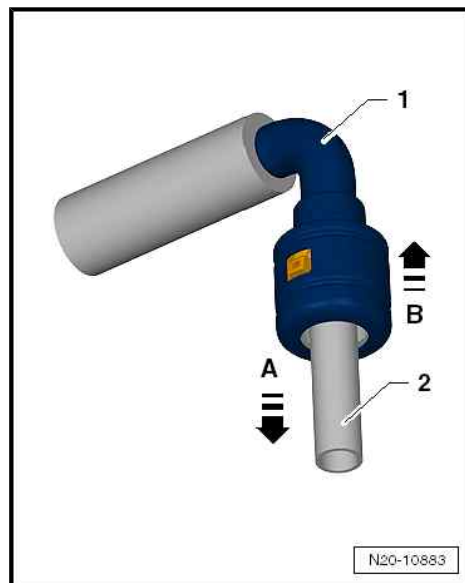
# WARNING

**The fuel system is pressurised.**

**Risk of injury as fuel may spray out.**

- Put on safety goggles.
- Put on protective gloves.
- Release pressure (wrap a clean cloth around connection and open connection carefully).

- Unfasten quick-release coupling -1-  
⇒ [“4.3 Releasing quick-release coupling at fuel line for auxiliary/supplementary heater”, page 128](#) .
- Connect quick-release coupling -1- for fuel line to diesel extraction unit - VAS 5226- .
- Connect diesel extractor - VAS 5226- to workshop’s compressed-air system ⇒ Rep. gr. 23 ; Injection system; Filling and bleeding injection system or ⇒ Fuel supply system; Rep. gr. 20 ; Fuel delivery unit/fuel gauge senders (depending on vehicle).
- Completely fill fuel line with fuel by briefly extracting air.
- Connect fuel line -2- to metering pump - V54- with quick-release coupling -1-.
- Check that quick-release coupling is securely seated by pulling at it.
- After re-installing all the components removed previously, switch on the auxiliary/supplementary heater and let it run at full load for approx. 10 minutes.



## 4.3 Releasing quick-release coupling at fuel line for auxiliary/supplementary heater



### Note

A version of the quick-release coupling for the fuel line is shown here as an example; for a description of other versions refer to ⇒ Fuel supply system; Rep. gr. 20 ; Plug-in connectors; Disconnecting plug-in connectors .



# WARNING

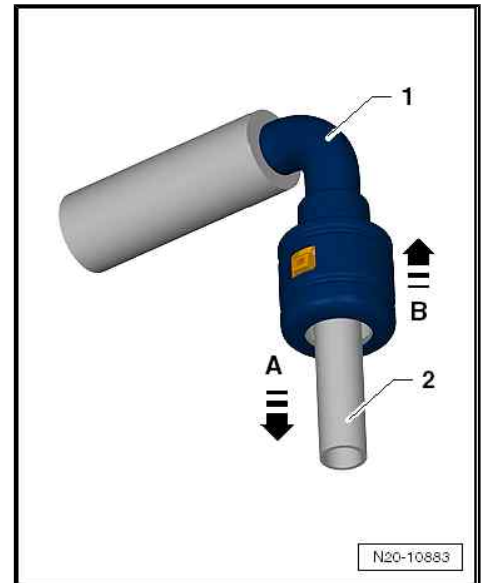
**The fuel system is pressurised.**

**Risk of injury as fuel may spray out.**

- Put on safety goggles.
- Put on protective gloves.
- Release pressure (wrap a clean cloth around connection and open connection carefully).

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- Press quick-release coupling -1- in direction of arrow -A-.
- Press and hold release tabs.
- Detach quick-release coupling -1- from fuel line -2- in direction of arrow -B-.
- Seal fuel line -2- and its connection.
- Quick-release coupling must engage audibly when it is installed.
- Check that quick-release coupling is securely seated by pulling at it.



#### 4.4 Routing of fuel line to auxiliary/supplementary heater

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##### Note

*Butt-joint fuel lines and secure with hose clips at marked locations.*

The fuel line -A- between the metering pump - V54- and the auxiliary/supplementary heater is routed along the underbody.

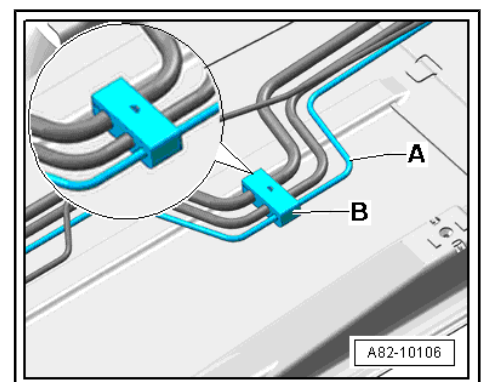
The retainers -B- secure the fuel line -A- to the auxiliary/supplementary heater and the fuel lines to the engine in position.

The fuel line -A- must be routed so that it does not make contact with components which heat up, is protected against heat which could affect its operation and does not make contact with other components (noise).

- When installing fuel lines, make sure that they are butt-jointed.

##### Note

- ◆ *The fuel line must be flush with the underbody and protected against mechanical damage.*
- ◆ *The fuel line to the auxiliary/supplementary heater must be protected against heat which could affect its operation.*
- ◆ *The fuel line must not make contact with moving components or components which can become hot.*
- ◆ *The fuel line to the auxiliary/supplementary heater must be filled completely with fuel (bled).*
- ◆ *Vehicles with and without auxiliary/supplementary heater have different fuel delivery units fitted in the fuel tank ➔ Rep. gr. 20 ; Fuel delivery unit/fuel gauge senders; Exploded view - fuel delivery unit/fuel gauge senders and ➔ Electronic parts catalogue .*
- ◆ *The sections of the fuel line must be butt-jointed to stop vapour bubbles from accumulating at the connections.*



## 4.5 Checking CO<sub>2</sub> content in exhaust gas of auxiliary/supplementary heater

### Special tools and workshop equipment required

- ◆ Vehicle diagnostic tester
- ◆ Exhaust emission test station - VAS 6300-
- ◆ Battery charger - VAS 5903-



### Note

- ◆ *For this test, the auxiliary/supplementary heater can be switched on via the rotary pushbutton of the Multi Media Interface (MMI, control unit for front display and information control panel - J523-) or with the remote control. For activation with the remote control, the temperature setting on the operating and display unit for front air conditioning system - E87- must be "HI"; otherwise (depending on the ambient temperature), the "auxiliary ventilation" function will be activated and the auxiliary/supplementary heater will not start up.*
- ◆ *With the "Basic setting" function, the auxiliary/supplementary heater can be operated up to a coolant temperature of 110 °C and starting from the control interval is possible. The operating time is then restricted to a maximum of 10 minutes → Vehicle diagnostic tester ("Guided Fault Finding").*
- ◆ *For notes on switching on the auxiliary/supplementary heater via the "Basic setting" function, refer to e.g. the section "Checking CO<sub>2</sub> content in exhaust gas" of Guided Fault Finding; please also note the display of the activation signals for the auxiliary/supplementary heater, e.g. in "General function check" in Guided Fault Finding → Vehicle diagnostic tester ("Guided Fault Finding").*

### Test requirements

- ◆ Coolant temperature below 30 °C
- ◆ Ambient temperature below 25 °C
- Sufficient fuel in tank (fuel gauge in instrument cluster not in red zone)
- Battery - A- (vehicle battery) fully charged
- Auxiliary/supplementary heater installed completely and connected to vehicle electrical system
- All auxiliary/supplementary heater fuses OK (according to current flow diagram) → Current flow diagrams, Electrical fault finding and Fitting locations
- Auxiliary/supplementary heater switched off
- Event memory of all systems with self-diagnosis capability read out, cause of any faults displayed in vehicle systems eliminated and displayed event memory entries erased → Vehicle diagnostic tester

### Procedure

- Connect → Vehicle diagnostic tester.
- Select **Diagnosis** mode and begin diagnosis.
- Select **Test plan** tab.
- Choose **Select own test** and select following options one after the other:

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- ◆ Body
- ◆ Heating, ventilation, air conditioning system
- ◆ 01 - Self-diagnosis compatible systems
- ◆ 18 - Auxiliary/additional heater\_J364
- ◆ 18 - Auxiliary/additional heater\_functions
- ◆ 18 - Checking CO2 content



**Note**

*The following description corresponds to the Guided Fault Finding test sequence.*



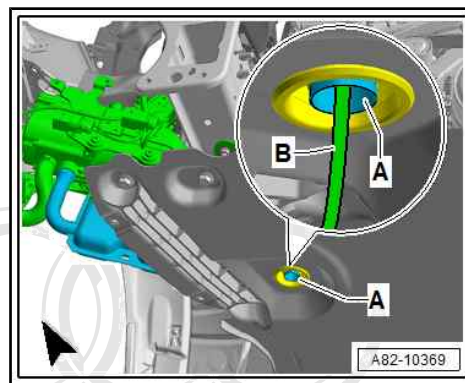
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- Switch on exhaust emission test station - VAS 6300- and insert exhaust probe -B- in exhaust pipe -A- of auxiliary/supplementary heater.



### Note

- ◆ *The hose of the exhaust probe must not prevent exhaust gas from leaving the exhaust pipe -A- during the check.*
- ◆ *If only a thick exhaust probe is available, it may be necessary to extend the exhaust probe of the exhaust emission test station - VAS 6300- e.g. with a thin metal pipe -B- and to only insert this metal pipe as far as absolutely necessary in the exhaust pipe of the auxiliary/supplementary heater -A-. To prevent the measured value from being distorted, the flow of exhaust gas must not be obstructed and the measuring device must not draw in any unmeasured air (fresh air). For this purpose, seal the connection point between the metal pipe and the inlet opening of the exhaust probe.*



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***When pulling out the exhaust probe, take care not to touch the exhaust probe of the exhaust emission test station - VAS 6300- or the exhaust pipe as these become very hot.***

- Set operating and display unit for front air conditioning system - E87- to maximum heat output ("HI" temperature setting).
- Restrict fresh air blower speed by setting -E87- to approx. 50 % of maximum fresh air blower speed.
- Wait until auxiliary/supplementary heater switches from starting to full load operation (auxiliary/supplementary heater must be at full load approx. 4 minutes after it is switched on).



### Note

- ◆ *If the connector for the heater coolant shut-off valve - N279- is unplugged, the engine is also heated up and the auxiliary/supplementary heater runs longer at full load.*
- ◆ *With the "Basic setting" function, the auxiliary/supplementary heater can be operated up to a coolant temperature of 110 °C and starting from the control interval is possible. The operating time is then restricted to a maximum of 10 minutes ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- Wait at least four more minutes after the auxiliary/supplementary heater has started running at full load.
- Read off measured value for CO<sub>2</sub> (carbon dioxide) content of exhaust gas from CO<sub>2</sub> measuring instrument.

### Specifications:

- ◆ 8 to 11 % by CO<sub>2</sub> volume for vehicles with diesel engine
- ◆ 7.5 to 10.5 % by CO<sub>2</sub> volume for vehicles with petrol engine



#### Note

- ◆ *If measured value is in lower range (less than 9 % for diesel or less than 8.5 % for petrol), problems may occur with auxiliary/supplementary heater combustion under unfavourable conditions, e.g. high vehicle speed with auxiliary/supplementary heater switched on. Check fuel delivery rate of metering pump - V54- ⇒ [“4.6 Checking fuel delivery rate”, page 134](#) .*
- ◆ *If CO<sub>2</sub> values displayed by measuring instrument only fluctuate slightly, calculate mean value from highest and lowest measured value.*
- ◆ *If measured values displayed for CO<sub>2</sub> fluctuate considerably (more than approx. +/- 0.6 % depending on measuring equipment), check position of measurement probe in auxiliary/supplementary heater exhaust pipe.*
- If applicable, plug connector back in at heater coolant shut-off valve - N279- .
- Interrogate event memory and erase if necessary ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

#### If the measured value is outside the permitted range:

- Check intake air noise insulation and exhaust system of auxiliary/supplementary heater for contamination or cross-sectional constriction; clean or renew these components if necessary  
⇒ [“2.6 Removing and installing air intake silencer”, page 70](#)  
and  
⇒ [“2.8 Removing and installing exhaust system for auxiliary/supplementary heater”, page 74](#) .
- Check fuel delivery rate of metering pump - V54-  
⇒ [“4.6 Checking fuel delivery rate”, page 134](#) .
- If CO<sub>2</sub> content of exhaust gas and fuel delivery rate of metering pump - V54- are in lower specified range, renew metering pump - V54-  
⇒ [“4.7 Removing and installing metering pump V54 ”, page 138](#) .

#### If the CO<sub>2</sub> content of the exhaust gas is not OK although the fuel delivery rate is OK:

- Check intake air noise insulation and exhaust system of auxiliary/supplementary heater for contamination or cross-sectional constriction; clean or renew these components if necessary  
⇒ [“2.6 Removing and installing air intake silencer”, page 70](#)  
and  
⇒ [“2.8 Removing and installing exhaust system for auxiliary/supplementary heater”, page 74](#) .

#### If the CO<sub>2</sub> content of the exhaust gas is not OK and no fault can be found:

- Check combustion air blower - V6- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).

#### If there are problems starting the auxiliary/supplementary heater although the fuel delivery volume and the CO<sub>2</sub> content in the exhaust gas are OK:

- Check glow plug for heater - Q9- and fuel pre-heating heater element - Z66- (only on vehicles with auxiliary/supplementary heater for diesel fuel) ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).



#### Note

*If problems with auxiliary/supplementary heater operation only occur when the engine is stopped and the fuel tank is less than half full, check the fuel supply to the auxiliary/supplementary heater ⇒ [“4.2 Fuel take-off from fuel tank”, page 122](#) .*

## 4.6 Checking fuel delivery rate

⇒ [“4.6.1 Test requirements”, page 134](#)

⇒ [“4.6.2 Preparations”, page 134](#)

⇒ [“4.6.3 Checking fuel delivery rate”, page 135](#)

### 4.6.1 Test requirements

- ◆ Coolant temperature below 30 °C
- ◆ Ambient temperature below 25 °C



#### Note

*A higher ambient temperature can lead to incorrect measurements of the fuel quantity delivered due to fuel evaporation.*

- Sufficient fuel in tank (fuel gauge in instrument cluster not in red zone)
- Battery - A- (vehicle battery) fully charged
- Auxiliary/supplementary heater installed completely and connected to vehicle electrical system
- All auxiliary/supplementary heater fuses OK (according to current flow diagram) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Auxiliary/supplementary heater switched off
- Event memory of all systems with self-diagnosis capability read out, cause of any faults displayed in vehicle systems eliminated and displayed event memory entries erased ⇒ Vehicle diagnostic tester (“Guided Fault Finding”)

### 4.6.2 Preparations

- Remove wheel spoiler (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .



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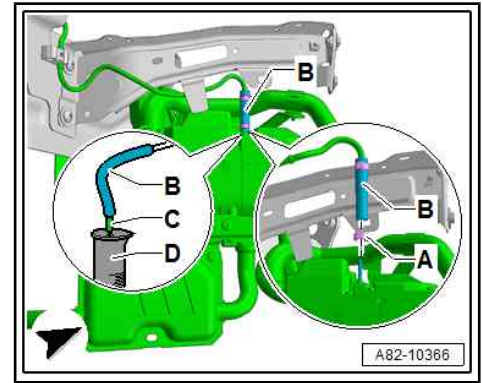


## WARNING

*The fuel system is pressurised.*

*Risk of injury as fuel may spray out.*

- *Put on safety goggles.*
- *Put on protective gloves.*
- *Release pressure (wrap a clean cloth around connection and open connection carefully).*



- Release hose clip -A-.
- Detach fuel line (hose to auxiliary/supplementary heater) -B- from fuel line for auxiliary/supplementary heater.
- Guide fuel line (hose to auxiliary/supplementary heater) -B- into measuring container -D-.



## Note

*If necessary, extend the fuel line (hose to auxiliary/supplementary heater) -B- with a pipe section -C-.*

## 4.6.3 Checking fuel delivery rate

Requirements satisfied ➤ [“4.6.1 Test requirements”, page 134](#)  
and test preparation performed  
➤ [“4.6.2 Preparations”, page 134](#) .

- Switch on ignition and switch off all electrical equipment.

### Procedure

- Connect ➤ Vehicle diagnostic tester.
- Select **Diagnosis** mode and begin diagnosis.
- Select **Test plan** tab.
- Choose **Select own test** and select following options one after the other:
  - ◆ Body
  - ◆ Heating, ventilation, air conditioning system
  - ◆ 01 - Self-diagnosis compatible systems
  - ◆ 18 - Auxiliary/additional heater\_J364
  - ◆ 18 - Auxiliary/additional heater\_functions
  - ◆ 18 - Checking fuel delivery



## Note

- ◆ *The following description corresponds to the procedure for the function “Checking fuel delivery”.*
- ◆ *The “Pipe filling” cannot be aborted once it has started; it is implemented in full by the control unit regardless of any entries made via the tester.*

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- Follow the procedure in the “Checking fuel delivery” test routine.
- ◆ The fuel line is first completely filled. The metering pump - V54- is activated for 30 seconds at 8 hertz (8 pulses per second). The fuel delivery rate specified in the metering pump - V54- is approx. 0.028 ml per stroke (0.028/1000 litres) ⇒ Vehicle diagnostic tester (“Checking fuel delivery”).
- Wait until metering pump - V54- is no longer activated.



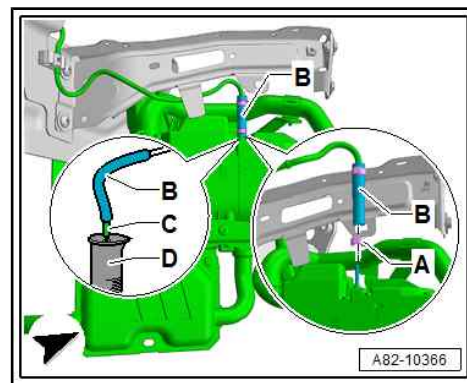
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- Empty measuring container -D- and guide fuel line (hose to auxiliary/supplementary heater) -B- into measuring container -D- again.



#### Note

*This illustration shows the layout on an Audi A4 or Audi A5. On the Audi Q5 the layout differs slightly due to the vertically installed auxiliary/supplementary heater.*



- Continue with “Checking fuel delivery rate” test routine.

The metering pump - V54- is activated for 240 seconds at 8 hertz (8 pulses per second). The fuel delivery rate specified in the metering pump - V54- is approx. 0.028 ml per stroke (0.028/1000 litres) ⇒ Vehicle diagnostic tester (“Checking fuel delivery”).

- Wait until metering pump - V54- is no longer activated.
- Measure amount of fuel delivered by metering pump - V54- in measuring container -D-.



#### Note

*One millilitre (ml) corresponds to 1/1000 litre or 1 cm<sup>3</sup>.*

#### Specifications:

Diesel - 51 to 62 ml

Benzin - 48 to 58 ml

If the quantity of fuel delivered is outside the tolerance range:

- Check fuel line (from fuel tank via metering pump - V54- to auxiliary/supplementary heater) for damage and proper routing  
⇒ [“4.4 Routing of fuel line to auxiliary/supplementary heater”, page 129](#).
- Check operation of fuel system pressurisation pump - G6-  
⇒ Vehicle diagnostic tester (“Guided Fault Finding”), diagnostic system for drive system, and  
⇒ [“4.2 Fuel take-off from fuel tank”, page 122](#).



#### Note

*The test routine for the fuel system pressurisation pump - G6- can be found under “Drive system” in the “Electrical components” of the engine ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

- If no fault is found, renew metering pump - V54-  
⇒ [“4.7 Removing and installing metering pump V54”, page 138](#).
- If there are problems starting the auxiliary/supplementary heater although the fuel delivery volume is OK, check the CO<sub>2</sub> content in the exhaust gas  
⇒ [“4.5 Checking CO<sub>2</sub> content in exhaust gas of auxiliary/supplementary heater”, page 130](#).

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## Note

- ◆ If problems with auxiliary/supplementary heater operation only occur when the engine is stopped and the fuel tank is less than half full, check the fuel take-off from the fuel tank  
⇒ ["4.2 Fuel take-off from fuel tank", page 122](#) .
- ◆ Check operation of fuel system pressurisation pump - G6-  
⇒ Vehicle diagnostic tester ("Guided Fault Finding"), diagnostic system for drive system, and  
⇒ ["4.2 Fuel take-off from fuel tank", page 122](#) .
- If the quantity of fuel delivered is in the lower tolerance range (less than 52 ml for diesel engine/less than 49 ml for petrol engine) and there are problems starting the auxiliary/supplementary heater, renew metering pump - V54- if applicable  
⇒ ["4.7 Removing and installing metering pump V54", page 138](#) .
- Fit fuel hose to auxiliary/supplementary heater and secure with a clamp of the same type.
- Install air cleaner housing (right-side) ⇒ Rep. gr. 23 ; Air cleaner; Removing and installing air cleaner housing or ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .

## 4.7 Removing and installing metering pump V54-

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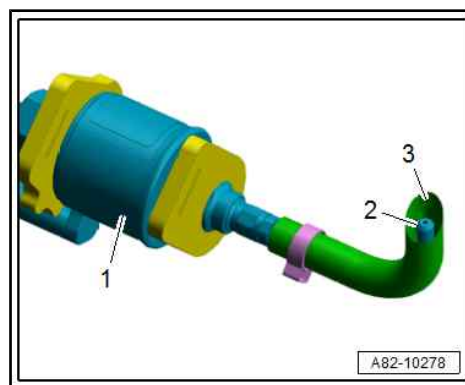
⇒ ["4.7.1 General notes", page 138](#)

⇒ ["4.7.2 Removing and installing metering pump V54", page 138](#)

⇒ ["4.7.3 Removing and installing bracket for metering pump", page 140](#)

### 4.7.1 General notes

- ◆ Depending on the vehicle version, a constriction (restrictor) -2- or noise insulation may be fitted in the fuel line -3- to the auxiliary/supplementary heater in the vicinity of the metering pump -1- to reduce noise.
- ◆ If fitted, the current dimensions of the restrictor in the fuel line are as follows: outer diameter 5 mm, length 7 mm, bore 1.5 +0.5 mm. The restrictor (or noise insulation) reduces the increase in pressure in the fuel line to the auxiliary/supplementary heater during the working stroke of the metering pump; this means that less operating noise is transmitted.
- ◆ Depending on the vehicle version, a strainer may be fitted between the connection for the metering pump and the fuel line to the fuel tank to prevent dirt particles from entering the metering pump.



### 4.7.2 Removing and installing metering pump - V54-

#### Removing

- Switch off ignition (and auxiliary/supplementary heater).
- Dissipate pressure in fuel tank by opening tank cap.

- Remove underbody trim (rear right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .



#### Note

*The illustration shows the installation position of the metering pump - V54- on the Audi A4 and Audi A5. On the Audi Q5, only the position of the bracket -8- differs.*

- Unplug electrical connector -2-.



#### WARNING

***The fuel system is pressurised.***

***Risk of injury as fuel may spray out.***

- ***Put on safety goggles.***
- ***Put on protective gloves.***
- ***Release pressure (wrap a clean cloth around connection and open connection carefully).***

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- Unfasten hose clip -6- and detach fuel hose -7-.
- Seal fuel hose -7-.
- Press release tab -arrow- and disconnect fuel line -1-.
- Seal fuel line -1-.
- Disengage rubber mountings -3, 5- at bracket -8- and detach metering pump -4-.

#### Installing

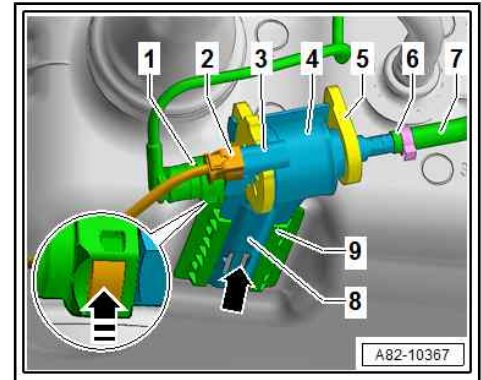
Install in reverse order of removal; note the following.

- Secure fuel line with standard hose clip. For correct version of hose clip refer to ⇒ Electronic parts catalogue .



#### Note

- ◆ ***Fit metering pump and corresponding fuel lines such that they do not make contact with other components (noise).***
- ◆ ***Take care not to twist fuel lines.***
- After renewing metering pump, switch on auxiliary/supplementary heater and check operating sequence ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).
- The auxiliary/supplementary heater must be operated at full load for at least 10 minutes to make sure the fuel line is bled completely.



### 4.7.3 Removing and installing bracket for metering pump

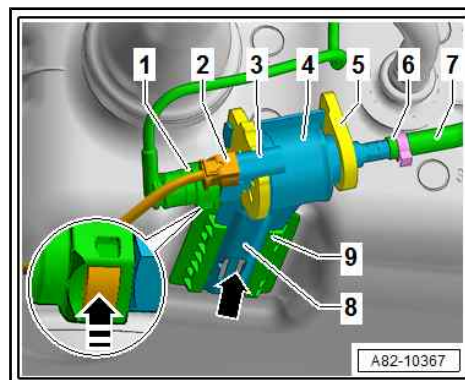
#### Removing

- Remove metering pump -4-  
⇒ [“4.7.2 Removing and installing metering pump V54 ”, page 138](#) .
- Release locking element -arrow- and detach bracket -8- from mounting at fuel tank -9-.



#### Note

*This illustration shows the layout on an Audi A4 or Audi A5. On the Audi Q5 the layout differs slightly due to a different bracket for the metering pump - V54- .*

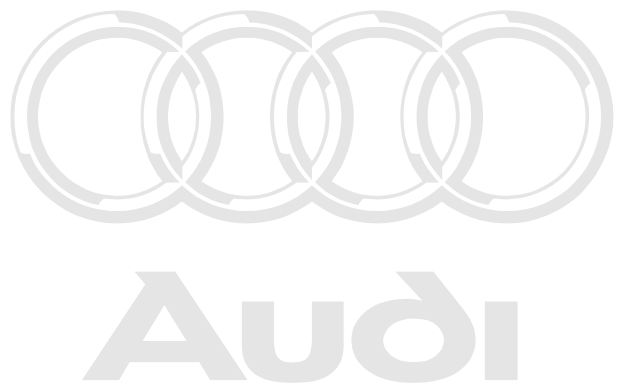


#### Installing

Install in reverse order of removal; note the following.

- Check that bracket is secured properly; bend locking element -arrow- for bracket -8- slightly if necessary.
- Install metering pump -4-  
⇒ [“4.7.2 Removing and installing metering pump V54 ”, page 138](#) .

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## 5 Auxiliary/supplementary heater control

⇒ [“5.1 Functional description”, page 142](#)

⇒ [“5.2 Switching auxiliary/supplementary heater and auxiliary ventilation on and off”, page 143](#)

### 5.1 Functional description



#### Note

- ◆ *The function “Auxiliary air conditioning” (“Auxiliary/supplementary heating” or “Auxiliary ventilation”) can be switched on and off via the operating and display unit for front air conditioning system - E87- , via the remote control (or via a mobile phone on vehicles with “Audi connect services”) ⇒ [page 154](#) or via the Multi Media Interface (MMI, control unit for front display and information control panel - J523- ) ⇒ *Infotainment/MMI Operating Manual and* ⇒ [page 144](#).*
- ◆ *The settings for various functions of the auxiliary/supplementary heater and the heater and air conditioning unit are adjusted via the Multi Media Interface (MMI). In the event of problems with the auxiliary/supplementary heater control function or heat output, you should therefore check these settings in the MMI ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .*
- ◆ *If the “Auxiliary air conditioning” (“Auxiliary/supplementary heating / Auxiliary ventilation”) function is called up via the operating and display unit for front air conditioning system - E87- , via the remote control (or via a mobile phone on vehicles with “Audi connect services”) for auxiliary/supplementary heater or via the Multi Media Interface (MMI, control unit for front display and information control panel - J523- ), the operating and display unit for front air conditioning system - E87- determines on the basis of the “specified temperatures” and the “actual temperature” measured whether the “auxiliary heating” or just the “auxiliary ventilation” function needs to be activated.*
- ◆ *Depending on the amount of heat generated by the auxiliary/supplementary heater (and engine) and emitted by the heat exchangers of the air conditioning unit, the heater (auxiliary/supplementary heater) may remain at full load, part load (controlled operation) or in the control interval for a lengthy period.*
- ◆ *To ensure that combustion in the heater always remains in the optimum range, the metering pump - V54- (clock frequency) and combustion air blower - V6- (voltage) are regulated over the entire sequence.*
- ◆ *If the heater has been interlocked due to a fault, the event memory must be read out and the content of the event memory erased. Depending on the cause of the fault, it may also be necessary to cancel the interlock via the “Adaption” function ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*
- ◆ *If the first attempted start fails to produce a flame, the auxiliary heater control unit - J364- terminates the sequence and attempts a restart after any combustion residue has been blown out with the combustion air blower - V6- . The auxiliary heater control unit - J364- is switched off if the restart also fails to produce a flame. The heater is disabled after three attempted manual starts (each with one restart) via -E87- ⇒ Vehicle diagnostic tester (“Guided Fault Finding”).*

- ◆ *If the heater is switched off during the starting process, the heater is either immediately switched off or switches to run-on mode (burn-off, cooling) if necessary, depending on the point reached in the starting sequence.*
- ◆ *If the coolant temperature exceeds approx. 91 °C before full load is reached (e.g. with a hot engine), the heater switches to the control interval.*
- ◆ *Various functions of the auxiliary/supplementary heater are constantly monitored during operation (the auxiliary/supplementary heater is switched off as soon as a fault occurs).*
- ◆ *Auxiliary/supplementary heating operation can be monitored via the vehicle diagnostic tester ("Read measured values" function) ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*
- ◆ *The temperatures given in the following descriptions (operating sequences etc.) are approximate. The actual temperatures at which the various functions are switched on and off may differ depending on the version of the vehicle and the characteristic curves stored in the auxiliary heater control unit - J364- .*
- ◆ *Start/stop system: The circulation pump - V55- of the auxiliary/supplementary heater may be activated by the auxiliary heater control unit - J364- while the stop function is active. The auxiliary heater control unit - J364- is requested by -E87- via the data bus to switch on -V55- ⇒ Vehicle diagnostic tester ("Guided Fault Finding").*

## 5.2 Switching auxiliary/supplementary heater and auxiliary ventilation on and off

⇒ ["5.2.1 Activation of auxiliary/supplementary heater with remote control", page 143](#)

⇒ ["5.2.2 Switching auxiliary/supplementary heater and auxiliary ventilation on and off", page 144](#)

### 5.2.1 Activation of auxiliary/supplementary heater with remote control



#### Note

- ◆ *A signal (switching on/off) is transmitted by the hand-held remote control transmitter for the auxiliary/supplementary heater to the remote control receiver for auxiliary heater - R64- . The operating and display unit for front air conditioning system - E87- determines whether auxiliary/supplementary heating mode is required to attain the specified temperature in the passenger compartment or whether auxiliary ventilation mode is sufficient.*
- ◆ *There are different versions of the hand-held remote control transmitter and the remote control receiver for auxiliary heater - R64- ; ensure correct assignment of these components. Malfunctions may occur if the wrong components are installed together; refer to ⇒ Electronic parts catalogue .*

If an activation signal is transmitted to the auxiliary/supplementary heater via the remote control for auxiliary/supplementary heater (or by a mobile phone on vehicles with "Audi connect services"), the operating and display unit for front air conditioning system - E87- determines whether to operate the auxiliary ventilation or auxiliary heating in the "Auxiliary air conditioning" function.

### Auxiliary ventilation mode

- ◆ The operating and display unit for front air conditioning system - E87- determines that auxiliary/supplementary heating mode is not required to attain the specified temperature. -E87- starts up without transmitting a request for activation of the auxiliary/supplementary heater via the data bus to the auxiliary heater control unit - J364- (auxiliary ventilation mode).

### Auxiliary/supplementary heating mode

- ◆ The operating and display unit for front air conditioning system - E87- determines that auxiliary/supplementary heating mode is required to attain the specified temperature. -E87- transmits the request for activation of the auxiliary/supplementary heater via the data bus to the auxiliary heater control unit - J364- . The auxiliary heater control unit - J364- switches on the auxiliary/supplementary heater (auxiliary/supplementary heating mode). It informs -E87- . as soon as the coolant temperature in the auxiliary/supplementary heater exceeds approx. 40 °C; -E87- then starts up.

## 5.2.2 Switching auxiliary/supplementary heater and auxiliary ventilation on and off

Via operating and display unit for front air conditioning system - E87- / Multi Media Interface (MMI)



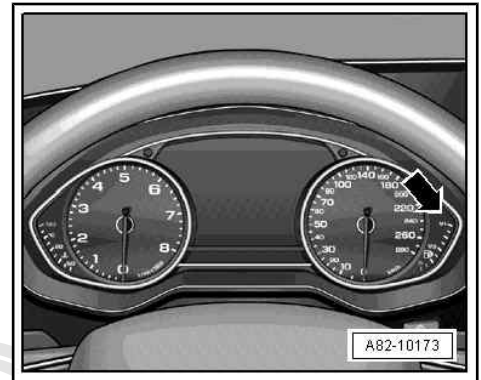
### Note

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- ◆ *The functions "Immediate on" and "Timer" can be called up using the operating and display unit for front air conditioning system - E87- . The auxiliary/supplementary heating or auxiliary ventilation is switched on depending on the ambient temperature and the temperature selected on -E87- ⇒ Heating, air conditioning; Rep. gr. 87 ; Operating and display unit and ⇒ Owner's Manual .*
- ◆ *The "Immediate on" and "Timer" functions can be called up via the Multi Media Interface (MMI, control unit for front display and information control panel - J523- ). The auxiliary/supplementary heating or auxiliary ventilation is switched on depending on the ambient temperature and the temperature selected on the operating and display unit for front air conditioning system - E87- .*
- ◆ *Depending on vehicle version, equipment, production period and the setting in the Multi Media Interface (MMI), certain auxiliary/supplementary heater functions can also be switched on and off via the programmable steering wheel button ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .*
- ◆ *Additional functions of the auxiliary/supplementary heater may be controlled by -E87- and the control unit for front display and information control panel - J523- , depending on the control unit version and the vehicle production period. For further information, refer to ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .*

## Requirements

- The auxiliary/supplementary heater must have been adapted in -E87- ; check and perform coding if necessary ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- The auxiliary/supplementary heating or auxiliary ventilation can only be switched on by the auxiliary heater control unit - J364- if there is enough fuel in the fuel tank. When the ignition is on, the fuel gauge in the instrument cluster -arrow- must not be in the "red zone" ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- There must not be any event memory entries in the auxiliary heater control unit - J364- .
- The battery - A- (vehicle battery) must be charged sufficiently.
- There must not be any faults in the vehicle data bus.
- Transport mode and component protection for auxiliary/supplementary heater must not be active ⇒ Vehicle diagnostic tester ("Guided Fault Finding").



## Switching on auxiliary/supplementary heating or auxiliary ventilation via "Immediate on" function

- Switch on ignition.

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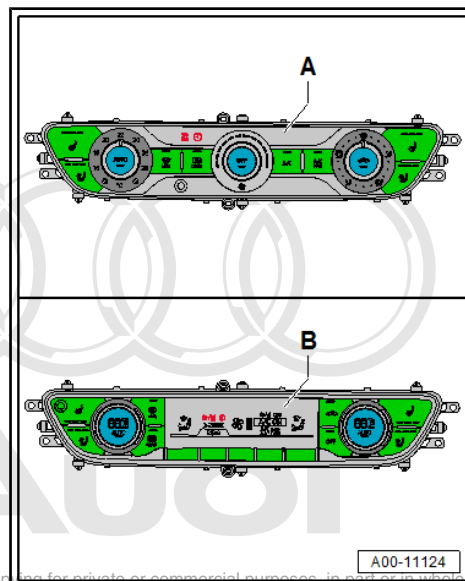
- On operating and display unit for front air conditioning system - E87- (version -A- with a “Low” air conditioner or version -B- with a “High” air conditioner), activate the additional function “Auxiliary air conditioning” ⇒ Owner’s Manual and ⇒ Heating, air conditioning; Rep. gr. 87 ; Operating and display unit .

#### Switching off auxiliary/supplementary heating or auxiliary ventilation via “Immediate on” function

- On operating and display unit for front air conditioning system - E87- (version -A- with a “Low” air conditioner or version -B- with a “High” air conditioner), deactivate the additional function “Auxiliary air conditioning” ⇒ Owner’s Manual and ⇒ Heating, air conditioning; Rep. gr. 87 ; Operating and display unit .

#### Switching on auxiliary/supplementary heating or auxiliary ventilation via “Timer” function

- Switch on ignition.
- Select corresponding function via controls for Multi Media Interface (MMI, control unit for front display and information control panel - J523- ) with “Auxiliary heating” function in “Vehicle” (or “Car”) menu in “Auxiliary air conditioning” sub-menu ⇒ Infotainment/MMI Operating Manual .
- Using the controls of the Multi Media Interface (MMI, control unit for front display and information control panel - J523- ), select the function “Program timers”, then e.g. “Timer 1: target time” using the “Auxiliary heating” function in the “Vehicle” or “Car” menu in the “Auxiliary air conditioning” sub-menu ⇒ Infotainment/MMI Operating Manual .
- Set the time and date.
- To activate the timer, confirm your entry by pressing the rotary pushbutton ⇒ Infotainment/MMI Operating Manual .



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**Note**

- ◆ *If the auxiliary/supplementary heater ( auxiliary heater control unit - J364- ) is activated via the "Timer" function, the operating and display unit for front air conditioning system - E87- determines in the "Auxiliary air conditioning" function whether auxiliary/supplementary heating mode is required to attain the specified temperature or whether auxiliary ventilation mode is sufficient.*
- ◆ *If the "Timer" function is active, the control unit in dash panel insert - J285- activates -E87- and the onboard supply control unit - J519- via the data bus approx. 50 minutes before the selected time. -J519- determines the current charge status of the battery - A- , uses this to determine the permissible operating time for the "auxiliary air conditioning" (auxiliary/supplementary heater or auxiliary ventilation) and then transmits this value to -J285- via the data bus. If the battery - A- is not charged sufficiently, for example, the auxiliary/supplementary heating (auxiliary ventilation) is not switched on or the operating time for the auxiliary/supplementary heating (auxiliary ventilation) is shortened such that the battery - A- is not excessively discharged (this may mean that the temperature specified for the passenger compartment is no longer attained). On the basis of the prevailing conditions (e.g. ambient temperature and passenger compartment temperature), -E87- determines whether auxiliary/supplementary heating mode is required to attain the specified temperature or whether auxiliary ventilation mode is sufficient. If auxiliary/supplementary heating mode is required, -E87- calculates the auxiliary/supplementary heating time needed to attain the desired passenger compartment temperature at the specified time and transmits this value to -J285- via the data bus. Depending on the ambient conditions, the auxiliary/supplementary heater is then activated immediately or the data bus is deactivated again by -J285- for the period prior to the calculated activation time. At the calculated cut-in point, the data bus is activated again by -J285- and -E87- is switched on. -E87- starts up (no obvious outward signs) and activates the auxiliary/supplementary heater. The data bus is likewise deactivated if -E87- determines that auxiliary ventilation mode is sufficient to attain the specified temperature. Only approx. 15 minutes before the specified time, -E87- is activated for auxiliary ventilation mode by -J285- via the data bus and -E87- starts up in "Auxiliary ventilation" mode.*
- ◆ *In the "Timer" function, auxiliary/supplementary heating mode and auxiliary ventilation mode are switched off approx. 10 minutes after the specified time. As the operating time is limited to a maximum of 60 minutes, the auxiliary/supplementary heater is activated no sooner than 50 minutes before the specified time even at very low ambient temperatures.*

## 6 Further control components

⇒ **"6.1 Removing and installing ambient temperature sensor", page 148**

⇒ **"6.2 Removing and installing remote control receiver for auxiliary heater R64 ", page 148**

⇒ **"6.3 Functional description of remote control for auxiliary/supplementary heater", page 149**

### 6.1 Removing and installing ambient temperature sensor

The ambient temperature sensor - G17- is required for the calculation of the ambient temperature so that the auxiliary/supplementary heater can be regulated.

- Removing and installing ambient temperature sensor - G17-  
⇒ Heating, air conditioning; Rep. gr. 87 ; Overview of fitting locations - air conditioner; Overview of fitting locations - components not located in passenger compartment
- Checking ambient temperature sensor - G17- ⇒ Vehicle diagnostic tester ("Guided Fault Finding")

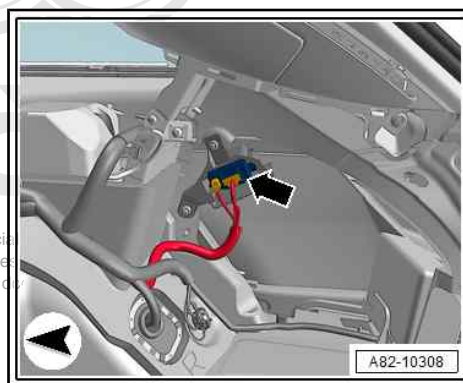
### 6.2 Removing and installing remote control receiver for auxiliary heater - R64-

Removing and installing remote control receiver for auxiliary/supplementary heater ⇒ Communication; Rep. gr. 91 ; Telephone system; Overview of fitting locations - telephone system



#### Note

- ♦ *The remote control receiver for auxiliary heater - R64- -arrow- is currently installed in the control unit carrier at the rear right of the luggage compartment ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- ♦ *The fitting location shown applies for the Audi A4 and Audi A5. it differs slightly on the Audi Q5 ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- ♦ *-R64- is not fitted on all vehicles. On vehicles with the optional extra "Audi connect services", the "Auxiliary air conditioning" function (auxiliary heating or auxiliary ventilation mode) is activated and deactivated e.g. via a mobile phone.*
- ♦ *On vehicles which feature an auxiliary/supplementary heater and "Audi connect services" as optional equipment, the operating and display unit for front air conditioning system - E87- (as on vehicles with a remote control for the auxiliary/supplementary heater) determines whether any heat output is required to attain the temperature specified for the passenger compartment. -E87- receives the request to switch the auxiliary heater / auxiliary ventilation on or off via the data bus for the Multi Media Interface (MMI, control unit for front display and information control panel - J523- ) or from control unit 1 for information electronics - J794- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations, ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .*



## 6.3 Functional description of remote control for auxiliary/supplementary heater

⇒ [“6.3.1 Switching on auxiliary heating/auxiliary ventilation via Immediate on function”, page 149](#)

⇒ [“6.3.2 Switching off auxiliary heating / auxiliary ventilation via Immediate on function”, page 150](#)

⇒ [“6.3.3 Switching on auxiliary heating / auxiliary ventilation via Timer function”, page 151](#)

⇒ [“6.3.4 Switching off auxiliary/supplementary heating or auxiliary ventilation via Timer function”, page 153](#)

⇒ [“6.3.5 Remote control for auxiliary heater”, page 154](#)

⇒ [“6.3.6 Display of fault conditions on remote control for auxiliary heater”, page 156](#)

⇒ [“6.3.7 Renewing battery of remote control for auxiliary heater”, page 157](#)

⇒ [“6.3.8 Adapting remote control for auxiliary/supplementary heater”, page 157](#)

### 6.3.1 Switching on auxiliary heating/auxiliary ventilation via “Immediate on” function



*On vehicles with an auxiliary/supplementary heater and with “Audi connect services” as optional equipment, the various functions of the auxiliary air conditioning (auxiliary heater or auxiliary ventilation) are activated in the same way as with a hand-held remote control transmitter; however, the transmitter/receiver with which these vehicles exchange information is a mobile phone ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual.*

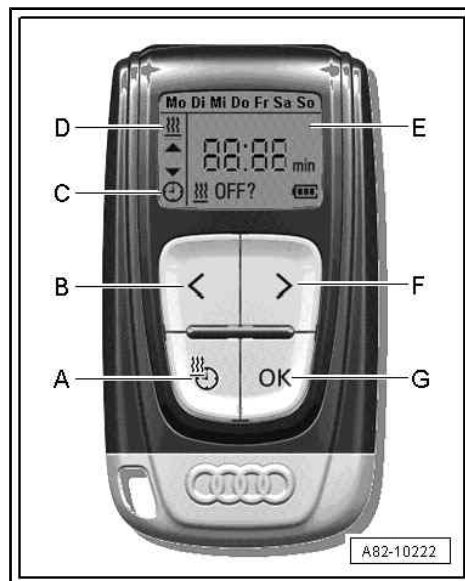
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- The remote control is activated by pressing button -A-.
- The “Immediate on” function is selected with button -A- (the arrow points to -D- in the remote control display).
- The required operating time is set with buttons -B- and -F- (in 10-minute increments).
- The auxiliary/supplementary heater or auxiliary ventilation is activated by pressing button -G-.



#### Note

- ◆ The request for activation is transmitted after button -G- is pressed. The data transfer symbol (aerial) appears on the remote control display.
- ◆ If the cut-in signal is received correctly by the auxiliary heater control unit - J364- and there are no faults in the auxiliary/supplementary heater, feedback is sent to the remote control and the auxiliary/supplementary heater or auxiliary ventilation is activated. The operating time or remaining running time appears on the remote control display.
- ◆ Heating is not possible if the vehicle battery charge level is too low, if there are any event memory entries in the auxiliary heater control unit - J364- or if there is not enough fuel in the tank. A feedback signal is sent to the remote control and the cause of the problem is indicated on the display  
⇒ [page 156](#).
- ◆ If the vehicle is outside the range of the remote control, the message “No radio link with vehicle” ⇒ [page 156](#) is displayed as feedback.
- ◆ The LCD of the remote control for auxiliary/supplementary heater is automatically switched off 8 seconds after the last button has been pressed. Pressing button -A- activates the remote control for auxiliary/supplementary heater and the remaining running time is displayed.



### 6.3.2 Switching off auxiliary heating / auxiliary ventilation via “Immediate on” function



#### Note

On vehicles with an auxiliary/supplementary heater and with “Audi connect services” as optional equipment, the various functions of the auxiliary air conditioning (auxiliary heater or auxiliary ventilation) are activated in the same way as with a hand-held remote control transmitter; however, the transmitter/receiver with which these vehicles exchange information is a mobile phone ⇒ Owner’s Manual and ⇒ Infotainment/MMI Operating Manual.

- The remote control for auxiliary/supplementary heater is activated by pressing button -A-.
- The auxiliary/supplementary heater can be switched off by pressing button -G-, irrespective of the operating time.



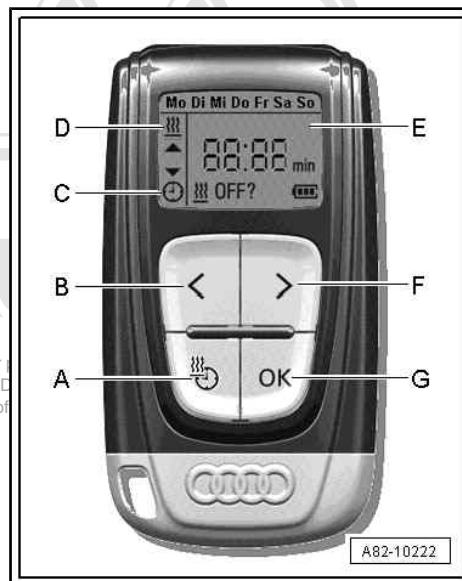
### 6.3.3 Switching on auxiliary heating / auxiliary ventilation via “Timer” function



#### Note

*On vehicles with an auxiliary/supplementary heater and with “Audi connect services” as optional equipment, the various functions of the auxiliary air conditioning (auxiliary heater or auxiliary ventilation) are activated in the same way as with a hand-held remote control transmitter; however, the transmitter/receiver with which these vehicles exchange information is a mobile phone ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .*

- The remote control is activated by pressing button -A-.
- The "Timer" function is selected with button -A- (the arrow points to -C- in the remote control display).
- The required "hour" setting is selected with buttons -B- and -F-.
- Switch to the "minute" setting by pressing button -G-.
- The required "minute" setting is selected with buttons -B- and -F-.
- Switch to the "day" setting by pressing button -G-.
- The required "day" setting is selected with buttons -B- and -F-.
- The "Timer" function of the auxiliary/supplementary heater is activated by pressing button -G-.



### Note

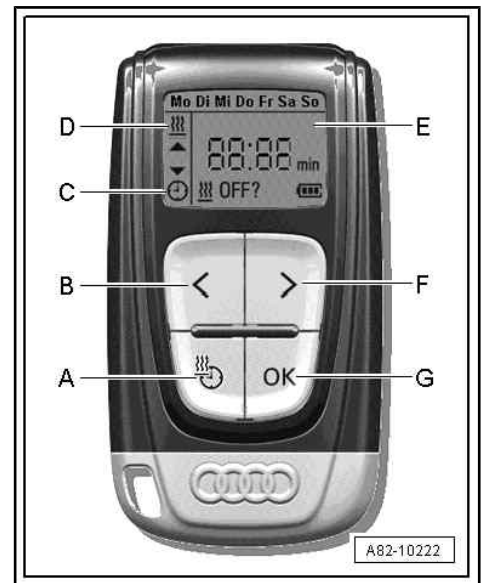
- ◆ The entry is transmitted after button -G- is pressed. The data transfer symbol (aerial) appears on the remote control display.
- ◆ If the cut-in signal is received correctly by the auxiliary heater control unit - J364- and there are no faults in the auxiliary/supplementary heater, a feedback signal is sent to the remote control for auxiliary/supplementary heater. The time setting appears on the remote control display.
- ◆ Heating is not possible if the vehicle battery charge level is too low, if there are any event memory entries in the auxiliary heater control unit - J364- or if there is not enough fuel in the tank. A feedback signal is sent to the remote control and the cause of the problem is indicated on the display  
⇒ [page 156](#).
- ◆ If the vehicle is outside the range of the remote control, the message "No radio link with vehicle" ⇒ [page 156](#) is displayed as feedback.
- ◆ The timer programmed with the remote control for auxiliary/supplementary heater is always displayed in the Multi Media Interface (MMI, control unit for front display and information control panel - J523- , "Auxiliary heating" function) as "Timer 1". If "Timer 1" or "Timer 2" has already been activated via the Multi Media Interface (MMI, control unit for front display and information control panel - J523- , "Auxiliary heater" function), the new programming using the remote control overwrites the previously activated timer; this is then displayed in the Multi Media Interface (MMI, control unit for front display and information control panel - J523- , "Auxiliary/supplementary heater" function) as "Timer 1".
- ◆ The display of the remote control for auxiliary heater is automatically switched off 8 seconds after the last button has been pressed. Pressing button -A- reactivates the remote control for auxiliary/supplementary heater and the timer programming or - if the auxiliary heater has already been activated - the remaining running time is displayed.
- ◆ If the auxiliary heater ( auxiliary heater control unit - J364- ) is activated via the "Timer" function, the operating and display unit for front air conditioning system - E87- ) determines whether auxiliary heating mode is required to attain the specified temperature or whether auxiliary ventilation mode is sufficient.

### 6.3.4 Switching off auxiliary/supplementary heating or auxiliary ventilation via “Timer” function

 **Note**

*On vehicles with an auxiliary/supplementary heater and with “Audi connect services” as optional equipment, the various functions of the auxiliary air conditioning (auxiliary heater or auxiliary ventilation) are activated in the same way as with a hand-held remote control transmitter; however, the transmitter/receiver with which these vehicles exchange information is a mobile phone ➔ Owner's Manual and ➔ Infotainment/MMI Operating Manual .*

- The remote control is activated by pressing button -A-.
- The auxiliary heater can be switched off by pressing button -G- again, irrespective of the timer programming selected.



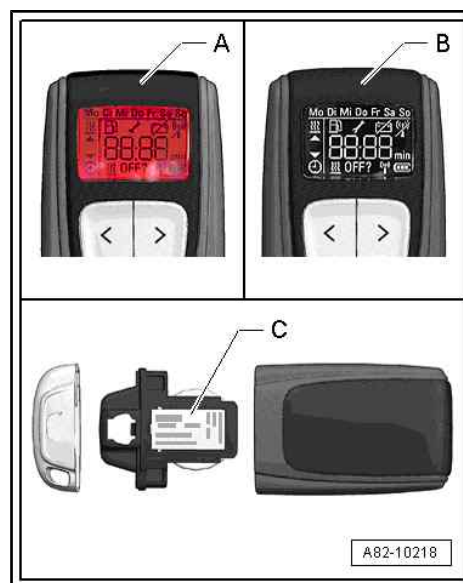
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## 6.3.5 Remote control for auxiliary heater



### Note

- ◆ On vehicles with an auxiliary/supplementary heater and with "Audi connect services" as optional equipment, the various functions of the auxiliary air conditioning (auxiliary heater or auxiliary ventilation) are activated in the same way as with a hand-held remote control transmitter; however, the transmitter/receiver with which these vehicles exchange information is a mobile phone ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .
- ◆ The functions "Immediate on" and "Timer" can be called up using the remote control for auxiliary heater (with display). The auxiliary/supplementary heating or auxiliary ventilation is switched on depending on the ambient temperature and the temperature selected on the operating and display unit for front air conditioning system - E87- .
- ◆ The auxiliary/supplementary heater can be switched on and off immediately using the remote control for auxiliary heater (with display). The auxiliary/supplementary heater or auxiliary ventilation is activated depending on the ambient temperature and the temperature setting on -E87- .
- ◆ If the auxiliary/supplementary heater ( auxiliary heater control unit - J364- ) is activated by a cut-in signal from the remote control for auxiliary heater, the remote control receiver for auxiliary heater - R64- initially activates -J364- . -J364- then transmits the information "switch auxiliary heating/ventilation on/off" to -E87- via the data bus. -E87- then determines whether auxiliary heating mode is required to attain the specified temperature or whether auxiliary ventilation mode is sufficient.
- ◆ The remote control for auxiliary heater (with display) has a range of approx. 700 - 1000 m. This may be considerably reduced by obstacles (e.g. buildings) between the remote control and the vehicle.
- ◆ There are different versions of the remote control for auxiliary heater (the hand-held remote control transmitter and the remote control receiver for auxiliary heater - R64- ) and of -E87- . It is therefore important to ensure that these components are correctly assigned. Malfunctions may occur if the wrong components are installed together or if the coding or adaption are incorrect ⇒ Electronic parts catalogue and ⇒ Vehicle diagnostic tester ("Guided Fault Finding").
- ◆ Up to model year 2011, hand-held remote control transmitters with dark lettering and a red display -A- were used at Audi (part number 4H0 963 511 without index). From model year 2012 onwards, hand-held remote control transmitters with white lettering on a dark background -B- and with part number 4H0 963 511 with index "A" were introduced gradually. For these vehicles (e.g. the Audi A4, Audi A5, Audi Q5), only hand-held remote control transmitters with white lettering on a dark background -B- and with part number 4H0 963 511 from index "B" onwards are planned. The two versions of the hand-held transmitter with white lettering on a dark background -B- have different functions.



- ◆ *The two versions of the remote control with white lettering on a dark background -B- can only be distinguished by certain features on the display (as described in the following). On these part numbers with index "A", the lines underneath the day display appear immediately after the ON button is pressed. On versions with part number from index "B" onwards, the time that the lines underneath the day display take to appear depend on the version of the remote control receiver for auxiliary heater - R64- installed in the vehicle.*
- ◆ *If a remote control from index "B" onwards recognises from the radio signal from -R64- that the vehicle is fitted with an -R64- with part number 4H0 963 271 up to index "C", the lines underneath the day display appear immediately after the ON button of the hand-held transmitter is pressed. If the radio signal identifies an -R64- with part number 4H0 963 271 from index "D" onwards (available for these vehicles, e.g. the Audi A4, Audi A5, Audi Q5), the lines underneath the day display only appear approx. 2 seconds after the ON button of the hand-held transmitter is pressed.*
- ◆ *The part number of the hand-held remote control transmitter is given on a sticker on the battery carrier -C-.*
- ◆ *The two versions of the hand-held transmitter with white lettering on a dark background -B- also have different functions. For example, on the version with part number 4H0 963 511 from index "B" onwards, it is possible to set the "Timer function" with the auxiliary/supplementary heater switched on.*
- ◆ *The remote control receiver for auxiliary heater - R64- exchanges data with -J364- via the auxiliary heater control unit - E87- .*
- ◆ *The hand-held remote control transmitter and the remote control receiver for auxiliary heater - R64- exchange information via the auxiliary heater aerial - R182- (fitted in the roof aerial - R216- ) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- ◆ *Make sure the hand-held remote control transmitters and the remote control receiver for auxiliary heater - R64- are correctly assigned. Hand-held remote control transmitters with part number without index or with index "A" can exchange data correctly with a -R64- with part number 4H0 963 271 up to index "C". Certain data cannot be exchanged with a -R64- with part number 4H0 963 271 from index "D" onwards.*
- ◆ *Hand-held remote control transmitters with part number from index "B" onwards can exchange data correctly with an -R64- with part number 4H0 963 271 up to index "C" and from index "D" onwards. These hand-held transmitters can identify the version via the signal from -R64- and adapt their transmission signal accordingly.*

#### Functions of hand-held remote control transmitter



## Note

- ◆ The main functions of the remote control are listed in the following. For a detailed functional description of this remote control, refer to the ⇒ Owner's Manual .
- ◆ On vehicles with an auxiliary/supplementary heater and with "Audi connect services" as optional equipment, the various functions of the auxiliary air conditioning (auxiliary heater or auxiliary ventilation) are activated in the same way as with a hand-held remote control transmitter; however, the transmitter/receiver with which these vehicles exchange information is a mobile phone ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .
- ◆ The LCD of the remote control is activated by pressing button -A-.

-A- Activation of remote control and selection of menus ("Immediate on" and "Timer")

-B- Down button

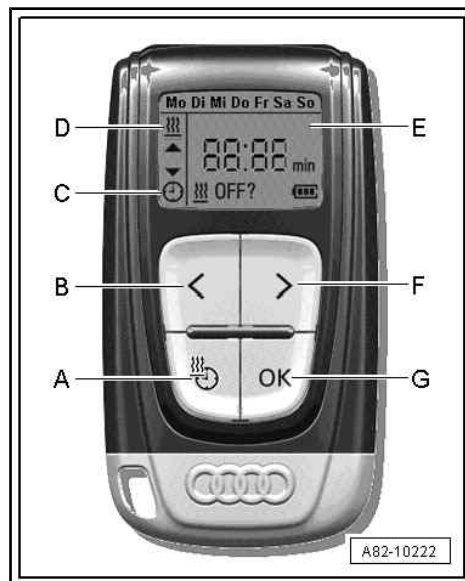
-C- "Timer" display

-D- "Immediate on" display

-E- LCD

-F- Up button

-G- Activation/deactivation of auxiliary/supplementary heater with required operating time and timer programming



## 6.3.6 Display of fault conditions on remote control for auxiliary heater



## Note

On vehicles with an auxiliary/supplementary heater and with "Audi connect services" as optional equipment, the various functions of the auxiliary air conditioning (auxiliary heater or auxiliary ventilation) are activated in the same way as with a hand-held remote control transmitter; however, the transmitter/receiver with which these vehicles exchange information is a mobile phone ⇒ Owner's Manual and ⇒ Infotainment/MMI Operating Manual .

### Heating not possible:

-A- Not enough fuel in the tank



## Note

When the ignition is switched on, the fuel gauge in the instrument cluster must not be in the "red zone".

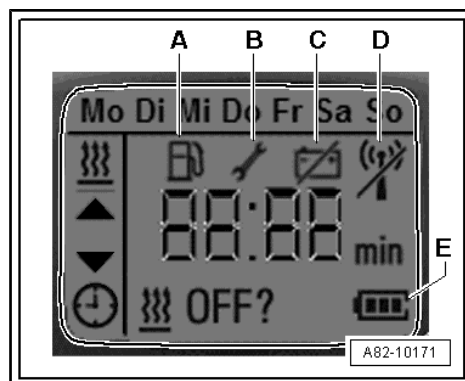
-B- Event memory entry in auxiliary heater control unit - J364-

-C- Vehicle battery charge level too low

-D- No radio link with vehicle (outside range)

### Battery capacity:

-E- Battery capacity of remote control

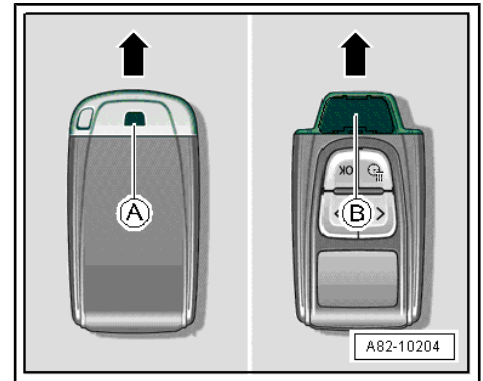


### 6.3.7 Renewing battery of remote control for auxiliary heater

- Press release tab -A- and detach cover in direction of -arrow-.
- Press release tab -B- on battery carrier and pull out battery carrier in direction of -arrow-.
- Fit new battery with “positive terminal” facing downwards.

#### Note

- ◆ Only fit batteries with specifications corresponding to the original battery (e.g. CR2430 3V 280m Ah). You can obtain these batteries e.g. from specialised dealers or via the replacement parts programme ➔ Electronic parts catalogue .
- ◆ Pressing any button on the remote control for auxiliary heater (with display) activates the LCD. Repeated unintentional activation of the LCD (e.g. while in your pocket) will shorten battery life.



### 6.3.8 Adapting remote control for auxiliary/supplementary heater

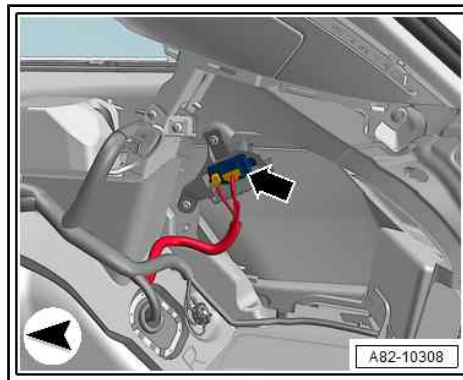


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## Note

- ◆ On vehicles with an auxiliary/supplementary heater and with "Audi connect services" as optional equipment, the various functions of the auxiliary air conditioning (auxiliary heater or auxiliary ventilation) are activated in the same way as with a hand-held remote control transmitter; however, the transmitter/receiver with which these vehicles exchange information is a mobile phone ➔ Owner's Manual and ➔ Infotainment/MMI Operating Manual .
- ◆ The remote control for auxiliary heater should be held upright (transmission aerial upwards) while pressing the buttons.
- ◆ Currently up to four remote controls can be adapted in the remote control receiver for auxiliary heater - R64- (via the auxiliary heater control unit - J364- ). If a fifth remote control is adapted, the first remote control that was adapted is deleted.
- ◆ The remote control for auxiliary heater is adapted in the remote control receiver for auxiliary heater - R64- . If this is renewed, all remote controls must be re-adapted.
- ◆ There are different versions of the remote control receiver for auxiliary heater - R64- . You must therefore make sure that the remote control is correctly assigned and that the auxiliary/supplementary heater is coded correctly  
➔ **"6.3.5 Remote control for auxiliary heater", page 154** , ➔ Electronic parts catalogue and ➔ Vehicle diagnostic tester ("Guided Fault Finding").
- ◆ The remote control for auxiliary heater can be adapted with the "Adapt radio remote control" function via the auxiliary heater control unit - J364- ➔ Vehicle diagnostic tester ("Guided Fault Finding").
- ◆ As the battery of the remote control for auxiliary heater becomes weaker, the transmission power and thus the reception quality deteriorate. The current battery capacity is indicated in the display of the remote control (with display) ➔ **page 156** . The reception quality of the transmission signal is displayed in the "Read measured values" function of the auxiliary heater control unit - J364- ➔ Vehicle diagnostic tester ("Guided Fault Finding").
- ◆ The code of each remote control for auxiliary heater is stored in the remote control receiver for auxiliary heater - R64- .
- ◆ In the event of adaption problems, check the aerial connector and attempt to adapt the remote control for auxiliary heater in the luggage compartment if necessary.
- ◆ Should it not be possible to switch on the auxiliary heater using the remote control for auxiliary heater, check the fuel level in the fuel tank (there must be a sufficient amount of fuel) and the operating status of the vehicle (transport mode must not be active). If these two shut-off criteria were recently active, e.g. on a new vehicle, it may be necessary to briefly interrupt the power supply to the auxiliary/supplementary heater and the remote control receiver for auxiliary heater - R64- to restore the normal function (auxiliary/supplementary heater "re-set").



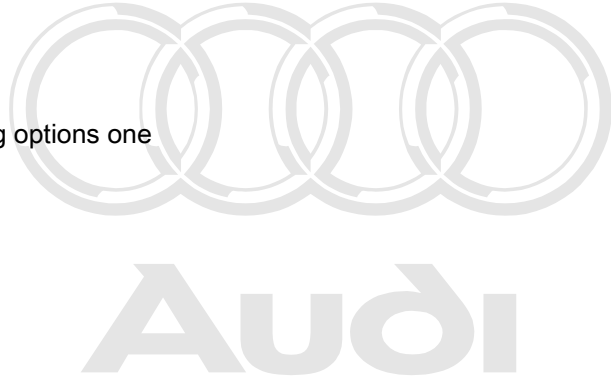
## Requirement

The remote control to be used must be coded in the auxiliary heater control unit - J364- (remote control with display).

- If applicable, check coding and remote control receiver for auxiliary heater - R64- , and encode auxiliary heater control unit - J364- accordingly (remote control with display) ⇒ Vehicle diagnostic tester ("Guided Fault Finding").

#### Adapting remote control for auxiliary/supplementary heater

- Connect ⇒ Vehicle diagnostic tester.
- Select **Diagnosis** mode and begin diagnosis.
- Select **Test plan** tab.
- Choose **Select own test** and select following options one after the other:
  - ◆ Body
  - ◆ Heating, ventilation, air conditioning system
  - ◆ 01 - Self-diagnosis compatible systems
  - ◆ 18 - Auxiliary/additional heater\_J364
  - ◆ 18 - Auxiliary/additional heater\_functions
  - ◆ 18 - Adapting radio remote control



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