

Workshop Manual Audi A6 2005 ➤

Auxiliary Heater

Edition 02.2008



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List of Workshop Manual Repair Groups

Repair Group

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.

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Contents

82 - Auxiliary heating	1
1 Repair Auxiliary heating	1
1.1 General information on auxiliary heater	1
1.2 Notes on Auxiliary heating	2
1.3 Notes on operation of auxiliary heater with biodiesel (vehicles with diesel engine only)	3
2 Safety precautions when working on vehicles fitted with auxiliary heater	5
3 Notes on general repair work on vehicles fitted with auxiliary heater	6
4 Rules for cleanliness when working on auxiliary heater (and fuel system)	8
5 Layout of components for auxiliary heater in vehicle	9
5.1 Buttons and indicator lamps of auxiliary heater remote control	18
5.2 Checking and replacing batteries in auxiliary heater remote control hand transmitter	20
5.3 Adaption of remote control hand transmitter in auxiliary heater control unit J364	20
5.4 Activating/deactivating auxiliary heater/auxiliary ventilation via Multi Media Interface (MMI)	21
6 Diverting fuel for auxiliary heater	29
6.1 Components for diverting fuel for auxiliary heater	30
6.2 Routing of auxiliary heater fuel-diverting hose in fuel delivery unit	35
6.3 Removing and installing metering pump V54	37
6.4 Checking operation of fuel shut-off valve N109	39
6.5 Routing the fuel pipe to the auxiliary heater	40
6.6 Checking fuel delivery of metering pump V54	42
7 Checking and adjusting CO2 content in auxiliary heater exhaust gas	53
7.1 Checking CO2 content in auxiliary heater exhaust gas	53
7.2 Adjusting CO2 content in auxiliary heater exhaust gas	58
7.3 Checking electrical connections to auxiliary heater and circulation pump V55	64
7.4 Checking auxiliary heater components	71
8 Functional description of auxiliary heater	79
8.1 Functional description of auxiliary heater	81
8.2 Control sequence when starting the auxiliary heater (also as additional heater)	90
8.3 Auxiliary heater control sequence on load change (from full to part-load mode and vice versa)	94
8.4 Control sequence on shutoff of auxiliary heater	97
8.5 Auxiliary heater temperature control curve	98
9 Incorporation of auxiliary heater into coolant circuit	100
9.1 Incorporation of auxiliary heater on vehicles with heater coolant shutoff valve N279	100
9.2 Operation and actuation of heater coolant shutoff valve N279	102
9.3 Removing and installing heater coolant shutoff valve N279	104
9.4 Actuation of circulation pump V55 in auxiliary heating mode	108
9.5 Bleeding coolant circuit	109
10 Removing and installing auxiliary heater	111
10.1 Removing and installing auxiliary heater (all models except Audi S6)	111
10.2 Removing and installing auxiliary heater (Audi S6)	115
11 Dismantling and assembling auxiliary heater	121
11.1 Detaching add-on components from auxiliary heater/re-attaching (all models except Audi S6)	121
11.2 Detaching add-on components from auxiliary heater/re-attaching (Audi S6)	127
11.3 Dismantling and assembling auxiliary heater	135
11.4 Design of auxiliary heater control unit J364 and combustion air blower V6	139
11.5 Checking installation position of glow plug with flame monitor Q8	140
11.6 Attaching connection for coolant hoses to auxiliary heater	141
11.7 Removing and installing combustion air intake pipe	141
11.8 Assembling burner housing with heat exchanger and outer casing	142



11.9	Assembling auxiliary heater control unit J364 and burner element	142
11.10	Removing and installing overheating fuse S24 / overheating sensor G189 and temperature sensor G18	144
12	Auxiliary heater block diagram.	146
12.1	Assignment of connector console at auxiliary heater control unit J364	146
13	Activating auxiliary heater with remote control	149
13.1	Block diagram for actuation of auxiliary heater with remote control	149
13.2	Removing and installing auxiliary heating radio controlled receiver R64	153
13.3	Removing and installing aerial module (Saloon)	154

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82 – Auxiliary heating

1 Repair Auxiliary heating

1.1 General information on auxiliary heater

- ◆ Auxiliary heater control remains operative during guided fault-finding.
- ◆ Auxiliary heater self-diagnosis is to be performed by way of the "Guided fault-finding" function using the vehicle diagnostic, testing and information system -VAS 5051 A- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- ◆ Auxiliary heater guided fault-finding can only be started with the ignition switched on. Once the auxiliary heater has switched to diagnostic mode, it is possible to continue with guided fault-finding even with the ignition switched off ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- ◆ Different auxiliary heater versions are available. Heed the exact assignment when replacing an auxiliary heater ⇒ [page 2](#) and ⇒ Electronic parts catalogue .
- ◆ Depending on vehicle equipment and production period, vehicles with diesel engine and "auxiliary heater" optional extra may also be fitted with an electric additional air heater ⇒ Air Conditioner; Repair group 87 and ⇒ Audi Sales Programme . On vehicles with an auxiliary heater and an electric supplementary air heater, the auxiliary heater is not actuated as a "supplementary heater" (introduction not yet finalised). Attention is therefore to be paid to the adaption of the supplementary heater control unit -J364- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- ◆ On vehicles with diesel engine and "auxiliary heater" optional extra which are not fitted with an electric supplementary air heater, the auxiliary heater is actuated as "supplementary heater" (currently applies to all vehicles) ⇒ Audi Sales Range . Attention is therefore to be paid to the adaption of the supplementary heater control unit -J364- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- ◆ Vehicles with diesel engine and no auxiliary heater are fitted with an electric additional heater (heat energy is added to air flow immediately after exiting from heat exchanger of air conditioner unit) ⇒ Audi Sales Programme and ⇒ Air Conditioner; Repair group 01 .
- ◆ If the auxiliary heater is to be replaced, interrogate the encoding and adaption of the supplementary heater control unit -J364- by way of the "Control unit replacement" function of the guided fault-finding routine prior to removal (the supplementary heater control unit -J364- is installed in the heater) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- ◆ On account of the built-in component protection, auxiliary heaters cannot be interchanged in the familiar manner. The component protection is activated following interchange and a certain number of starting operations (currently 30). The auxiliary heater can then no longer be switched on without cancelling the component protection ⇒ "Guided fault-finding"

function of vehicle diagnostic, testing and information system
VAS 5051. .

1.2 Notes on Auxiliary heating



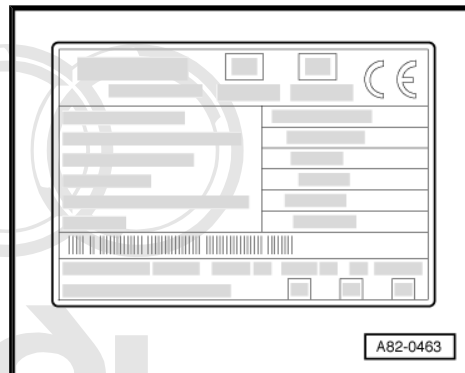
Note

Different auxiliary heater versions are available. Heed the exact assignment when replacing an auxiliary heater ⇒ Electronic parts catalogue .

The heater rating plate indicates the version concerned:

The most important technical data entered on the nameplate are as follows (example):

- ◆ Approval symbols for heater and heater radio interference suppression
- ◆ Heater type "Thermo Top V" (TT-V)
- ◆ Operating voltage and power input (in full-load mode) of auxiliary heater e.g. "12 V/ 42 W"
- ◆ Max. heat flux (maximum heat output in full-load mode) "5.0 kW"
- ◆ Type of fuel "Diesel" or "Petrol"
- ◆ Permissible operating pressure (in cooling system) "2.5 bar"
- ◆ Country of manufacture, article number, version, serial no. and year of commissioning of auxiliary heater

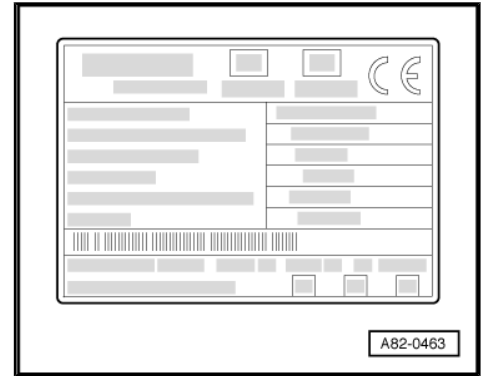


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Note

- ◆ The "V" in the type designation "Thermo Top V" stands for "Venturi nozzle".. This type of auxiliary heater employs the Venturi principle to mix the fuel with the combustion air.
- ◆ The air is blown by the combustion air blower -V6- into the combustion chamber via a pipe with constriction. The air velocity increases at the constriction. The fuel emerging from the fuel injection tube ("Venturi nozzle") is entrained and a swirl effect produced.
- ◆ The year of initial commissioning is to be entered/marked beneath the technical data on the rating plate.
- ◆ It must be possible to identify the year of initial commissioning on both rating plates (nameplates, original on auxiliary heater and duplicate in engine compartment). These nameplates are available as replacement parts ⇒ Electronic parts catalogue .
- ◆ A second rating plate (duplicate) is fitted in the engine compartment of the vehicle (e.g. to the bonnet or to the front end module). In the event of uncertainty about the type of auxiliary heater, always heed the rating plate affixed to the auxiliary heater itself and the part number of the supplementary heater control unit -J364- , which is displayed in the "Guided fault-finding" function ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .
- ◆ If the auxiliary heater is to be replaced, interrogate the encoding and adaption of the supplementary heater control unit -J364- (integrated into the heater) under "Control unit replacement" prior to removal ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .
- ◆ Before handing over new vehicle with auxiliary heater to customer, check operation of auxiliary heater and run heater in full-load mode for at least 10 minutes. There may still be remnants of factory lubricant for example in or on auxiliary heater components and these would evaporate following initial activation on becoming hot. The resultant smoke could give customers cause for concern and possibly lead them to think that there is a fault in the auxiliary heater.



1.3 Notes on operation of auxiliary heater with biodiesel (vehicles with diesel engine only)

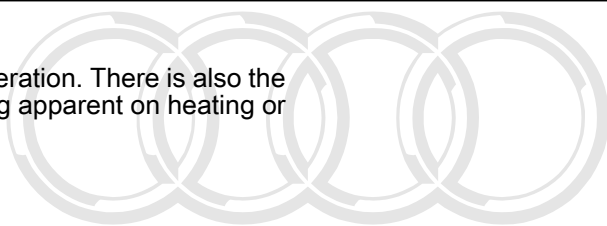
Problems with auxiliary heater operation may be encountered in cold weather (usually the only conditions under which auxiliary heater is switched on or actuated) if use is made of vegetable-oil or rape-oil methylester as fuel.

Reason:

- On account of the physical properties, deposits may form during operation with vegetable-oil or rape-oil methylester in the auxiliary heater combustion chamber (burner element). These then cause combustion problems if the vehicle is run for lengthy periods on vegetable-oil or rape-oil methylester (no flame formation and deflagration in combustion chamber).
- At low temperatures (below 0 °C), the fluidity of vegetable-oil and rape-oil methylester deteriorates to a far greater extent than that of diesel fuel, thus resulting in a reduced supply of fuel and problems with auxiliary heater operation.
- The physical properties of vegetable-oil or rape-oil methylester fuel are such that clouds of smoke may emerge from the ex-



haust pipe during auxiliary heater operation. There is also the possibility of certain odours becoming apparent on heating or burning vegetable oils.



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2 Safety precautions when working on vehicles fitted with auxiliary heater

- ◆ The auxiliary heater must not be activated in areas where there is a danger of fire or explosion.
- The auxiliary heater is to be switched off by way of the MMI (Multi Media Interface), e.g. in the case of an air conditioner of “Convenience” type after selecting the function “Set-up” on the operating and display unit, Climatronic control unit -J255- ⇒ [page 21](#) , in the case of an air conditioner of “Basic” type after selecting the function “Car” on the MMI terminal and the MMI rotary knob/pushbutton or with the remote control “OFF” button ⇒ Owner's manual and ⇒ Operating instructions for “Infotainment / MMI” .
- ◆ Do not operate or switch on the auxiliary heater in confined spaces without extractors.
- ◆ Observe the relevant safety regulations when working on the fuel system ⇒ Fuel Supply - Petrol Engines; Rep. Gr. 20 or ⇒ Fuel Supply - Diesel Engines; Rep. Gr. 20 .
- ◆ If components of the fuel system (e.g. metering pump -V54- , fuel pipe, fuel gauge sender -G-) are removed or opened, the vehicle engine may not be started.
- ◆ On completion of repairs to auxiliary heater or fuel system check operation of auxiliary heater.
- ◆ Before starting repair work on auxiliary heater:
 - Dissipate pressure in cooling system by opening the plug on the coolant expansion tank
 - Disconnect the voltage and fuel supply to the auxiliary heater (e.g. by removing auxiliary heater fuse)⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

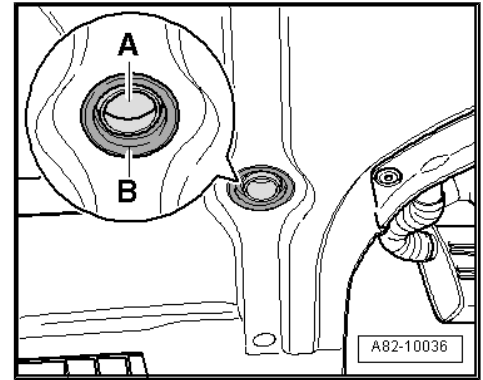
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3 Notes on general repair work on vehicles fitted with auxiliary heater

- ◆ Before carrying out electric welding work on the vehicle, disconnect the positive and negative leads from the battery -A- .
- ◆ If coolant has been drained, bleed auxiliary heater after filling cooling system ⇒ [page 109](#) .
- ◆ If parts of fuel system have been removed or replaced, make sure that all components used for diverting fuel to auxiliary heater are properly installed. Then the auxiliary heater must be switched on and the function checked.
- ◆ After performing repairs in area of fuel pipe to auxiliary heater:
 - Check that there is no air in the fuel pipe to the auxiliary heater.
 - that the fuel pipes are flush with the floor of the vehicle, and are routed so as to protect them from mechanical damage.
 - that the fuel pipe to auxiliary heater is protected against heat generation which could affect operation.
 - that the fuel pipe does not touch hot vehicle components.

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- ◆ When performing repair work in area of fuel delivery unit, pay attention to correct routing of pipe for diverting fuel to auxiliary heater in fuel tank. If pipe is not routed properly, metering pump -V54- may only supply fuel if tank is completely full (if this is not the case, no fuel is supplied and auxiliary heater is deactivated on account of a fault).
- ◆ After removing and installing fuel system components, the auxiliary heater is to be switched on and operated at full load for at least 10 minutes to ensure complete bleeding of the fuel pipe.
- ◆ If there is not enough fuel in the tank (fuel gauge in "red zone"), the supplementary heater control unit -J364- does not activate the auxiliary heater ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function.
- ◆ Prior to activation and during auxiliary heater operation, auxiliary heater control unit -J364- interrogates onboard supply control unit -J519- via data bus system. As soon as onboard supply control unit -J519- transmits energy saving information on account of insufficient electrical system voltage, auxiliary heater control unit -J364- switches off auxiliary heater.
- ◆ If auxiliary heater is to be replaced, interrogate encoding and adaption of auxiliary heater control unit -J364- (installed in heater) before removal under "Control unit replacement" and ⇒ vehicle diagnostic, testing and information system -5051 A- in the "Guided fault-finding" function .
- ◆ Guided fault-finding is to be performed on completion of auxiliary heater repair work (check encoding, perform basic setting, interrogate fault memory and perform adaption) ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .
- ◆ Avoid switching on the auxiliary heater repeatedly without combustion operation in between (when repeatedly switching off the auxiliary heater fuel can accumulate in the combustion chamber during the start sequence, which may cause increased emission of smoke in the auxiliary heater with a subsequent start attempt).
- ◆ After installing noise insulation, check position of exhaust pipe -A-; a gasket -B- must be installed between exhaust pipe -A- and noise insulation. Exhaust pipe must protrude downwards out of gasket and outlet of exhaust gas from exhaust pipe -A- must not be impeded



4 Rules for cleanliness when working on auxiliary heater (and fuel system)

- ◆ Thoroughly clean all unions and the adjacent areas before disconnecting.
- ◆ Place dismantled components on a clean surface (use plastic sheeting or paper, lint-free cloths) and cover over.
- ◆ Carefully cover over or seal open components if repairs cannot be performed immediately.
- ◆ Only install clean components:
 - Do not remove replacement parts from their wrapping until immediately prior to installation.
 - Do not use parts that have been stored without their packaging (e.g. in tool boxes etc.).
- ◆ When the fuel system is open:
 - Do not work with compressed air.
 - Do not move the vehicle.
 - Do not start the engine.
 - Do not switch on the auxiliary heater (also applies to switch-on in the guided fault-finding "Basic setting" function).



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5 Layout of components for auxiliary heater in vehicle

Note

- ◆ *Fitting locations of various relays and fuses for auxiliary heater ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- ◆ *Auxiliary heater guided fault-finding procedure ⇒ Vehicle diagnostic, testing and information system -5051 A-, "Guided fault-finding" function .*

1 - Exhaust gas outlet of auxiliary heater

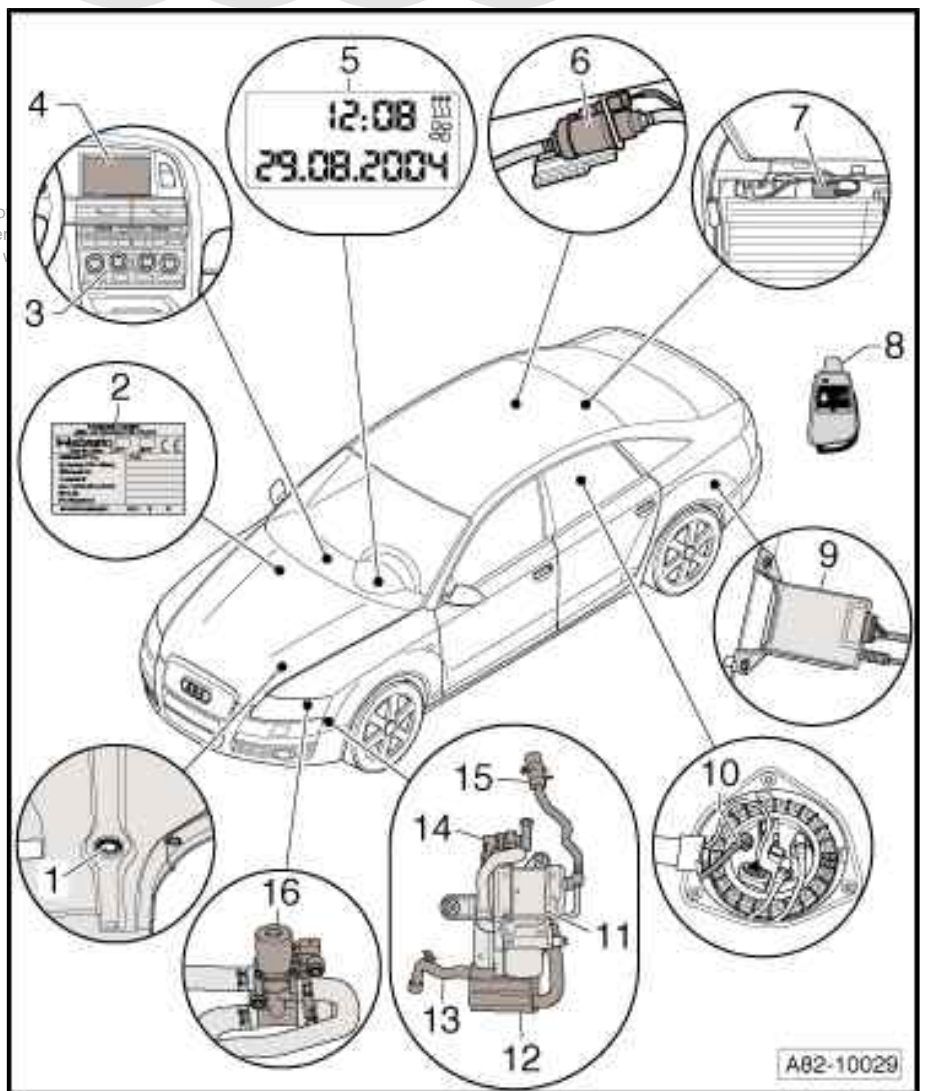
- ☐ Removing and installing ⇒ [page 111](#)
- ☐ A gasket be installed between exhaust pipe and noise insulation
- ☐ Exhaust pipe must protrude downwards out of gasket
- ☐ Outlet of exhaust gas from exhaust pipe must not be impeded (e.g. by parking front end of vehicle over edge of pavement)

2 - Duplicate plate for auxiliary heater

- ☐ Indicates auxiliary heater model in addition to technical data
- ☐ Attached to bonnet from the inside

3 - Climatronic control unit - J255- operating and display unit

- ☐ Actuated via convenience data bus system
- ☐ When operating auxiliary heater via "Timer" function or remote control, this unit determines auxiliary heater start-up mode (auxiliary ventilation or auxiliary heating)
- ☐ On vehicles with an air conditioner of "Convenience" type, the various auxiliary heating and ventilation actuation functions appear on the MMI display e.g. after pressing the "Setup" button on the operating and display unit, Climatronic control unit -J255- .



**Note**

- ◆ *As of Model Year 2009, modified operating and display units, Climatronic control unit -J255- of "Convenience" type are being gradually introduced ⇒ Electronic parts catalogue and ⇒ Air conditioning; Rep. Gr. 87. These operating and display units have for example an **A/C** button instead of the **Setup** button ⇒ Owner's manual.*
 - ◆ *On vehicles with an operating and display unit, Climatronic control unit -J255- of "Convenience" type with no **Setup** button, the additional auxiliary heater functions are selected and activated by way of the rotary knob/pushbutton of the MMI operating unit (different versions) ⇒ Owner's manual and ⇒ Operating instructions for "Infotainment / MMI".*
 - ◆ *Pay attention to correct assignment of the operating and display unit, Climatronic control unit -J255- of "Convenience" type to the information electronics control unit 1 -J794- ⇒ Electronic parts catalogue (different versions). In the event of incorrect assignment, the various air conditioner and auxiliary heater functions cannot be displayed in the MMI and selected.*
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- ☐ In the case of vehicles with an air conditioner of "Basic" type, the various auxiliary heating and ventilation actuation functions appear on the MMI display after pressing the "Car" button on the MMI operating unit.
 - ☐ The auxiliary heater is only switched on by way of the MMI "Timer" function if the temperature set in the operating and display unit, Climatronic control unit -J255- is higher than that actually measured in the passenger compartment. If, for example, preselected temperature "Lo" is set for driver's and passenger's side in operating and display unit (Climatronic control unit -J255-), auxiliary heater is not activated (only "Auxiliary ventilation" mode is activated).



Note

- ◆ *Depending on the auxiliary heater adaption, it may not be possible to deactivate the "supplementary heating" function (only provided for vehicles with diesel engine) (series status up to October 2005). With the auxiliary heaters gradually introduced as of October 2005, the "supplementary heating" function is actually deactivated if the corresponding setting is made on the MMI display or if the operating and display unit, Climatronic control unit -J255- is set to "Econ" mode ⇒ Vehicle diagnostic, testing and information system -5051 A-, "Guided fault-finding" function .*
- ◆ *With the operating and display units, Climatronic control unit -J255- (versions with software as of "0160") gradually introduced as of July 2005, the valves of the pump/valve unit (left heat regulation valve -N175- and right heat regulation valve -N176-) always remain open for a certain period in auxiliary heating mode. This is designed to prevent the possibility of the valves remaining permanently closed and the coolant in the auxiliary heater thus overheating after switching on the ignition for example, depending on the temperature setting at the operating and display unit, Climatronic control unit -J255- .*



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4 - Display of MMI (Multi Media Interface)

- ☐ Depending upon vehicle equipment, Basic MMI or Infotainment MMI is fitted
- ☐ On vehicles with an air conditioner of "Convenience" type, the additional auxiliary heating functions are selected and activated and the various auxiliary heating/ventilation actuation functions appear on the MMI display after pressing the "Setup" button on the operating and display unit, Climatronic control unit -J255- or selecting the "A/C" function by way of the rotary knob/pushbutton of the MMI operating unit (different versions) ⇒ Owner's manual and ⇒ Operating instructions for "Infotainment / MMI" .



Note

- ◆ *As of Model Year 2009, modified operating and display units, Climatronic control unit -J255- of "Convenience" type are being gradually introduced ⇒ Electronic parts catalogue and ⇒ Air conditioning; Rep. Gr. 87 . These operating and display units have for example an A/C button instead of the Setup button ⇒ Owner's manual .*

- ◆ *On vehicles with an operating and display unit, Climatronic control unit -J255- of "Convenience" type with no Setup button, the additional auxiliary heater functions are selected and activated by way of the rotary knob/pushbutton of the MMI operating unit ⇒ Owner's manual and ⇒ Operating instructions for "Infotainment / MMI".*
- ◆ *Pay attention to correct assignment of the operating and display unit, Climatronic control unit -J255- of "Convenience" type to the information electronics control unit 1 -J794- ⇒ Electronic parts catalogue (different versions). In the event of incorrect assignment, the various air conditioner and auxiliary heater functions cannot be displayed in the MMI and selected.*

- ☐ Operation of auxiliary heater and associated displays indicated, for vehicles with "Convenience" version air conditioner ⇒ [page 21](#)
- ☐ On vehicles with an air conditioner of "Basic" type, pressing the "Car" button on the MMI terminal provides access to the "Systems" option and from there, under "A/C", to auxiliary heating and auxiliary ventilation (for procedure refer to ⇒ Operating instructions for "Infotainment / MMI").
- ☐ Auxiliary heating and auxiliary ventilation are only indicated on the MMI display if auxiliary heating and auxiliary ventilation have been encoded in the operating and display unit, Climatronic control unit -J255- ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function (for air conditioner).
- ☐ If there is not enough fuel in the tank (fuel gauge in red zone), auxiliary heater cannot be activated. The "Auxiliary heating on" function on the MMI display goes out again ⇒ Operating instructions for "Infotainment / MMI".
- ☐ If requested by customer and depending upon MMI version and adaption of operating and display unit (Climatronic control unit -J255- , the function "inclu. engine" or "engine preheating" can be set ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function (for air conditioner). Despite corresponding adaption in the operating and display unit, Climatronic control unit -J255- , the MMI fitted at the start of production do not display the function "inclu. engine" or "engine preheating" or the function is not implemented although it is displayed (depending on software version, introduction not yet finalised).



Note

Depending on the auxiliary heater adaption, it may not be possible to deactivate the "supplementary heating" function (only provided for vehicles with diesel engine) (series status up to October 2005). With the auxiliary heaters gradually being introduced as of October 2005, the "supplementary heating" function is actually deactivated if the corresponding setting is made on the MMI display or if the operating and display unit, Climatronic control unit -J255- is set to "Econ" mode.

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5 - Clock

- ☐ In dash panel insert
- ☐ Set or activated auxiliary heating or auxiliary ventilation function is indicated via a symbol.

- ❑ With auxiliary heating / auxiliary ventilation activated, the corresponding symbol flashes next to the time. If a timer is active, symbol for auxiliary heating and auxiliary ventilation illuminates ⇒ Operating instructions

6 - Metering pump -V54-

- ❑ Different versions for vehicles with petrol and diesel engine ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ [page 37](#)
- ❑ Auxiliary heater fuel feed ⇒ [page 29](#)
- ❑ Checking fuel delivery ⇒ [page 42](#)
- ❑ Checking actuation ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function
- ❑ Checking wiring ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function
- ❑ After removing and installing fuel system components, the auxiliary heater is to be switched on and operated at full load for at least 10 minutes to ensure complete bleeding of the fuel pipe.



Note

- ◆ *Pay attention to correct assignment of the metering pump -V54- to the auxiliary heater. Depending for example on the auxiliary heater version (with or without fuel shut-off valve -N109-), vehicles with a diesel engine have to be fitted with different types of metering pump -V54- ⇒ [page 37](#) and ⇒ Electronic parts catalogue .*
- ◆ *A fuel shut-off valve -N109- is currently only provided for the diesel version; gradual introduction as of 05.2008 ⇒ Electronic parts catalogue .*

7 - Aerial for auxiliary heater

- ❑ The illustration shows arrangement for saloon; for Avant, actuation, depending upon vehicle equipment, is via a roof aerial or via an aerial installed in the left rear side window ⇒ [page 149](#) and ⇒ Communication; Rep. Gr. 91

8 - Remote control hand transmitter

- ❑ For activating and deactivating "auxiliary heating / auxiliary ventilation" function of auxiliary heater ⇒ [page 18](#)
- ❑ Pressing buttons causes integral indicator lamp to illuminate or flash (green or red)
- ❑ Replacing batteries ⇒ [page 20](#)
- ❑ In order that remote control detects pressing of buttons and transmits a radio signal, the relevant button must be pressed for approx. 2 seconds ⇒ Operating instructions
- ❑ If the auxiliary heater is replaced together with the supplementary heater control unit -J364- , check operation of at least one hand transmitter and re-adapt all hand transmitters if necessary ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .
- ❑ If the auxiliary heating radio controlled receiver -R64- is replaced, all hand transmitters have to be re-adapted ⇒ [page 20](#) and ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .
- ❑ The auxiliary heater remote control is available in various versions. Exclusive use is to be made on the Audi A6 of the "T90" / "T91" version ⇒ [page 149](#) and ⇒ Electronic parts catalogue .
- ❑ The auxiliary heater is only switched on by way of a signal from the hand transmitter if the temperature set in the operating and display unit, Climatronic control unit -J255- is higher than that actually measured in the passenger compartment. If, for example, preselected temperature "Lo" is set for driver's and passenger's side in operating and display unit (Climatronic control unit -J255-), auxiliary heater is not activated (only "Auxiliary ventilation" mode is activated).

9 - Auxiliary heating radio controlled receiver -R64-

- ❑ Fitting location, removing and installing ⇒ [page 153](#) and ⇒ Communication; Rep. Gr. 91
- ❑ The auxiliary heater radio controlled receiver -R64- is available in various versions. Exclusive use is to be made on the Audi A6 of the "T90" / "T91" version ⇒ [page 149](#) and ⇒ Electronic parts catalogue .

10 - Fuel pipe from sealing flange of fuel delivery unit to metering pump

- ❑ Different fuel delivery units for vehicles with petrol and diesel engines or FWD and 4WD ⇒ Fuel Supply - Petrol Engines; Rep. Gr. 20 or ⇒ Fuel Supply - Diesel Engines; Rep. Gr. 20
- ❑ Diverting fuel for auxiliary heater ⇒ [page 29](#) Fuel is diverted out of the baffle housing of the fuel delivery unit. To prevent this running empty in auxiliary heating mode, the supplementary heater control unit -J364- actuates the fuel pre-supply pump -G6- in auxiliary heating mode at regular intervals by way of the fuel pump relay for supplementary heater -J749- or the corresponding engine control unit (e.g. the Simos control unit -J361- or Motronic control unit -J220- for vehicles with FSI engine) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations and ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051. .
- ❑ After removing and installing fuel system components, the auxiliary heater is to be switched on and operated at full load for at least 10 minutes to ensure complete bleeding of the fuel pipe.

11 - Auxiliary heater (fitting location, all models except Audi S6)

- ❑ Different layout on the Audi S6 ⇒ [page 16](#)
- ❑ Different version for vehicles with petrol and diesel engine ⇒ Electronic parts catalogue
- ❑ Incorporation into coolant circuit ⇒ [page 100](#)
- ❑ Function ⇒ [page 79](#)
- ❑ Removing and installing ⇒ [page 111](#)
- ❑ Dismantling and assembling ⇒ [page 121](#)
- ❑ Checking power supply ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function
- ❑ Checking electrical components of auxiliary heater ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function
- ❑ Auxiliary heater block diagram ⇒ [page 146](#)
- ❑ The auxiliary heater is fitted with the following electrical components:
 - ◆ Combustion air blower -V6-
 - ◆ Glow plug with flame monitor -Q8-
 - ◆ Overheating fuse -S24- / overheating sensor -G189-
 - ◆ Temperature sensor -G18-
 - ◆ Auxiliary heater control unit -J364-
 - ◆ Fuel pre-heating heater element -Z66- (only fitted on version for vehicles with diesel engine). Fuel pre-heating enhances combustion particularly at low temperatures.
 - ◆ Fuel shut-off valve -N109- (currently only provided for diesel version; gradual introduction as of 05.2008)
 - ◆ Auxiliary heater control unit -J364- and combustion air blower -V6- are permanently connected to auxiliary heater and cannot be replaced separately at present; Dismantling and assembling auxiliary heater ⇒ [page 135](#) .
 - ◆ If the auxiliary heater is replaced together with the supplementary heater control unit -J364- , check operation of at least one hand transmitter and re-adapt all hand transmitters if necessary ⇒ [page 20](#) and ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .



Note

- ◆ *Pay attention to correct assignment of the metering pump -V54- to the auxiliary heater. Depending for example on the auxiliary heater version (with or without fuel shut-off valve -N109-), vehicles with a diesel engine have to be fitted with different types of metering pump -V54- ➔ [page 37](#) and ➔ Electronic parts catalogue .*
- ◆ *A fuel shut-off valve -N109- is currently only provided for the diesel version; gradual introduction as of 05.2008 ➔ Electronic parts catalogue .*
- ◆ *As of Model Year 2009, a modified data bus diagnostic interface -J533- is gradually being introduced ➔ Electronic parts catalogue . Vehicles with the modified version of -J533- are only to be fitted with auxiliary heaters (with supplementary heater control unit -J364-) with part number 4F0 265 081 as of index "M" ➔ Electronic parts catalogue . If an auxiliary heater with part number 4F0 265 081 up to index "L" is fitted in a vehicle with modified -J533- , shut-off of the auxiliary heater on account of "Undervoltage" (e.g. in the event of an insufficiently charged battery -A-) by -J533- is not possible ➔ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .*

12 - Exhaust silencer and exhaust pipes of auxiliary heater (fitting location, all models except Audi S6)

- ☐ Different layout on the Audi S6 ➔ [page 16](#)
- ☐ Outlet of exhaust gas from exhaust pipe must not be impeded (e.g. by parking front end of vehicle over edge of pavement)
- ☐ Removing and installing ➔ [page 126](#) .

13 - Auxiliary heater exhaust pipe (fitting location, all models except Audi S6)

- ☐ Different layout on the Audi S6 ➔ [page 16](#)
- ☐ Exhaust pipe must protrude downwards out of gasket in noise insulation
- ☐ Outlet of exhaust gas from exhaust pipe must not be impeded (e.g. by parking front end of vehicle over edge of pavement)
- ☐ Removing and installing ➔ [page 126](#) .

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14 - Circulation pump -V55- (fitting location, all models except Audi S6)

- ☐ Different layout on the Audi S6 ➔ [page 16](#)
- ☐ Removing and installing ➔ [page 123](#)
- ☐ Checking wiring ➔ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051

15 - Intake air silencer (fitting location, all models except Audi S6)

- ☐ Different layout on the Audi S6 ➔ [page 16](#)

- ❑ Removing and installing ⇒ [page 111](#)
- ❑ Air inlet into intake air silencer must not be impeded (e.g. by additional fittings)

16 - Heater coolant shut-off valve -N279- (fitting location, all models except Audi S6)

- ❑ Different layout on the Audi S6 ⇒ [page 16](#)
- ❑ Actuated in auxiliary heating mode by supplementary heater control unit -J364- ⇒ [page 104](#)
- ❑ Removing and installing ⇒ [page 104](#)
- ❑ Checking wiring ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function

Different component layout on the Audi S6

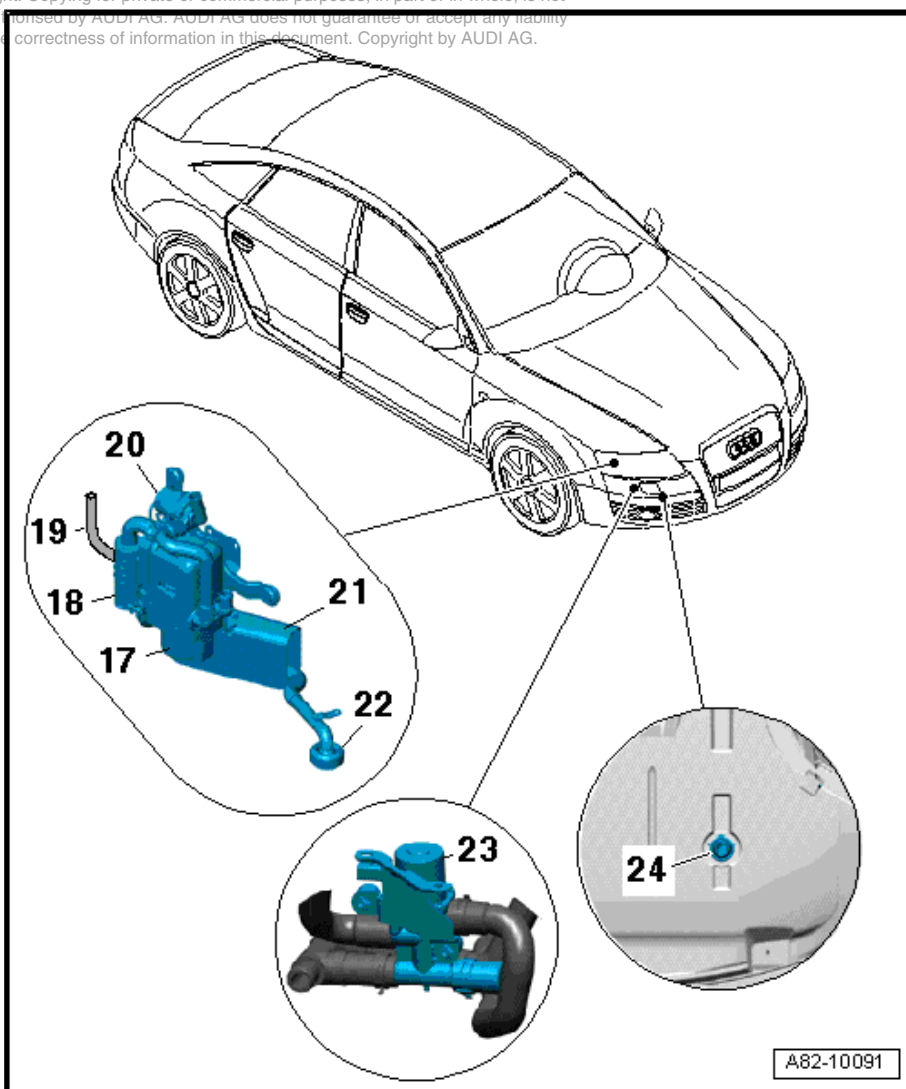
17 - Auxiliary heater

- ❑ Incorporation into coolant circuit ⇒ [page 100](#)
- ❑ Function ⇒ [page 79](#)
- ❑ Removing and installing ⇒ [page 115](#)
- ❑ Dismantling and assembling ⇒ [page 121](#)
- ❑ Checking power supply ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function
- ❑ Checking electrical components of auxiliary heater ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function
- ❑ Block diagram of auxiliary heater ⇒ [page 146](#)
- ❑ The auxiliary heater is fitted with the following electrical components:

- ◆ Glow plug with flame monitor -Q8-
- ◆ Overheating fuse -S24- / overheating sensor -G189-
- ◆ Temperature sensor -G18-
- ◆ Supplementary heater control unit -J364- and combustion air blower -V6- are permanently connected to auxiliary heater and cannot be replaced separately at present; dismantling and assembling auxiliary heater

⇒ [page 135](#)

- ◆ If the auxiliary heater is replaced together with the supplementary heater control unit -J364- , check operation of at least one hand transmitter and re-adapt all hand transmitters if necessary ⇒ [page 20](#) and ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .





Note

- ◆ *Pay attention to correct assignment of the metering pump -V54- to the auxiliary/supplementary heater ⇒ [page 37](#) and ⇒ Electronic parts catalogue .*
- ◆ *As of Model Year 2009, a modified data bus diagnostic interface -J533- is gradually being introduced ⇒ Electronic parts catalogue . Vehicles with the modified version of -J533- are only to be fitted with auxiliary heaters (with supplementary heater control unit -J364-) with part number 4F0 265 081 as of index "M" ⇒ Electronic parts catalogue . If an auxiliary heater with part number 4F0 265 081 up to index "L" is fitted in a vehicle with modified -J533- , shut-off of the auxiliary heater on account of "Undervoltage" (e.g. in the event of an insufficiently charged battery -A-) by -J533- is not possible ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .*



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18 - Intake air silencer

- ☐ Removing and installing ⇒ [page 132](#)
- ☐ Air inlet into the intake air silencer must not be impeded (e.g. by additional fittings).

19 - Fuel pipe

20 - Circulation pump -V55-

- ☐ Removing and installing ⇒ [page 130](#)
- ☐ Checking wiring ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function

21 - Exhaust silencer with auxiliary heater exhaust pipes

- ☐ Emergence of exhaust gas from the exhaust pipe must not be impeded (e.g. by parking the front end of the vehicle over the edge of the pavement)
- ☐ Removing and installing ⇒ [page 133](#)

22 - Exhaust pipe with gasket

23 - Heater coolant shut-off valve -N279-

- ☐ Actuated in auxiliary heating mode by auxiliary heater control unit -J364- ⇒ [page 104](#)
- ☐ Removing and installing ⇒ [page 104](#)
- ☐ Checking wiring ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function

24 - Auxiliary heater exhaust gas outlet

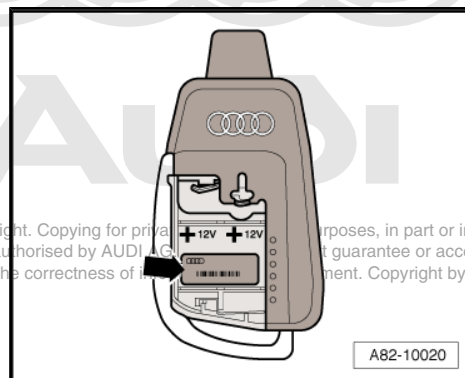
- ☐ A gasket must be fitted between the exhaust pipe and noise insulation
- ☐ The exhaust pipe must project downwards out of the gasket in the noise insulation
- ☐ Emergence of exhaust gas from the exhaust pipe must not be impeded (e.g. by parking the front end of the vehicle over the edge of the pavement)

5.1 Buttons and indicator lamps of auxiliary heater remote control



Note

- ◆ The auxiliary heater remote control is available in various versions. Exclusive use is to be made on the Audi A6 of the "T90" / "T91" version ⇒ [page 149](#) and ⇒ *Electronic parts catalogue* .
- ◆ The remote control version can be seen after removing the batteries ⇒ [page 20](#) from the sticker -arrow- indicating the part number ⇒ *Electronic parts catalogue* .
- ◆ The range of the remote control is approx. 600 m. The range can be significantly reduced due to obstacles (e.g. buildings) between the remote control and the vehicle.

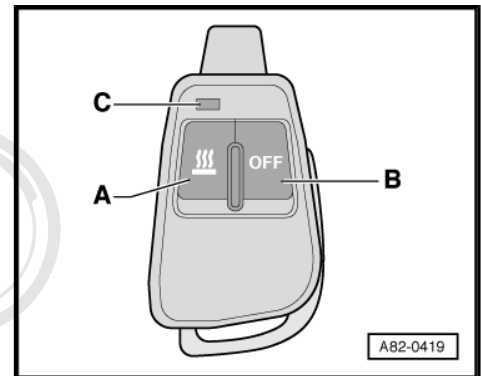


5.1.1 Telestart "T90" / "T91" remote control hand transmitter version



Note

- ◆ In order that remote control detects pressing of a button and transmits a radio signal, the relevant button must be pressed for approx. 2 seconds ⇒ Operating instructions
- ◆ If remote control batteries are discharged to such an extent that radio signal can no longer be transmitted with sufficient strength, indicator lamp -C- no longer illuminates on pressing ON button -A- or OFF button -B-.
- ◆ As a functional check, indicator lamp -C- lights (green) briefly (approx. 2 seconds) after pressing ON button -A-.
- ◆ If activation signal has been properly received by auxiliary heater control unit -J364- and there are no auxiliary heater faults present, auxiliary heater control unit -J364- transmits confirmation and indicator lamp -C- then flashes (green) 30 times at approx. one Hz (1 pulse per second) (as acknowledgement).
- ◆ If activation signal has not been properly received by auxiliary heater control unit -J364- e.g. on account of excessive distance from vehicle (and link cannot be established with control unit), indicator lamp -C- flashes (red) 30 times.
- ◆ In the event of a fault in the vehicle or auxiliary heater (auxiliary heater cannot be switched on e.g. on account of empty fuel tank), auxiliary heater control unit -J364- transmits a fault message and indicator lamp -C- flashes (red) 30 times.
- ◆ As a functional check, indicator lamp -C- lights (red) briefly (approx. 2 seconds) after pressing OFF button -B-. Indicator lamp -C- then flashes (red) 30 times at approx. one Hz (1 pulse per second).
- ◆ If shutoff signal has not been properly received by auxiliary heater control unit -J364- e.g. on account of excessive distance from vehicle (and link cannot be established with control unit), indicator lamp -C- then flashes (red) for 10 seconds at approx. 4 Hz (4 pulses per second).
- ◆ The remote control hand transmitter is transmitter and receiver. The Audi A6 is only fitted with an auxiliary heating radio controlled receiver -R64- of type Telestart "T90" / "T91". These receivers feature feedback from the supplementary heater control unit -J364- to the remote control hand transmitter ⇒ [page 18](#) and ⇒ [page 149](#).
- ◆ When transmitting, hold remote control with transmission aerial upwards.
- ◆ On pressing remote control hand transmitter buttons, ensure sufficient distance from vehicle aerial (problems with reception may be encountered if radio signal is too strong; if necessary, cover transmission aerial with hand or maintain minimum distance of 10 m from vehicle).
- ◆ The auxiliary heating radio controlled receiver -R64- can be switched to power saving mode by the supplementary heater control unit -J364- (radio signal can no longer be received, the no-load current input decreases from approx. 1 mA to approx. 0.04 mA) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.



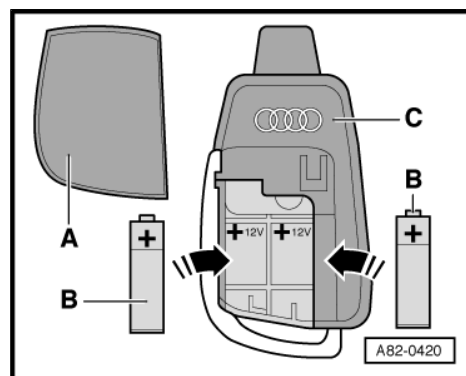
5.2 Checking and replacing batteries in auxiliary heater remote control hand transmitter

- Carefully detach battery cover -A- from remote control -C-.



Note

- ◆ When inserting, pay attention to correct position of batteries (marked in battery compartment; both positive terminals at same connection, parallel arrangement).
- ◆ Always replace both batteries -B-.
- ◆ Only fit batteries -B- with specifications corresponding to original batteries (e.g. 12V high voltage special batteries of type 23). Such batteries can be obtained for example from specialist dealers (e.g. Duracell MN21/23, Varta V23GA) or from the parts range ⇒ Electronic parts catalogue .
- ◆ If a battery is installed laterally inverted, remote control will not function correctly and both batteries soon become discharged.
- ◆ If remote control batteries -B- are discharged to such an extent that radio signal can no longer be transmitted with sufficient strength, indicator lamp does not light on pressing a button.



5.3 Adaption of remote control hand transmitter in auxiliary heater control unit - J364-



Note

- ◆ When transmitting, hold remote control with transmission aerial upwards.
- ◆ Adaption of the hand transmitter for the auxiliary heater remote control is to be performed in the vehicle system "Supplementary/auxiliary heater" in the "Basic setting" function ⇒ Vehicle diagnostic, testing and information system -5051 A-, "Guided fault-finding" function .
- ◆ Remote control adaption is performed in the auxiliary heating radio controlled receiver -R64- . If this is replaced, all remote control hand transmitters must be consecutively re-adapted ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .
- ◆ At present, a maximum of 4 remote control units can be adapted in the auxiliary heating radio controlled receiver -R64- in the "Basic setting" function. If a 5th remote control unit is adapted, the one adapted first is erased ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .

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5.4 Activating/deactivating auxiliary heater/ auxiliary ventilation via Multi Media In- terface (MMI)

Note

- ◆ *The following description relates to operation of the auxiliary heater on a vehicle up to Model Year 2008 with an air conditioner of "Convenience" type. On vehicles with "Basic" version air conditioner, "Air conditioner set-up" or "Systems" menu is accessed after pressing "Car" button on MMI terminal and then auxiliary heater and auxiliary ventilation are accessed under "Air conditioner". For procedure, refer to ⇒ Owner's manual and ⇒ Operating instructions for "Infotainment / MMI".*
- ◆ *As different shutoff criteria and shutoff stages of the energy management control unit -J644- are active with the ignition switched on than with the ignition switched off, the following may occur if the battery -A- is not fully charged. With the ignition switched on and the auxiliary heater in operation, "Start engine, low battery charge" appears on the display of the MMI (Multi Media Interface) and at the same time the fresh air blower -V2- is switched off. After switching off the ignition, the fresh air blower -V2- is switched on again in auxiliary heating mode.*
- ◆ *As of Model Year 2009, modified operating and display units, Climatronic control unit -J255- of "Convenience" type are being gradually introduced ⇒ Electronic parts catalogue and ⇒ Air conditioning; Rep. Gr. 87. These operating and display units have for example an A/C button instead of the Setup button ⇒ Owner's manual.*
- ◆ *On vehicles with an operating and display unit, Climatronic control unit -J255- of "Convenience" type with no Setup button, the additional functions are selected and activated by way of the rotary knob/pushbutton of the MMI operating unit ⇒ Owner's manual and ⇒ Operating instructions for "Infotainment / MMI".*
- ◆ *Pay attention to correct assignment of the operating and display unit, Climatronic control unit -J255- of "Convenience" type to the information electronics control unit 1 -J794- ⇒ Electronic parts catalogue (different versions). In the event of incorrect assignment, the various air conditioner and auxiliary heater functions cannot be displayed in the MMI and selected.*

Requirements

- Auxiliary heating and auxiliary ventilation are only indicated on the MMI display if auxiliary heating and auxiliary ventilation have been encoded in the operating and display unit, Climatronic control unit -J255- ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function (for air conditioner).
- There must be sufficient fuel in fuel tank to enable auxiliary heater to be activated by auxiliary heater control unit -J364- or to enable "Auxiliary heater on" function to be activated. With the ignition on, the fuel gauge must not be in the "red zone" ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- No faults must be stored in auxiliary heater control unit -J364- .
- Battery -A- must be adequately charged.

- There must be no faults present in vehicle data bus system ⇒ Vehicle diagnostic, testing and information system -5051 A- in "Guided fault-finding" function .

Activating and deactivating auxiliary heating / auxiliary ventilation (with air conditioner of "Convenience" type up to Model Year 2008)



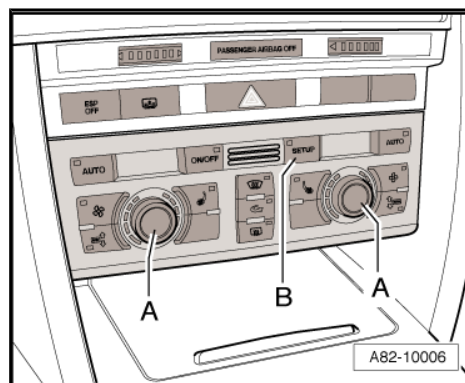
Note

- ◆ With the ignition switched on, auxiliary heating / auxiliary ventilation is set by way of the operating and display unit, Climatronic control unit -J255- or via the rotary knob/pushbutton of the MMI operating unit (different versions) ⇒ Owner's manual and ⇒ Operating instructions for "Infotainment / MMI" .
 - ◆ With an air conditioner of "Basic" type, setting is performed by way of the rotary knob / pushbutton of the MMI operating unit ⇒ Owner's manual and ⇒ Operating instructions for "Infotainment / MMI" .
 - ◆ On vehicles with an operating and display unit, Climatronic control unit -J255- of "Convenience" type with a **Setup** button, the "auxiliary heating" functions are set by way of the rotary knob / pushbutton of the operating and display unit. On vehicles with an operating and display unit, Climatronic control unit -J255- of "Convenience" type with no **Setup** button, the "auxiliary heater" functions are set by way of the rotary knob/pushbutton of the MMI operating unit (different versions) ⇒ Owner's manual and ⇒ Operating instructions for "Infotainment / MMI" .
- Switch on ignition.
- Press the "Setup" button -B- in the operating and display unit, Climatronic control unit -J255- .

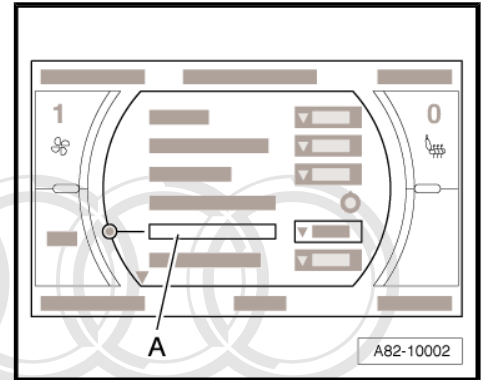


Note

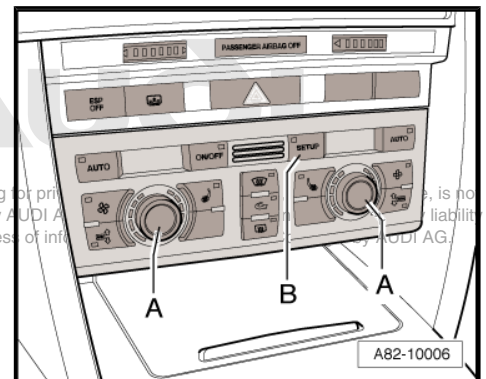
- ◆ On vehicles with an operating and display unit, Climatronic control unit -J255- of "Convenience" type with no **Setup** button, the additional functions are selected and activated by way of the rotary knob/pushbutton of the MMI operating unit (different versions) ⇒ Owner's manual and ⇒ Operating instructions for "Infotainment / MMI" .
 - ◆ The following description relates to selection and activation of the additional "auxiliary heater" functions for an operating and display unit, Climatronic control unit -J255- of "Convenience" type with **Setup** button. For an operating and display unit, Climatronic control unit -J255- of "Convenience" type with no **Setup** button, refer to ⇒ Owner's manual and ⇒ Operating instructions for "Infotainment / MMI" .
 - ◆ The following example shows operation via MMI display in "Infotainment" version. Operation is similar on vehicles with an MMI of "Basic" type ⇒ Owner's manual.
- The display in the MMI switches to "Setup A/C" .
 - By turning one of the rotary knob/pushbuttons -A-, select function "Auxiliary heater" or "Auxiliary ventilation" .



- Selected function -A- is now highlighted on MMI display.



- Confirm selection by pressing one of rotary knob/pushbuttons -A-.



- Indicated on display of MMI:

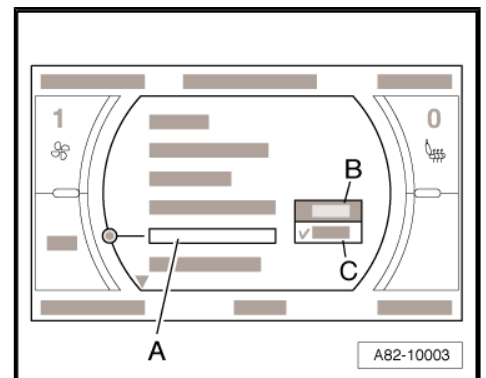
Auxiliary heater -Item A- on -Item B-
 off -Item C-

Or

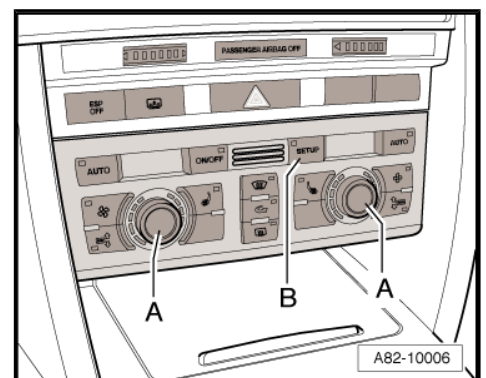
Auxiliary ventilation -Item A- on -Item B-
 off -Item C-

- In order to activate or deactivate auxiliary heating/auxiliary ventilation, select desired function by turning one of rotary knob/pushbuttons.

Selected function is now highlighted on MMI display.



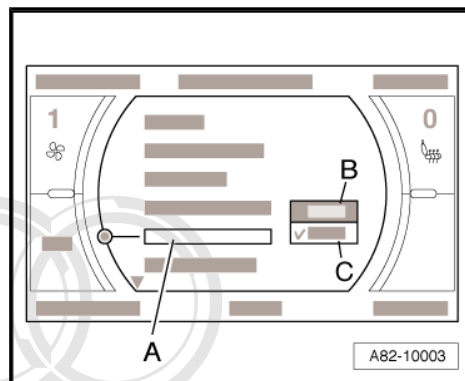
- Confirm selection by pressing one of rotary knob/pushbuttons -A-.





Note

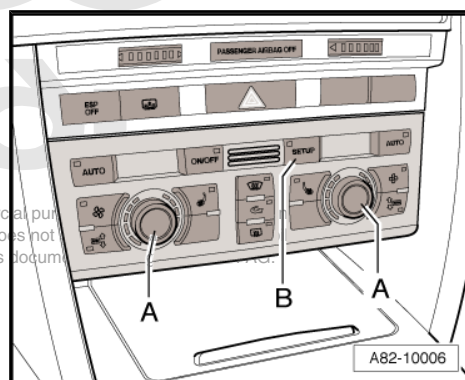
The function now activated can be recognised by the preceding tick. After a short time, "on / off" function selection disappears and current setting of auxiliary heating/auxiliary ventilation appears on MMI display.



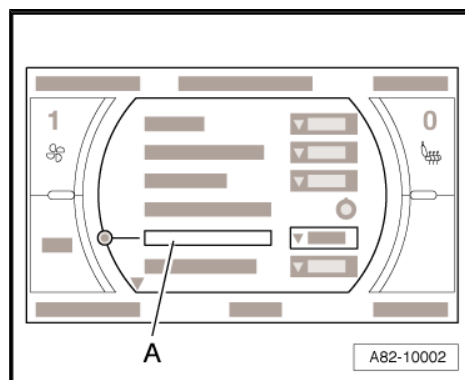
Setting operating time

- By turning one of rotary knob/pushbuttons -A-, select function "Operating time".

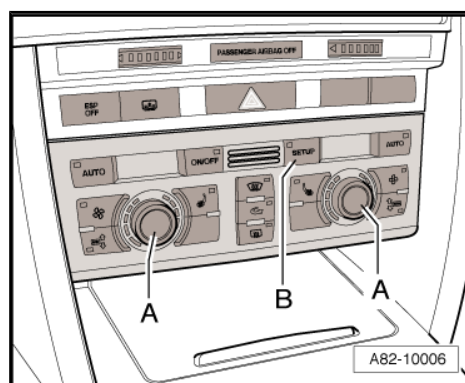
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- Selected function -A- is now highlighted on MMI display (example).



- Confirm selection by pressing one of rotary knob/pushbuttons -A-.



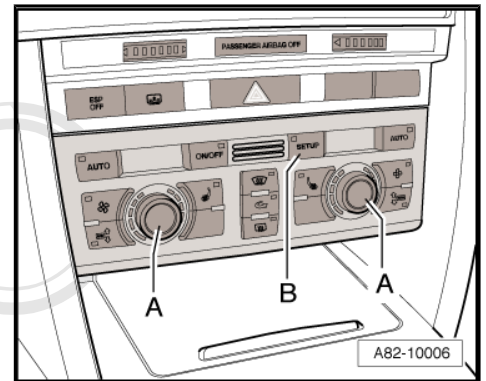
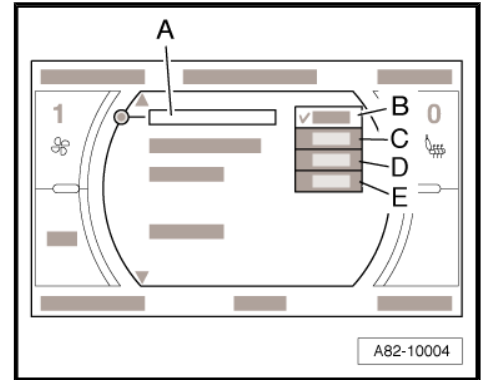
- Indicated on display of MMI:

Operating time -Item A-	15 min -Item B-
	30 min -Item C-
	45 min -Item D-
	60 min -Item E-

Note

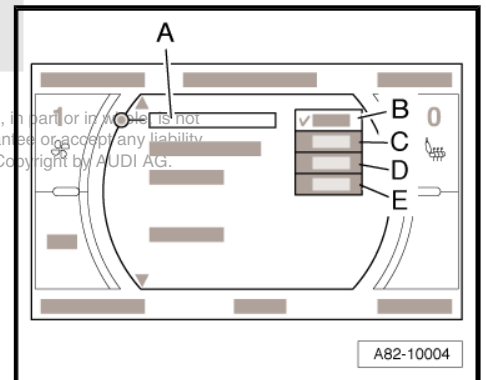
Depending upon version, setting can also be made in minute steps of between 10 ... 60 min.

- In order to select operating time, select desired duration by turning one of rotary knob/pushbuttons.
- Selection is now highlighted on MMI display.
- Confirm selection by pressing one of rotary knob/pushbuttons -A-.



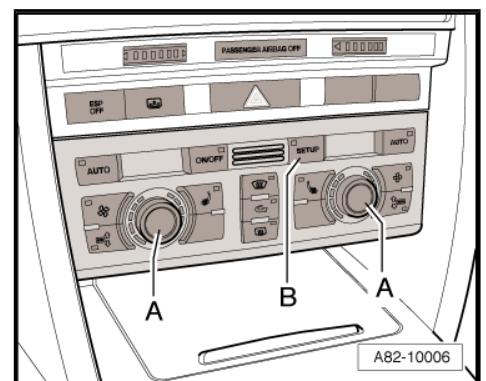
Note

The operating time now activated can be recognised by the preceding tick. After a short time, time selection of operating time disappears and current setting of operating time appears on MMI display.

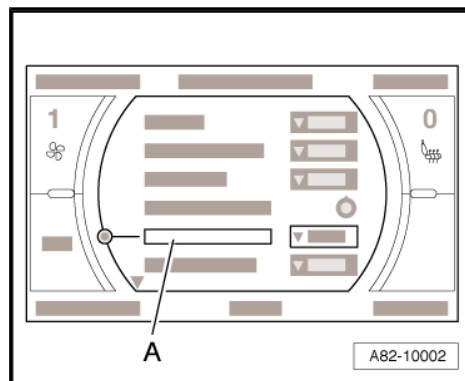


Setting timer status

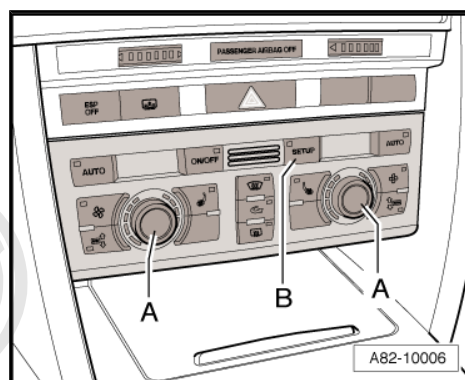
- By turning one of rotary knob/pushbuttons -A-, select function "Timer status".



- Selected function -A- is now highlighted on MMI display (example).



- Confirm selection by pressing one of rotary knob/pushbuttons -A-.



- Indicated on display of MMI:

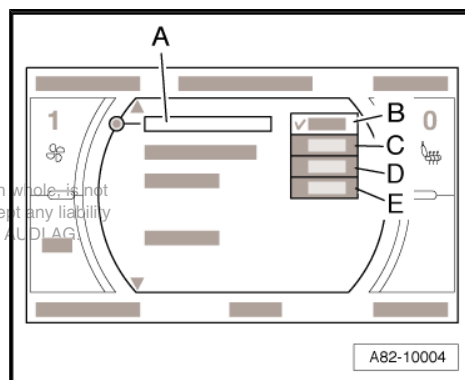
Timer status -Item A-

off -Item B-
T1 on -Item C-
T2 on -Item D-
T3 on -Item E-

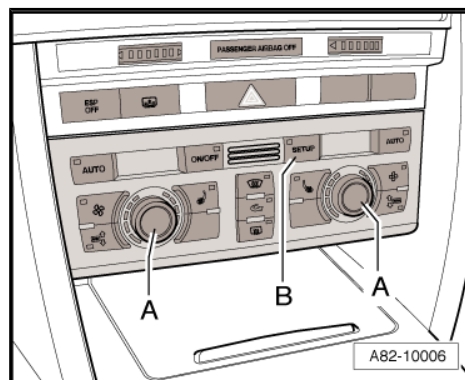
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- In order to activate or deactivate timer, select desired timer status by turning one of rotary knob/pushbuttons.

Selection is now highlighted on MMI display.

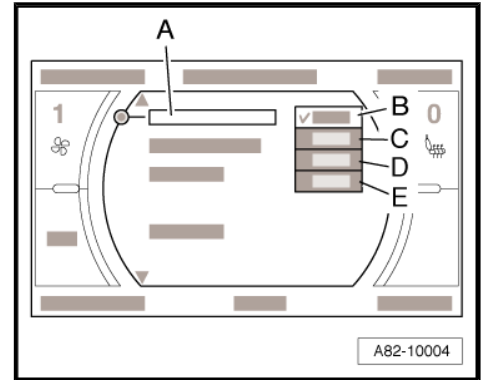


- Confirm selection by pressing one of rotary knob/pushbuttons -A-.



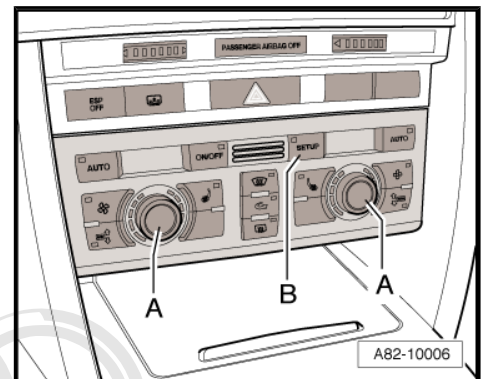
i Note

The timer status now activated can be recognised by the preceding tick. After a short time, timer selection disappears and current setting of timer status appears on MMI display.

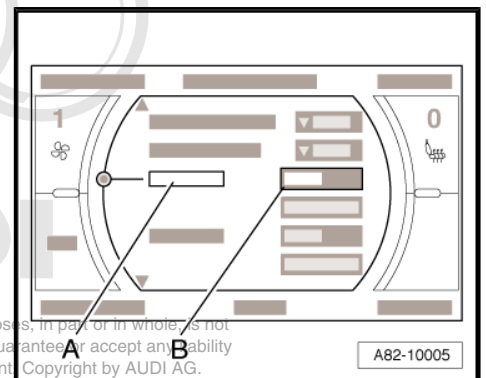


Setting timer (start of activation of auxiliary heater/auxiliary ventilation)

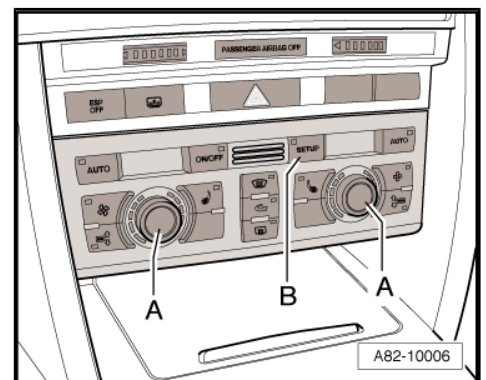
- By turning one of rotary knob/pushbuttons -A-, select function “Timer 1”.



- Selected function -A- is now highlighted on MMI display (example).



- Confirm selection by pressing one of rotary knob/pushbuttons -A-.



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- Indicated on display of MMI:

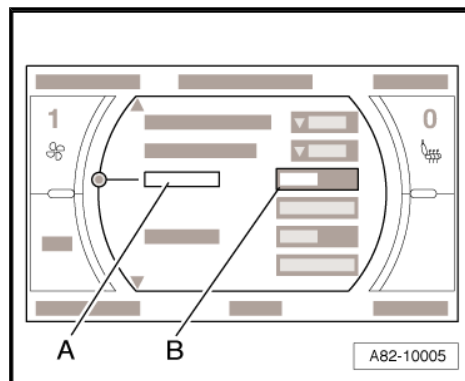
Timer 1 -Item A- 00:00 -Item B-
01.04.2004 ¹⁾ -Item B-

1) Example: Display can show max. 30 days later than current date.



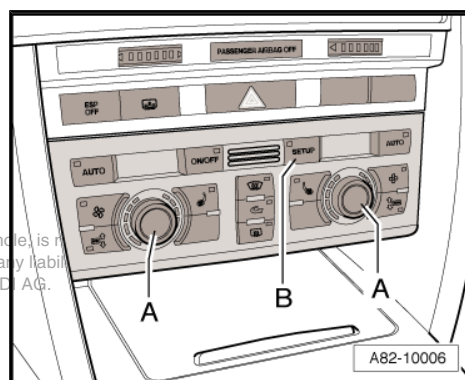
Note

Depending upon version, for MMI displays installed at start of production, a time can be entered up to 31.12. of the following year. If necessary, inform the customer that it is not appropriate to enter a time more than approx. 30 days in advance.



- Current hour value of timer is now highlighted.
- In order to set desired hour value, turn one of rotary knob/pushbuttons -A- to left or to right.
- Confirm selection by pressing one of rotary knob/pushbuttons.
- Current minute value of timer is now highlighted.
- In order to set desired minute value, turn one of rotary knob/pushbuttons to left or to right.
- Confirm selection by pressing one of rotary knob/pushbuttons.
- Current date of timer is now highlighted.
- In order to set desired date, turn one of rotary knob/pushbuttons to left or to right.
- Confirm selection by pressing one of rotary knob/pushbuttons.

Timer 2 and timer 3 are set in the same way.



Note

Only one of 3 timers shown on MMI display can be activated. If a second timer is activated, MMI erases timer which was set first.

6 Diverting fuel for auxiliary heater



Note

- ◆ *For operation of the auxiliary heater, fuel is drawn out of the baffle housing of the fuel delivery unit in the fuel tank. In order to prevent baffle housing from being emptied with engine stopped, fuel pump for presupply -G6- in baffle housing is actuated in intervals at start, during and at end of auxiliary heating mode so that baffle housing is refilled via suction jet pumps. This also prevents metering pump -V54- from drawing in air instead of fuel in an adversely parked vehicle, if fuel tank is not completely full.*
- ◆ *If fuel pump for presupply -G6- is not actuated in auxiliary heating mode, problems may occur in heating operation, depending upon quantity of fuel in fuel tank (fuel may not be supplied) and "Loss of flame" fault is entered.*
- ◆ *Checking actuation function for auxiliary heater and fuel pre-supply pump -G6- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *When engine is started, auxiliary heater control unit -J364- transmits a short activation signal (test impulse) for actuation of fuel pump for presupply -G6-. For vehicles in which fuel pump for presupply -G6- is actuated directly by relevant engine control unit, a fault may be stored in engine control unit if this signal is not detected. This test pulse has no significance for vehicles on which the fuel pre-supply pump -G6- is actuated by way of the fuel pump relay for supplementary heater -J749- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- ◆ *Air in the auxiliary heater fuel supply can lead to problems in auxiliary heater operation. To stop air being drawn in by the metering pump -V54- and conveyed to the auxiliary heater when the auxiliary heater is first switched on after working on the fuel tank or fuel delivery unit, the fuel diversion pipe is to be filled with fuel (bled) after working in this area
⇒ [page 33](#).*
- ◆ *After removing and installing fuel system components, the auxiliary heater is to be switched on and operated at full load for at least 10 minutes to ensure complete bleeding of the fuel pipe.*



WARNING

Observe the applicable rules for cleanliness, take the appropriate precautions and heed the relevant safety measures when working on open fuel systems ⇒ Fuel supply system, petrol engines; Rep. Gr. 20 and ⇒ Fuel supply system, diesel engines; Rep. Gr. 20.

The following are prerequisites for operation of auxiliary heater:

- ◆ No air in the fuel pipe to the auxiliary heater
- ◆ Fuel pipe flush with bottom of vehicle and protected against mechanical damage.
- ◆ Fuel pipe to auxiliary heater is protected against heat generation which could affect operation.

- ◆ Fuel pipe does not come into contact with hot vehicle components.
- ◆ Fuel pump for presupply -G6- is actuated in regular intervals.

6.1 Components for diverting fuel for auxiliary heater

6.1.1 Fuel diversion components (all models except Audi S6)



Note

- ◆ As of Model Year 2006, fuel hoses with a larger inside diameter and fitted with a plastic wire or plastic tube to reduce the volume are gradually being introduced (exact date not yet finalised) ⇒ *Electronic parts catalogue*.
- ◆ The sections of the fuel pipe are to be butt-jointed to stop vapour bubbles accumulating at the connections.

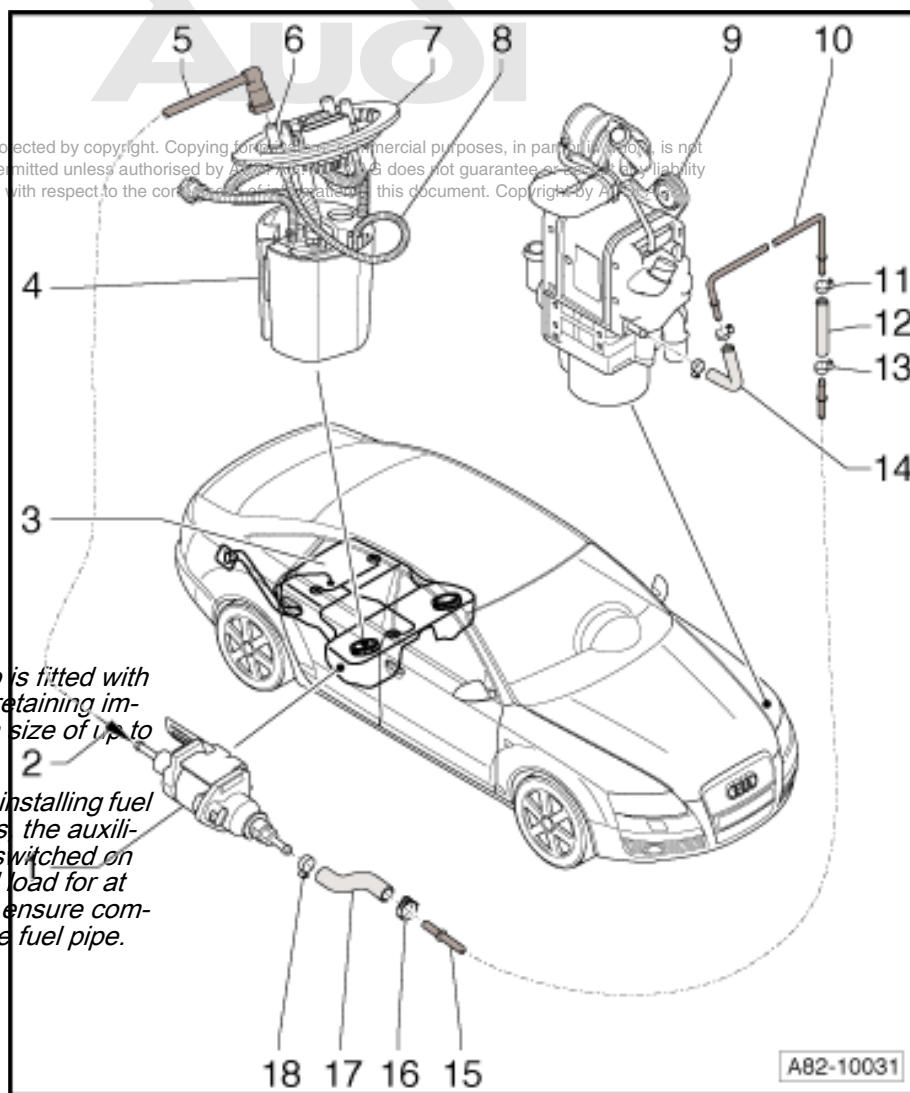
1 - Metering pump -V54-

- ❑ Different versions for vehicles with petrol and diesel engine ⇒ *Electronic parts catalogue*
- ❑ Removing and installing ⇒ [page 37](#)
- ❑ Checking fuel delivery ⇒ [page 42](#)
- ❑ Checking actuation ⇒ Vehicle diagnostic, testing and information system -5051 A-, "Guided fault-finding" function
- ❑ Checking wiring ⇒ Vehicle diagnostic, testing and information system -5051 A-, "Guided fault-finding" function



Note

- ◆ The metering pump is fitted with a filter element for retaining impurities with a grain size of up to 0.1 mm.
- ◆ After removing and installing fuel system components, the auxiliary heater is to be switched on and operated at full load for at least 10 minutes to ensure complete bleeding of the fuel pipe.



- ◆ *Pay attention to correct assignment to the auxiliary heater. Depending for example on the auxiliary heater version (with or without fuel shut-off valve - N109-), vehicles with a diesel engine have to be fitted with different types of metering pump - V54- ⇒ [page 37](#) and ⇒ Electronic parts catalogue .*
- ◆ *At present, the metering pump - V54- for auxiliary heaters with fuel shut-off valve -N109- has a grey plastic jacket and the pump for auxiliary heaters with no fuel shut-off valve -N109- has a black jacket.*
- ◆ *The fuel shut-off valve -N109- (in the auxiliary heater) stops fuel entering the heater combustion chamber after switching off the auxiliary heater. To permit pressure dissipation in the fuel pipe between the fuel shut-off valve - N109- and the metering pump - V54- , the metering pump -V54- for auxiliary heaters with -N109- has a bypass bore.*
- ◆ *A fuel shut-off valve -N109- is currently only provided for the diesel version; gradual introduction as of 05.2008 ⇒ Electronic parts catalogue .*

2 - Fuel pipe from sealing flange of fuel delivery unit to metering pump -V54-

3 - Fuel tank

- ☐ Removing and installing ⇒ Fuel Supply - Petrol Engines; Rep. Gr. 20 or ⇒ Fuel Supply - Diesel Engines; Rep. Gr. 20

4 - Fuel delivery unit

- ☐ Different version for petrol or diesel engine, front-wheel drive or four-wheel drive ⇒ Electronic parts catalogue
- ☐ Removing and installing ⇒ Fuel Supply - Petrol Engines; Rep. Gr. 20 or ⇒ Fuel Supply - Diesel Engines; Rep. Gr. 20
- ☐ If fuel pump for presupply -G6- is not actuated in auxiliary heating mode, problems may occur in heating operation, depending upon quantity of fuel in fuel tank (fuel may not be supplied) and "Loss of flame" fault is entered

5 - Fuel pipe from sealing flange of fuel delivery unit to metering pump -V54-

- ☐ Press "release button" to detach from connection at sealing flange for fuel delivery unit
- ☐ Filling the fuel pipe to the metering pump -V54- with fuel (bleeding) ⇒ [page 33](#)

6 - Diverting connection

- ☐ ~~Diverting connection is sealed on vehicles without auxiliary heater~~

7 - Sealing flange of fuel delivery unit

- ☐ Different version for petrol or diesel engine, front-wheel drive or four-wheel drive ⇒ Electronic parts catalogue
- ☐ Removing and installing ⇒ Fuel Supply - Petrol Engines; Rep. Gr. 20 or ⇒ Fuel Supply - Diesel Engines; Rep. Gr. 20

8 - Fuel-diverting hose

- ☐ Check routing for fuel delivery unit ⇒ [page 35](#)

9 - Auxiliary heater

- Different versions for vehicles with petrol or diesel engine ⇒ [page 135](#)



Note

- ◆ *Pay attention to correct assignment of the metering pump - V54-. Depending for example on the auxiliary heater version (with or without fuel shut-off valve - N109-), vehicles with a diesel engine have to be fitted with different types of metering pump - V54- ⇒ [page 37](#) and ⇒ Electronic parts catalogue.*
- ◆ *A fuel shut-off valve -N109- is currently only provided for the diesel version; gradual introduction as of 05.2008 ⇒ Electronic parts catalogue.*
- ◆ *At present, the metering pump - V54- for auxiliary heaters with fuel shut-off valve -N109- has a grey plastic jacket and the pump for auxiliary heaters with no fuel shut-off valve -N109- has a black jacket.*
- ◆ *The fuel shut-off valve -N109- (in the auxiliary heater) stops fuel entering the heater combustion chamber after switching off the auxiliary heater. To permit pressure dissipation in the fuel pipe between the fuel shut-off valve - N109- and the metering pump - V54-, the metering pump -V54- for auxiliary heaters with -N109- has a bypass bore.*

10 - Fuel pipe

- Routing of fuel pipe from metering pump -V54- to auxiliary heater ⇒ [page 40](#)

11 - Hose clip

- Always use standard hose clamps ⇒ Electronic parts catalogue

12 - Fuel hose

- Routing of fuel pipe from metering pump -V54- to auxiliary heater ⇒ [page 40](#)

13 - Hose clamp

- Always use standard hose clamps ⇒ Electronic parts catalogue

14 - Fuel hose elbow

- Routing of fuel pipe from metering pump -V54- to auxiliary heater ⇒ [page 40](#)

15 - Fuel pipe from metering pump -V54- to auxiliary heater

- Routing of fuel pipe from metering pump -V54- to auxiliary heater ⇒ [page 40](#)

16 - Hose clip

- Always use standard hose clamps ⇒ Electronic parts catalogue

17 - Fuel hose

- Routing of fuel pipe from metering pump -V54- to auxiliary heater ⇒ [page 40](#)

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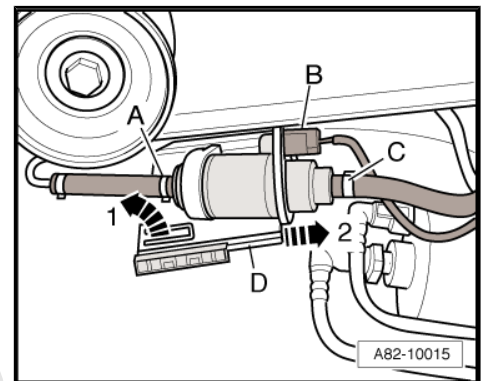
18 - Hose clamp

- Always use standard hose clamps ⇒ Electronic parts catalogue

6.1.2 Filling fuel pipe to metering pump -V54- with fuel (bleeding)

Note

- ◆ *Air in the auxiliary heater fuel supply can lead to problems in auxiliary heater operation. To stop air being drawn in by the metering pump -V54- and conveyed to the auxiliary heater when the auxiliary heater is first switched on after working on the fuel tank or fuel delivery unit, the fuel diversion pipe is to be filled with fuel (bled) after working in this area.*
- ◆ *After working on the fuel system, switch on the auxiliary heater and let it run for some time in full load mode to check operation (at least 10 minutes).*
- Auxiliary heater switched off (the metering pump -V54- is not actuated).
- Switch off ignition.
- Unfasten the clip and detach the fuel pipe -A-.
- Connect the fuel pipe -A- to the diesel extraction unit -VAS 5226- .
- Connect the diesel extraction unit -VAS 5226- to the workshop compressed air system ⇒ Fuel supply system; Rep. Gr. 20 .
- Completely fill the fuel pipe -A- with fuel by briefly extracting the air.
- Connect the fuel pipe -A- to the metering pump -V54- .
- After re-installing the components removed, switch on the auxiliary heater and let it operate in full load mode for roughly 10 minutes.



6.1.3 Fuel diversion components (Audi S6)

Note

- ◆ *As of Model Year 2006, fuel hoses with a larger inside diameter and fitted with a plastic wire or plastic tube to reduce the volume are gradually being introduced (exact date not yet finalised) ⇒ Electronic parts catalogue .*
- ◆ *The sections of the fuel pipe are to be butt-jointed to stop vapour bubbles accumulating at the connections.*

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1 - Fuel hose

- ❑ Routing of fuel pipe from metering pump -V54- to auxiliary heater
⇒ [page 40](#)

2 - Hose clamp

- ❑ Always use standard hose clamps ⇒ Electronic parts catalogue

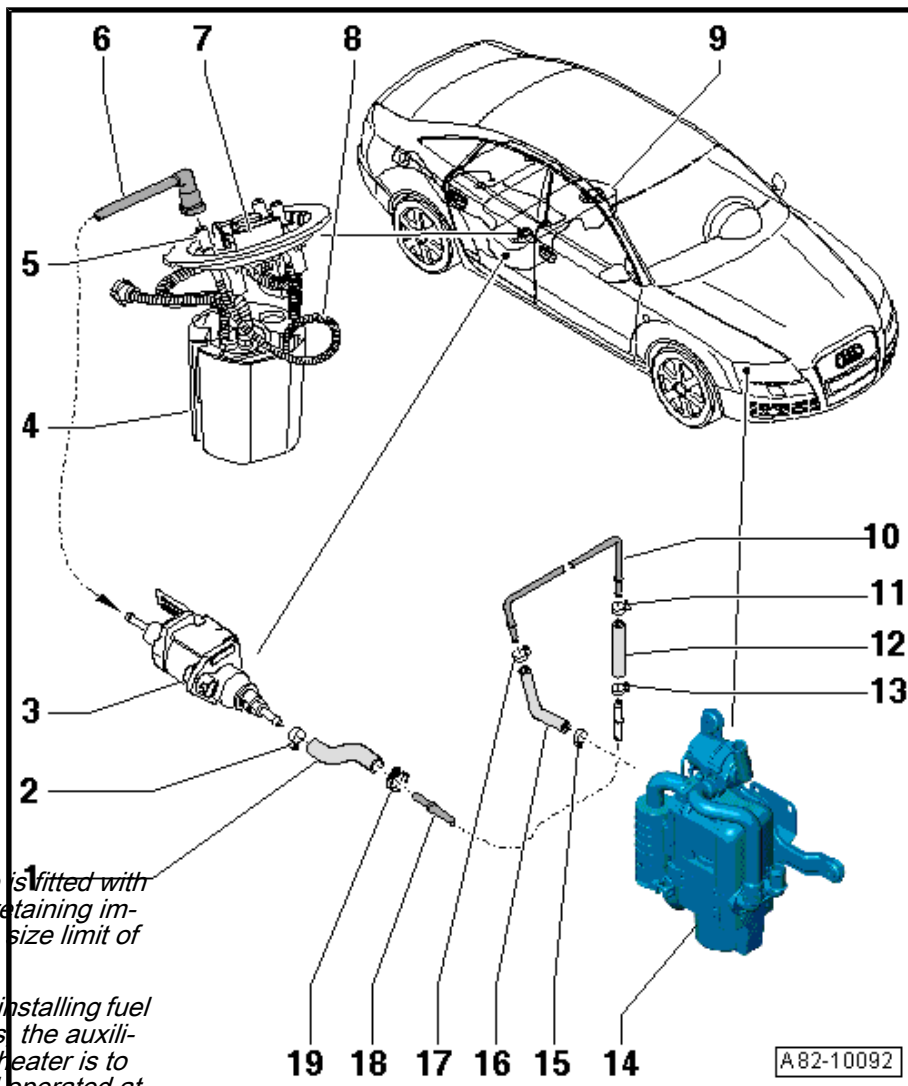
3 - Metering pump -V54-

- ❑ Removing and installing ⇒ [page 37](#)
- ❑ Checking fuel delivery ⇒ [page 42](#)
- ❑ Checking actuation ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051
- ❑ Checking wiring ⇒ Vehicle diagnostic, testing and information system -5051 A-, "Guided fault-finding" function



Note

- ◆ The metering pump is fitted with a filter element for retaining impurities with a grain size limit of 0.1 mm.
- ◆ After removing and installing fuel system components, the auxiliary/supplementary heater is to be switched on and operated at full load for at least 10 minutes to ensure complete bleeding of the fuel pipe.
- ◆ Pay attention to correct assignment to the auxiliary/supplementary heater ⇒ [page 37](#) and ⇒ Electronic parts catalogue.



4 - Fuel delivery unit

- ❑ Removing and installing ⇒ Fuel supply system, petrol engines; Rep. Gr. 20
- ❑ If the fuel pre-supply pump -G6- is not actuated in auxiliary heating mode, problems may be encountered in heating operation depending on the amount of fuel in the fuel tank (there may be no fuel delivery) and the fault "Flame interruption" is entered

5 - Diversion connection

- ❑ The diversion connection is sealed off on vehicles with no auxiliary heater

6 - Fuel pipe from sealing flange of fuel delivery unit to metering pump -V54-

- ❑ Press "release button" to detach from connection at sealing flange for fuel delivery unit
- ❑ Filling the fuel pipe to the metering pump -V54- with fuel (bleeding) ⇒ [page 33](#)

7 - Sealing flange for fuel delivery unit

- ❑ Removing and installing ⇒ Fuel supply system, petrol engines; Rep. Gr. 20

8 - Fuel diversion hose

- ❑ Checking routing in fuel delivery unit ⇒ [page 35](#)

9 - Fuel tank

- ❑ Removing and installing ⇒ Fuel supply system, petrol engines; Rep. Gr. 20

10 - Fuel pipe

- ❑ Routing of fuel pipe from metering pump -V54- to auxiliary heater ⇒ [page 40](#)

11 - Hose clamp

- ❑ Always use standard hose clamps ⇒ Electronic parts catalogue

12 - Fuel hose

- ❑ Routing of fuel pipe from metering pump -V54- to auxiliary heater ⇒ [page 40](#)

13 - Hose clamp

- ❑ Always use standard hose clamps ⇒ Electronic parts catalogue

14 - Auxiliary heater



Note

Pay attention to correct assignment of the metering pump -V54- ⇒ [page 37](#) and ⇒ Electronic parts catalogue.

15 - Hose clamp

- ❑ Always use standard hose clamps ⇒ Electronic parts catalogue

16 - Angled fuel hose

- ❑ Routing of fuel pipe from metering pump -V54- to auxiliary heater ⇒ [page 40](#)

17 - Hose clamp

- ❑ Always use standard hose clamps ⇒ Electronic parts catalogue

18 - Fuel pipe

- ❑ Routing of fuel pipe from metering pump -V54- to auxiliary heater ⇒ [page 40](#)

19 - Hose clamp

- ❑ Always use standard hose clamps ⇒ Electronic parts catalogue

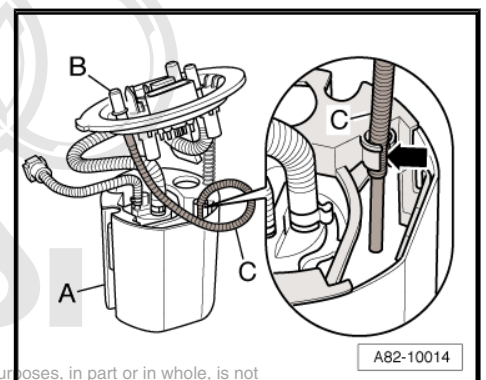
6.2 Routing of auxiliary heater fuel-diverting hose in fuel delivery unit

Fuel-diverting hose -C- to diverting connection -B- must be inserted in fuel delivery unit -A- in such a way that first ribs engage in bracket -arrow-.

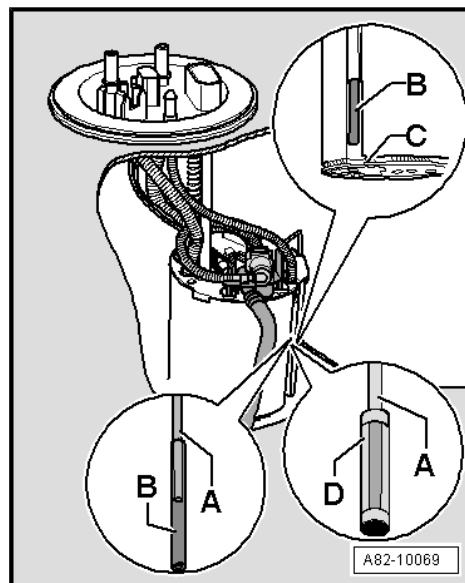


Note

If fuel pump for presupply -G6- is not actuated in auxiliary heating mode, problems may occur in heating operation, depending upon quantity of fuel in fuel tank (fuel may not be supplied) and "Loss of flame" fault is entered



As of Model Year 2006, the fuel diversion pipe of the auxiliary heater -A- is gradually being fitted with a steel mesh strainer -B- or a tube with strainer -D- is being fitted in the fuel diversion pipe -A-. This strainer is designed to prevent gas bubbles being drawn in by the metering pump -V54- under unfavourable useage conditions.

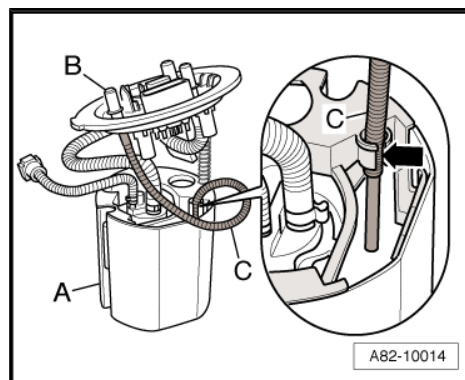


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Note

- ◆ For greater clarity, the fuel tank is shown as a part section
- ◆ The illustration shows the layout on a front-wheel drive vehicle (the layout differs from this illustration on four-wheel drive vehicles)
- ◆ There are different versions of the strainer. With one version, a steel mesh tube -B- is slipped over the fuel diversion pipe -A-. With the other version, a tube with strainer -D- is inserted in the fuel diversion pipe -A-.
- ◆ The steel mesh strainer -B- is to be fitted such that it does not rest on the bottom of the fuel tank with the fuel diversion pipe -A- in position (ends approx. 35 mm above bottom of fuel delivery unit -C-).
- ◆ If a steel mesh tube -B- is to be retrofitted on the fuel diversion pipe -A-, it may be necessary to reduce the diameter of the fuel diversion pipe -A- slightly (e.g. carefully scrape off a small amount of material with a knife; the fuel diversion pipe -A- may increase in size somewhat during operation).
- ◆ If a tube with strainer -D- is to be retrofitted in the fuel diversion pipe -A-, it may be necessary to widen the fuel diversion pipe -A- slightly.
- ◆ The strainer of the tube -D- is available with different mesh sizes (0.2 mm or 0.1 mm). Pay attention to the correct version ⇒ Electronic parts catalogue .
- ◆ At the start of production, the fuel diversion hoses -C- fitted had a corrugated surface. Fuel diversion hoses -C- with a smooth surface are being gradually introduced as of Model Year 2007 ⇒ Electronic parts catalogue .
- ◆ After removing and installing fuel system components, the fuel pipe to the metering pump -V54- is to be filled with fuel and the auxiliary heater then switched on and operated at full load for at least 10 minutes to ensure complete bleeding of the fuel pipe.



6.3 Removing and installing metering pump -V54-

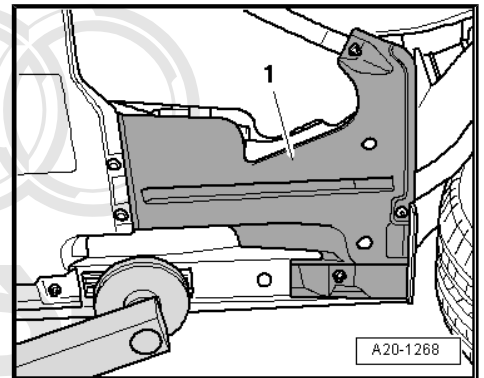


WARNING

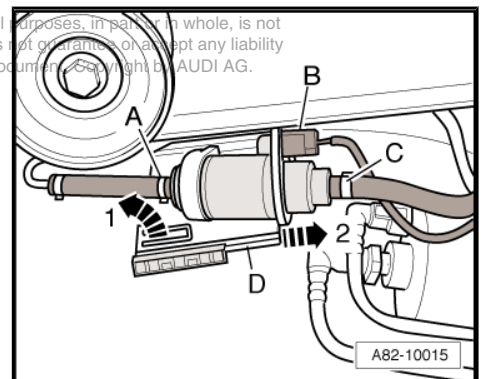
Observe the applicable rules for cleanliness, take the appropriate precautions and heed the relevant safety measures when working on open fuel system ⇒ Fuel Supply - Petrol Engines; Rep. Gr. 20 or ⇒ Fuel Supply - Diesel Engines; Rep. Gr. 20.

Removing

- Switch off ignition.
- Remove cover -1- at bottom rear right, at vehicle floor.



- Unplug electrical connector -B-.
- Hold a cloth under joint to catch escaping fuel.
- Detach the fuel pipes -A- to the sealing flange and the fuel pipe -C- to the auxiliary heater from the metering pump -V54- and seal the open pipe with a plug.
- Slightly raise locking tab -arrow 1- and push metering pump -V54- with bracket forwards -arrow 2- out of guide on fuel tank.
- Seal the fuel pipe.
- If necessary, detach metering pump -V54- from bracket.



Installing

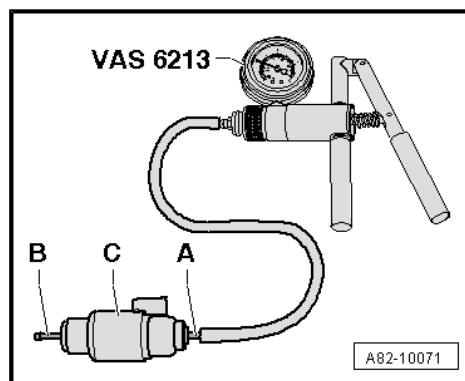


DANGER!

Pay attention to correct assignment as regards the version of the metering pump -V54-. Auxiliary heaters with no fuel shut-off valve -N109- are never to be fitted with a metering pump -V54- intended for the version with fuel shut-off valve -N109-.


Note

- ◆ Pay attention to correct assignment to the auxiliary heater. Depending for example on the auxiliary heater version (with or without fuel shut-off valve -N109-), vehicles with diesel engine have to be fitted with different types of metering pump -V54- ⇒ *Electronic parts catalogue*.
- ◆ A fuel shut-off valve -N109- is currently only provided for the diesel version; gradual introduction as of 05.2008 ⇒ *Electronic parts catalogue*.
- ◆ A metering pump -V54- intended for auxiliary heaters with fuel shut-off valve -N109- (e.g. metering pump -V54- with part number 4F0 261 163 C), allows a small quantity of fuel to flow through (bypass) to prevent the build-up of pressure or vacuum in the fuel pipe. This metering pump -V54- model is therefore not to be fitted on auxiliary heaters with no fuel shut-off valve -N109-.
- ◆ At present, the metering pump -V54- for auxiliary heaters with fuel shut-off valve -N109- has a grey plastic jacket and the pump for auxiliary heaters with no fuel shut-off valve -N109- has a black jacket.
- ◆ The fuel shut-off valve -N109- (in the auxiliary heater) stops fuel entering the heater combustion chamber after switching off the auxiliary heater. To permit pressure dissipation in the fuel pipe between the fuel shut-off valve -N109- and the metering pump -V54-, the metering pump -V54- for auxiliary heaters with -N109- has a bypass bore.
- ◆ In cases of doubt as to whether the metering pump -V54- -C- has a bypass or not, connect the vacuum hand pump -VAS 6213- for example to connection -A- of the metering pump -V54-. Then use the hand pump to generate a vacuum or pressure of approx. 0.8 bar. In the case of a metering pump -V54- with bypass (for auxiliary and supplementary heaters with fuel shut-off valve -N109-), the vacuum or pressure will be dissipated within one minute via the metering pump -V54- (connection -B- must be open when doing so).
- ◆ In the case of a metering pump -V54- -C- intended for auxiliary heaters with no fuel shut-off valve -N109-, any vacuum or pressure applied at connection -A- (e.g. using a vacuum hand pump -VAS 6213-) must not be dissipated via connection -B- (no internal leaks in metering pump -V54-).



Installation is in reverse order; pay attention to the following:


Note

- ◆ For determination of the correct metering pump -V54- (for petrol or diesel engine), refer to ⇒ *Electronic parts catalogue*.
- ◆ Secure all hose connections with standard clamps ⇒ *Electronic parts catalogue*.
- Observe flow direction for metering pump -V54-.
- Make sure fuel pipes are not twisted.

Note

- ◆ *Make sure that the metering pump -V54- and the corresponding fuel pipes are fitted such that they do not make contact with other components (noise).*
- ◆ *After removing and installing fuel system components, the auxiliary heater is to be switched on and operated at full load for at least 10 minutes to ensure complete bleeding of the fuel pipe.*

6.4 Checking operation of fuel shut-off valve -N109-

Note

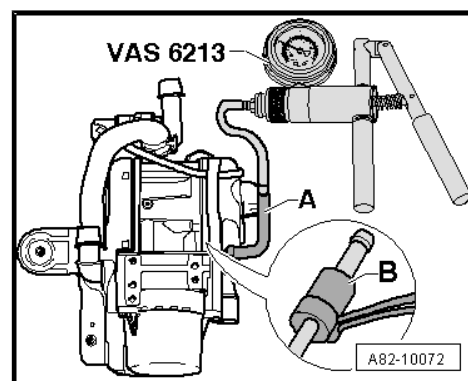
Not all auxiliary and supplementary heater versions are fitted with a fuel shut-off valve -N109- -B-. Currently only intended for the auxiliary heater version for diesel vehicles with part number 4F0 265 081 as of index "M", gradual introduction as of 05.2008 → Electronic parts catalogue .

- Detach the fuel pipe from the auxiliary heater ⇒ [page 40](#) .

Note

Seal the fuel pipe detached or place the end of the detached fuel pipe in a small vessel (a small amount of fuel may emerge during subsequent final control diagnosis).

- Connect the vacuum hand pump -VAS 6213- for example to the fuel pipe to the auxiliary heater -A-.
- With the ignition switched off, connect up the vehicle diagnostic, testing and information system -VAS 5051 A- with the diagnostic cable -VAS 5051/5A- to the 16-pin diagnosis socket in the vehicle and select the function "Auxiliary/supplementary heater final control diagnosis" ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .
- Use the vacuum hand pump -VAS 6213- to build up a pressure of approx. 1.5 bar in the fuel pipe to the auxiliary heater.
- Wait approx. 1 minute. The pressure must be maintained.
- Perform auxiliary/supplementary heater final control diagnosis ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function . When doing so, keep switching until the fuel shut-off valve -N109- control element is displayed.
- Activate the fuel shut-off valve -N109- control element and in doing so observe the display on the pressure gauge of the vacuum hand pump -VAS 6213- .
- As soon as the fuel shut-off valve -N109- is actuated, the pressure in the fuel pipe must be dissipated (by way of the fuel shut-off valve -N109-).



the fuel pipe to the auxiliary

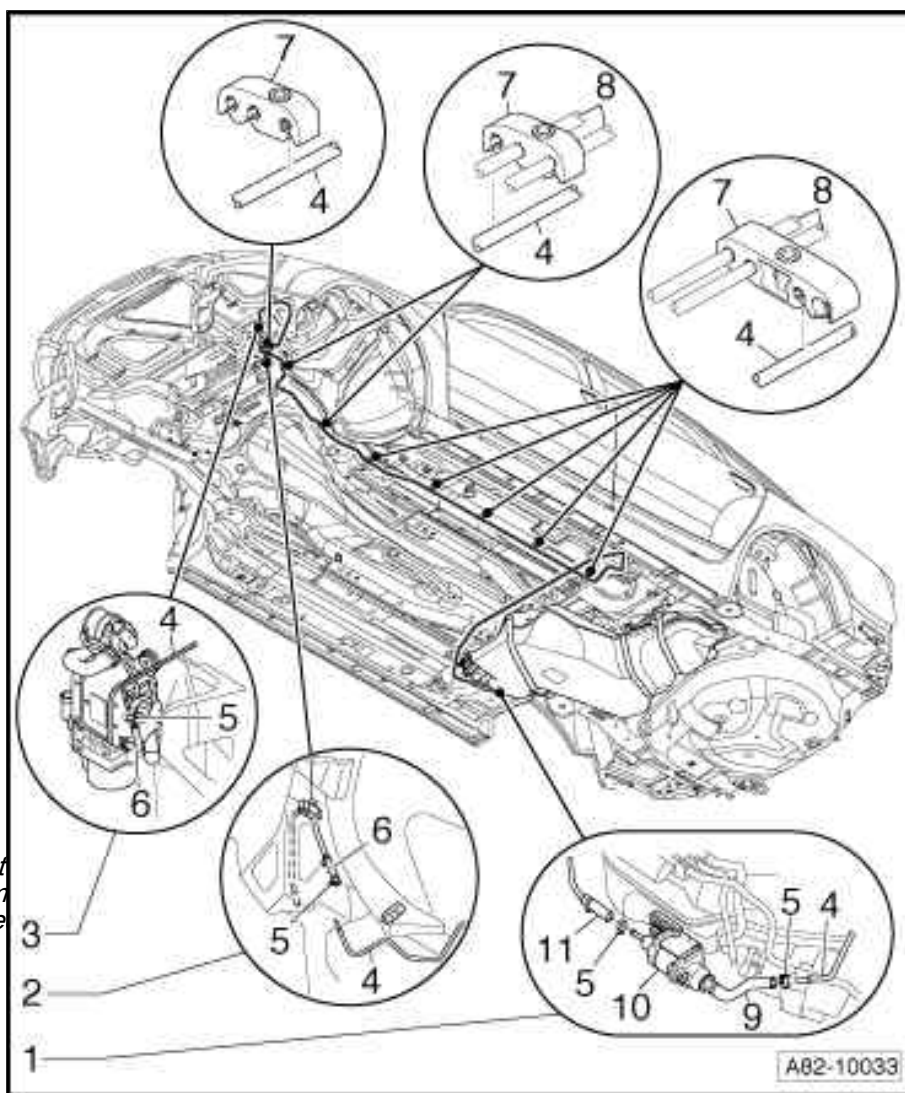


- ◆ *Fuel pipe from metering pump -V54- to auxiliary heater is routed on floor of vehicle.*
- ◆ *The fuel pipes and fuel hoses to the auxiliary heater must be routed such that they do not come into contact with components which become warm and are protected against heat generation which could affect operation.*
- ◆ *As of Model Year 2006 fuel hoses with a larger inside diameter and fitted with a plastic wire or plastic tube to reduce the volume are gradually being introduced (exact date not yet finalised) ⇒ Electronic parts catalogue .*
- ◆ *The sections of the fuel pipe are to be butt-jointed to stop vapour bubbles accumulating at the connections.*

es to the auxiliary heater must be
t come into contact with compo-
and are protected against heat

- ### Note

11 - Fuel pipe from sealing flange of fuel delivery unit to metering pump -V54-



6.5.2 Routing of fuel pipe (Audi S6)

1 - Routing of fuel pipes and hoses in area of metering pump -V54-

2 - Routing of fuel pipes on underside of vehicle

3 - Routing of fuel pipes and hoses in area of front right wheel housing

4 - Routing of fuel pipes and hoses in area of auxiliary heater

5 - Hose clamps

- ❑ Always use standard hose clamps ⇒ Electronic parts catalogue

6 - Fuel pipe from sealing flange of fuel delivery unit to metering pump -V54-

- ❑ Filling the fuel pipe to the metering pump - V54- with fuel (bleeding) ⇒ [page 33](#)

7 - Fuel hose to auxiliary heater

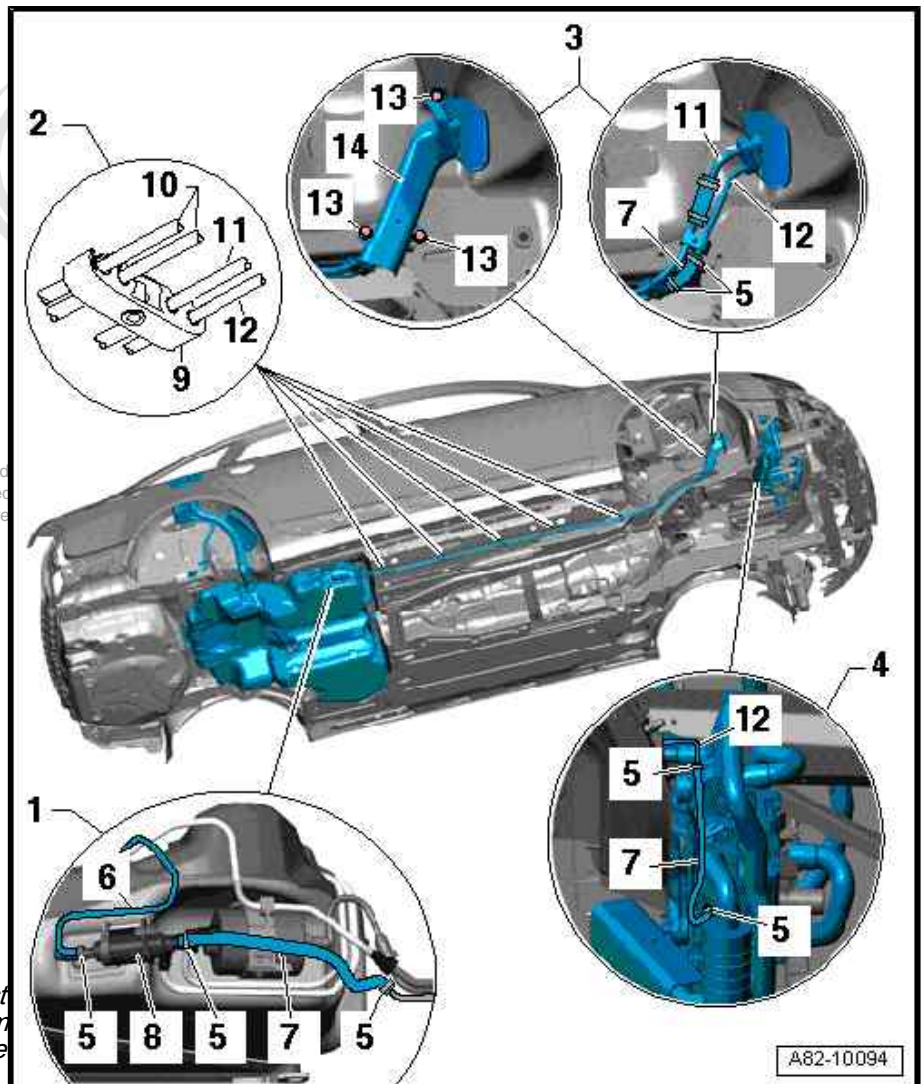
8 - Metering pump -V54-

- ❑ Removing and installing ⇒ [page 37](#)



Note

Pay attention to correct to the auxiliary/supplemental heater ⇒ [page 37](#) and ⇒ Electronic parts catalogue.



9 - Holder for fuel and breather pipes

10 - Breather pipes

11 - Fuel pipe to engine

12 - Fuel pipe to auxiliary heater

13 - Bolt 8 Nm

14 - Cover for fuel pipes in wheel housing

6.6 Checking fuel delivery of metering pump -V54-

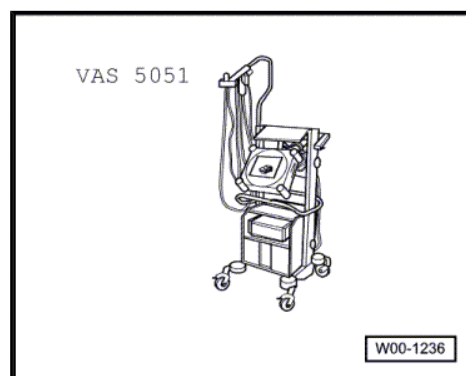


Note

- ◆ For a representative test result, test conditions must be observed, preliminary work must be performed and fuel pipe must be filled. Only then is it possible to perform the actual delivery check.
- ◆ If the fuel pre-supply pump -G6- is not actuated in auxiliary heating mode or if the fuel diversion pipe is not properly installed in the fuel tank, problems may be encountered during heater operation depending on the amount of fuel in the fuel tank (fuel may not be conveyed) and the fault "Flame interruption" is entered ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

Special tools and workshop equipment required

- ◆ Vehicle diagnostic, testing and information system -VAS 5051 A-



- ◆ Measuring cup, fuel test

6.6.1 Test conditions and preliminary work



WARNING

Observe the applicable rules for cleanliness, take the appropriate precautions and heed the relevant safety measures when working on open fuel system ⇒ Fuel Supply - Petrol Engines; Rep. Gr. 20 or ⇒ Fuel Supply - Diesel Engines; Rep. Gr. 20.

Test conditions

- Coolant temperature is less than 30 °C.
- Ambient temperature is less than 25 °C (a higher ambient temperature can lead to errors in measured fuel quantity due to fuel evaporation).
- Sufficient fuel in tank (fuel gauge in dash panel insert not in red zone).
- The battery -A- is fully charged.
- The auxiliary heater is completely installed and connected to the vehicle electrical system.
- Auxiliary heater is switched off.

- Encoding and adaption of the supplementary heater control unit -J364- OK ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 .

Preliminary work

Test conditions satisfied ⇒ [page 42](#)

- With the ignition switched off, connect up the vehicle diagnostic, testing and information system -VAS 5051 A- with the diagnostic cable -VAS 5051/5A- to the 16-pin diagnosis socket in the vehicle ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- Allow engine to run briefly (in order to initially fill baffle housing of fuel delivery unit).
- Read out the fault memories of all systems with self-diagnosis capability, paying particular attention to the following vehicle systems ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 :

◆ Dash panel insert

◆ Air conditioner/heater electronics

◆ Supplementary/auxiliary heater

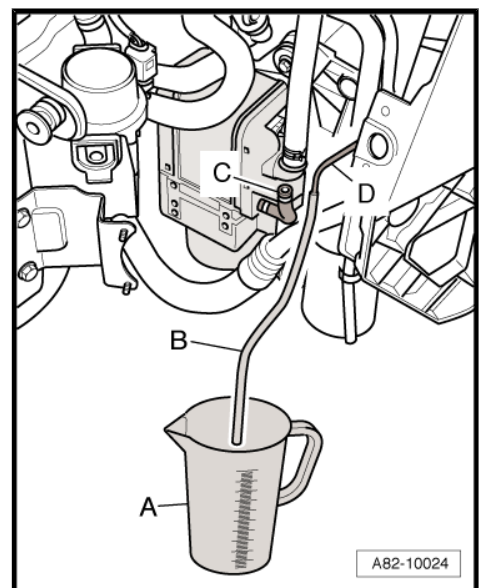
◆ Convenience system central module

◆ Data bus diagnostic interface -J533-

- Switch off all electrical equipment.
- Terminate guided fault-finding and switch off the ignition.
- Eliminate the cause of any faults displayed in the vehicle systems and erase the fault memory ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

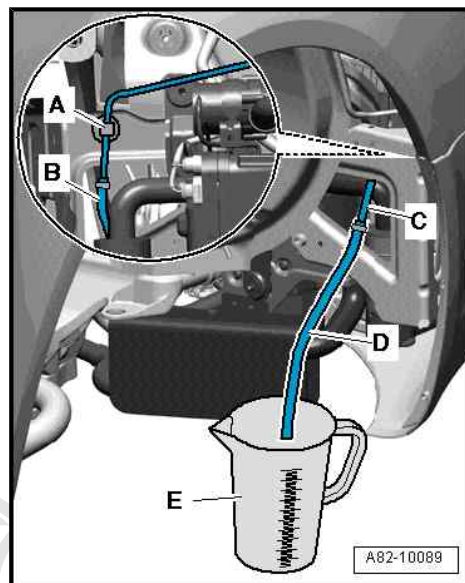
All models except Audi S6:

- Remove front bumper cover ⇒ General body repairs, Exterior; Rep. Gr. 63 .
- If necessary, remove intercooler (e.g. on vehicles with diesel engine)⇒ Rep. Gr. 21 ; Engine, Mechanical Components
- Carefully detach fuel pipe -D- from fuel hose elbow -C- at auxiliary heater.
- Extend fuel pipe using an auxiliary hose -B-, which then leads to measuring cup -A-.



Audi S6:

- Remove the front right wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 .
- Unfasten the hose clamp and detach the fuel hose -B- from the fuel pipe. To do so, unclip the fuel pipe from the holder -A-.
- Extend the fuel pipe -C- with an auxiliary hose -D- and route this into a graduated beaker -E-.



6.6.2 Filling fuel pipe completely

Test conditions satisfied ⇒ [page 42](#) and test preparation performed ⇒ [page 43](#)

- Switch ignition on and all electr. loads off.
- Check and if necessary correct the encoding and adaption of the supplementary heater control unit -J364- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- Switch off ignition and all electr. loads.

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Note

Auxiliary heater guided fault-finding can only be started with the ignition switched on (the data bus diagnostic interface -J533- is only active when the ignition is on). Once the auxiliary heater has switched to diagnostic mode, it is possible to continue with guided fault-finding even with the ignition switched off ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

- Completely fill the fuel pipe (from the metering pump -V54- to the graduated beaker) with fuel ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.



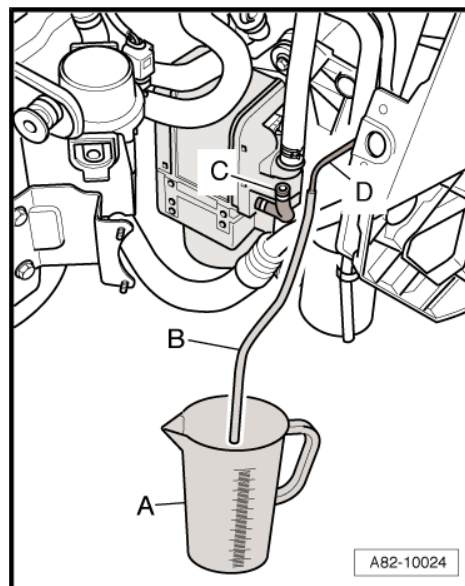
Note

- ◆ *The delivery rate can only be checked by way of the Basic setting function. This does however involve using the "Adaption" function to enter the actuation time of the metering pump -V54- and enabling the "Pipe filling" function in a further adaption channel ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *For replacement auxiliary heaters (with a new supplementary heater control unit -J364-) for which basic setting has not yet been performed using the "Pipe filling" function, the value displayed for the pipe filling time may for example not be "0", but rather a different value e.g. "200" ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *The delivery rate can only be checked by way of the "Basic setting" function if the value "0" has been entered in the adaption channel for enabling "Pipe filling". When the "Pipe filling" function is implemented, the adaption value is reset to "1" and this function is thus disabled ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *In the case of replacement auxiliary heaters (with a new supplementary heater control unit -J364-) for which basic setting has yet to be performed with the "Pipe filling" function, the value "0" may also be displayed.*
- ◆ *Following implementation of the "Pipe filling" function, the display in the measured value block is reset to the factory setting for the auxiliary heater. On completion of the necessary work, the auxiliary heater must therefore be actuated with the "Basic setting" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *The metering pump -V54- is actuated for 30 s at 7 hertz (7 pulses per second) in the "Pipe filling" function if e.g. "30" has been entered in the adaption channel for the "Pipe filling" function (the fuel pipe is then completely filled with fuel).*
- ◆ *Once the "Pipe filling" function has been started, it cannot be aborted and is implemented in full by the control unit regardless of any entries made via the tester.*
- *Wait until the display changes from "Pipe filling" to "End" (with certain control units, "Function unknown or cannot be implemented at present" is displayed on completion of actuation) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*

- Empty the graduated beaker -A- and re-attach it or place it in position again.
- Terminate guided fault-finding.

The following is stored in the supplementary heater control unit -J364- to stop too much fuel being conveyed into the auxiliary heater:

- ◆ It may only be possible to perform "Pipe filling" once in the "Basic setting" function in the course of guided fault-finding depending on the version of the supplementary heater control unit -J364- (not necessary for all versions of the supplementary heater control unit -J364- , terminate guided fault-finding and re-start if necessary) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- ◆ Once "Pipe filling" has been performed in the "Basic setting" function, the supplementary heater control unit -J364- resets the time entered in the adaption channel for "Pipe filling" to "0" (actuation time of the metering pump -V54- in the "Pipe filling" function) and, in a further adaption channel, the value is set to "1" (pipe filling disabled as already implemented) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.



Note

For the actual test it is therefore necessary to exit from guided fault-finding and to repeat the entire procedure for test purposes.

6.6.3 Checking delivery rate

Test conditions satisfied ⇒ [page 42](#) , test preparation performed ⇒ [page 43](#) and fuel pipe completely filled ⇒ [page 44](#)

- Select the supplementary heater control unit -J364- in the "Guided fault-finding" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- Check the delivery rate of the metering pump -V54- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.



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Note

- ◆ *With the supplementary heater control unit -J364- fitted at present, the maximum value which can be entered is "255".*
- ◆ *When checking the delivery rate, the metering pump -V54- is actuated for 200 s at 7 hertz (7 pulses per second).*
- ◆ *The metering pump -V54- actuation time is entered in seconds in the adaption channel. When the "Pipe filling" function is next selected in "Basic setting", the metering pump -V54- is actuated for this period. The "Pipe filling" function can however only be performed in "Basic setting" if this has been enabled in a further adaption channel ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *In the "Pipe filling" routine of the "Basic setting" function, the metering pump -V54- is actuated at a frequency of 7 hertz (7 pulses per second). The delivery rate set in the metering pump is approx. 0.031 ml per stroke (0.031/1000 litre).*
- ◆ *Depending on the supplementary heater control unit -J364-, rounding errors on conversion after entering the encoded display value, e.g. "200", may lead to the following message being displayed "Note: Value to be stored 200, value actually stored 199". If this display appears, enter e.g. "201" instead of "200" if necessary to store the exact value and confirm the display.*
- ◆ *Values entered which are not within the specified limits are displayed but not implemented.*
- ◆ *If the value entered is too high or too low, the display is automatically reset (to the lowest or highest value still permitted).*
- Wait until the set time has elapsed and the metering pump -V54- is no longer actuated.



Note

Depending on the control unit version, the tester display switches from "Pipe filling" to "End" or "Function unknown or cannot be implemented at present".

- Terminate guided fault-finding.



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- Measure the fuel delivery rate of the metering pump -V54- on completion of the “Pipe filling” routine in the “Basic setting” function in the graduated beaker -A-.
- Specified value: 44 ml + / - 4 ml (permissible tolerance range: 39 ... 49 ml).



Note

One millilitre (ml) corresponds to $\frac{1}{1000}$ litre or cm^3 .

If the fuel delivery is outside the tolerance range:

- Check the fuel pipe (from the fuel tank via the metering pump -V54- to the auxiliary heater) for damage and proper routing [⇒ page 29](#).
- Replace the metering pump V54- if there is no fault in the fuel supply [⇒ page 37](#).

If no faults can be detected:

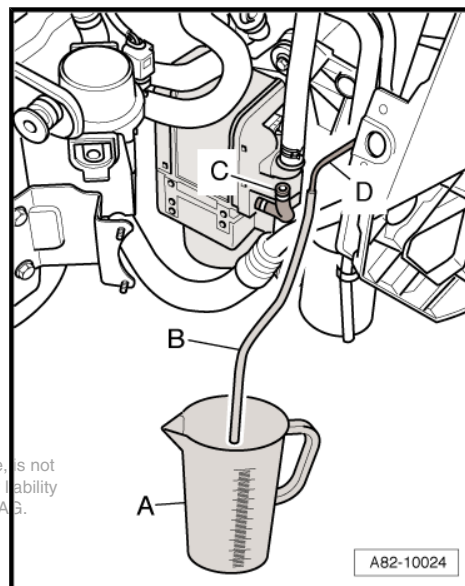
- On auxiliary heaters with fuel shut-off valve -N109- (gradual introduction on vehicles with diesel engine only as of 05.2008 [⇒ Electronic parts catalogue](#)), check operation and actuation of this valve [⇒ page 39](#).

If starting problems are encountered with auxiliary heater although fuel delivery is OK:

- Check CO_2 content in exhaust gas [⇒ page 53](#).

If fuel delivery is in lower tolerance range (less than 40 ml) and there are starting difficulties with auxiliary heater or problem “Poor heat output” has been registered:

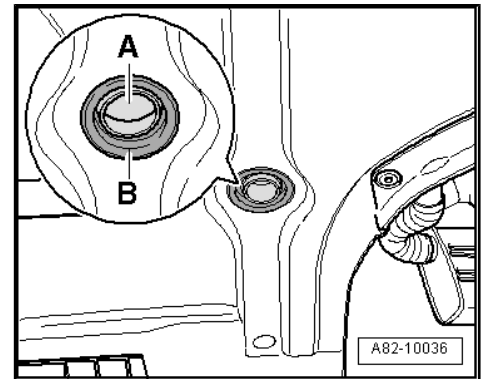
- Replace the metering pump -V54- if necessary [⇒ page 37](#).



Note

- ◆ In vehicles with petrol engine, a filter and a restriction are installed in fuel connection of burner element ([⇒ page 30](#)). If this filter is blocked, metering pump is unable to deliver fuel to combustion chamber. If necessary, check this filter for blockage [⇒ page 49](#) (Checking fuel delivery of metering pump -V54- with auxiliary heater switched on).
- ◆ On auxiliary heaters with fuel shut-off valve -N109- (gradual introduction for vehicles with diesel engine only as of 05.2008 [⇒ Electronic parts catalogue](#)), fuel can only be conveyed into the auxiliary heater if the fuel shut-off valve -N109- is actuated and thus opened (checking operation and actuation of this valve [⇒ page 39](#)).
- ◆ If the fuel pre-supply pump -G6- is not actuated in auxiliary heating mode, problems may be encountered during heater operation depending on the amount of fuel in the fuel tank (fuel may not be conveyed) and the fault “Flame interruption” is entered [⇒ “Guided fault-finding” function of vehicle diagnostic, testing and information system VAS 5051](#).
- ◆ In vehicles with diesel engine, fuel is pre-heated via fuel pre-heating heater element -Z66- before entering combustion chamber ([⇒ page 30](#)). Without fuel pre-heating, starting difficulties with auxiliary heater may occur at low ambient temperatures.

- Re-install all removed components on completion of required work.
- After installing noise insulation, check position of exhaust pipe -A-; a gasket -B- must be installed between exhaust pipe -A- and noise insulation. Exhaust pipe must protrude downwards out of gasket and outlet of exhaust gas from exhaust pipe -A- must not be impeded
- Start the engine.
- With the engine running, start the auxiliary heater by way of the "Auxiliary heater on" routine in the "Basic setting" function (the auxiliary heater must be allowed to operate for a short period to reset the value displayed in the measured value block to the initial value) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- Once the auxiliary heater is in full load operation, switch off the auxiliary heater by way of the "Auxiliary heater off" routine in the "Basic setting" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.



Note

To ensure that the auxiliary heater is ready for operation again after measurement, it must be allowed to run for a brief period in heating mode. This resets certain adaption values and the displays in the measured value block to the initial values ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

- Terminate guided fault-finding and switch off the ignition.

6.6.4 Checking fuel delivery of metering pump -V54- with auxiliary heater switched on

Note

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- ◆ *As coolant is only circulated in the small coolant circuit in auxiliary heating mode with the engine stopped on vehicles with heater coolant shut-off valve -N279-, the engine has to be started for implementation of this test. When the engine is running, the heater coolant shut-off valve -N279- is not actuated, the coolant circulates in the large circuit and does not heat up as quickly.*
- ◆ *This test measures the metering pump delivery rate in auxiliary heater full load mode. Consequently, the result is not as accurate as when checking delivery by way of the basic setting function. This test does however make it possible to detect any constrictions (e.g. a clogged filter in the burner element) impeding the entry of fuel into the combustion chamber.*
- ◆ *A timer which indicates seconds is required for this test.*

**WARNING**

Observe the applicable rules for cleanliness, take the appropriate precautions and heed the relevant safety measures when working on open fuel systems ⇒ Engine, mechanics; Rep. Gr. 20; Fuel supply system or ⇒ Fuel supply system; Rep. Gr. 20.

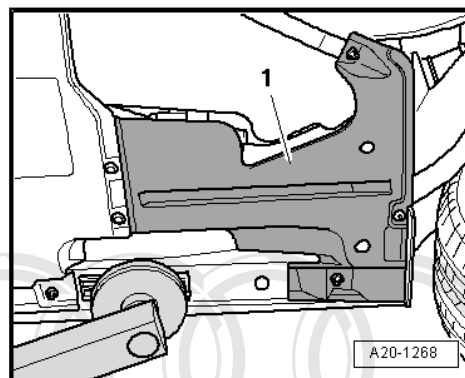
Special tools and workshop equipment required

- ◆ Vehicle diagnostic, testing and information system -VAS 5051 A-
- ◆ Bottle for additional heater -VAS 5086-
- ◆ Clock with second display

Test procedure

Test conditions satisfied ⇒ [page 42](#)

- Remove cover -1- at bottom rear right, at vehicle floor.



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- Disconnect fuel pipe -B- from metering pump -C-.
- Seal fuel pipe with plug -A-.
- Pour precisely measured quantity of fuel (e.g. 0.5 l) into bottle for additional heater -VAS 5086- .

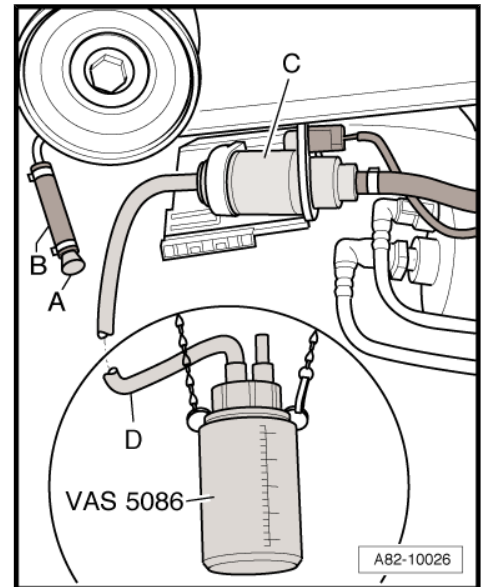
 Note

- ◆ *A rising tube must be fitted to bottle for additional heater -VAS 5086- which reaches to bottom of bottle.*
- ◆ *There must be an opening in the container lid to prevent a vacuum from forming when fuel is removed.*
- Fasten bottle for additional heater -VAS 5086- to vehicle in area of metering pump -V54- .
- Press bottle for additional heater -VAS 5086- together until fuel is present at end of hose -D-, then connect hose to metering pump -C-.
- With the ignition switched off, connect up the vehicle diagnostic, testing and information system -VAS 5051 A- with the diagnostic cable -VAS 5051/5A- to the 16-pin diagnosis socket in the vehicle ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- Switch ignition on and all electr. loads off.
- For "Convenience" version air conditioner, select temperature setting "HI" for driver's and front passenger's side on operating and display unit (Climatronic control unit -J255- or, for "Basic" version air conditioner, set both temperature rotary controls to "Maximum heating output".
- For "Convenience" version air conditioner, limit fresh-air blower speed to blower setting "5" on operating and display unit (Climatronic control unit -J255- or, for "Basic" version air conditioner, set rotary control for fresh-air blower speed to "Half speed".
- Start guided fault-finding for the supplementary heater control unit -J364- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- Select the function "Reading measured value block".
- Select the display group in which the operating status of the auxiliary heater is indicated ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

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Open all vehicle windows.

- Switch on the auxiliary heater (e.g. for an air conditioner of "Convenience" type on the operating and display unit, Climatronic control unit -J255-) ⇒ [page 21](#) .
- Observe the display in which actuation of the metering pump -V54- is indicated.
- Start measuring the time as soon as the display indicates that the metering pump -V54- is being actuated at more than 80%.
- Continue to observe the display. If the metering pump -V54- is actuated at less than 80% within the measurement period, eliminate the cause of the trouble and repeat the test.
- Switch off auxiliary heater after 5 minutes in full- load mode (metering pump actuation greater than 80%).
- Terminate guided fault-finding.

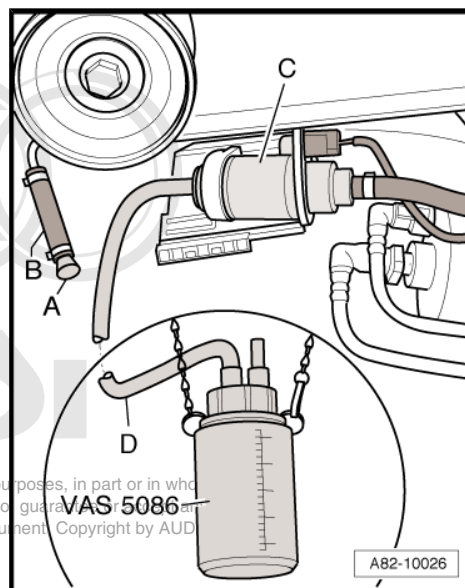


- Switch off ignition and detach diagnostic connector.
- Remove bottle for additional heater -VAS 5086- and measure remaining fuel.
- In the 5 minute full-load period (actuation of metering pump -V54- at more than 80 %), metering pump -V54- must deliver at least 47 ml on vehicles with petrol engine and at least 40 ml on vehicles with diesel engine.



Note

- ◆ One millilitre (ml) corresponds to $\frac{1}{1000}$ litre or cm^3 .
- ◆ A metering pump -V54- with an actual delivery capacity of 100% (permissible tolerance $\pm 10\%$) which is actuated at 100% over the entire 5 minute period by the auxiliary heater control unit -J364-, will deliver 58.5 ml (300 seconds $\times$ 6.3 pulses per second $\times$ 0.031 ml per stroke) on vehicles with petrol engine and 50 ml (300 seconds $\times$ 5.37 pulses per second $\times$ 0.031 ml per stroke) on vehicles with diesel engine.



7 Checking and adjusting CO₂ content in auxiliary heater exhaust gas



Note

- ◆ *The CO₂ content in the exhaust gas can be set in the "Adaption" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *By way of adaption and the supplementary heater control unit -J364-, it is possible to alter actuation of the combustion air blower -V6- to modify delivery and convey more or less combustion air into the auxiliary heater.*

7.1 Checking CO₂ content in auxiliary heater exhaust gas

Special tools and workshop equipment required

- ◆ 4-component exhaust analyser -V.A.G 1788 (D)-

Test conditions

- The coolant temperature is lower than 30° C . at the start of the test
- The ambient temperature is less than 25 ° C.
- Sufficient fuel in tank (fuel gauge in dash panel insert not in red zone)
- Battery -A- (vehicle battery) fully charged
- The auxiliary heater is completely installed and connected to the vehicle electrical system.
- Encoding and adaption of the supplementary heater control unit -J364- OK ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051

Preliminary work

- With the ignition switched off, connect up the vehicle diagnostic, testing and information system -VAS 5051 A- with the diagnostic cable -VAS 5051/5A- to the 16-pin diagnosis socket in the vehicle ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- Switch ignition on and all electrical equipment off.
- Select the "Guided fault-finding" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- Read out the fault memories of all systems with self-diagnosis capability, paying particular attention to the following vehicle systems ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 :
 - ◆ Dash panel insert
 - ◆ Air conditioner/heater electronics
 - ◆ Supplementary/auxiliary heater
 - ◆ Convenience system central module
 - ◆ Data bus diagnostic interface -J533-
- Eliminate the cause of any faults displayed in the vehicle systems and erase the fault memory ⇒ "Guided fault-finding"

function of vehicle diagnostic, testing and information system VAS 5051.

- Select the supplementary heater control unit -J364- in the "Guided fault-finding" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.



Note

Auxiliary heater guided fault-finding can only be started with the ignition switched on (the data bus diagnostic interface -J533- is only active when the ignition is on). Once the auxiliary heater has switched to diagnostic mode, it is possible to continue with guided fault-finding even with the ignition switched off.



Note

- ◆ *If the fuel pre-supply pump -G6- is not actuated in auxiliary heating mode, problems may be encountered during heater operation depending on the amount of fuel in the fuel tank (fuel may not be conveyed) and the fault "Flame interruption" is entered ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *For this test, the auxiliary heater can be switched on in the case of an air conditioner of "Convenience" type at the operating and display unit, Climatronic control unit -J255- ⇒ [page 21](#) and in the case of an air conditioner of "Basic" type at the rotary knob/pushbutton of the MMI operating unit or by way of the remote control. For "Convenience" version air conditioner, temperature setting "HI" must be set for driver's and front passenger's side on operating and display unit (Climatronic control unit -J255-) or, for "Basic" version air conditioner, both temperature rotary controls must be set to "Maximum heating output" when activating remote control otherwise, depending upon ambient temperature, "Auxiliary ventilation" function is activated and auxiliary heater does not start.*
- ◆ *For this test, the auxiliary heater can also be switched on in the "Basic setting" function. In the "Basic setting" function, the auxiliary heater can also be operated up to a coolant temperature of 110 °C and starting from the control interval is possible. The operating time is then however restricted to a maximum of 10 minutes ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*

Checking

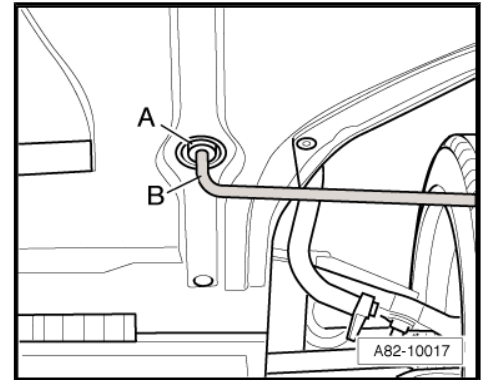
- Switch on the exhaust analyser (e.g. the exhaust emission test station -VAS 6300- or the 4-component exhaust analyser - V.A.G 1788 / (D)-).



- Insert corresponding hose -B- of analyser exhaust probe in exhaust pipe -A- of auxiliary heater.

i Note

- ◆ *Exhaust probe hose should not impede flow of exhaust gas from exhaust pipe during test.*
- ◆ *On the Audi S6, the auxiliary heater exhaust pipe is located on the right of the noise insulation.*
- Switch ignition on and all electr. loads off.
- Open all vehicle windows.
- For “Convenience” version air conditioner, select temperature setting “HI” for driver's and front passenger's side on operating and display unit (Climatronic control unit -J255- or, for “Basic” version air conditioner, set both temperature rotary controls to “Maximum heating output”.
- Limit the fresh air blower speed in the case of an air conditioner of “Convenience type” at the operating and display unit, Climatronic control unit -J255- to blower setting “5” or, in the case of an air conditioner of “Basic” type, set the fresh air blower speed rotary knob to “half speed”.
- Switch on the auxiliary heater (at the operating and display unit, Climatronic control unit -J255- in the case of the “Convenience” version, via the MMI terminal for the “Basic” version ⇒ [page 21](#) or by way of the Vehicle diagnostic, testing and information system -VAS 5051 A- , “Basic setting” function ⇒ “Guided fault-finding” function of vehicle diagnostic, testing and information system VAS 5051.)
- Wait until the auxiliary heater has been switched from start to full-load operation (approx. 4 min).



i Note

The instantaneous operating status of the auxiliary heater can be read off in the “Reading measured value block” function ⇒ “Guided fault-finding” function of vehicle diagnostic, testing and information system VAS 5051.

- After the auxiliary heater has switched to full-load operation, wait at least another 1 minute.
- Read measured value for CO₂ content in exhaust gas off CO₂ measuring instrument (as of approx. 5 minutes after switch-on, auxiliary heater must be in full-load mode).

i Note

- ◆ *Value for CO₂ content in exhaust gas is the same for vehicles with petrol and diesel engines.*
- ◆ *CO₂ content in auxiliary heater exhaust gas varies with ambient temperature and altitude of location at which measurement is taken (atmospheric pressure decreases with increasing altitude).*

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Specifications

CO ₂ (carbon dioxide) content in exhaust gas of auxiliary heater in % by vol.		
Altitude of location above sea level in metres	Ambient temperature	
	0 °C	+20 °C
0	9,9 ± 0,5 %	10,1 ± 0,5 %
200	10,2 ± 0,5 %	10,3 ± 0,5 %
400	10,5 ± 0,5 %	10,6 ± 0,5 %
600	10,7 ± 0,5 %	10,9 ± 0,5 %
800	11,0 ± 0,5 %	11,2 ± 0,5 %
1000	11,3 ± 0,5 %	11,5 ± 0,5 %
1200	11,6 ± 0,5 %	11,8 ± 0,5 %
1400	11,9 ± 0,5 %	12,1 ± 0,5 %
1600	12,3 ± 0,5 %	12,5 ± 0,5 %
1800	12,6 ± 0,5 %	12,8 ± 0,5 %

If measured value is in bottom of range (more than approx. 0.5 % below lowest permissible setting), malfunctions in the auxiliary heater combustion may occur under unfavourable operating conditions, e.g. at higher vehicle speeds:

- In this case, adjust CO₂ content in exhaust gas to higher value
⇒ [page 58](#) .

If the value displayed by the CO₂ measuring instrument fluctuates slightly:

- calculate the average value from the highest and lowest measured values.

If the value displayed by the CO₂ measuring instrument fluctuates strongly (depending upon measuring instrument, more than approx. ± 0.6 %):

- Check position of measuring probe in auxiliary heater exhaust pipe.

If measured value is outside the permitted range:

- Check intake air silencer and the auxiliary heater exhaust system for dirt or cross-section restrictions and clean or replace these components if necessary.
- Check fuel delivery for metering pump -V54- ⇒ [page 42](#) .

If CO₂ content in exhaust gas and metering pump -V54- delivery are in lower specified range:

- replace metering pump -V54- ⇒ [page 37](#) .

If CO₂ content in exhaust gas is not OK, but fuel delivery is OK:

- Check intake air silencer and the auxiliary heater exhaust system for dirt or cross-section restrictions and clean or replace these components if necessary.

If no fault is found in the above mentioned components:

- Adjust CO₂ content in exhaust gas ⇒ [page 58](#) .

If CO₂ content in exhaust gas cannot be adjusted:

- Dismantle auxiliary heater ⇒ [page 135](#) .
- Check combustion air blower -V6- and combustion chamber of auxiliary heater.

If there are no large deposits in combustion chamber:

- Replace combustion air blower -V6- (can at present only be replaced together with auxiliary heater control unit -J364-)
 ⇒ [page 139](#) .

In the event of auxiliary heater starting problems despite correct fuel delivery and CO₂ content in the exhaust gas:

- Check the glow plug with flame monitor -Q8- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- On vehicles with a diesel engine, check the fuel pre-heating heater element -Z66- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051
 ⇒ [page 49](#) (checking fuel delivery of metering pump -V54- with auxiliary heater switched on) and ⇒ [page 135](#) (dismantling auxiliary heater).
- On vehicles with petrol engine, check micro-filter in fuel pipe in burner element for blockage ⇒ [page 49](#) and ⇒ [page 135](#) .
- Remove any deposits from the auxiliary heater combustion chamber. This is particularly important for vehicles with diesel engine operating with biodiesel (vegetable-oil or rape-oil methylester fuel) ⇒ [page 135](#) (Dismantling auxiliary heater).



Note

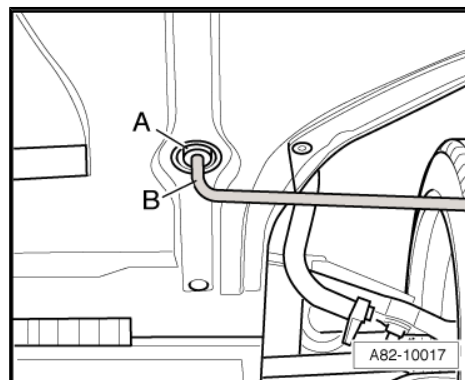
- ◆ *If fuel pump for presupply -G6- is not actuated in auxiliary heating mode, problems may occur in heating operation, depending upon quantity of fuel in fuel tank (fuel may not be supplied) and "Loss of flame" fault is entered.*
- ◆ *Checking actuation of the fuel pre-supply pump -G6- ⇒ Vehicle diagnostic, testing and information system -5051 A-, "Guided fault-finding" function*

7.2 Adjusting CO₂ content in auxiliary heater exhaust gas



Note

- ◆ *The auxiliary heater must be operating in full load mode when adjusting the CO₂ content in the exhaust gas.*
- ◆ *Adjustment of the CO₂ content in the exhaust gas requires connection of the vehicle diagnostic, testing and information system -VAS 5051 A- to the vehicle and initiation of auxiliary heater guided fault-finding ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051*
- ◆ *When adjusting the CO₂ content in the exhaust gas, the CO₂ measuring instrument must be ready for operation and the exhaust measurement probe -B- fitted in the exhaust pipe -A- of the auxiliary heater such that it does not stop exhaust gas emerging.*
- ◆ *If the auxiliary heater switches from full to part load operation during CO₂ adjustment on account of an excessive coolant temperature, full load operation of the auxiliary heater can be maintained up to a coolant temperature of approx. 110°C and for max. approx. 10 minutes in the "Basic setting" function. If this period is not sufficient, the procedure can be repeated ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *Alteration of the CO₂ content of the exhaust gas involves changing the actuation voltage for the combustion air blower -V6- by way of the "Adaption" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051. .*



7.2.1 Adjusting

Adjustment conditions

- ◆ Necessary test requirements satisfied ⇒ [page 53](#) .
- ◆ Preliminary work performed as described ⇒ [page 53](#)
- ◆ Adjustment can only be made if the auxiliary heater has been operating in full load mode for at least one minute.
- With the ignition switched off, connect up the vehicle diagnostic, testing and information system -VAS 5051 A- with the diagnostic cable -VAS 5051/5A- to the 16-pin diagnosis socket in the vehicle ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- Start engine.
- Open all windows.
- In the case of an air conditioner of "Convenience" type, set the temperature for the driver's and passenger's side at the operating and display unit, Climatronic control unit -J255- to "HI" or, in the case of an air conditioner of "Basic" type, set "maximum heat output" at both rotary temperature controls.
- Limit the fresh air blower speed in the case of an air conditioner of "Convenience type" at the operating and display unit, Climatronic control unit -J255- to blower setting "5" or, in the case of an air conditioner of "Basic" type, set the fresh air blower speed rotary knob to "half speed".



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- Select the supplementary heater control unit -J364- in the guided fault-finding routine ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- Switch on the auxiliary heater (at the operating and display unit, Climatronic control unit -J255- in the case of the "Convenience" version, via the MMI terminal for the "Basic" version ⇒ [page 21](#) or by way of the Vehicle diagnostic, testing and information system -VAS 5051 A- , "Basic setting" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.)
- Wait until the auxiliary heater switches from starting to full load mode (approx. 4 minutes).



Note

The instantaneous operating status of the auxiliary heater can be read off in the "Reading measured value block" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

- Wait at least 1 more minute after the auxiliary heater has switched to full load operation.
- Check the CO₂ (carbon dioxide) content in the exhaust gas of the auxiliary heater ⇒ [page 54](#) .

If the measured CO₂ (carbon dioxide) content of the exhaust gas is not as specified:

- Select the "Adaption" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- Use the input keypad to enter the adaption channel for adjusting the "CO₂ content in the exhaust gas" and confirm the entry.



Note

- ◆ *There may be several reasons for the display "Function unknown or cannot be implemented at present" appearing in the display zone ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *If the auxiliary heater is in the starting sequence, wait until it switches to full load mode.*
- ◆ If the auxiliary heater is in part load mode or the control interval:
- Switch the auxiliary heater off (at the operating and display unit, Climatronic control unit -J255- in the case of the "Convenience" version or via the MMI terminal for the "Basic" version ⇒ [page 21](#)) and back on again by way of the Vehicle diagnostic, testing and information system -VAS 5051 A- ("Basic setting" function). In the basic setting, full load operation is possible up to a coolant temperature of 110° C with a certain setting ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

Settings for CO₂ content in exhaust gas ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 :



Note

- ◆ *With this auxiliary heater, the value to be set for the CO₂ content in the exhaust gas is the same for vehicles with both petrol and diesel engine.*
- ◆ *The CO₂ content in the auxiliary heater exhaust gas varies with the ambient temperature and the altitude of the location at which the measurement is taken (atmospheric pressure decreases with increasing altitude).*

CO ₂ content to be set in exhaust gas of auxiliary heater in % by vol.		
Altitude of location above sea level in metres	Ambient temperature (in degrees centigrade)	
	0 °C	+20 °C
0	9,9 +/-0,5 %	10,1 +/-0,5 %
200	10,2 +/-0,5 %	10,3 +/-0,5 %
400	10,5 +/-0,5 %	10,6 +/-0,5 %
600	10,7 +/-0,5 %	10,9 +/-0,5 %
800	11,0 +/-0,5 %	11,2 +/-0,5 %
1000	11,3 +/-0,5 %	11,5 +/-0,5 %
1200	11,6 +/-0,5 %	11,8 +/-0,5 %
1400	11,9 +/-0,5 %	12,1 +/-0,5 %
1600	12,3 +/-0,5 %	12,5 +/-0,5 %
1800	12,6 +/-0,5 %	12,8 +/-0,5 %

A bar may appear for example on the tester display. The CO₂ content in the exhaust gas can be changed by altering the position of the bar.

- ◆ Moving the bar to the left (lower value) increases the CO₂ content in the exhaust gas by approx. 0.07 % per unit (change in CO₂ content in exhaust gas with 15 units is approx. 1%).
- ◆ Moving the bar to the right (higher value) reduces the CO₂ content in the exhaust gas by approx. 0.07 % per unit (change in CO₂ content in exhaust gas with 15 units is approx. 1%).



Note

- ◆ *The value applicable prior to adjustment remains stored if the auxiliary heater is shut off or switches out of full load mode during CO₂ adjustment.*
- ◆ *In the event of a greater difference between the specified and actual values, the adaption value can also be entered directly ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*

The auxiliary heater has been in full load operation for at least one minute since the setting was last changed.

- Read the measured value for the CO₂ (carbon dioxide) content in the exhaust gas off the CO₂ measuring instrument (as

of approx. 5 minutes after switch-on, the auxiliary heater must be in full load operation).



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Note

The hose -B- of the exhaust probe must not stop exhaust gas emerging from the exhaust pipe -A- during the test.

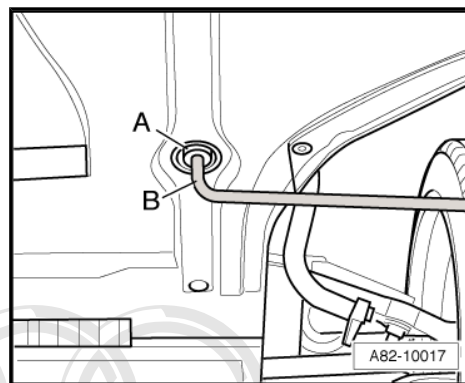
- Use the input keypad in the display zone to alter the value for this adaption channel for re-adaption of the supplementary heater control unit -J364- and thus the CO₂ content in the exhaust gas ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

Per unit, the CO₂ content changes by approx. 0.07 % by vol. (higher display value, lower CO₂ content or lower display value, higher CO₂ content). Change in CO₂ content in exhaust gas with 15 units is approx. 1%.

Example:

- ◆ The measured CO₂ content in the exhaust gas is 9.9 % by vol. (vehicle at an altitude of approx. 600 m above sea level and ambient temperature approx. 20 °C).
- ◆ "185" is displayed as adaption value in the adaption channel.
- ◆ New adaption value "170" (for CO₂ content in exhaust gas of 10.9 % by vol.).

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Note

- ◆ *Code numbers entered via the keypad or bar which are not within the specified limits are displayed but not implemented.*
- ◆ *If the CO₂ content in the exhaust gas is to be increased, a lower value must be entered in the adaption channel (the combustion air blower -V6- is actuated at a slightly lower voltage and less air is thus conveyed to the combustion chamber).*
- ◆ *If the CO₂ content in the exhaust gas is to be reduced, a higher value must be entered in the adaption channel (the combustion air blower -V6- is actuated at a higher voltage and more air is conveyed to the auxiliary heater).*
- Adopt and store the entry ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

Wait at least one minute (for the exhaust gas value to adjust to the new setting).

- Read the measured value for the CO₂ (carbon dioxide) content in the exhaust gas off the CO₂ measuring instrument (as of approx. 1 minute after the last entry, the auxiliary heater must be in full load operation).
- If the new CO₂ measured value does not correspond to the desired setting, repeat the adjustment procedure.
- If the new CO₂ measured value corresponds to the desired setting:
- Switch off auxiliary heater.
- Switch off ignition.
- Terminate guided fault-finding and unplug the diagnostic connector.



Note

- ◆ *If the auxiliary heater has been switched on via the "Basic setting" function, it can also be switched off again by way of the "Basic setting" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *If the value displayed by the CO₂ measuring instrument fluctuates slightly, form the mean from the highest and lowest measured value.*
- ◆ *If the value displayed by the CO₂ measuring instrument fluctuates considerably (more than approx. +/- 0.6% depending on measuring instrument), check the position of the measurement probe in the auxiliary heater exhaust pipe.*
- ◆ *The procedure can be repeated if the time is not sufficient (e.g. if the auxiliary heater was switched on by way of the "Basic setting" function).*
- ◆ *With the supplementary heater control unit -J364- installed at present, a CO₂ adjustment value of between "100" and "250" can be entered.*
- ◆ *Code numbers entered which are not within the specified limits are displayed but not implemented.*
- ◆ *If the code number entered is too high or too low, the display is automatically reset to the initial value or to the lowest/highest value still permitted.*
- ◆ *The value applicable prior to adjustment remains stored if the auxiliary heater is shut off during the "Adaption" function (CO₂ adjustment). In this case, repeat the procedure again.*
- ◆ *If the auxiliary heater switches from full to part load operation during CO₂ adjustment on account of an excessive coolant temperature, full load operation of the auxiliary heater can be maintained up to a coolant temperature of approx. 110°C and for max. approx. 10 minutes in the "Basic setting" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *If the setting for the CO₂ content is not within the permitted adaption value ranges:*
 - Check the fresh-air intake silencer and the exhaust system of the auxiliary heater for contamination or cross-sectional constriction and clean or replace these components if necessary.
 - Check the fuel delivery of the metering pump -V54- ⇒ [page 42](#) . If the CO₂ content of the exhaust gas and the delivery of the metering pump -V54- are in the lower specified range, replace the metering pump -V54- ⇒ [page 37](#) .
- ◆ *If no fault is found in the above-mentioned components and the CO₂ content in the exhaust gas cannot be adjusted:*
 - Dismantle auxiliary heater and clean combustion chamber ⇒ [page 135](#) . Check the combustion air blower -V6- and the combustion chamber of the auxiliary heater. If there are no major deposits in the combustion chamber, replace the combustion air blower -V6- (can only be replaced at present together with the supplementary heater control unit -J364-).
- ◆ *In the event of auxiliary heater starting problems despite correct fuel delivery and CO₂ content in the exhaust gas:*

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- Check the glow plug with flame monitor -Q8- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- On vehicles with a diesel engine, check the fuel pre-heating heater element -Z66- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 , ⇒ [page 135](#) and ⇒ [page 49](#) .
- On vehicles with a diesel engine and an auxiliary heater with fuel shut-off valve -N109- , check operation of -N109- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 and ⇒ [page 39](#) .
- On vehicles with petrol engine, check micro-filter in fuel pipe in burner element for blockage ⇒ [page 49](#) and ⇒ [page 135](#) .
- Remove any deposits from the auxiliary heater combustion chamber. This is particularly important for vehicles with diesel engine operating with biodiesel (vegetable-oil or rape-oil methylester fuel) ⇒ [page 135](#) (Dismantling auxiliary heater).
- Adjust the CO₂ content of the exhaust gas ⇒ [page 58](#) .
- If the CO₂ content in the exhaust gas cannot be adjusted, replace the combustion air blower -V6- (only possible at present in conjunction with the supplementary heater control unit -J364-) ⇒ [page 139](#) .
- After installing the auxiliary heater, check and if necessary re-adjust the CO₂ content in the exhaust gas.

7.3 Checking electrical connections to auxiliary heater and circulation pump -V55-

7.3.1 Required measuring and testing equipment:

- ◆ Vehicle diagnostic, testing and information system -VAS 5051 A- with multimeter leads -VAS 5051/7- , probe -VAS 5051/8- and current probe 50 A -VAS 5051/9-
- ◆ Voltage tester -V.A.G 1527/B-
- ◆ Adapter set -V.A.G 1594/C-

7.3.2 Test conditions

- All fuses OK in accordance with current flow diagram.
- Battery -A- adequately charged
- Auxiliary heater fault memory interrogated and any faults displayed eliminated ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051



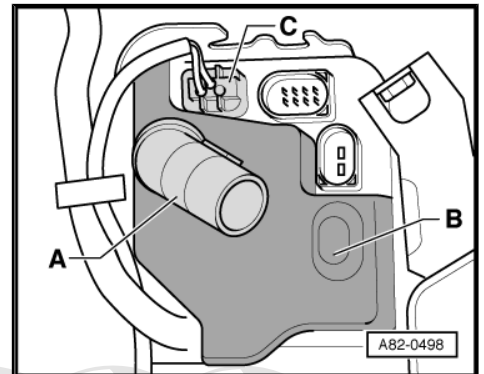
Note

The Manual merely gives a brief outline of the checking of individual components. Electrical checking is to be performed as described in the guided fault-finding routine ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

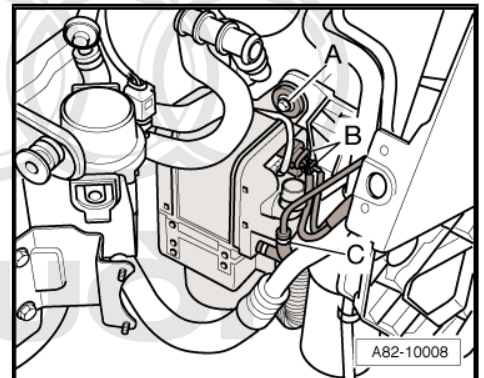
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7.3.3 Checking auxiliary heater actuation and electrical connections (all models except Audi S6)

- Switch off the ignition and the auxiliary heater.
- Remove the noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 .
- Remove the front bumper cover ⇒ General body repairs, exterior; Rep. Gr. 63; Front bumper .
- If necessary, remove intercooler (e.g. on vehicles with diesel engine)⇒ Rep. Gr. 21 ; Engine, Mechanical Components
- Remove left headlight ⇒ Electrical System; Rep. Gr. 94 .
- Detach air intake hose from connecting pipe -A- and turn connecting pipe -A- to side.

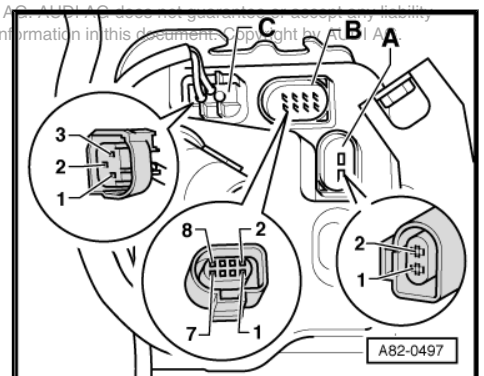


- Release electrical connectors -B- and detach from auxiliary heater.



Note

- ◆ Connectors -B- are released by pressing towards component and releasing catch whilst pressing connector (e.g. pull on tab).
- ◆ Numbering of contacts at connectors for connections -A-, -B- and -C-



7.3.4 Checking auxiliary heater actuation and electrical connections (Audi S6)

Special tools and workshop equipment required

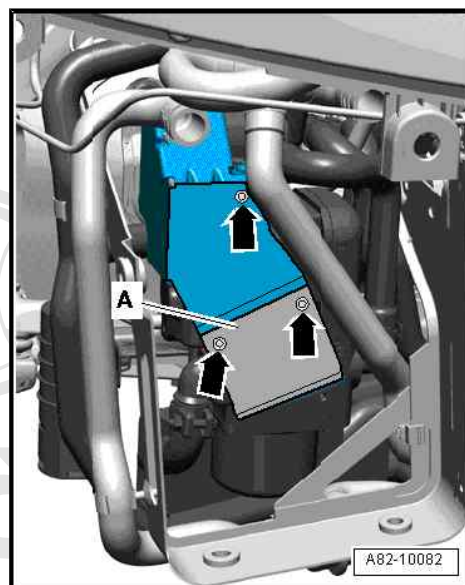
- ◆ Hand drill
- ◆ Bit Ø 3 mm

- ◆ Left-hand removal tool, size 3
- ◆ Safety goggles
- Switch off ignition and auxiliary heater.
- Remove the noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 .
- Remove the front bumper cover ⇒ General body repairs, exterior; Rep. Gr. 63 .
- If fitted, remove the auxiliary radiator ⇒ Engine, mechanics; Rep. Gr. 19 .

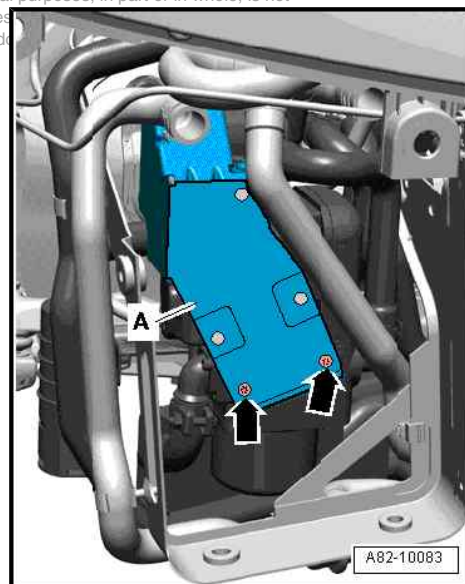

WARNING

Wear safety goggles.

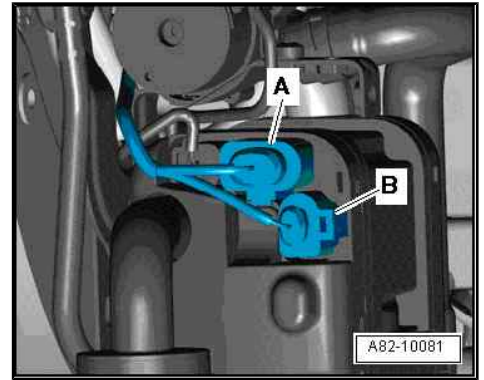
- Drill out the shear bolts -arrows- with a $\varnothing$ 3 mm bit.
- Screw a commercially available size 3 left-hand removal tool for example into the hole of the shear bolt.
- Use the left-hand removal tool to screw out the shear bolt.
- Detach the front protective cover -A-.



- Screw out the bolts -arrows-.
- Detach the rear protective cover -A- from the auxiliary heater.

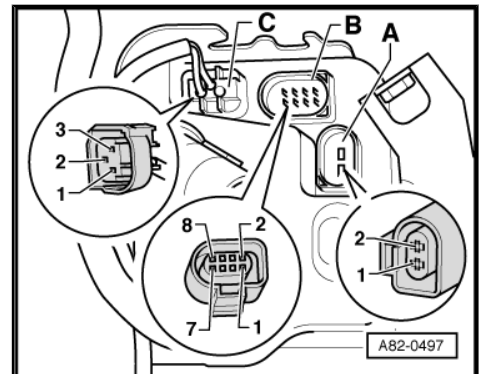


- Unplug the 6-pin connector -A-.
- After waiting 2 seconds, unplug the 2-pin connector -B-.



 Note

Numbering of contacts at connectors for connections -A-, -B- and -C-



7.3.5 List of electrical tests.

Test step	Component checked	Page
1	Power supply and earth connection – To auxiliary heater	⇒ page 67
2	Auxiliary heater connection – to metering pump -V54-	⇒ page 68
3	Auxiliary heater connection – to coolant shutoff valve -N279-	⇒ page 68
4	Auxiliary heater connection – to fuel pump relay for additional heater -J749- or to relevant engine control unit	⇒ page 69
5	Auxiliary heater connection – to circulation pump -V55-	⇒ page 70

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7.3.6 Test step 1 (power supply and earth connection)

Vehicle diagnostic, testing and information system -VAS 5051 A- , measurement mode: Multimeter, voltage measurement (20 VDC)					
Test step	Heater connection	Testing of	• Test conditions – Additional operations	Specified value	Remedies if specified value not attained
1.1	Plug A, contact 1 and plug A, contact 2	Terminal 30 (contact 1) and earth connection at auxiliary heater control unit -J364-	• Ignition switched off.	– Approx. battery voltage	– Use current flow diagram to check and repair power supply and earth connection.



Note

- ◆ Depending on last operating status and temperature of coolant in auxiliary heater, no-load current input of auxiliary heater may be up to max. 60 mA for a period of 5 to 10 minutes after switch-off. During this period, cooling of coolant is calculated by auxiliary heater control unit -J364- for time following switch-off.
- ◆ At the latest 10 minutes after switch-off, no-load current input of auxiliary heater control unit -J364- is less than 2 mA.
- ◆ The no-load current input of the auxiliary heating radio controlled receiver -R64- (Telestart "T90" / "T91" version) is less than 1 mA (the current input increases as soon as a transmission signal is received).

7.3.7 Test step 2 (connection from auxiliary heater to metering pump -V54-)

Vehicle diagnostic, testing and information system -VAS 5051 A- , measurement mode: Multimeter, resistance measurement (0...100 Ω)					
Test step	Heater connection	Testing of	• Test conditions – Additional operations	Specified value	Remedies if specified value not attained
2.1	Connector B, contact 5 and connector A, contact 2	Wiring to metering pump -V54-	• Ignition switched off.	– Greater than 3 and less than 20 Ω	– Use current flow diagram to check and repair wiring. – Replace metering pump



Note

- ◆ The internal resistance of the metering pump -V54- is 5.2 Ω~ + / - 0.6 Ω
- ◆ If the resistance between connector "B" contact "5" and "earth" is greater than 20 kohms or less than 20 mohms, a fault is detected by the supplementary heater control unit -J364-.
- ◆ Checking actuation of the metering pump -V54- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

7.3.8 Test step 3 (connection from auxiliary heater to coolant shutoff valve - N279-)

Vehicle diagnostic, testing and information system -VAS 5051 A- , measurement mode: Multimeter, resistance measurement (0...100 Ω)					
Test step	Heater connection	Testing of	• Test conditions – Additional operations	Specified value	Remedies if specified value not attained
3.1	Connector B, contact 8 and connector A, contact 2	Wiring to coolant shutoff valve - N279-	• Ignition switched off.	– Greater than 5 and less than 30 Ω	– Use current flow diagram to check and repair wiring. – Coolant shutoff valve - N279-



Note

- ◆ *Checking actuation of the coolant shut-off valve -N279- → "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *Internal resistance of coolant shutoff valve -N279- = 12 Ω +/- 1.2 Ω*
- ◆ *Current input of coolant shutoff valve -N279- = approx. 1 A*
- ◆ *If resistance between connector B, contact 8 and earth is greater than 20 kohms or less than 20 mohms, fault is detected by auxiliary heater control unit -J364- .*
- ◆ *Coolant shutoff valve -N279- is presently fitted to all vehicles*
- ◆ *In the case of auxiliary heaters with part number 4F0 265 081 up to index "L" (up to software version "060"), an "open circuit / short to positive" may be erroneously detected as a sporadic fault at the coolant shut-off valve -N279- under certain usage conditions. This entry in the fault memory need only be heeded in the event of problems with the auxiliary heater. If there are no problems with the auxiliary heater, erase the erroneous fault memory entry if applicable (do not perform any further fault-finding).*

7.3.9 Test step 4 (connection from auxiliary heater to fuel pump relay for additional heater -J749- or to relevant engine control unit)

Vehicle diagnostic, testing and information system -VAS 5051 A- , measurement mode: Multimeter, current measurement (2000 mA =)					
Test step	Heater connection	Testing of	• Test conditions – Additional operations	Specified value	Remedies if specified value not attained
4.1	Connector B, contact 6 and connector A, contact 1	Wiring to fuel pump relay for additional heater - J749- or to relevant engine control unit	• Ignition switched off.	– less than 1.0 A (amp) – Fuel pump for presup- ply -G6- running.	– Use current flow diagram to check and re- pair wiring. – Replace fuel pump relay for additional heater - J749- – Check signal input at rel- evant engine control unit via "Guided fault-find- ing" → Vehicle diagno- sis, testing and informa- tion system VAS 5051



Note

- ◆ *Checking actuation of the fuel pre-supply pump -G6- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *With certain engine versions for which the fuel pump for pre-supply -G6- is actuated directly by the relevant engine control unit, no fuel pump relay for additional heater -J749- is installed. In these vehicles, the relevant engine control unit is actuated (e.g. in vehicles with FSI engines) and this then actuates the fuel pump for presupply -G6- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations*
- ◆ *On vehicles on which the fuel pre-supply pump -G6- is actuated directly by the engine control unit, a fault may be entered in the fault memory of the engine control unit if the supplementary heater control unit -J364- does not transmit a test pulse after starting the engine. If necessary, check the signal input at the corresponding engine control unit ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *In the Audi A6, fuel for the auxiliary heater is drawn out of the baffle housing of the fuel delivery unit. To stop the baffle housing running empty in auxiliary heating mode (and the metering pump -V54- drawing in air instead of fuel), the fuel pre-supply pump -G6- is briefly switched on by the supplementary heater control unit -J364- (via the fuel pump relay for supplementary heater -J749- or the corresponding engine control unit) at the start of, during and on completion of auxiliary heating mode with the engine stopped to fill the baffle housing of the fuel delivery unit in the fuel tank with fuel ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*

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7.3.10 Test step 5 (connection between auxiliary heater and circulation pump -V55-)

Vehicle diagnostic, testing and information system -VAS 5051 A- , measurement mode: Multimeter, resistance measurement (0...20 kΩ)					
Test step	Heater connection	Testing of	• Test conditions – Additional operations	Specified value	Remedies if specified value not attained
5.1	Connector C, contacts 2 and 3	Wiring to	• Ignition switched off.	– approx. 10 kΩ	– Use current flow diagram to check and repair wiring. – Replace circulation pump -V55-
5.2	Connector C, contact 2 and connector A, contact 2	Wiring to circulation pump -V55-	• Ignition switched off.	– ∞ Ω	– Replace circulation pump -V55-



Note

- ◆ *Checking actuation of the circulation pump -V55- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *Actual internal resistance of circulation pump -V55- cannot be measured on account of electronics fitted. This test can only be used to establish open circuit or short to earth (e.g. on account of trapped wire).*
- ◆ *If resistance at connector C between contacts 3 and 2 is greater than 20 kohms or less than 20 mohms, fault is detected by auxiliary heater control unit -J364-.*
- ◆ *If voltage of 12 VDC is applied to circulation pump -V55-, current input is between 0.2 and 1.0 A (depending on back pressure of coolant conveyed).*

7.4 Checking auxiliary heater components

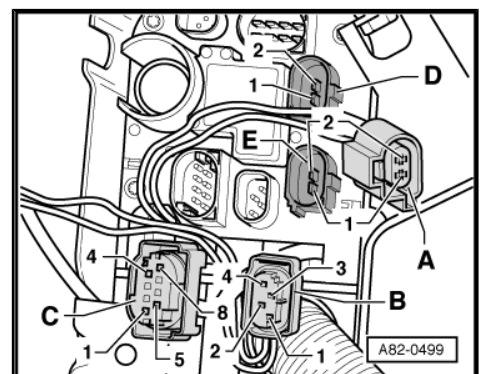
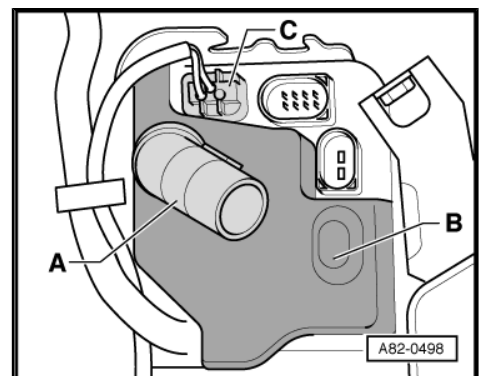
7.4.1 Measuring instruments and test equipment required

- ◆ Vehicle diagnostic, testing and information system -VAS 5051 A- with multimeter leads -VAS 5051/7-, probe -VAS 5051/8- and current probe 50 A -VAS 5051/9-
- ◆ Voltage tester -V.A.G 1527/B-
- ◆ Adapter set -V.A.G 1594/C-

7.4.2 Preparation for testing

- Remove the auxiliary heater ⇒ [page 111](#) (all models except Audi S6), ⇒ [page 115](#) (Audi S6).
- Unplug connector -C- to circulation pump -V55- from auxiliary heater control unit -J364-.
- Detach combustion air intake pipe -A- ⇒ [page 141](#).
- Use screwdriver to prise cover -B- over connector console off auxiliary heater control unit -J364- ⇒ [page 135](#) (dismantling and assembling auxiliary heater).

- ◆ Numbering of contacts at connectors -A-, -B-, -C- and in connector housings -D- and -E-



7.4.3 List of electrical tests.

Test step	Component checked	Page
1	Glow plug with flame monitor -Q8- Earth connection between auxiliary heater control unit -J364- and glow plug with flame monitor -Q8-	⇒ page 72
2	Overheating fuse -S24- / overheating sensor -G189- and temperature sensor -G18-	⇒ page 73
3	Fuel pre-heating heater element -Z66- and fuel shut-off valve -N109- – Only fitted with auxiliary heater version for diesel fuel	⇒ page 76



Note

Depending on the version of the supplementary heater control unit -J364-, the overheating fuse -S24- may also be referred to as overheating sensor -G189-.

7.4.4 Test step 1 (glow plug with flame monitor -Q8-)

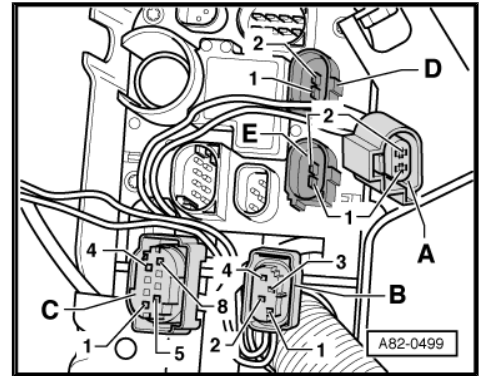
Vehicle diagnostic, testing and information system -VAS 5051 A- , measurement mode: Multimeter, resistance measurement (0...100 Ω)					
Test step	Heater connection	Testing of	• Test conditions – Additional operations	Specified value	Remedies if specified value not attained
1.1	Connector A, contacts 1 and 2	Glow plug with flame monitor -Q8- and corresponding wiring		– Greater than 0.15 and less than 1.5 Ω.	– Replace glow plug (with burner element)
1.2	Connector A, contact 1 and auxiliary heater housing			– ∞ Ω.	– Replace glow plug (with burner element)



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i Note

- ◆ At 25 °C, internal resistance of glow plug is 0.220 Ω +/- 0.033 Ω (rated resistance). It increases linearly with increasing temperature and reaches approx. 0.790 Ω +/- 0.170 Ω at 1000 ° C.
- ◆ Resistances of less than 1 Ω can no longer be measured with the required accuracy using workshop equipment. This test can therefore only be used to detect major component damage.
- ◆ Resistance characteristic curve of glow plug with flame monitor -Q8- enables auxiliary heater control unit -J364- to detect whether a flame has formed in heater.
- ◆ If a voltage of 10 V is applied to the glow plug with flame detector, the current input is between 9 and 14 A.
- ◆ If the resistance at connector -A- between contacts 1 and 2 is greater than 1.5 kohms or less than 0.5 mohms, a fault is detected by the supplementary heater control unit -J364- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- ◆ Checking actuation of the glow plug with flame monitor -Q8- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.



Vehicle diagnostic, testing and information system -VAS 5051 A- , measurement mode: Multimeter, resistance measurement (0...100 Ω)					
Test step	Heater connection	Testing of	• Test conditions – Additional operations	Specified value	Remedies if specified value not attained
1.3	Connector housing E, contact 2 and connector housing D, contact 2	Earth connection in auxiliary heater control unit -J364- for glow plug with flame monitor -Q8-		– Less than 1.5 ~Ω.	– Replace auxiliary heater control unit -J364- (with combustion air blower -V6-)

7.4.5 Test step 2 (overheating fuse -S24- / overheating sensor -G189- and temperature sensor -G18-)

i Note

- ◆ Depending on the version of the supplementary heater control unit -J364- , the overheating fuse -S24- may also be referred to as overheating sensor -G189-.
- ◆ As of Model Year 2006, auxiliary heaters with an improved overheating fuse -S24- / overheating sensor -G189- and an improved temperature sensor -G18- are gradually being introduced (better protection of wiring against ingress of moisture).

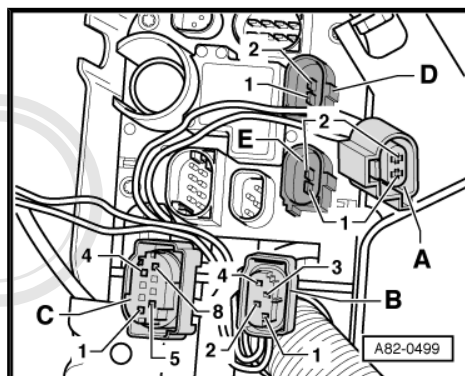
Vehicle diagnostic, testing and information system -VAS 5051 A- , measurement mode: Multimeter, resistance measurement (0...200 Ω)

Test step	Heater connection	Testing of	• Test conditions – Additional operations	Specified value	Remedies if specified value not attained
2.1	Connector C, contacts 3 and 7	Overheating fuse - S24- / overheating sensor -G189- and corresponding wiring		– Greater than 50 and less than 150 $\sim\Omega$.	– Replace wiring with overheating fuse - S24- / overheating sensor -G189- and temperature sensor - G18-
2.2	Connector C, contact 3 and auxiliary heater housing			– $\infty \Omega$.	– Replace wiring with overheating fuse - S24- / overheating sensor -G189- and temperature sensor - G18-



Note

- ♦ Up to a temperature of approx. 110 °C, resistance of overheating fuse -S24- is less than 150 Ω . Resistance value increases sharply as of a temperature of 120 °C [⇒ page 75](#).
- ♦ Depending on version of auxiliary heater control unit -J364-, overheating fuse -S24- may also be referred to as overheating sensor -G189-.
- ♦ If the resistance at connector -C- between contacts 3 and 7 is greater than 5 kohms, the supplementary heater control unit -J364- interrupts actuation of the metering pump -V54- and stores a fault $\Rightarrow$ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

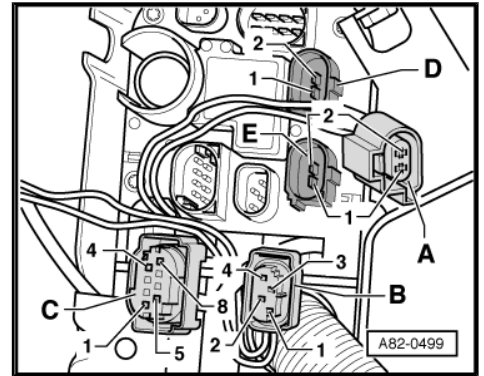


Vehicle diagnostic, testing and information system -VAS 5051 A- , measurement mode: Multimeter, resistance measurement (0...10 k Ω)

Test step	Heater connection	Testing of	• Test conditions – Additional operations	Specified value	Remedies if specified value not attained
2.3	Connector C, contacts 2 and 6	Temperature sensor -G18- and corresponding wiring		– Greater than 100 Ω and less than 20 $\sim k\Omega$.	– Replace wiring with overheating fuse - S24- / overheating sensor -G189- and temperature sensor - G18-
2.4	Connector C, contact 2 and auxiliary heater housing			– $\infty \Omega$.	– Replace wiring with overheating fuse - S24- / overheating sensor -G189- and temperature sensor - G18-

Note

- ◆ At 25 °C, resistance of temperature sensor -G18- is approx. 2.6 kΩ. It decreases with increasing temperature
⇒ [page 75](#)
- ◆ Depending on the version of the supplementary heater control unit -J364-, the overheating fuse -S24- may also be referred to as overheating sensor -G189-.
- ◆ By way of the resistance of the temperature sensor -G18-, the supplementary heater control unit -J364- detects the coolant temperature in the auxiliary heater and controls the various operating statuses and outputs in line with the switching temperatures stored ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- ◆ If resistance between connector -C-, contacts -2- and -6- is greater than 200 kohms or less than 50 ohms, fault is detected by auxiliary heater control unit -J364-.



7.4.6 Characteristic resistance curve of overheating fuse -S24- / overheating sensor -G189-

Note

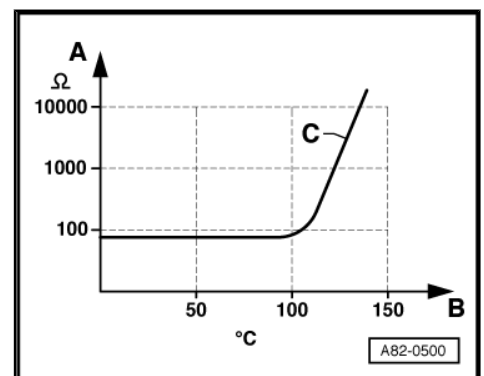
Depending on version of auxiliary heater control unit -J364-, overheating fuse -S24- may also be referred to as overheating sensor -G189-.

-A- Resistance in Ω (ohms)

-B- Temperature of overheating fuse -S24- / overheating sensor -G189- in °C

-C- Resistance profile as a function of temperature

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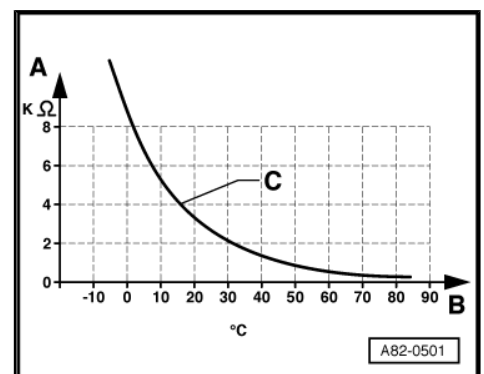


7.4.7 Characteristic resistance curve of temperature sensor -G18-

-A- Resistance in kΩ (kilo ohms)

-B- Temperature of temperature sensor -G18- in °C

-C- Resistance profile as a function of temperature



7.4.8 Test step 3 (fuel pre-heating heater element -Z66- and fuel shut-off valve - N109-)



Note

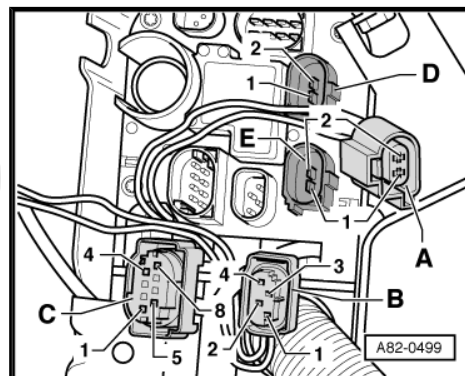
- ♦ Fuel pre-heating heater element -Z66- is only provided on auxiliary heater version for diesel fuel.
- ♦ The fuel shut-off valve -N109- is only provided for the auxiliary heater version for diesel fuel to be gradually introduced as of 05.2008.

Vehicle diagnostic, testing and information system -VAS 5051 A- , measurement mode: Multimeter, resistance measurement (0...10 Ω)					
Test step	Heater connection	Testing of	• Test conditions – Additional operations	Specified value	Remedies if specified value not attained
3.1	Connector B, contacts 3 and 4	Fuel pre-heating heater element -Z66- and corresponding wiring		– Greater than 1 and less than 15 Ω	– Burner element with glow plug with flame monitor -Q8-
3.2	Connector B, contact 3 and auxiliary heater housing			– ∞ Ω.	Replace fuel pre-heating heater element -Z66-



Note

- ♦ If resistance between connector -B-, contacts -3- and -4- is greater than 5 kohms or less than 50 ohms, fault is detected by auxiliary heater control unit -J364- .
- ♦ If voltage of 9 VDC is applied to fuel pre-heating heater element -Z66- , current input at low ambient temperature is up to approx. 4.5 A (current input decreases as soon as heater element warms up).
- ♦ At present, the glow plug with flame monitor -Q8- and the fuel pre-heating heater element -Z66- (and, if fitted, the fuel shut-off valve -N109- can only be replaced together with the burner element (wires welded in a joint grommet) ⇒ [page 135](#) .
- ♦ If a voltage of 9 V DC is applied to the fuel pre-heating heater element -Z66- , the current input at low ambient temperature is up to approx. 4.5 A (the current input decreases as soon as the heater element warms up).



Vehicle diagnostic, testing and information system -VAS 5051 A- , measurement mode: Multimeter, resistance measurement (0...20 Ω)					
Test step	Connection at heater	Checking of	• Test conditions – Additional operations	Specification	Measures to be taken if reading does not match specification
3.3	Connector B, contacts 1 and 2	Fuel shut-off valve -N109- and corresponding wiring		– Greater than 110 and less than 150 Ω	– Burner element with glow plug with flame monitor - Q8- , fuel pre-heating heater element -Z66- Replace fuel shut-off valve -N109-
3.4	Connector B, contact 1 and auxiliary heater housing			– ∞ Ω.	

i Note

The fuel shut-off valve -N109- closes off the fuel pipe when the auxiliary heater is switched off. After switching on the auxiliary heater (shortly before the metering pump -V54- is actuated), the control unit -J364- supplies power to the fuel shut-off valve -N109- , the fuel shut-off valve -N109- opens and allows fuel to flow into the auxiliary heater.

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8 Functional description of auxiliary heater



Note

- ◆ *The auxiliary heater is switched on and off by way of the control unit in dash panel insert -J285-, the auxiliary heater remote control hand transmitter or the operating and display unit, Climatronic control unit -J255-.*
- ◆ *If "auxiliary heating/auxiliary ventilation" function has been set via "Timer" function in MMI (Multi Media Interface) or if auxiliary heating/auxiliary ventilation is activated via remote control hand transmitter, air conditioner operating and display unit (Climatronic control unit -J255-) determines on the basis of set "Specified temperatures" and measured "Actual temperature" whether auxiliary heater is switched on or only "Auxiliary ventilation" function is activated.*
- ◆ *On vehicles on which auxiliary heater is actuated as additional heater (only applies at present to vehicles with diesel engine and without electric additional air heater), operating and display unit (Climatronic control unit -J255-) effects actuation (by way of convenience data bus system) if additional heat output is required to obtain temperature set in passenger compartment. This function can be deactivated by driver via operating and display unit (Climatronic control unit -J255-) if additional heat output is not desired (e.g. by selecting "Econ" function). The "Adaption" function can be used to deactivate or restrict this function in the supplementary heater control unit -J364- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *Depending on amount of heat generated by auxiliary heater (and engine) and emitted by heat exchangers of air conditioner unit, heater may remain for a lengthy period in full load, part load (control mode) or control interval status.*
- ◆ *Circulation pump -V55- can be activated to assist engine coolant pump even with auxiliary heater switched off (and on vehicles with diesel engines in "Additional heating" function). On Audi A6, pump is always activated at present in additional heating mode, irrespective of coolant temperature.*
- ◆ *To ensure best possible combustion in heater, metering pump -V54- (clock frequency) and combustion air blower -V6- (voltage) are regulated over the entire sequence.*
- ◆ *The temperatures given in the functional sequence and function chart are approximate.*
- ◆ *If the heater has been interlocked (fully deactivated) on account of a fault (e.g. flame interruption or overheating), it cannot be re-activated until the fault memory has been read out, the content of the fault memory erased and - depending on the cause of the trouble - the interlock cancelled by way of the "Adaption" function ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*

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- ◆ *If no flame is generated on the first attempted start, the supplementary heater control unit -J364- interrupts the process and attempts re-starting once any combustion residue has been blown out with the combustion air blower -V6- ("Start repetition" is not provided with all versions; if available (and set by way of the "Adaption" function), it may only be implemented at very low ambient temperatures depending on the software version). If no flame is generated even on start repetition, the supplementary heater control unit -J364- is deactivated ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *If the heater is to be switched off during the start procedure, the instantaneous position reached in the start sequence governs whether the heater is switched off immediately or whether run-on is necessary. (burning off, cooling down).*
- ◆ *If coolant temperature exceeds 82 °C before attaining full load mode (e.g. with warm engine), heater switches to part load mode. If coolant temperature continues to increase and exceeds 88 °C (98 °C in first 6 minutes after switch-on), auxiliary heater switches to control interval.*
- ◆ *Various auxiliary heater functions are constantly monitored during operation (auxiliary heater is switched off as soon as a fault occurs).*
- ◆ *In the Audi A6, fuel for the auxiliary heater is drawn out of the baffle housing of the fuel delivery unit. To stop the baffle housing running empty in auxiliary heating mode (and the metering pump -V54- drawing in air instead of fuel), the fuel pre-supply pump -G6- is briefly switched on by the supplementary heater control unit -J364- (via the fuel pump relay for supplementary heater -J749- or the corresponding engine control unit) at the start of, during and on completion of auxiliary heating mode with the engine stopped to fill the baffle housing of the fuel delivery unit in the fuel tank with fuel ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *Auxiliary/supplementary heating operation can be monitored by way of the vehicle diagnostic, testing and information system -VAS 5051 A- ("reading measured value block" function). There may however be slight deviations between the values shown in the illustrations and the actual switching points ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051. .*
- ◆ *As of Model Year 2009, a modified data bus diagnostic interface -J533- is gradually being introduced ⇒ Electronic parts catalogue . Vehicles with the modified version of -J533- are only to be fitted with auxiliary heaters (with supplementary heater control unit -J364-) with part number 4F0 265 081 as of index "M" ⇒ Electronic parts catalogue . If an auxiliary heater with part number 4F0 265 081 up to index "L" is fitted in a vehicle with modified -J533- , shut-off of the auxiliary heater on account of "Undervoltage" (e.g. in the event of an insufficiently charged battery -A-) by -J533- is not possible ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .*
- ◆ *As the additional heater only operates when the engine is running, it is scarcely perceptible in heating mode. Heater run-on is audible if engine is switched off.*

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8.1 Functional description of auxiliary heater

8.1.1 Prerequisites for sequence described on the following pages (when switching on heater):

- Coolant circuit bled and coolant temperature less than 20 °C
- Battery -A- adequately charged
- Sufficient fuel in tank.
- No faults stored in fault memory of auxiliary heater control unit -J364-
- Ignition off and "auxiliary heating" mode set



Note

Only the main items in the function sequence are presented on the following pages. It should be noted that certain processes taking place in the background are not always perceptible (audible or measurable).

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
1a	Auxiliary heater cut-in signal • From MMI (Multi Media Interface) – Via data bus system (setting is made by way of rotary knob/pushbutton in centre console) ➔ page 9 • From operating and display unit (Climatronic control unit -J255-) in "Convenience" version – By pressing "Econ" button (function must have been set via adaption in Climatronic control unit -J255-) • From Vehicle diagnostic, testing and information system -VAS 5051 A- – Via "Basic setting" function		
Continued - No. 2			

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
1b	Auxiliary heating/auxiliary ventilation cut-in signal • From MMI (Multi Media Interface) – Via data bus system (based on pre-set time setting "Timer function") ➔ page 9 • From auxiliary heating radio controlled receiver - R64- – By pressing "ON button" on hand transmitter		

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
	Operating and display unit, Climatronic control unit - J255- interrogation (by way of data bus system)	Climatronic control unit -J255- decides heating mode is not required to achieve specified temperature in passenger compartment	Auxiliary ventilation (summer mode) ⇒ No. 11
Continued - No. 2			

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No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
1c	Additional heater cut-in signal (vehicles with diesel engine only)		
	From operating and display unit (Climatronic control unit -J255-) (via data bus system; vehicles with diesel engine only; function must have been set via adaption in Climatronic control unit -J255-)		
	This function has not been deactivated in the supplementary heater control unit -J364- by way of the "Adaption" function	The function has been deactivated in the adaption routine on account of the vehicle equipment	Cheek the vehicle equipment and alter the adaption if applicable.
Continued - No. 2			

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
2	Initiation of start procedure		
	- Interrogation of fault memory - Interrogation of voltage at heater - Interrogation of information from energy management control unit -J644- - Monitoring of all electrical components and input signals. - Interrogation of glow plug with flame monitor -Q8- - Interrogation of coolant temperature in heater (less than 81 °C)	- Fault interlock entered - Voltage is or becomes lower than specified cut-off voltage - Fault detected - Resistance of glow plug with flame monitor -Q8- outside specified range. - Coolant temperature (greater than 81 °C)	- Termination of starting procedure/fault/off - Termination of starting procedure (entry in fault memory)/fault/off - see above - see above - Switchover to control interval (No. 7)
Continued - No. 3			

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
3	Start		

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
	– Monitoring as for No. 2 • Circulation pump -V55- on (regulated). – Delivery rate is dependent upon adaption and temperature of coolant in auxiliary heater • Actuation of fuel pump for presupply -G6- – Duration of actuation and repetition rate in auxiliary heating mode are only dependent upon adaption when engine is stopped. • Actuation of operating and display unit, Climatronic control unit -J255- on (auxiliary heater only) – As soon as coolant temperature equals or exceeds +30 °C • Actuation of glow plug with flame monitor -Q8- on (regulated). • Actuation of combustion air blower -V6- on (regulated). • Actuation of metering pump -V54- on (regulated). • Actuation of coolant shutoff valve -N279- on (regulated). – Actuation is dependent upon adaption and temperature of coolant in auxiliary heater	⇒No. 2	⇒No. 2
Continued on next page			

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
3	Starting (continued)		
	Stabilisation time • Start of "Full-load" combustion • Switching of glow plug with flame monitor - Q8- from "Glow plug" to "Flame monitor" – Interrogation of resistance of glow plug with flame monitor -Q8- (remains hot)	Resistance of glow plug with flame monitor -Q8- outside specified range Resistance of glow plug with flame monitor -Q8- outside specified range (even after start repetition)	Termination of starting procedure (1x start repetition)⇒ No. 2 Termination of starting procedure (entry in fault memory)/ fault/off
Continued - No. 4			



Note

- ◆ "Start" sequence is described on Page ⇒ [page 90](#).
- ◆ Actuation of circulation pump -V55- is governed by encoding and adaption.
- ◆ Actuation of the coolant shut-off valve -N279- is governed by the temperature of the coolant, the vehicle operating status and the adaption.
- ◆ If no flame is generated on the first attempted start, the supplementary heater control unit -J364- interrupts the process and attempts re-starting once any combustion residue has been blown out with the combustion air blower -V6- ("Start repetition" is not provided with all versions; if available and released by way of the adaption, it may only be implemented at very low ambient temperatures depending on the software version). The supplementary heater control unit -J364- is deactivated if repeated starting also fails to produce a flame.

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
4	"Full-load" combustion (maximum heat output)		
	– Monitoring as for No. 2 – Interrogation of information from energy management control unit -J644- – Voltage (at heater) remains in excess of that required – No interruption of heating – Coolant temperature increases and reaches 82 °C	⇒No. 2 – Shutoff request is not transmitted – Voltage drops below specified cut-out voltage – Flame goes out – Coolant temperature remains below 82 °C	⇒No. 2 – Burn-off (entry in fault memory)/ fault/off – Burn-off and re-start ⇒ No. 2 – Heater remains in full load mode until switched off
Continued - No. 5			



Note

"Change from full to part-load mode" sequence is described on Page ⇒ [page 94](#).

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
5	Part-load combustion (approx. 50% of heat output)		
	– Monitoring as for No. 4 • Actuation of metering pump -V54- with reduced clock frequency • Actuation of combustion air blower -V6- at reduced voltage – Coolant temperature increases and reaches 88 °C (98 °C)	⇒No. 4 – Coolant temperature remains between 65 and 88 °C	⇒No. 4 – Heater remains in part-load mode until switch-off

Note

- ◆ “Change from full to part-load mode” sequence is described on Page [⇒ page 94](#).
- ◆ During first 6 minutes after activation, auxiliary heater does not switch from part-load mode to control interval until coolant temperature is approx. 98 °C. This prevents several consecutive auxiliary heater starts from control interval under certain operating conditions.

Note

"Burn-off/run-on" sequence is described on Page ⇒ [page 97](#).

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
	Coolant temperature drops below 70 °C	Coolant temperature continues to increase (engine runs and heats up coolant) Coolant temperature remains between 77 and 88 °C (98 °C) Coolant temperature drops below 125 °C	Heater remains in control interval until switched off If shut-off, auxiliary heater cuts out without run-on see above Fault (entry in fault memory)/off/fault interlock

Continued - No. 8

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
8	Start from control interval - Monitoring as for No. 2 - Actuation of glow plug with flame monitor -Q8- (regulated) - Actuation of combustion air blower -V6- (regulated) - Actuation of metering pump -V54- (regulated) Stabilisation time - Start of "full or part-load" heating operation - Mode dependent upon coolant temperature	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 © AUDI AG. → No. 2	→ No. 2

Continued on next page

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
8	Start from control interval (continued) - Switching of glow plug with flame monitor - Q8- from glow plug to flame monitor - Interrogation of resistance of glow plug with flame monitor -Q8- (remains hot) - Combustion (continued - no. 4)	Resistance of glow plug with flame monitor -Q8- outside specified range Resistance of glow plug with flame monitor -Q8- outside specified range (even after start repetition)	Termination of starting procedure (1x start repetition)→ No. 2 Termination of starting procedure (entry in fault memory)/ fault/off

Continuation: No. 9 (a or b)

 Note

Starting from control interval takes place as described on Page [⇒ page 90](#) . The times for the various sequences do however differ from those for fresh starting (e.g. shorter pre-heating and fuel delivery periods) as heater is already at operating temperature. Depending on the version, it may only be possible to start the auxiliary heater in part load mode instead of full load mode from the control interval for example.

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
9a	"Auxiliary heater" shutoff signal • From MMI (Multi Media Interface) – Via data bus system (setting by way of rotary knob/ pushbutton in centre console or on completion of set operating time) ⇒ page 9 • From operating and display unit (Climatronic control unit -J255-) in "Convenience" version – By pressing "Econ" button (function must have been set via adaption in Climatronic control unit -J255-). • From auxiliary heating radio controlled receiver -R64- – By pressing "Off" button on hand transmitter • From Vehicle diagnostic, testing and information system -VAS 5051 A- – Via "Basic setting" function		
Continued - No. 10			

 Note

- ◆ *In "auxiliary heating mode", auxiliary heater is shut off automatically after max. 60 minutes by MMI or by operating and display unit (Climatronic control unit -J255-). Operating time of auxiliary heater/auxiliary ventilation is set in MMI [⇒ page 9](#) .*
- ◆ *If heater is in control interval when switched off, it cuts out without burn-off and run-on.*
- ◆ *For a description of the "Burn-off/run-on" sequence, refer to [⇒ page 97](#) .*

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
9b	"Additional heater" shutoff signal		

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
	- Shutoff signal from operating and display unit, Climatronic control unit -J255- (by way of data bus system) - On switching off engine - Additional heat output to achieve specified passenger compartment temperature is no longer necessary. "Econ" mode was selected. - Coolant or ambient temperature has exceeded a specified value.		

Continued - No. 10



Note

- The auxiliary heater remains activated in "supplementary heating mode" for as long as requested by the operating and display unit, Climatronic control unit -J255-. There is no maximum operating time stored.

- If heater is in control interval when switched off, it cuts out without burn-off and run-on.

- "Burn-off/run-on" sequence is described on Page [⇒ page 97](#).

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No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
10	Burn-off		
	- Monitoring as for No. 2 - Actuation of metering pump -V54- off - Actuation of circulation pump -V55- off - Actuation of operating and display unit (Climatronic control unit -J255-) off - Actuation of combustion air blower -V6- at regulated voltage - Actuation of glow plug with flame monitor -Q8- (post-glow, regulated) - Actuation of glow plug with flame monitor -Q8- off - Interrogation of resistance of glow plug with flame monitor -Q8- (becomes colder) - Actuation of fuel pump for presupply -G6- - Duration of actuation is only dependent upon adaptation when engine is stopped.	⇒No. 2	⇒No. 2
	OFF	Resistance of glow plug with flame monitor - Q8- outside specified range	Burn-off (entry in fault memory)/fault/off

End of auxiliary heating mode

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
11	Auxiliary ventilation		
	Cut-in signal • From MMI (Multi Media Interface) – Via data bus system (setting by way of rotary knob/ pushbutton in centre console or on basis of pre-set time setting "Timer function") ⇒ page 9 • From operating and display unit (Climatronic control unit -J255-) in "Convenience" version – By pressing "Econ" button (function must have been set via adaption in Climatronic control unit -J255-). • From auxiliary heating radio controlled receiver -R64- – By pressing "ON button" on hand transmitter		
Continued on next page			

No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
11	Auxiliary ventilation (continued)		
	Cut-in signal (continued) • Operating and display unit, Climatronic control unit - J255- interrogation (by way of data bus system) • Operating and display unit (Climatronic control unit - J255- interrogation (via data bus system) – Auxiliary ventilation mode	The Climatronic control unit - J255- decides that heating mode is required to attain the specified temperature in the passenger compartment	Auxiliary heating (winter mode) ⇒ No. 2
	– Interrogation of information from energy management control unit -J644- by operating and display unit (Climatronic control unit -J255-)	Voltage is or becomes lower than specified cut-off voltage	Termination of auxiliary ventilation mode (entry in fault memory of Climatronic control unit - J255-) / off
Continued - No. 12			

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Note

- ◆ In auxiliary ventilation mode, auxiliary heater control unit -J364- is only required to switch signal from auxiliary heating radio controlled receiver -R64- to data bus system.
- ◆ If auxiliary ventilation mode has been set in MMI or if operating and display unit (Climatronic control unit -J255-) has decided that auxiliary heating mode is not required to achieve specified temperature in passenger compartment, auxiliary heater control unit -J364- is not actuated.

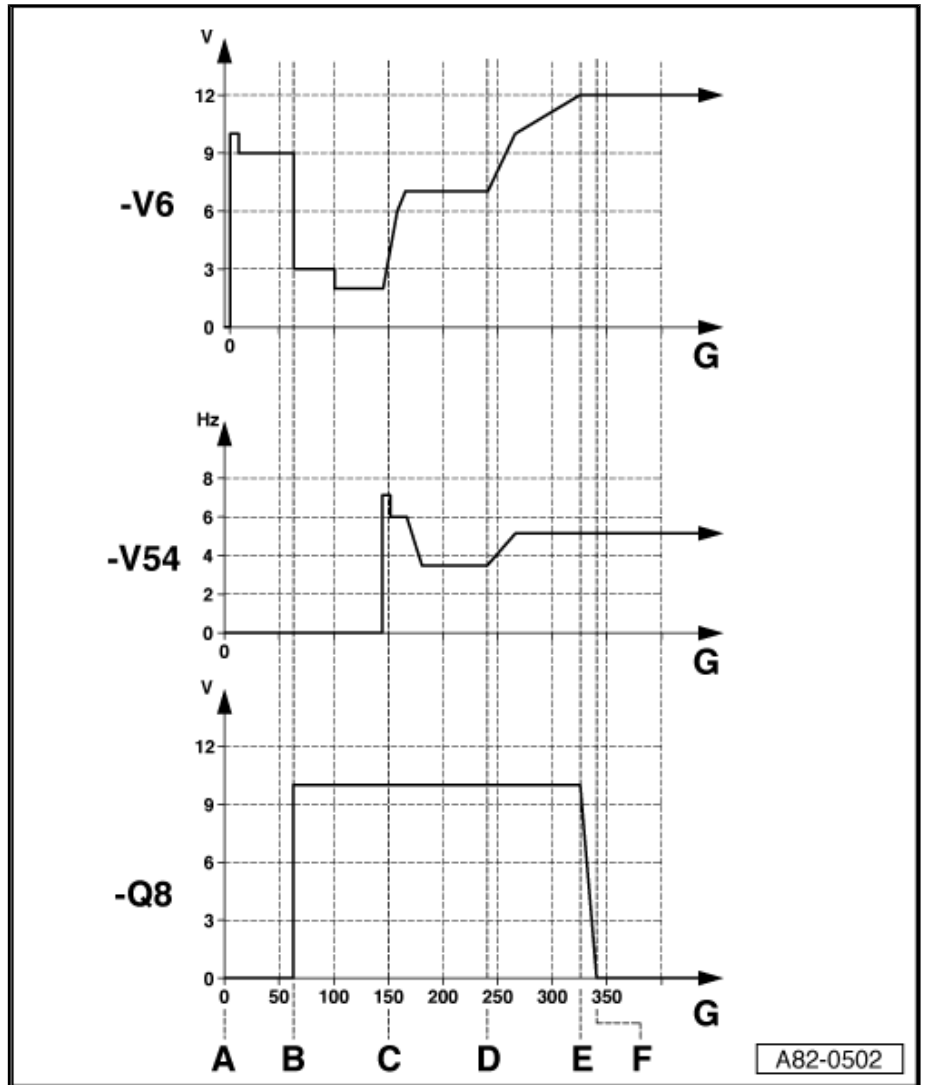
No.	Control sequence	Possible cause of deviation	Continuation of sequence following deviation
12	Auxiliary ventilation Cut-out signal • From MMI (Multi Media Interface) – Via data bus system (setting by way of rotary knob/ pushbutton in centre console or on completion of set operating time) ⇒ page 9 • From auxiliary heating radio controlled receiver -R64- – By pressing “Off” button on hand transmitter • Actuation of operating and display unit, Climatronic control unit -J255- off • OFF		
End of auxiliary ventilation mode			



Note

In auxiliary ventilation mode, auxiliary heater control unit -J364- is only required to switch signal from auxiliary heating radio controlled receiver -R64- to convenience data bus system.

8.2 Control sequence when starting the auxiliary heater (also as additional heater)

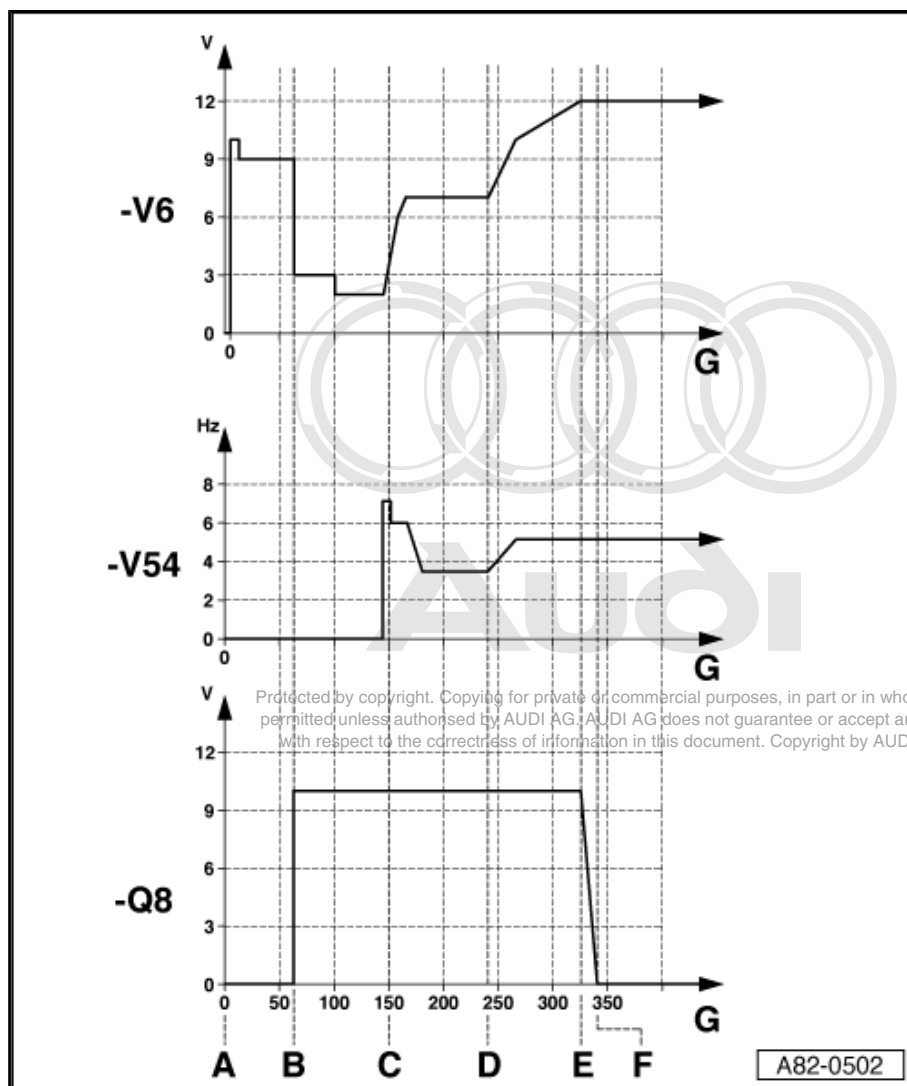


Note

- ◆ Starting sequence outlined below applies at a coolant temperature between -20°C and -5°C . If coolant temperature is lower or higher, various actuation times are adapted accordingly by auxiliary heater control unit -J364- (e.g. pre-heating, fuel delivery times etc. are longer or shorter).
- ◆ In Audi A6, coolant shutoff valve -N279- is presently actuated depending upon coolant temperature, in auxiliary heating mode (small coolant circuit). As soon as a set coolant temperature is exceeded or engine is started, coolant shutoff valve -N279- is actuated via curve stored in auxiliary heater control unit -J364- [⇒ page 102](#).
- ◆ At present, fuel pre-heating heater element -Z66- (only available for diesel version) is actuated when starting auxiliary heater, irrespective of coolant temperature.
- ◆ Air conditioner operating and display unit (Climatronic control unit -J255-) is requested via convenience data bus system in order to activate fresh-air blower -V2- as soon as coolant temperature in auxiliary heater exceeds 30°C .
- ◆ At present, circulation pump -V55- is not actuated depending upon coolant temperature, in auxiliary heating mode [⇒ page 108](#).

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8.2.1 Auxiliary heater components



-V6- = Combustion air blower -V6-

- Voltage at combustion air blower -V6- in V (volts)
- Speed is regulated by auxiliary heater control unit -J364- via voltage.

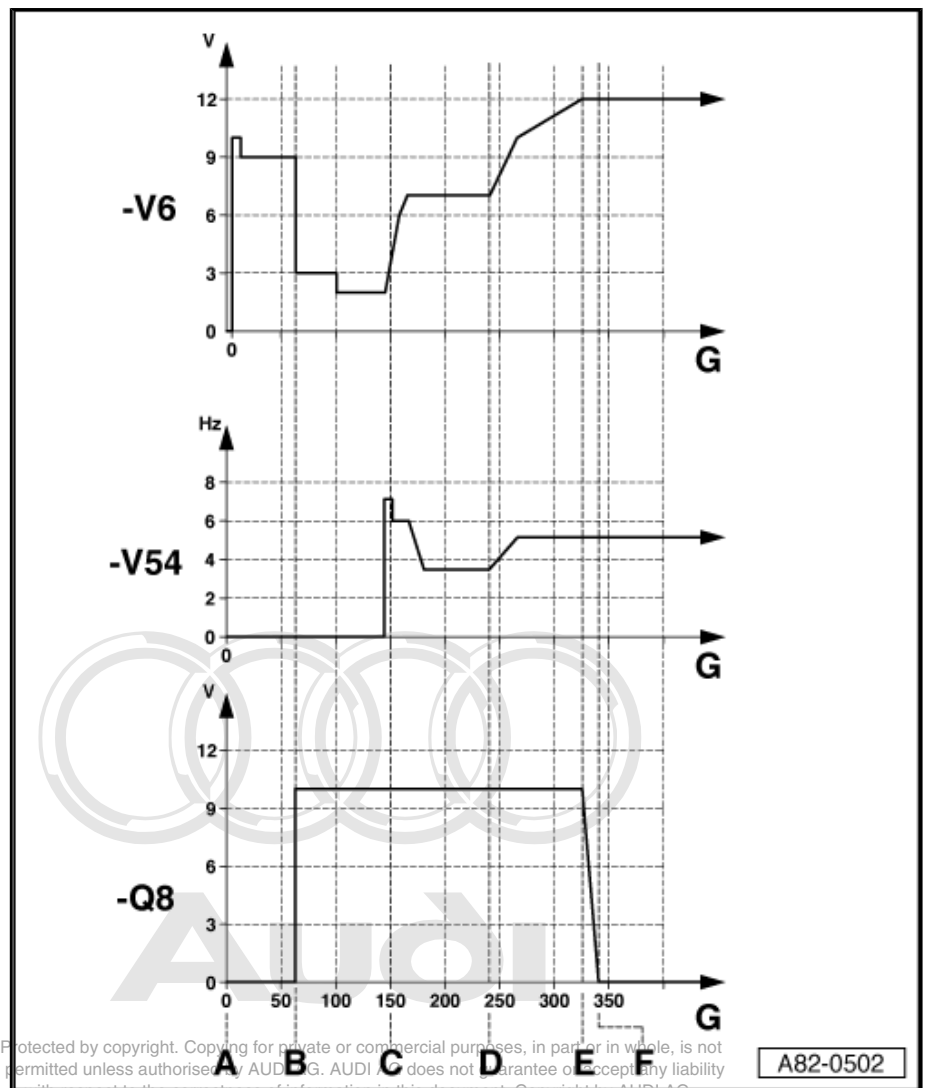
-V54- = Metering pump -V54-

- Actuation from auxiliary heater control unit -J364- is effected in full-load mode with approx. 5.85 Hz (Hertz: strokes per sec.) for petrol version and 5.13 Hz for diesel version.

-Q8- = Glow plug with flame monitor -Q8-

- Glow plug is actuated at a voltage of approx. 10 V.
- Voltage is regulated by auxiliary heater control unit -J364- .
- Auxiliary heater control unit -J364- recognises that a flame has formed if resistance of glow plug with flame monitor -Q8- remains within a specified range after shutting off voltage (flame monitor).

8.2.2 Control sequence when starting the auxiliary heater (also as additional heater)



-A- = Cut-in signal for auxiliary heater (additional heater on vehicles with diesel engine)

- Auxiliary heater control unit -J364- receives request for activation (as auxiliary or additional heater) via convenience data bus system
- Component check (approx. 2 seconds)
- Auxiliary heater control unit -J364- checks connected components

-B- = Start of pre-heating

-C- = Commencement of starting sequence

-D- = Switchover in starting sequence to full-load mode

-E- = End of pre-heating time

- Voltage at glow plug with flame monitor -Q8- is reduced

- Flame stabilisation time

-F- = Start of full-load mode

- Interrogation of glow plug with flame monitor -Q8- as flame monitor
- Resistance of glow plug with flame monitor -Q8- must remain within a specified range after shutting off voltage.
- If there is no flame, the resistance of the glow plug with flame monitor -Q8- drops below the permitted level (the glow plug becomes colder) and the supplementary heater control unit -J364- terminates full load mode. On completion of run-on time stored in auxiliary heater control unit -J364- , auxiliary heater control unit -J364- attempts a second start. If there is again no flame, auxiliary heater control unit -J364- switches to fault status.
- Duration of full-load mode is dependent upon quantity of heat emitted by heat exchanger of air conditioner.
- The (air conditioner) operating and display unit, Climatronic control unit -J255- is actuated as soon as the specified temperature is attained (activation is requested via the data bus system as soon as the coolant temperature in the auxiliary heater exceeds 30 °C).

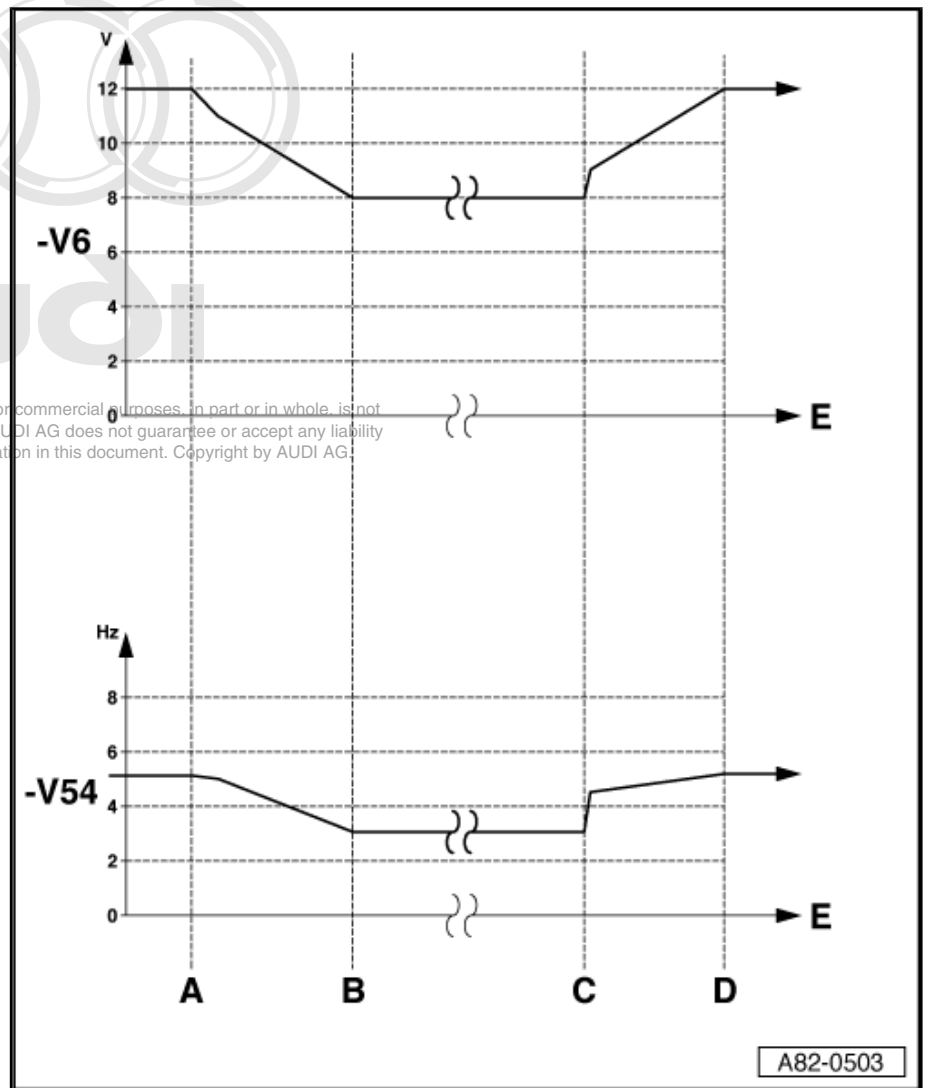
-G- = Operating time in seconds since activation

8.3 Auxiliary heater control sequence on load change (from full to part-load mode and vice versa)

Auxiliary heater components

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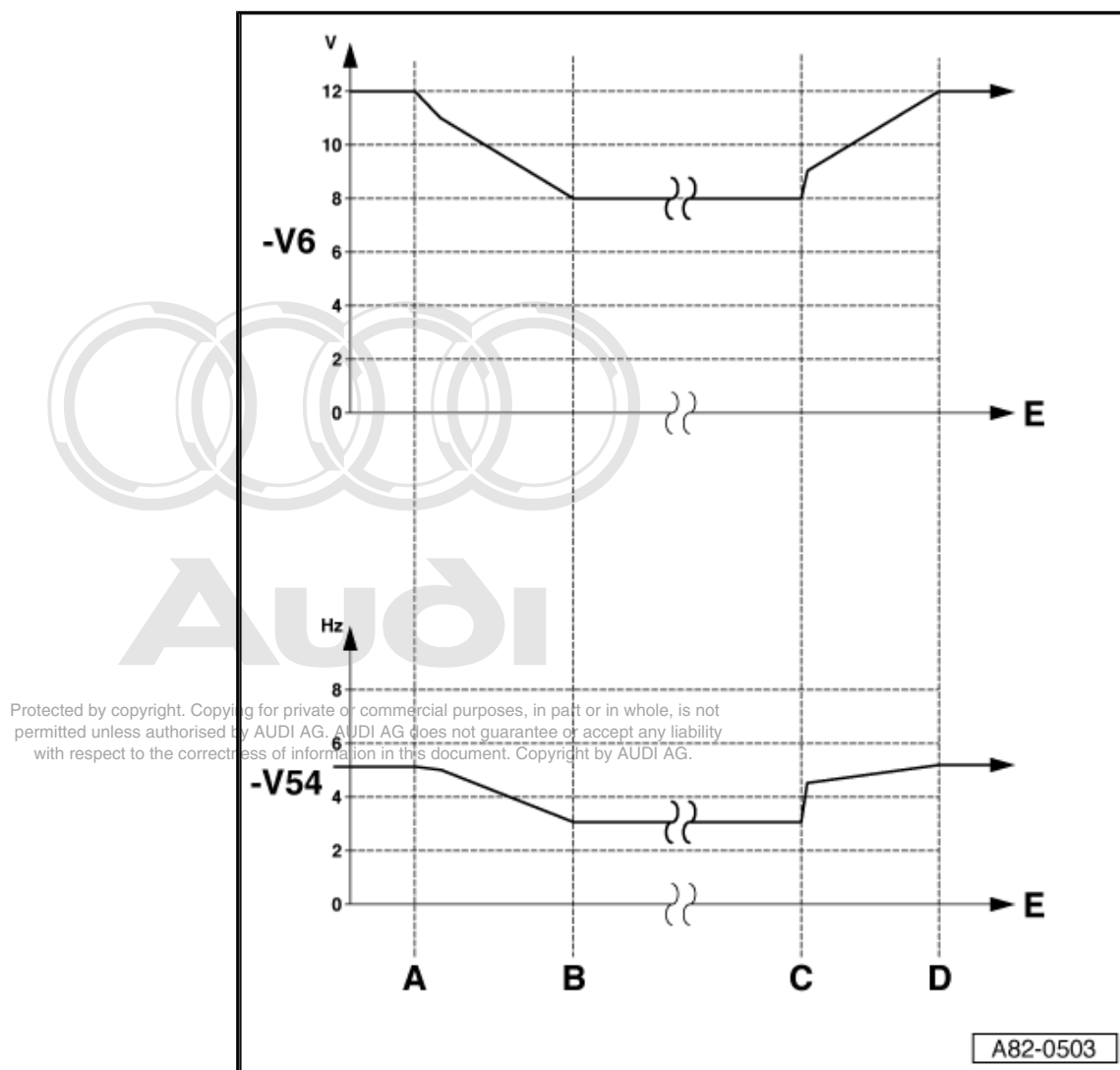
-V6- = Combustion air blower -V6-

- Voltage at combustion air blower -V6- in V (volts)
- Speed is regulated by auxiliary heater control unit -J364- via voltage.

-V54- = Metering pump -V54-

- Actuation from auxiliary heater control unit -J364- is effected in full-load mode with approx. 5.85 Hz (Hertz: strokes per sec.) for petrol version and 5.13 Hz for diesel version.
- Actuation from auxiliary heater control unit -J364- is effected in part-load mode with approx. 3.4 Hz for petrol version and 3.0 Hz for diesel version.

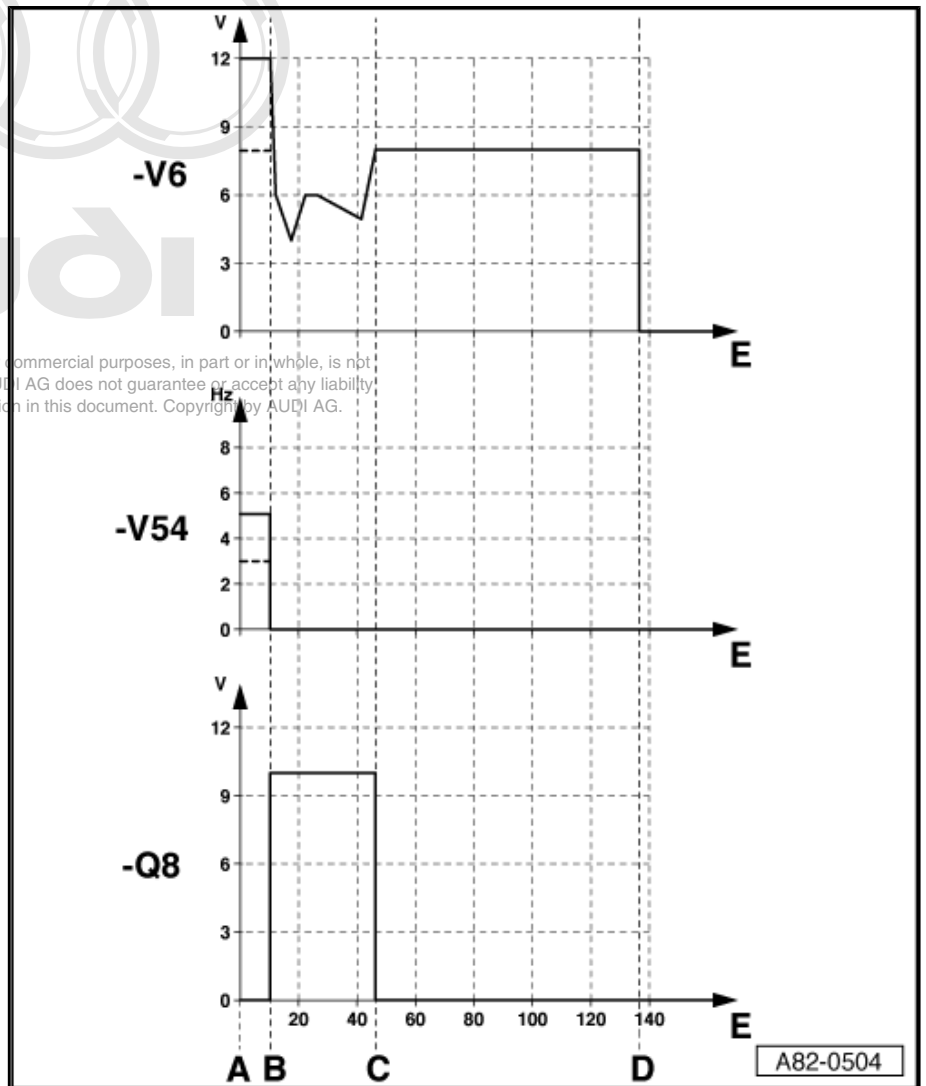
Control sequence on load change



- A- = End of full-load mode
 - Auxiliary heater requires approx. 25 seconds for switchover
- B- = Start of part-load mode
 - Duration of part-load mode is dependent upon quantity of heat emitted by heat exchanger of air conditioner.
- C- = End of part-load mode
 - Auxiliary heater requires approx. 25 seconds for switchover
- D- = Start of full-load mode
 - Duration of full-load mode is dependent upon quantity of heat emitted by heat exchanger of air conditioner.
- E- = Operating time

8.4 Control sequence on shutoff of auxiliary heater

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-V6- = Combustion air blower -V6-

-V54- = Metering pump -V54-

-Q8- = Glow plug with flame monitor -Q8-



Note

- ◆ Further information on auxiliary heater components ⇒ [page 92](#)
- ◆ Sequence outlined applies to shutoff of auxiliary heater from full-load mode.
- ◆ If auxiliary heater is shut off in part-load mode, various actuation times are adapted accordingly by auxiliary heater control unit -J364- (e.g. dashed line for combustion air blower -V6- and metering pump -V54-).
- ◆ If auxiliary heater is in control interval and receives shutoff signal via convenience data bus system, it cuts out without run-on.
- ◆ If, however, auxiliary heater is in a different operating mode at this point, auxiliary heater control unit -J364- determines run-on required and actuates the various components accordingly.

-A- = Shutoff signal for auxiliary heater (additional heater on vehicles with diesel engine)

- Auxiliary heater control unit -J364- receives request for shutoff (as auxiliary or additional heater) via convenience data bus system
- B- = End of auxiliary heating mode
 - Burn-off time
 - Glow plug is actuated for post-glow
 - Flame goes out as soon as fuel in auxiliary heater has been used up
- C- = Start of run-on
 - Interrogation of glow plug with flame monitor -Q8-
 - Auxiliary heater control unit -J364- checks resistance of glow plug with flame monitor -Q8- after switching off voltage; resistance must decrease (glow plug becomes cold, flame monitor).
 - Time for cooling down and removal of combustion gases from combustion chamber
- D- = End of run-on
 - Auxiliary heater switches to no-load status
- E- = Operating time in seconds since shutoff

8.5 Auxiliary heater temperature control curve



Note

- ◆ *Depending on the amount of heat generated in the auxiliary heater (and by the engine) and emitted by the heat exchanger of the air conditioner unit, the heater may remain for a lengthy period in full load, part load (control mode) or control interval status.*
- ◆ *The temperatures indicated below are approximate and may differ from the actual values depending on the auxiliary heater version.*
- ◆ *If auxiliary heater is in control interval and receives shutoff signal via convenience data bus system, it cuts out without run-on. If, however, auxiliary heater is in a different operating mode at this point, auxiliary heater control unit -J364- determines run-on required and actuates the various components accordingly.*

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-A- = Power output of auxiliary heater (also as additional heater) in kW (kilowatts)

-B- = Temperature of coolant in auxiliary heater in °C (degrees Celsius)

-C- = Cut-in signal for auxiliary heater (also as additional heater) via convenience data bus system

-D- = Auxiliary heater starting sequence

-E- = Switchover to full-load mode

-F- = Auxiliary heater full-load mode

-G- = Actuation of operating and display unit (Climatronic control unit -J255-) on (actuation is implemented in auxiliary heating mode via convenience data bus system)

– At present, activation temperature is not as shown in the illustration for Audi A6. 50 °C but 30 °C.

-H- = Switchover from full to part-load mode

-J - = Part-load mode

-K- = Extended part-load mode

– Only if coolant temperature exceeds 88 °C during first 6 minutes after switch-on.

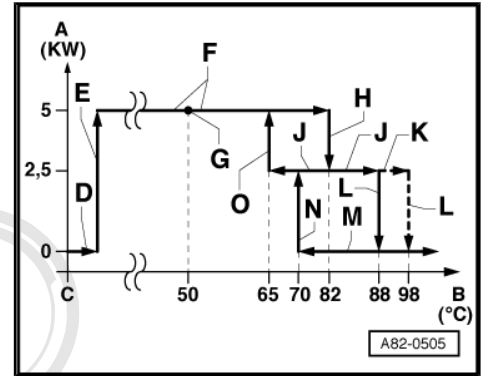
-L - = Switchover to control interval

– Auxiliary heater run-on (burn-off)

-M- = Control interval

-N- = Auxiliary heater re-start (from control interval into part-load mode).

-O- = Switchover from part to full-load mode



9 Incorporation of auxiliary heater into coolant circuit



Note

- ♦ *All components not mentioned ⇒ Engine, Mechanical Components; Rep. Gr. 19.*
- ♦ *In auxiliary heating mode, coolant flow depends upon actuation of heater coolant shutoff valve -N279-, e.g. for cold coolant and with engine stopped, directly from air conditioner heat exchanger back to auxiliary heater (in auxiliary heating mode, engine is first pre-heated when coolant temperature in auxiliary heater exceeds a certain value). Thus, passenger compartment is heated as quickly as possible in auxiliary heating mode (entire heat energy generated by auxiliary heater is transferred to passenger compartment). If function "Incl. engine" is set in MMI (Multi Media Interface), engine is also pre-heated at start of auxiliary heating mode; however, heating of passenger compartment then takes correspondingly longer.*
- ♦ *The "Adaption" function can be used to influence actuation of the circulation pump -V55- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*

9.1 Incorporation of auxiliary heater on vehicles with heater coolant shutoff valve -N279-

Direction of coolant flow

"→" in auxiliary heating mode (with engine running, coolant in engine is colder than in auxiliary heater).

"->" in auxiliary heating mode with the heater coolant shut-off valve -N279- not actuated (e.g. with the engine running and the coolant already warm ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 and ⇒ [page 102](#)).

"→" in auxiliary heating mode with the heater coolant shut-off valve -N279- actuated (e.g. with cold coolant and the engine not running ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 and ⇒ [page 104](#)).



Note

- ♦ *Actuation of the heater coolant shut-off valve -N279- and the circulation pump -V55- is governed by the coolant temperature (in the auxiliary heater and the engine), the engine operating status, the setting in the MMI (Multi Media Interface) and the adaption of the supplementary heater control unit -J364- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051 ⇒ [page 102](#) (heater coolant shut-off valve -N279-, operation and actuation) and ⇒ [page 108](#) (actuation of circulation pump -V55- in auxiliary heating mode).*
- ♦ *As of 07.2005, the coolant return hose from the air conditioner unit heat exchanger to the heater coolant shut-off valve -N279- is gradually being fitted with T-pieces with a bleed valve and restrictor (the constriction eliminates the noise caused by pressure pulsation which may occur under certain operating conditions when the valves of the pump/valve unit are switched) ⇒ Air conditioning; Rep. Gr. 87.*
- ♦ *On vehicles with an auxiliary heater with control unit -J364- up to software version "059", the restrictor in the T-piece may, under certain usage conditions, cause premature switching of the auxiliary heater to part load mode or the control interval. In the event of problems, remove the constriction in the T-piece or, if applicable, fit a T-piece with no restrictor.*

1 - Auxiliary heater

2 - Circulation pump -V55-

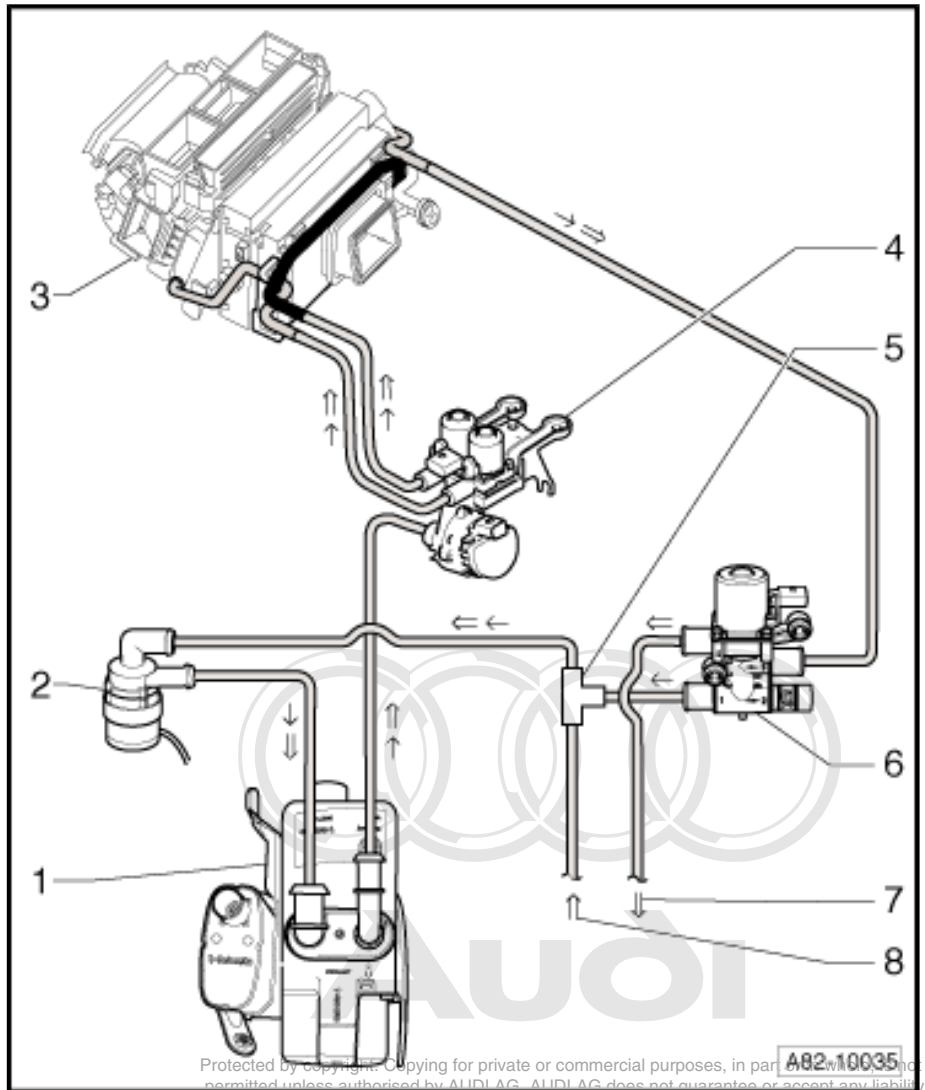
- ❑ Circulation pump is actuated by auxiliary heater control unit -J364- .
- ❑ Under certain conditions, the circulation pump may also be actuated with the engine running to assist the coolant pump of the engine ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- ❑ Checking ⇒ Vehicle diagnostic, testing and information system -VAS 5051 A- , "Guided fault-finding" function
- ❑ Removing and installing ⇒ [page 121](#) .

3 - Air conditioner with heat exchanger

- ❑ Incorporation of the air conditioner into the coolant circuit ⇒ Air conditioning; Rep. Gr. 87

4 - Air conditioner pump/valve unit

- ❑ Incorporation of the air conditioner into the coolant circuit ⇒ Air conditioning; Rep. Gr. 87
- ❑ With the ignition switched on and in auxiliary heating/auxiliary ventilation mode, the components fitted (left heat regulation valve -N175- , right heat regulation valve -N176- and coolant circulation pump - V50-) are actuated as a function of the specified temperature set in the operating and display unit, Climatronic control unit -J255- and the actual temperature measured in the passenger compartment ⇒ Air conditioning; Rep. Gr. 87 .
- ❑ With ignition switched off and in auxiliary heating mode, valves of pump/valve unit are not actuated at present for at least approx. 20% of the time. This ensures that a certain minimum quantity of coolant is always in circulation and auxiliary heater does not overheat.



**Note**

With the operating and display units, Climatronic control unit -J255- (versions with software as of "0160") gradually being introduced as of July 2005, the valves of the pump/valve unit (left heat regulation valve -N175- and right heat regulation valve -N176-) always remain open for a certain period in auxiliary heating mode. This is designed to prevent the possibility of the valves remaining permanently closed and the coolant in the auxiliary heater thus overheating after switching on the ignition for example, depending on the temperature setting at the operating and display unit, Climatronic control unit -J255- .

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5 - Connector for coolant hoses**6 - Heater coolant shutoff valve -N279-**

- ☐ Removing and installing ⇒ [page 104](#)
- ☐ The shut-off valve is actuated by the supplementary heater control unit -J364- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- ☐ Operation and actuation ⇒ [page 102](#)

7 - Coolant return to engine

- ☐ Incorporation in engine coolant circuit ⇒ Engine, Mechanical Components; Rep. Gr. 19

8 - Coolant supply from engine

- ☐ Incorporation in engine coolant circuit ⇒ Engine, Mechanical Components; Rep. Gr. 19

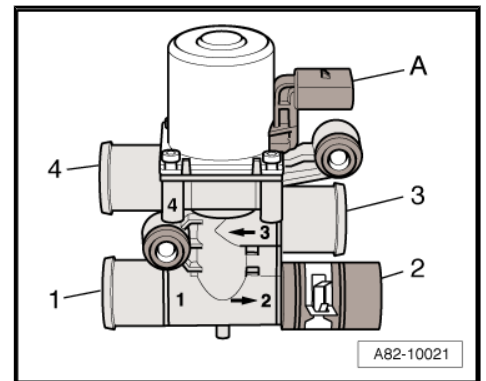
9.2 Operation and actuation of heater coolant shutoff valve -N279-

**Note**

In the case of auxiliary heaters with part number 4F0 265 081 up to index "L" (up to software version "060"), an "open circuit / short to positive" may be erroneously detected as a sporadic fault at the coolant shut-off valve -N279- under certain usage conditions. This entry in the fault memory need only be heeded in the event of problems with the auxiliary heater. If there are no problems with the auxiliary heater, erase the erroneous fault memory entry if applicable (do not perform any further fault-finding).

Operation of heater coolant shutoff valve -N279-

- ◆ In auxiliary heating mode, heater coolant shutoff valve -N279- is actuated by auxiliary heater control unit -J364- , depending upon operating status of auxiliary heater, setting in MMI (Multi Media Interface) and upon coolant temperature in engine and in auxiliary heater ⇒ [page 103](#) .
- ◆ If voltage is not applied to heater coolant shutoff valve -N279- , coolant flows from connection -3- (from air conditioner heat exchanger) to connection -4- (to engine, large coolant circuit).
- ◆ If voltage is applied to connection -A- (e.g. in auxiliary heating mode with cold coolant and engine stopped), coolant flows from connection -3- (from air conditioner heat exchanger) to connection -1- to auxiliary heater (small coolant circuit).



Note

Connection -2- is sealed.

Actuation of heater coolant shutoff valve -N279-

Note

- ◆ Actuation of heater coolant shutoff valve -N279- is dependent upon coolant temperature on activation and upon operating status of vehicle (e.g. "Engine running").
- ◆ If auxiliary heater is operated as additional heater auxiliary heater control unit -J364- compares coolant temperature of auxiliary heater and engine and only actuates heater coolant shutoff valve -N279- if coolant temperature of auxiliary heater is greater than that of engine.
- ◆ The display in the measured value block for actuation of the heater coolant shut-off valve -N279- differs and depends on the vehicle model and the version of the supplementary heater control unit -J364- . On the Audi A6 at present for example, a display of 100 % indicates that 100 % of the coolant is being conveyed in the small circuit and that the heater coolant shut-off valve -N279- is being actuated ⇒ Vehicle diagnostic, testing and information system -VAS 5051 A- , "Guided fault-finding" function.

If heater coolant shutoff valve -N279- is not actuated, 100 % of coolant flows in large circuit.

A - This proportion of coolant in % is conveyed in large coolant circuit.

- ◆ Heater coolant shutoff valve -N279- is actuated by auxiliary heater control unit -J364- in accordance with coolant temperature and request set.

B - Temperature of coolant in auxiliary heater in °C

C - Activation signal for auxiliary heater (also as additional heater) via convenience data bus system

D - Start of full-load operation following start of auxiliary heater. In full-load operation, heater coolant shutoff valve -N279- is actuated via various curves depending upon coolant temperature

E - Switching to part-load operation of auxiliary heater

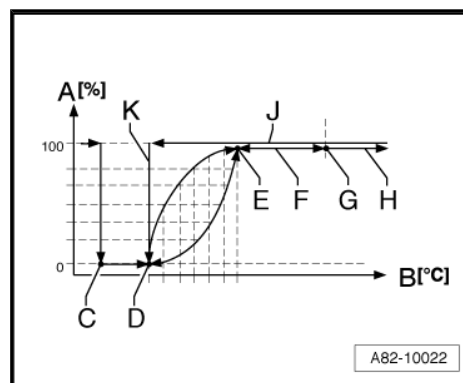
F - Part-load operation of auxiliary heater

G - Switching from part-load operation to control interval

H - Auxiliary heater is in control interval, coolant temperature continues to increase, e.g. with engine running

J - Auxiliary heater is in control interval, coolant temperature decreases (also with engine running, if more heat is dissipated by air conditioner heat exchanger than engine generates)

K - New start of auxiliary heater out of control interval



Note

- ◆ Depending on ambient temperature and amount of heat dissipated by air conditioner heat exchanger, heater coolant shutoff valve -N279- actuation may remain in the various operating statuses for a lengthy period.
- ◆ Actuation of heater coolant shutoff valve -N279- is also maintained even if engine is started with auxiliary heater running.
- ◆ At a coolant temperature of approx. 91 °C, auxiliary heater switches from control mode to control interval. If heater coolant shutoff valve -N279- is not actuated during control interval, coolant flows in large circuit.

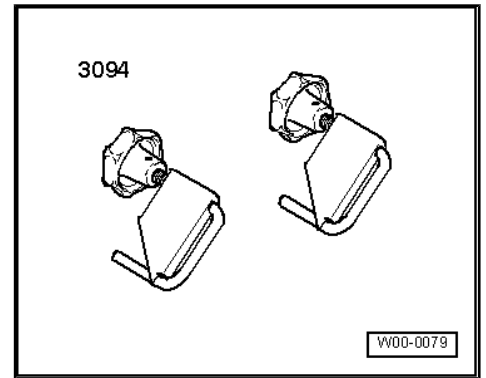
9.3 Removing and installing heater coolant shutoff valve -N279-

Note

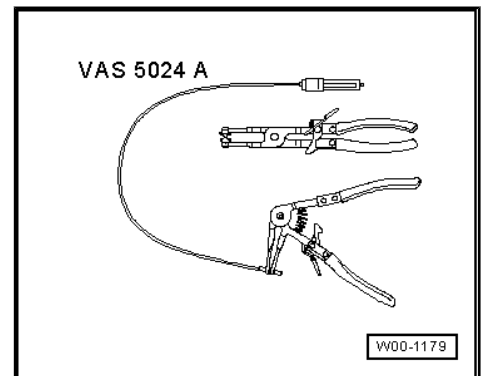
In the case of auxiliary heaters with part number 4F0 265 081 up to index "L" (up to software version "060"), an "open circuit / short to positive" may be erroneously detected as a sporadic fault at the coolant shut-off valve -N279- under certain usage conditions. This entry in the fault memory need only be heeded in the event of problems with the auxiliary heater. If there are no problems with the auxiliary heater, erase the erroneous fault memory entry if applicable (do not perform any further fault-finding).

Special tools and workshop equipment required

- ◆ Hose clamps up to Ø 25 mm -3094- (4x)



- ◆ Hose clip pliers -VAS 5024 A-



9.3.1 Removing and installing heater coolant shut-off valve -N279- (all models except Audi S6)

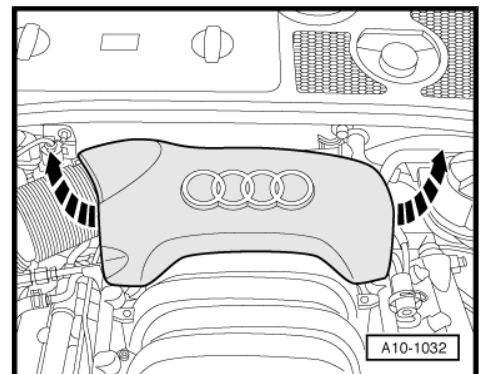
Removing



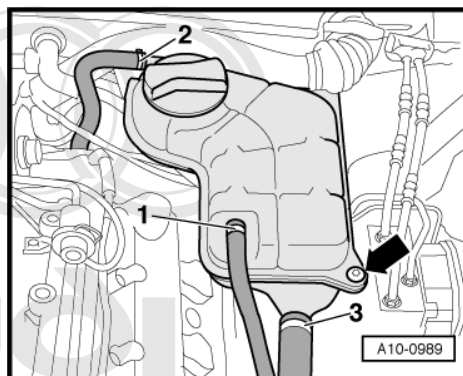
Note

- ◆ *Removal of heater coolant shutoff valve -N279- for a vehicle with 3.0 l MPI engine is described below. Proceed analogously for all other engine versions.*
- ◆ *On removal, note down bolt lengths and assignment for re-installation.*
- ◆ *All cable ties and other wiring harness fasteners which are released or cut open during removal of heater coolant shutoff valve -N279- are to refitted in same position on installation.*

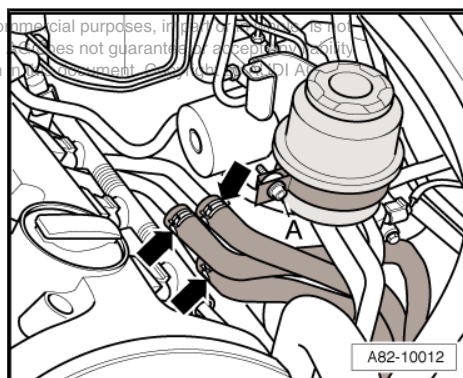
- Switch off ignition (and auxiliary heater).
- Detach rear engine cover -arrows-.
- Drain coolant ⇒ Engine, Mechanical Components; Rep. Gr. 19 .



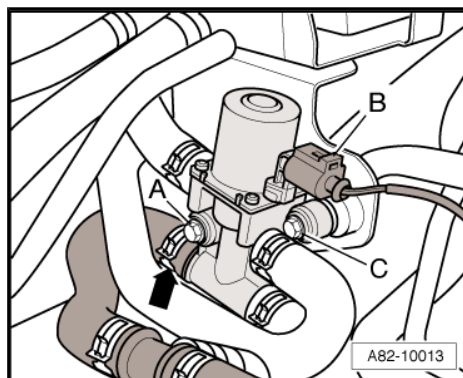
- Detach coolant hose -2-.
- Unbolt coolant expansion tank -arrow-.
- Detach electrical connector from coolant shortage indicator switch -F66- at bottom of expansion tank and lay coolant expansion tank with connected coolant hoses -1- and -3- to one side.



- Remove bolt -A- and lay power steering reservoir with connected coolant hydraulic hoses to one side.
- Detach coolant hoses from points marked with -arrows-; use pliers for spring clips -VAS 5024 A- to open spring clips.



- Unplug electrical connector -B- at heater coolant shutoff valve -N279-.
- Remove out bolts -A- and -C-.
- Remove heater coolant shutoff valve -N279- from vehicle and detach coolant hose -arrow-.



Installing

Installation is in reverse order; pay attention to the following:

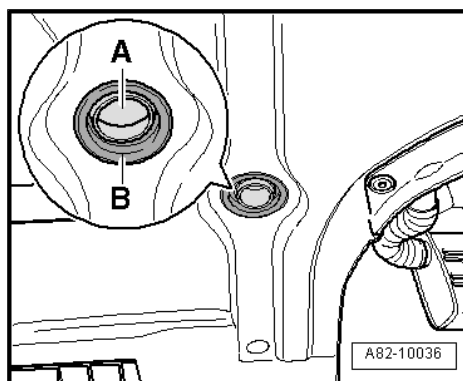
- After installing, check the exhaust pipe, the coolant hoses, fuel pipe and wiring to the auxiliary heater; they must not touch any other components.
- After installing noise insulation, check position of exhaust pipe -A-; a gasket -B- must be installed between exhaust pipe -A- and noise insulation. Exhaust pipe must protrude downwards out of gasket and outlet of exhaust gas from exhaust pipe -A- must not be impeded



Note

Secure all hose connections with standard clamps ⇒ *Electronic parts catalogue*.

- Fill coolant ⇒ Engine, Mechanical Components; Rep. Gr. 19.
- Bleed coolant circuit ⇒ [page 109](#) and ⇒ Engine, Mechanical Components; Rep. Gr. 19.



Tightening torques

Component	Nm
Heater coolant shutoff valve -N279- to body	7
Power steering reservoir to body	9

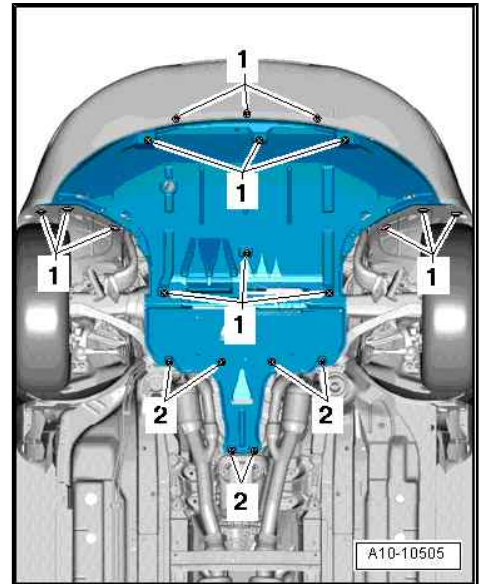
9.3.2 Removing and installing heater coolant shut-off valve -N279- (Audi S6)

Removing

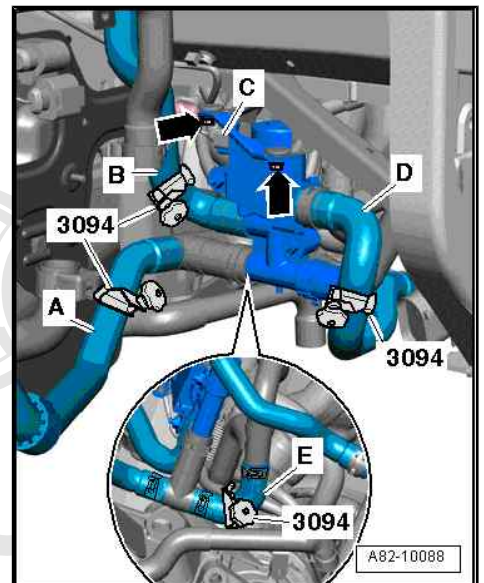


All cable ties and other wiring harness fasteners detached or cut open on removing the heater coolant shut-off valve -N279- must be re-attached in the same position on installation.

- Switch off ignition (and auxiliary heater).
- Unfasten the quick-release fasteners -1- and detach the front noise insulation.



- Screw out the bolts -arrows-.
- Detach the holder with the heater coolant shut-off valve -N279- from the studs.
- Unplug the connector -C- at the heater coolant shut-off valve -N279-.
- Pinch off the coolant hoses -A, B, D, E- with the hose clamps -3094-.
- Unfasten the hose clamps and detach the coolant hoses at the heater coolant shut-off valve -N279-.

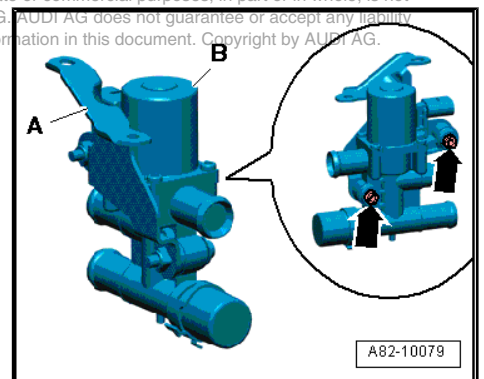


- Screw out the bolts -arrows-.
- Detach the heater coolant shut-off valve -N279- -B- from the holder -A-.

Installing

Install in reverse order, paying attention to the following:

- Following installation, check the exhaust pipe, coolant hoses, fuel pipe and wiring to the auxiliary heater (must not make contact with other components).



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- After installing the noise insulation, check the position of the exhaust pipe -A-. There must be a gasket -B- fitted between the exhaust pipe and the noise insulation. The exhaust pipe must project downwards out of the gasket and the emergence of exhaust gas from the exhaust pipe -A- must not be impeded.



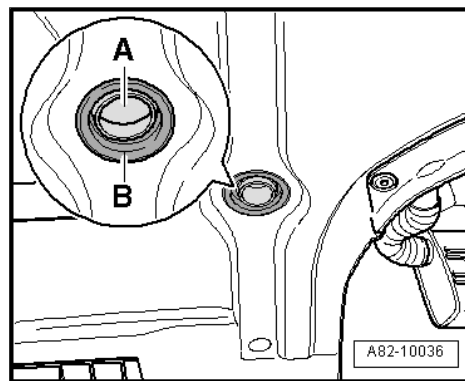
Note

Secure all hose connections with standard clamps ⇒ *Electronic parts catalogue*.

- Top up coolant ⇒ Engine, mechanics; Rep. Gr. 19.
- Bleed the coolant circuit ⇒ [page 109](#) and ⇒ Engine, mechanics; Rep. Gr. 19.

Tightening torques

Component	Nm
Heater coolant shut-off valve -N279- to holder	7
Holder with heater coolant shut-off valve -N279- to body	8



9.4 Actuation of circulation pump -V55- in auxiliary heating mode



Note

- ♦ Removing and installing circulation pump -V55- ⇒ [page 123](#) (all models except Audi S6), ⇒ [page 130](#) (Audi S6)
- ♦ Actuation of the circulation pump -V55- is governed by the adaption of the supplementary heater control unit -J364- ⇒ Vehicle diagnostic, testing and information system -VAS 5051 A-, "Guided fault-finding" function.
- ♦ Depending on the coolant and ambient temperature, the circulation pump -V55- may also be switched on by the supplementary heater control unit -J364- with the auxiliary heater switched off to assist the engine coolant pump ⇒ Vehicle diagnostic, testing and information system -VAS 5051 A-, "Guided fault-finding" function.

If engine is running circulation pump -V55- is not actuated at 100 % in auxiliary heating and additional heating modes.

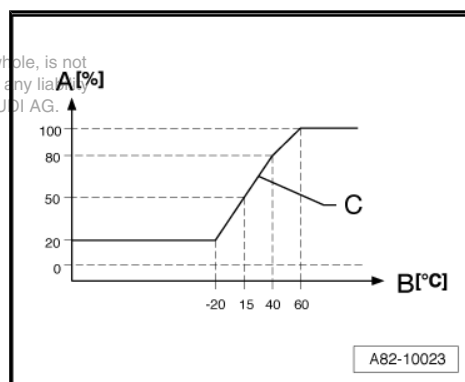
A - Actuation time of circulation pump -V55- in %

- Depends upon auxiliary heater coolant temperature in auxiliary heating mode

B - Coolant temperature in auxiliary heater

C - Actuation of circulation pump -V55- in %

- In control mode circulation pump -V55- is actuated via a square-wave signal (at a frequency of 1 Hz, one pulse per sec.).



9.5 Bleeding coolant circuit

Note

- ◆ *As heater coolant shutoff valve -N279- is only actuated depending upon coolant temperature with auxiliary heater activated, auxiliary heater must be briefly activated during bleeding procedure, in order to remove any air bubbles present from the auxiliary heater cooling circuit.*
- ◆ *If air is present in coolant circuit, auxiliary heater may overheat and "Control unit defective" fault is stored. If this fault occurs several times in succession, auxiliary heater control unit -J364- is interlocked and fault can only be erased via "Adaption" function, once interlock has been cancelled.*

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Fill up engine coolant as specified in → Engine, Mechanical Components; Rep. Gr. 19

- Bleed engine coolant circuit as specified → Engine, Mechanical Components; Rep. Gr. 19
- If necessary switch off the engine.
- Switch on ignition.
- Activate auxiliary heater (e.g. via MMI terminal)

Note

- ◆ *Auxiliary heater may not start depending on coolant temperature (may switch to control interval) → [page 79](#).*
- ◆ *It is sufficient if auxiliary heater circulation pump -V55- is running (if auxiliary heater is in the control interval because of coolant temperature).*
- Switch off ignition.
- If applicable, wait until the operating and display unit, Climatronic control unit -J255- of the auxiliary heater is started up.
- Set maximum heat output on the operating and display unit, Climatronic control unit -J255- for the driver's and passenger's side.

Note

Operating and display unit (Climatronic control unit -J255-) can actuate valves of pump/valve unit, depending upon set temperature (close, as heat output is no longer required). As, with valves closed, coolant can no longer flow through auxiliary heater, set maximum heat output (e.g. preselected temperature to "Hi") for driver's and front passenger's side on operating and display unit (Climatronic control unit -J255-)

- Wait approx. 3 minutes (leave the auxiliary heater switched on).
- Start the engine again and leave it running for approx. 3 minutes with increased idle speed (e.g. 2300 rpm)
- Switch off auxiliary heater.
- Switch off engine.



- If necessary, fill up coolant according to ⇒ Engine, Mechanical Components; Rep. Gr. 19



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10 Removing and installing auxiliary heater



Note

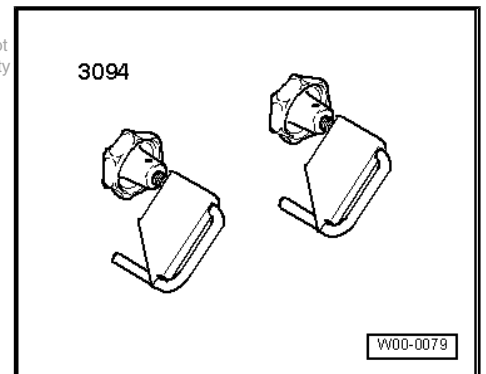
- ◆ There are different versions of this auxiliary heater (e.g. also for Audi A3, VW Touran and VW Golf). Although these different versions are identical in appearance, only the models released for this vehicle are to be fitted on the Audi A6 (different actuation via the data bus system, different software, different connector assignment) ⇒ *Electronic parts catalogue*.
- ◆ As of Model Year 2009, a modified data bus diagnostic interface -J533- is gradually being introduced ⇒ *Electronic parts catalogue*. Vehicles with the modified version of -J533- are only to be fitted with auxiliary heaters (with supplementary heater control unit -J364-) with part number 4F0 265 081 as of index "M" ⇒ *Electronic parts catalogue*. If an auxiliary heater with part number 4F0 265 081 up to index "L" is fitted in a vehicle with modified -J533-, shut-off of the auxiliary heater on account of "Undervoltage" (e.g. in the event of an insufficiently charged battery -A-) by -J533- is not possible ⇒ *Vehicle diagnostic, testing and information system -5051 A-, "Guided fault-finding" function*.

10.1 Removing and installing auxiliary heater (all models except Audi S6)

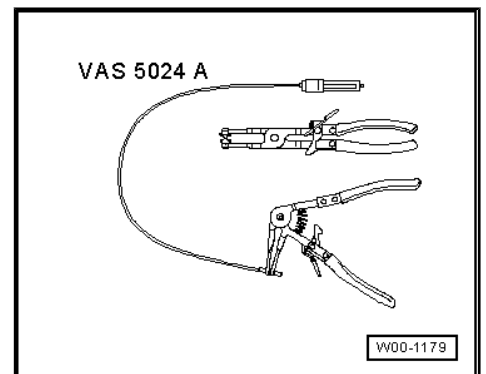
Special tools and workshop equipment required

- ◆ Hose clamps up to Ø 25 mm -3094-

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- ◆ Pliers for spring clips -VAS 5024 A-



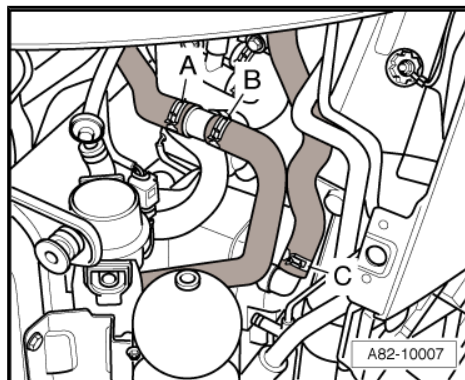
Removing



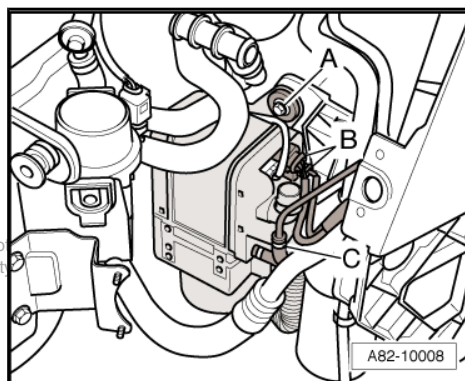
Note

The removal of the auxiliary heater for a vehicle with a 3.0 MPI engine is described below. For other engines proceed analogously.

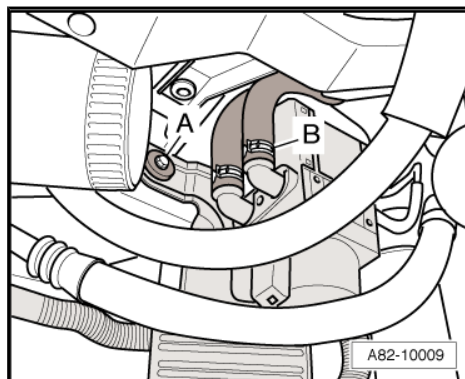
- Before replacing the auxiliary heater, interrogate encoding and configuration of auxiliary heater control unit -J364- in "Control unit replacement" function of ⇒ vehicle diagnostic, testing and information system -VAS 5051 A- in "Guided fault-finding" function .
- Switch off the ignition and the auxiliary heater.
- Remove front bumper cover ⇒ General body repairs, Exterior; Rep. Gr. 63 .
- Remove left headlight ⇒ Electrical System; Rep. Gr. 94 .
- If applicable, remove the charge air cooler (e.g. on vehicles with diesel engine) ⇒ Engine, mechanics; Rep. Gr. 21 .
- Clamp off both coolant hoses -A- and -B- using hose clamps -3094- .
- Disconnect coolant hoses -A- and -B- and air intake hose -C-.



- Detach fuel pipe -C- from angle hose.
- Unplug connectors -B-.
- Remove bolt -A-.

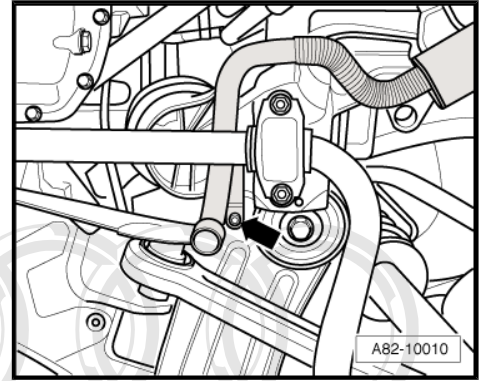


- Clamp off coolant hose -B- using hose clamps -3094- .
- Disconnect coolant hose from auxiliary heater.
- Remove bolt -A-.



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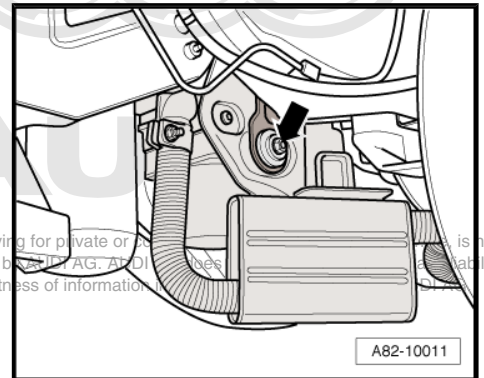
- Remove bolt -arrow- for exhaust pipe.



- Unscrew nut -arrow- and remove the auxiliary heater.

i Note

The illustration shows an exhaust silencer with corrugated exhaust pipes not fitted with a heat shield. If not already provided, fit the exhaust silencer with a new heat shield → *Electronic parts catalogue*.



Installing

i Note

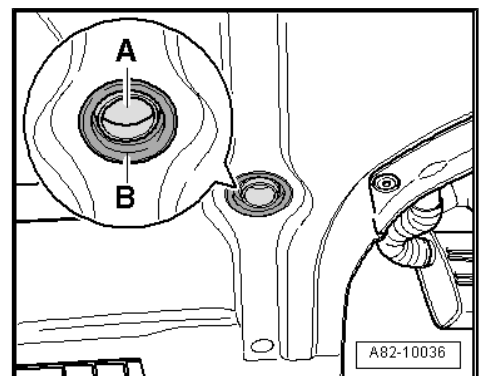
- ♦ Pay attention to correct assignment of the auxiliary heater. Depending for example on the auxiliary heater version (with or without fuel shut-off valve -N109-), vehicles with a diesel engine have to be fitted with different types of metering pump -V54- → [page 37](#) and → *Electronic parts catalogue*.
- ♦ A fuel shut-off valve -N109- is currently only provided for the diesel version; gradual introduction as of 05.2008 → *Electronic parts catalogue*.

Tightening torques

Component	Nm
Auxiliary heater to body	8
Exhaust pipe to engine mounting console	10

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

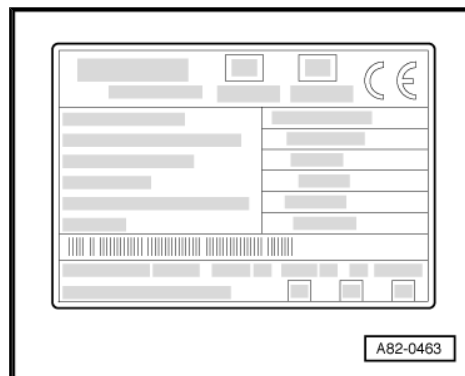
- Following installation, check the exhaust pipe, coolant hoses, fuel pipe and wiring (must not make contact with other components).
- After installing noise insulation, check position of exhaust pipe -A-; a gasket -B- must be installed between exhaust pipe -A- and noise insulation. Exhaust pipe must protrude downwards out of gasket and outlet of exhaust gas from exhaust pipe -A- must not be impeded





Note

- ◆ *On replacement, pay attention to correct auxiliary heater version (different design for vehicles with petrol or diesel engine) ⇒ [page 135](#).*
- ◆ *Secure all hose connections with standard clamps ⇒ *Electronic parts catalogue*.*
- ◆ *If the auxiliary heater has been replaced, enter the year of initial commissioning for the newly installed auxiliary heater on the heater rating plate and the new "duplicate rating plate".*



- Top up coolant ⇒ Engine, mechanics; Rep. Gr. 19.
- Bleed the coolant circuit ⇒ [page 109](#) and ⇒ Engine, mechanics; Rep. Gr. 19.
- Depending on the nature of the repair work, the following checks/settings may have to be made after installing the auxiliary heater :
- If the assignment of the supplementary heater control unit -J364- (rating plate) differs from that indicated on the display of the vehicle diagnostic, testing and information system -VAS 5051 A- , check the display ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- Check encoding of auxiliary heater control unit -J364- or enter encoding ⇒ vehicle diagnostic, testing and information system -VAS 5051 A- "Guided fault-finding" function .
- Interrogate fault memory of auxiliary heater control unit -J364- and delete any displayed faults⇒ vehicle diagnostic, testing and information system -VAS 5051 A- in "Guided fault-finding" function .
- Check operation of the auxiliary heater remote control and perform basic setting of the supplementary heater control unit -J364- if necessary ⇒ Vehicle diagnostic, testing and information system -VAS 5051 A- , "Guided fault-finding" function .
- If the auxiliary heater is replaced together with the supplementary heater control unit -J364- , check the operation of at least one hand transmitter and re-adapt all hand transmitters if necessary ⇒ [page 20](#) (remote control hand transmitter adaption) and ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .
- Interrogate the adaption of the supplementary heater control unit -J364- and if necessary enter the adaption value "5" in the adaption channel "Pipe filling" (if a value other than "0" is displayed) ⇒ Vehicle diagnostic, testing and information system -VAS 5051 A- , "Guided fault-finding" function .
- If the value displayed in the "Pipe filling" adaption channel was other than "0", perform the "Basic setting" function, "Pipe filling" display group (the metering pump V54 is actuated for the time set in the "Pipe filling" adaption channel, the adaption in the "Pipe filling" adaption channel is reset to "0" and the "Pipe filling" fault is erased) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- Start the engine and interrogate the fault memory of all control units fitted (faults may also have been entered for other control units by way of the convenience data bus system) ⇒ Vehicle diagnostic, testing and information system -VAS 5051 A- , "Guided fault-finding" function .

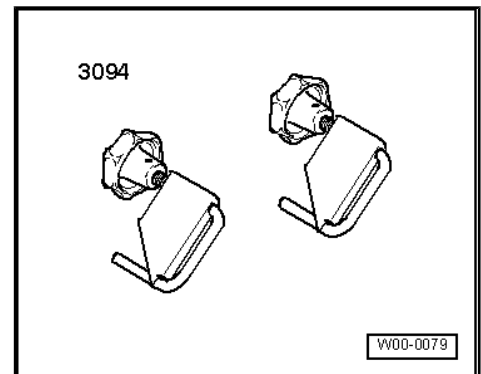
- Perform the “Basic setting” function to switch on the auxiliary heater. After the auxiliary heater has been operated once in heating mode in the “Basic setting” function, certain displays in the “Measured value block” switch from “not OK” to “OK” ⇒ “Guided fault-finding” function of vehicle diagnostic, testing and information system VAS 5051.
- Switch on the auxiliary heater and check and if necessary re-adjust the CO₂ content in the auxiliary heater exhaust gas (if for example the control unit -J364- has been replaced together with the combustion air blower -V6-) ⇒ [page 53](#) .
- After replacing auxiliary heater components, switch on the auxiliary heater before handing over the vehicle to the customer and allow the auxiliary heater to run for at least 10 minutes in full load mode. There may still be remnants of factory lubricant for example in the components and these would evaporate following initial activation as soon as the components become hot.
- After removing and installing fuel system components or the auxiliary heater, the auxiliary heater is to be switched on and operated at full load for at least 10 minutes to ensure complete bleeding of the fuel pipe.

10.2 Removing and installing auxiliary heater (Audi S6)

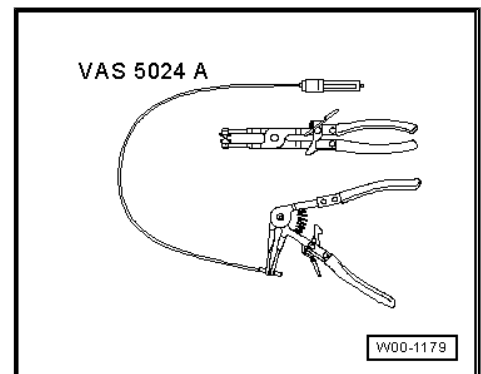
Special tools and workshop equipment required

◆ Hose clamps up to Ø 25 mm -3094-

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◆ Hose clip pliers -VAS 5024 A-



- ◆ Hand drill
- ◆ Bit Ø 3 mm
- ◆ Left-hand removal tool, size 3
- ◆ Safety goggles

Removing

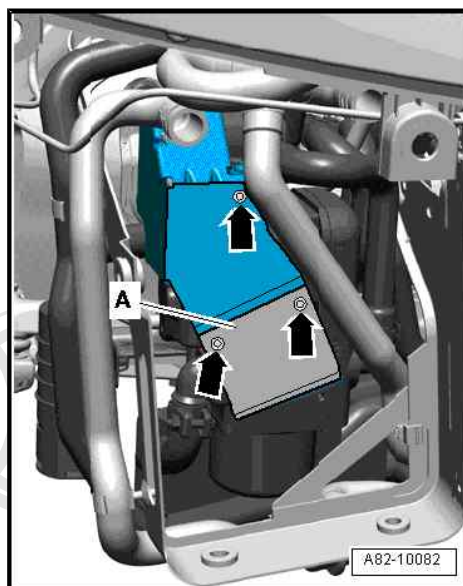
- Before replacing the auxiliary heater, interrogate the encoding and adaption of the control unit -J364- using the "Control unit replacement" function ⇒ Vehicle diagnostic, testing and information system -VAS 5051 A-, "Guided fault-finding" function .
- Switch off ignition and auxiliary heater.
- Dissipate the pressure in the cooling system by opening the cap on the coolant expansion tank.
- Remove the front bumper cover ⇒ General body repairs, exterior; Rep. Gr. 63 .
- If fitted, remove the auxiliary radiator and its holder ⇒ Engine, mechanics; Rep. Gr. 19 .



WARNING

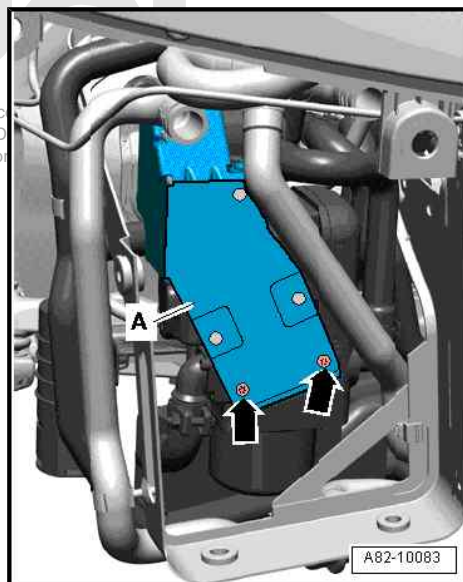
Wear safety goggles.

- Drill out the shear bolts -arrows- with a Ø 3 mm bit.
- Screw a commercially available size 3 left-hand removal tool for example into the hole of the shear bolt.
- Use the left-hand removal tool to screw out the shear bolt.
- Detach the front protective cover -A-.



- Screw out the bolts -arrows-.
- Detach the rear protective cover -A- from the auxiliary heater.

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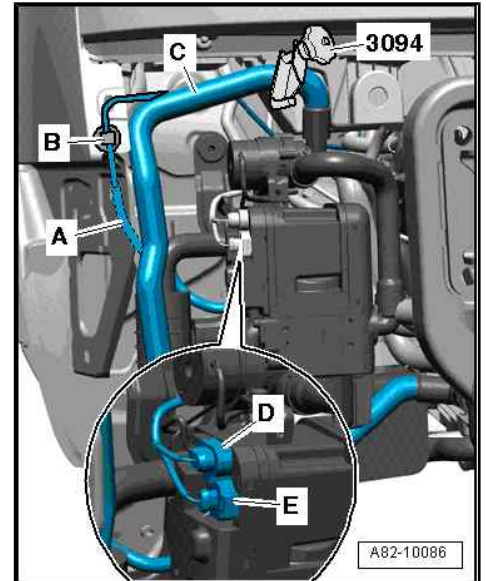


- Pinch off the coolant hose -C- with a hose clamp -3094- .
- Detach the coolant hose -C- at the circulation pump -V55- .
- Start by unplugging the 6-pin connector -D-.
- After waiting 2 seconds, unplug the 2-pin connector -E-.
- Unfasten the hose clamp and detach the fuel hose -A- from the fuel pipe. To do so, unclip the fuel pipe from the holder -B-.

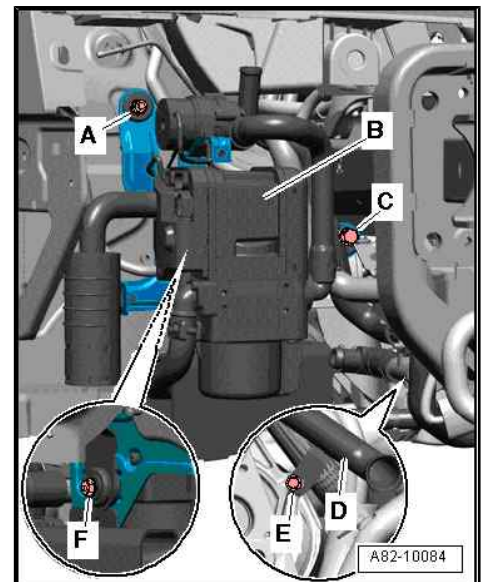


Caution

Heed the rules for cleanliness when working on an open fuel system ⇒ Fuel supply system; Rep. Gr. 20 .

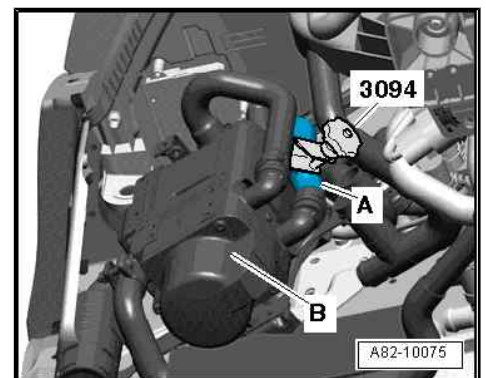


- Screw out the bolt -E- for the exhaust pipe -D-.
- Unscrew the nuts -A- and -F- and screw out the bolt -C-.
- Detach the auxiliary heater -B- from the studs.



- Pinch off the coolant hose -A- with a hose clamp -3094- .
- Detach the coolant hose from the auxiliary heater -B-.

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- Remove the intake air silencer ⇒ [page 132](#) .
- Unfasten the clamp -E-.
- Detach the exhaust pipe -F- from the auxiliary heater -D-.
- Unplug the connector -B- for the circulation pump -V55- .
- Detach the coolant hose -C- at the auxiliary heater.
- Screw out the bolts -arrows-.
- Detach the auxiliary heater from the holder -A-.

Installing



Note

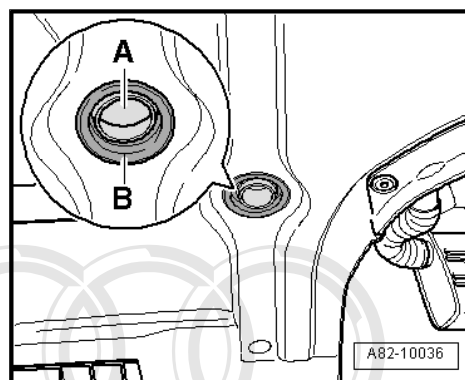
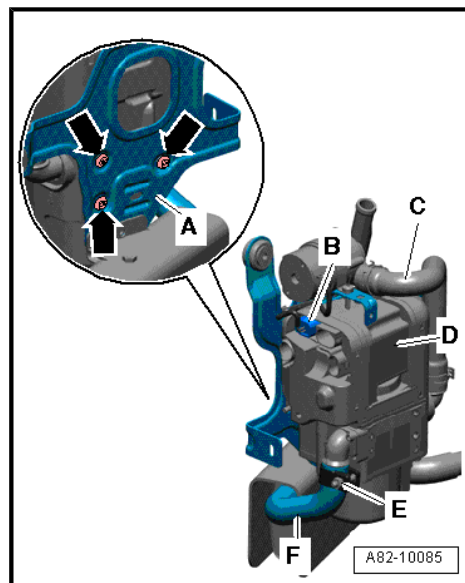
Pay attention to correct assignment of the auxiliary/supplementary heater ⇒ *Electronic parts catalogue* .

Tightening torques

Component	Nm
Auxiliary heater to holder	8
Holder with auxiliary heater to body	8
Nut	8
Bolt	8
Exhaust pipe to engine mounting bracket	10

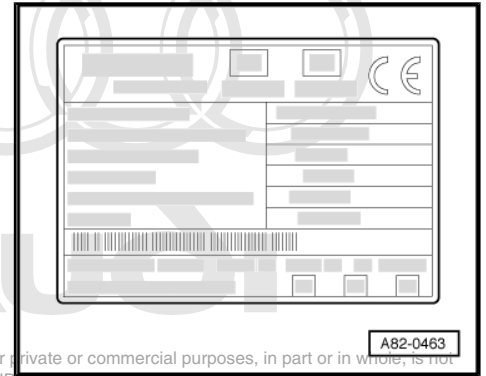
Install in reverse order, paying attention to the following:

- Following installation, check the exhaust pipe, coolant hoses, fuel pipe and wiring to the auxiliary heater (must not make contact with other components).
- After installing the noise insulation, check the position of the exhaust pipe -A-. There must be a gasket -B- fitted between the exhaust pipe and the noise insulation. The exhaust pipe must project downwards out of the gasket and the emergence of exhaust gas from the exhaust pipe -A- must not be impeded.



 Note

- ◆ *On replacement, pay attention to the correct auxiliary heater version (different design for vehicles with petrol or diesel engine) ⇒ [page 135](#).*
- ◆ *Secure all hose connections with standard clamps ⇒ *Electronic parts catalogue*.*
- ◆ *If the auxiliary heater has been replaced, enter the year of initial commissioning for the newly installed auxiliary heater on the heater rating plate and the new "duplicate rating plate".*



- Top up coolant ⇒ Engine, mechanics; Rep. Gr. 19.
- Bleed the coolant circuit ⇒ [page 109](#) and ⇒ Engine, mechanics; Rep. Gr. 19.
- Depending on the nature of the repair work, the following checks/settings may have to be made after installing the auxiliary heater:
- If the assignment of the supplementary heater control unit -J364- (rating plate) differs from that indicated on the display of the vehicle diagnostic, testing and information system -VAS 5051 A-, check the display ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- Check the encoding and adaption of the supplementary heater control unit -J364- or enter these in the "Guided functions" ⇒ Vehicle diagnosis, testing and information system VAS 5051.
- Interrogate the fault memory of the supplementary heater control unit -J364- and erase any faults displayed ⇒ Vehicle diagnosis, testing and information system VAS 5051 ⇒ Vehicle diagnostic, testing and information system -VAS 5051 A-, "Guided fault-finding" function.
- Check operation of the auxiliary heater remote control and perform basic setting of the supplementary heater control unit -J364- if necessary ⇒ Vehicle diagnostic, testing and information system -VAS 5051 A-, "Guided fault-finding" function.
- If the auxiliary heater is replaced together with the supplementary heater control unit -J364-, check the operation of at least one hand transmitter and re-adapt all hand transmitters if necessary ⇒ [page 20](#) (remote control hand transmitter adaption) and ⇒ Vehicle diagnostic, testing and information system -5051 A-, "Guided fault-finding" function.
- Interrogate the adaption of the supplementary heater control unit -J364- and if necessary enter the adaption value "5" in the adaption channel "Pipe filling" (if a value other than "0" is displayed) ⇒ Vehicle diagnostic, testing and information system -VAS 5051 A-, "Guided fault-finding" function.
- If the value displayed in the "Pipe filling" adaption channel was other than "0", perform the "Basic setting" function, "Pipe filling" display group (the metering pump -V54- is actuated for the time set in the "Pipe filling" adaption channel, the adaption in the "Pipe filling" adaption channel is reset to "0" and the "Pipe filling" fault is erased) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.

- Start the engine and interrogate the fault memory of all control units fitted (faults may also have been entered for other control units by way of the convenience data bus system) ⇒ Vehicle diagnostic, testing and information system -VAS 5051 A- , "Guided fault-finding" function .
- Perform the "Basic setting" function to switch on the auxiliary heater. After the auxiliary heater has been operated once in heating mode in the "Basic setting" function, certain displays in the "Measured value block" switch from "not OK" to "OK" ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- Switch on the auxiliary heater and check and if necessary re-adjust the CO₂ content in the auxiliary heater exhaust gas (if for example the supplementary heater control unit -J364- has been replaced together with the combustion air blower -V6-)
⇒ [page 53](#) .
- After replacing auxiliary heater components, switch on the auxiliary heater before handing over the vehicle to the customer and allow the auxiliary heater to run for at least 10 minutes in full load mode. There may still be remnants of factory lubricant for example in the components and these would evaporate following initial activation as soon as the components become hot.
- After removing and installing fuel system components or the auxiliary heater, the auxiliary heater is to be switched on and operated at full load for at least 10 minutes to ensure complete bleeding of the fuel pipe.

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11 Dismantling and assembling auxiliary heater



Note

- ◆ *Removing auxiliary heater ⇒ [page 111](#) . (all models except Audi S6), ⇒ [page 115](#) . (Audi S6)*
- ◆ *There are different versions of this auxiliary heater (e.g. also for Audi A3, VW Touran and VW Golf). Although these different versions are identical in appearance, only the models released for this vehicle are to be fitted on the Audi A6 (different actuation via the convenience data bus system, different software, different connector assignment) ⇒ [Electronic parts catalogue](#) .*
- ◆ *As of Model Year 2009, a modified data bus diagnostic interface -J533- is gradually being introduced ⇒ [Electronic parts catalogue](#) . Vehicles with the modified version of -J533- are only to be fitted with auxiliary heaters (with supplementary heater control unit -J364-) with part number 4F0 265 081 as of index "M" ⇒ [Electronic parts catalogue](#) . If an auxiliary heater with part number 4F0 265 081 up to index "L" is fitted in a vehicle with modified -J533- , shut-off of the auxiliary heater on account of "Undervoltage" (e.g. in the event of an insufficiently charged battery -A-) by -J533- is not possible ⇒ [Vehicle diagnostic, testing and information system -5051 A-](#) , "Guided fault-finding" function .*

11.1 Detaching add-on components from auxiliary heater/re-attaching (all models except Audi S6)

1 - Clip for corrugated exhaust pipe

2 - Connection for corrugated exhaust pipe

3 - Bolt

4 - Auxiliary heater holder

5 - Square-head bolt

6 - Fuel hose elbow

- ❑ Routing of fuel pipe to auxiliary heater
⇒ [page 40](#)

7 - Auxiliary heater

- ❑ Different version for vehicles with petrol and diesel engine
⇒ [page 135](#) and ⇒ Electronic parts catalogue
- ❑ Different version for vehicles with a diesel engine (without and with fuel shut-off valve - N109-) ⇒ [page 135](#) and ⇒ Electronic parts catalogue
- ❑ Dismantling and assembling ⇒ [page 135](#)

8 - Bolt, -8 Nm

9 - Grommet

10 - Coolant hose

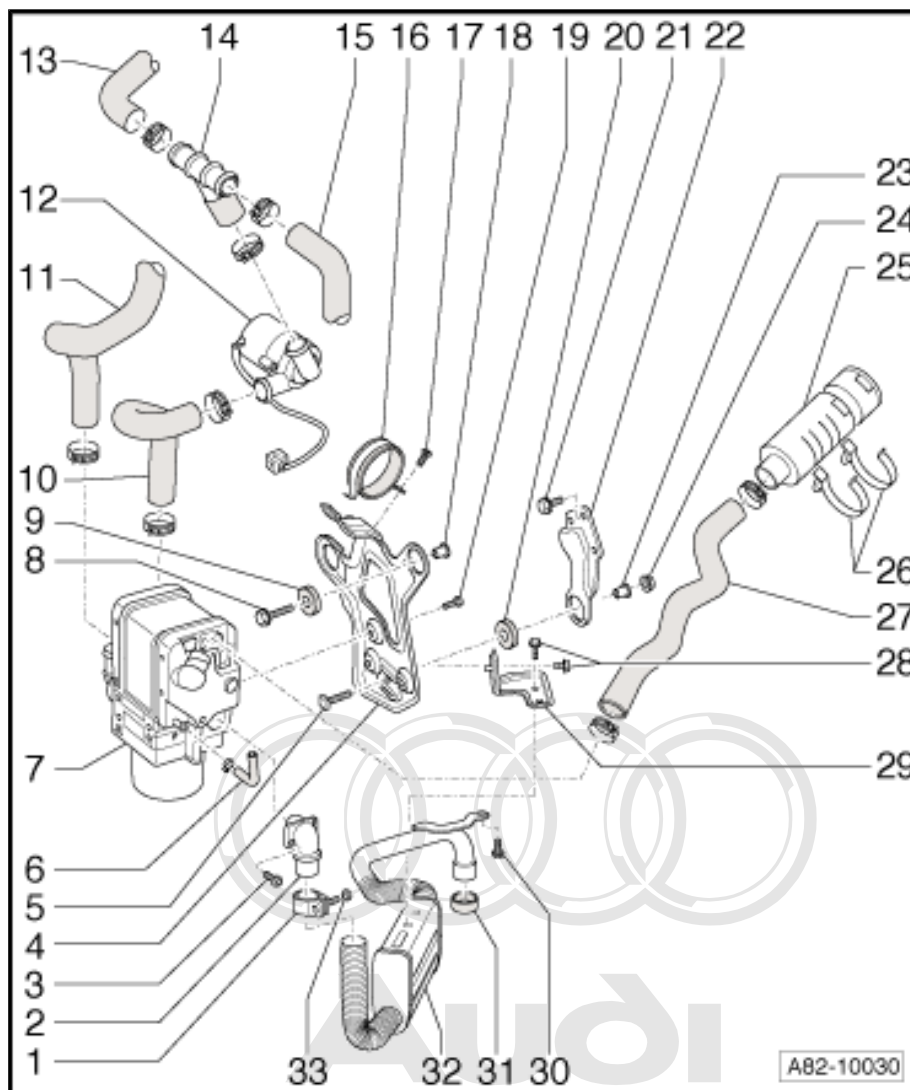
- ❑ Supply of auxiliary heater

11 - Coolant hose

- ❑ Return to coolant circuit (air conditioner heat exchanger)

12 - Circulation pump -V55-

- ❑ Removing and installing ⇒ [page 123](#)



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- 13 - Coolant hose
- 14 - Connector for coolant hoses
- 15 - Coolant hose
- 16 - Bracket with rubber insert for circulation pump -V55-
- 17 - Bolt
- 18 - Bushing
- 19 - Bolt, -8 Nm
- 20 - Grommet
- 21 - Bolt, -8 Nm
- 22 - Bracket
- 23 - Bushing
- 24 - Nut - 8 Nm

25 - Intake air silencer

- ☐ Air must be able to enter without obstruction; if necessary check for dirt and clean
- ☐ Removing and installing ⇒ [page 125](#)

26 - Bracket with clips

27 - Air intake hose

28 - Bolts - 8 Nm

29 - Bracket

30 - Bolt, -10 Nm

31 - Gasket for exhaust pipe

- ☐ Installed between exhaust pipe and front noise insulation
- ☐ Once installed, exhaust pipe must protrude downwards out of gasket
- ☐ Outlet of exhaust gas from exhaust pipe must not be impeded (by the front noise insulation or e.g. by parking front end of vehicle over edge of pavement)

32 - Exhaust silencer with corrugated exhaust pipes

- ☐ Removing and installing ⇒ [page 126](#)
- ☐ With heat insulation mat, detach if necessary.



Note

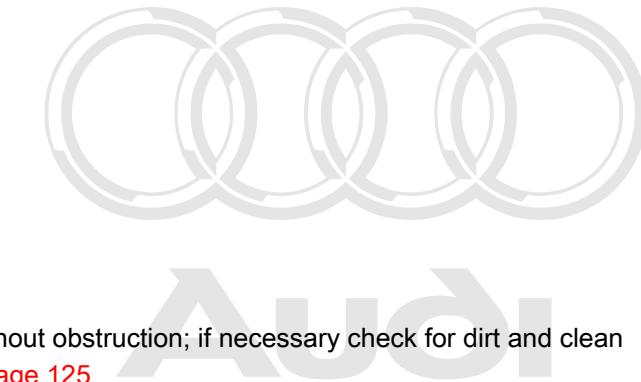
The illustration shows an exhaust silencer with corrugated exhaust pipes not fitted with a heat shield. If not already provided, fit the exhaust silencer with a new heat shield ⇒ Electronic parts catalogue .

33 - Nut - 8 Nm

11.1.1 Removing and installing circulation pump -V55-

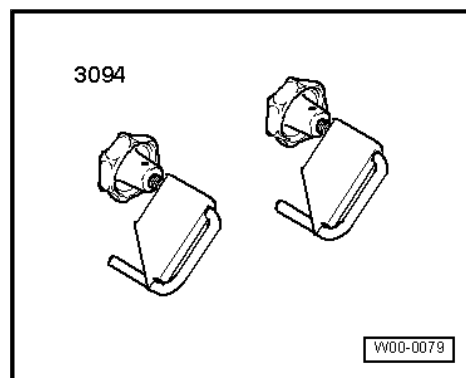
All models except Audi S6

Special tools and workshop equipment required

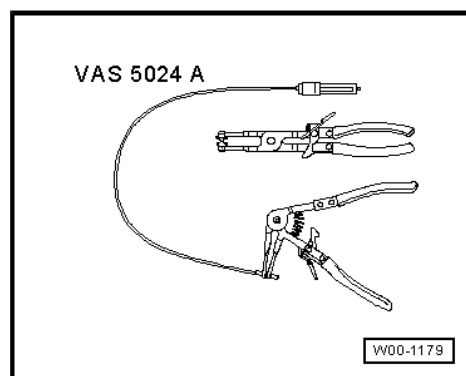


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- ◆ Hose clamps up to Ø 25 mm -3094-



- ◆ Pliers for spring clips -VAS 5024 A-



Removing

- Switch off the ignition and the auxiliary heater.
- Remove front bumper cover ⇒ General body repairs, Exterior; Rep. Gr. 63 .
- Remove left headlight ⇒ Electrical System; Rep. Gr. 94 .
- If applicable, remove the charge air cooler (e.g. on vehicles with diesel engine) ⇒ Engine, mechanics; Rep. Gr. 21 .
- Clamp off coolant hoses -A- and -B- using hose clamps -3094- and detach.
- Unplug electrical connector -C-.
- Remove bolt -arrow- and detach clip and circulation pump - V55- .

Installing

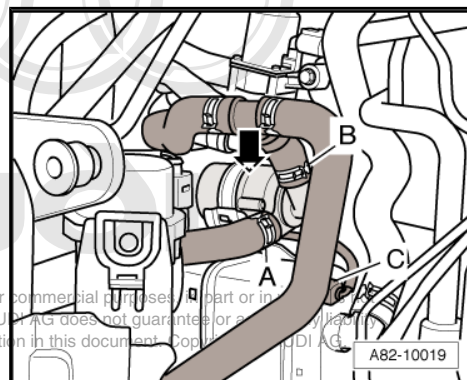
Installing is carried out in reverse order; note the following:



Note

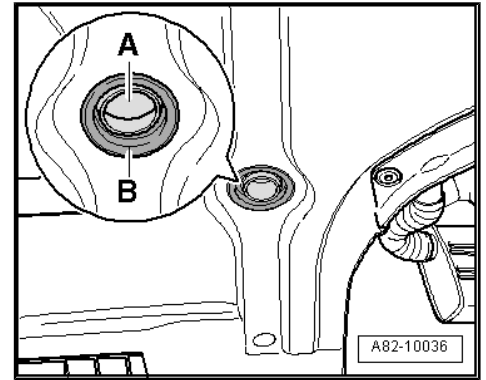
Secure all hose connections with standard clamps ⇒ Electronic parts catalogue .

- Following installation, check the exhaust pipe, coolant hoses, fuel pipe and wiring to the auxiliary heater (must not make contact with other components).



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- After installing noise insulation, check position of exhaust pipe -A-; a gasket -B- must be installed between exhaust pipe -A- and noise insulation. Exhaust pipe must protrude downwards out of gasket and outlet of exhaust gas from exhaust pipe -A- must not be impeded
- Refill coolant ⇒ Engine, Mechanical Components; Rep. Gr. 19 .
- Bleed coolant circuit ⇒ [page 109](#) and ⇒ Engine, Mechanical Components; Rep. Gr. 19
- Install left headlight ⇒ Electrical System; Rep. Gr. 94 .
- Install front bumper cover ⇒ General body repairs, Exterior; Rep. Gr. 63 .
- Briefly switch on auxiliary heater.

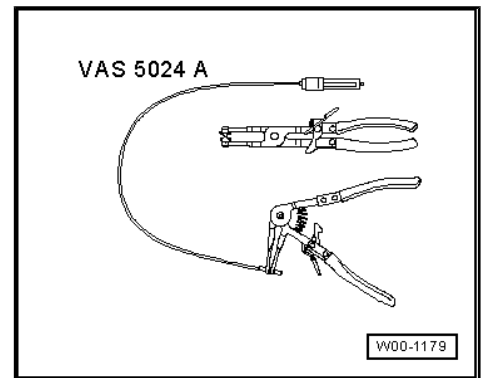


11.1.2 Removing and Installing intake air silencer

All models except Audi S6

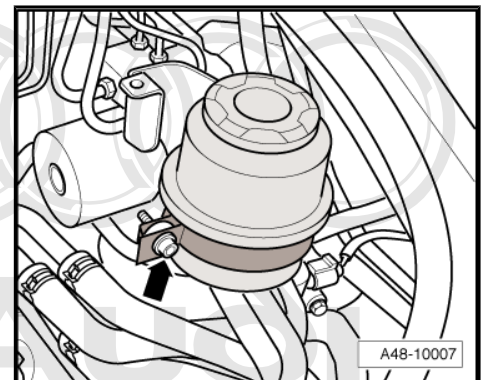
Special tools and workshop equipment required

- ◆ Pliers for spring clips -VAS 5024 A-



Removing

- Unscrew bolt -arrow- and lay power steering reservoir aside with the connected hydraulic hoses.

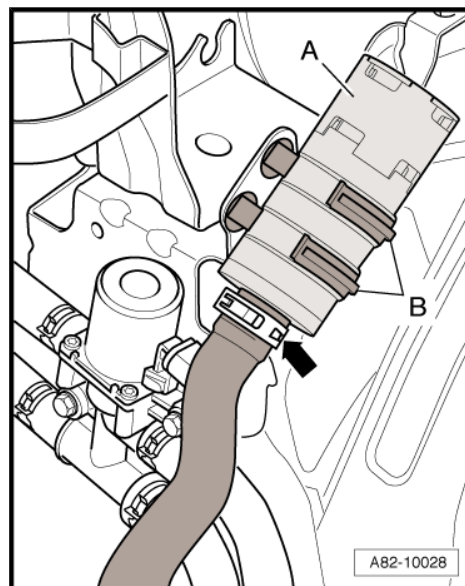


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- Unclip intake air silencer -A- from brackets -B-.
- Pull the intake air silencer toward engine compartment and open hose clip -arrow-.
- Disconnect intake air silencer from intake air hose.

Installing

Installation is carried out in reverse order.



11.1.3 Removing and installing auxiliary heater silencer with corrugated exhaust pipes

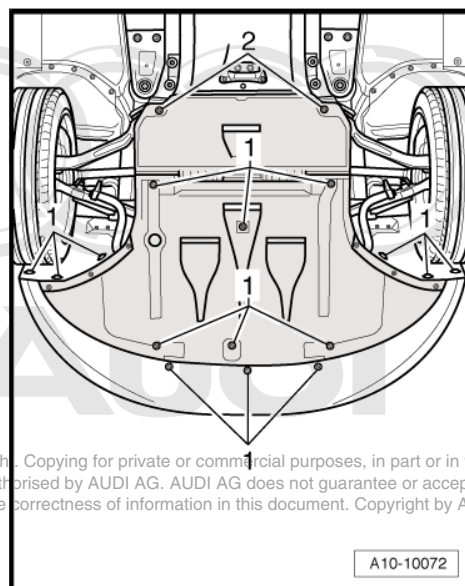
All models except Audi S6



Note

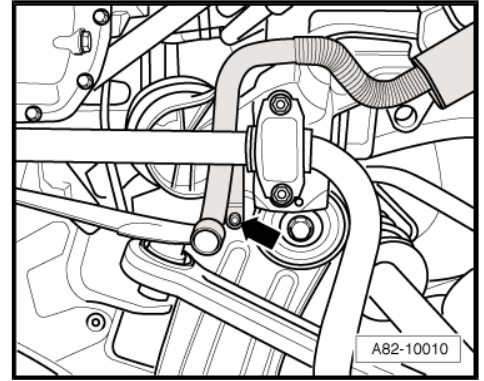
Depending on the version, the corrugated exhaust pipes may be fitted with a heat insulation mat. After fitting, pay attention to the correct installation position of this heat insulation mat.

- Unfasten quick-release catches -1- and -2- and detach front and rear noise insulation.



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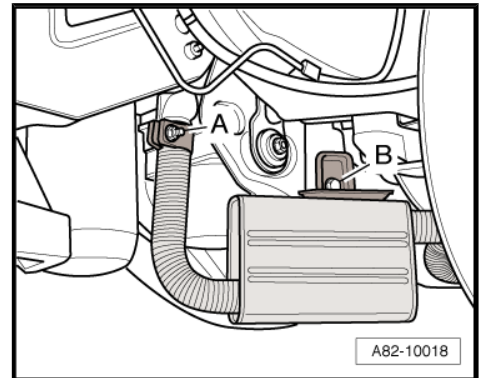
- Unscrew bolt -arrow- for corrugated exhaust pipe.



- Unfasten nut -A- on clamp of corrugated exhaust pipe.
- Unscrew bolt -B- and detach auxiliary heater exhaust silencer with corrugated exhaust pipes.

i Note

The illustration shows an exhaust silencer with corrugated exhaust pipes not fitted with a heat shield. If not already provided, fit the exhaust silencer with a new heat shield ⇒ Electronic parts catalogue .



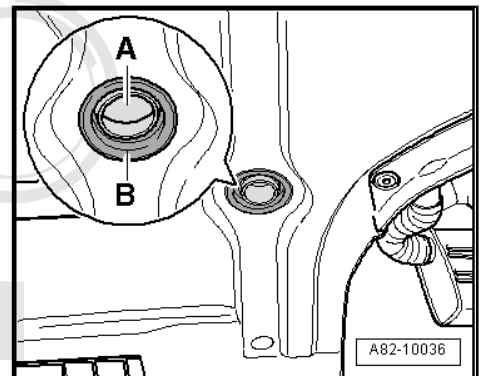
Installing

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

- After installing, check exhaust pipe, coolant hoses, fuel line and wiring to auxiliary heater; they must not touch any other components.
- After installing noise insulation, check position of exhaust pipe -A-; a gasket -B- must be installed between exhaust pipe -A- and noise insulation. Exhaust pipe must protrude downwards out of gasket and outlet of exhaust gas from exhaust pipe -A- must not be impeded

Tightening torques

Component	Nm
Auxiliary heater exhaust silencer to bracket	8
Clip for corrugated exhaust pipe	8
Exhaust pipe to engine mounting console	10



11.2 Detaching add-on components from auxiliary heater/re-attaching (Audi S6)

Part 1

1 - Front protective cover
2 - Shear bolt
☐ 3x

3 - Intake air silencer

- ☐ Air inlet must not be impeded; check for contamination if necessary and clean
- ☐ Removing and installing ⇒ [page 132](#)

4 - Air intake hose
5 - Auxiliary heater

- ☐ Dismantling and assembling ⇒ [page 135](#)

6 - Bolt - 8 Nm
7 - T-bolt
8 - Nut - 8 Nm
9 - Rubber bush
10 - Sleeve
11 - Holder for auxiliary heater
12 - Bolt - 8 Nm
☐ 3x

13 - Bolt - 8 Nm
☐ 3x

14 - Holder
15 - Nut - 8 Nm
16 - Sleeve
17 - Sleeve
18 - Bolt - 8 Nm
19 - Bolt - 8 Nm
20 - Retaining bracket

- ☐ For exhaust silencer

21 - Heat shield

- ☐ For exhaust silencer

22 - Retaining clip - 8 Nm
23 - Spacer

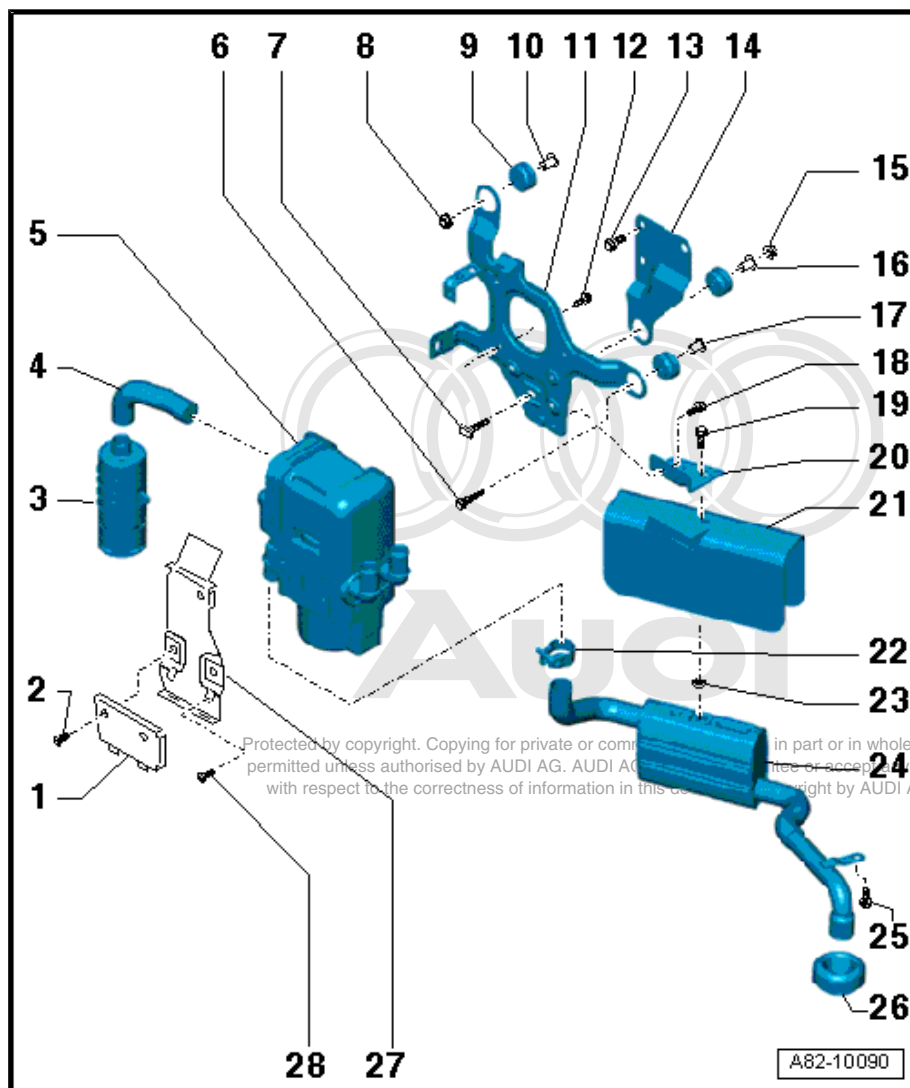
- ☐ Inserted between heat shield and exhaust silencer

24 - Exhaust silencer with corrugated exhaust pipes

- ☐ Removing and installing ⇒ [page 133](#)

25 - Bolt -10 Nm
26 - Gasket for exhaust pipe

- ☐ Fitted between exhaust pipe and front noise insulation
- ☐ When fitted, the exhaust pipe must project downwards out of the gasket
- ☐ Emergence of exhaust gas from the exhaust pipe must not be impeded (by the front noise insulation or e.g. by parking the front end of the vehicle over the edge of the pavement)



27 - Rear protective cover

28 - Bolt

Part 2

1 - Coolant hose

- ☐ To engine
- ☐ Connection diagram
⇒ [page 100](#)

2 - Nut - 8 Nm

3 - Holder

- ☐ For heater coolant shut-off valve -N279-

4 - Heater coolant shut-off valve -N279-

- ☐ Removing and installing
⇒ [page 104](#)

5 - Coolant hose

- ☐ From air conditioner unit heat exchanger
- ☐ Connection diagram
⇒ [page 100](#)

6 - Coolant hose

- ☐ To circulation pump - V55-
- ☐ Connection diagram
⇒ [page 100](#)

7 - Fuel hose

- ☐ Routing of fuel pipe to auxiliary heater
⇒ [page 40](#)

8 - Coolant hose

- ☐ To auxiliary heater
- ☐ Connection diagram
⇒ [page 100](#)

9 - Bolt

10 - Clip

- ☐ For attachment of circulation pump -V55-

11 - Circulation pump -V55-

- ☐ Removing and installing ⇒ [page 130](#)

12 - Coolant hose

- ☐ To air conditioner unit heat exchanger
- ☐ Connection diagram ⇒ [page 100](#)

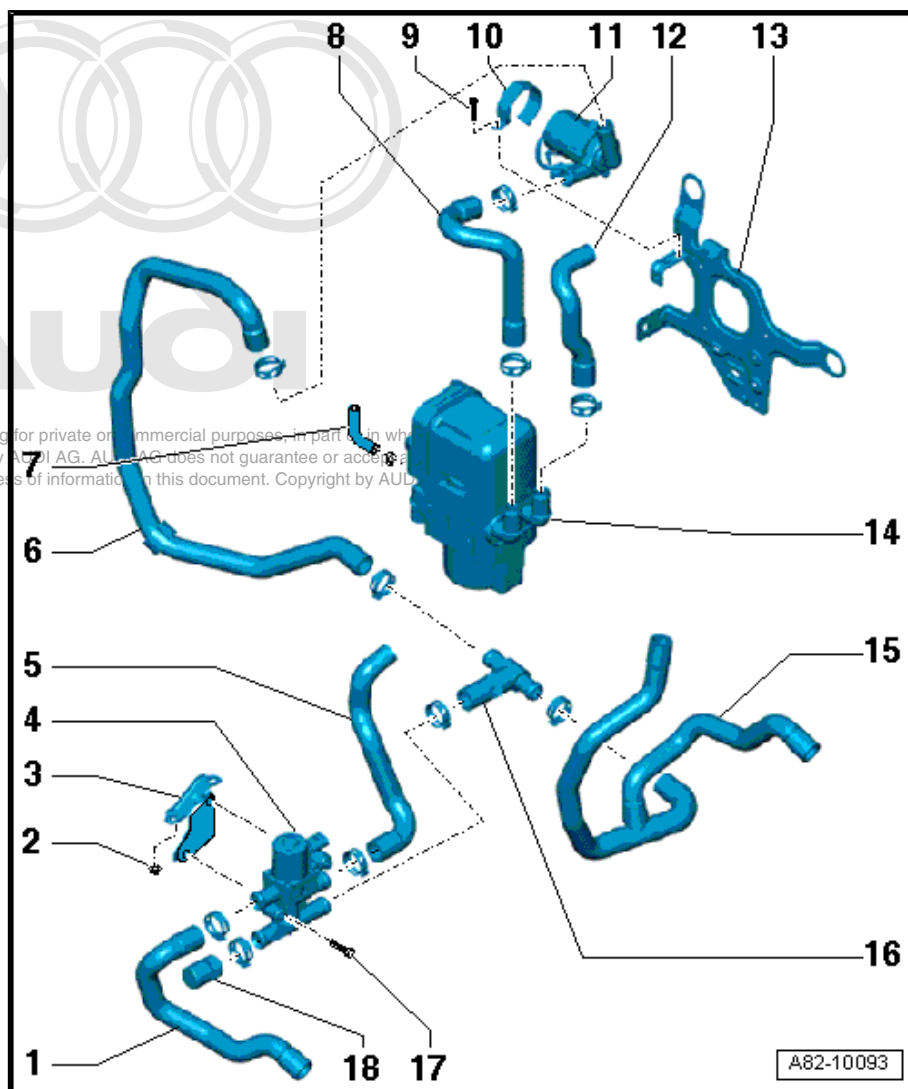
13 - Holder for auxiliary heater

14 - Auxiliary heater

- ☐ Dismantling and assembling ⇒ [page 135](#)

15 - Coolant hose assembly

- ☐ From engine
- ☐ Connection diagram ⇒ [page 100](#)



16 - T-piece

17 - Bolt - 7 Nm

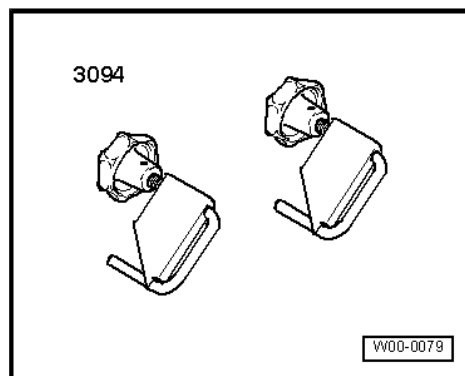
18 - Sealing plug

11.2.1 Removing and installing circulation pump -V55-

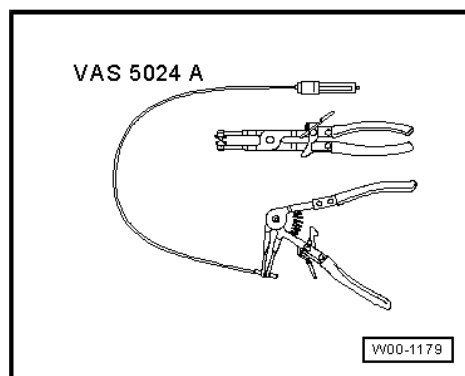
Audi S6

Special tools and workshop equipment required

- ◆ Hose clamps up to Ø 25 mm -3094-



- ◆ Hose clip pliers -VAS 5024 A-



- ◆ Hand drill

- ◆ Bit Ø 3 mm

- ◆ Left-hand removal tool, size 3

- ◆ Safety goggles

Removing

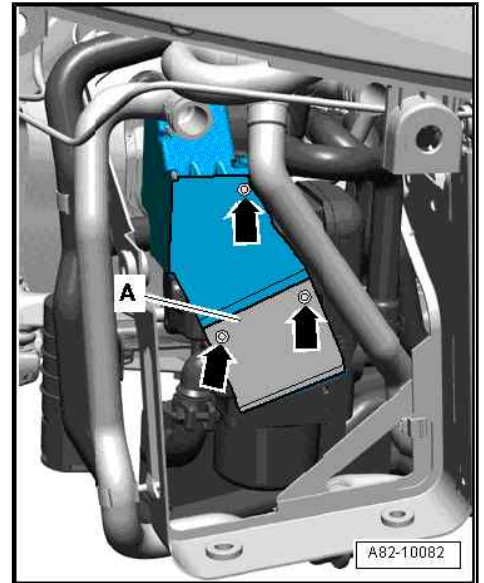
- Switch off ignition and auxiliary heater.
- Remove the front bumper cover ⇒ General body repairs, exterior; Rep. Gr. 63 .
- If fitted, remove the auxiliary radiator ⇒ Engine, mechanics; Rep. Gr. 19 .



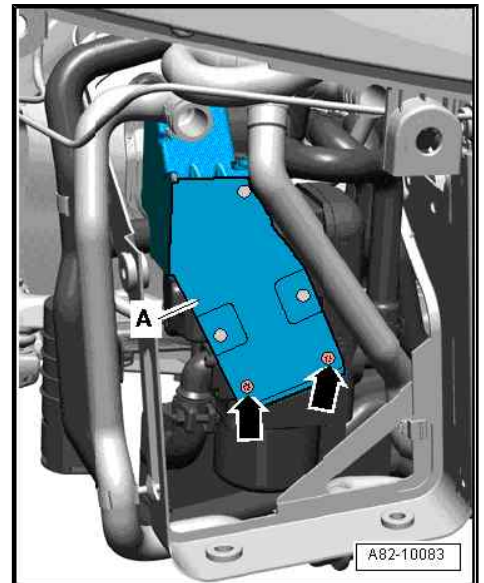
WARNING

Wear safety goggles.

- Drill out the shear bolts -arrows- with a $\varnothing$ 3 mm bit.
- Screw a commercially available size 3 left-hand removal tool for example into the hole of the shear bolt.
- Use the left-hand removal tool to screw out the shear bolt.
- Detach the front protective cover -A-.



- Screw out the bolts -arrows-.
- Detach the rear protective cover -A- from the auxiliary heater.



- Pinch off the coolant hoses -C- and -D- with hose clamps -3094- .
- Detach the coolant hoses at the circulation pump -V55- .
- Unplug the connector -A- at the auxiliary heater.
- Screw out the bolt -arrow- and detach the clip and the circulation pump -V55- -Item B-.

Installing

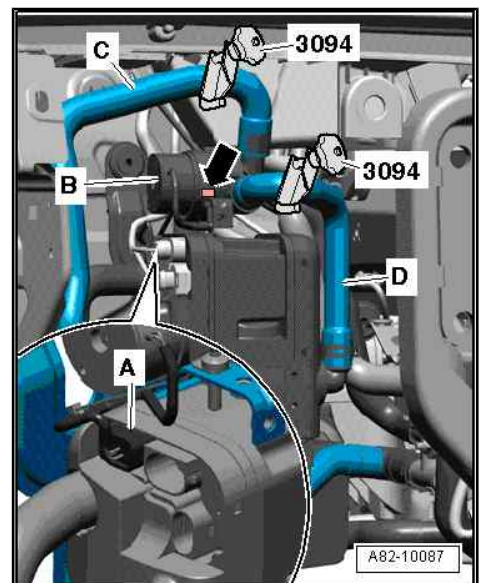
Install in reverse order, paying attention to the following:



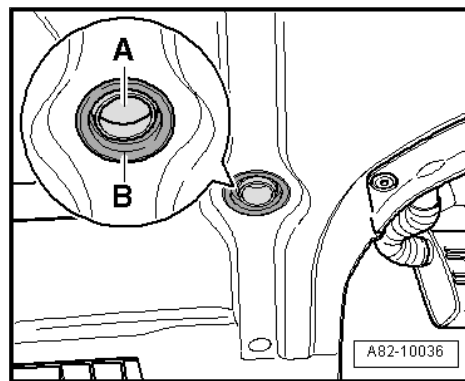
Note

Secure all hose connections with standard clamps $\Rightarrow$ Electronic parts catalogue .

- Following installation, check the exhaust pipe, coolant hoses, fuel pipe and wiring to the auxiliary heater (must not make contact with other components).



- After installing the noise insulation, check the position of the exhaust pipe -A-. There must be a gasket -B- fitted between the exhaust pipe and the noise insulation. The exhaust pipe must project downwards out of the gasket and the emergence of exhaust gas from the exhaust pipe -A- must not be impeded.
- Top up coolant ⇒ Engine, mechanics; Rep. Gr. 19 .
- Bleed the coolant circuit ⇒ [page 109](#) and ⇒ Engine, mechanics; Rep. Gr. 19 .
- Install the front bumper cover ⇒ General body repairs, exterior; Rep. Gr. 63 .
- Briefly switch on the auxiliary heater.

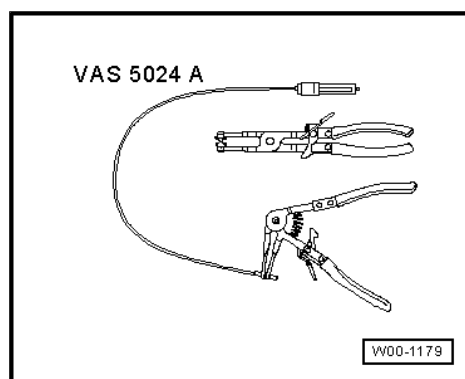


11.2.2 Removing and installing intake air silencer

Audi S6

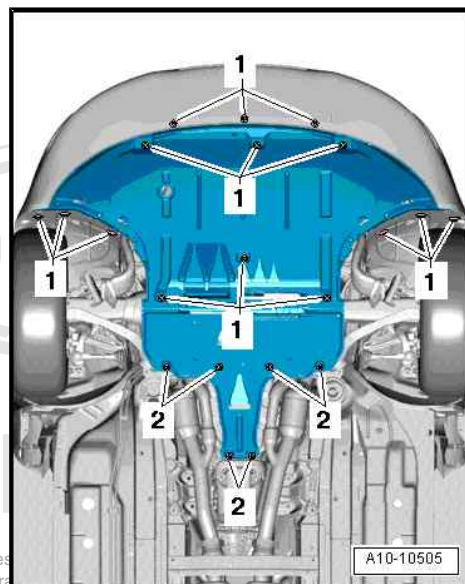
Special tools and workshop equipment required

- ◆ Pliers for spring clips -VAS 5024 A-



Removing

- Unfasten the quick-release fasteners -1- and detach the front noise insulation.

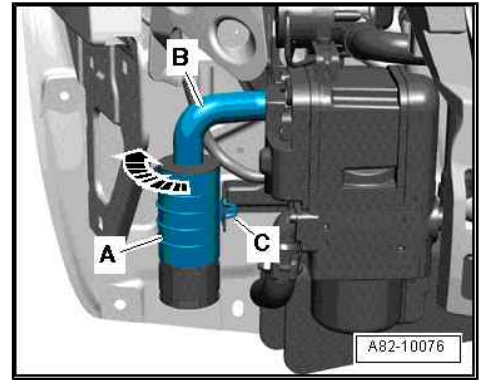


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- Release the clip -C- and take the intake air silencer -A- out of the holder.
- Screw the intake air silencer in -arrow direction- out of the intake air hose -B-.

Installing

Install in reverse order.

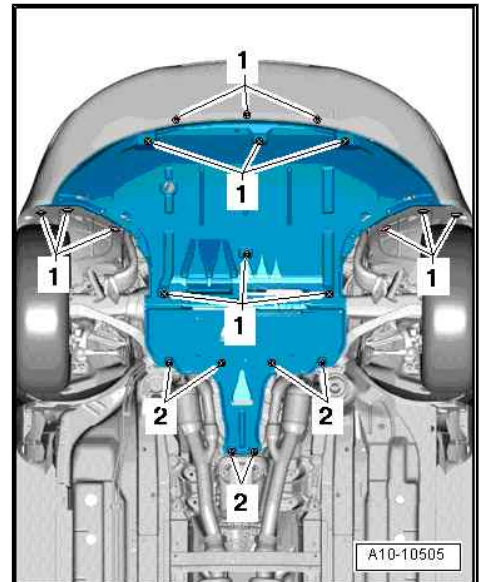


11.2.3 Removing and installing exhaust silencer with corrugated exhaust pipes

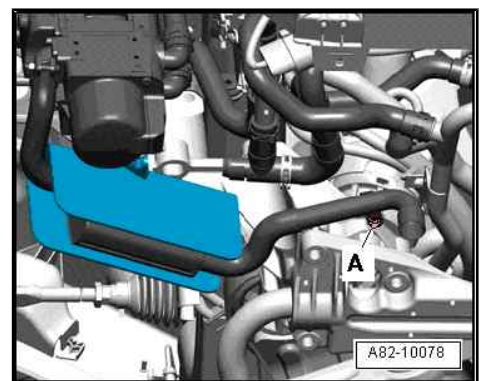
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Removing

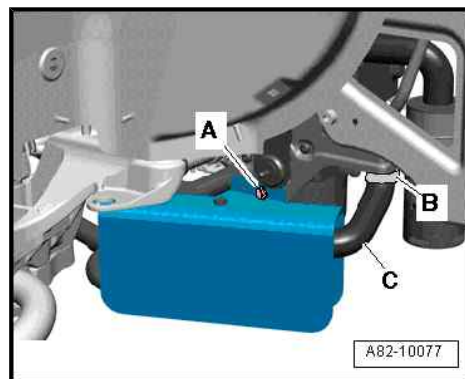
- Unfasten the quick-release fasteners -1- and detach the front noise insulation.
- Remove the front right wheel housing liner ⇒ Rep. Gr. 66 .



- Screw out the bolt -A- for the corrugated exhaust pipe.



- Unfasten the nut at the clip -B- and detach the corrugated exhaust pipe -C- at the auxiliary heater.
- Screw out the bolt -A- and detach the exhaust silencer with corrugated exhaust pipes.



- Screw out the bolt -B-.
- Detach the heat insulation mat -A- at the exhaust silencer.



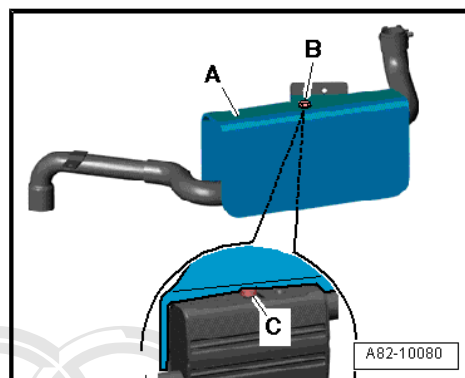
Note

Pay attention to the spacer -C- when detaching the heat insulation mat.

Installing

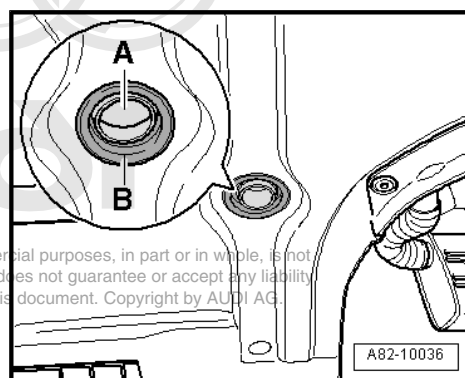
Install in reverse order, paying attention to the following:

- Following installation, check the exhaust pipe, coolant hoses, fuel pipe and wiring to the auxiliary heater (must not make contact with other components).
- After installing the noise insulation, check the position of the exhaust pipe -A-. There must be a gasket -B- fitted between the exhaust pipe and the noise insulation. The exhaust pipe must project downwards out of the gasket and the emergence of exhaust gas from the exhaust pipe -A- must not be impeded.



Tightening torques

Component	Nm
Holder to exhaust silencer	8
Exhaust silencer with holder to auxiliary heater	8
Clamp for corrugated exhaust pipe	8
Exhaust pipe to engine mounting bracket	10



11.3 Dismantling and assembling auxiliary heater

Note

- ◆ Removing auxiliary heater ⇒ [page 111](#) (all models except Audi S6), ⇒ [page 115](#) (Audi S6)

◆ Detaching add-on components from the auxiliary heater:
 ⇒ [page 121](#) (all models except Audi S6), ⇒ [page 127](#) (Audi S6)

- ◆ There are different versions of the supplementary heater control unit -J364- and the burner element for vehicles with petrol and diesel engine ⇒ *Electronic parts catalogue*.

- ◆ There are different versions of auxiliary heater control unit -J364- (e.g. also for Audi A3, VW Touran and VW Golf). Although these different versions are identical in appearance, only the models released for this vehicle are to be fitted on the Audi A6 (different actuation via the convenience data bus system, different software, different connector assignment) ⇒ *Electronic parts catalogue*.

1 - Intake manifold

- This illustration shows the angled version (the Audi S6 is fitted with a different version ⇒ *Electronic parts catalogue*)
- Removing and installing ⇒ [page 141](#)

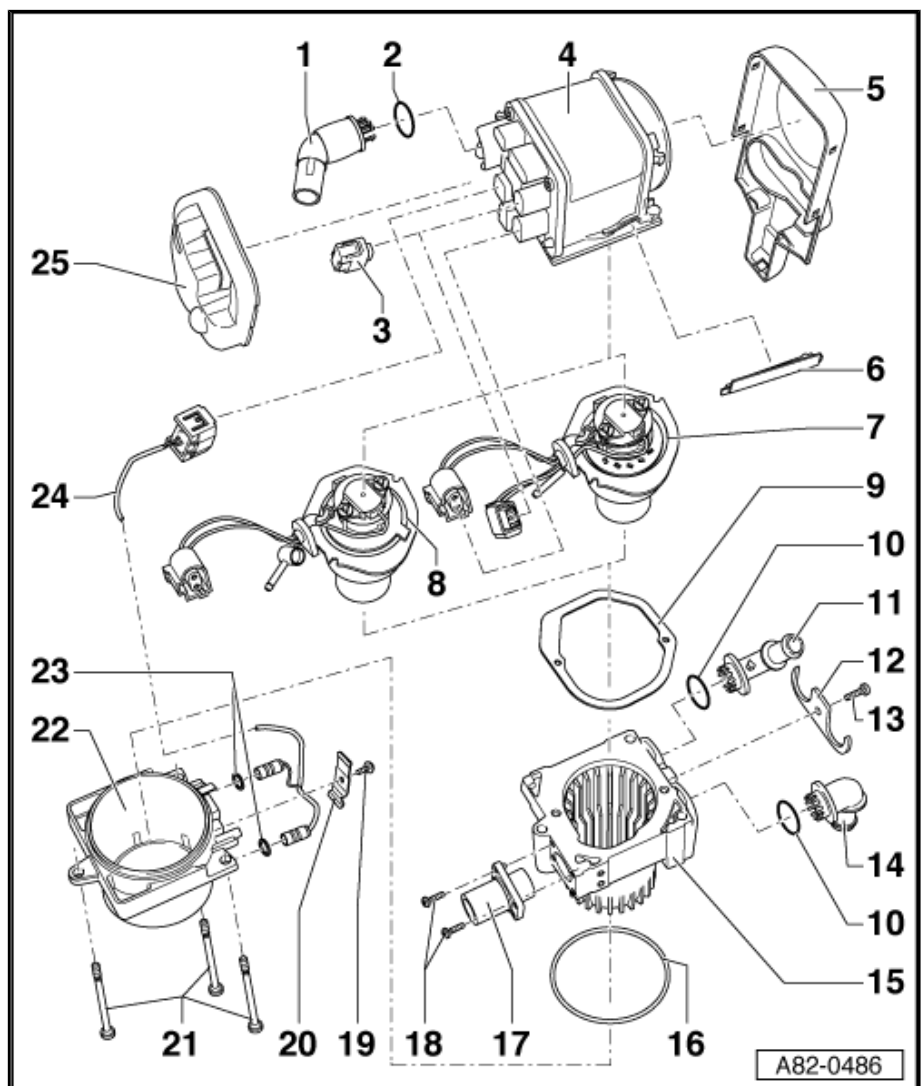
2 - Oil seal

3 - Connector housing

- No wiring with petrol version (dummy plug for sealing connector at control unit)

4 - Auxiliary heater control unit -J364- and combustion air blower -V6-

- Checking ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051
- Design ⇒ [page 139](#)
- Connector assignment at auxiliary heater control unit -J364- ⇒ [page 146](#)
- Different versions ⇒ [page 139](#) and ⇒ *Electronic parts catalogue*
- Assembling auxiliary heater control unit -J364- and burner element ⇒ [page 142](#)



**Note**

- ◆ *There are different versions of auxiliary heater control unit -J364- for vehicles with petrol or diesel engines. Certain functions are differently matched (e.g. pre-heating times) or not available at all (e.g. actuation of fuel pre-heating heater element -Z66-).*
- ◆ *Depending on the auxiliary heater design (with or without fuel shut-off valve -N109-), different versions of the supplementary heater control unit -J364- and the metering pump -V54- are fitted ⇒ [page 37](#) and ⇒ *Electronic parts catalogue*.*
- ◆ *The fuel shut-off valve -N109- is only provided for the diesel version; gradual introduction as of 05.2008 ⇒ *Electronic parts catalogue*.*
- ◆ *At present the supplementary heater control unit -J364- and the combustion air blower -V6- are not available as replacement parts (on account of component protection, introduction not yet finalised) ⇒ *Electronic parts catalogue*.*
- ◆ *As of Model Year 2009, a modified data bus diagnostic interface -J533- is gradually being introduced ⇒ *Electronic parts catalogue*. Vehicles with the modified version of -J533- are only to be fitted with auxiliary heaters (with supplementary heater control unit -J364-) with part number 4F0 265 081 as of index "M" ⇒ *Electronic parts catalogue*. If an auxiliary heater with part number 4F0 265 081 up to index "L" is fitted in a vehicle with modified -J533-, shut-off of the auxiliary heater on account of "Undervoltage" (e.g. in the event of an insufficiently charged battery-A-) by -J533- is not possible ⇒ *Vehicle diagnostic, testing and information system -5051 A-, "Guided fault-finding" function*.*

5 - Cover

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6 - Cover

- ☐ Use screwdriver to carefully release from fasteners and detach

7 - Diesel burner element

- ☐ With glow plug with flame monitor -Q8- and fuel pre-heating heater element -Z66- (and fuel shut-off valve -N109-)
- ☐ Checking installation position of glow plug with flame monitor -Q8-
⇒ ["11.5 Checking installation position of glow plug with flame monitor Q8", page 140](#)

- ☐ Different versions for petrol or diesel vehicles ⇒ Electronic parts catalogue
- ☐ Checking glow plug with flame monitor -Q8- and fuel pre-heating heater element -Z66- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051
- ☐ Assembling auxiliary heater control unit -J364- and burner element ⇒ [page 142](#)



Note

- ◆ *At present, glow plug with flame monitor -Q8- and fuel pre-heating heater element -Z66- can only be replaced together with burner element (wires welded in joint grommet).*
- ◆ *With certain restrictions, diesel version is also designed for operation of auxiliary heater with biodiesel (vegetable-oil or rape-oil methylester fuel) ⇒ [page 3](#)*
- ◆ *As of Model Year 2006, auxiliary heaters with a modified glow plug with flame monitor -Q8- are gradually being introduced (changes to insulation and length of ferrules at glow plug).*
- ◆ *Depending on the auxiliary heater design (with or without fuel shut-off valve -N109-), different versions of the supplementary heater control unit -J364- and the metering pump -V54- are fitted ⇒ [page 37](#) and ⇒ Electronic parts catalogue .*
- ◆ *The fuel shut-off valve -N109- is only provided for the diesel version; gradual introduction as of 05.2008 ⇒ Electronic parts catalogue .*



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8 - Petrol burner element

- ☐ With glow plug with flame monitor -Q8- (without fuel pre-heating heater element -Z66-)
- ☐ Checking installation position of glow plug with flame monitor -Q8- ⇒ [page 140](#)
- ☐ Checking glow plug with flame monitor -Q8- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051
- ☐ Assembling auxiliary heater control unit -J364- and burner element ⇒ [page 142](#)
- ☐ Different versions for vehicles with petrol or diesel engine ⇒ Electronic parts catalogue



Note

- ◆ *At present, the glow plug with flame monitor -Q8- can be replaced separately (currently also available as separate replacement part) ⇒ Electronic parts catalogue .*
- ◆ *As of Model Year 2006, auxiliary heaters with a modified glow plug with flame monitor -Q8- are gradually being introduced (changes to insulation and length of ferrules at glow plug).*

9 - Shaped gasket

- ☐ Replace ⇒ Electronic parts catalogue

**Note**

As of Model Year 2006, auxiliary heaters with a modified moulded gasket are gradually being introduced (changes to outer contour of gasket).

10 - O- ring seal

- ☐ Replace ⇒ Electronic parts catalogue
- ☐ Moisten with coolant, for example, before installing (as lubricant)

11 - Connection

- ☐ For the coolant hose from the auxiliary heater to the air conditioner pump/valve unit
- ☐ Installing connection at auxiliary heater ⇒ [page 141](#)

12 - Bracket for connection

- ☐ Installing connection at auxiliary heater ⇒ [page 141](#)
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13 - Bolt**14 - Connection**

- ☐ For coolant hose between circulation pump -V55- and auxiliary heater
- ☐ Installing connection at auxiliary heater ⇒ [page 141](#)

15 - Burner housing and heat exchanger

- ☐ Remove combustion residue prior to assembly
- ☐ Assembling burner housing with heat exchanger and outer casing ⇒ [page 142](#)
- ☐ Depending on the auxiliary heater version, the burner housing and heat exchanger, the O-ring (⇒ [Item 16 \(page 138\)](#)) and the outer casing (⇒ [Item 22 \(page 138\)](#)) may be permanently connected and cannot be dismantled ⇒ Electronic parts catalogue .

16 - O- ring seal

- ☐ Replace ⇒ Electronic parts catalogue
- ☐ Moisten with coolant, for example, before installing (as lubricant)

17 - Connection

- ☐ For corrugated exhaust pipe

18 - Bolt**19 - Bolt****20 - Clamp**

- ☐ For attaching overheating fuse -S24- / overheating sensor -G189- and temperature sensor -G18-

21 - Bolt**22 - Outer casing**

- ☐ Assembling burner housing with heat exchanger and outer casing ⇒ [page 142](#)
- ☐ Depending on the auxiliary heater version, the burner housing and heat exchanger (⇒ [Item 15 \(page 138\)](#)), the O-ring (⇒ [Item 16 \(page 138\)](#)) and the outer casing may be permanently connected and cannot be dismantled ⇒ Electronic parts catalogue .

**Note**

As of Model Year 2006, auxiliary heaters with a modified outer casing are gradually being introduced (changes to seal at connections and second cable guide).

23 - O- ring seal

- ☐ Replace ⇒ Electronic parts catalogue
- ☐ Moisten with coolant, for example, before installing (as lubricant)

24 - Overheating fuse -S24- / overheating sensor -G189- and temperature sensor -G18- with corresponding wiring

- ☐ Depending on version of auxiliary heater control unit -J364- , overheating fuse -S24- may also be referred to as overheating sensor -G189- .
- ☐ Cannot be replaced separately ⇒ Electronic parts catalogue
- ☐ Removing and installing overheating fuse -S24- / overheating sensor -G189- and temperature sensor -G18- ⇒ [page 144](#)
- ☐ Checking overheating fuse -S24- / overheating sensor -G189- and temperature sensor -G18- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051

25 - Cover

- ☐ For connector console
- ☐ Assignment of connector console ⇒ [page 146](#)
- ☐ Use screwdriver to carefully release from fasteners and detach

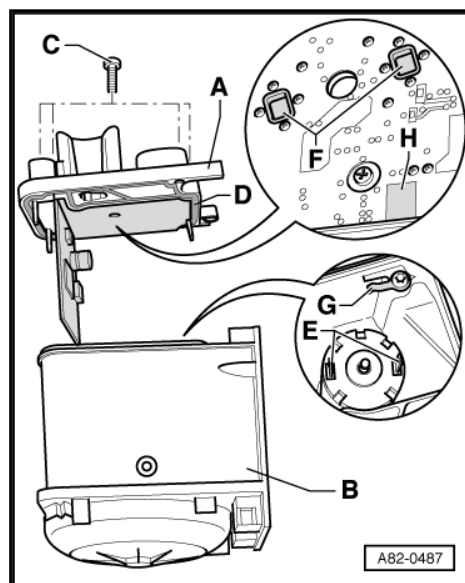
11.4 Design of auxiliary heater control unit -J364- and combustion air blower -V6-



Note

- ◆ *Delivery of combustion air blower is subject to certain tolerances. When manufacturing auxiliary heater, CO₂ content in exhaust gas is set (on a test bench) at auxiliary heater control unit -J364- . Replacement of control unit together with combustion air blower on these heaters could lead to CO₂ content in exhaust gas exceeding permitted levels. After replacement, check CO₂ content in exhaust gas and adjust if necessary ⇒ [page 53](#) .*
- ◆ *There are different versions of auxiliary heater control unit -J364- for vehicles with petrol or diesel engines. Certain functions are differently matched (e.g. preheating times) or not available at all (e.g. actuation of fuel pre-heating heater element -Z66-).*
- ◆ *There are different versions of auxiliary heater control unit -J364- (with combustion air blower -V6- (e.g. also for Audi A3, VW Touran and VW Golf). Although these different versions are identical in appearance, only the models released for this vehicle are to be fitted on the Audi A6 (different actuation via the convenience data bus system, different software, different connector assignment) ⇒ Electronic parts catalogue .*
- ◆ *Combustion air blower -V6- is actuated by control unit with a voltage of approx. 12 V and has a current input of approx. 1.8 A.*
- ◆ *At present the supplementary heater control unit -J364- and the combustion air blower -V6- are not available as replacement parts (on account of component protection, introduction not yet finalised) ⇒ Electronic parts catalogue .*

- ◆ The supplementary heater control unit -J364- -Item A- and the housing with the combustion air blower -V6- -Item B- form one unit and can currently only be jointly replaced ⇒ Electronic parts catalogue .
- ◆ Moulded gasket -D- prevents ingress of moisture at housing joint.
- ◆ The two lugs -E- of the combustion air blower -V6- are inserted directly into the two contacts -F- of the PCB of the auxiliary heater control unit -J364- .
- ◆ Spring contact -G- and soldered surface -H- are designed to prevent a difference in voltage between PCB and housing.



11.5 Checking installation position of glow plug with flame monitor -Q8-



Note

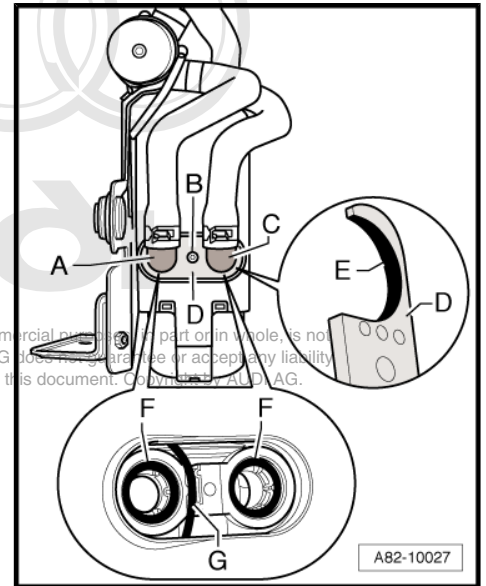
- ◆ *Illustration shows a burner element version for "petrol". In version for "diesel", electrical connection to fuel pre-heating heater element -Z66- is additionally welded into grommet -D-.*
- ◆ *The glow plug with flame monitor -Q8- and the fuel pre-heating heater element -Z66- can only be replaced at present together with the burner element on the "diesel" version (wires welded in joint grommet) ⇒ Electronic parts catalogue .*
- ◆ *Checking glow plug with flame monitor -Q8- and fuel pre-heating heater element -Z66- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051*
- ◆ *Glow plug -A- is held in a precisely defined position in ceramic body of burner element -C- by means of clip -B-. If this position is incorrect, combustion problems may be encountered (e.g. smoke formation).*
- ◆ Check grommets -D- after fitting.
- ◆ The non-insulated areas of the two wires to the glow plug -A- must not make mutual contact or come into contact with other components (danger of short circuit).



11.6 Attaching connection for coolant hoses to auxiliary heater

Note

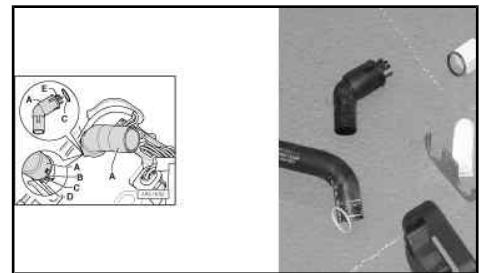
- ◆ *Attach connections -A- and -C- as shown in illustration (so that coolant hoses for auxiliary heater can be installed without tension and are not touching any other components).*
 - ◆ *Bracket -D- must be fitted so that lug -E- is facing auxiliary heater.*
 - ◆ *Before attaching bracket, check position of wire -G- in auxiliary heater recess.*
 - ◆ *As of Model Year 2006, auxiliary heaters with modified connections (optimised seal) and a modified outer casing are gradually being introduced.*
- Prior to installation, moisten both O-rings -F- with coolant, for example (as lubricant).
 - Insert both O-rings in the two connection openings.
 - Insert both connections -A- and -C- in the two connection openings.
 - Place bracket in correct position onto both connections and loosely screw in bolt -B-.
 - Align the two connections as shown (pay attention to position of webs on respective base plate of connections).
 - Tighten bolt -B-.



11.7 Removing and installing combustion air intake pipe

Note

- ◆ *This illustration shows the angled version (the Audi S6 is fitted with a different version ⇒ Electronic parts catalogue)*
- ◆ *Adjustment ring -D- with lug -B- is swivel-mounted on intake pipe -A-.*
- ◆ *Sealing ring -C- is designed to prevent water running directly into intake area via connection point.*



Removing

- Pull intake pipe to release it from fasteners -E-.

Installing

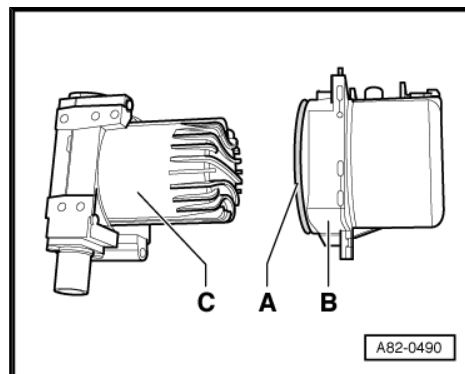
- Insert sealing ring -C- in auxiliary heater.
- Insert intake pipe in auxiliary heater as shown (pay attention to lug -B-).

11.8 Assembling burner housing with heat exchanger and outer casing

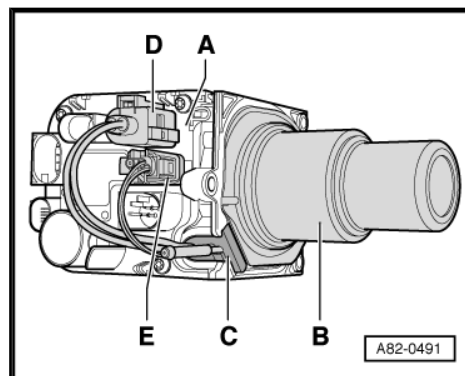
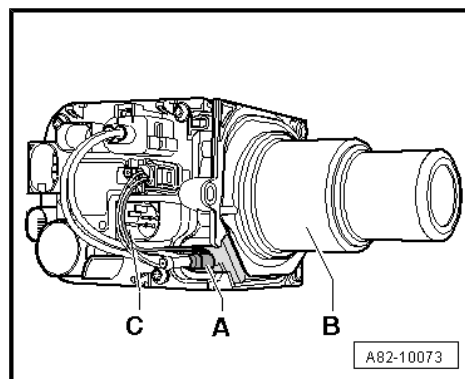


Note

- ◆ Depending on the auxiliary heater version, the burner housing and heat exchanger -C-, the O-ring -A- and the outer casing -B- may be permanently connected and cannot be dismantled
⇒ Electronic parts catalogue .
 - ◆ Prior to assembly, remove any combustion residue from heat exchanger -C-.
 - ◆ Prior to assembly, remove any residual coolant from heat exchanger -C- and outer casing -B-.
 - ◆ Check and clean both openings in the outer casing -B- of the auxiliary heater into which the temperature sensor -G18- and the overheating fuse -S24- / overheating sensor -G189- are inserted as well as both contact surfaces for these components at the heat exchanger -C-.
- Prior to installation, moisten O-ring -A- with coolant for example (as lubricant).
 - Attach O-ring -A- to outer casing -B-.
 - Assemble heat exchanger -C- and outer casing -B-.



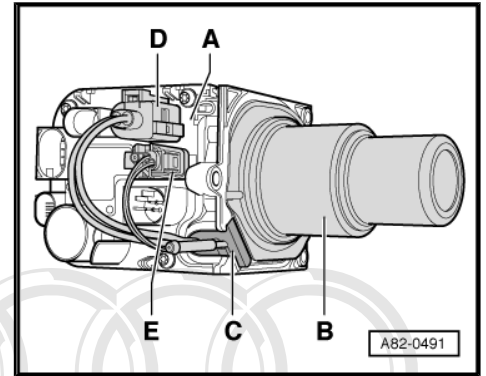
11.9 Assembling auxiliary heater control unit -J364- and burner element





Note

- ◆ Depending on the auxiliary heater design (with or without fuel shut-off valve -N109- -A-), different versions of the supplementary heater control unit -J364- -C- and the metering pump -V54- are fitted ⇒ [page 37](#) and ⇒ *Electronic parts catalogue*.
 - ◆ The fuel shut-off valve -N109- -A- is only provided in the fuel pipe of the burner element -B- on the version for vehicles with diesel engine. The fuel shut-off valve -N109- is being gradually introduced as of 05.2008 ⇒ *Electronic parts catalogue*.
 - ◆ Prior to assembly, remove any combustion residue from or out of burner element -B-.
 - ◆ Pay attention to correct assignment of auxiliary heater control unit -J364- -A- and burner element -B- (different versions).
 - ◆ This illustration shows burner element for diesel (with wiring and connector for fuel pre-heating heater element -Z66-).
 - ◆ If the burner element is defective, also replace the glow plug with flame monitor -Q8- ⇒ *Electronic parts catalogue*.
 - ◆ Replace burner element if deposits have formed which affect heating operation and cannot be removed with **workshop equipment**.
 - ◆ Version for petrol (without wiring and connector for fuel pre-heating heater element -Z66-) features a connector -E- with no wiring (to stop ingress of dirt and moisture into control unit via connection).
- Assemble auxiliary heater control unit -J364- (with combustion air blower) -A- and burner element -B- as shown, paying particular attention to correct installation position of grommet -C-.
 - Plug in connectors -D- (to glow plug with flame monitor -Q8-) and -E- (to fuel pre-heating heater element -Z66- , diesel version only) at control unit.



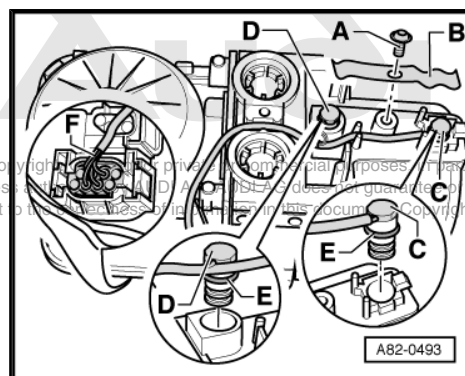
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11.10 Removing and installing overheating fuse -S24- / overheating sensor -G189- and temperature sensor -G18-



Note

- ◆ Depending on version of auxiliary heater control unit -J364-, overheating fuse -S24- may also be referred to as overheating sensor -G189-.
- ◆ The overheating fuse -S24- / overheating sensor -G189- -Item C-, the temperature sensor -G18- -Item D- and the corresponding wiring form one unit and can only be jointly replaced.
- ◆ The overheating fuse -S24- / overheating sensor -G189- and the temperature sensor -G18- are only inserted in the housing. After a lengthy operating period, O-rings fitted as seals may however stick to housing.
- ◆ As of Model Year 2006, auxiliary heaters with an improved overheating fuse -S24- / overheating sensor -G189- and an improved temperature sensor -G18- are gradually being introduced (better protection of wiring against ingress of moisture).



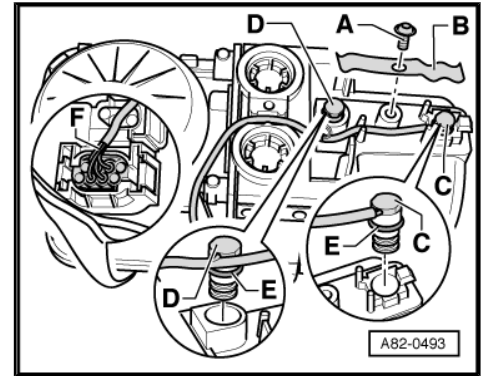
Removing

- Remove auxiliary heater ⇒ [page 111](#) . (all models except Audi S6), ⇒ [page 115](#) (Audi S6)
- Detach the add-on components from the auxiliary heater ⇒ [page 121](#) (all models except Audi S6), ⇒ [page 127](#) (Audi S6).
- Detach both coolant hose connections from auxiliary heater ⇒ [page 141](#) .
- Detach both plastic covers from auxiliary heater ⇒ [page 135](#) (dismantling and assembling auxiliary heater).

- Remove bolt -A- and detach clip -B-.
- Carefully pull the overheating fuse -S24- / overheating sensor -G189- -Item C- and the temperature sensor -G18- -Item D- out of the auxiliary heater (e.g. by applying gripping pliers directly to the housing). In doing so, take care not to damage components which are to be re-used.
- Unplug connector -F- from control unit.

Installing

- Check and clean both openings in the outer casing of the auxiliary heater into which the temperature sensor -G18- -D- and the overheating fuse -S24- / overheating sensor -G189- -C- are inserted. Also check the surfaces of these components that will come into contact with the heat exchanger. (through the two openings in the auxiliary heater).
- Attach one new O-ring -E- each to the overheating fuse -S24- / overheating sensor -G189- and the temperature sensor -G18- .
- Prior to installation, moisten both O-rings -E- with coolant, for example (as lubricant).
- Insert the overheating fuse -S24- / overheating sensor -G189- and the temperature sensor -G18- .
- Insert clip -B- in correct position and tighten bolt -A-.
- Route wiring to connector -F- as shown and plug in connector.



Note

As of Model Year 2006, auxiliary heaters are gradually being introduced on which the wiring is routed on the opposite side to that shown at the attachment point for the holder of the connection.

- Re-assemble the auxiliary heater ⇒ [page 121](#) (all models except Audi S6), ⇒ [page 127](#) (Audi S6).
- Re-install the auxiliary heater and all the parts removed in reverse order ⇒ [page 111](#) (all models except Audi S6), ⇒ [page 115](#) (Audi S6).

Audi

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12 Auxiliary heater block diagram.



Note

- ◆ *Incorporating auxiliary heater into vehicle electrical system
⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- ◆ *Checking auxiliary heater components ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051*
- ◆ *There are different versions of auxiliary heater control unit - J364- for vehicles with petrol or diesel engines. Certain functions are differently matched (e.g. preheating times) or not available at all (e.g. actuation of fuel pre-heating heater element -Z66-).*
- ◆ *There are different versions of auxiliary heater control unit - J364- (e.g. also for Audi A3, VW Touran and VW Golf). Although these different versions are identical in appearance, only the models released for this vehicle are to be fitted on the Audi A6 (different actuation via the convenience data bus system, different software, different connector assignment) ⇒ Electronic parts catalogue .*

12.1 Assignment of connector console at auxiliary heater control unit -J364-

1 - Auxiliary heater control unit -J364- with connector console

- ❑ The supplementary heater control unit -J364- and the combustion air blower -V6- form one unit and cannot be replaced separately ⇒ Electronic parts catalogue.

Note

- ◆ Depending on the auxiliary heater design (with or without fuel shut-off valve -N109-), different versions of the supplementary heater control unit -J364- and the metering pump -V54- are fitted ⇒ [page 37](#) and ⇒ [Electronic parts catalogue](#).
- ◆ The fuel shut-off valve -N109- is only provided for the diesel version; gradual introduction as of 05.2008 ⇒ [Electronic parts catalogue](#).

2 - 2-way connector

- ❑ To vehicle wiring harness ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Contact 1: terminal 30 power supply (fused)
- ❑ Contact 2: earth connection

3 - 2-way connector

- ❑ Contact 1: Positive output to glow plug with flame monitor -Q8-
- ❑ Contact 2: Earth output to glow plug with flame monitor -Q8-

4 - 4-way connector

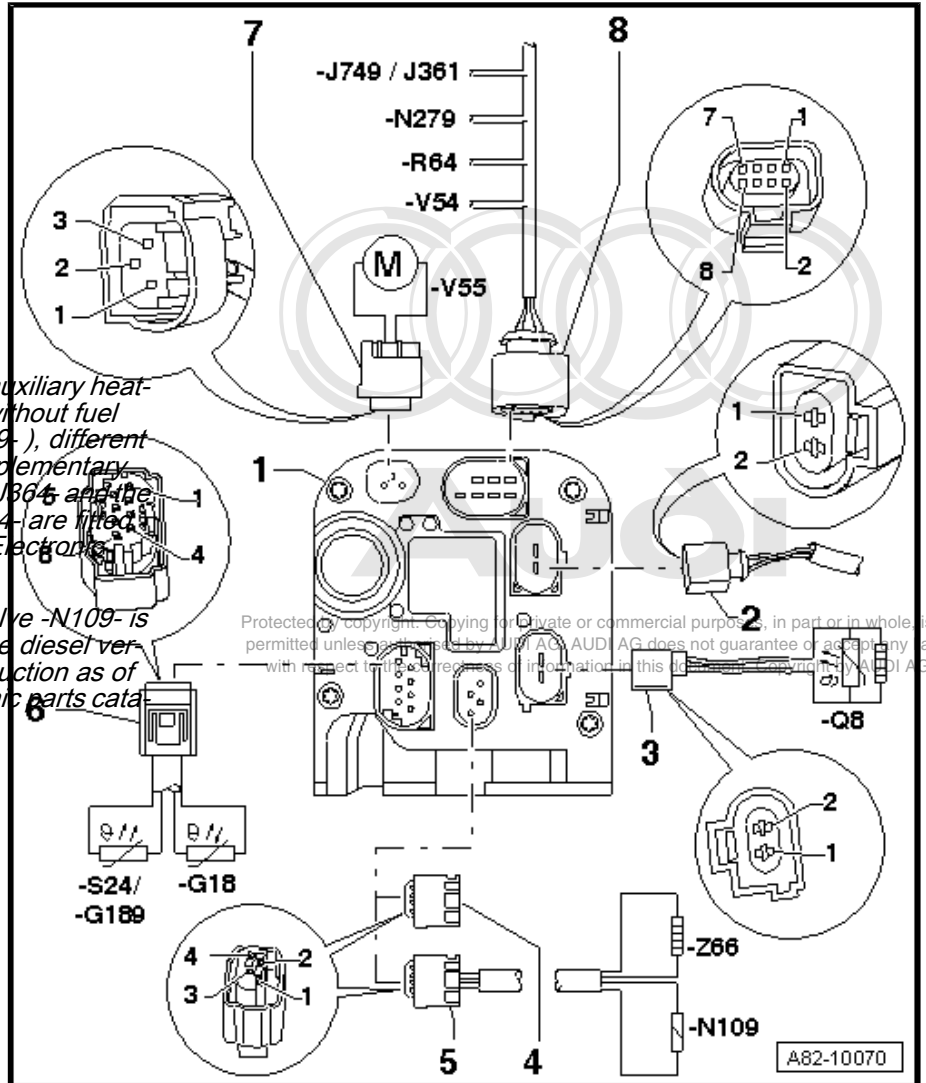
- ❑ Version for petrol
- ❑ No wire connected (connector only seals connection at control unit)

5 - 4-way connector

- ❑ Version for diesel
- ❑ Contacts 1 and 2 are not used (on auxiliary heaters with part number 4F0 265 081 up to index "L")
- ❑ Contacts 1 and 2: To the fuel shut-off valve -N109- (on auxiliary heaters with part number 4F0 265 081 as of index "M")

Note

- ◆ Depending on the auxiliary heater design (with or without fuel shut-off valve -N109-), different versions of the metering pump -V54- are fitted ⇒ [page 37](#) and ⇒ [Electronic parts catalogue](#).



- ◆ *The fuel shut-off valve -N109- is to be gradually introduced as of 05.2008 ⇒ Electronic parts catalogue .*

- ☐ Contacts 3 and 4: To the fuel pre-heating heater element -Z66- ⇒ Electronic parts catalogue

6 - 8-way connector

- ☐ Contacts 1, 4, 5 and 8 are not used
- ☐ Contacts 2 and 6: temperature sensor -G18-
- ☐ Contacts 3 and 7: To the overheating fuse -S24- / overheating sensor -G189-



Note

Depending on the version of the supplementary heater control unit -J364-, the overheating fuse -S24- may also be referred to as overheating sensor -G189- .

7 - 3-way connector

- ☐ Contact 1: not used
- ☐ Contact 2: earth output to circulation pump -V55-
- ☐ Contact 3: positive output to circulation pump -V55-

8 - 8-way connector

- ☐ To vehicle wiring harness ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ☐ Contacts 1 and 3 are not used
- ☐ Contact 2: signal wire from auxiliary heater radio receiver -R64-
- ☐ Contact 4: signal wire to convenience data bus system (CAN low)
- ☐ Contact 5: activation of metering pump -V54-
- ☐ Contact 6: fuel pump relay for auxiliary heater -J749- or relevant engine control unit (e.g. Simos control unit -J361- or Motronic control unit -J220- in vehicles with FSI engines) ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ☐ Contact 7: signal wire to convenience data bus system (CAN high)
- ☐ Contact 8: activation of heater coolant shutoff valve -N279-

13 Activating auxiliary heater with remote control



Note

- ◆ *The Audi A6 is only fitted with an auxiliary heating radio controlled receiver -R64- of type Telestart "T90" / "T91". These receivers feature feedback from the supplementary heater control unit -J364- to the remote control hand transmitter ⇒ [page 18](#) .*
- ◆ *There are different versions of the auxiliary heater remote control hand transmitter. Only the "T90" / "T91" version is to be used for the Audi A6 ⇒ [page 18](#) and ⇒ Electronic parts catalogue .*
- ◆ *In Model Year 2008 production is gradually being switched from the Telestart "T90" version of the remote control to the Telestart "T91" type. Thanks to the identical transmission protocol, the hand transmitters and the auxiliary heating radio controlled receiver -R64- of the two Telestart "T90" and "T91" versions can exchange information with one another (the "T90" auxiliary heating radio controlled receiver -R64- can be actuated by the "T91" hand transmitter and vice versa with no loss of function). In the case of vehicles fitted with the Telestart "T91" remote control version, use is however only ever to be made of the components developed for the Telestart "T91" version (slightly larger range) ⇒ Electronic parts catalogue .*
- ◆ *Hand transmitters for auxiliary heater remote control transmit only on/off signals. The decision as to whether auxiliary heater mode or auxiliary ventilation mode is necessary to achieve specified temperatures set in the operating and display unit (climatronic control unit -J255-), is made by the operating and display unit (climatronic control unit -J255-).*
- ◆ *If auxiliary ventilation mode is adequate, operating and display unit (Climatronic control unit -J255-) starts up without transmitting request for activation of auxiliary heater via convenience data bus system to auxiliary heater control unit -J364- (auxiliary ventilation mode).*
- ◆ *If auxiliary heating mode is required, operating and display unit (Climatronic control unit -J255-) transmits request for activation of auxiliary heater via convenience data bus system to auxiliary heater control unit -J364- . Auxiliary heater control unit -J364- activates auxiliary heater and when coolant temperature reaches 30°C sends information to operating and display unit (Climatronic control unit -J255-) which in turn activates fresh-air blower -V2- .*

13.1 Block diagram for actuation of auxiliary heater with remote control

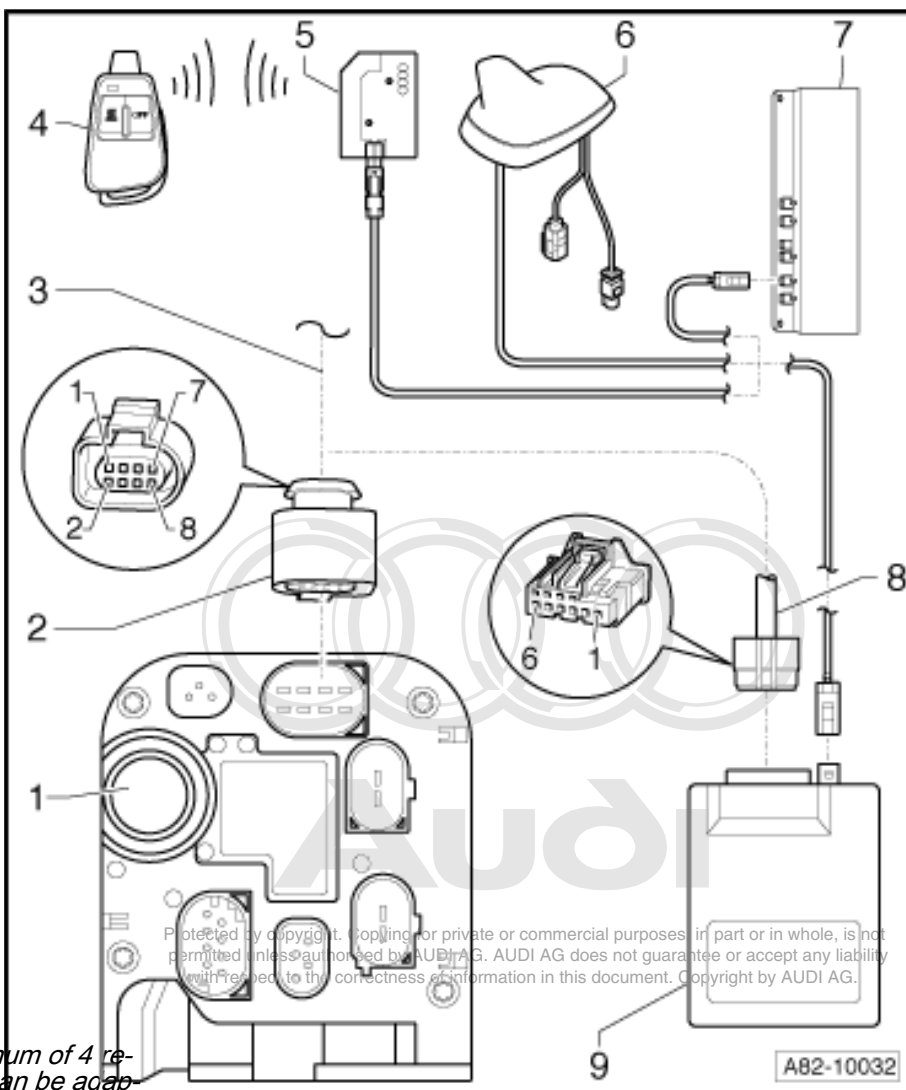
1 - Auxiliary heater control unit -J364-

- ❑ Adaption of remote control hand transmitter in supplementary heater control unit -J364- ⇒ Vehicle diagnostic, testing and information system -5051 A-, "Guided fault-finding" function
- ❑ If auxiliary heating/auxiliary ventilation is activated by way of remote control, operating and display unit (Climatronic control unit -J255-) determines whether "auxiliary heating mode" or "auxiliary ventilation mode" is activated.
- ❑ Remote control adaption is performed in the auxiliary heating radio controlled receiver -R64-. If this is replaced, all hand transmitters have to be re-adapted ⇒ [page 20](#) (adaption of remote control hand transmitter) and ⇒ Vehicle diagnostic, testing and information system -5051 A-, "Guided fault-finding" function .



Note

- ◆ *At present, a maximum of 4 remote control units can be adapted in the auxiliary heating radio controlled receiver -R64-. Adaption of a fifth remote control unit causes the first matched remote control unit to be erased.*
- ◆ *The signals from the remote control hand transmitter are only relayed by the auxiliary heating radio controlled receiver -R64-. The signals are then processed by the supplementary heater control unit -J364- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*
- ◆ *The auxiliary heating radio controlled receiver -R64- can be deactivated by the supplementary heater control unit -J364- (thus reducing the no-load current input) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*



- ◆ *Checking signals from the auxiliary heating radio controlled receiver -R64- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051*

2 - 8-pin connector to auxiliary heater control unit -J364-

- ❑ Contacts 1 and 3 to 8: ⇒ [page 146](#)
- ❑ Contact 2: Checking signal wire from auxiliary heating radio controlled receiver -R64- (input for activation and deactivation signal in supplementary heater control unit -J364-) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051
- ❑ If the receiver is in energy saving mode, no signal is supplied after/on pressing the remote control hand transmitter ON or OFF button ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- ❑ Electrical checking at the connector ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051

3 - Connection to vehicle wiring harness ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

4 - Remote control hand transmitter

- ❑ Switching on/off "auxiliary heater mode/auxiliary ventilation mode" ⇒ [page 18](#)
- ❑ Pressing buttons causes integral indicator lamp to light up or flash (green or red)
- ❑ Replacing batteries ⇒ [page 20](#)
- ❑ In order that remote control registers pressing of a button and transmits a radio signal, button must be pressed for at least approx. 2 seconds ⇒ Owner's Manual
- ❑ If the auxiliary heater is replaced together with the supplementary heater control unit -J364- , check the operation of at least one hand transmitter and re-adapt all hand transmitters if necessary ⇒ [page 20](#) (remote control hand transmitter adaption) and ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .
- ❑ If the auxiliary heating radio controlled receiver -R64- is replaced, all hand transmitters have to be re-adapted ⇒ [page 20](#) (remote control hand transmitter adaption) and ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .
- ❑ There are different versions of the auxiliary heater remote control hand transmitter. Only the "T90" / "T91" version is to be used for the Audi A6 ⇒ [page 149](#) , ⇒ [page 18](#) and ⇒ Electronic parts catalogue .

5 - Aerial module (Avant)

- ❑ Depending on vehicle equipment, a roof aerial may be fitted instead of the aerial module
- ❑ The term used in the current flow diagram and in the "Communication" workshop manual depends upon vehicle equipment ⇒ Current flow diagrams, Electrical fault finding and Fitting locations and ⇒ Communication; Rep. Gr. 91
- ❑ This aerial is used not only to receive radio signals from radio-operated remote control hand transmitters, but also for feedback of reception acknowledgement to hand transmitter.



Note

The aerial for the auxiliary heater of this version is installed in the back left side window, the aerial module is located below the side window behind the left-hand trim of the luggage compartment.

- ❑ Removing and installing ⇒ Communication; Rep. Gr. 91

6 - Roof aerial (Avant)

- ❑ Depending on vehicle equipment, an aerial module may be fitted instead of roof aerial
- ❑ The term used in the current flow diagram and in the "Communication" workshop manual depends upon vehicle equipment ⇒ Current flow diagrams, Electrical fault finding and Fitting locations and ⇒ Communication; Rep. Gr. 91
- ❑ This aerial is used not only to receive radio signals from remote control hand transmitters, but also for feedback of reception acknowledgement to hand transmitter
- ❑ Removing and installing ⇒ Communication; Rep. Gr. 91

7 - Aerial module (Saloon)

- ❑ The term used in the current flow diagram and in the "Communication" workshop manual depends upon vehicle equipment ⇒ Current flow diagrams, Electrical fault finding and Fitting locations and ⇒ Communication; Rep. Gr. 91
- ❑ This aerial is used not only to receive radio signals from remote control hand transmitters, but also for feedback of reception acknowledgement to hand transmitter.



Note

The aerial for the auxiliary heater is installed in the rear window, the aerial module is located to the right of the third brake light.

- ❑ Removing and installing ⇒ [page 154](#) and ⇒ Communication; Rep. Gr. 91

8 - 6-pin connector to auxiliary heating radio controlled receiver -R64-

- ❑ Contacts 3, 4 and 5 are not used ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Contact 1: power supply (terminal "30")
- ❑ Contact 2: Signal wire to auxiliary heater (to supplementary heater control unit -J364-), output for activation and deactivation signal to the supplementary heater control unit -J364- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051
- ❑ If the receiver is in energy saving mode, no signal is supplied after/on pressing the remote control ON or OFF button ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.
- ❑ Contact 6: earth

9 - Auxiliary heating radio controlled receiver -R64-

- ❑ Removing and installing ⇒ [page 153](#)
- ❑ Transmits information to auxiliary heater control unit -J364- on receiving radio signals (switch on/off auxiliary heating/auxiliary ventilation).
- ❑ Transmits reception acknowledgement back to hand transmitter via aerial
- ❑ Only a receiver of the Telestart "T90" / "T91" type is to be fitted ⇒ [page 149](#) .
- ❑ Can be switched off by the auxiliary heater control unit -J364- (reducing no-load current input).
- ❑ Checking signals from the auxiliary heating radio controlled receiver -R64- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051



Note

- ◆ *The remote control hand transmitter is adapted in the auxiliary heating radio controlled receiver -R64- and not in the supplementary heater control unit -J364- ⇒ [page 20](#) (remote control hand transmitter adaption) and ⇒ Vehicle diagnostic, testing and information system -5051 A-, "Guided fault-finding" function.*
- ◆ *The signals from the remote control hand transmitter are only relayed by the auxiliary heating radio controlled receiver -R64- . The signals are then processed by the supplementary heater control unit -J364- ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*

13.2 Removing and installing auxiliary heating radio controlled receiver -R64-

Note

- ◆ *The auxiliary heating radio controlled receiver -R64- is available in different versions. Exclusive use is to be made on the Audi A6 of the Telestart "T90" / "T91" version ⇒ [page 149](#) and ⇒ Electronic parts catalogue .*
- ◆
- ◆ *Adaption of the receiver is to be performed in the supplementary heater control unit -J364- ⇒ [page 20](#) (remote control hand transmitter adaption) and ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .*
- ◆ *Remote control hand transmitters are adapted in auxiliary heating radio controlled receiver -R64- . If this is replaced, all hand transmitters have to be re-adapted ⇒ [page 20](#) (remote control hand transmitter adaption) and ⇒ Vehicle diagnostic, testing and information system -5051 A- , "Guided fault-finding" function .*
- ◆ *Auxiliary heating radio controlled receiver -R64- no-load current input is less than 1 mA (current input increases as soon as transmission signal is received).*
- ◆ *The auxiliary heating radio controlled receiver -R64- can be switched to power saving mode by the supplementary heater control unit -J364- (radio signal can no longer be received, the no-load current input decreases from approx. 1 mA to approx. 0.04 mA) ⇒ "Guided fault-finding" function of vehicle diagnostic, testing and information system VAS 5051.*

Removing

Note

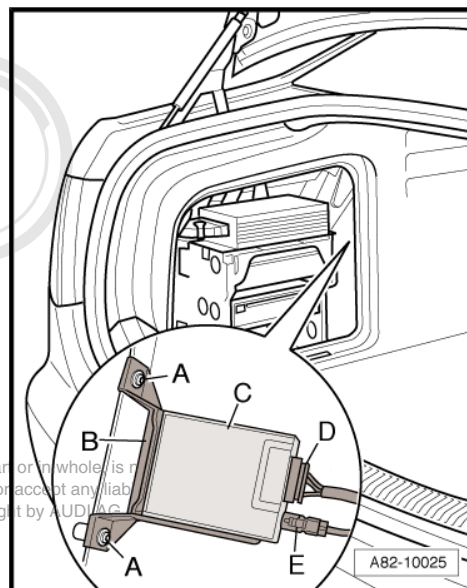
This illustration shows the auxiliary heating radio controlled receiver -R64- for a Saloon. In the Avant, the auxiliary heater radio controlled receiver -R64- is currently also located in the left of the luggage compartment. Depending on vehicle equipment, another location is possible ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

- Remove left luggage compartment side trim ⇒ General body repairs, Interior; Rep. Gr. 70 .

- Remove bolts -A- and remove auxiliary heating radio controlled receiver -R64- with bracket -B-.
- Unplug electrical connector -D- and connector for aerial wire -E-.
- Unclip auxiliary heating radio controlled receiver -R64- from the bracket.

Installing

Installation is carried out in reverse order.



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13.3 Removing and installing aerial module (Saloon)



Note

*Removing and installing aerial module/roof aerial on Audi Avant
⇒ Communication; Rep. Gr. 91.*

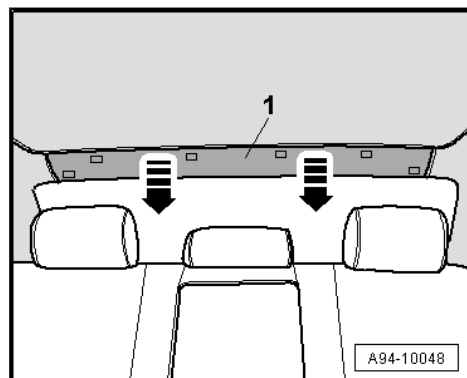
Removing

- Carefully remove roof end trim -1- from roof frame -arrows-.



Note

Remove roof end trim with removal lever -80-200- if necessary.



- Unplug aerial wire connector -C-.
- Unclip aerial for auxiliary heater -A- from the clips -B- to right of third brake light.

Installing

Installation is carried out in reverse order.

