Workshop Manual

Golf 2004 ➤
Golf 2009 ➤

Auxiliary heater

Edition 09.2008

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Repair Group

82 - Auxiliary 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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Contents

82 – Auxiliary heating

1 Auxiliary heater Thermo Top V

1.1 Safety measures for working on vehicles with auxiliary heaters

- The auxiliary heater must not be in operation or switched on in areas in which there is a risk of fire or explosion.
- The auxiliary heater must not be in operation or switched on (including via 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 vehicle 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 100^0 C.*
>
> *If necessary, release pressure before carrying out repairs.*

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

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 5051- or later models.
- 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 line fits flush with the vehicle underbody and is protected from mechanical damage.
- that the auxiliary heater fuel line is protected from heating which might disturb operation.
- that the fuel line does not come in contact with vehicle parts 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. Button not pressed and temperature setting not on "cold"
- Ambient temperature < = 5° C
- Fuel gauge not in reserve range
- On-board network manager not active
- No crash switch-off
- No fault memory 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 switch-off
- No fault memory 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.

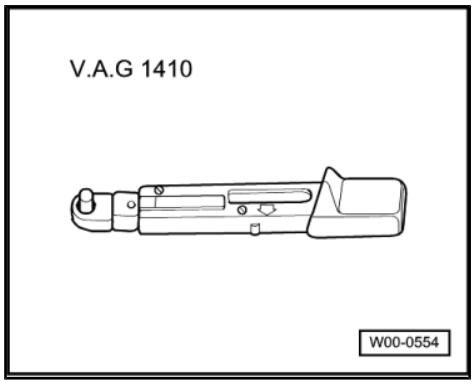
4 Repairing auxiliary heater Thermo Top V

Before beginning repair work, perform the following steps:

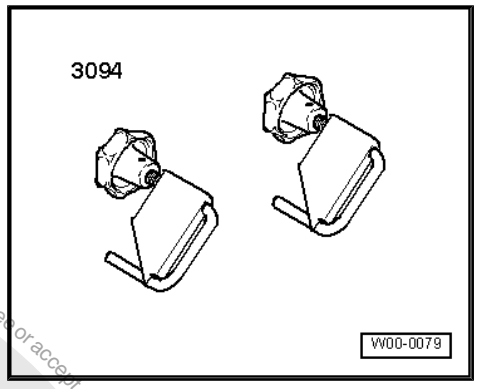
– Disconnect the battery ⇒ Rep. Gr. 27 .

Special tools and workshop equipment required

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



♦ Hose clamps up to 25 mm Ø -3094-

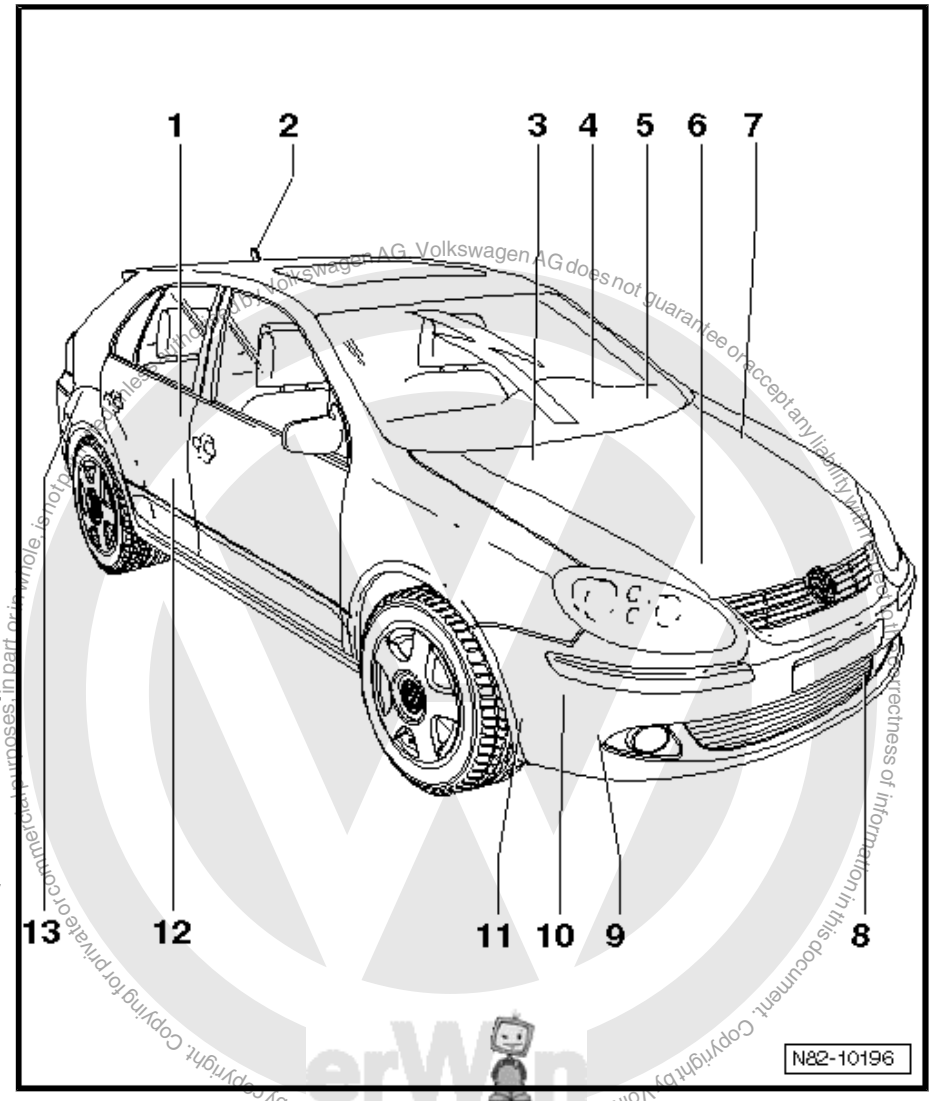


Note

♦ *The illustration shows the Golf V. The installation positions of the auxiliary heater components on the Golf VI are identical.*

♦ *A manufacturer's plate is fitted on the auxiliary heater unit. This manufacturer's plate provides information about which version is installed in vehicle: diesel Thermo Top V ⇒ page 6 .*

♦ *The coolant circuit must be bled after it is opened ⇒ page 22 .*



1 - Fuel gauge sender -G-

- ❑ Installation location: under rear bench seat, right.
- ❑ Removing and installing ⇒ Rep. Gr. 20

2 - Aerial for telephone, navigation system, auxiliary heating -R66-

- ❑ For vehicles with auxiliary heater and remote control.

3 - Heater coolant shut-off valve -N279- Golf ‣ 2008

Note

- ❑ Secured to engine compartment bulkhead
- ❑ Removing and installing ⇒ page 21

4 - Fresh air blower relay -J13-

- ❑ Not in vehicles with Climatronic
- ❑ Location: relay and fuse carrier below dash panel on left
- ❑ Checking ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

5 - Fuse carrier with auxiliary heater operation relay -J485- (only on vehicles with Climatronic)

- ❑ Location: under dash panel on left ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

6 - Coolant temperature sender -G62-

- ❑ Location: on cylinder head connection

7 - Battery -A-

- ❑ Location: in engine compartment on left

8 - Ambient temperature sensor -G17-

- ❑ Checking: vehicle diagnosis, testing and information system -VAS 5051- or successor models
- ❑ Removing and installing ⇒ page 7

9 - Circulation pump -V55-

- ❑ Location on auxiliary heater
- ❑ Removing and installing ⇒ page 15

10 - Auxiliary heater Thermo Top V

- ❑ With auxiliary heating control unit -J364- .
- ❑ Location: below front bumper on right
- ❑ Removing and installing ⇒ page 10

11 - Exhaust system

- ❑ For auxiliary heating.
- ❑ Removing and installing ⇒ page 8

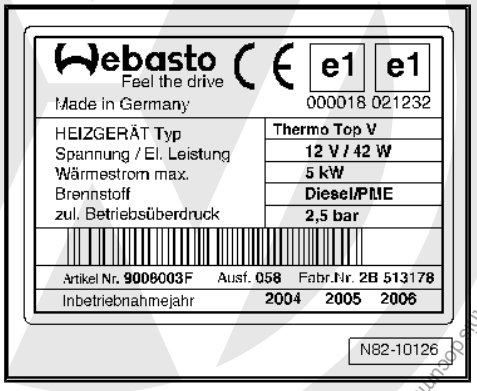
12 - Metering pump -V54-

- Location: right side of fuel tank.
- Fuel supply to auxiliary heater ⇒ page 40 .
- It is possible that the metering pump ticks audibly but still does not deliver fuel because there is air in the intake. The control unit will then switch off permanently. Therefore, read fault memory using vehicle diagnosis, testing and information system -VAS 5051- or later models, Self-diagnosis of auxiliary heater Thermo Top V. Clear fault memory and carry out final control diagnosis of auxiliary heater Thermo Top V.
- Removing and installing ⇒ page 42
- Testing quantity of fuel delivered ⇒ page 43

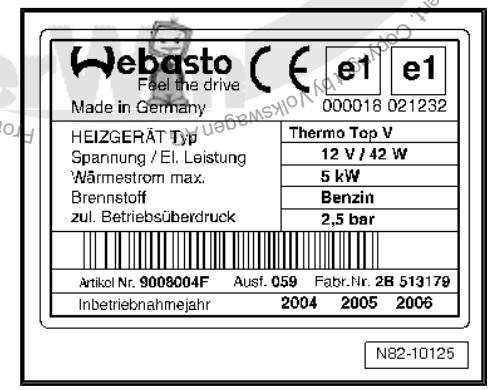
13 - Remote control receiver for auxiliary coolant heater -R149-

- Removing and installing ⇒ page 8

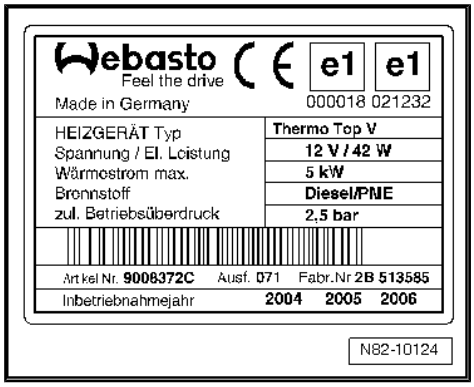
Manufacturer's plate on heater unit for Thermo Top V, diesel



Manufacturer's plate on heater unit for Thermo Top V, petrol



Manufacturer's plate on heater unit for Thermo Top V, diesel (preheater without auxiliary heating function)



Manufacturer's plate (duplicate) on lock carrier for Thermo Top V, diesel

Manufacturer's plate (duplicate) for Thermo Top V, petrol

Manufacturer's plate (duplicate) on lock carrier for Thermo Top V, diesel (preheater without auxiliary heating function)

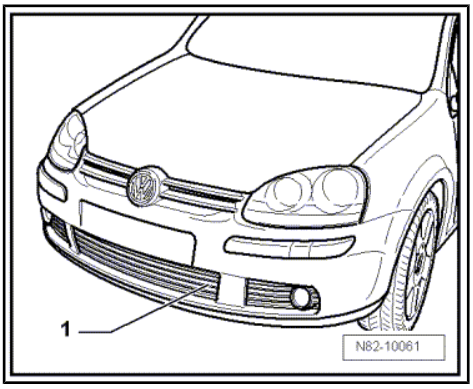
Note

- *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.*

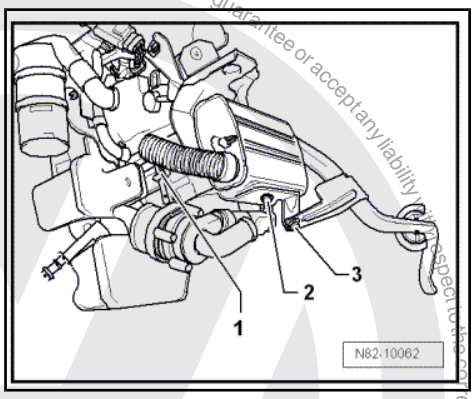
Removing and installing ambient temperature sensor -G17-

– Remove centre grille ⇒ Rep. Gr. 63 .

– Unclip ambient temperature sensor -G17- -1- and separate connector.



Removing and installing exhaust system



WARNING

Danger of burn injuries.

Silencer could be hot.

Before removing silencer, let it cool off.

– Remove front part of front right wheel housing liner ⇒ Rep. Gr. 66 .
– Loosen securing clamp on exhaust pipe -1- and remove bolts -2- and -3- (6 Nm).
– Remove exhaust system.

Caution

The exhaust system must be routed so that wiring harness does not touch exhaust system (danger of short circuit).

4.1 Removing and installing remote control receiver for auxiliary coolant heater - R149-

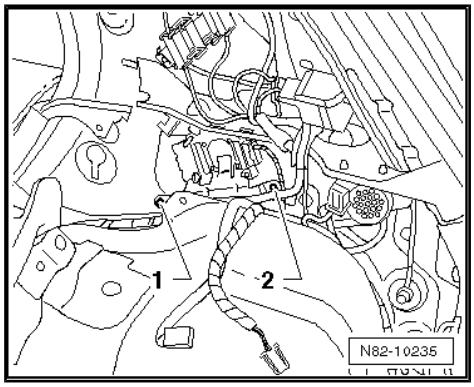
Note

If the remote control receiver for auxiliary coolant heater -R149- is renewed, the remote controls must be re-taught.

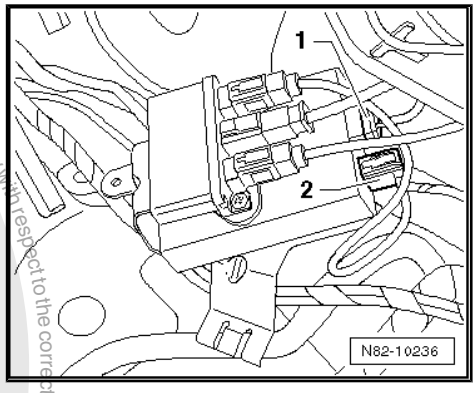
– Start “Basic settings” function using vehicle diagnosis, testing and information system -VAS 5051- or later model and then select channel 04.

4.1.1 Removing

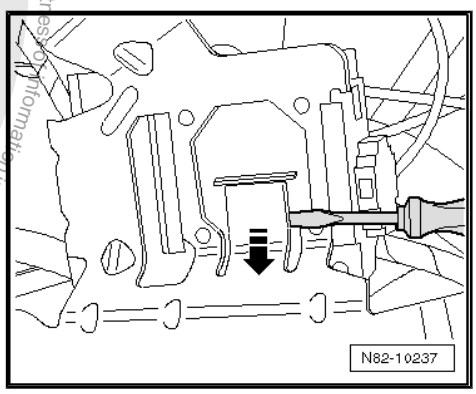
– Remove rear right seat belt behind luggage compartment trim ⇒ Rep. Gr. 69 .
– Remove bolts -1- and -2- and pull out retaining plate with remote control for auxiliary water heater -R149- and aerial filter -R87- .



– Pull off connectors -1- and -2-.



– Pry up retaining tab and pull out remote control receiver for auxiliary coolant heater -R149- in -direction of arrow-.



4.1.2 Installing

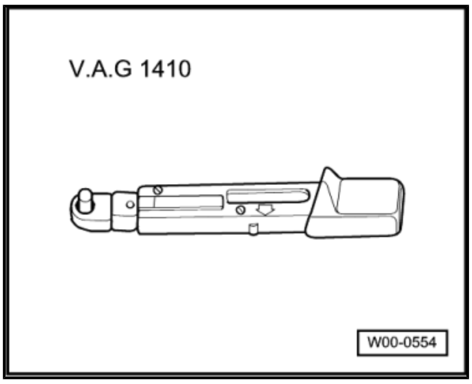
Note

Ensure that the connectors and retaining tab are properly seated.

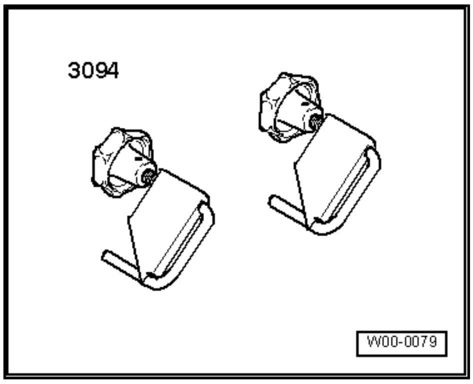
5 Removing and installing auxiliary heater Thermo Top V

Special tools and workshop equipment required

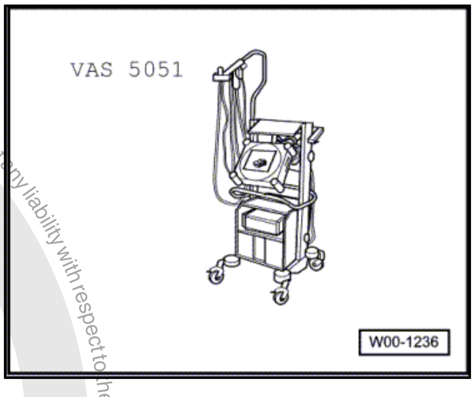
- Torque wrench -V.A.G 1410- (4…20 Nm)



- Hose clamps up to 25 mm Ø -3094-



- Vehicle diagnosis, testing and information system -VAS 5051- or successor models.



Note

- *A manufacturer's plate is fitted on the auxiliary heater unit. This manufacturer's plate provides information about which version is installed in vehicle, for example, diesel Thermo Top V* *⇒ page 6* *.*
- *The coolant circuit must be bled after it is opened* *⇒ page 22* *.*
- *Cooling system is pressurized when engine is warm. If necessary, release pressure before carrying out repairs.*

5.1 Components of auxiliary heater Thermo Top V

1 - Auxiliary heater Thermo Top V

- ❑ With auxiliary heating control unit -J364- .
- ❑ Removing ⇒ page 11

2 - Fuel line with quick-release coupling

- ❑ Routing of fuel line ⇒ page 40 .

3 - Air intake silencer

- ❑ Removing and installing ⇒ page 14

4 - Exhaust system

- ❑ Removing and installing ⇒ page 8

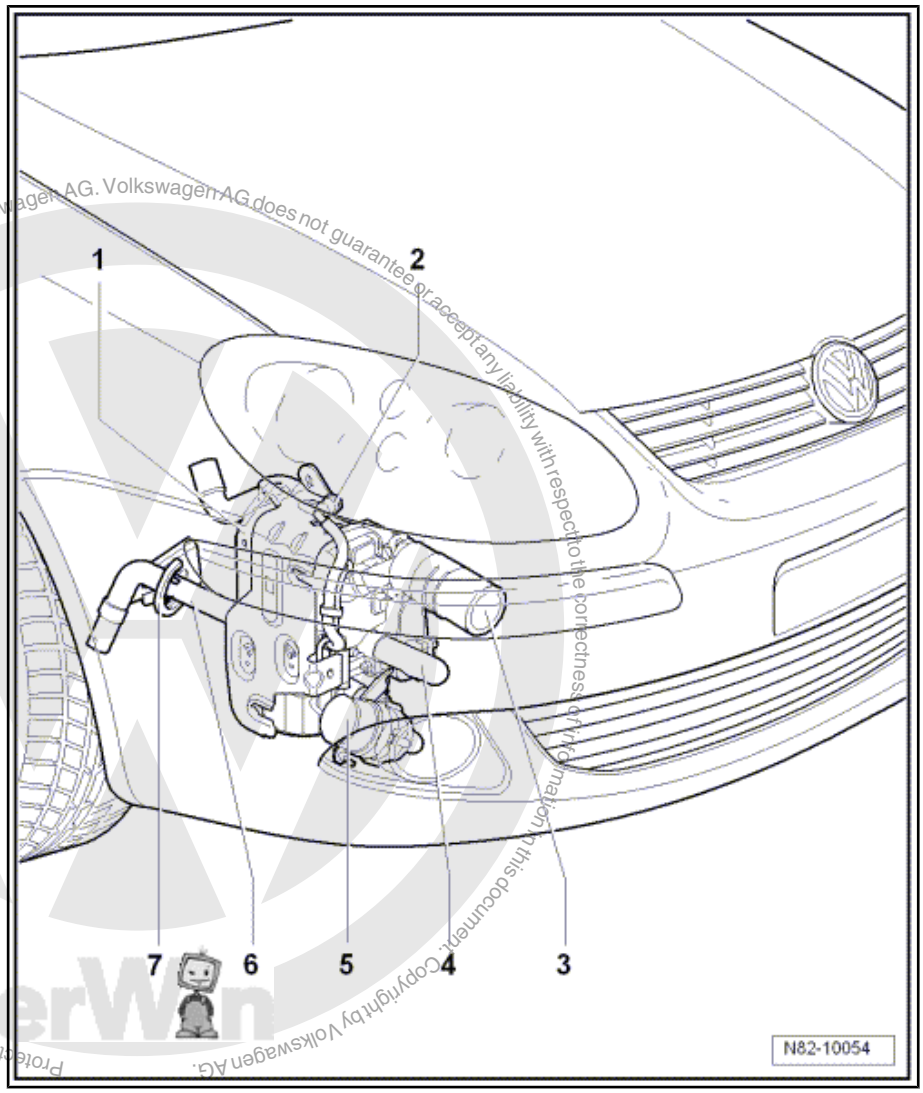
5 - Circulation pump -V55-

- ❑ Removing and installing ⇒ page 15

6 - Exhaust pipe

Note

7 - Chafing protection



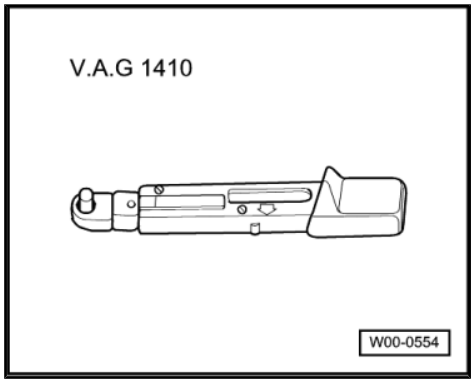
5.2 Removing auxiliary heater Thermo Top V

Note

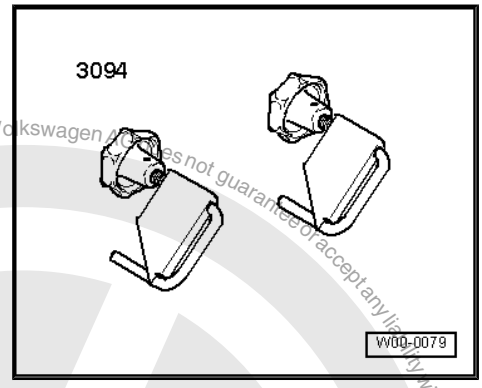
If the Thermo Top V is to be renewed, first connect vehicle diagnosis, testing and information system -VAS 5051- (or later model) and call up the "Renew heater" function under the guided functions.

Special tools and workshop equipment required

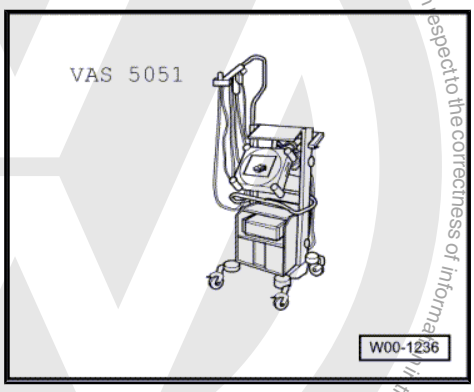
- Torque wrench -V.A.G 1410- (4…20 Nm)



- Hose clamps up to 25 mm Ø -3094-



- Vehicle diagnosis, testing and information system -VAS 5051- or successor models.



Note

- *The coolant circuit must be bled after it is opened* *⇒ page 22* .
- *After the auxiliary heater has been detached, it must be secured to the body with welding wire to prevent damage to the coolant hoses.*

– Remove lower front right wheel housing liner ⇒ Rep. Gr. 66 .

WARNING

Danger of burn injuries.

Parts of the exhaust system may be hot.

Before removing exhaust system, let it cool off.

– Remove exhaust pipe from silencer on auxiliary heater ⇒ page 15 .

WARNING

Danger of scalding injuries.

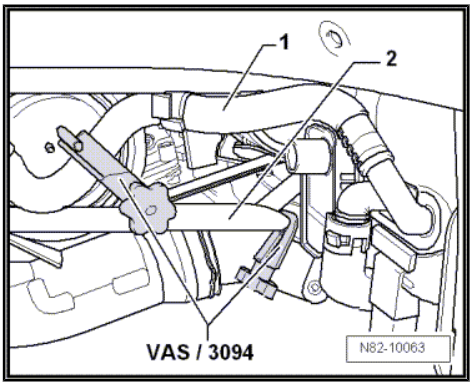
When the engine is warm, the coolant temperature may be above 100 °C. The cooling system is pressurised.

If necessary, release pressure before carrying out repairs.

– Clamp off coolant hoses -1- and -2- using hose clamps up to Ø 25 mm -3094- and pull coolant hoses off auxiliary heater.

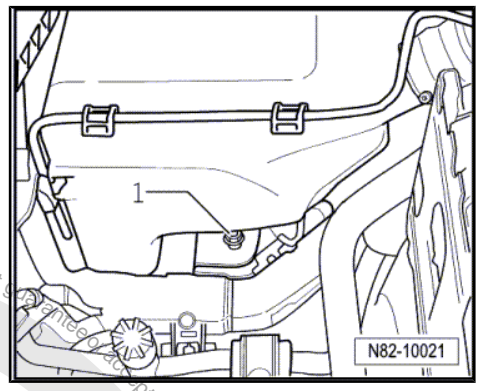
Do not separate coolant hoses that are connected to each other.

– Remove fuel filter with bracket ⇒ Rep. Gr. 20 . On vehicles with diesel engine.

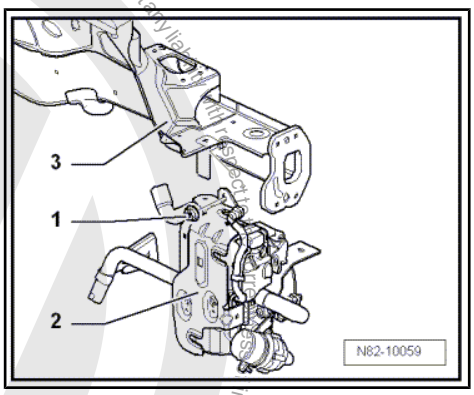


– Remove windscreen washer system reservoir ⇒ Rep. Gr. 92 .

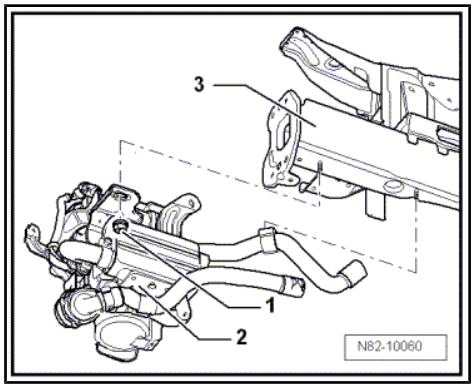
– Remove securing bolt -1- (8 ± 0.8 Nm) below reservoir for windscreen washer system.



– Remove securing nut -1- (8 ± 0.8 Nm) from auxiliary heater -2- on right longitudinal member -3-.



– Remove securing nut -1- (15 ± 1.5 Nm) from auxiliary heater -2- on right longitudinal member -3-.



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.

– Disconnect fuel line at quick-release coupling and seal fuel lines with appropriate plugs.

Caution

Auxiliary heater control unit -J364- could get damaged.

Overvoltages can occur at the connectors.

First pull out 8-pin connector.

– Unplug the other connectors at the auxiliary heater.

5.3 Installing auxiliary heater Thermo Top V

Note

If the Thermo Top V is not to be renewed, connect vehicle diagnosis, testing and information system -VAS 5051- (or later model) and call up the "Release heater" function under the guided functions.

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

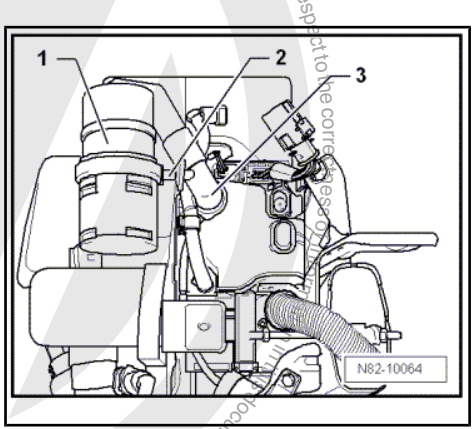
– After installing auxiliary heater, bleed coolant circuit ⇒ page 22 .

– Then start the auxiliary heater.

5.4 Removing ancillaries of auxiliary heater Thermo Top V

5.4.1 Removing air intake silencer

– Unclip air intake silencer -1- from bracket -2- and pull off intake pipe -3-.



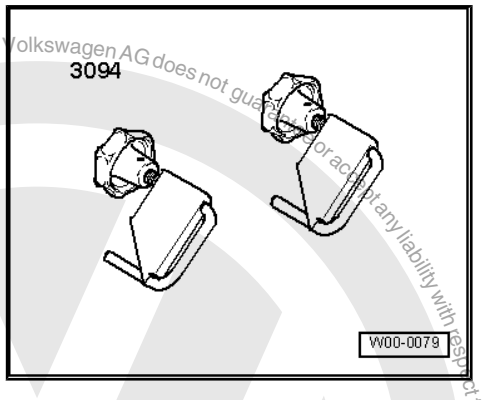
5.4.2 Installing

– Push air intake silencer onto intake pipe -3- far enough that it can be clipped into bracket -2-.

5.4.3 Removing circulation pump -V55-

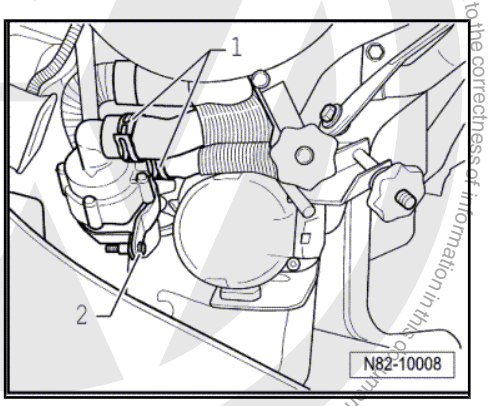
Special tools and workshop equipment required

♦ Hose clamps up to 25 mm Ø -3094-



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

– Loosen clip -1-.



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 before carrying out repairs.

– Pull coolant hoses off circulation pump -V55- .

– Pull connector off circulation pump -V55- .

– Remove bolt -2- and remove circulation pump -V55- .

5.4.4 Installing

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

– After installing circulation pump -V55- , bleed coolant circuit ⇒ page 22 .

5.4.5 Removing and installing exhaust pipe for auxiliary heater

Short exhaust pipe

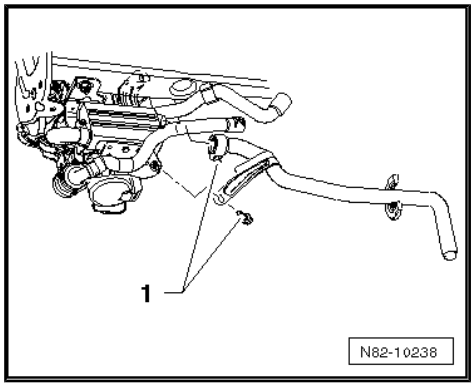
WARNING

Danger of burn injuries.

Parts of the exhaust system may be hot.

Before removing exhaust system, let it cool off.

– Remove nut and bolt -1-. When installing, first tighten bolt (6 ±0.6 Nm).

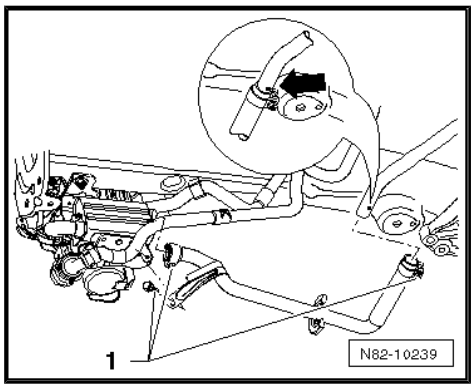


Long exhaust pipe

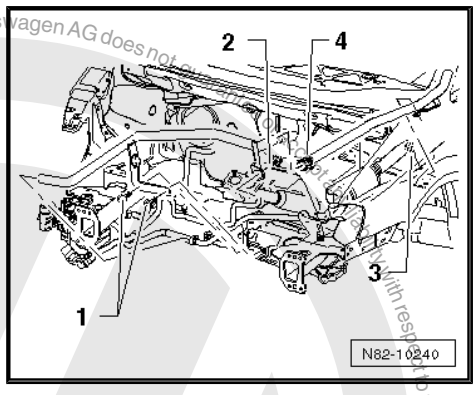
– Remove nuts and bolt -1-. When installing, first tighten bolt (6 ±0.6 Nm).
– When installing exhaust system, first install this exhaust pipe.

Note

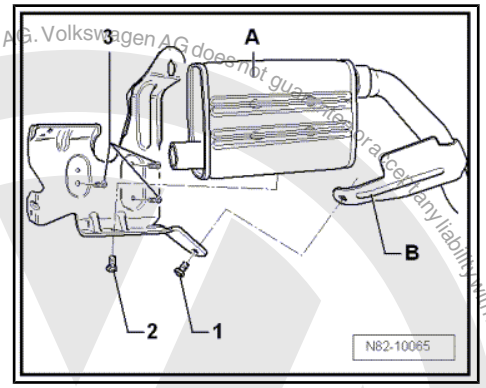
Observe drain hole -arrow-. It must be visible following installation and also serves as an installation marking.



– Tighten bolts and nuts to 6 ±0.6 Nm and bolt -2- to 23 ±3.5 Nm. Tightening sequence of bolts and nuts is 1...4.



5.4.6 Removing and installing silencer with bracket



WARNING

Danger of burn injuries.

Silencer could be hot.

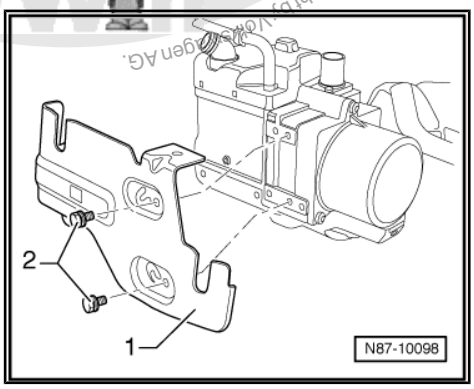
Before removing silencer, let it cool off.

- Separate exhaust pipe from silencer -A- ⇒ page 15 .
- Remove bolt -1- from support -B- and lay exhaust pipe to side.
- Remove bolt -2- from silencer -A-.
- Remove silencer -A-.
- Remove bolts -3- from bracket.
- Separate bracket from centring tabs and remove.
- Install in reverse order.

Note

When installing bracket, observe centring tabs.

5.4.7 Removing and installing bracket for auxiliary heater

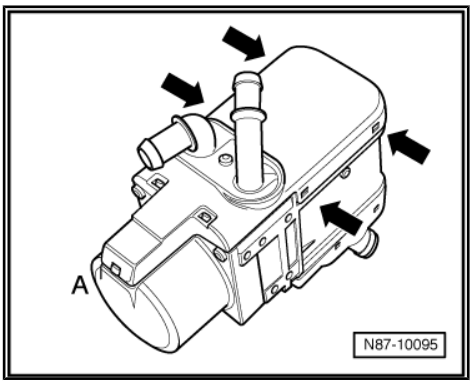


- Remove bolts -2- and remove bracket -1-.
- Install in reverse order.

Note

When installing bracket -1-, observe centring tabs.

5.4.8 Removing and installing cover

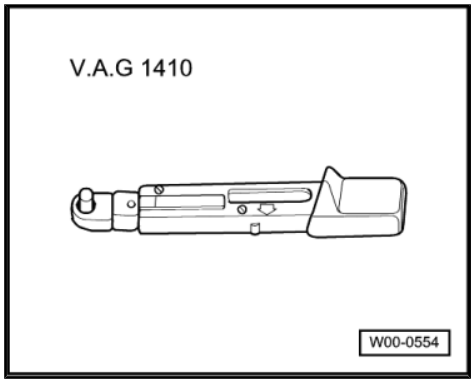


- Mark fitting position of coolant connections and remove them (bolt 4 Nm).
- Unclip cover at -arrows- and pull cover over locking lugs -A-.
- Install in reverse order.

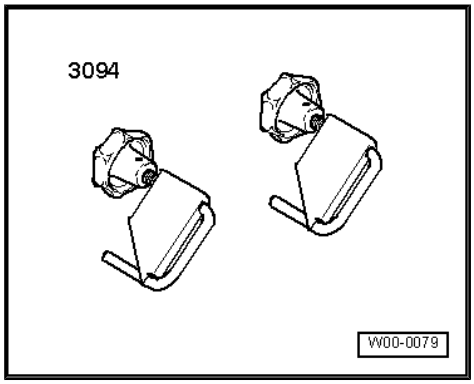
5.5 Dismantling and assembling auxiliary heater Thermo Top V

Special tools and workshop equipment required

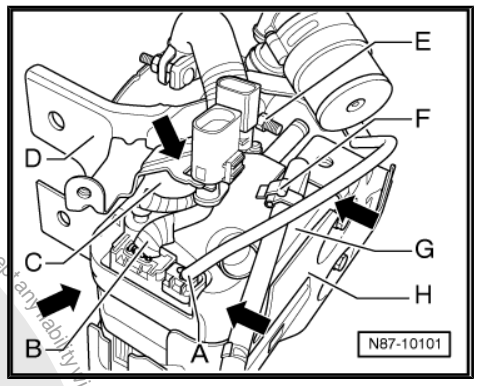
♦ Torque wrench -V.A.G 1410- (4…20 Nm)



♦ Hose clamps up to 25 mm Ø -3094-



– Remove auxiliary heater Thermo Top V ⇒ page 11 .
– Loosen securing clamp -E- and remove silencer with bracket -D- ⇒ page 17 .
– Remove bracket -H- ⇒ page 17 .
– Pull off connectors -A-, -B- and -C-.



WARNING

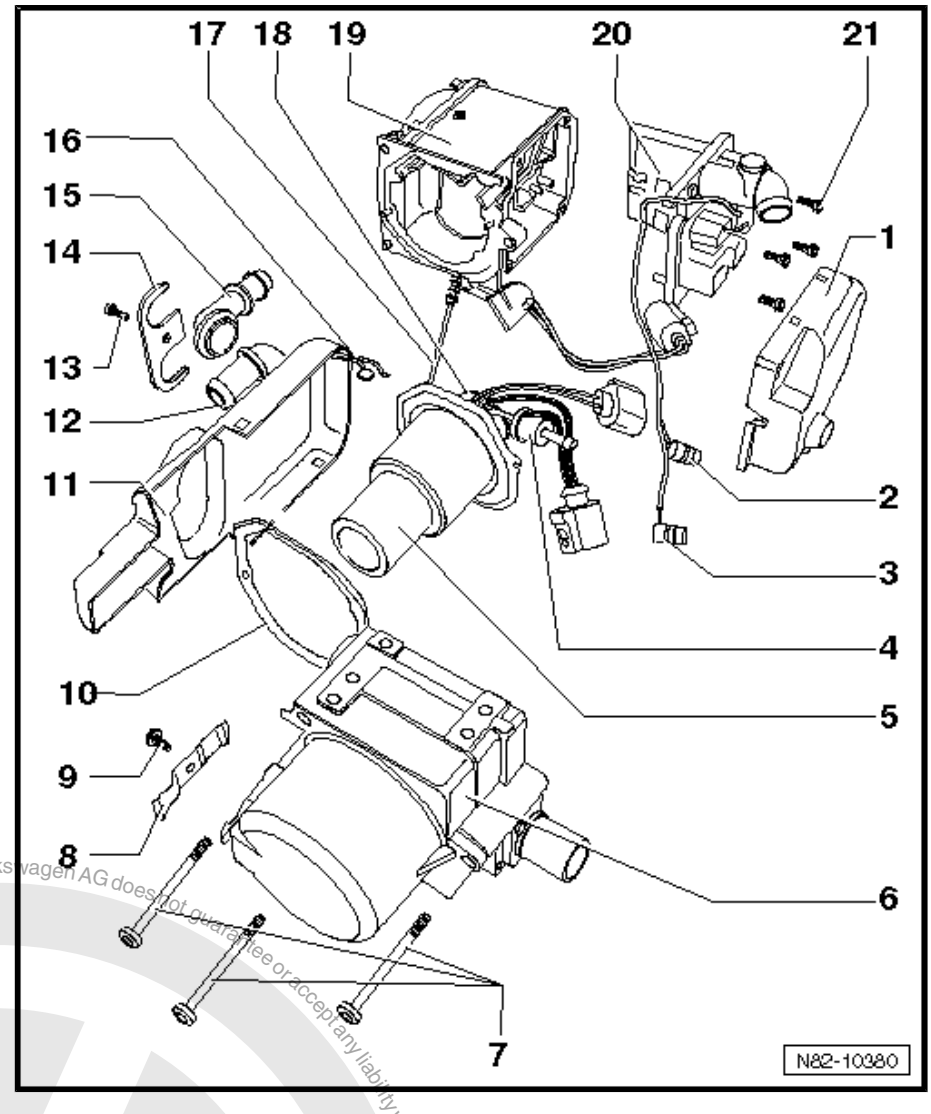
Danger of fuel escaping.

Fuel system is under pressure.

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

– Open O-type clip and pull fuel line -F- off connection. Renew O-type clip with screw-type clip.
– Seal fuel lines using suitable plugs.
– Unclip cover -G- -arrows-.

5.6 Inner components of auxiliary heater



1 - Cover for auxiliary heating control unit -J364- .

- ❑ Removing and installing ⇒ page 17

2 - Temperature sensor -G18-

- ❑ Removing and installing ⇒ page 20

3 - Overheating sensor -G189-

- ❑ Removing and installing ⇒ page 20

4 - Fuel shut-off valve -N109-

- ❑ Only vehicles with a diesel engine.

5 - Combustion tube

Note

Note

- ❑ Removing and installing ⇒ page 17

6 - Heat exchanger

- ❑ Removing and installing ⇒ page 17

7 - 7 Nm

- ❑ Qty. 3

8 - Retaining spring

9 - 4 Nm

10 - Seal

- ❑ Must be renewed after every opening.

11 - Cover

- ❑ Removing and installing ⇒ page 17

12 - Coolant connection

- ❑ Mark fitting position.

13 - 4 Nm

14 - Retaining plate

15 - Coolant connection

- ❑ Mark fitting position.

16 - Retaining clip

17 - Glow plug with flame monitoring -Q8-

- ❑ Ensure correct seating.
- ❑ Removing and installing ⇒ page 20 is possible only with petrol version.

Note

18 - Burner

- ❑ Removing and installing ⇒ page 17

19 - Combustion air blower -V6-

- ❑ The combustion air blower -V6- and housing are one component and cannot be dismantled.
- ❑ Removing and installing ⇒ page 17

20 - Auxiliary heater control unit -J364-

Note

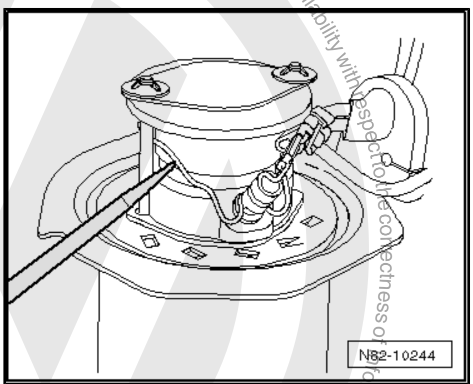
21 - 4 Nm

- ❑ Qty. 4

5.6.1 Removing and installing glow plug with flame monitoring -Q8-

Note

With the diesel version, a fuel pre-heating heater element -Z66- and a fuel shut-off valve -N109- are permanently installed on the combustion tube. The wires are connected to wires of glow plug with flame monitoring -Q8- . With this version, the entire combustion tube must be renewed if the glow plug with flame monitoring -Q8- is defective.

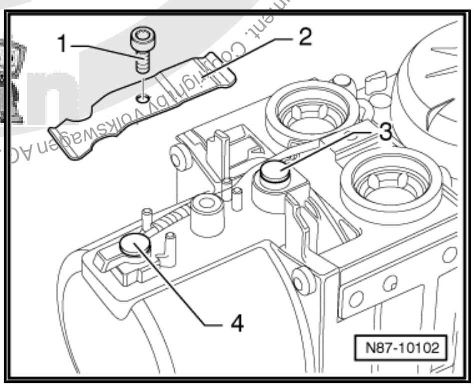


- Dismantling and assembling auxiliary heater Thermo Top V ⇒ page 17 .
- Using a suitable screwdriver, raise retaining clip -A- on both sides and remove glow plug with flame monitoring -Q8- .

Note

- ♦ *During assembly, retaining clip must seat in groove.*
- ♦ *Ensure proper seating of glow plug with flame monitoring -Q8- -B-.*

5.6.2 Removing and installing temperature sensor -G18- and overheating sensor -G189-



- Dismantling and assembling auxiliary heater Thermo Top V ⇒ page 17 .
- Remove bolt -1- and remove retaining spring -2-.
- Pull out temperature sensor -G18- -3-and overheating sensor -G189- -4- using needle-nose pliers.

Note

- ♦ *When assembling, ensure that retaining spring is in proper position -2-.*
- ♦ *Sensors cannot be renewed separately.*

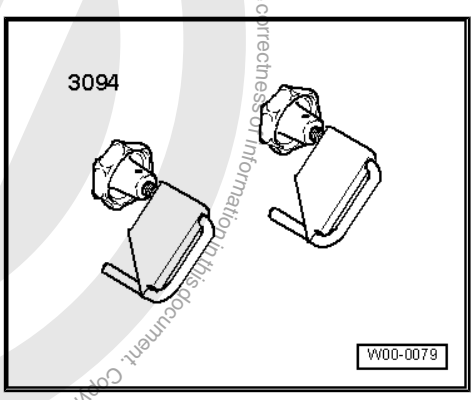
5.6.3 Removing and installing heater cooler shut-off valve -N279-

Note

The heater coolant shut-off valve -N279- was fitted only in vehicles with certain engines and was then gradually discontinued during production.

Special tools and workshop equipment required

- Hose clamps up to 25 mm Ø -3094-



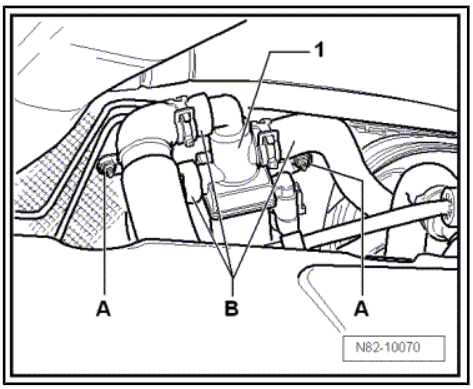
Removing

– Remove engine cover ⇒ Rep. Gr. 10 .

– Pull out noise insulation and, depending on engine, remove intake hose to turbocharger ⇒ Rep. Gr. 21 .

– Remove securing nuts (8 ±0.8 Nm) -A- from bracket for heater coolant shut-off valve -N279- -1-.

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



WARNING

Danger of scalding injuries.

The cooling system is pressurised. When the engine is warm, the coolant temperature may be above 100^0 C.

If necessary, release pressure before carrying out repairs.

– Separate coolant hoses from -B- heater coolant shut-off valve -N279- .

– Unclip connecting wire from retainer and separate connector.

– Remove securing nuts (8 ±0.8 Nm) -A- from heater coolant shut-off valve -N279- .

Installing

– Install in reverse order.

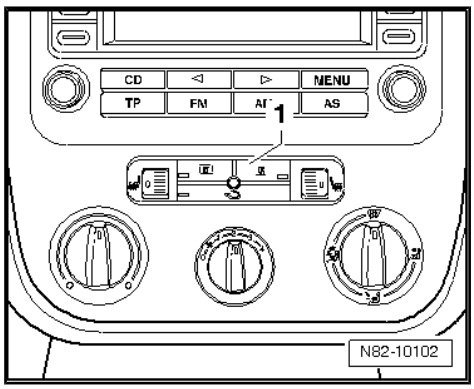
5.7 Bleeding coolant circuit

Note

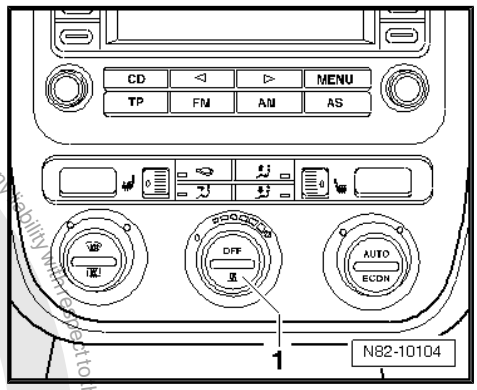
- *Because the heater coolant shut-off valve -N279- (optional) will be actuated depending on the coolant temperature and only with the auxiliary heater switched on, the auxiliary heater must be switched on during the bleeding procedure.*
- *Air in the coolant circuit or the auxiliary heater can cause the auxiliary heater to overheat. The fault "control unit defective" will be stored in the auxiliary heater. If this fault occurs several times in a row, the auxiliary heater will be blocked electronically. This blockage can be removed using the vehicle diagnosis, testing and information system -VAS 5051- or a later model. Start the function "adaptation" in the vehicle diagnosis, testing and information system -VAS 5051- .*

– Fill coolant circuit ⇒ Rep. Gr. 19 .
– Switch on engine and then auxiliary heater. Press, for example, the instant heating button -E537- -1-.

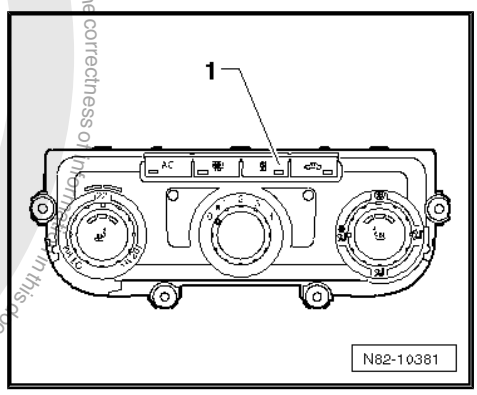
Heating / Climatic Golf ‣ 2008:



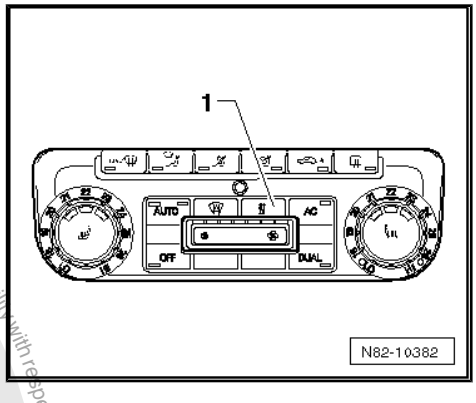
Climatronic Golf ‣ 2008:



Climatic Golf 2009 ‣:



Climatronic Golf 2009 ▸:



– Set temperature on operating unit (heating, Climatic or Climatronic) to highest step and open dash panel vents.

– Run engine at idling speed for 3 minutes and then at a higher speed, about 2,300 rpm, for 3 minutes longer.

– Switch off auxiliary heater using instant heating button -E537--1-.

– Turn off engine.

– Check coolant lever in coolant reservoir and top up if necessary ⇒ Rep. Gr. 19 .

6 Connecting auxiliary heater Thermo Top V to coolant circuit

WARNING

Danger of scalding injuries.

The cooling system is pressurised. When the engine is warm, the coolant temperature may be above 100^0 C.

If necessary, release pressure 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 heater, engine codes BKC, BJB, BLS, BRV

1 - Coolant expansion tank

2 - Heat exchanger for heater

3 - Non-return valve

- ❑ Note fitting position.
- ❑ Arrow on non-return valve points in direction of flow.

4 - Heater coolant shut-off valve -N279-

- ♦ Location: secured to engine compartment bulkhead
- ♦ Removing and installing ⇒ page 21

5 - Cylinder head and cylinder block

6 - ATF cooler

- ♦ Only vehicles with automatic transmission

7 - Engine oil cooler

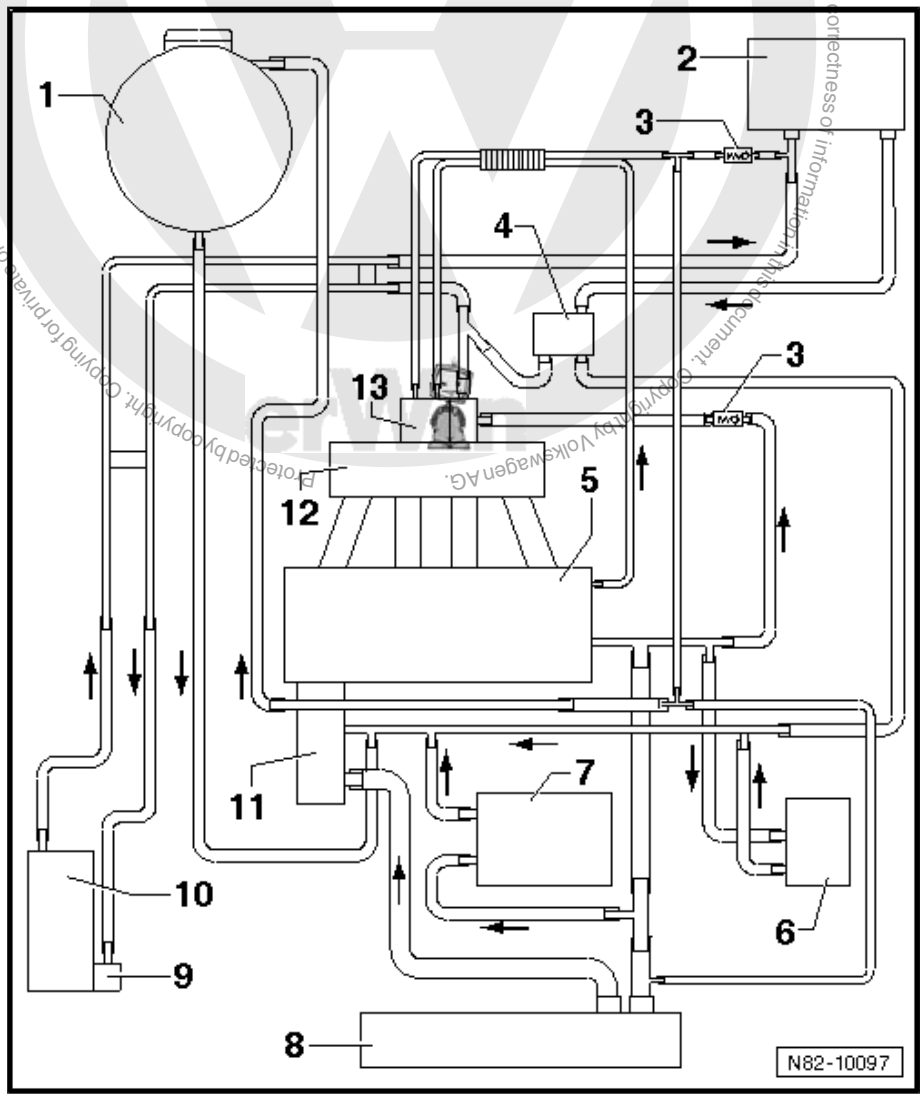
8 - Radiator

9 - Circulation pump -V55-

- ❑ Removing and installing ⇒ page 15

10 - Auxiliary heater Thermo Top V

- ❑ Removing and installing ⇒ page 11



11 - Water pump

12 - Intake manifold

13 - Exhaust gas recirculation (water cooled)

6.2 Connection diagram for coolant hoses in vehicles with auxiliary heating, engine code BMM

1 - Coolant expansion tank

2 - Coolant pipes in bulkhead area

3 - Exhaust gas recirculation cooler

4 - Intake manifold

5 - Heat exchanger for heater

6 - Connecting piece

7 - Upper coolant pipe

8 - Front coolant pipe

9 - Oil cooler

- ❑ For engine oil

10 - Upper coolant hose

11 - Radiator

12 - Lower coolant hose

13 - Thermostat for coolant pump

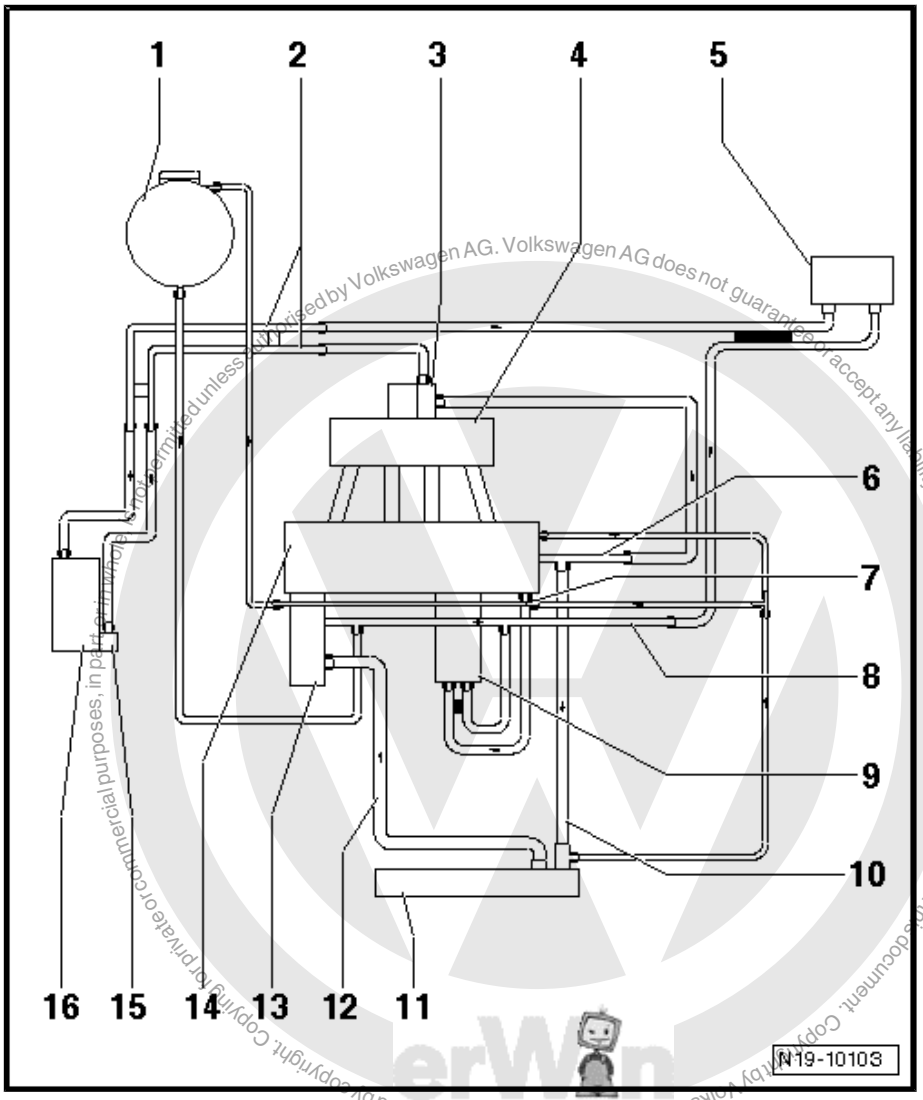
14 - Cylinder head and cylinder block

15 - Circulation pump -V55-

- ❑ Removing and installing ⇒ page 15

16 - Auxiliary heater Thermo Top V

- ❑ Removing and installing ⇒ page 11



6.3 Connection diagram for coolant hoses in vehicles with auxiliary heating, engine codes BLG, BMY

1 - Coolant expansion tank

2 - Intake manifold

3 - Restrictor

4 - Heat exchanger for heater

5 - Thermostat housing

6 - Restrictor

7 - Radiator

8 - Oil cooler

- ❑ For engine oil

9 - Continued coolant circulation pump -V51-

10 - Turbocharger

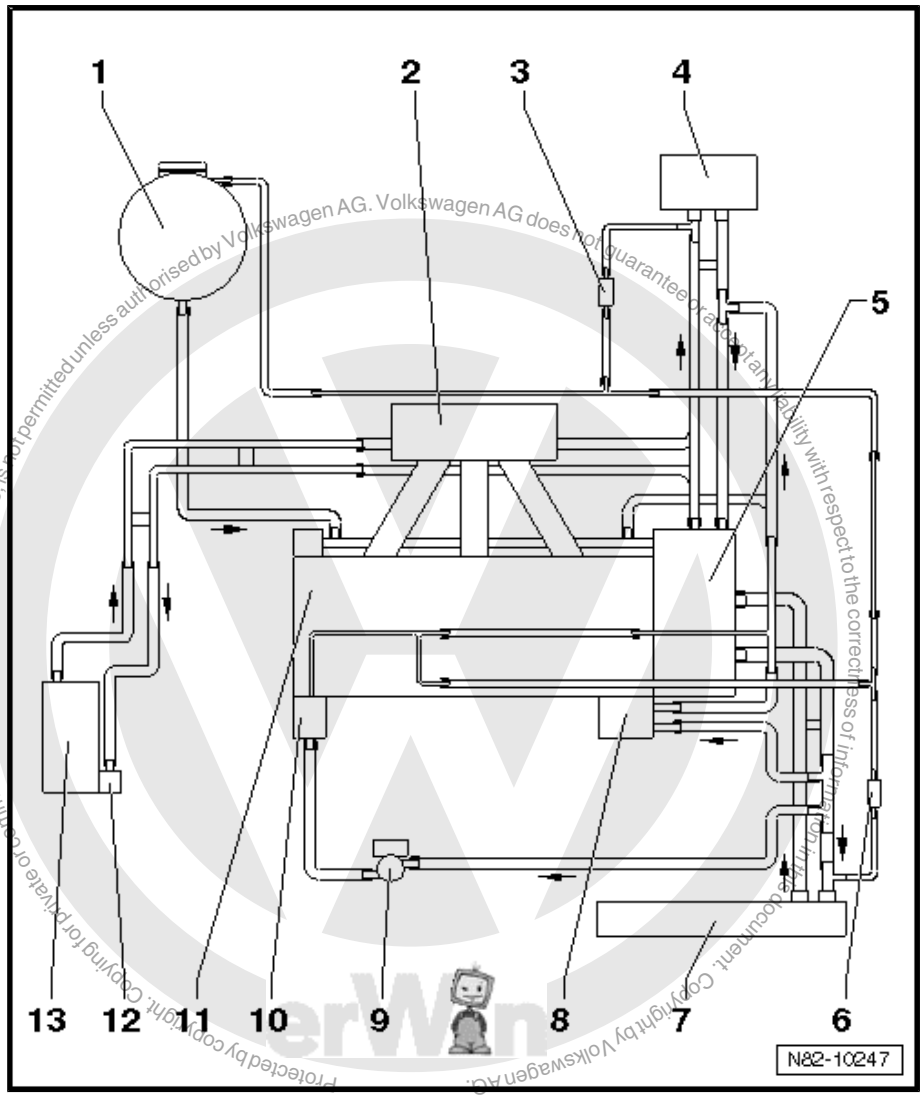
11 - Cylinder head and cylinder block

12 - Circulation pump -V55-

- ❑ Removing and installing ⇒ page 15

13 - Auxiliary heater Thermo Top V

- ❑ Removing and installing ⇒ page 11



6.4 Connection diagram for coolant hoses in vehicles with auxiliary heating, engine codes AXX, BPY, BWA

1 - Coolant expansion tank

2 - Heat exchanger for heater

3 - ATF cooler

- ❑ Only for automatic gearboxes

4 - Bypass thermostat

- ❑ Only for automatic gearboxes

5 - Coolant connection

6 - Cylinder head and cylinder block

7 - Intake manifold

8 - Auxiliary radiator

9 - Radiator

10 - Continued coolant circulation pump -V51-

11 - Thermostat housing

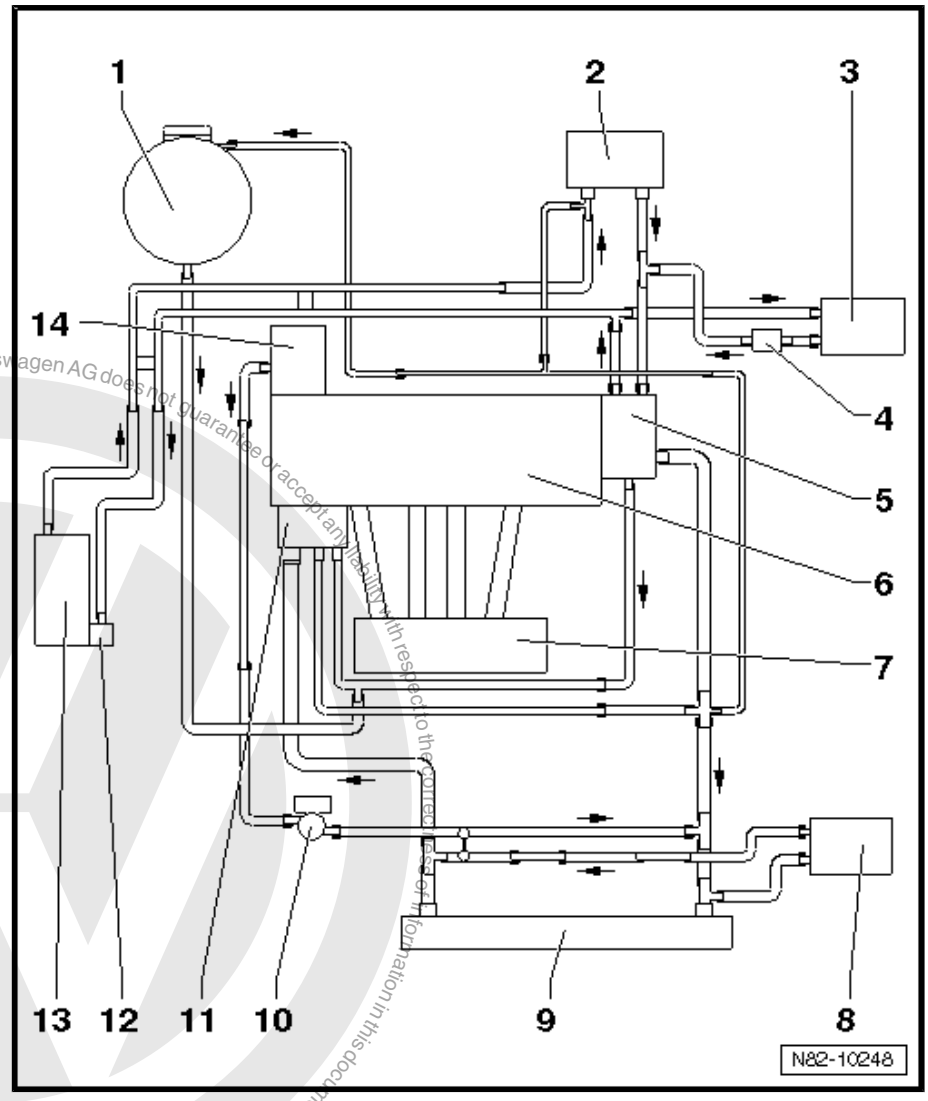
12 - Circulation pump -V55-

- ❑ Removing and installing ⇒ page 15

13 - Auxiliary heater Thermo Top V

- ❑ Removing and installing ⇒ page 11

14 - Turbocharger



6.5 Connection diagram for coolant hoses in vehicles with auxiliary heating, engine codes AZV, BKD, BMN

1 - Coolant expansion tank

2 - Heat exchanger for heater

3 - Non-return valve

- ❑ Note fitting position.
- ❑ Arrow on non-return valve points in direction of flow.

4 - Heater coolant shut-off valve -N279-

- ♦ Location: secured to engine compartment bulkhead
- ♦ Removing and installing ⇒ page 21

5 - Radiator

6 - Engine oil cooler

7 - Circulation pump -V55-

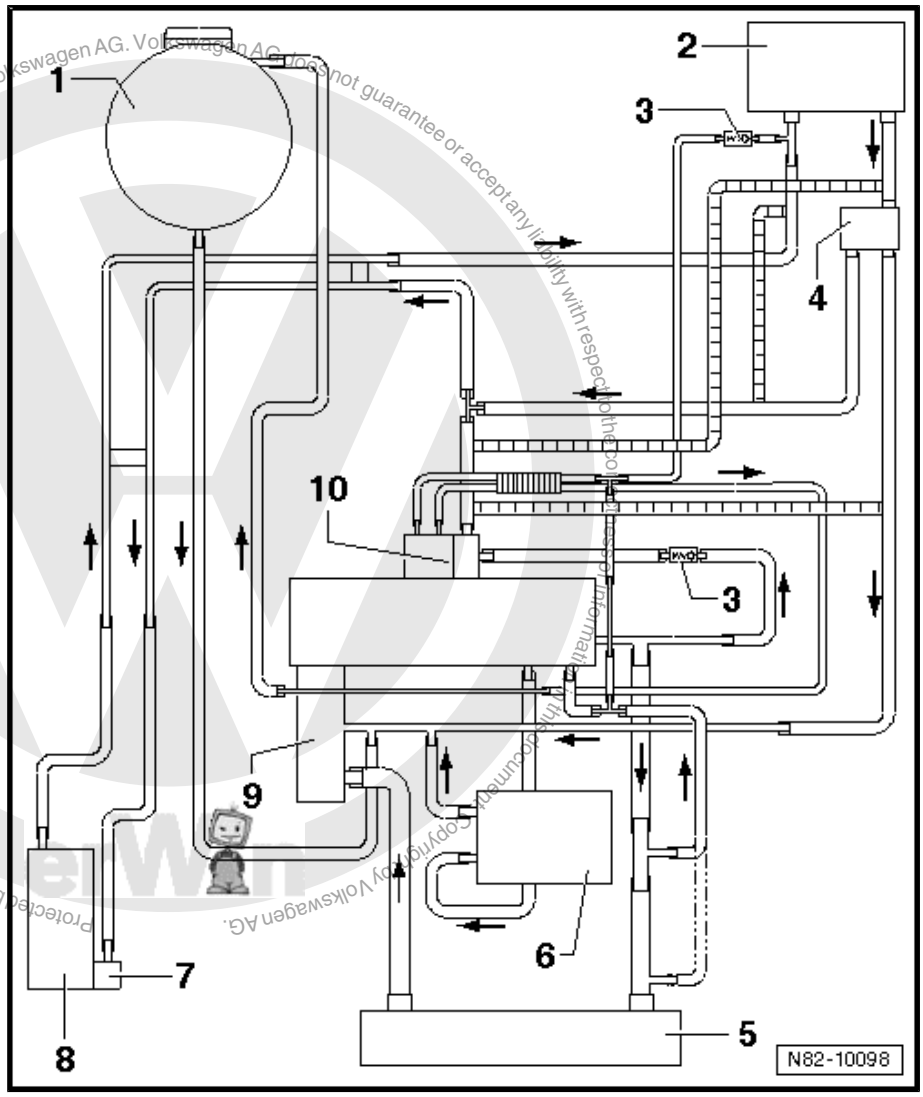
- ❑ Removing and installing ⇒ page 15

8 - Auxiliary heater Thermo Top V

- ❑ Removing and installing ⇒ page 11

9 - Water pump

10 - Exhaust gas recirculation (water cooled)



6.6 Connection diagram for coolant hoses in vehicles with auxiliary heating, engine codes BAG, BKG, BLF, BLN, BLP

1 - Coolant expansion tank

2 - Non-return valve

- ❑ Note fitting position.
- ❑ Arrow on non-return valve points in direction of flow.

3 - Restrictor

4 - Heat exchanger for heater

5 - Heater coolant shut-off valve -N279-

- ♦ Location: secured to engine compartment bulkhead
- ♦ Removing and installing ⇒ page 21

6 - Exhaust gas recirculation (water cooled)

7 - Intake manifold

8 - Thermostat housing

9 - Radiator

10 - Engine oil cooler

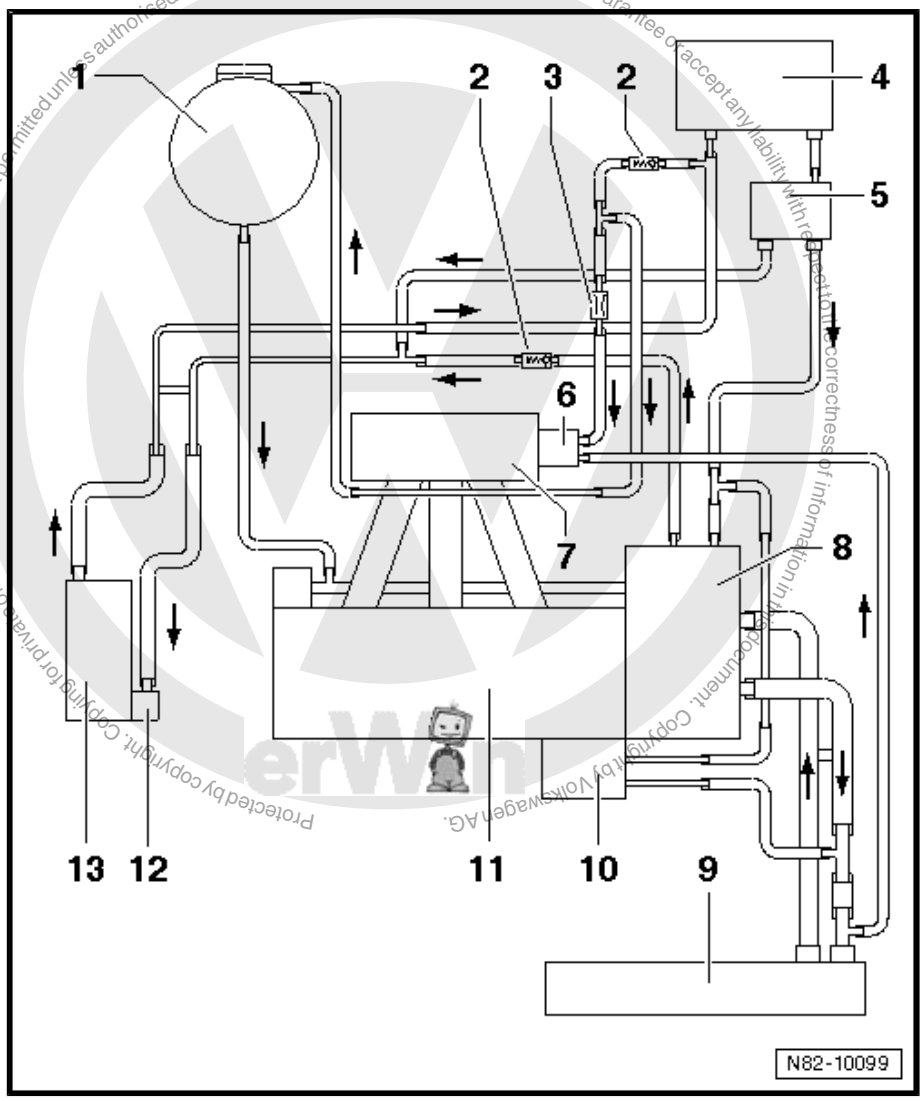
11 - Cylinder head and cylinder block

12 - Circulation pump -V55-

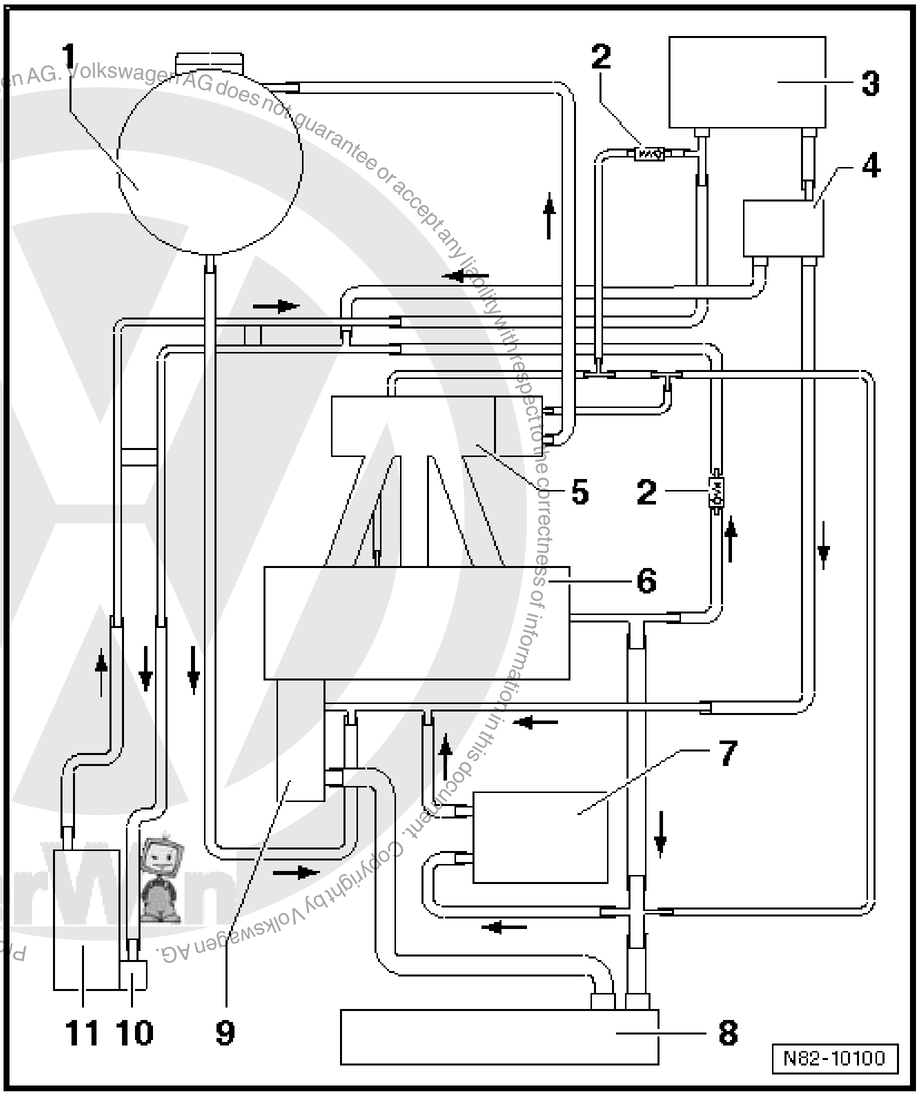
- ❑ Removing and installing ⇒ page 15

13 - Auxiliary heater Thermo Top V

- ❑ Removing and installing ⇒ page 11



6.7 Connection diagram for coolant hoses in vehicles with auxiliary heating, engine codes BGU, BSE, BSF and CHGA



1 - Coolant expansion tank

2 - Non-return valve

- ❑ Note fitting position.
- ❑ Arrow on non-return valve points in direction of flow.

3 - Heat exchanger for heater

4 - Heater coolant shut-off valve -N279-

- ♦ Location: secured to engine compartment bulkhead
- ♦ Removing and installing ⇒ page 21
- ♦ Not installed in vehicles with engine code CHGA.

5 - Intake manifold

6 - Cylinder head and cylinder block

7 - Engine oil cooler

8 - Radiator

9 - Water pump

10 - Circulation pump -V55-

- ❑ Removing and installing ⇒ page 15

11 - Auxiliary heater Thermo Top V

- ❑ Removing and installing ⇒ page 11

6.8 Connection diagram for coolant hoses in vehicles with auxiliary heating, engine code BKD

1 - Coolant expansion tank

2 - Heat exchanger for heater

3 - Non-return valve

- ❑ Note fitting position.
- ❑ Arrow on non-return valve points in direction of flow.

4 - Heater coolant shut-off valve -N279-

- ♦ Location: secured to engine compartment bulkhead
- ♦ Removing and installing ⇒ page 21

5 - Radiator

6 - Engine oil cooler

7 - Water pump

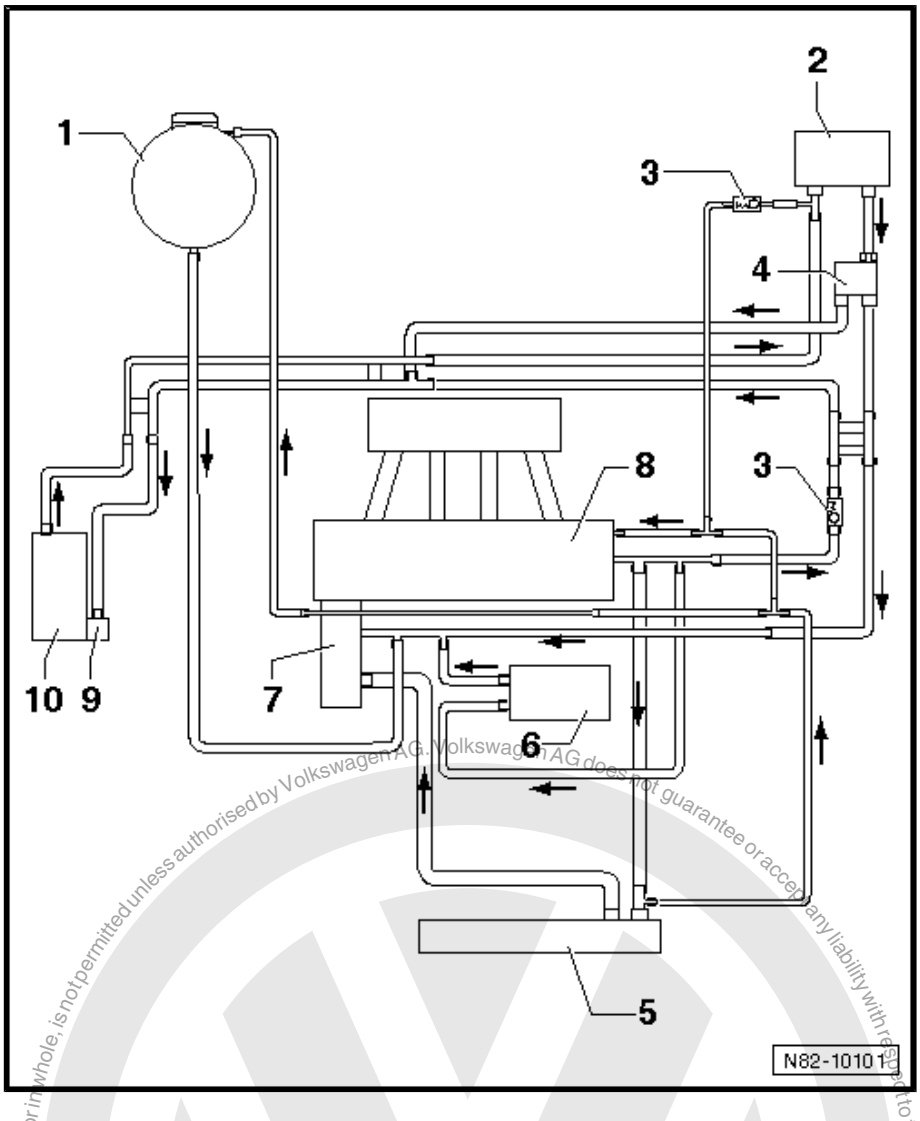
8 - Cylinder head and cylinder block

9 - Circulation pump -V55-

- ❑ Removing and installing ⇒ page 15

10 - Auxiliary heater Thermo Top V

- ❑ Removing and installing ⇒ page 11



6.9 Connection diagram for coolant hoses in vehicles with auxiliary heating, engine codes AXW, BLX, BLY, BLR

1 - Coolant expansion tank

2 - Heat exchanger for heater

3 - Non-return valve

- ❑ Note fitting position.
- ❑ Arrow on non-return valve points in direction of flow.

4 - Heater coolant shut-off valve -N279-

- ♦ Location: secured to engine compartment bulkhead
- ♦ Removing and installing ⇒ page 21

5 - Intake manifold

6 - Engine oil cooler

7 - Radiator

8 - Circulation pump -V55-

- ❑ Removing and installing ⇒ page 15

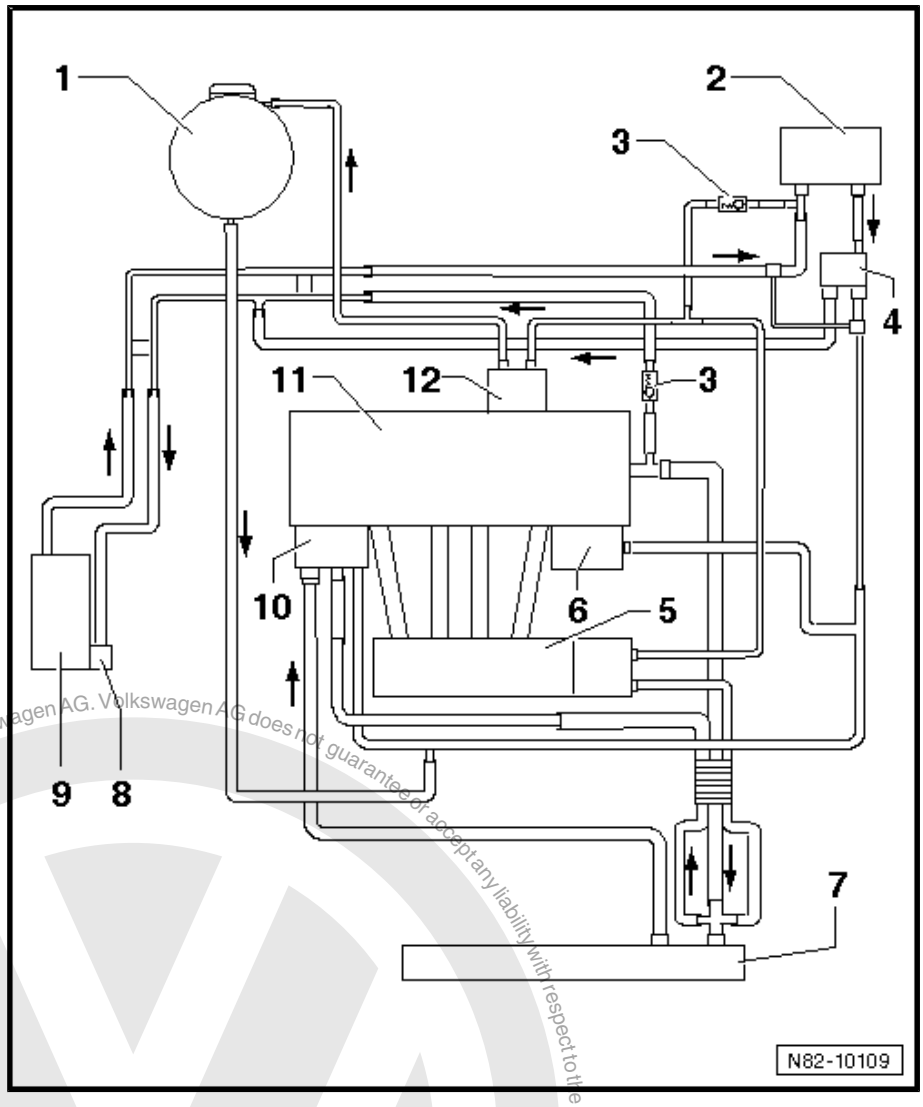
9 - Auxiliary heater Thermo Top V

- ❑ Removing and installing ⇒ page 11

10 - Thermostat housing

11 - Cylinder head and cylinder block

12 - Exhaust gas recirculation (water cooled)



6.10 Connection diagram for coolant hoses in vehicles with auxiliary heating, engine codes BUB, CBRA

1 - Coolant expansion tank

2 - Non-return valve

- ❑ Note fitting position.
- ❑ Arrow on non-return valve points in direction of flow.

3 - Heat exchanger for heater

4 - Heater coolant shut-off valve -N279-

- ♦ Location: secured to engine compartment bulkhead
- ♦ Removing and installing ⇒ page 21

5 - Thermostat housing

6 - Upper coolant hose

7 - Radiator

8 - Lower coolant hose

9 - Continued coolant circulation pump -V51-

10 - Oil cooler

- ❑ For engine oil

11 - Cylinder block

12 - Coolant pump

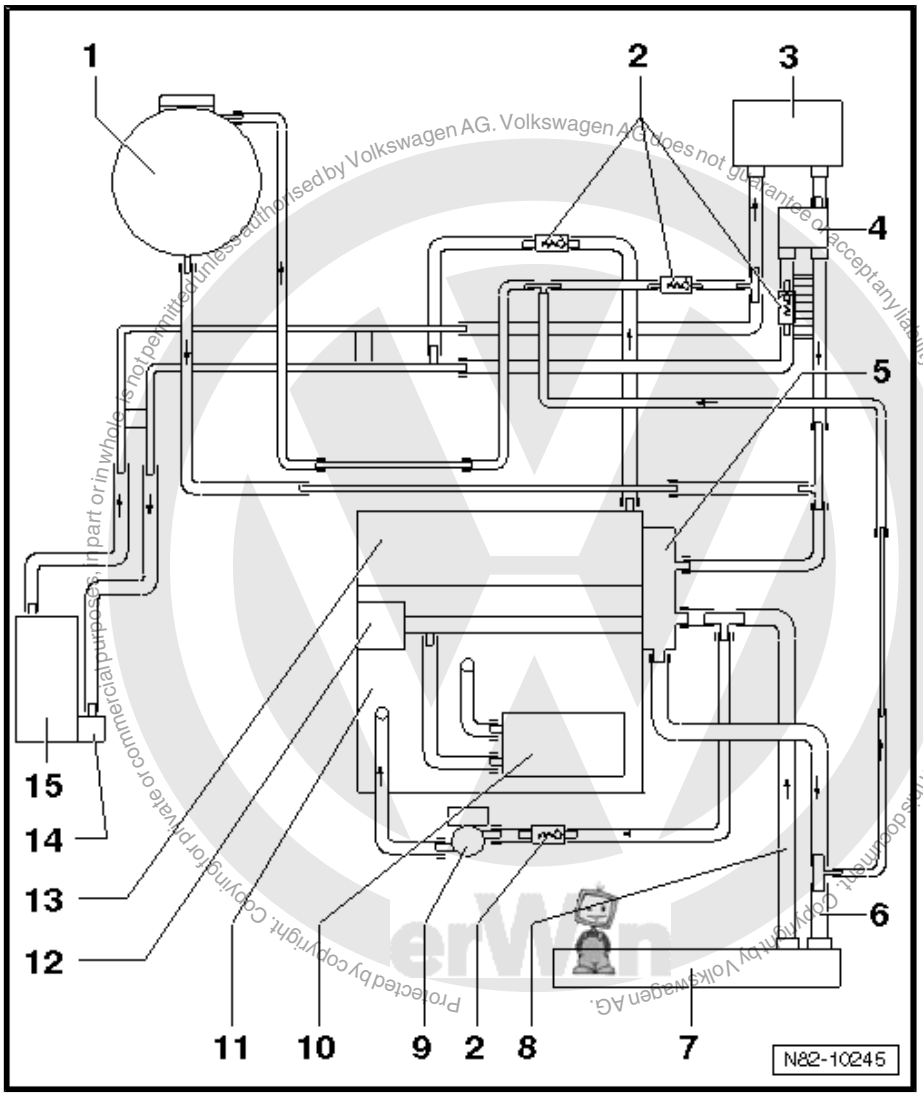
13 - Cylinder head

14 - Circulation pump -V55-

- ❑ Removing and installing ⇒ page 15

15 - Auxiliary heater Thermo Top V

- ❑ Removing and installing ⇒ page 11



6.11 Connection diagram for coolant hoses in vehicles with auxiliary heating, engine codes BVX, BVY, BVZ

1 - Expansion tank

2 - Heater coolant shut-off valve -N279-

Note

Location: secured to engine compartment bulkhead

Removing and installing
⇒ page 21

3 - Heat exchanger for heater

4 - ATF cooler

- ❑ Only vehicles with automatic transmission

5 - Engine oil cooler

6 - Intake manifold

7 - Radiator

8 - Circulation pump -V55-

- ❑ Removing and installing
⇒ page 15

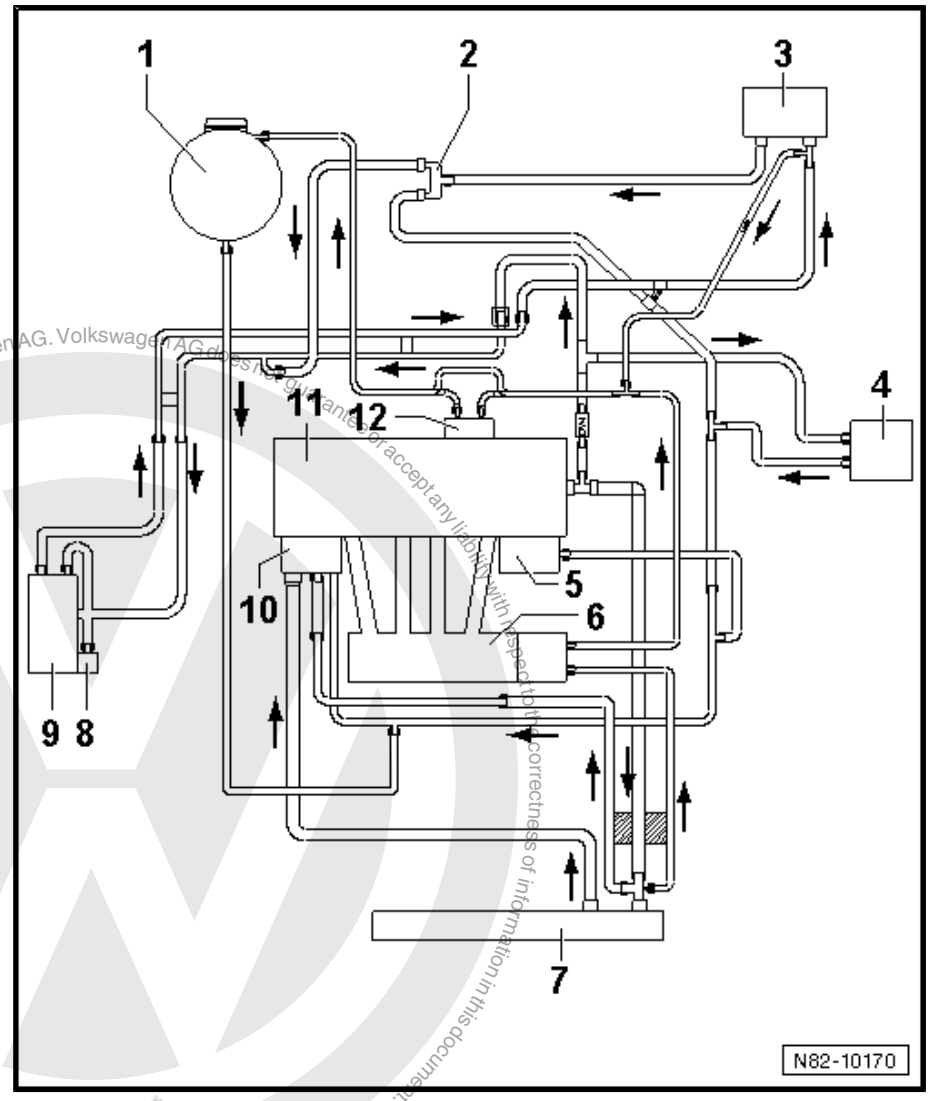
9 - Auxiliary heater Thermo Top V

- ❑ Removing and installing
⇒ page 11

10 - Thermostat housing

11 - Cylinder head and cylinder block

12 - Exhaust gas recirculation (water cooled)



6.12 Connection diagram for coolant hoses in vehicles with auxiliary heating, engine code CAVD

1 - Expansion tank

2 - Coolant pump

3 - Intake manifold

4 - Cylinder head and cylinder block

5 - Heat exchanger for heater

6 - Thermostat housing

7 - Radiator

8 - Engine oil cooler

9 - Coolant circulation pump - V50-

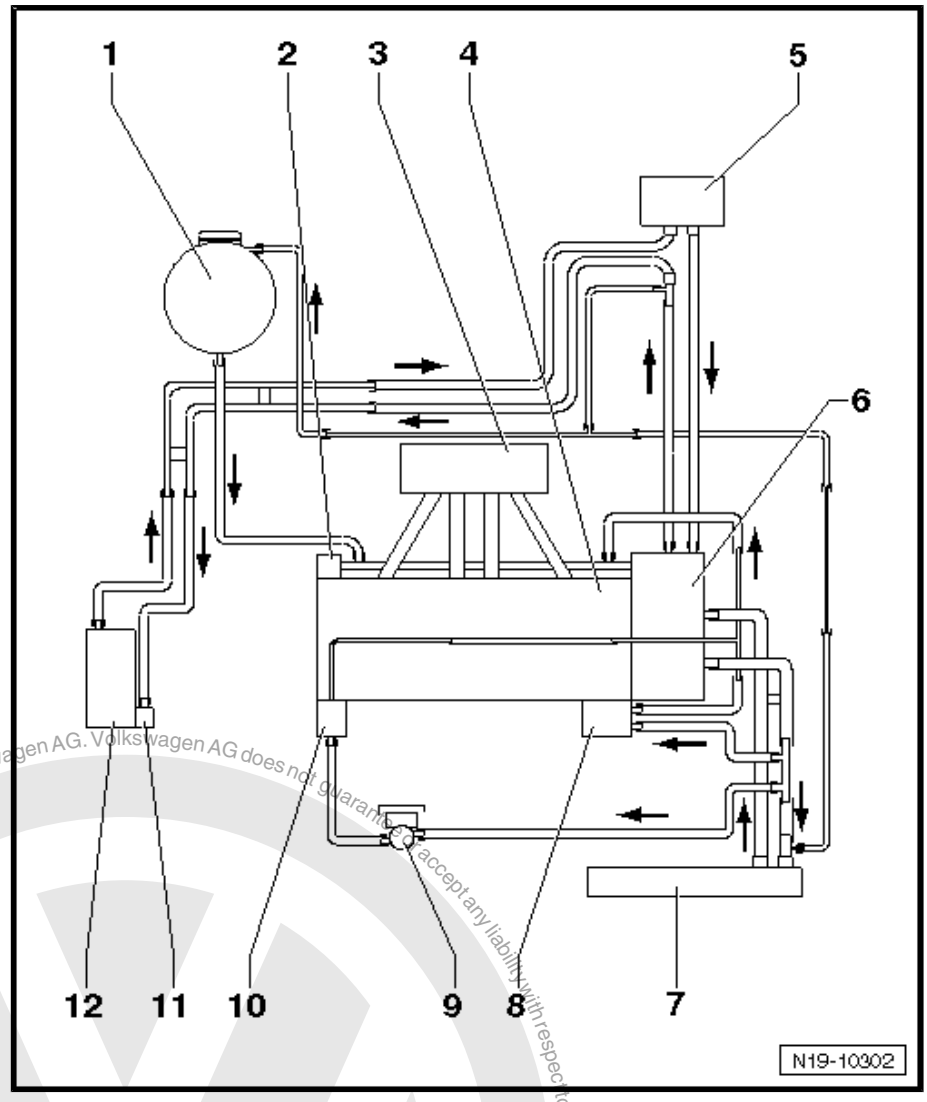
10 - Turbocharger

11 - Circulation pump -V55-

- ❑ Removing and installing ⇒ page 15

12 - Auxiliary heater Thermo Top V

- ❑ Removing and installing ⇒ page 11



6.13 Connection diagram for coolant hoses in vehicles with auxiliary heating, engine code CAXA

1 - Expansion tank

2 - Coolant circulation pump - V50-

3 - Intake manifold

4 - Non-return valve

5 - Heat exchanger for heater

6 - Thermostat housing

7 - Restrictor

8 - Engine oil cooler

9 - Radiator

10 - Auxiliary radiator for charge air system

11 - Turbocharger

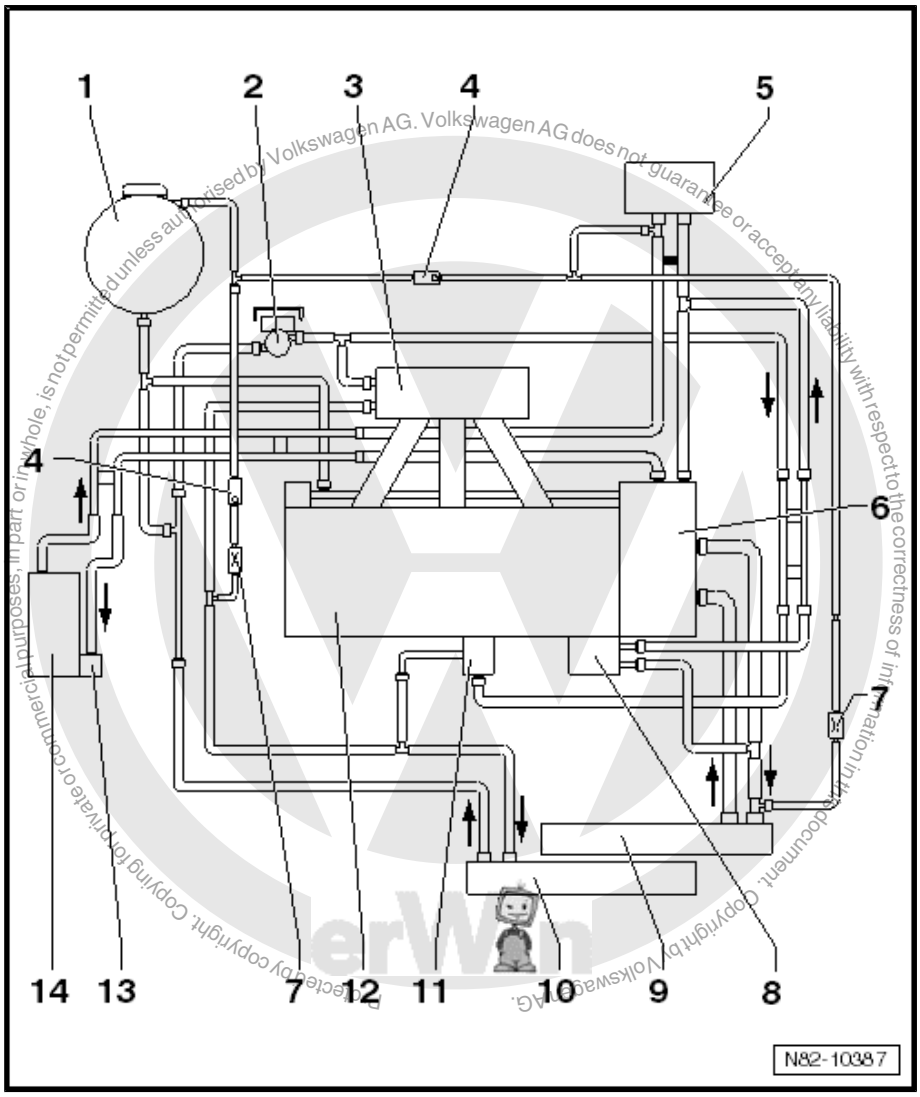
12 - Cylinder head and cylinder block

13 - Circulation pump -V55-

- ❑ Removing and installing ⇒ page 15

14 - Auxiliary heater Thermo Top V

- ❑ Removing and installing ⇒ page 11



6.14 Connection diagram for coolant hoses in vehicles with auxiliary heating, engine code CBAB

1 - Expansion tank

2 - Exhaust gas recirculation (water cooled)

3 - Cylinder head and cylinder block

4 - Heat exchanger for heater

5 - Restrictor

6 - Engine oil cooler

7 - Continued coolant circulation pump -V51-

8 - Radiator

9 - Coolant pump

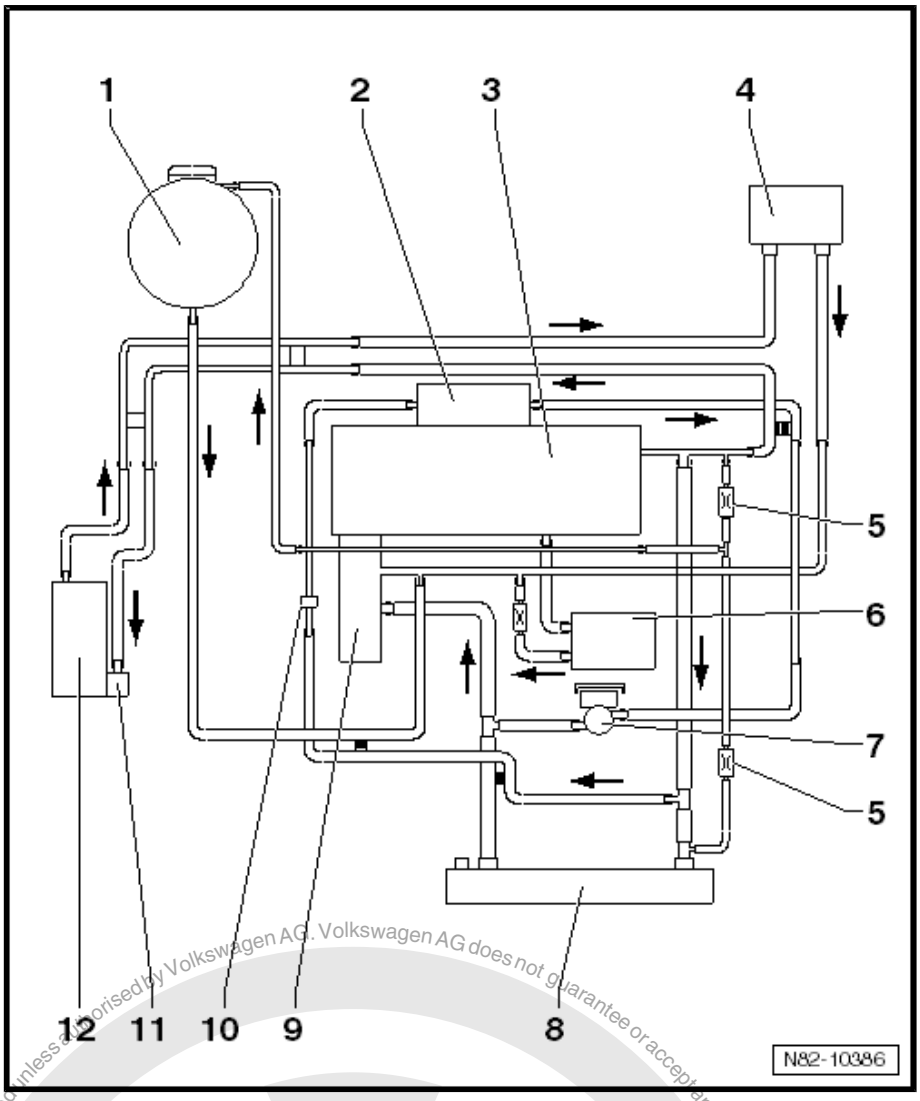
10 - Temperature sensor

11 - Circulation pump -V55-

- ❑ Removing and installing ⇒ page 15

12 - Auxiliary heater Thermo Top V

- ❑ Removing and installing ⇒ page 11



6.15 Connection diagram for coolant hoses in vehicles with auxiliary heating, engine codes BXE, BXF, BXJ

1 - Expansion tank

2 - Bypass flap

3 - Exhaust gas recirculation cooler

4 - Heat exchanger for heater

5 - Cylinder head and cylinder block

6 - ATF cooler

- ❑ Only on vehicles with automatic gearbox

7 - Upper coolant hose

8 - Radiator

9 - Lower coolant hose

10 - Engine oil cooler

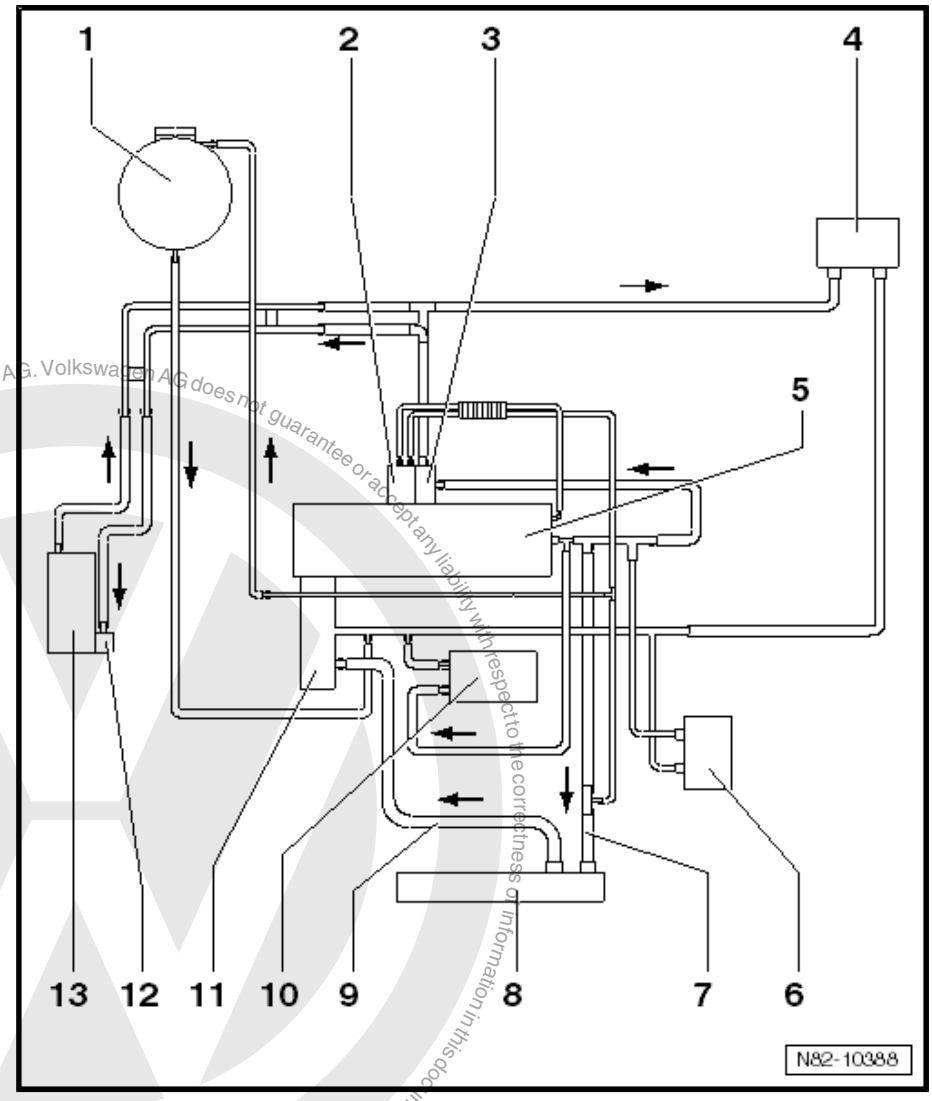
11 - Coolant pump/thermostat

12 - Circulation pump -V55-

- ❑ Removing and installing ⇒ page 15

13 - Auxiliary heater Thermo Top V

- ❑ Removing and installing ⇒ page 11



6.16 Connection diagram for coolant hoses in vehicles with auxiliary heating, engine codes CAWB, CBFA, CCTA

Note

The connection diagram for coolant hoses also applies to vehicles with gear oil cooler.

1 - Circulation pump -V55-

- ❑ Removing and installing ⇒ page 15

2 - Auxiliary heater Thermo Top V

- ❑ Removing and installing ⇒ page 11

3 - Coolant pump

4 - Thermostat

5 - Engine oil cooler

6 - Cylinder head and cylinder block

7 - Turbocharger

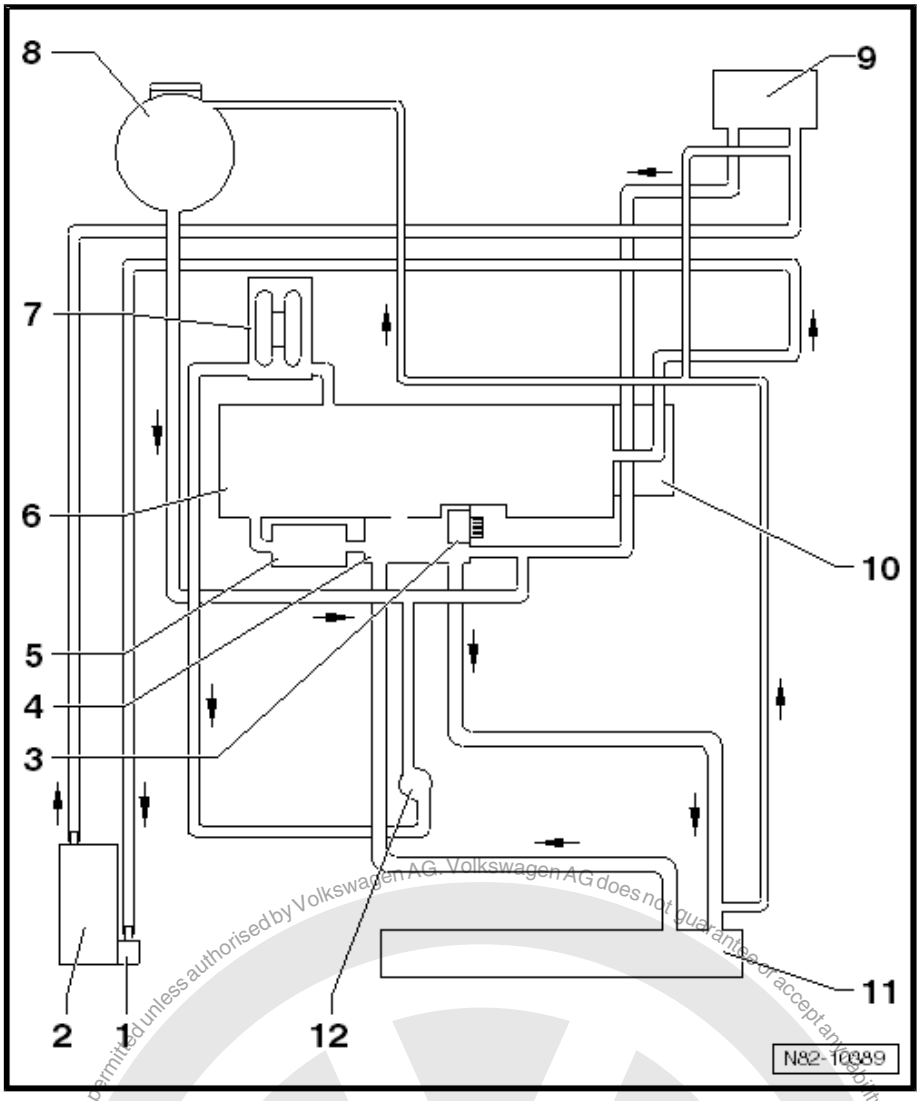
8 - Expansion tank

9 - Heat exchanger for heater

10 - Coolant connection

11 - Radiator

12 - Continued coolant circulation pump -V51-



7 Fuel supply for auxiliary heater Thermo Top V

Note

Observe the safety measures when working on the 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 V

Note

- *The illustration shows the Golf V. The installation positions of the auxiliary heater components on the Golf VI are identical.*
- *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.*
- *If the tank was empty, there may be air in the fuel line for 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 40 .*

1 - Quick-release coupling of fuel line

- ❑ For auxiliary heater Thermo Top V on inner side of wing

2 - Quick-release coupling of fuel line

- ❑ On auxiliary heater

3 - Auxiliary heater Thermo Top V

4 - Quick-release coupling of fuel line

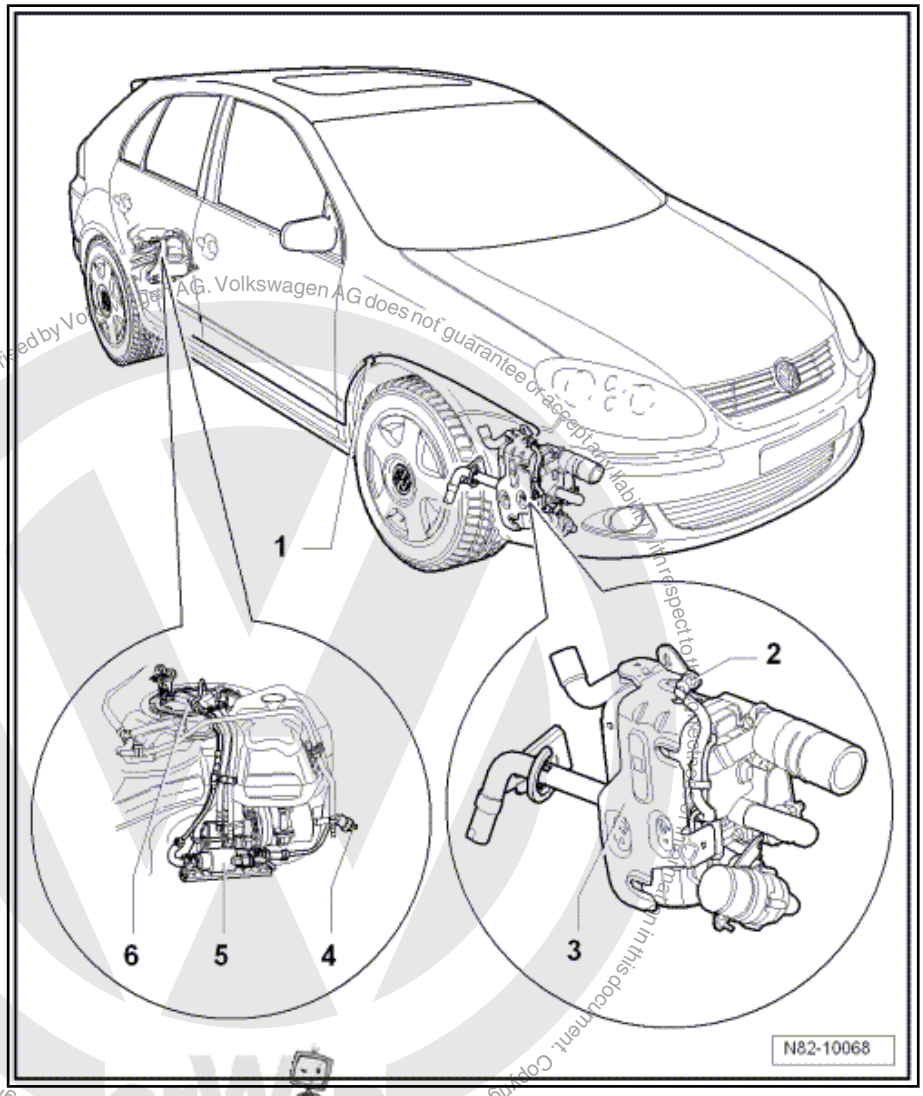
- ❑ For auxiliary heater Thermo Top V on metering pump -V54-

5 - Metering pump -V54-

- ❑ Metering pump -V54- is located on the fuel tank on the right-hand side.
- ❑ Removing and installing ⇒ page 42
- ❑ Testing quantity of fuel delivered ⇒ page 43 .

6 - Fuel gauge sender -G-

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



7.2.1 Fuel feed to Thermo Top V

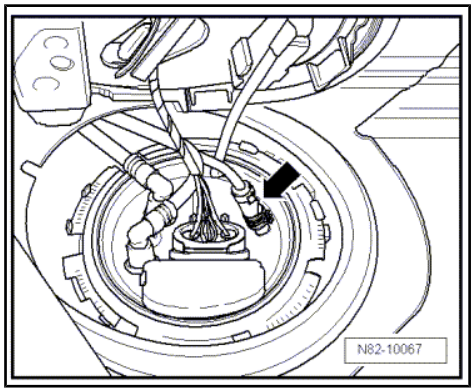
WARNING

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.

Fuel feed to auxiliary heater is achieved via connection on fuel gauge sender -G- -arrow-. Fuel gauge sender -G- is located on right side under bench seat.



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.*
- *The fuel shut-off valve -N109- (in the auxiliary heater) prevents the fuel from entering the combustion chamber when the auxiliary heater is switched off. The metering pump -V54- has a bypass hole for releasing pressure in the fuel line between the fuel shut-off valve -N109- and the metering pump -V54- .*
- *Ensure the genuine part number is correct.*

Removing

Note

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

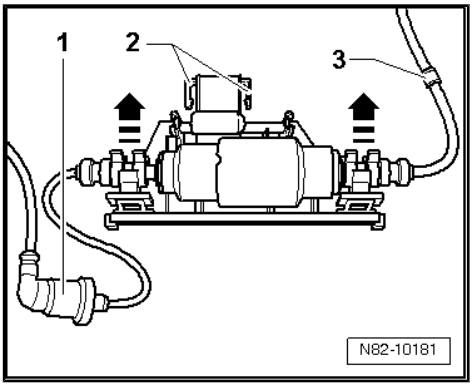
WARNING

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.

– Release quick-release coupling on fuel line -1- and seal fuel line to prevent fuel from leaking.
– Loosen O-type clip -3- and seal fuel line to fuel tank to prevent fuel from leaking.
– Detach bracket -2- for metering pump -V54- on fuel tank.
– Pull metering pump -V54- out in direction of -arrow-.
– Disconnect connector on metering pump -V54- .



Installing

Note

Renew clamp-type clips using screw-type clips.

Ensure the genuine part number is correct.

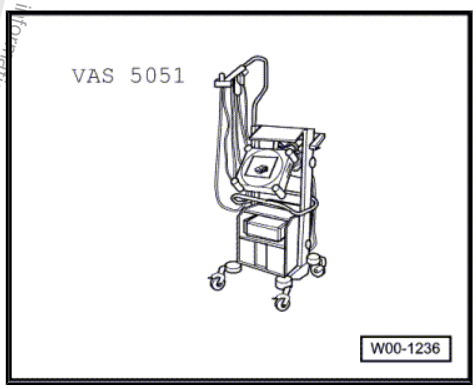
Install in reverse order.

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

7.4 Testing quantity of fuel delivered

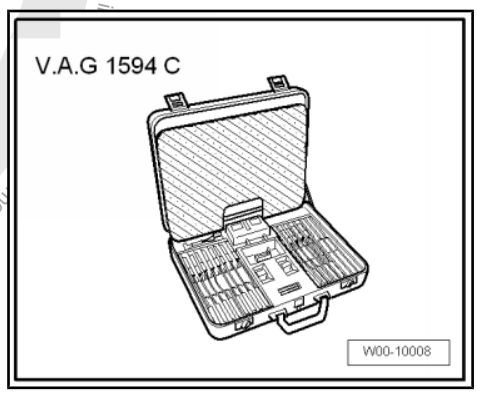
Special tools and workshop equipment required

♦ Vehicle diagnosis, testing and information system -VAS 5051- or successor models.



- 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)
- Fuel hose, length approx. 300 mm

7.4.1 Test prerequisites:

- Resistance of metering pump -V54- 5.2 +/- 5%Ω
- 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:

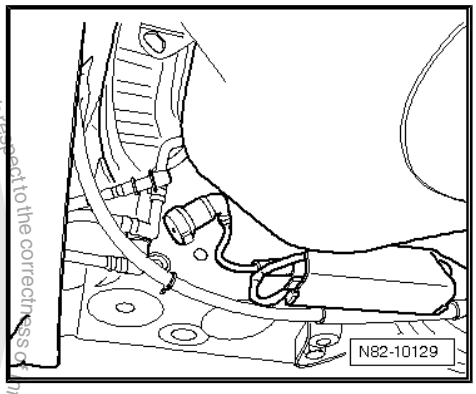
WARNING

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.

– Disconnect connector on fuel line for metering pump -V54- and seal using suitable means.



– Hold measuring glass at same height as auxiliary heater.

– Using vehicle diagnosis, testing and information system -VAS 5051- (or later model), open guided function “Check quantity of fuel delivered” (open fuel line from metering pump -V54-) and start.

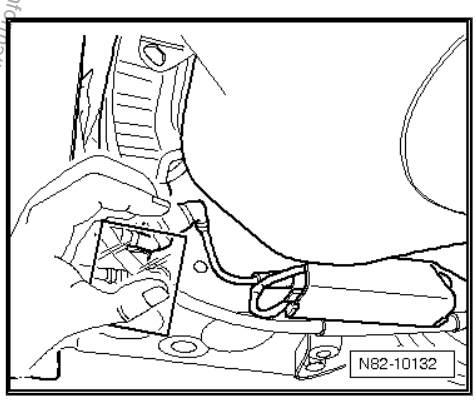
After approx. 30 seconds, the fuel line is filled and bled.

– Seal fuel line.

– Empty measuring glass.

– Hold measuring glass at same height as auxiliary heater.

– Using vehicle diagnosis, testing and information system -VAS 5051- (or later model), 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 connector to fuel line.

– Read measuring glass. Quantity delivered for petrol and diesel: 22 to 28 ml

– If quantity delivered 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 auxiliary heater Thermo Top V

The auxiliary heater is intended to heat coolant.

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

Note

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

8.1 Functional description of auxiliary heater Thermo Top V

Temperature at temperature sensor -G18- less than 50 °C.

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 monitoring -Q8- is switched off and the combustion air blower -V6- is brought up to full load. 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

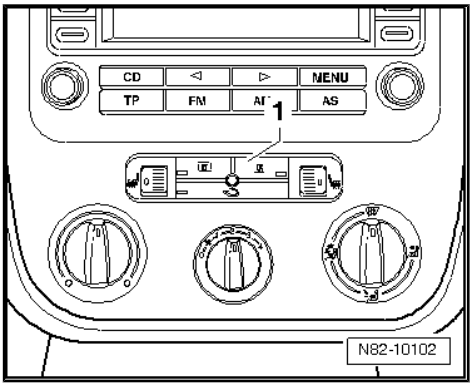
Once the coolant temperature has reached 84° C, the control unit switches to the energy-saving part load mode. If the coolant temperature continues to rise above 88° C, the control unit switches to the regulated waiting period. If the coolant temperature does not drop below 76° C within 900 seconds during 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.

8.1.2 Auxiliary heating mode

- Start conditions ⇒ page 2

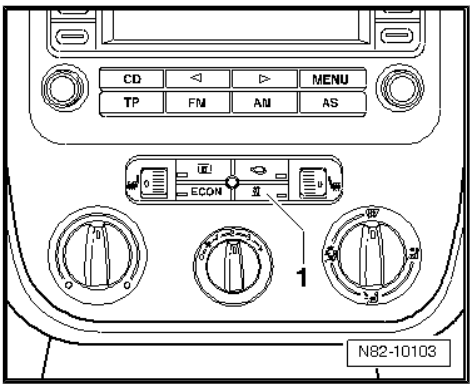
Switching on auxiliary heating mode in vehicles without an air conditioning system:

– Press instant heating button -E537- -1-.

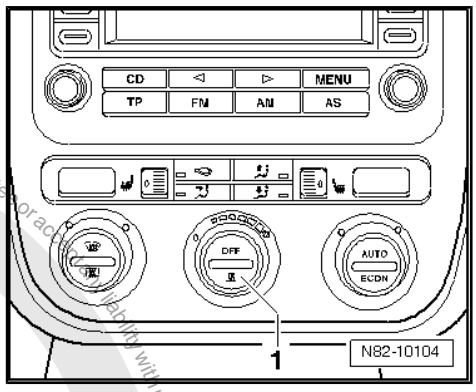


Switching on auxiliary heating mode in vehicles with Climatic, Golf 2008 ➢:

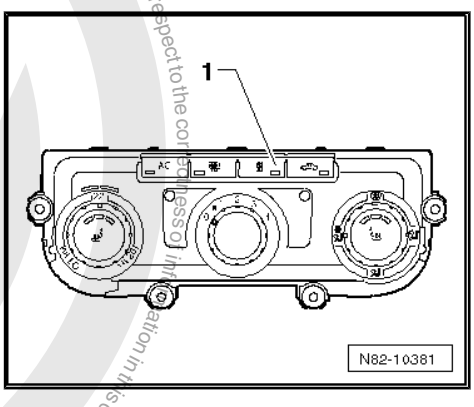
– Press instant heating button -E537- -1-.



Switching on auxiliary heating mode in vehicles with Climatronic, Golf ➢ 2008:

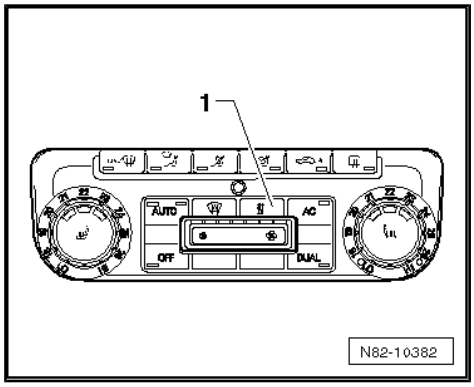


Switching on auxiliary heating mode in vehicles with Climatic, Golf 2009 ➢:



Switching on auxiliary heating mode in vehicles with Climatronic, Golf 2009 ▸:

– Press instant heating button -E537- -1-.



Once the coolant temperature has reached 82° 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 regulated waiting period. If the coolant temperature does not drop below 70° 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 65° C.

8.1.3 Switching off

After the unit has been switched off manually (for example, by pressing the instant heat button -E537-), after a maximum operating time of 60 minutes or after the coolant reaches a temperature of 84° C, combustion is ended and the post-operation mode begins. The circulation pump -V55- and the combustion air blower -V6- , however, continue to run to cool down the auxiliary heater (post-operation mode) and are switched off automatically.

Note

The post-operation period of the circulation pump -V55- and the combustion air blower -V6- depend on the operating mode in which the auxiliary heater was switched off.

The post-operation period is 175 seconds when heater is switched off during full-load operation and about 110 seconds for part-load operation.

Depending on the control unit software version, slight deviations in the specified post-operation values are possible.

8.2 Functional description of “big” remote control

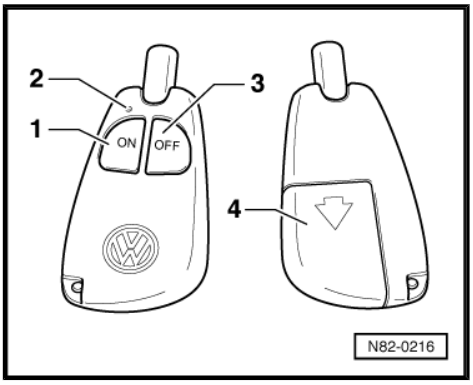
Note

- *The auxiliary heater can be switched on and off from a distance of up to 600 metres (open grounds) using the remote control. This range is restricted in built-up areas or from buildings.*
- *The remote control should be held upright when operating the buttons (the radio signals can be received optimally by the vehicle aerial in this way and the greatest transmission range is achieved).*
- *Following disconnection of the vehicle battery, the auxiliary heater remote control does not have to be re-adapted.*
- *If the remote control is renewed, initiate the “basic setting” function using vehicle diagnosis, testing and information system -VAS 5051- .*

8.2.1 Switching auxiliary heater on using remote control

– Press button -1-, the warning lamp -2- must light up green.

The operating period of the auxiliary heater is determined by the remote control unit when the heater is switched on (a time component is included in the switching signal). This time component is stored permanently in the remote control and cannot be changed.



8.2.2 Switching auxiliary heater off using remote control

– Press button -3-, the warning lamp -2- must light up red.

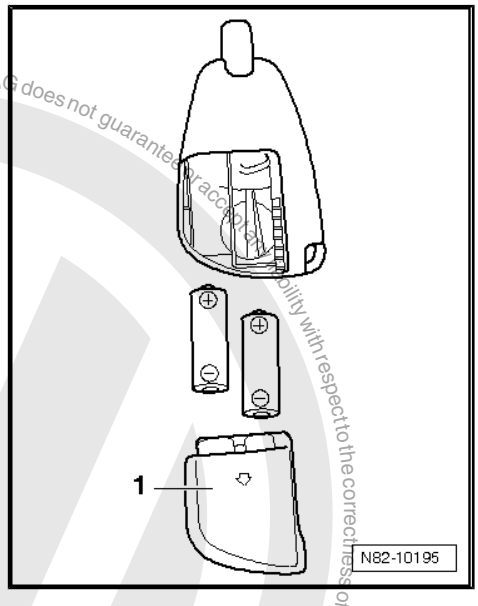
The auxiliary heater switches to run-on and then off.

8.2.3 Renewing remote control batteries

Note

- *Note installation position of batteries.*
- *Only use batteries of the same type with a voltage of 12 Volt.*
- *Allocation of the remote control to the auxiliary heater remains intact. Re-adapting is not necessary.*

– Take off battery cover -1- and remove batteries. Insert new batteries and replace cover.



8.3 Functional description of “small” remote control

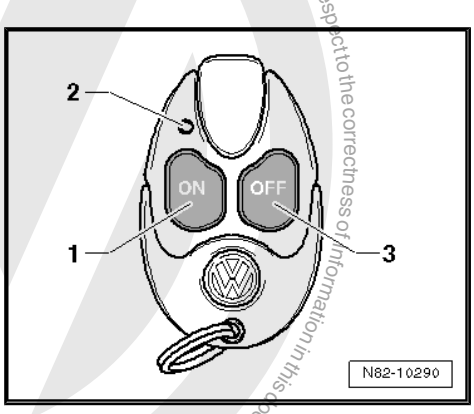
Note

- *The auxiliary heater can be switched on and off from a distance of up to 600 metres (open space) using the remote control. This range is restricted in built-up areas or from buildings.*
- *The remote control should be held upright when operating the buttons (the radio signals can be received optimally by the vehicle aerial in this way and the greatest transmission range is achieved).*
- *Following disconnection of the vehicle battery, the auxiliary heater remote control must not be re-adapted.*
- *If the remote control has been renewed, the basic setting should be carried out using the vehicle diagnostic, testing and information system -VAS 5051B- .*

8.3.1 Switching auxiliary heater on using remote control

– Press button -1-, the warning lamp -2- must light up green.

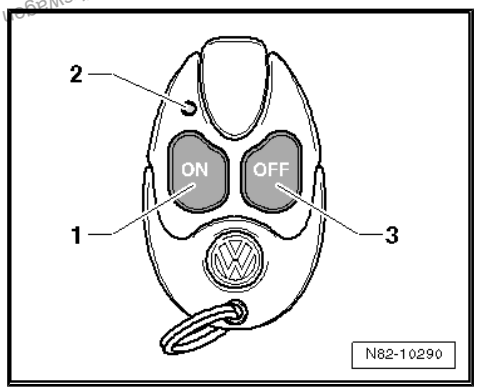
The operating period of the auxiliary heater is determined by the remote control unit when the heater is switched on (a time component is included in the switching signal). This time component is stored permanently in the remote control and cannot be changed.



8.3.2 Switching auxiliary heater off using remote control

– Press button -3-, the warning lamp -2- must light up red.

The auxiliary heater switches to run-on and then off.

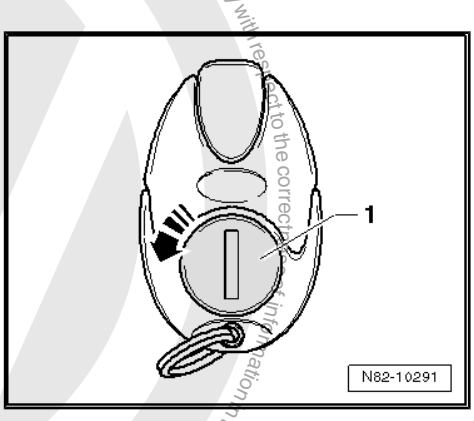


8.3.3 Renewing remote control battery

Note

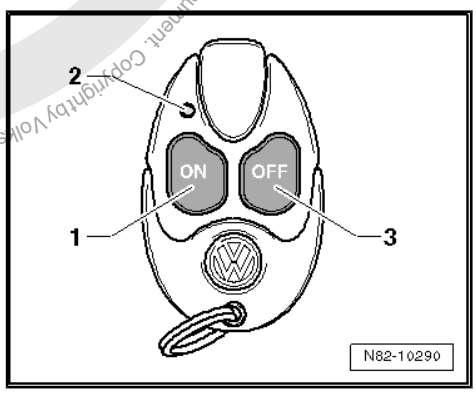
- *Ensure proper installation position of battery.*
- *Only use batteries of the same type with a voltage of 3 volts.*
- *Allocation of the remote control to the auxiliary heater remains intact. Re-adapting is not necessary.*

– Pull off battery cover -1- in direction of -arrow- and remove battery. Insert new batteries and refit cover.



8.3.4 Warning lamp in remote control

The warning lamp in the remote control -2- shows you whether the signal from the remote control (press of a button) has been received by the auxiliary heater and whether the battery in the remote control is low.



Display -2-	Meaning
Lights up green for two seconds.	The auxiliary heater has been switched on with -1- “ON”.
Lights up red for two seconds.	The auxiliary heater has been switched off with -3- “OFF”.
Flashes green slowly for two seconds.	The signal to switch on has not been received.
Flashes green quickly for two seconds.	The auxiliary heater is blocked, e.g. because the fuel tank is nearly empty or there is a fault in the auxiliary heater.
Flashes red for two seconds.	The signal to switch off has not been received.
Lights up orange for two seconds, then green or red.	The battery charge is low, but the switch on/switch off signal was received.
Lights up orange for two seconds, then flashes green or red.	The battery charge is low and the switch on/switch off signal was not received.
Flashes orange for five seconds.	The battery is discharged and the switch on/switch off signal was not received.

9 Electric engine preheater, 230 V or 115 V

9.1 Safety measures for working on vehicles with engine preheater

All work on the electrical system must be carried out only by qualified persons in possession of the technical knowledge required.

WARNING

Danger of electrical shock.

Engine preheater operates with 230 V or 115 V current from the mains.

Before working on engine preheater, pull plug from mains socket.

10 Rules for cleanliness when working on engine preheater

- 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 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).

11 Removing and installing connector for mains plug

All work on the electrical system must be carried out only by qualified persons in possession of the technical knowledge required.

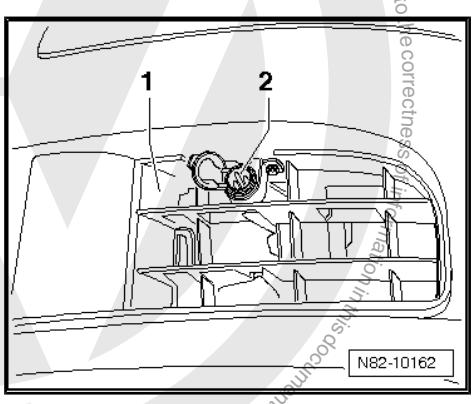
WARNING

Danger of electrical shock.

Engine preheater operates with 230 V or 115 V current from the mains.

Before working on socket for engine preheater, pull plug from mains socket.

11.1 Removing



- Pull vent grille -1- out of fasteners in front bumper cover ⇒ Rep. Gr. 63 .
- Remove bolts from connector -2- and separate earth wire from longitudinal member behind it.
- Remove noise insulation ⇒ Rep. Gr. 50 .
- Separate electrical wiring.

11.2 Installing

Note

- *When installing, ensure that cover of connector opens upwards.*
- *The electrical wiring must not come in contact with hot, turning or sharp-edged components.*

Caution

The electrical wiring can be pulled off.

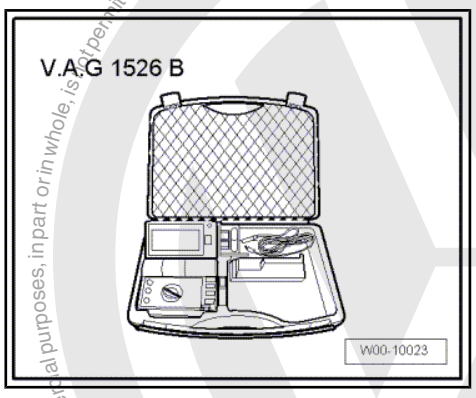
The motor moves relative to the body during load changes.

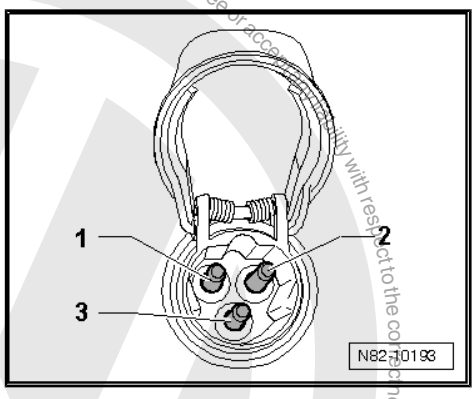
Route the electrical wiring with slack between the engine and the body.

12 Checking connector

Special tools and workshop equipment required

- Hand multimeter - V.A.G 1526B-





Checking

1 - Single phase 230 V or 115 V

2 - Neutral conductor

3 - Earth conductor

– Measure between pin -1- and -3-. Specification: ∞ Ω

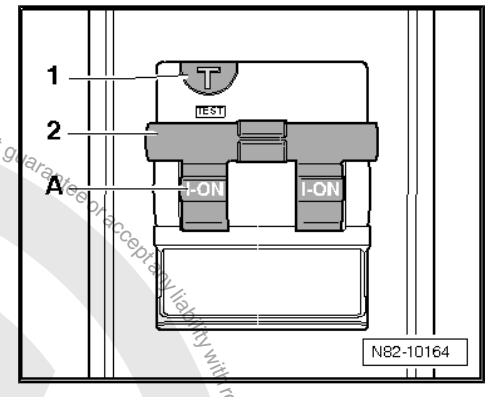
– Measure between pin -2- and -3-. Specification: ∞ Ω

– Measure continuity from pin -3- to negative terminal of vehicle battery (vehicle earth). Specification: 0-1 Ω

If value deviates from specification, check wiring as well as earth connection for damage. Renew defective wiring harness with a genuine part.

13 Testing safety switch (optional)

All work on the electrical system must be carried out only by qualified persons in possession of the technical knowledge required.



Checking

1 - Test button

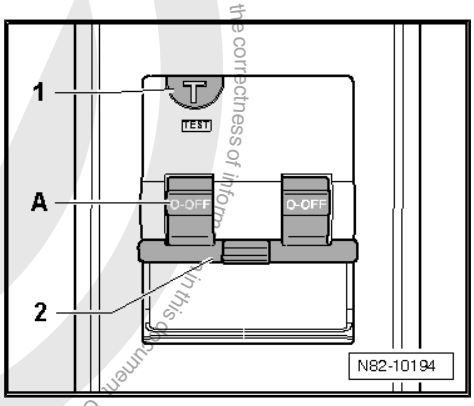
2 - Switch

A = Display “I-ON” or “0-OFF”

– Connect safety switch between adapter cable and extension cord.

– Push plug into mains socket.

After a short time, the heating element will heat up and the sound of boiling water can be heard.



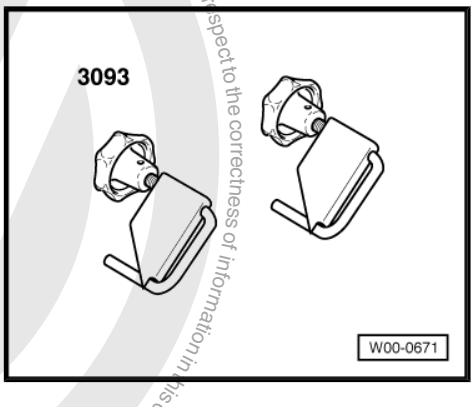
– Push the Test button -1-. The switch -2- will jump back to the “0-OFF” position.

The engine preheater is switched off. The engine preheater can be switched on again by manually moving switch -2- to the “I-ON” position.

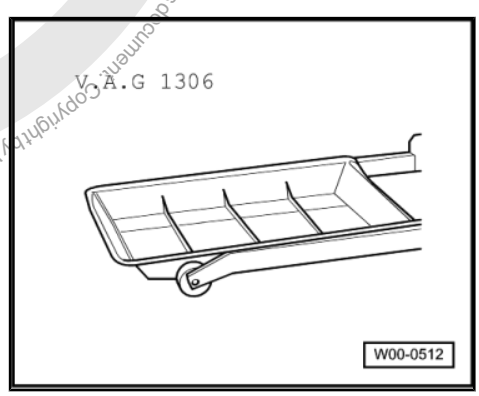
14 Removing and installing engine pre-heater

Special tools and workshop equipment required

- Hose clamps up to 40 mm Ø -3093-



- Drip tray -V.A.G 1306-



14.1 Assembly overview - engine preheater

1 - Engine preheater

2 - Bracket

3 - Nut
- ❑ 40 Nm

4 - Clip

5 - To coolant pipe

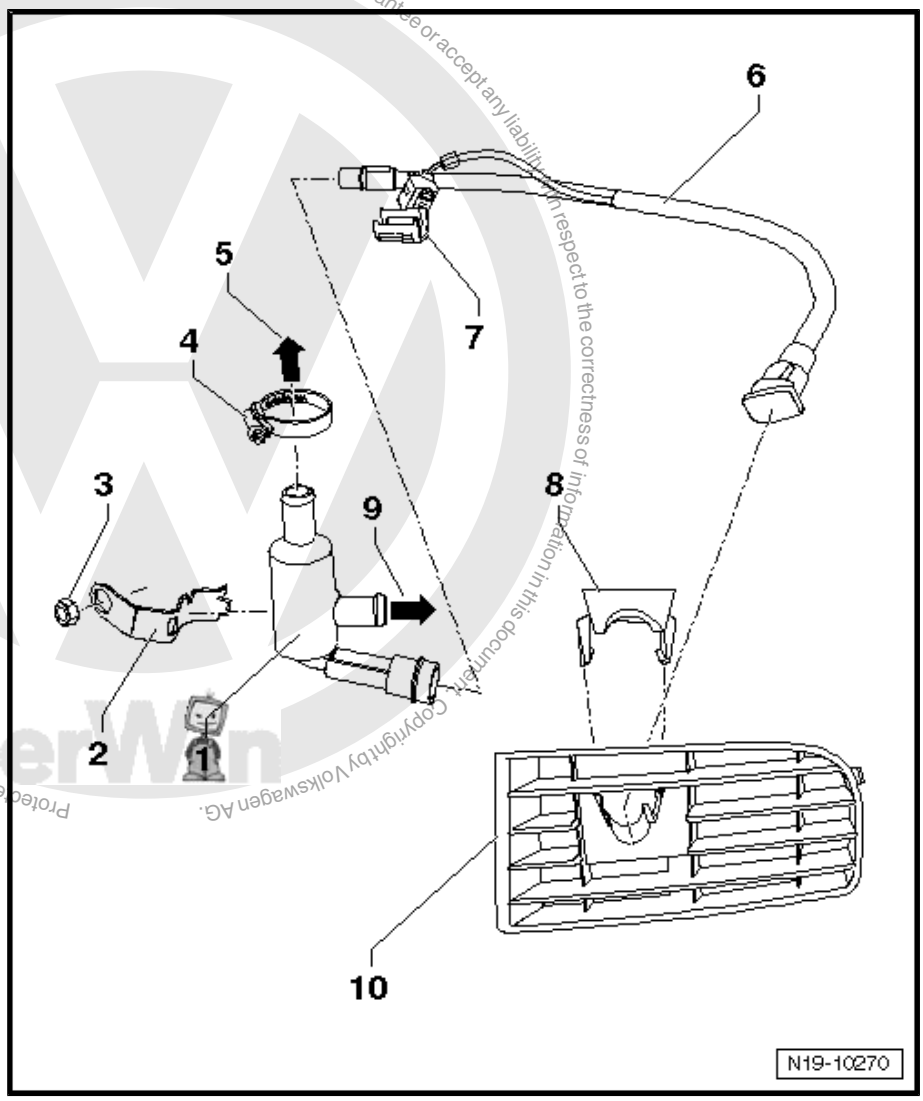
6 - 220 V or 115 V connecting cable

7 - Catch

8 - Bracket

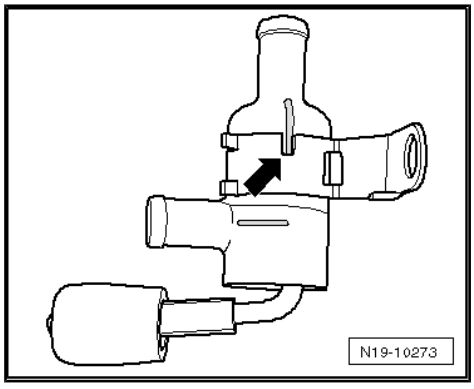
9 - To coolant hose on top of radiator

10 - Left air intake grille



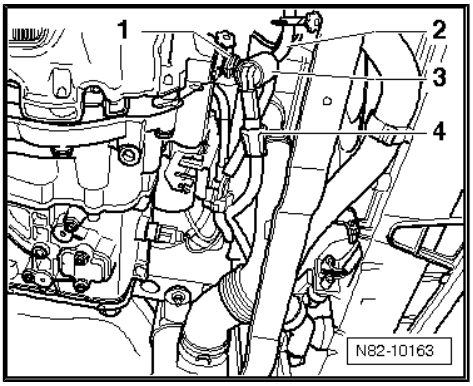
Installation position of heater element

Note locating element -arrow-.



14.2 Removing

– Remove noise insulation ⇒ Rep. Gr. 50 .



All work on the electrical system must be carried out only by qualified persons in possession of the technical knowledge required.

WARNING

Danger of electrical shock.

Engine preheater operates with 230 V or 115 V current from the mains.

Before working on engine preheater, pull plug from mains socket.

– Remove yellow "pull-off protection" -4- from electrical connector and pull off connector. Seal connector so that no coolant can enter (danger of short circuit).

– Clamp off coolant hoses -1- and -2- with hose clamps up to 40 mm Ø -3093- .

– Set drip tray -V.A.G 1306- under vehicle.

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 before carrying out repairs.

– Loosen O-type or screw-type clips and pull coolant hoses off heating element -3-.

14.3 Installing

Install in reverse order.

– Ensure proper seating of yellow "pull-off protection".

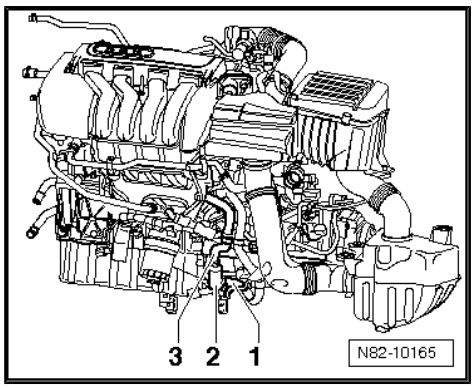
Note

- *The coolant circuit must be bled after it is opened* *⇒ page 22* .
- *O-type clips are to be replaced with screw-type clips.*

15 Connecting engine preheater into cooling circuit

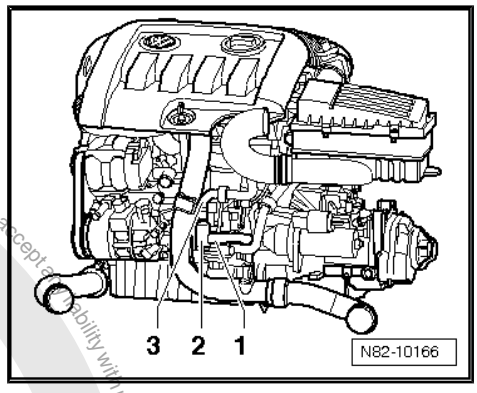
15.1 2.0 l FSI

1 - Coolant return line
2 - Heating element
3 - Coolant supply line



15.2 1.9 l TDI

1 - Coolant return line
2 - Heating element
3 - Coolant supply line



15.3 1.6 l MPI

1 - Coolant return line
2 - Heating element
3 - Coolant supply line