



Workshop Manual Amarok 2011 ➤

Auxiliary heater

Edition 11.2010





List of Workshop Manual Repair GroupsList of Workshop Manual Repair Groups

Repair Group

82 - Supplementary heating



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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82 – Supplementary heating

1 Auxiliary heater Thermo Top Z

1.1 Safety measures for working on vehicles with auxiliary heaters

- ◆ Make sure that the auxiliary heater is not operated or switched on in areas where there is a risk of fire or explosion.
- ◆ Make sure that the auxiliary heater is not operated or switched on (including by means of a preset switch-on time) in closed rooms without an exhaust extraction system.
- ◆ When working on a fuel system, always observe applicable safety regulations and rules for cleanliness. ⇒ Rep. gr. 20
- ◆ If fuel system components (e.g. metering pump, fuel lines, fuel gauge sender) are removed or opened, the engine must not be started.
- ◆ Before beginning repair work on the auxiliary heater:



WARNING

Danger of scalding injuries.

The cooling system is pressurised. When the engine is warm, the coolant temperature may be above 100 °C.

If necessary, release pressure and reduce temperature before carrying out repairs.

- ◆ After completing repair work on the auxiliary heater or the fuel system, check the operation of the auxiliary heater.
- ◆ After completing repairs on the auxiliary heater, carry out self-diagnosis using vehicle diagnosis, testing and information system -VAS 5051B- or later model.





2 Notes on general repairs on vehicles with auxiliary heaters



Note

If the **ECON** button (depending on vehicle equipment) is pressed, the auxiliary heater will not operate as a supplementary heater.

- ◆ Read self-diagnosis of auxiliary heater using vehicle diagnosis, testing and information system -VAS 5051B- or later model.
- ◆ If parts of the fuel system were removed or renewed, ensure that all components for fuel delivery to the auxiliary heater are properly installed.

Following repair work in the vicinity of the auxiliary heater fuel line, check:

- ◆ That the fuel lines are routed flush with the vehicle underbody and are protected against mechanical damage.
- ◆ That the auxiliary heater fuel line is protected from heat which might disturb operation.
- ◆ That the fuel line does not come in contact with components which heat up.

2.1 Starting conditions for auxiliary heating (preheater)

- ◆ Engine type OK (diesel/petrol)
- ◆ Terminal 15 (ignition) on
- ◆ Engine revs > 400 rpm.
- ◆ Coolant temperature < 69 °C
- ◆ On vehicles with **ECON** button (depending on equipment fitted in vehicle). ECON button not pressed. Temperature selector not set to 'cold'
- ◆ Ambient temperature < 5 °C
- ◆ Fuel gauge not in reserve range
- ◆ On-board network manager not active
- ◆ No crash shut-off
- ◆ No fault entries blocking start procedure

2.2 Starting conditions for auxiliary heating



Note

Every auxiliary heater also has a supplementary heating function

- ◆ Engine type OK (diesel/petrol)
- ◆ Auxiliary heater coded in Gateway.
- ◆ No undervoltage shutdown
- ◆ Fuel gauge not in reserve range
- ◆ No crash shut-off



- ◆ No fault entries blocking start procedure





3 Rules for cleanliness when working on the auxiliary heater and the fuel system

- ◆ Thoroughly clean all connections and adjacent areas before disconnecting.
- ◆ Place parts that have been removed on a clean surface (use sheeting or paper, but no fluffy cloths) and cover.
- ◆ Carefully cover opened components or seal if the repair cannot be carried out immediately.

Install clean parts only:

- ◆ Remove genuine parts from their packages only immediately before installing them.
- ◆ Do not use any parts which have not been stored in their packaging (e.g. in a tool box).

If fuel line has been opened:

- ◆ do not work with compressed air.
- ◆ do not move vehicle.
- ◆ Do not start engine.
- ◆ Do not switch auxiliary heater on.





4 Repairing auxiliary heater Thermo Top Z

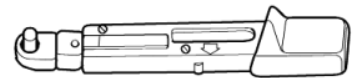
Before beginning repair work, perform the following steps:

- Disconnect battery ⇒ Rep. gr. 27 .

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1410- (4...20 Nm)

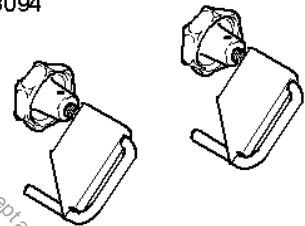
V.A.G 1410



W00-0554

- ◆ Hose clamps up to 25 mm Ø -3094-

3094



W00-0079



Note

- ◆ *There is a manufacturer's nameplate on the auxiliary heater unit. This type plate provides information about which version is installed in the vehicle: diesel Thermo Top Z ⇒ [page 6](#)*
- ◆ *The coolant circuit must be bled after it is opened.*



1 - Ambient temperature sensor -G17-

- ☐ Checking: Vehicle diagnosis, testing and information system -VAS 5051B- or later model.
- ☐ Removing and installing ➔ [page 7](#)

2 - Dash panel insert -K-

3 - Fuel gauge sender -G-

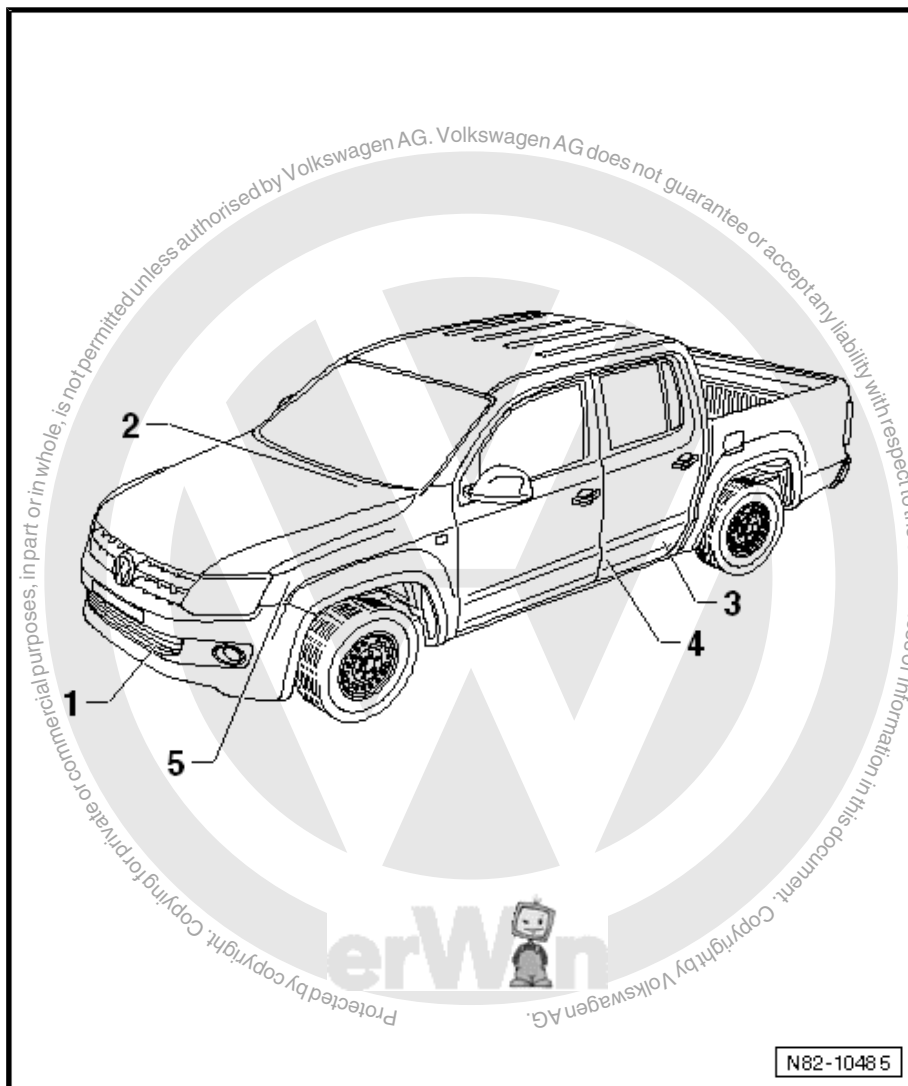
- ☐ Removing and installing ➔ Rep. gr. 20

4 - Metering pump -V54-

- ☐ Fuel supply to auxiliary heater ➔ [page 22](#).
- ☐ It is possible that the metering pump ticks audibly but still does not deliver fuel because there is air in the intake pipe. The control unit will then switch itself off permanently. You should therefore read out the fault memory using vehicle diagnosis, testing and information system -VAS 5051B- or later models (self-diagnosis of the Thermo Top Z auxiliary heater). Delete the fault memory and carry out a final control diagnosis of the Thermo Top Z auxiliary heater.
- ☐ Removing and installing ➔ [page 24](#)
- ☐ Testing quantity of fuel delivered ➔ [page 25](#)

5 - Auxiliary heater Thermo Top Z

- ☐ With auxiliary heating control unit -J364-.
- ☐ Located in engine compartment, front left
- ☐ Removing and installing ➔ [page 8](#)

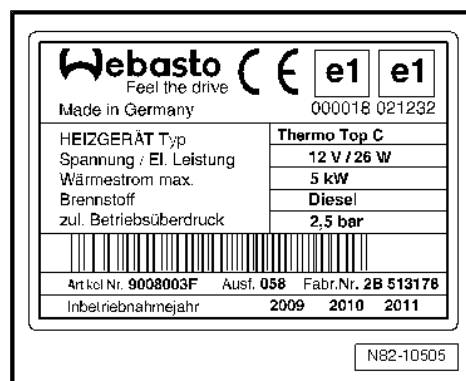


Manufacturer's plate on heater unit for Thermo Top Z, diesel



Note

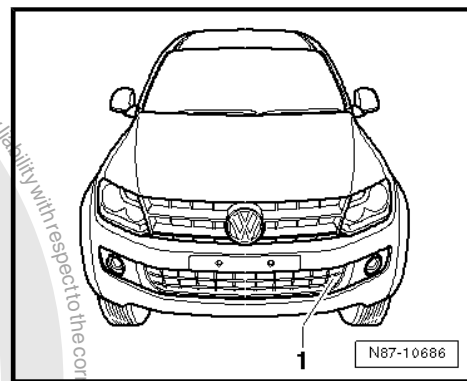
- ◆ The most important technical data are shown on upper part of manufacturer's plate.
- ◆ The date of first use is entered on the lower part of manufacturer's plate.
- ◆ The year the unit was first put into use must be entered on the „Genuine part“ manufacturer's plate. The heat exchanger of the coolant heater does not need to be renewed after 10 years. Legislation in Germany dictates only that air heaters must be renewed.





Removing and installing ambient temperature sensor -G17-

- Remove centre vent ⇒ Rep. gr. 63 .
- Unclip ambient temperature sensor -G17- -1- and separate connector.

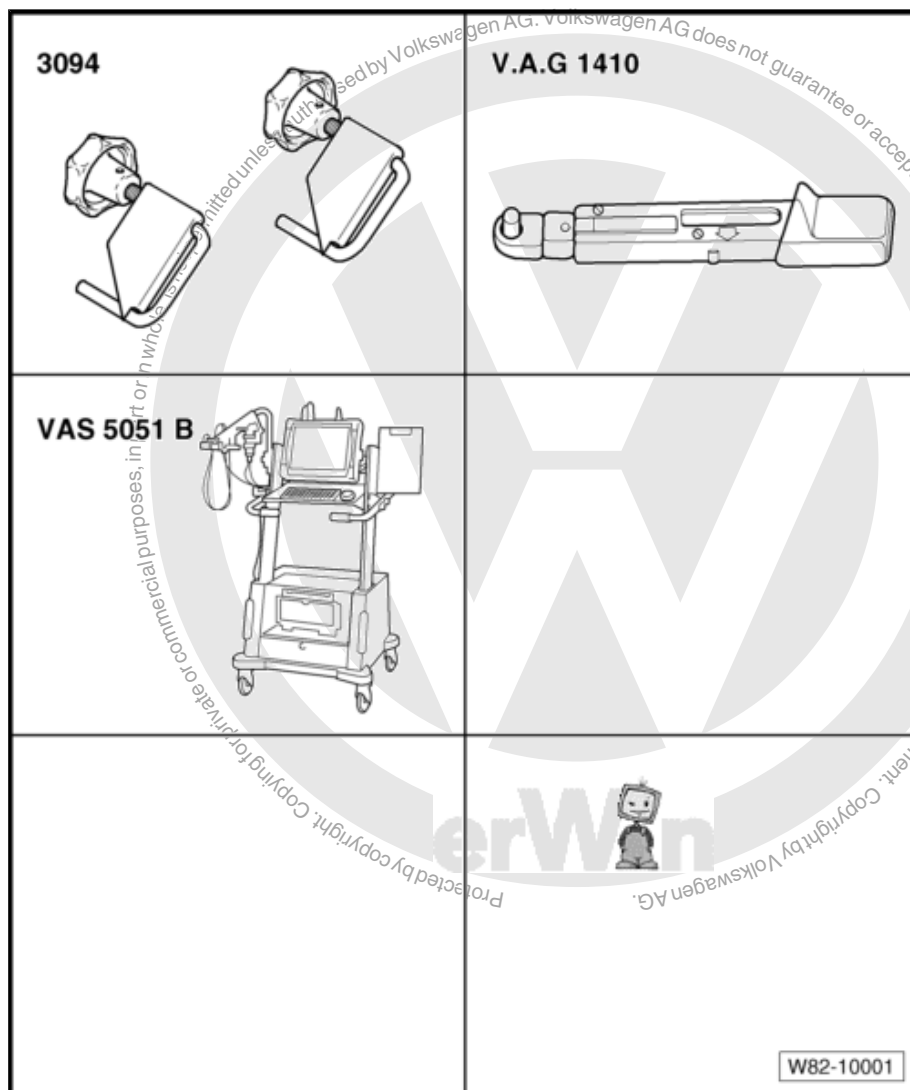




5 Removing and installing auxiliary heater Thermo Top Z

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1410- (4...20 Nm)
- ◆ Hose clamps up to 25 mm -3094-
- ◆ Vehicle diagnosis, testing and information system - VAS 5051B- or later model



Note

- ◆ There is a manufacturer's nameplate on the auxiliary heater unit. This manufacturer's plate provides information about which version is installed in vehicle, for example, diesel Thermo Top Z ⇒ [page 6](#).
- ◆ The coolant circuit must be bled after it is opened.
- ◆ Cooling system is pressurised when engine is warm. If necessary, release pressure before carrying out repairs.



5.1 Components of auxiliary heater Thermo Top Z

1 - Exhaust system

- ❑ Removing and installing
⇒ [page 14](#)

2 - Circulation pump -V55-

- ❑ Removing and installing
⇒ [page 13](#)

3 - Fuel line

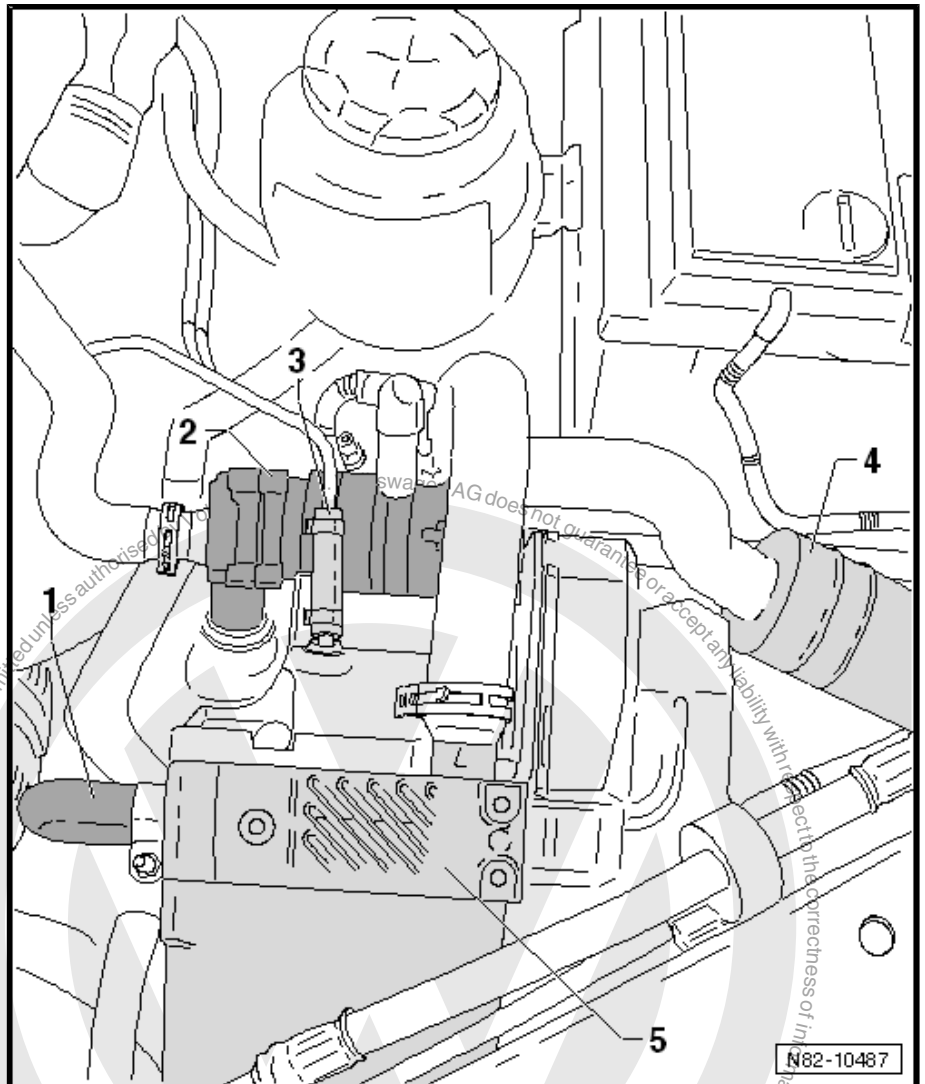
- ❑ Routing of fuel line
⇒ [page 22](#)

4 - Air intake silencer

- ❑ Removing and installing
⇒ [page 13](#)

5 - Auxiliary heater Thermo Top Z

- ❑ With auxiliary heating control unit -J364- .
- ❑ Removing ⇒ [page 9](#)



5.2 Removing the Thermo Top Z auxiliary heater



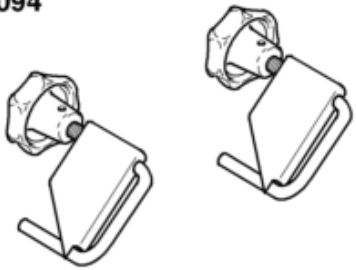

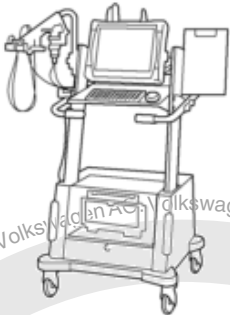
Note

If the Thermo Top Z is to be renewed, first connect vehicle diagnosis, testing and information system -VAS 5051B- or later model and start the „Renew heater“ function under the guided functions.



Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1410- (4...20 Nm)
- ◆ Hose clamps up to 25 mm -3094-
- ◆ Vehicle diagnosis, testing and information system - VAS 5051B- or later model

3094 	V.A.G 1410 
VAS 5051 B 	
	W82-10001



Note

- ◆ The coolant circuit must be bled after it is opened.
- ◆ After the auxiliary heater has been detached, it must be secured to the body with welding wire to prevent damage to the coolant hoses.



WARNING

Danger of burn injuries.

Parts of the exhaust system may be hot.

Before removing exhaust system, let it cool off.

- Remove exhaust pipe for auxiliary heater ⇒ [page 14](#) .



WARNING

Danger of fuel escaping.

Fuel system is under pressure.

*Before opening system, wrap a cloth around the connection.
Then release pressure by carefully loosening the connection.*

- Pull fuel line off auxiliary heater and seal with suitable plugs.



WARNING

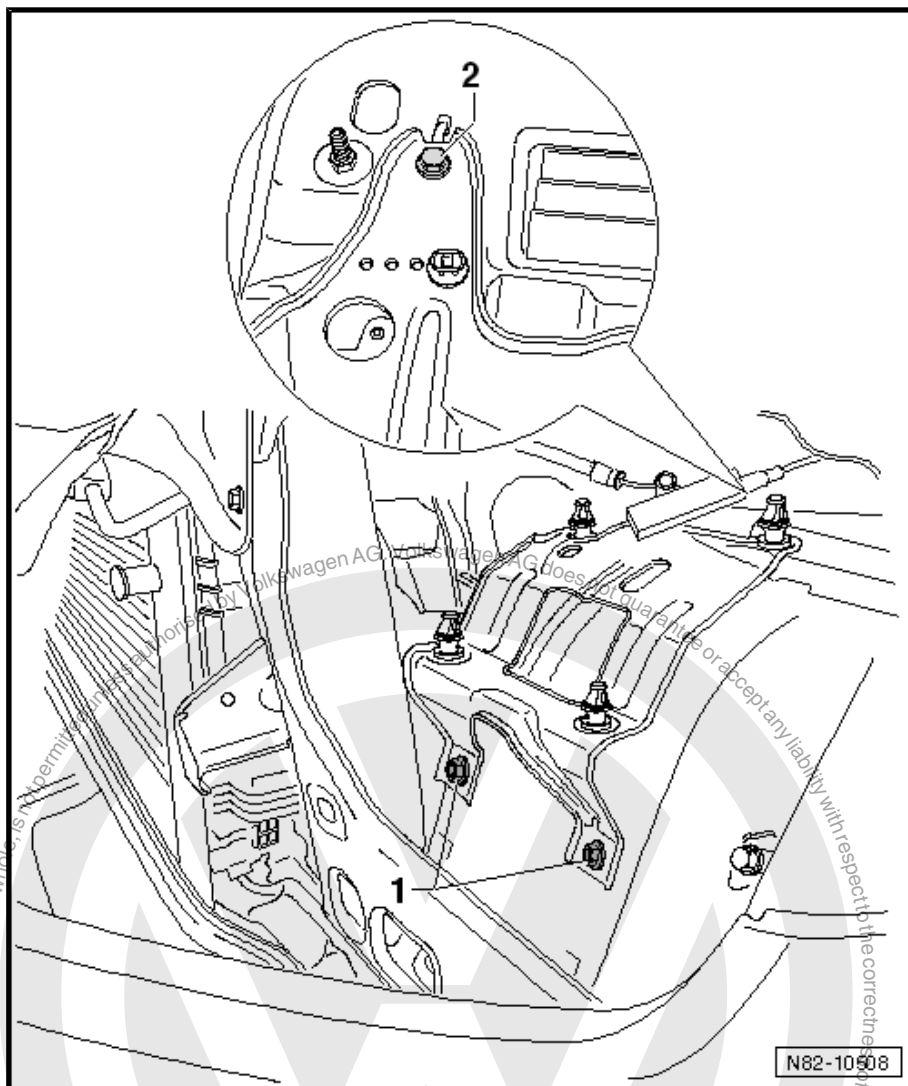
Danger of scalding injuries.

*When the engine is warm, the coolant temperature may be
above 100 °C. The cooling system is pressurised.*

*If necessary, release pressure and reduce temperature before
carrying out repairs.*

- Clamp off coolant hoses using hose clamps up to 25 mm Ø
-3094- and pull coolant hoses off auxiliary heater.
- Remove left headlight ⇒ Lights, bulbs, switches - exterior;
Rep. gr. 94 ; Removing and installing headlights .





- Loosen securing bolt -1- (8 ± 1 Nm).
- Undo and remove securing bolt -2- (8 ± 1 Nm).



Caution

Auxiliary heater control unit -J364- could be damaged.
Overvoltages can occur at the connectors.
First disconnect 8-pin connector.

- Unplug the other connectors at the auxiliary heater.

5.3 Installing the Thermo Top Z auxiliary heater



Note

If the Thermo Top Z is not to be renewed, connect vehicle diagnosis, testing and information system -VAS 5051B- or later model and start the „Release heater“ function under the guided functions.



Installation is carried out in the reverse order. When installing, note the following:

- After installing auxiliary heater, bleed coolant circuit.
- Start auxiliary heater.

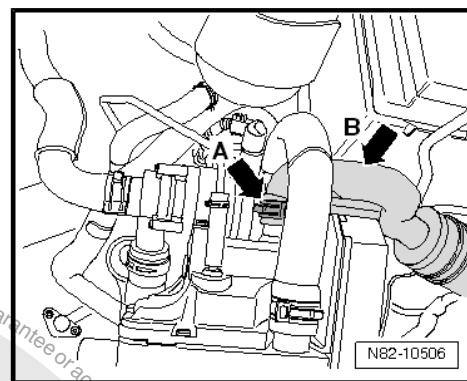
5.4 Removing and installing air intake silencer

Removing

- Loosen clamp -arrow A- and pull air intake silencer off -arrow B-.

Installing

- Push air intake silencer onto the intake pipe until it can be clipped onto the bracket.
- Fit clamp.

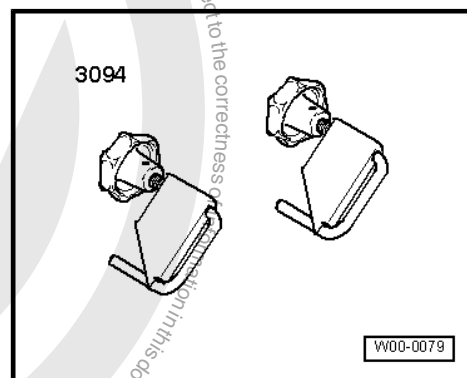


5.5 Removing and installing circulation pump -V55-

Removing

Special tools and workshop equipment required

- ◆ Hose clamps up to 25 mm Ø -3094-



- Clamp off coolant hoses using hose clamps to Ø 25 mm -3094-.



- Pull connector -4- off circulation pump -V55- .
- Loosen clamps -1- and -2- at the circulation pump -V55- .

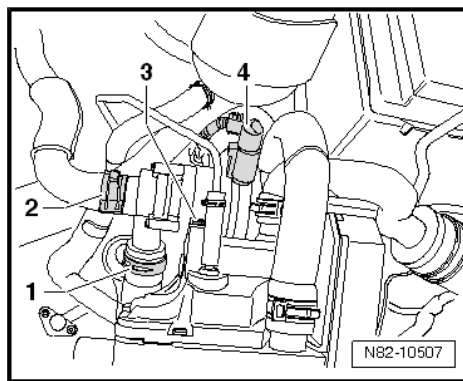


WARNING

Danger of scalding injuries.

When the engine is warm, the coolant temperature may be above 100 °C. The cooling system is pressurised.

If necessary, release pressure and reduce temperature before carrying out repairs.



- Pull coolant hoses off circulation pump -V55- .
- Remove bolt -3- and remove circulation pump -V55- .

Installing

Installation is carried out in the reverse order. When installing, note the following:

- After installing circulation pump -V55- , bleed coolant circuit.

5.6 Removing and installing exhaust pipe for auxiliary heater

Removing



WARNING

Danger of burn injuries.

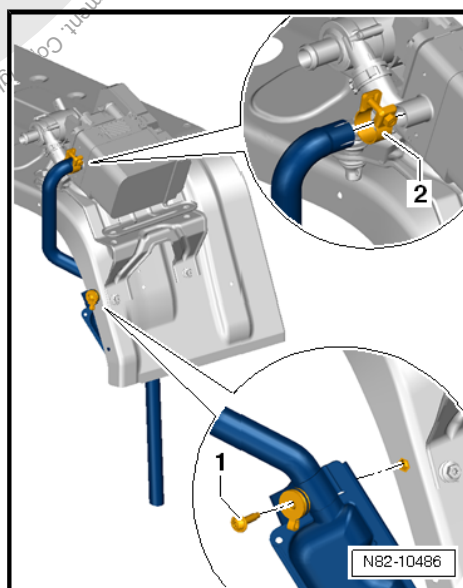
Parts of the exhaust system may be hot.

Before removing exhaust system, let it cool off.

- Unscrew bolt -1- (8 ± 1 Nm).
- Loosen clamp -2- and pull exhaust pipe of auxiliary heater.

Installing

- Install in reverse order.





5.7 Dismantling and assembling Thermo Top Z auxiliary heater



Note

Removing and installing Thermo Top Z auxiliary heater
⇒ [page 9](#).

1 - Glow plug for heater -Q9- (with flame monitor)

- ☐ With inner heating element (glow pin).
- ☐ Removing and installing ⇒ [page 18](#)

2 - Seal

- ☐ Always renew after dismantling.

3 - Rubber grommet

- ☐ Always renew after dismantling.

4 - Combustion air blower -V6-

- ☐ Removing and installing ⇒ [page 17](#)

5 - Bolt

6 - Retaining clip

- ☐ For glow plug for heater -Q9- (with flame monitor).



Note

7 - Clip

- ☐ Note fitting position.

8 - Combustion chamber with flame tube

- ☐ Clean inside and outside with brass wire brush (spark plug brush).
- ☐ Removing and installing ⇒ [page 18](#)

9 - Seal

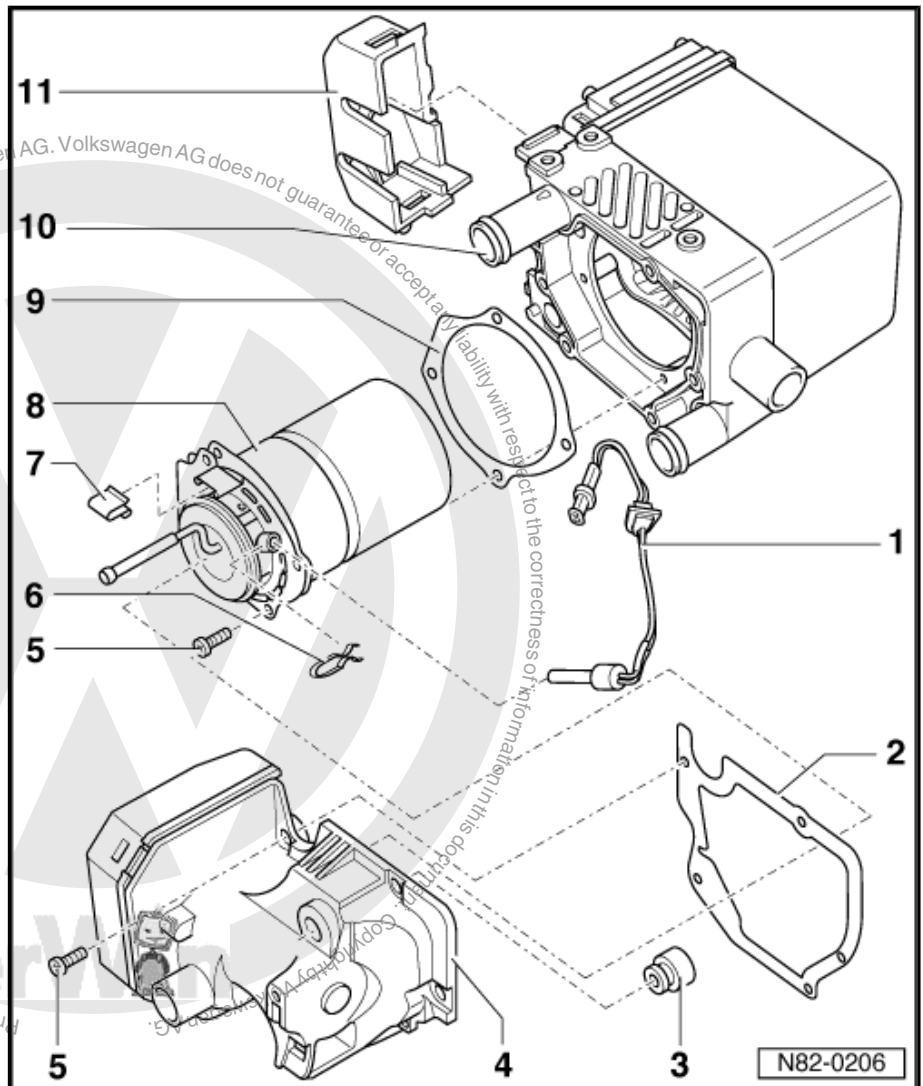
- ☐ Always renew after dismantling.

10 - Water jacket

- ☐ Clean inside and outside with brass wire brush (spark plug brush).
- ☐ Do not dismantle further

11 - Cover

- ☐ For connector strip
- ☐ Removing and installing ⇒ [page 16](#)
- ☐ Connector strip assignment ⇒ [page 16](#).





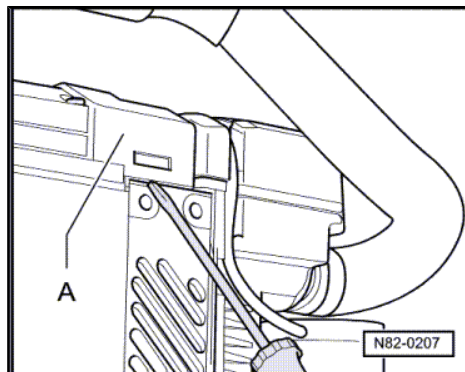
5.8 Removing and installing connector strip cover



Note

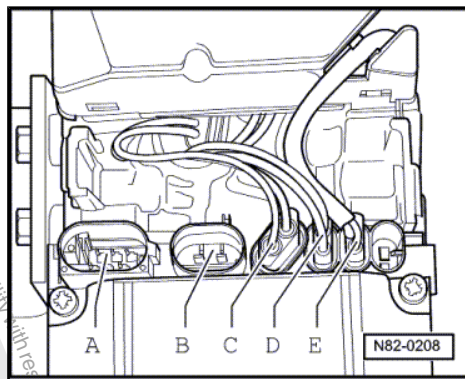
Removing the Thermo Top Z auxiliary heater ⇒ [page 12](#).

- Remove cover -A- using screwdriver.



5.9 Plug strip assignment for Thermo Top Z auxiliary heater

- ◆ 6-pin connector -A-
- ◆ Connector -B- for voltage supply , 12 Volt
- ◆ Connector -C- for glow plug for heater -Q9- (with flame monitor)
- ◆ Connector -D- for combustion air blower -V6-
- ◆ Connector -E- for circulation pump -V55- (only auxiliary coolant heater)

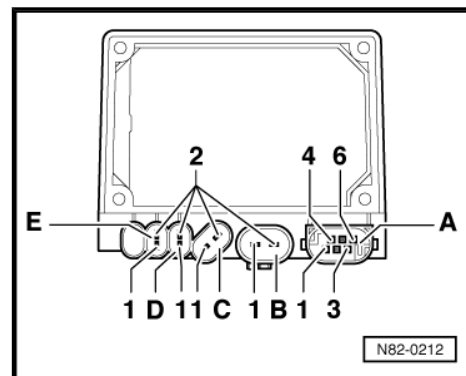




5.10 Pin assignment of connector strip for Thermo Top Z auxiliary heater

6-pin connector, connector housing -A-

- 1 - Webasto diagnosis cable
- 2 - CAN bus high (optional)
- 3 - CAN bus low (optional)
- 4 - Coolant shut-off valve, heater -N279- (not on vehicles with auxiliary heater)
- 5 - Main switch
- 6 - Metering pump -V54-



2-pin connector, connector housing -B-

- 1 - Terminal 30
- 2 - Terminal 31

2-pin connector, connector housing -C-

- 1 - Glow plug for heater -Q9- (with flame monitor)
- 2 - Terminal 31

2-pin connector, connector housing -D-

- 1 - Combustion air blower -V6-
- 2 - Terminal 31

2-pin connector, connector housing -E-

- 1 - Circulation pump -V55-
- 2 - Terminal 31

5.11 Removing and installing combustion air blower -V6-

Removing

- Removing the Thermo Top Z auxiliary heater ⇒ [page 12](#) .
- Remove connector strip cover and separate connections to connector strip ⇒ [page 16](#) .
- Remove bolts -A-.
- Separate combustion air blower -V6- -B- from auxiliary coolant heater Thermo Top Z/C.

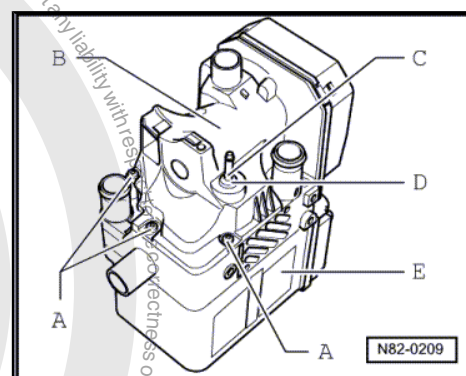
Installing



Note

- ◆ Renew gasket between combustion air blower and additional coolant heater Thermo Top Z/C.
- ◆ Ensure proper seating of fuel line -C- in new grommet -D-.

Install in reverse order.





5.12 Removing and installing combustion chamber with flame tube

Removing

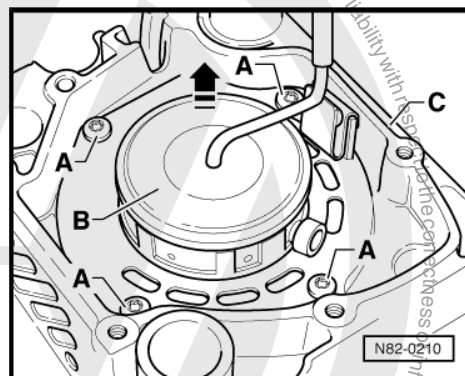
- Remove combustion air blower -V6- ⇒ [page 17](#) .
- Remove bolts -A-.
- Release connector from glow plug for heater -Q9- .
- Pull combustion chamber, together with flame tube -B-, out of Thermo Top Z auxiliary heater -C-.

Installing



Note

- ♦ *Renew gasket between combustion chamber with flame tube and auxiliary coolant heater Thermo Top Z/C.*
- ♦ *If combustion chamber with flame tube is defective, renew also glow plug for heater -Q9- (with flame monitor). ⇒ [page 18](#)*



5.13 Removing and installing glow plug for heater -Q9-

Removing

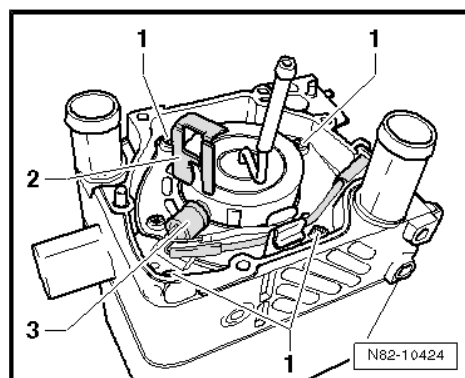
- Remove combustion air blower -V6- ⇒ [page 17](#) .
- Unscrew bolts -1- and lift combustion chamber with flame tube slightly.
- Pull off retaining clip -2-.
- Pull glow plug for heater -Q9- (with flame monitor) -3- out of combustion chamber with flame tube.

Installing



Note

- ♦ *Install retaining clip and ensure that the glow plug for heater -Q9- is correctly seated.*
- ♦ *Insert wiring in support and route as in figure.*



5.14 Coolant temperature sender, heating - G241-



Caution

*The heater control unit -J162- can be damaged by dampness.
There is no replacement seal part for the cover.
Do not remove cover.*



Note

The coolant temperature sender, heating -G241- is permanently installed on the board and cannot be renewed.





6 Connecting Thermo Top Z auxiliary heater to coolant circuit



WARNING

Danger of scalding injuries.

The cooling system is pressurised. When the engine is warm, the coolant temperature may be above 100 °C.

If necessary, release pressure and reduce temperature before carrying out repairs.



Note

The coolant circuit must be free of air for the auxiliary heater to heat properly.

6.1 Connection diagram for coolant hoses in vehicles with auxiliary heating, engine codes CDCA and CDBA

1 - Expansion tank

2 - Heat exchanger for heater

3 - Unions on rear cylinder head

- ☐ With coolant temperature sender -G62-

4 - Cylinder head

5 - Engine oil cooler

6 - 4/2 way valve

- ☐ With coolant regulator
- ☐ Can only be replaced as a complete unit

7 - Circulation pump -V55-

8 - Auxiliary heater

- ☐ Depending on equipment

9 - Radiator

- ☐ Renew coolant after replacement.

10 - Coolant pump

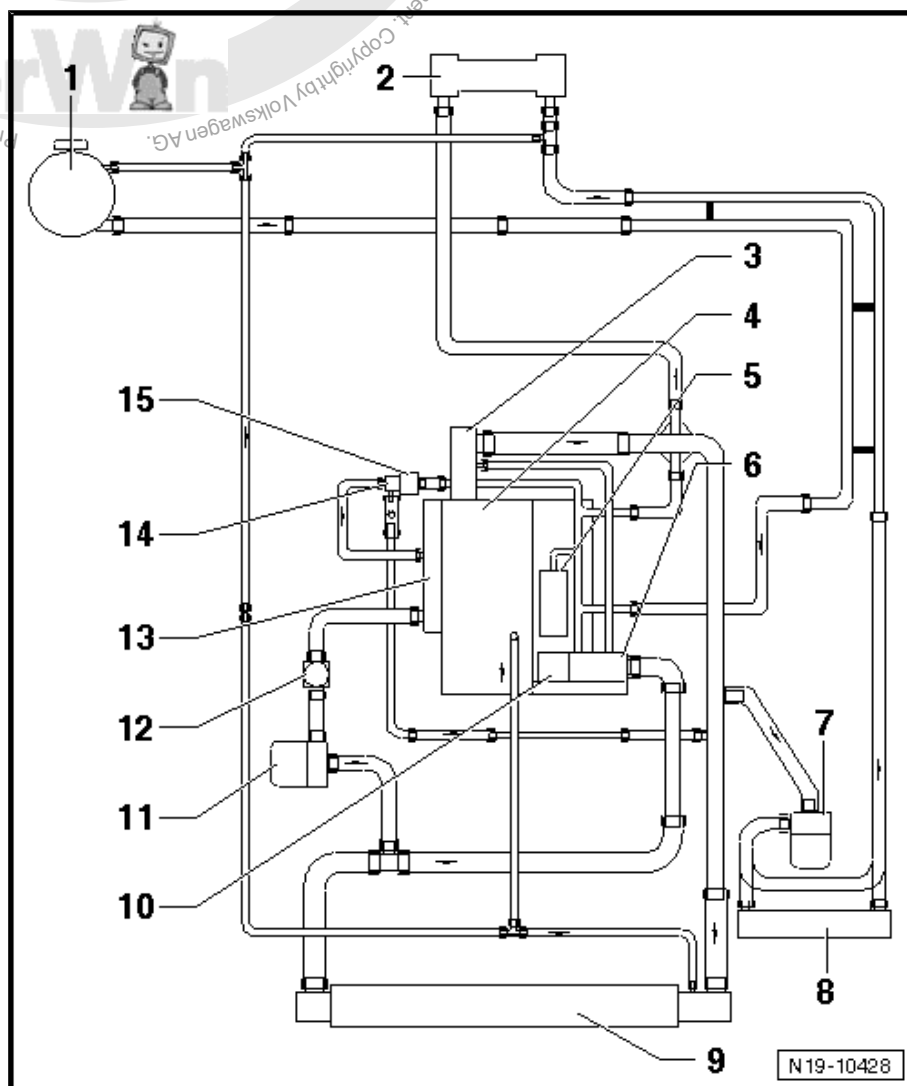
11 - Continued coolant circulation pump -V51-

12 - Coolant temperature sender at cooler outlet -G83-

13 - Exhaust gas recirculation cooler

14 - Thermostat (Y-piece)

15 - Coolant temperature





sender -G62-





7 Fuel supply for Thermo Top Z auxiliary heaters



Note

Observe safety regulations for working on fuel supply system ⇒ Rep. gr. 20.

Before beginning repair work, perform the following steps:

- Disconnect the battery ⇒ Rep. gr. 27.

7.1 Rules for cleanliness

When working on the fuel supply/injection system, carefully follow the „5 rules“ below:

- ◆ Thoroughly clean all connections and adjacent areas before disconnecting.
- ◆ Place parts that have been removed on a clean surface and cover. Do not use fluffy cloths!
- ◆ Carefully cover or seal opened components if the repair cannot be carried out immediately.
- ◆ Install clean parts only; remove replacement parts from their packages only immediately before installing them. Do not use any parts which have not been stored in their packaging (e.g. in a tool box).
- ◆ Fuel hoses and pipes may be shortened only with a clean sharp knife. Cutting points must not be soiled or deformed. Cutting points and surfaces must be free of burrs.

7.2 Fuel feed to Thermo Top Z



Note

- ◆ Fuel lines are secured with O-type clips. These O-type clips must always be replaced with screw-type clips.
- ◆ To start the auxiliary heater, the following conditions are required: ambient temperature sensor -G17- is pulled off and the coolant temperature is below 50 °C.
- ◆ The auxiliary heater can only be started in basic setting 1 and stopped with 4 by means of the vehicle diagnosis, testing and information system -VAS 5051B-.
- ◆ If the fuel tank was empty, there may be air in the fuel line to the auxiliary heater. To remove air from the fuel line, start auxiliary heater repeatedly until it does not go out by itself.
- ◆ Observe the rules for cleanliness when doing all work on the fuel supply system ⇒ [page 22](#).



1 - Metering pump -V54-

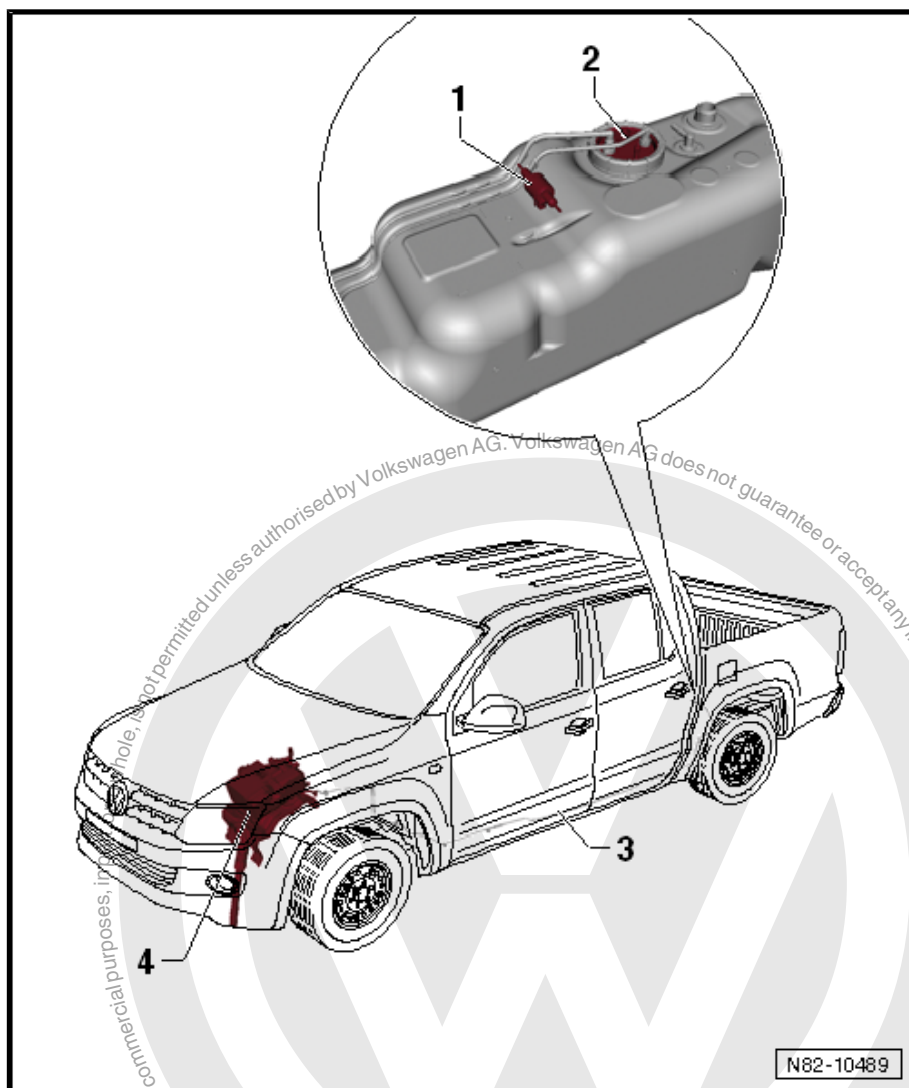
- ❑ Metering pump -V54- is located on the fuel tank on the right-hand side.
- ❑ Removing and installing ⇒ [page 24](#)
- ❑ Testing quantity of fuel delivered ⇒ [page 25](#).

2 - Fuel gauge sender -G-

- ❑ Fuel gauge sender -G- is located on right side under bench seat.
- ❑ Removing and installing ⇒ Rep. gr. 20

3 - Fuel line

4 - Auxiliary heater Thermo Top Z



7.2.1 Fuel feed to Thermo Top Z



WARNING

Danger of fuel escaping.

Fuel system is under pressure.

***Before opening system, wrap a cloth around the connection.
Then release pressure by carefully loosening the connection.***

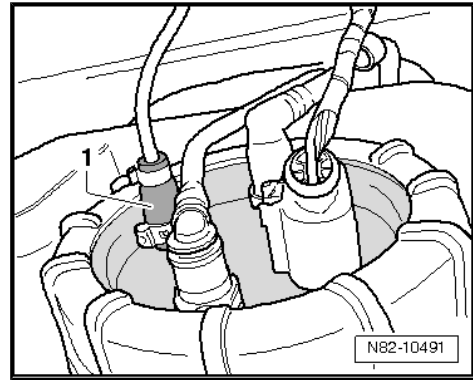


Note

Observe the safety measures when working on the fuel supply system ⇒ Rep. gr. 20.



Fuel feed to auxiliary heater is achieved via connection on fuel gauge sender -G- -1-. The fuel gauge sender -G- is located on the fuel tank.



7.3 Removing and installing metering pump -V54-



Note

- ♦ The metering pump -V54- for diesel engines has a grey plastic shell and the one for petrol engines has a black plastic shell.
- ♦ Make sure the part number is correct.

Removing



Note

Observe the safety measures when working on the fuel supply system ⇒ Rep. gr. 20 .

- Lower fuel tank ⇒ Engine and gearbox unit; Rep. gr. 20 ; Removing and installing fuel tank.



WARNING

Danger of fuel escaping.

Fuel system is under pressure.

Before opening system, wrap a cloth around the connection. Then release pressure by carefully loosening the connection.

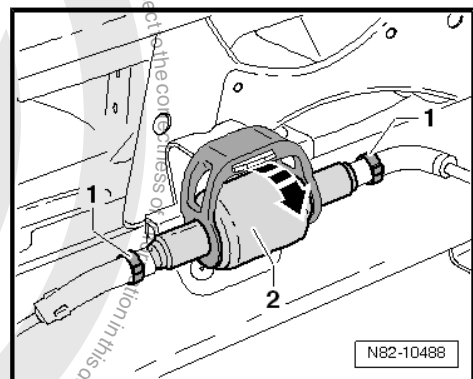
- Loosen fuel line clamps -1-.
- Pull fuel lines off circulation pump -V55- and seal the lines to prevent fuel escaping.
- Pull metering pump -V54- of bracket in direction of -arrow-.
- Detach bracket -2- for metering pump -V54- on fuel tank using suitable tools.
- Pull metering pump -V54- out in direction of -arrow-.
- Disconnect connector on metering pump -V54- .

Installing

Make sure the part number is correct.

Install in reverse order.

- Ensure proper installation position of metering pump -V54- .

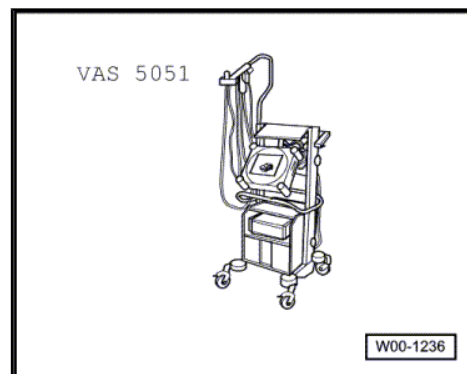




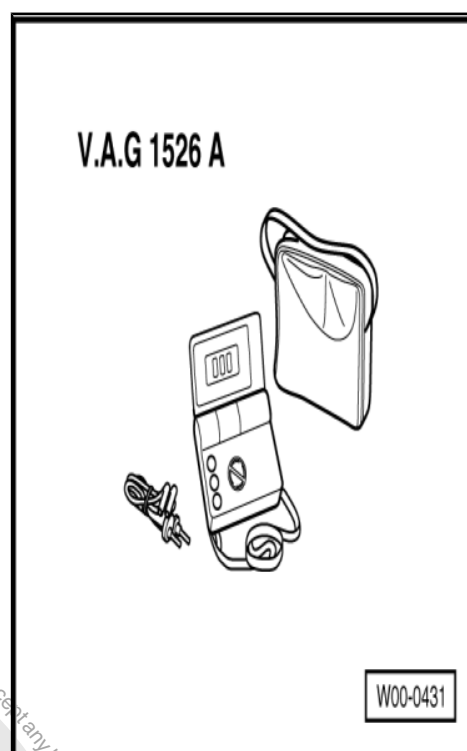
7.4 Testing quantity of fuel delivered

Special tools and workshop equipment required

- ◆ Vehicle diagnosis, testing and information system -VAS 5051B- or later model.



- ◆ Hand multimeter -V.A.G 1526/A-



- ◆ Auxiliary measuring set -V.A.G 1594/C-



- ◆ Current flow diagram
- ◆ Commercially available measuring glass (0 to 50 ml)



7.4.1 Test prerequisites:

- Resistance of metering pump -V54- 5.2 +/- 5 %
- Voltage at metering pump -V54- 9.5 to 16.5 Volt.
- No fault stored in fault memory.
- Fuel lines are not damaged or leaking.
- Ambient temperature approx. 20 °C
- Fuel tank sufficiently filled (fuel gauge on dash panel insert not in red area).

7.4.2 Checking:



WARNING

Danger of fuel escaping.

Fuel system is under pressure.

*Before opening system, wrap a cloth around the connection.
Then release pressure by carefully loosening the connection.*

- Loosen clamp -1- on fuel line.
- Detach and seal fuel line.
- Hold measuring glass under fuel line.
- Using vehicle diagnosis, testing and information system -VAS 5051B- (or later models), open guided function „Check quantity of fuel delivered“ (open fuel line from metering pump -V54-) and start.

After approx. 30 seconds, the fuel line is filled and bled.

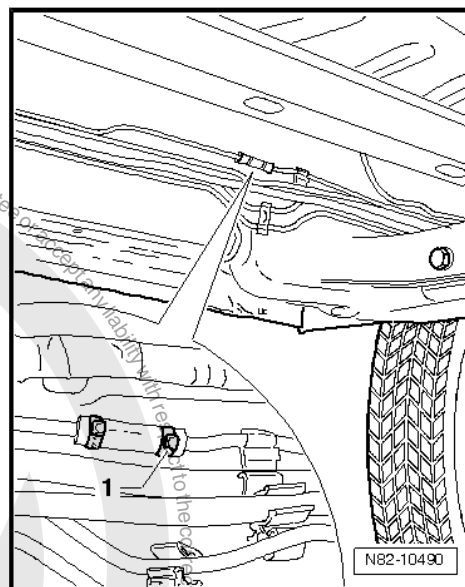
- Seal fuel line.
- Empty measuring glass.
- Hold measuring glass under fuel line.
- Using vehicle diagnosis, testing and information system -VAS 5051B- (or later models), open guided function „Check quantity of fuel delivered“ (open fuel line from metering pump -V54-) and start.

Fuel delivery finishes after approx. 120 seconds.

- Connect fuel line.

Use new clamp.

- Read measuring glass. Fuel delivery rate for petrol and diesel: 22 to 28 ml
- If fuel delivery rate is not within specifications, renew metering pump -V54-.



Note

- ◆ If the ambient temperature is above 20 °C, fuel vaporisation may lead to incorrect measurements.
- ◆ No bubbles are to be delivered.



8 Regulation of Thermo Top Z auxiliary heater

The auxiliary heater is intended to heat coolant.

Various operating modes can be set depending on heat required in heating circuit:

8.1 Functional description of Thermo Top Z auxiliary heater

Temperature at ambient temperature sensor -G17- must be below approx. +5 °C.

Turning on the switch enables operation of the auxiliary heater. The glow plug with flame monitor -Q8-, the combustion air blower -V6- and the circulation pump -V55- begin to operate. After 30 seconds, the metering pump -V54- is switched on and the combustion air blower -V6- is switched off for 3 seconds. Then the combustion air blower -V6- runs up in two stages to nearly full load within 56 seconds. After a stabilisation phase (attaining steady motor speed) of 15 seconds, the combustion air blower -V6- is again brought up to nearly full load in a 50-second stage.

After reaching full-load fuel delivery, the glow plug with flame monitor -Q8- is switched off and the combustion air blower -V6- is brought up to full speed. During the next 45 seconds as well as during normal operation, the glow plug with flame monitoring -Q8- assumes the task of flame monitoring and checks flame development. Then the automatically regulated heating operation begins. If no flame develops or the flame extinguishes, then the fuel supply is interrupted and a malfunction shut-down occurs with the combustion air blower -V6- continuing in run-on mode. If the flame is extinguished during normal operation, a new start is automatically initiated.

8.1.1 Preheating mode

Once the coolant temperature has reached 84 °C, the control unit switches to the energy-saving part load mode. If the coolant temperature continues to rise above 88 °C, the control unit switches to the controlled waiting period. If the coolant temperature does not drop below 76 °C within 900 seconds during the controlled waiting period, the heating unit will start with the normal start procedure in full-load mode when the coolant temperature does drop below 76 °C.