Workshop Manual
e-up! 2014 ➢

Heating, air conditioner

Edition 10.2018

List of Workshop Manual Repair Groups

Repair Group

00 - Technical data

80 - Heating

87 - Air conditioning system

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

Contents

00 – Technical data

1 Safety information

(VRL012154; Edition 10.2018)

1.1 Safety precautions when handling refrigerants

Risk of freezing injury from refrigerant

When working on the air conditioning system, there is a risk of highly pressurised refrigerant escaping from the system. There is a risk of injury to the skin and parts of the body due to freezing.

– Wear protective gloves.

– Wear safety goggles.

– Extract refrigerant and open the refrigerant circuit immediately afterwards.

– If more than 10 minutes have passed since the refrigerant was extracted, repeat the extraction process before opening the refrigerant circuit. Pressure could build up in the refrigerant circuit from continued evaporation.

Risk of damage to refrigerant lines

There is a risk of damage to the refrigerant lines due to rupture of the inner foil.

– Never bend refrigerant lines to a radius less than 100 mm (r < 100 mm).

Further information can be found under:

♦ ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

1.2 Safety precautions when working on high-voltage system

Danger to life due to high voltage

The high-voltage system is under high voltage. Severe or fatal injury from electric shock.

– Persons with life-preserving or other electronic medical devices in or on their body must not perform any work on the high-voltage system. Such medical devices include internal analgesic pumps, implanted defibrillators, pacemakers, insulin pumps and hearing aids.

– The high-voltage system must be de-energised by a suitably qualified technician.

Risk of injury from motor starting unexpectedly

On electric and hybrid vehicles, the operational readiness of the vehicle is difficult to detect. There is a risk of parts of the body becoming trapped or drawn in.

– Switch off ignition.
– Always store the ignition key outside the vehicle.

Risk of damage to high-voltage cables

Improper handling of high-voltage cables or high-voltage connectors may result in damage to their insulation.

– Never support body weight on high-voltage cables or high-voltage connectors.
– Never support any tools on high-voltage cables or high-voltage connectors.
– Never kink or severely bend high-voltage cables.
– Always observe the coding when connecting high-voltage connectors.

Risk of injury from activate stationary air conditioning

On electric and hybrid vehicles with active stationary air conditioning, the stationary air conditioning could switch on unintentionally. Risk of limbs becoming trapped or drawn in by the radiator fan starting automatically.

– Deactivate the stationary air conditioning.

1.3 Safety precautions when working in the vicinity of high-voltage components

Danger to life due to high voltage

The high-voltage system is under high voltage. Damage to high-voltage components can result in severe or fatal injury from electric shock.

– Carry out a visual inspection on high-voltage components and cables.
– Never use cutting or forming tools, or any other sharp-edged tools.
– Never use heat sources such as welding, brazing, soldering, hot air or thermal bonding equipment.

1.4 Safety precautions when working on the cooling system

Danger of scalding by hot coolant

On a warm engine, the cooling system is under high pressure.
Danger of scalding by steam and hot coolant.

– Wear protective gloves.

– Wear safety goggles.

– To relieve pressure, cover the cap of the coolant expansion tank with a cloth, and open it carefully.

2 General information

⇒ “2.1 Notes concerning odours in air conditioned vehicles”, page 4

⇒ “2.2 Type plates”, page 4

2.1 Notes concerning odours in air conditioned vehicles

- If the evaporator emits unpleasant odours, clean the evaporator.
- Volkswagen has tested and approved the ultrasound A/C cleaner - VAS 6189A- as well as the suction feed spray-gun - V.A.G 1538- with the appropriate spray probe.
- Instructions on cleaning the evaporator are supplied with the equipment.
- As soon as Volkswagen approves new methods, appropriate notes are added to the workshop manual ⇒ Air conditioning systems with refrigerant R134a; Rep. gr. 00 ; Complaints; Odours from the heating and air conditioning unit .

2.2 Type plates

Type plate with capacities for refrigerant R134a and refrigerant oil

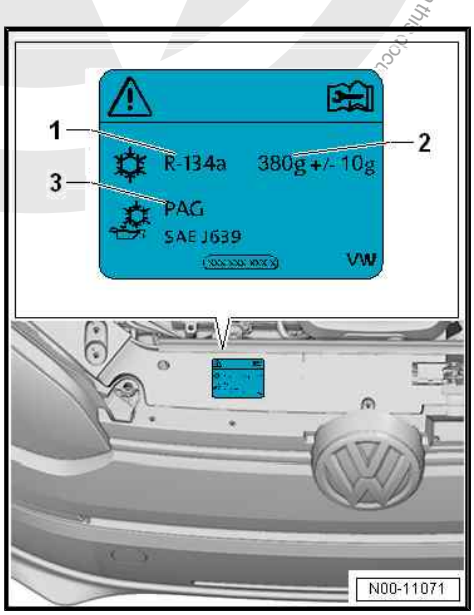
1 - Name of refrigerant

2 - Refrigerant capacity

3 - Designation of refrigerant oil

Contrary to the manufacturer’s plate, a tolerance of 380 ± 15 g is permissible.

Capacities for refrigerant R134a and refrigerant oil ⇒ “4 Technical data”, page 6 .



3 Repair notes

⇒ “3.1 Working on refrigerant circuit”, page 5

⇒ “3.2 Refrigerant circuit seals”, page 5

3.1 Working on refrigerant circuit

Repairs requiring opening of the refrigerant circuit must only be carried out by specially trained personnel.

Notes on repairs to vehicles with air conditioning and on handling refrigerant can be found in ELSA under ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; General information for air conditioning system, Safety precautions for when working on vehicles with air conditioning and when handling refrigerant R134a .

Notes on testers and tools for repairs to vehicles with air conditioning can be found in ELSA under ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Testing equipment and tools .

Notes on working with air conditioner service station for vehicles equipped with air conditioning system can be found in ELSA under ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Working with air conditioner service station .

Under certain conditions, it is not necessary to renew the desiccant bag every time the refrigerant circuit is opened. Refer to ELSA under ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Renewing components .

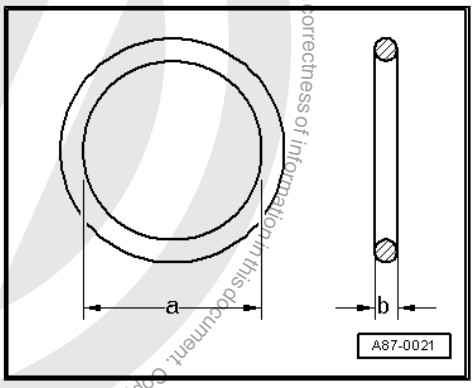
The conditions and the procedure for purging with refrigerant R134a are described in ELSA under ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Clearing refrigerant circuit of contaminants; Purging (cleaning) refrigerant circuit with refrigerant R134a .

3.2 Refrigerant circuit seals

- Renew seals.
- Moisten seals with refrigerant oil before installing.
- Ensure proper seating of seals on the pipe or in the groove.
- Work in a thoroughly clean environment. Even the least contamination, e.g. a hair, may cause leaks.

Note

- *Use only seals that are resistant to refrigerant R134a and the associated refrigerant oil. These seals are marked in colour to prevent them from being interchanged (currently “red”, “purple” or “violet”) ⇒ Electronic parts catalogue .*
- *The dimensions -a- and -b- vary, depending on the fitting locations of the seals ⇒ Electronic parts catalogue .*
- *In addition to the coloured seals, black seals are also used during production for certain connections.*



4 Technical data

4.1 Capacities for refrigerant R134a

Air conditioner compressor	Manufacturer	Capacity
VPEVAH	Visteon	380 + 10 g

Note

Contrary to the manufacturer’s plate, a tolerance of 380 ± 15 g is permissible.

4.2 Refrigerant oil

Depending on the manufacturer, different refrigerant oils are used; part number ⇒ Electronic parts catalogue (ETKA) .

Refrigerant oil is very hygroscopic. Therefore refrigerant oils from containers which have been open for a longer period of time are unusable.

– Reseal open containers immediately to protect against ingress of moisture.

Model	Total capacity [1]
Air conditioner compressor, manufacturer: Visteon	150 ± 10 cm^3

1) This quantity of refrigerant oil is contained in air conditioner compressor (genuine part) and corresponds to the total capacity.

4.3 Oil distribution

The oil, which is located in the sump of the air conditioner compressor before the air conditioner system is switched on for the first time, distributes itself through the refrigerant circuit as follows:

- Air conditioner compressor approx. 50 %
- Condenser approx. 10 %
- Suction hose approx. 10 %
- Evaporator approx. 20 %
- Receiver approx. 10 %

80 – Heating

1 Heating

Note

- *The only heating system presently available for the e-up! has an integrated air conditioning system.*
- *For information on repairs, refer to* *⇒ g r.87 “Air conditioning system”, page 8* .

87 – Air conditioning system

1 Overview of fitting locations - air conditioning system

⇒ “1.1 Overview of fitting locations - components not located in passenger compartment”, page 8

⇒ “1.2 Overview of fitting locations - components located in front section of passenger compartment”, page 11

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

⇒ “1.1.1 Overview of fitting locations - components not located in passenger compartment, left-hand drive vehicles”, page 8

⇒ “1.1.2 Overview of fitting locations - components not located in passenger compartment, right-hand drive vehicles”, page 9

1.1.1 Overview of fitting locations - components not located in passenger compartment, left-hand drive vehicles

1 - Forced ventilation of passenger compartment

- ❑ Removing and installing ⇒ page 78
- ❑ Checking ⇒ page 77 .

2 - Humidity sender for air conditioning system - G260-

- ❑ Removing and installing ⇒ Electrical system; Rep. gr. 92 ; Windscreen wiper system; Removing and installing rain and light sensor - G397- .
- ❑ The humidity sender for air conditioning system - G260- and the light and rain sensor - G397- form one component and are installed depending on vehicle equipment.

3 - Expansion valve

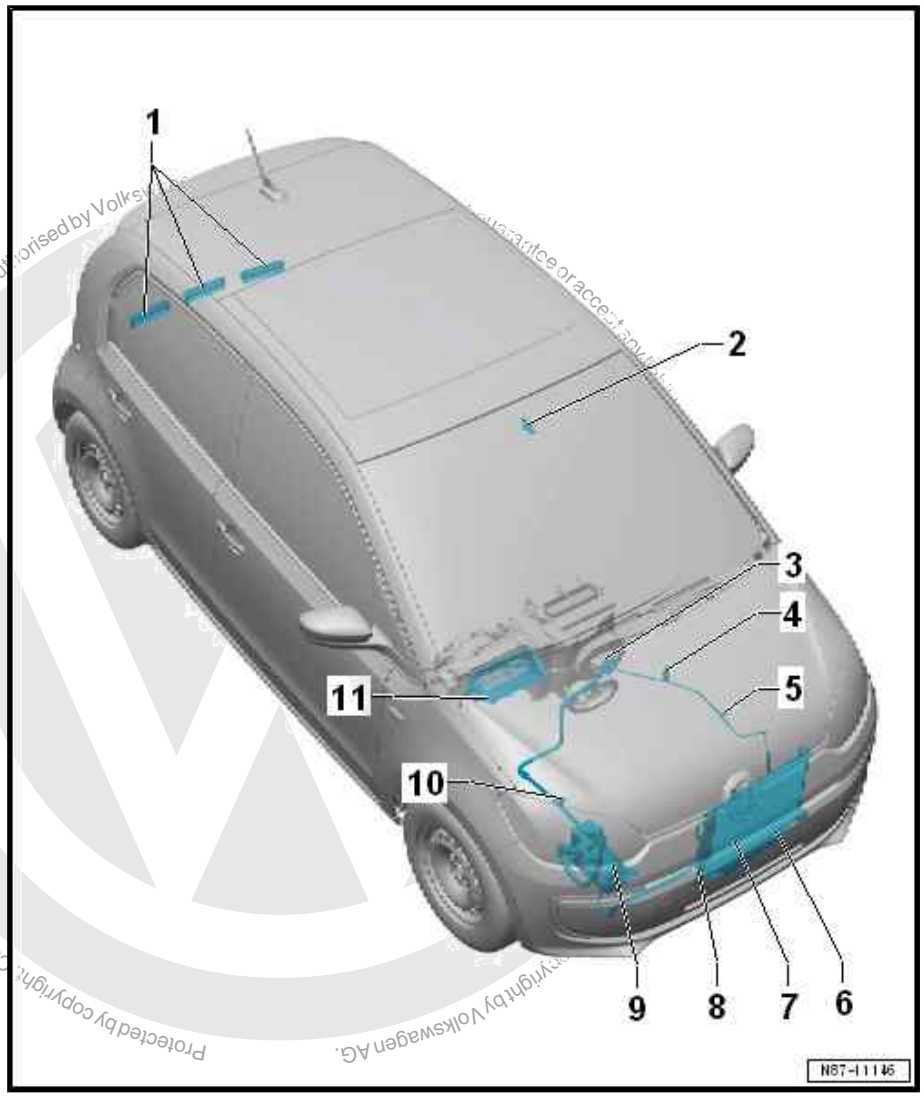
- ❑ Removing and installing ⇒ page 17

4 - High-pressure sender - G65-

- ❑ Removing and installing ⇒ page 15

5 - Evacuating and charging valve, high-pressure side

- ❑ Removing and installing ⇒ page 22



6 - Ambient temperature sensor - G17-

- ❑ Removing and installing ⇒ page 87

7 - Condenser

- ❑ Removing and installing ⇒ page 19

8 - Desiccant cartridge

- ❑ Removing and installing ⇒ page 20

9 - Electrical air conditioner compressor - V470-

- ❑ With control unit for air conditioning compressor - J842-
- ❑ Removing and installing ⇒ page 27

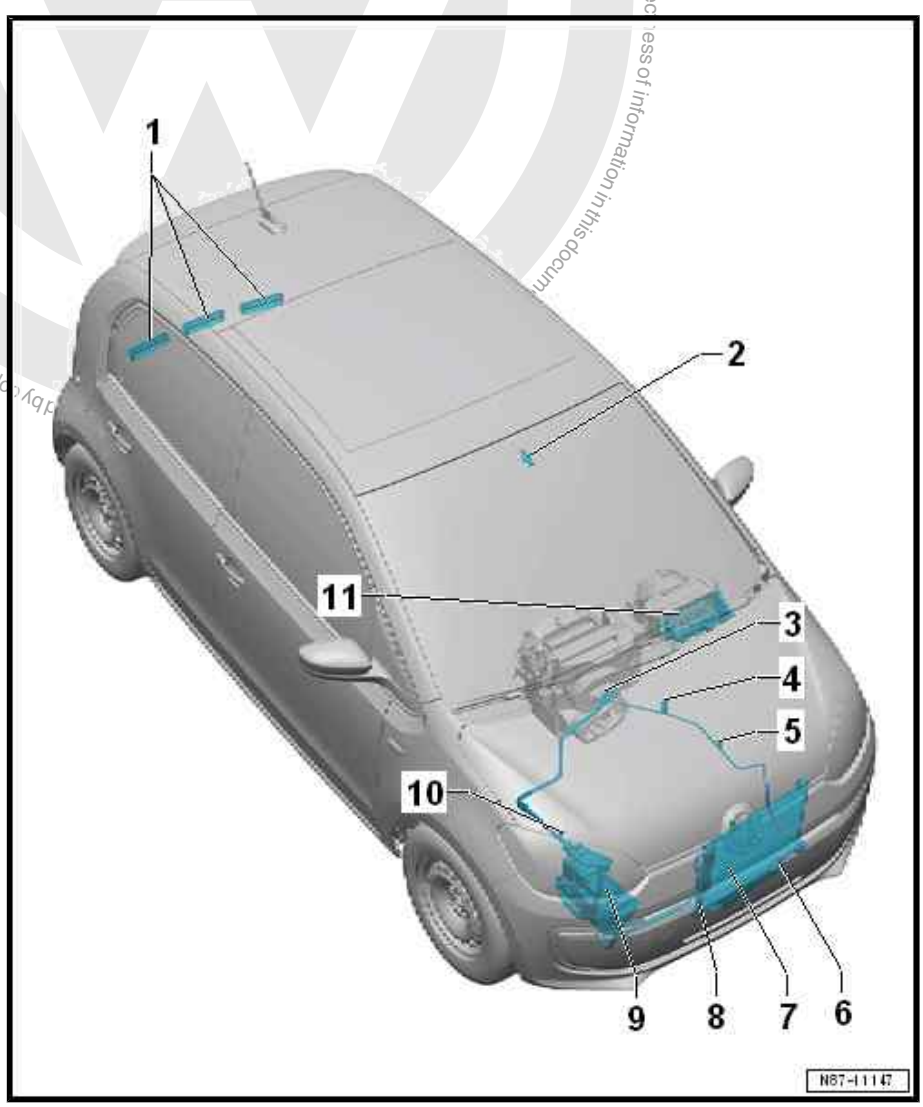
10 - Evacuating and charging valve, low-pressure side

- ❑ Removing and installing ⇒ page 22

11 - Fresh air intake connecting piece

- ❑ Removing and installing ⇒ page 78

1.1.2 Overview of fitting locations - components not located in passenger compartment, right-hand drive vehicles



1 - Forced ventilation of passenger compartment

- ❑ Removing and installing ⇒ page 78
- ❑ Checking ⇒ page 77 .

2 - Humidity sender for air conditioning system - G260-

- ❑ Removing and installing ⇒ Electrical system; Rep. gr. 92 ; Windscreen wiper system; Removing and installing rain and light sensor - G397- .
- ❑ The humidity sender for air conditioning system - G260- and the light and rain sensor - G397- form one component and are installed depending on vehicle equipment.

3 - Expansion valve

- ❑ Removing and installing ⇒ page 17

4 - High-pressure sender - G65-

- ❑ Removing and installing ⇒ page 15

5 - Evacuating and charging valve, high-pressure side

- ❑ Removing and installing ⇒ page 22

6 - Ambient temperature sensor - G17-

- ❑ Removing and installing ⇒ page 87

7 - Condenser

- ❑ Removing and installing ⇒ page 19

8 - Desiccant cartridge

- ❑ Removing and installing ⇒ page 20

9 - Electrical air conditioner compressor - V470-

- ❑ With control unit for air conditioning compressor - J842-
- ❑ Removing and installing ⇒ page 27

10 - Evacuating and charging valve, low-pressure side

- ❑ Removing and installing ⇒ page 22

11 - Fresh air intake connecting piece

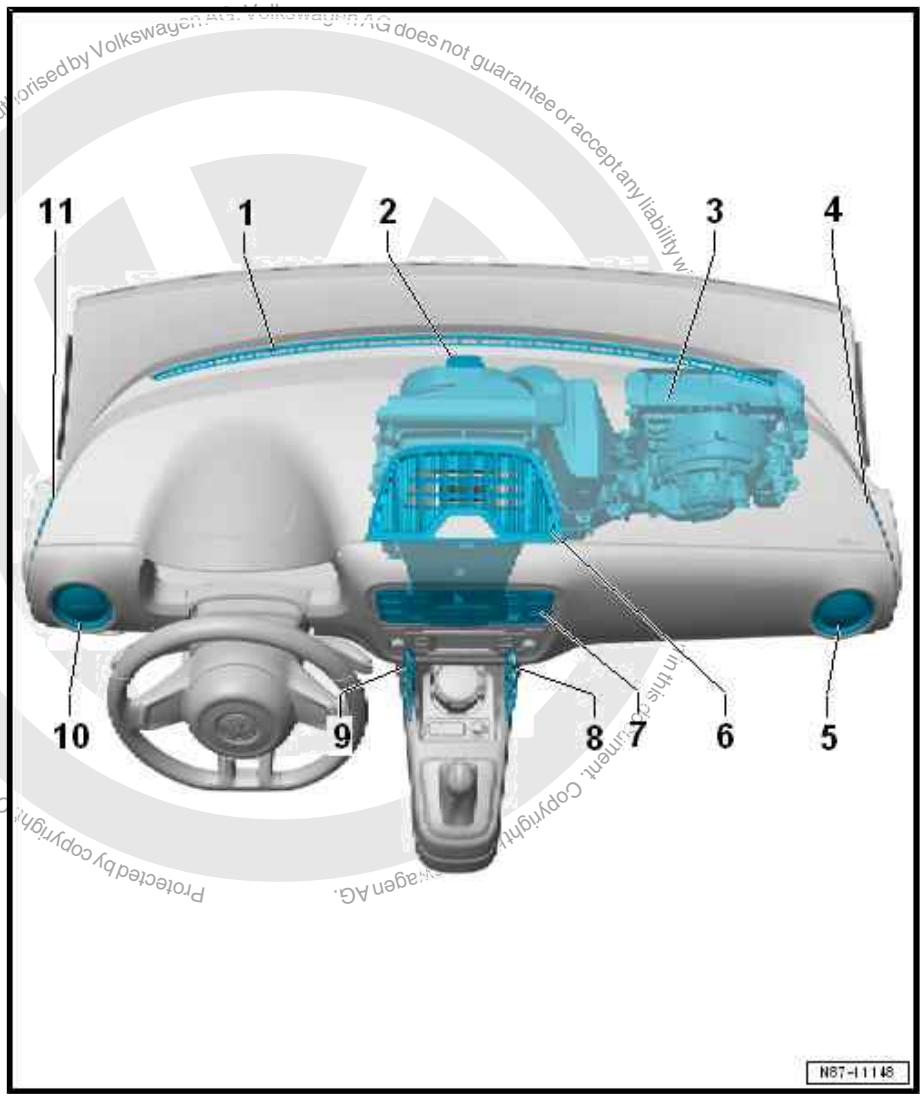
- ❑ Removing and installing ⇒ page 78

1.2 Overview of fitting locations - components located in front section of passenger compartment

⇒ “1.2.1 Overview of fitting locations - components inside of front passenger compartment, left-hand drive vehicles”, page 11

⇒ “1.2.2 Overview of fitting locations - components inside of front passenger compartment, right-hand drive vehicles”, page 12

1.2.1 Overview of fitting locations - components inside of front passenger compartment, left-hand drive vehicles



1 - Defroster vent

- ❑ Removing and installing ⇒ page 75

2 - Sunlight penetration photosensor - G107-

- ❑ Removing and installing ⇒ page 87

3 - Heater and air conditioning unit

- ❑ Removing and installing ⇒ page 55
- ❑ Dismantling and assembling ⇒ page 63

4 - Dash panel vent, side

- ❑ Removing and installing ⇒ page 76

5 - Right vent

- ❑ Removing and installing ⇒ page 76

6 - Centre vent

- ❑ Removing and installing ⇒ page 75

7 - Operating and display unit

- ❑ Removing and installing ⇒ page 86

8 - Right footwell vent

- ❑ Removing and installing ⇒ page 77

9 - Left footwell vent

- ❑ Removing and installing ⇒ page 77

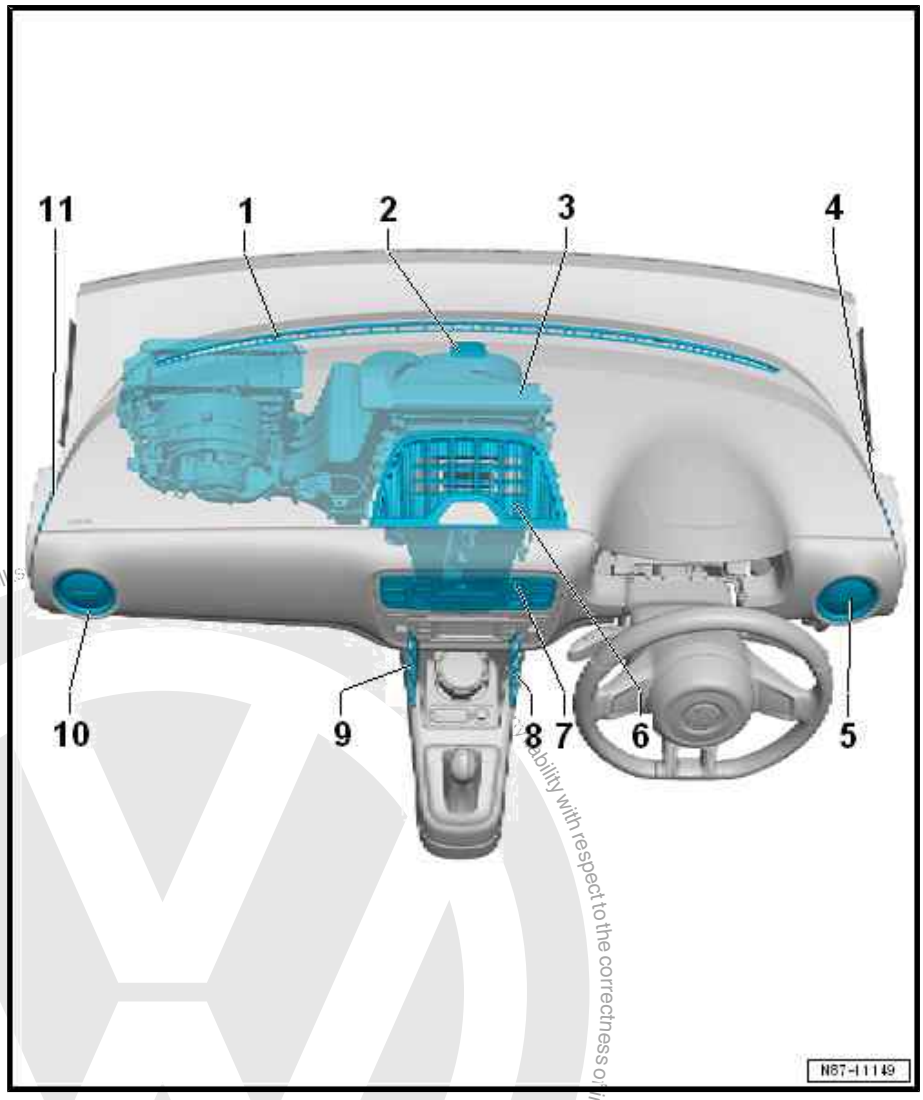
10 - Left vent

- ❑ Removing and installing ⇒ page 76

11 - Dash panel vent, side

- ❑ Removing and installing ⇒ page 76

1.2.2 Overview of fitting locations - components inside of front passenger compartment, right-hand drive vehicles



1 - Defroster vent

- ❑ Removing and installing ⇒ page 75

2 - Sunlight penetration photosensor - G107-

- ❑ Removing and installing ⇒ page 87

3 - Heater and air conditioning unit

- ❑ Removing and installing ⇒ page 55
- ❑ Dismantling and assembling ⇒ page 63

4 - Dash panel vent, side

- ❑ Removing and installing ⇒ page 76

5 - Right vent

- ❑ Removing and installing ⇒ page 76

6 - Centre vent

- ❑ Removing and installing ⇒ page 75

7 - Operating and display unit

- ❑ Removing and installing ⇒ page 86

8 - Right footwell vent

- ❑ Removing and installing ⇒ page 77

9 - Left footwell vent

- ❑ Removing and installing ⇒ page 77

10 - Left vent

- ❑ Removing and installing ⇒ page 76

11 - Dash panel vent, side

- ❑ Removing and installing ⇒ page 76

2 Refrigerant circuit

2.1 System overview - refrigerant circuit

2.1.1 System overview – refrigerant circuit, LHD vehicles

1 - Expansion valve

- ❑ Removing and installing ⇒ page 17

2 - High-pressure sender - G65-

- ❑ Removing and installing ⇒ page 15
- ❑ 8 ± 1 Nm

3 - Evacuating and charging valve, high-pressure side

- ❑ Removing and installing ⇒ page 22

4 - Condenser

- ❑ Removing and installing ⇒ page 19

5 - Desiccant cartridge

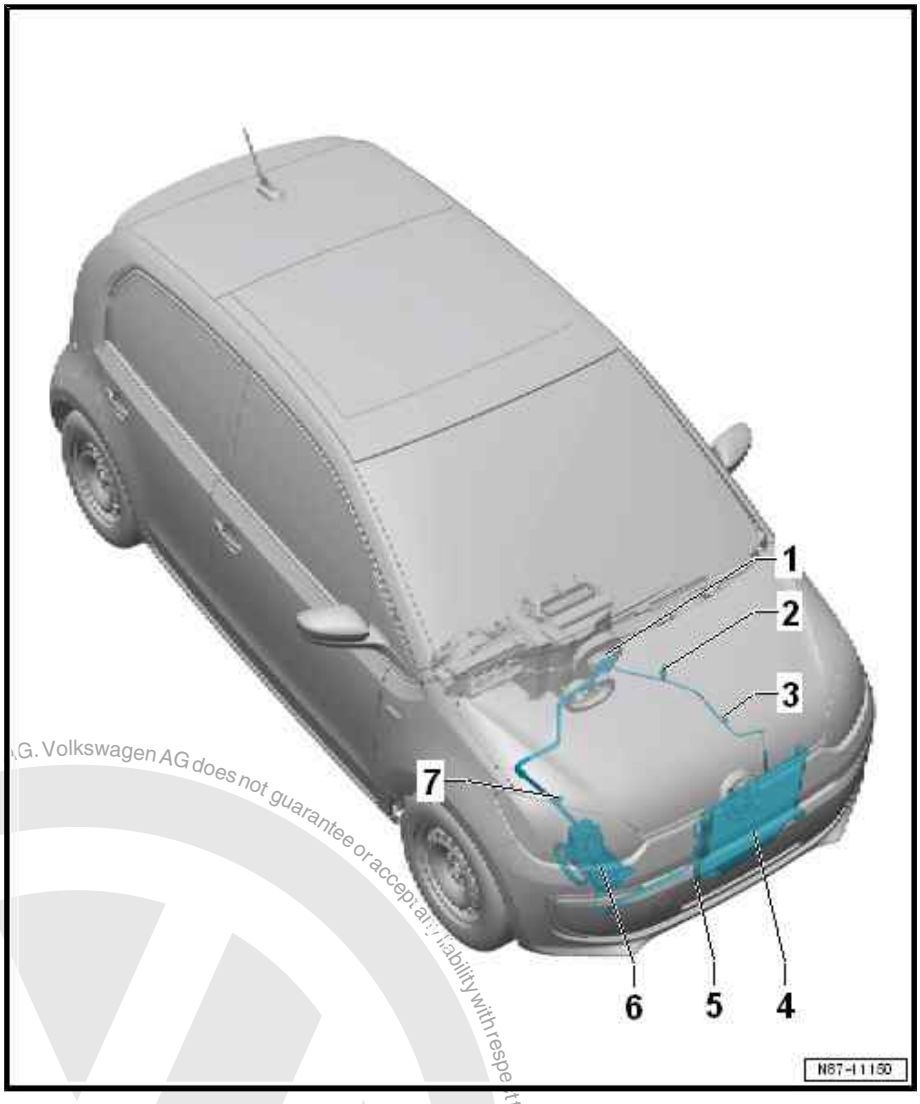
- ❑ Removing and installing ⇒ page 20

6 - Electrical air conditioner compressor - V470-

- ❑ With control unit for air conditioning compressor - J842-
- ❑ Removing and installing ⇒ page 27

7 - Evacuating and charging valve, low-pressure side

- ❑ Removing and installing ⇒ page 22



2.1.2 System overview – refrigerant circuit, RHD vehicles

1 - Expansion valve

- ❑ Removing and installing ⇒ page 17

2 - High-pressure sender - G65-

- ❑ Removing and installing ⇒ page 15
- ❑ 8 ± 1 Nm

3 - Evacuating and charging valve, high-pressure side

- ❑ Removing and installing ⇒ page 22

4 - Condenser

- ❑ Removing and installing ⇒ page 19

5 - Desiccant cartridge

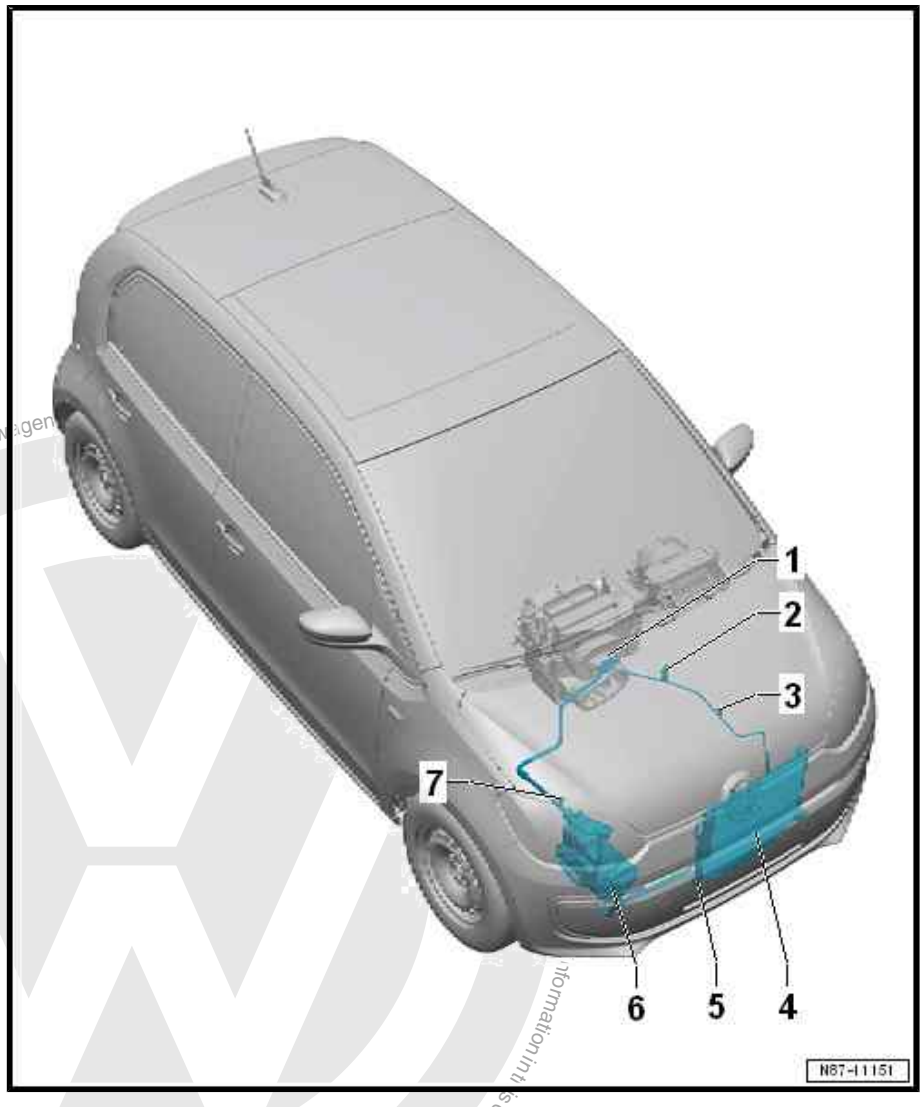
- ❑ Removing and installing ⇒ page 20

6 - Electrical air conditioner compressor - V470-

- ❑ With control unit for air conditioning compressor - J842-
- ❑ Removing and installing ⇒ page 27

7 - Evacuating and charging valve, low-pressure side

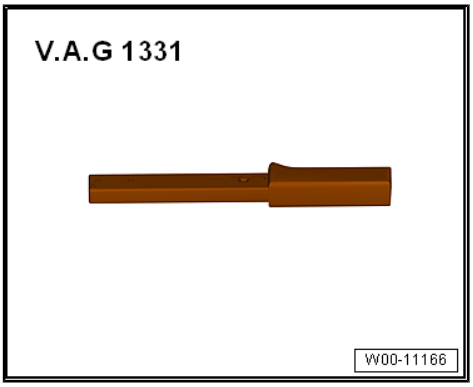
- ❑ Removing and installing ⇒ page 22



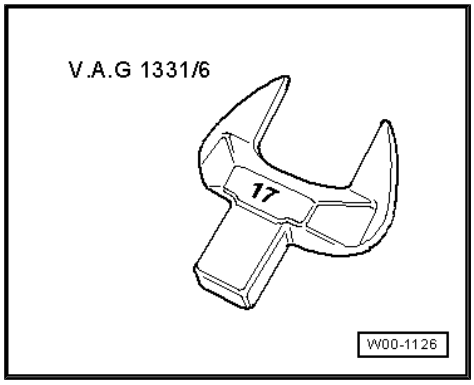
2.2 Removing and installing high-pressure sender - G65-

Special tools and workshop equipment required

- ♦ Torque wrench - V.A.G 1331-

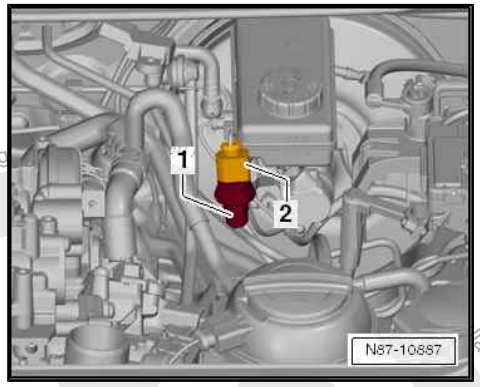


♦ Open end spanner insert, AF 17 mm - V.A.G 1331/6-



Removing

– Disconnect connector -2-.



⚠ CAUTION

Risk of freezing injury caused by escaping pressurised refrigerant.

There is a risk of injury to the skin and parts of the body due to freezing.

- **Wear protective gloves.**
- **Wear safety goggles.**
- **If, when detaching the pressure sender, refrigerant escapes from the refrigerant line for longer than 1 second, tighten the pressure sender and renew the non-return valve that is defective.**
- **Extract refrigerant and open the refrigerant circuit immediately afterwards.**
- **If more than 10 minutes have passed since the refrigerant was extracted, repeat the extraction process before opening the refrigerant circuit. Pressure could build up in the refrigerant circuit from continued evaporation.**

⚠ CAUTION

Risk of freezing injury caused by escaping pressurised refrigerant. If handled incorrectly, union could break off and refrigerant could escape.

There is a risk of injury to the skin and parts of the body due to freezing.

- **Wear protective gloves.**
- **Wear safety goggles.**
- **Counterhold refrigerant lines using a suitable tool.**

– Counterhold refrigerant line using a suitable tool, and unscrew high-pressure sender - G65- -1-.

Installing

Install in reverse order of removal, observing the following:

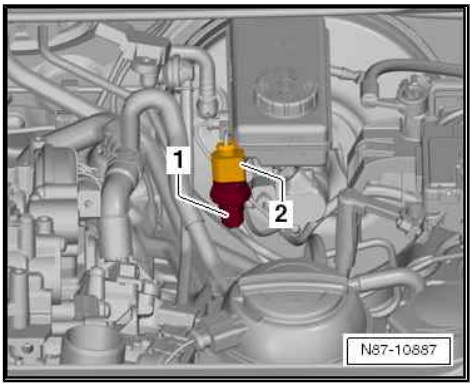
– Renew O-ring ⇒ Electronic Parts Catalogue .

– Counterhold refrigerant line using a suitable tool, and screw in high-pressure sender - G65- -1-.

– Connect connector -2-.

Specified torque

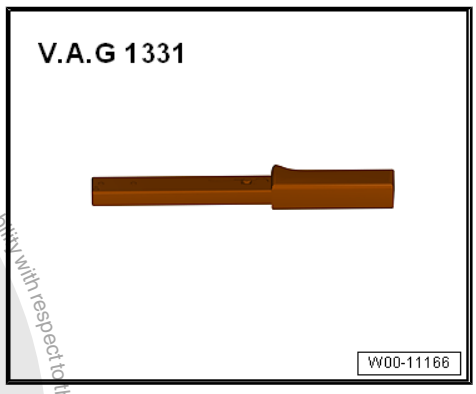
- High-pressure sender - G65- ⇒ Item 2 (page 14)



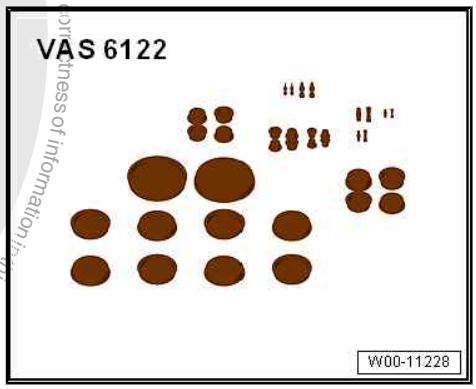
2.3 Removing and installing expansion valve

Special tools and workshop equipment required

- Torque wrench - V.A.G 1331/- (5 to 50 Nm)



- Engine bung set - VAS 6122-



- Air conditioner service station

Note

- *The refrigerant must be extracted beforehand, e.g. with air conditioner service station .*
- *The previously used air conditioner service stations can still be used ⇒ Volkswagen Workshop Equipment catalogue.*
- *To prevent the intrusion of moisture, all components of the refrigerant circuit which have been opened must be sealed with suitable plugs.*

Removing

– Note safety precautions
⇒ “1.1 Safety precautions when handling refrigerants”, page 1 .

– Observe notes ⇒ “3.1 Working on refrigerant circuit”, page 5 .

1 - Seal between evaporator housing and plenum chamber bulkhead

2 - O-ring

❑ Renewing ⇒ Electronic Parts Catalogue

3 - Expansion valve

❑ Aperture must be sealed against splashed water.

Function

♦ The expansion valve atomises incoming refrigerant and regulates the flow so that, depending on the heat transport, the vapour does not become a gas until it reaches the outlet of the evaporator.

4 - O-ring

❑ Renewing ⇒ Electronic Parts Catalogue

5 - High-pressure refrigerant line

6 - Low-pressure refrigerant line

7 - Socket head bolt with washer

❑ 5 Nm

8 - Bolts

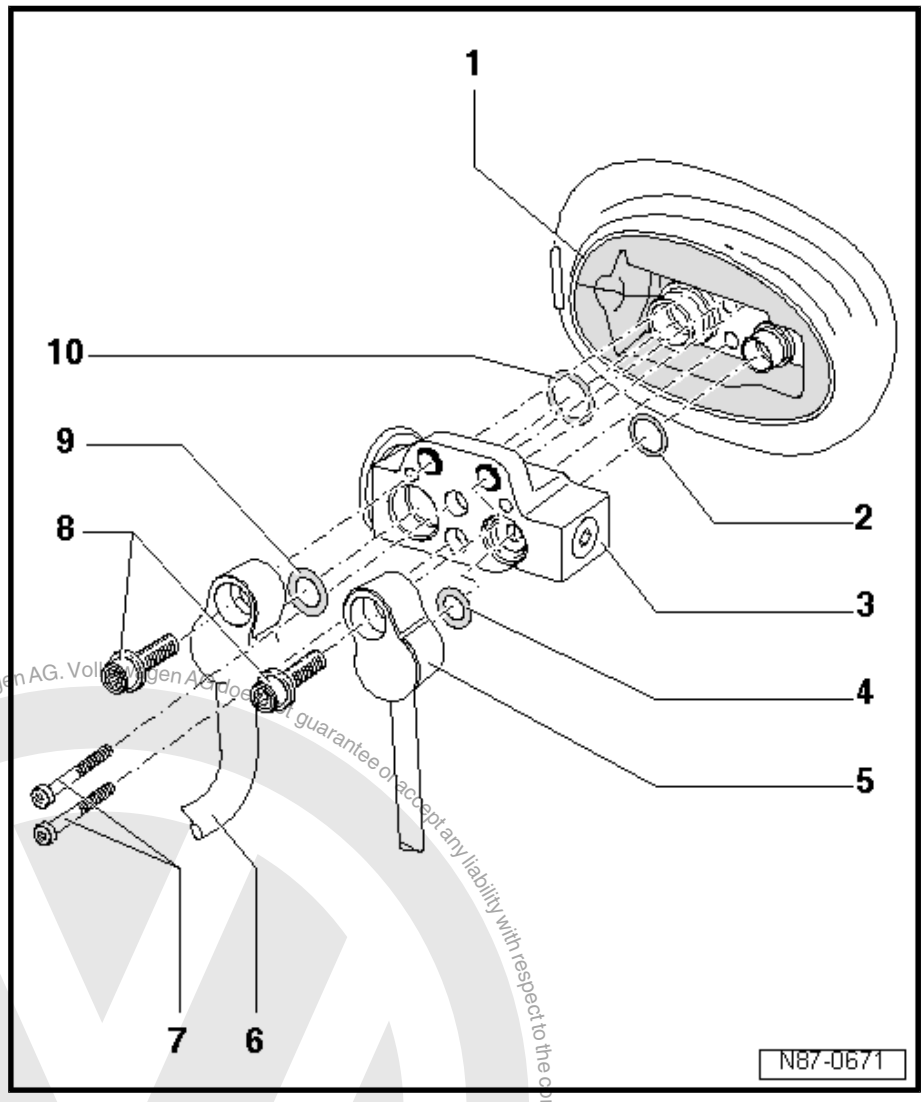
❑ 12 Nm
❑ Qty. 2

9 - O-ring

❑ Renewing ⇒ Electronic Parts Catalogue

10 - O-ring

❑ Renewing ⇒ Electronic Parts Catalogue



– Evacuate refrigerant circuit using air conditioner service station before opening refrigerant circuit.

Note

Releasing refrigerant into the environment is a punishable offence.

CAUTION

Risk of freezing injury caused by escaping pressurised refrigerant.

There is a risk of injury to the skin and parts of the body due to freezing.

- **Wear protective gloves.**
- **Wear safety goggles.**
- **Extract refrigerant and open the refrigerant circuit immediately afterwards.**
- **If more than 10 minutes have passed since the refrigerant was extracted, repeat the extraction process before opening the refrigerant circuit. Pressure could build up in the refrigerant circuit from continued evaporation.**

– Unscrew bolts -8-.

– Pull out refrigerant lines -5- and -6-.

– Unscrew bolts -7-.

– Remove expansion valve -3-.

Installing

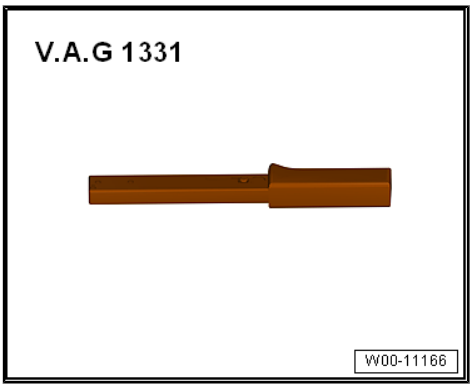
♦ Renew O-rings -2-, -4-, -9- and -10- ⇒ Electronic Parts Catalogue .

Continue installation in reverse order of removal.

2.4 Removing and installing condenser

Special tools and workshop equipment required

♦ Torque wrench - V.A.G 1331/- (5 to 50 Nm)



♦ Air conditioner service station

Note

♦ *The refrigerant must be extracted beforehand, with the air conditioning service station .*

♦ *The previously used air conditioner service stations can still be used ⇒ Volkswagen Workshop Equipment catalogue.*

♦ *To prevent the intrusion of moisture, all components of the refrigerant circuit which have been opened must be sealed with suitable plugs.*

Removing

– Note safety precautions ⇒ “1.1 Safety precautions when handling refrigerants”, page 1 .

– Observe notes ⇒ “3.1 Working on refrigerant circuit”, page 5 .

– Remove front bumper ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Removing and installing front bumper .

– Remove air duct for radiator on left ⇒ Rep. gr. 93 ; Radiator/ radiator fan; Assembly overview - radiator/radiator fan .

– Partly remove washer fluid reservoir and attach on side ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .

– Evacuate refrigerant circuit using air conditioner service station before opening refrigerant circuit.

⚠ CAUTION

Risk of freezing injury caused by escaping pressurised refrigerant.

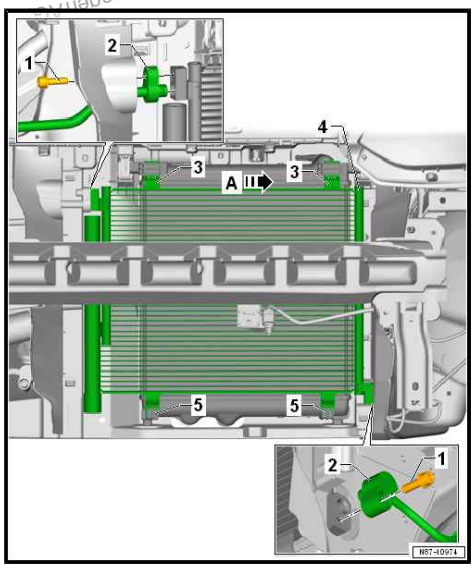
There is a risk of injury to the skin and parts of the body due to freezing.

- **Wear protective gloves.**
- **Wear safety goggles.**
- **Extract refrigerant and open the refrigerant circuit immediately afterwards.**
- **If more than 10 minutes have passed since the refrigerant was extracted, repeat the extraction process before opening the refrigerant circuit. Pressure could build up in the refrigerant circuit from continued evaporation.**

– Unscrew bolts -1-.

– Remove refrigerant lines -2- from condenser.

– Push condenser -4- in direction of -arrow A- out of brackets -3- and -5- and remove downwards.



Installing

Further installation is carried out in the reverse order of removal. Ensure proper seating of condenser in brackets.

– Renew oil seals. ⇒ Electronic parts catalogue

Specified torque:

Component	Specified torque
Condenser bolts	12 Nm

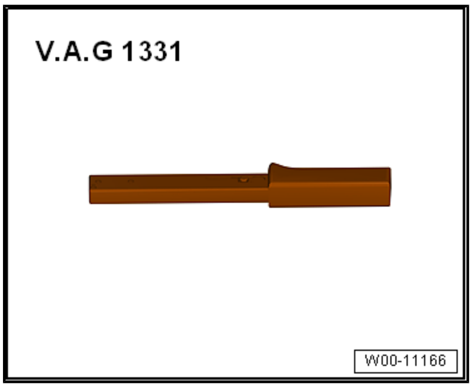
♦ Install bumper ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Removing and installing front bumper .

♦ Attach washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; removing and installing washer fluid reservoir .

2.5 Removing and installing desiccant bag or cartridge

Special tools and workshop equipment required

- ♦ Torque wrench - V.A.G 1331/- (5 to 50 Nm)



- ♦ Air conditioner service station

Removing

– Note safety precautions ⇒ “1.1 Safety precautions when handling refrigerants”, page 1 .

– Observe notes ⇒ “3.1 Working on refrigerant circuit”, page 5 .

– Partly remove front bumper in order to gain access to desiccant cartridge ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Removing and installing front bumper .

– Extract refrigerant with air conditioning service station . Observe notes ⇒ page 5 .

CAUTION

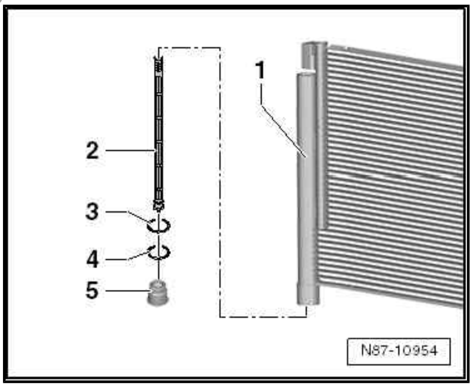
Risk of freezing injury caused by escaping pressurised refrigerant.

There is a risk of injury to the skin and parts of the body due to freezing.

- **Wear protective gloves.**
- **Wear safety goggles.**
- **Extract refrigerant and open the refrigerant circuit immediately afterwards.**
- **If more than 10 minutes have passed since the refrigerant was extracted, repeat the extraction process before opening the refrigerant circuit. Pressure could build up in the refrigerant circuit from continued evaporation.**

– Unscrew cap -5- using Torx 55 socket insert.

– Pull desiccant cartridge -2- out of condenser -1- using a suitable tool.



Installing

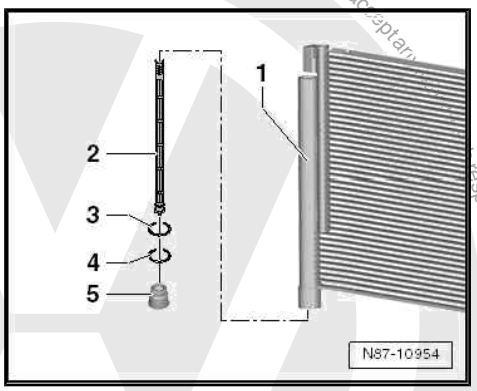
– Insert new desiccant cartridge -2- in condenser -1-.
– Renew seals -3- and -4- ⇒ Electronic Parts Catalogue .
– Make sure cap -5- is seated correctly.

Continue installation in reverse order of removal.

Specified torque:

Component	Specified torque
Cap	5 Nm

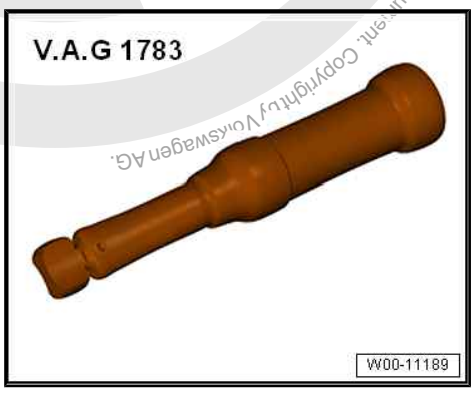
♦ Install front bumper ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Removing and installing front bumper .



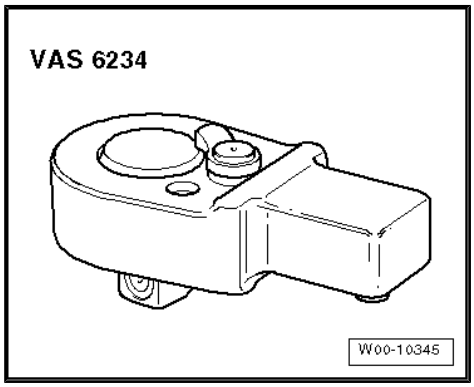
2.6 Removing and installing evacuating and charging valves on low and high-pressure side

Special tools and workshop equipment required

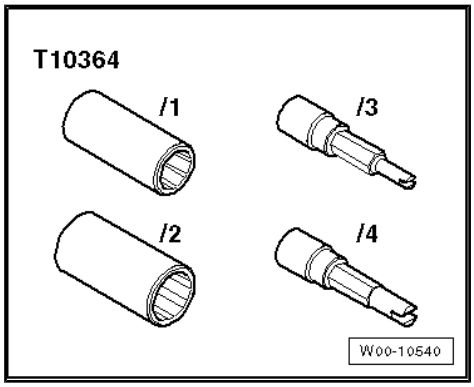
♦ Torque wrench - V.A.G 1783-



♦ Ratchet insert tool 1/4" - VAS 6234-



♦ Adapter set for service connections - T10364-



- Air conditioner service station

Note

- *The refrigerant must be extracted beforehand, with the air conditioning service station .*
- *Releasing refrigerant into the environment is a punishable offence.*
- *The illustration shows the up!. The same removal and installation procedures apply.*

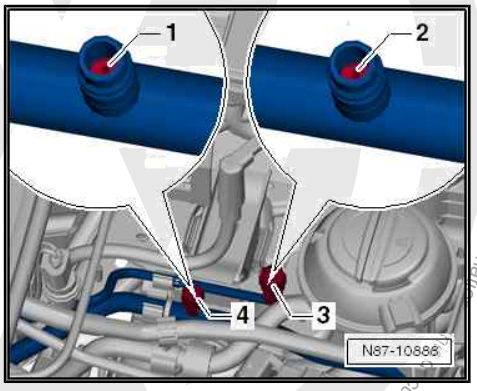
Removing

– Note safety precautions
⇒ “1.1 Safety precautions when handling refrigerants”, page 1 .

– Observe notes ⇒ “3.1 Working on refrigerant circuit”, page 5 .

– Unscrew caps -3- and -4-.

– Evacuate refrigerant circuit using air conditioner service station before opening refrigerant circuit.



CAUTION

Risk of freezing injury caused by escaping pressurised refrigerant.

There is a risk of injury to the skin and parts of the body due to freezing.

- **Wear protective gloves.**
- **Wear safety goggles.**
- **Extract refrigerant and open the refrigerant circuit immediately afterwards.**
- **If more than 10 minutes have passed since the refrigerant was extracted, repeat the extraction process before opening the refrigerant circuit. Pressure could build up in the refrigerant circuit from continued evaporation.**

– Unscrew evacuating and charging valves -1- and -2- using socket - T10364- and a suitable adapter.

Installing

– Install in reverse order.

Specified torque:

Component	Specified torque
Caps	2 ± 0.2 Nm
Valve in refrigerant line	2.4 ± 0.2 Nm

2.7 Commissioning of air conditioning system after filling refrigerant circuit

Note

- *Do not operate the vehicle until the refrigerant circuit has been properly assembled.*
- *Furthermore, do not operate the vehicle until its refrigerant circuit has been filled properly.*
- *Do not operate the vehicle during evacuation of the refrigerant circuit or when the refrigerant circuit is in evacuated state (this may cause damage to the air conditioner compressor) ⇒ Air conditioning system with refrigerant R134a .*
- *The air conditioner compressor has an "internal oil circuit" to ensure the compressor is not damaged when the refrigerant circuit is empty. A prerequisite for the internal lubrication is residual refrigerant oil in the air conditioner compressor.*

- All removed components have been reinstalled.
- The refrigerant circuit has been filled ⇒ Air conditioning system with refrigerant R134a .

If it is necessary to operate the vehicle with an empty refrigerant circuit:

- The refrigerant circuit must be fully assembled.
- There must be no underpressure in the refrigerant circuit.
- At least ¼ of the quantity of refrigerant oil specified for this refrigerant circuit must be in the air conditioner compressor.
- The air conditioning system must be switched off.

Note

Also refer to the notes on commissioning of air conditioning system after filling ⇒ Air conditioning system with refrigerant R134a .

3 Air conditioner compressor

⇒ “3.1 Assembly overview - drive unit of air conditioner compressor”, page 25

⇒ “3.2 Removing electrical air conditioner compressor V470 from and attaching to bracket”, page 25

⇒ “3.3 Removing and installing electrical air conditioner compressor V470 ”, page 27

⇒ “3.4 Removing and installing air conditioner compressor fuse S355 ”, page 30

3.1 Assembly overview - drive unit of air conditioner compressor

1 - Guard
- ❑ Vehicle-specific

2 - Refrigerant line

3 - Bolt
- ❑ 25 Nm

4 - Bolt
- ❑ 9 Nm

5 - Potential equalisation line

6 - Connector

7 - High-voltage connector

8 - Bolt
- ❑ 25 Nm

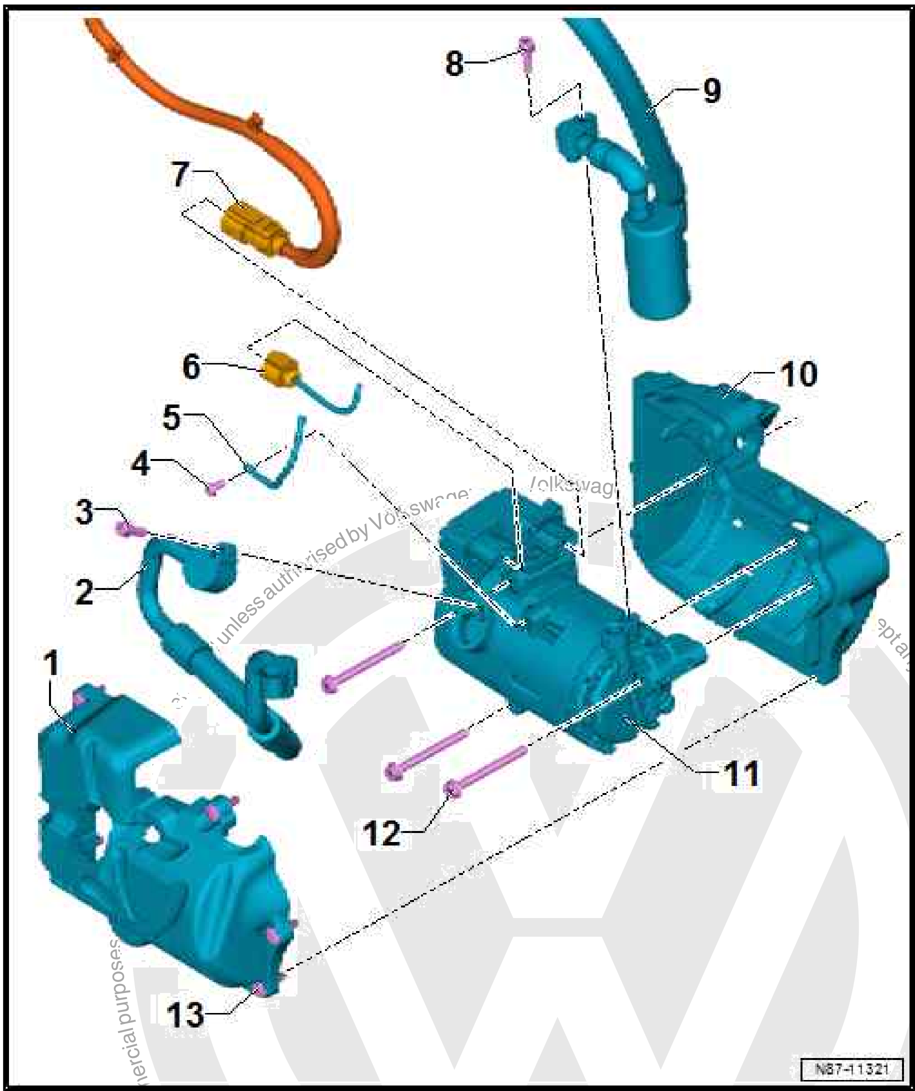
9 - Refrigerant line

10 - Guard
- ❑ Vehicle-specific

11 - Electrical air conditioner compressor - V470-
- ❑ With control unit for air conditioning compressor - J842-
- ❑ ⇒ page 27

12 - Bolt
- ❑ Qty. 3
- ❑ 23 Nm

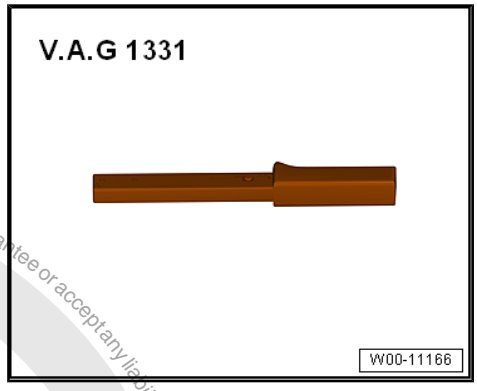
13 - Clip



3.2 Removing electrical air conditioner compressor - V470- from and attaching to bracket

Special tools and workshop equipment required

♦ Torque wrench - V.A.G 1331- (5 to 50 Nm)



Removing

– Note safety precautions ⇒ “1.1 Safety precautions when handling refrigerants”, page 1

– Observe notes ⇒ “3.1 Working on refrigerant circuit”, page 5 .

– Observe safety precautions when working on the high-voltage system ⇒ page 1 .

– Observe safety precautions when working in the vicinity of high-voltage components ⇒ page 2 .

– Observe the risk classification of the high-voltage system ⇒ Electric drive; Rep. gr. 00 ; Risk classification of the high-voltage system .

DANGER

Danger to life from high voltage.

Severe or fatal injury from electric shock.

– The high-voltage system must be de-energised by a suitably qualified technician.

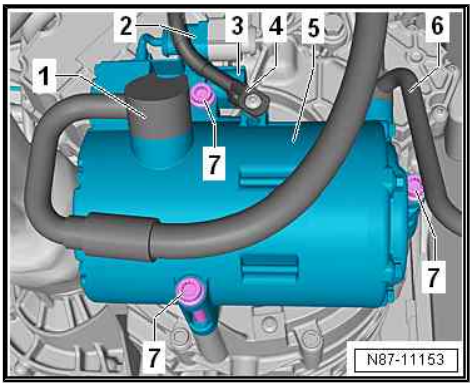
– Now de-energise the high-voltage system ⇒ Electric drive; Rep. gr. 93 ; De-energising the high-voltage system .

– Remove noise insulation under engine ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview - noise insulation .

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

– If fitted, push aside or partly detach noise insulation of electrical air conditioner compressor - V470- -5- in order to gain access to connectors and bolts.

– Disconnect electrical connector -2- from electrical air conditioner compressor - V470- -5-.
– Disconnect high-voltage cable -3- from electrical air conditioner compressor - V470- -5-.
– Disconnect potential equalisation line -4- from electrical air conditioner compressor - V470- -5-.
– Unscrew bolts -7-.
– Remove electrical air conditioner compressor - V470- -5-.

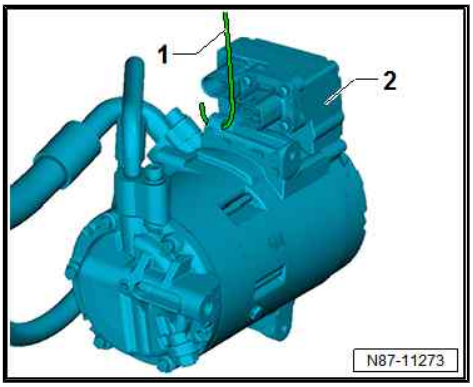


NOTICE

Risk of damage to air conditioner compressor. Refrigerant oil may accumulate in the compression chamber of a removed air conditioner compressor.

– **Make sure to store the air conditioner compressor in installation position only.**

– Secure electrical air conditioner compressor - V470- -2- to body with suitable material (e.g. welding wire -1-).



Installing

Install in reverse order of removal, observing the following:

– Always assemble refrigerant circuit before starting engine.
– Always charge refrigerant circuit before starting engine.

Note

- *The contact points of the electrical air conditioner compressor - V470- and the engine must be checked prior to installation.*
- *The contact surfaces must be free of dirt, rust and grease.*

WARNING

Danger to life from high voltage.
Risk of severe or fatal injury due to electric shock.

– **Have a qualified technician re-energise the high-voltage system.**

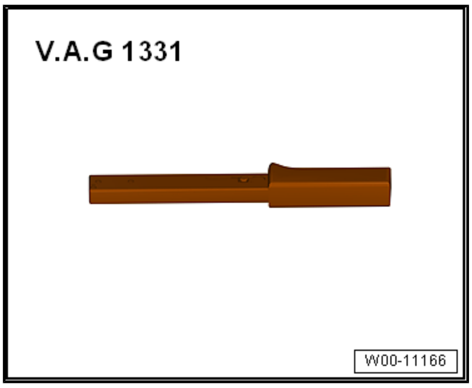
Specified torque

- ⇒ “3.1 Assembly overview - drive unit of air conditioner compressor”, page 25

3.3 Removing and installing electrical air conditioner compressor - V470-

Special tools and workshop equipment required

- ♦ Torque wrench - V.A.G 1331/- (5 to 50 Nm)



- ♦ Air conditioner service station

Removing

– Note safety precautions ⇒ “1.1 Safety precautions when handling refrigerants”, page 1 .

– Observe notes ⇒ “3.1 Working on refrigerant circuit”, page 5 .

– Observe safety precautions when working on the high-voltage system ⇒ page 1 .

– Observe safety precautions when working in the vicinity of high-voltage components ⇒ page 2 .

– Observe the risk classification of the high-voltage system ⇒ Electric drive; Rep. gr. 00 ; Risk classification of the high-voltage system .

⚠ DANGER

Danger to life from high voltage.

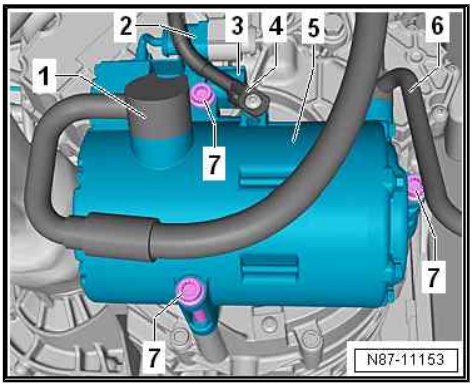
Severe or fatal injury from electric shock.

– **The high-voltage system must be de-energised by a suitably qualified technician.**

– De-energise high-voltage system ⇒ Electric drive; Rep. gr. 93 ; De-energising high-voltage system .

– Loosen front right wheel housing liner far enough to gain access to electrical air conditioner compressor - V470- ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Assembly overview - wheel housing liner .

– If fitted, remove noise insulation from electrical air conditioner compressor - V470- .



– Disconnect electrical connector -2- from electrical air conditioner compressor - V470- -5-.
– Disconnect high-voltage cable -3- from electrical air conditioner compressor - V470- -5-.
– Disconnect earth wire -4- from electrical air conditioner compressor - V470- -5-.
– Extract refrigerant with air conditioning service station . Observe notes ⇒ page 5 .

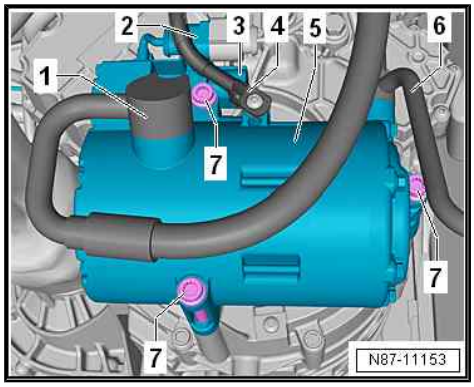
⚠ CAUTION

Risk of freezing injury caused by escaping pressurised refrigerant.

There is a risk of injury to the skin and parts of the body due to freezing.

– Wear protective gloves.
– Wear safety goggles.
– Extract refrigerant and open the refrigerant circuit immediately afterwards.
– If more than 10 minutes have passed since the refrigerant was extracted, repeat the extraction process before opening the refrigerant circuit. Pressure could build up in the refrigerant circuit from continued evaporation.

– Disconnect refrigerant lines -1- and -6- from electrical air conditioner compressor - V470- -5-.
– Unscrew bolts -7-.
– Remove electrical air conditioner compressor - V470- -5-.



Installing

Install in reverse order of removal, observing the following:

– Only start the engine once the refrigerant circuit has been assembled.
– Only start engine when refrigerant circuits are charged.

Note

- *The bolting points of the air conditioner compressor and the engine must be checked prior to installation.*
- *The contact surfaces must be free of dirt, rust and grease.*

NOTICE

Risk of damage to air conditioner compressor. Refrigerant oil may accumulate in the compression chamber of a removed air conditioner compressor.

– **Make sure to store the air conditioner compressor in installation position only.**

WARNING

Danger to life from high voltage.

Risk of severe or fatal injury due to electric shock.

– **Have a qualified technician re-energise the high-voltage system.**

– Re-energise high-voltage system ⇒ Electric drive; Rep. gr. 93 ; Re-energising high-voltage system .

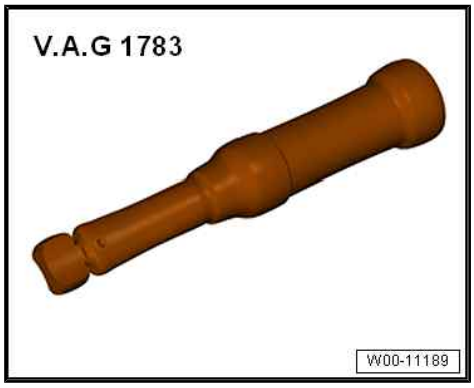
Specified torque

- ⇒ “3.1 Assembly overview - drive unit of air conditioner compressor”, page 25

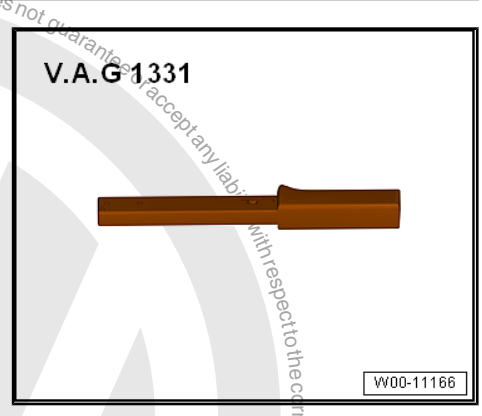
3.4 Removing and installing air conditioner compressor fuse - S355-

Special tools and workshop equipment required

- Torque wrench - V.A.G 1783-



♦ Torque wrench - V.A.G 1331-



Removing

DANGER

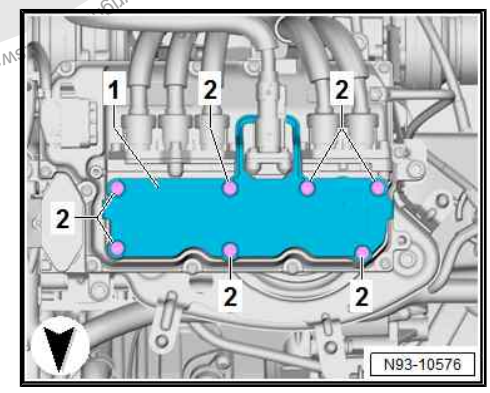
Danger to life from high voltage.

Severe or fatal injury from electric shock.

– The high-voltage system must be de-energised by a suitably qualified technician.

– Now de-energise the high-voltage system ⇒ Electric drive; Rep. gr. 93 ; De-energising the high-voltage system .

– Unscrew bolts -2- from cover -1-.

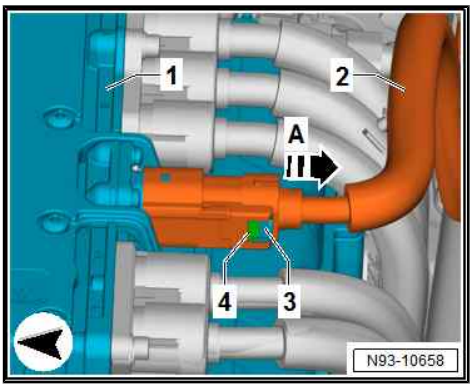


– Pull out fuse -3- on high-voltage cable connector -2- for charging unit 1 for high-voltage battery - AX4- in direction of arrow -A-.

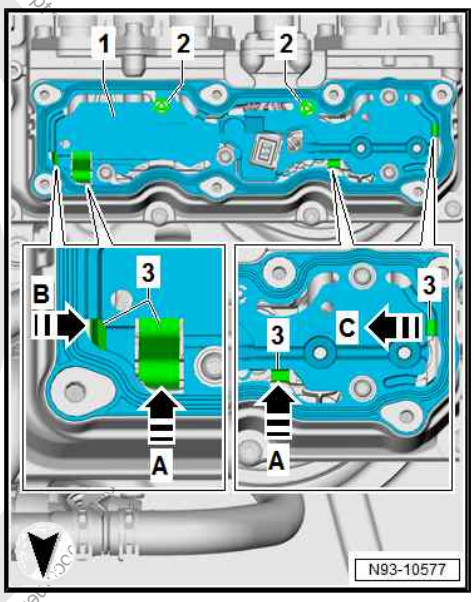
– Press locking mechanism -4-.

– Pull high-voltage cable connector -2- for charging unit 1 for high-voltage battery - AX4- off power and control electronics for electric drive - JX1- -1-.

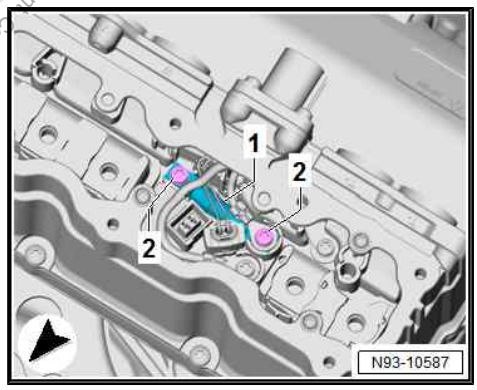
– Detach cover -1-.



– Release catches -3- in direction of arrows -A-, -B- and -C-.
– Unclip catches -2- upwards.
– Remove contact protection -1-.



– Unscrew bolts -2-.
– Remove air conditioner compressor fuse - S355- -1-.



Installing

Install in reverse order of removal, observing the following:

NOTICE

The seal of a previously installed safety cover may be deformed.

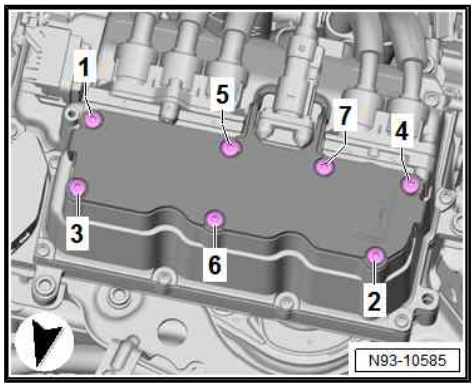
A deformed seal may leak. Moisture from leaks may damage the high-voltage system.

– **Renew contact protection of power and control electronics for electric drive - JX1- after it has been removed.**

Renew bolts for cover of power and control electronics for electric drive - JX1- after they have been removed.

Tightening sequence for cover

– Screw in bolts for cover.
– Tighten bolts in the sequence -5-, -6- and -1-. The remaining bolts can be tightened in any sequence.



WARNING

Danger to life from high voltage.

Risk of severe or fatal injury due to electric shock.

– **Have a qualified technician re-energise the high-voltage system.**

– Re-energise high-voltage system ⇒ Electric drive; Rep. gr. 93 ; De-energising high-voltage system .

Specified torques

◆ Assembly overview - power and control electronics for electric drive ⇒ Electric drive; Rep. gr. 93 ; Power and control electronics for electric drive

4 Control motors

4.1 Overview of fitting locations - front control motors

4.1.1 Overview of fitting locations - front control motors, LHD vehicles

1 - Defroster flap control motor - V107-

- ❑ Checking: vehicle diagnostic tester
- ❑ Removing and installing ⇒ page 40
- ❑ Renewing: initiate basic setting using vehicle diagnostic tester .

2 - Temperature flap control motor - V68-

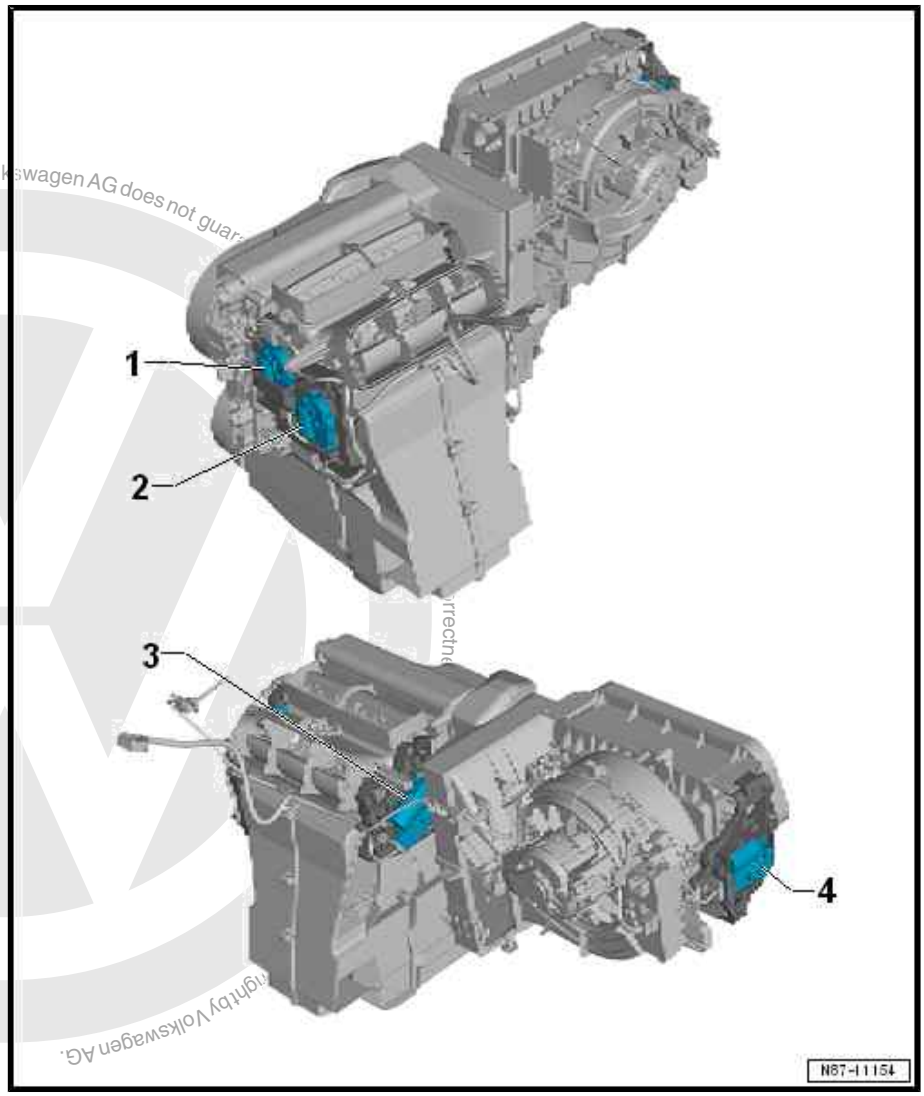
- ❑ Checking: vehicle diagnostic tester
- ❑ Removing and installing ⇒ page 34
- ❑ Renewing: initiate basic setting using vehicle diagnostic tester .

3 - Central flap control motor - V70-

- ❑ Checking: vehicle diagnostic tester
- ❑ Removing and installing ⇒ page 36
- ❑ Renewing: initiate basic setting using vehicle diagnostic tester .

4 - Air flow flap control motor - V71-

- ❑ Checking: vehicle diagnostic tester
- ❑ Removing and installing ⇒ page 38



- ❑ Renewing: initiate basic setting using vehicle diagnostic tester .

4.1.2 Overview of fitting locations - front control motors, RHD vehicles

1 - Air flow flap control motor - V71-

- ❑ Checking: vehicle diagnostic tester
- ❑ Removing and installing ⇒ page 39
- ❑ Renewing: initiate basic setting using vehicle diagnostic tester .

2 - Defroster flap control motor - V107-

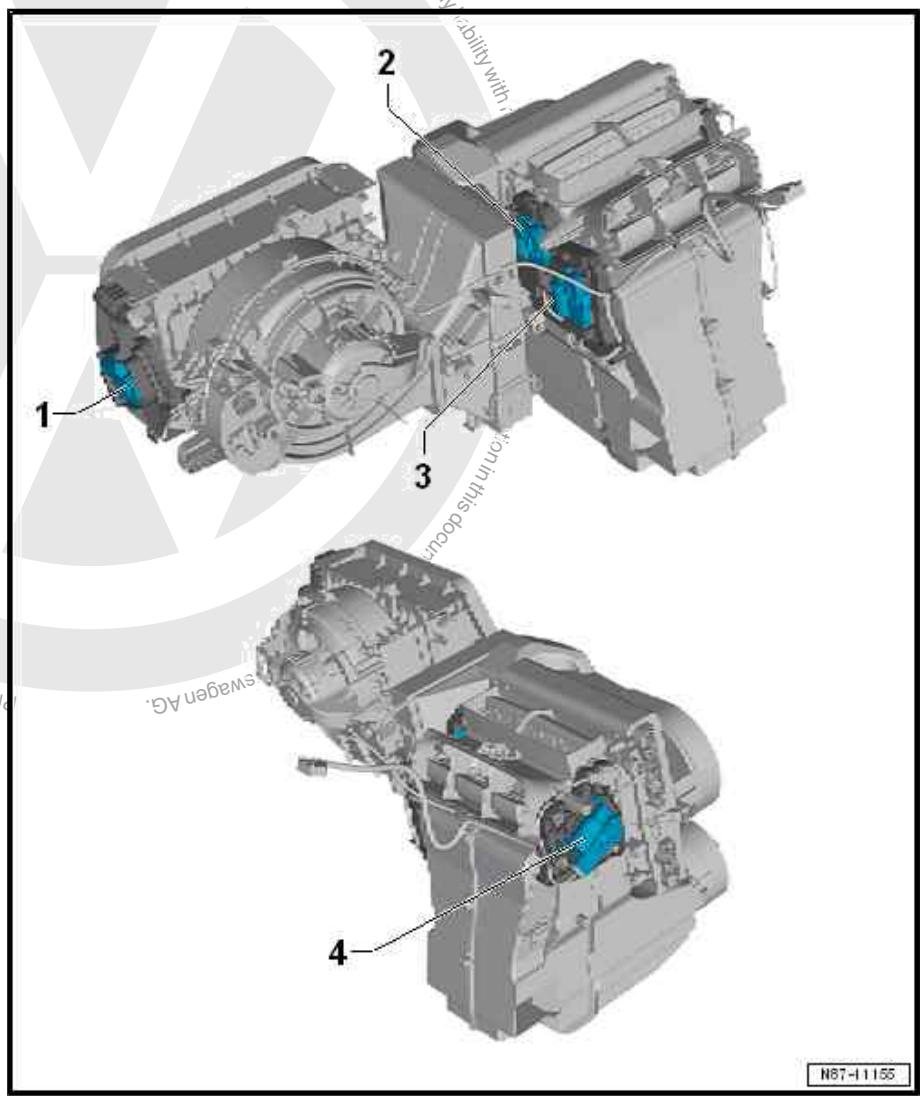
- ❑ Checking: vehicle diagnostic tester
- ❑ Removing and installing ⇒ page 41
- ❑ Renewing: initiate basic setting using vehicle diagnostic tester .

3 - Temperature flap control motor - V68-

- ❑ Checking: vehicle diagnostic tester
- ❑ Removing and installing ⇒ page 35
- ❑ Renewing: initiate basic setting using vehicle diagnostic tester .

4 - Central flap control motor - V70-

- ❑ Checking: vehicle diagnostic tester
- ❑ Removing and installing ⇒ page 37
- ❑ Renewing: initiate basic setting using vehicle diagnostic tester .



4.2 Removing and installing temperature flap control motor - V68-

⇒ “4.2.1 Removing and installing temperature flap control motor V68 , left-hand drive vehicles”, page 34

⇒ “4.2.2 Removing and installing temperature flap control motor V68 , right-hand drive vehicles”, page 35

4.2.1 Removing and installing temperature flap control motor - V68- , left-hand drive vehicles

Special tools and workshop equipment required

- ♦ Bit ratchet

♦ Angled screwdriver - VAS 6800-

Removing

– Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .

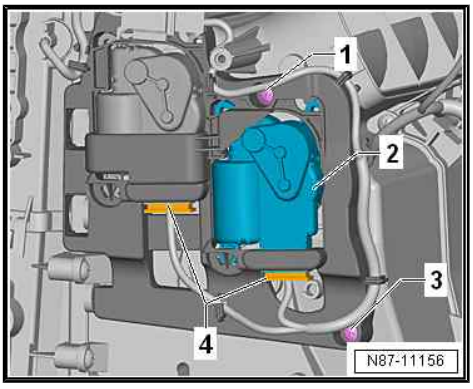
– Remove central tube for dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Removing and installing central tube for dash panel .

– Disconnect connectors -4-.

– Unscrew bolts -1- and -3-.

– Remove control motors with bracket.

– Unclip temperature flap control motor - V68- -2- from bracket.



Installing

– Install in reverse order of removal, observing the following:

Note

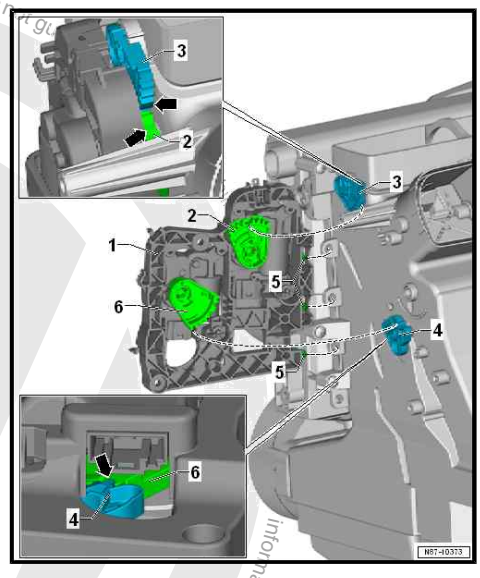
Before installing, check condition and function of flaps.

– Fit control motors with bracket -1- into mountings -5-.

– Make sure that gears -2- and -6- engage with gears -3- and -4- -arrows- of heater and air conditioning unit.

– Check function of control motors.

– Continue installation in reverse order of removal.



4.2.2 Removing and installing temperature flap control motor - V68- , right-hand drive vehicles

Special tools and workshop equipment required

♦ Bit ratchet

♦ Angled screwdriver - VAS 6800-

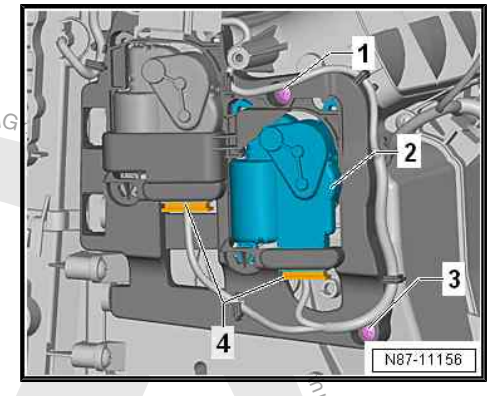
Removing

Note

The figures show a left-hand drive vehicle. Removal and installation are analogous.

– Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .

– Remove central tube for dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Removing and installing central tube for dash panel .
– Disconnect connectors -4-.
– Unscrew bolts -1- and -3-.
– Remove control motors with bracket.
– Unclip temperature flap control motor - V68- -2- from bracket.



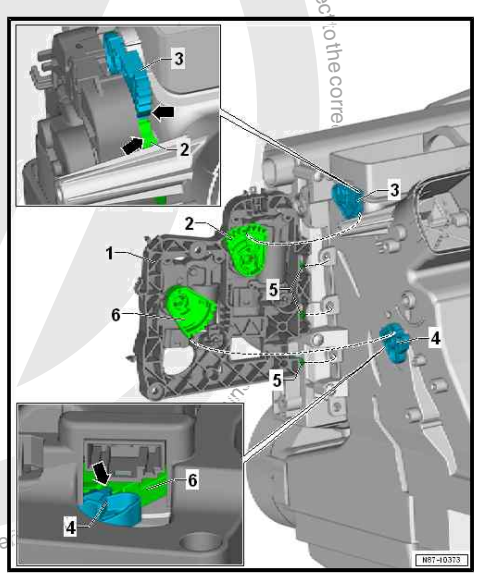
Installing

– Install in reverse order of removal, observing the following:

Note

Before installing, check condition and function of flaps.

– Fit control motors with bracket -1- into mountings -5-.
– Make sure that gears -2- and -6- engage with gears -3- and -4- -arrows- of heater and air conditioning unit.
– Check function of control motors.
– Continue installation in reverse order of removal.



4.3 Removing and installing centre flap control motor - V70-

⇒ “4.3.1 Removing and installing centre flap control motor V70 , left-hand drive vehicles”, page 36

⇒ “4.3.2 Removing and installing centre flap control motor V70 , right-hand drive vehicles”, page 37

4.3.1 Removing and installing centre flap control motor - V70- , left-hand drive vehicles

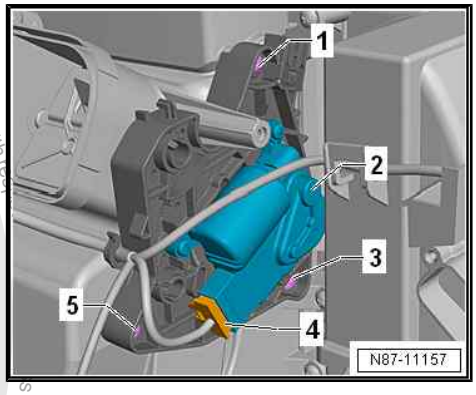
Special tools and workshop equipment required

♦ Bit ratchet
♦ Angled screwdriver - VAS 6800-

Removing

– Remove glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .

– Remove lower part of centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Assembly overview – centre console .
– Disconnect connector -4-.
– Unscrew bolts -1-, -3- and -5-.
– Remove centre flap control motor - V70- -2- together with bracket.



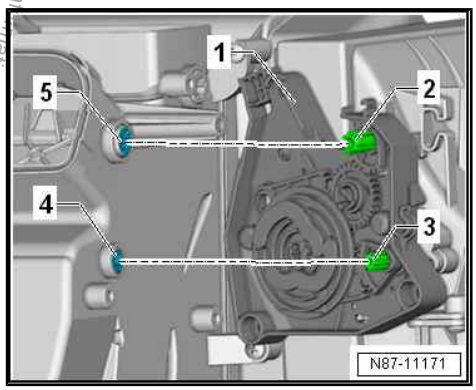
Installing

– Install in reverse order of removal, observing the following:

Note

Before installing, check condition and function of flaps.

– There is only one position in which mountings -2- and -3- of centre flap control motor - V70- -1- can be fitted into mountings -4- and -5- of air distribution housing.
– Position centre flap control motor - V70- on air distribution housing, and fit it into mountings.
– Continue installation in reverse order of removal.



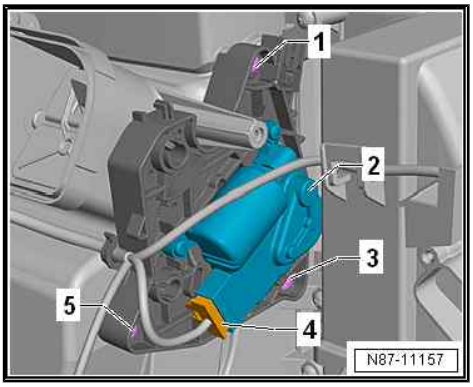
4.3.2 Removing and installing centre flap control motor - V70- , right-hand drive vehicles

Special tools and workshop equipment required

- Bit ratchet
- Angled screwdriver - VAS 6800-

Removing

– Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .
– Remove central tube for dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Removing and installing central tube for dash panel .
– Disconnect connector -4-.
– Unscrew bolts -1-, -3- and -5-.
– Remove centre flap control motor - V70- -2- together with bracket.



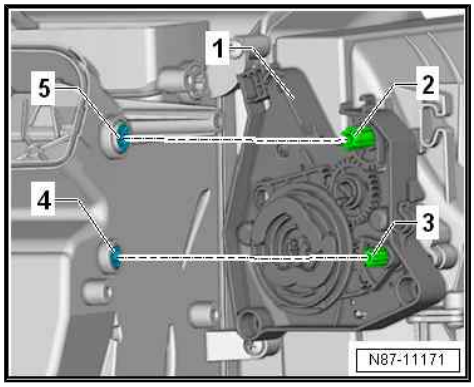
Installing

– Install in reverse order of removal, observing the following:

Note

Before installing, check condition and function of flaps.

– There is only one position in which mountings -2- and -3- of centre flap control motor - V70- -1- can be fitted into mountings -4- and -5- of air distribution housing.
– Position centre flap control motor - V70- on air distribution housing, and fit it into mountings.
– Continue installation in reverse order of removal.



4.4 Removing and installing air flow flap control motor - V71-

⇒ “4.4.1 Removing and installing air flow flap control motor V71 , left-hand drive vehicles”, page 38

⇒ “4.4.2 Removing and installing air flow flap control motor V71 , right-hand drive vehicles”, page 39

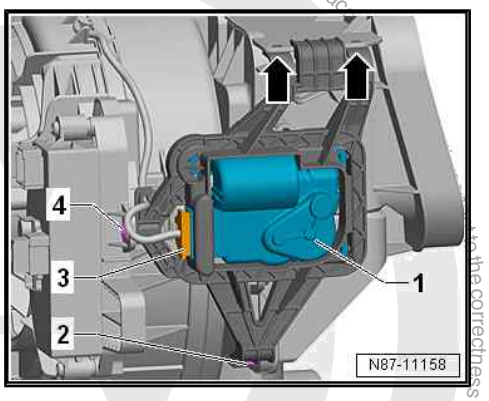
4.4.1 Removing and installing air flow flap control motor - V71- , left-hand drive vehicles

Special tools and workshop equipment required

♦ Bit ratchet
♦ Angled screwdriver - VAS 6800-

Removing

– Remove glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .
– Disconnect connector -3-.
– Unscrew bolts -2- and -4-.
– Unhook and remove air flow flap control motor - V71- -1- -arrows-.



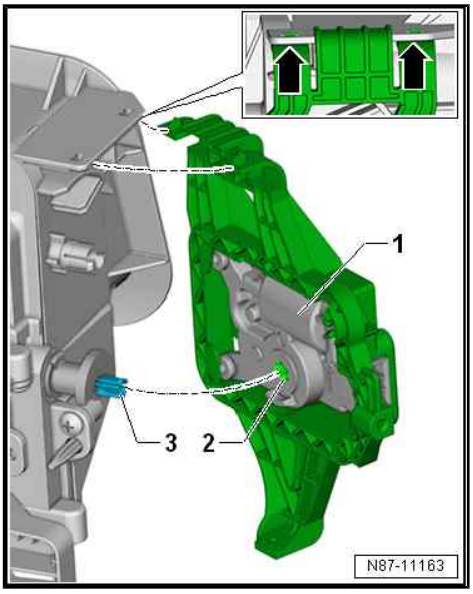
Installing

– Install in reverse order of removal, observing the following:

– Attach air flow flap control motor - V71- -arrows-.
– Fit air flow flap control motor - V71- -1- onto shaft.

There is only one position in which the mounting -2- of the air flow flap control motor - V71- -1- fits onto the shaft -3-.

– Make sure the control motor is seated correctly on the shaft and in the mounting -arrows-.
– Continue installation in reverse order of removal.



4.4.2 Removing and installing air flow flap control motor - V71- , right-hand drive vehicles

Special tools and workshop equipment required

- Bit ratchet
- Angled screwdriver - VAS 6800-

Removing

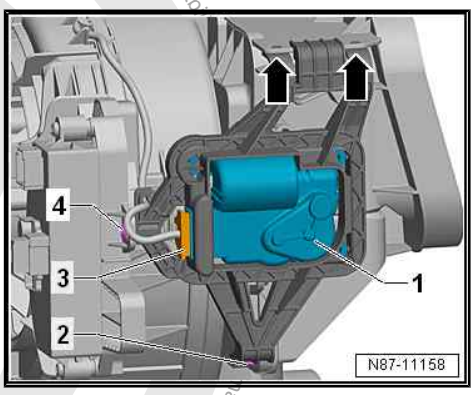
Note

The figures show a left-hand drive vehicle. Removal and installation are analogous.

– Remove glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment.
– Disconnect connector -3-.
– Unscrew bolts -2- and -4-.
– Unhook and remove air flow flap control motor - V71- -1- -arrows-.

Installing

– Install in reverse order of removal, observing the following:



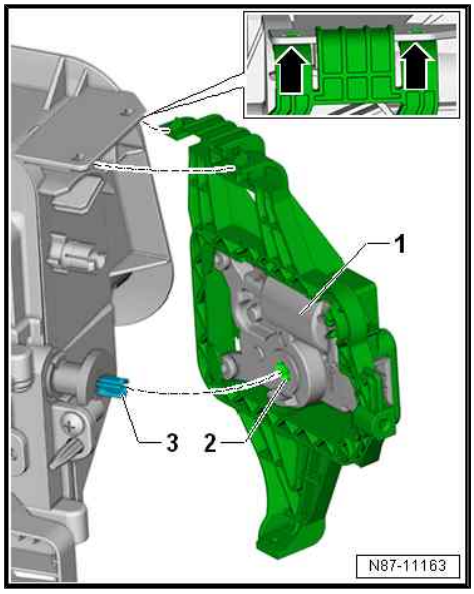
– Attach air flow flap control motor - V71- -arrows-.

– Fit air flow flap control motor - V71- -1- onto shaft.

There is only one position in which the mounting -2- of the air flow flap control motor - V71- -1- fits onto the shaft -3-.

– Make sure the control motor is seated correctly on the shaft and in the mounting -arrows-.

– Continue installation in reverse order of removal.



4.5 Removing and installing defroster flap control motor - V107-

⇒ “4.5.1 Removing and installing defroster flap control motor V107 , left-hand drive vehicles”, page 40

⇒ “4.5.2 Removing and installing defroster flap control motor V107 , right-hand drive vehicles”, page 41

4.5.1 Removing and installing defroster flap control motor - V107- , left-hand drive vehicles

Special tools and workshop equipment required

- Bit ratchet
- Angled screwdriver - VAS 6800-

Removing

– Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .

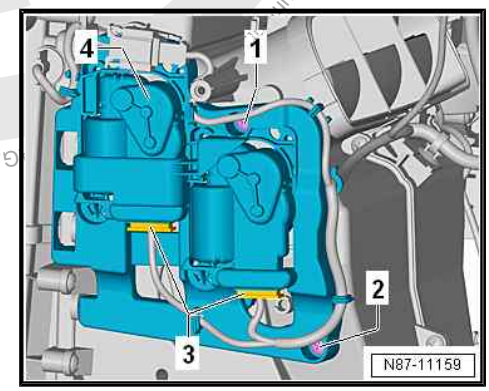
– Remove central tube for dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Removing and installing central tube for dash panel .

– Disconnect connectors -3-.

– Unscrew bolts -1- and -2-.

– Remove control motors with bracket.

– Unclip defroster flap control motor - V107- -4- from bracket.



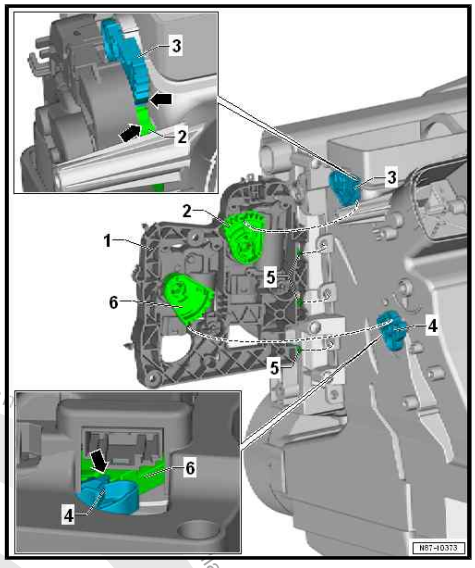
Installing

– Install in reverse order of removal, observing the following:

Note

Before installing, check condition and function of flaps.

– Fit control motors with bracket -1- into mountings -5-.
– Make sure that gears -2- and -6- engage with gears -3- and -4- -arrows- of heater and air conditioning unit.
– Check function of control motors.
– Continue installation in reverse order of removal.



4.5.2 Removing and installing defroster flap control motor - V107- , right-hand drive vehicles

Special tools and workshop equipment required

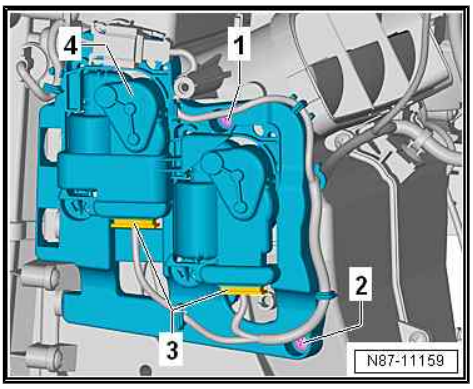
- Bit ratchet
- Angled screwdriver - VAS 6800-

Removing

Note

The figures show a left-hand drive vehicle. Removal and installation are analogous.

– Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .
– Remove central tube for dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Removing and installing central tube for dash panel.
– Disconnect connectors -3-.
– Unscrew bolts -1- and -2-.
– Remove control motors with bracket.
– Unclip defroster flap control motor - V107- -4- from bracket.



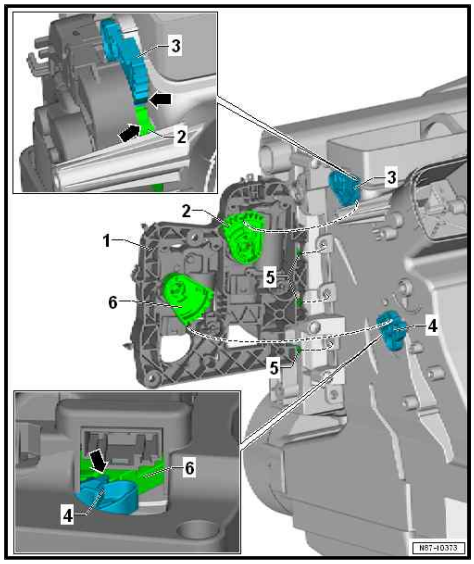
Installing

– Install in reverse order of removal, observing the following:

Note

Before installing, check function of flaps.

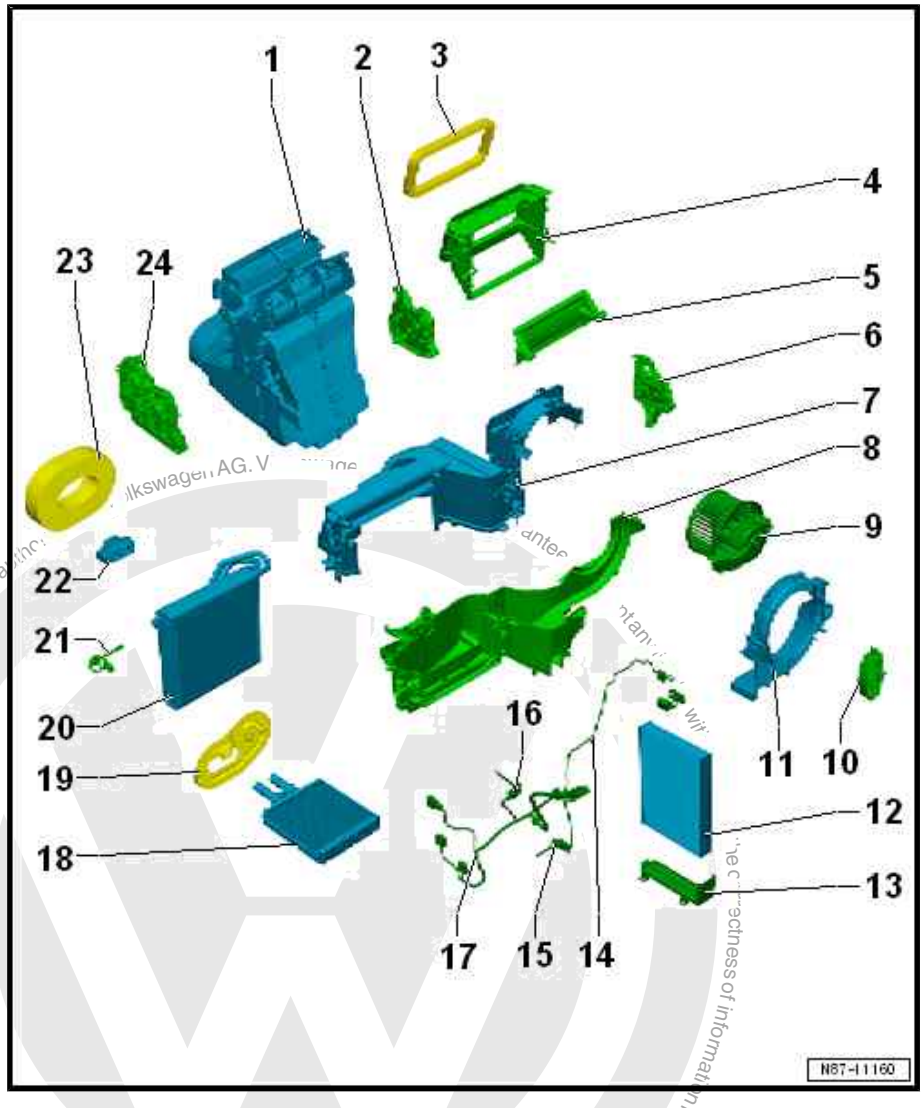
– Fit control motors with bracket -1- into mountings -5-.
– Make sure that gears -2- and -6- engage with gears -3- and -4- -arrows- of heater and air conditioning unit.
– Check function of control motors.
– Continue installation in reverse order of removal.



5 Front heater and air conditioning unit

5.1 Assembly overview - add-on parts of heater and air conditioning unit and of air intake box

5.1.1 Assembly overview - add-on parts of heater and air conditioning unit and of air intake box, LHD vehicles



1 - Air distribution housing

2 - Central flap control motor - V70-

- ❑ Removing and installing ⇒ page 36

3 - Seal

4 - Air intake housing

5 - Air flow flap

6 - Air flow flap control motor - V71-

- ❑ Removing and installing ⇒ page 38

7 - Upper part of evaporator housing

8 - Lower part of evaporator housing

9 - Fresh air blower - V2-

- ❑ Removing and installing ⇒ page 66

10 - Fresh air blower control unit - J126-

- ❑ Removing and installing ⇒ page 69

11 - Fresh air blower bracket

12 - Dust and pollen filter

- ❑ Removing and installing ⇒ page 65

13 - Cover

- ❑ For dust and pollen filter

14 - Wiring harness for fresh air blower - V2-

15 - Footwell vent temperature sender - G192-

- ❑ Removing and installing ⇒ page 91

16 - Centre vent temperature sender - G191-

- ❑ Removing and installing ⇒ page 91

17 - Wiring harness for control motors

18 - Heat exchanger for heater

- ❑ Removing and installing ⇒ page 71

19 - Seal

- ❑ Note installation position ⇒ page 73

20 - Evaporator

- ❑ Removing and installing ⇒ page 47

21 - Evaporator temperature sensor - G308-

- ❑ Removing and installing ⇒ page 54

22 - Expansion valve

- ❑ Removing and installing ⇒ page 17

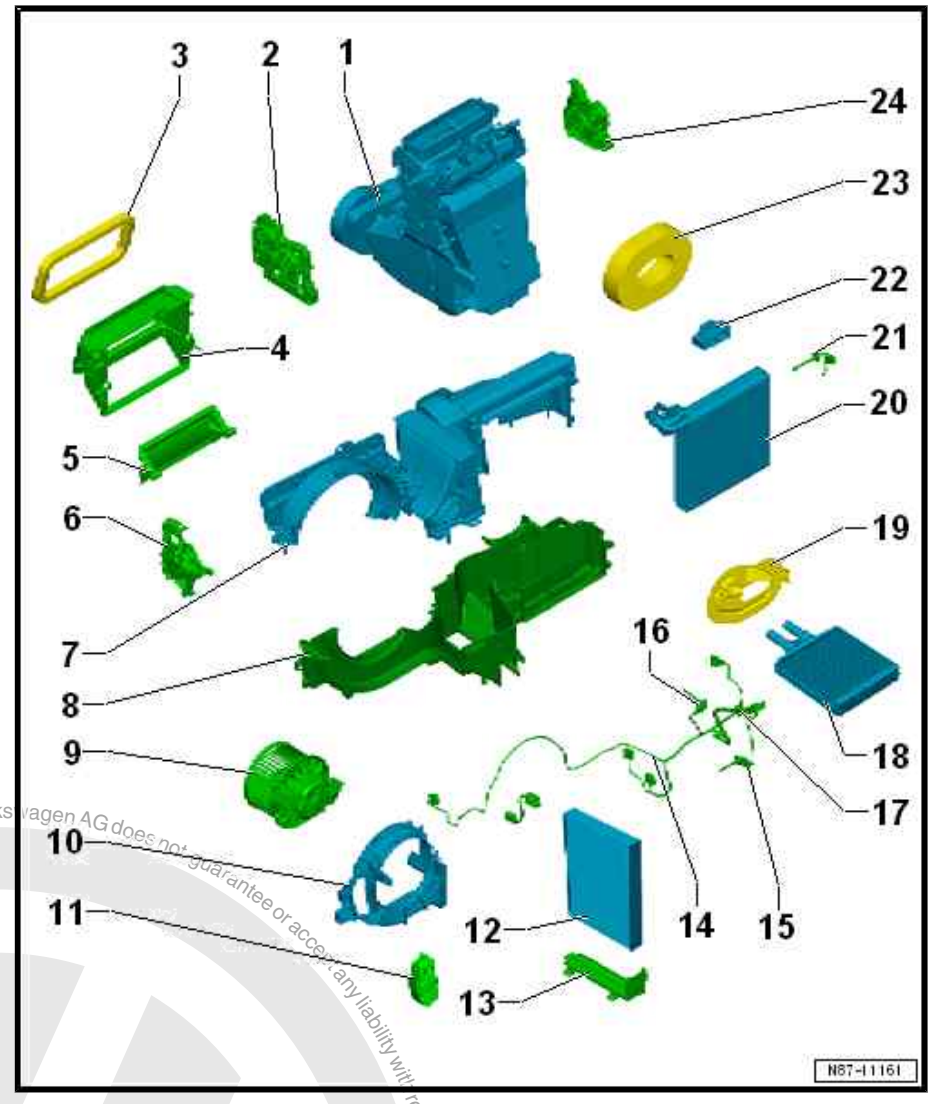
23 - Seal

- ❑ Note installation position ⇒ page 51

24 - Temperature flap control motor - V68- and defroster flap control motor - V107-

- ❑ Removing and installing ⇒ page 33

5.1.2 Assembly overview - add-on parts of heater and air conditioning unit and of air intake box, RHD vehicles



1 - Air distribution housing

2 - Temperature flap control motor - V68- and defroster flap control motor - V107-

- ❑ Removing and installing ⇒ page 33

3 - Seal

4 - Air intake housing

5 - Air flow flap

6 - Air flow flap control motor - V71-

- ❑ Removing and installing ⇒ page 38

7 - Upper part of evaporator housing

8 - Lower part of evaporator housing

9 - Fresh air blower - V2-

- ❑ Removing and installing ⇒ page 66

10 - Fresh air blower bracket

11 - Fresh air blower control unit - J126-

- ❑ Removing and installing ⇒ page 69

12 - Dust and pollen filter

- ❑ Removing and installing ⇒ page 65

13 - Cover

- ❑ For dust and pollen filter

14 - Wiring harness for fresh air blower - V2-

15 - Footwell vent temperature sender - G192-

- ❑ Removing and installing ⇒ page 91

16 - Centre vent temperature sender - G191-

- ❑ Removing and installing ⇒ page 91

17 - Wiring harness for control motors

18 - Heat exchanger for heater

- ❑ Removing and installing ⇒ page 71

19 - Seal

- ❑ Note installation position ⇒ page 73

20 - Evaporator

- ❑ Removing and installing ⇒ page 47

21 - Evaporator temperature sensor - G308-

- ❑ Removing and installing ⇒ page 55

22 - Expansion valve

- ❑ Removing and installing ⇒ page 17

23 - Seal

- ❑ Note installation position ⇒ page 51

24 - Central flap control motor - V70-

- ❑ Removing and installing ⇒ page 36

5.2 Assembly overview - evaporator housing

⇒ “5.2.1 Assembly overview - evaporator housing, left-hand drive vehicles”, page 46

⇒ “5.2.2 Assembly overview - evaporator housing, right-hand drive vehicles”, page 47

5.2.1 Assembly overview - evaporator housing, left-hand drive vehicles

1 - Evaporator housing, upper part

2 - Seal

- ❑ Note installation position ⇒ page 51

3 - Expansion valve

- ❑ Removing and installing ⇒ page 17

4 - Socket head bolt with washer

- ❑ 5 Nm
- ❑ Qty. 2

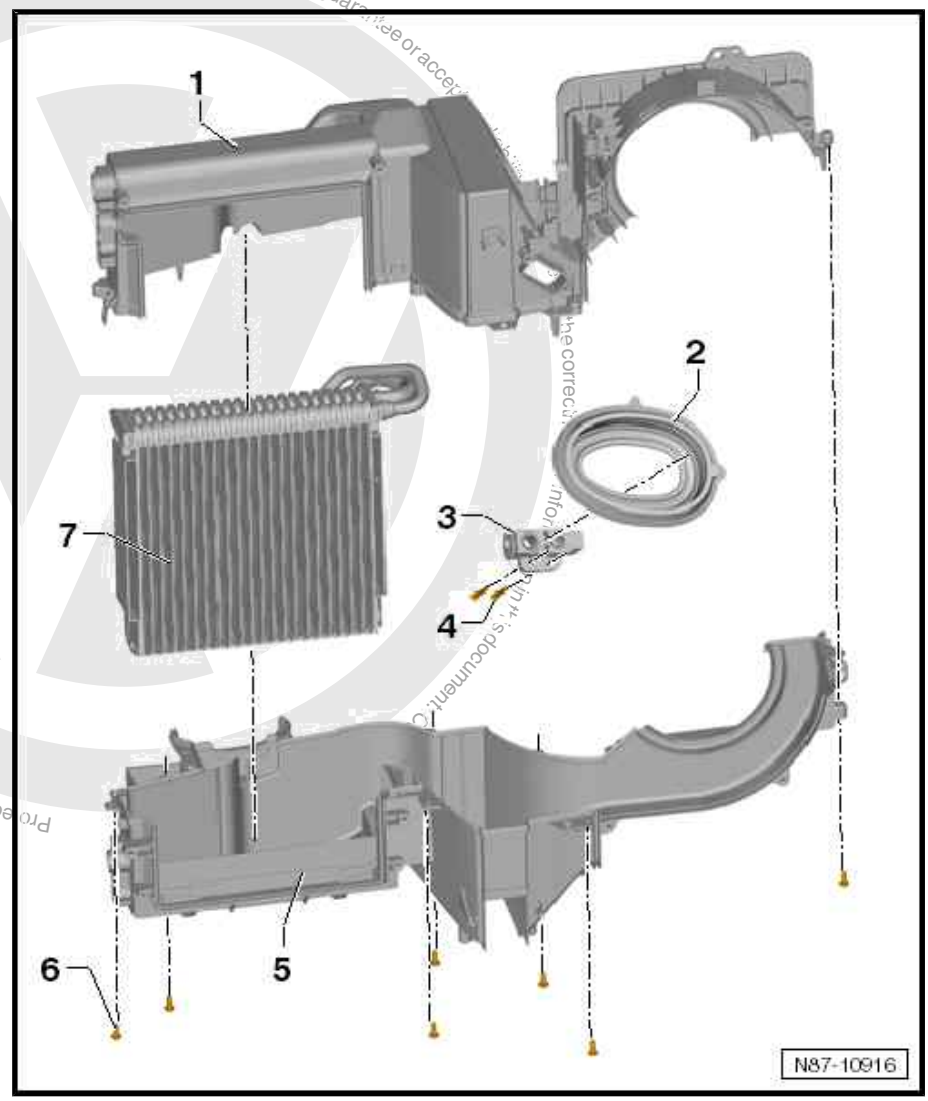
5 - Evaporator housing, lower part

6 - Bolts

- ❑ 1.5 Nm

7 - Evaporator

- ❑ Removing and installing ⇒ page 47



5.2.2 Assembly overview - evaporator housing, right-hand drive vehicles

1 - Evaporator housing, upper part

2 - Evaporator

- ❑ Removing and installing ⇒ page 47

3 - Evaporator housing, lower part

4 - Bolts

- ❑ 1.5 Nm

5 - Seal

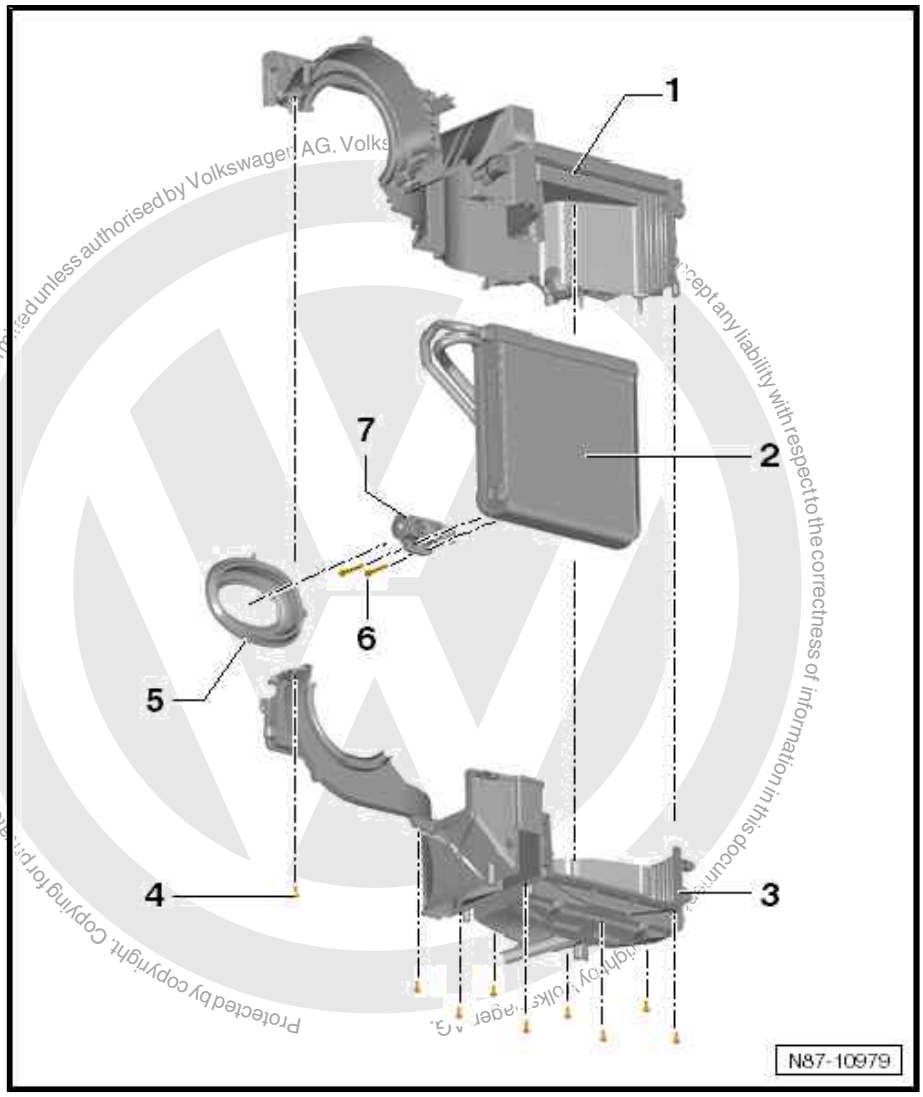
- ❑ Note installation position ⇒ page 51

6 - Socket head bolt with washer

- ❑ 5 Nm
- ❑ Qty. 2

7 - Expansion valve

- ❑ Removing and installing ⇒ page 17



5.3 Removing and installing evaporator

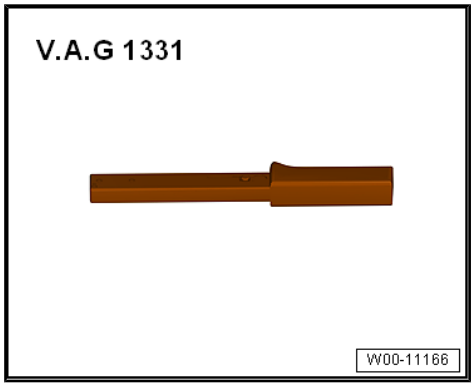
⇒ “5.3.1 Removing and installing evaporator, left-hand drive vehicles”, page 47

⇒ “5.3.2 Removing and installing evaporator, right-hand drive vehicles”, page 51

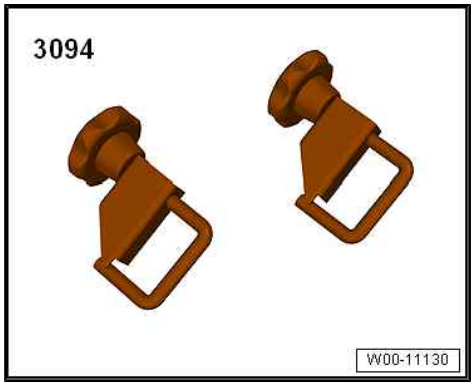
5.3.1 Removing and installing evaporator, left-hand drive vehicles

Special tools and workshop equipment required

- Torque wrench - V.A.G 1331/- (5 to 50 Nm)

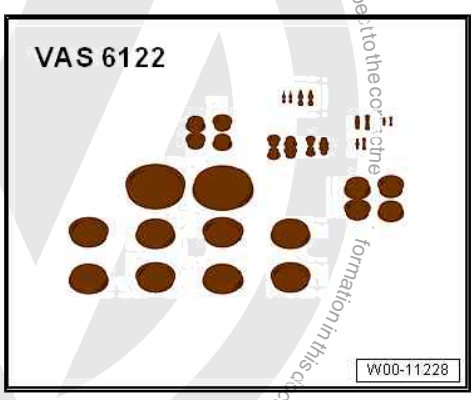


- Hose clamps to 25 mm - 3094-



- Drip tray for workshop hoist - VAS 6208-

- Engine bung set - VAS 6122-



- Air conditioner service station
- Commercially available compressed air gun

Removing

Note

- *The refrigerant must be extracted beforehand, with the air conditioning service station .*
- *The previously used air conditioner service station can still be used ⇒ Volkswagen Workshop Equipment catalogue.*
- *To prevent the intrusion of moisture, all components of the refrigerant circuit which have been opened must be sealed with suitable plugs.*
- *Releasing refrigerant into the environment is a punishable offence.*

CAUTION

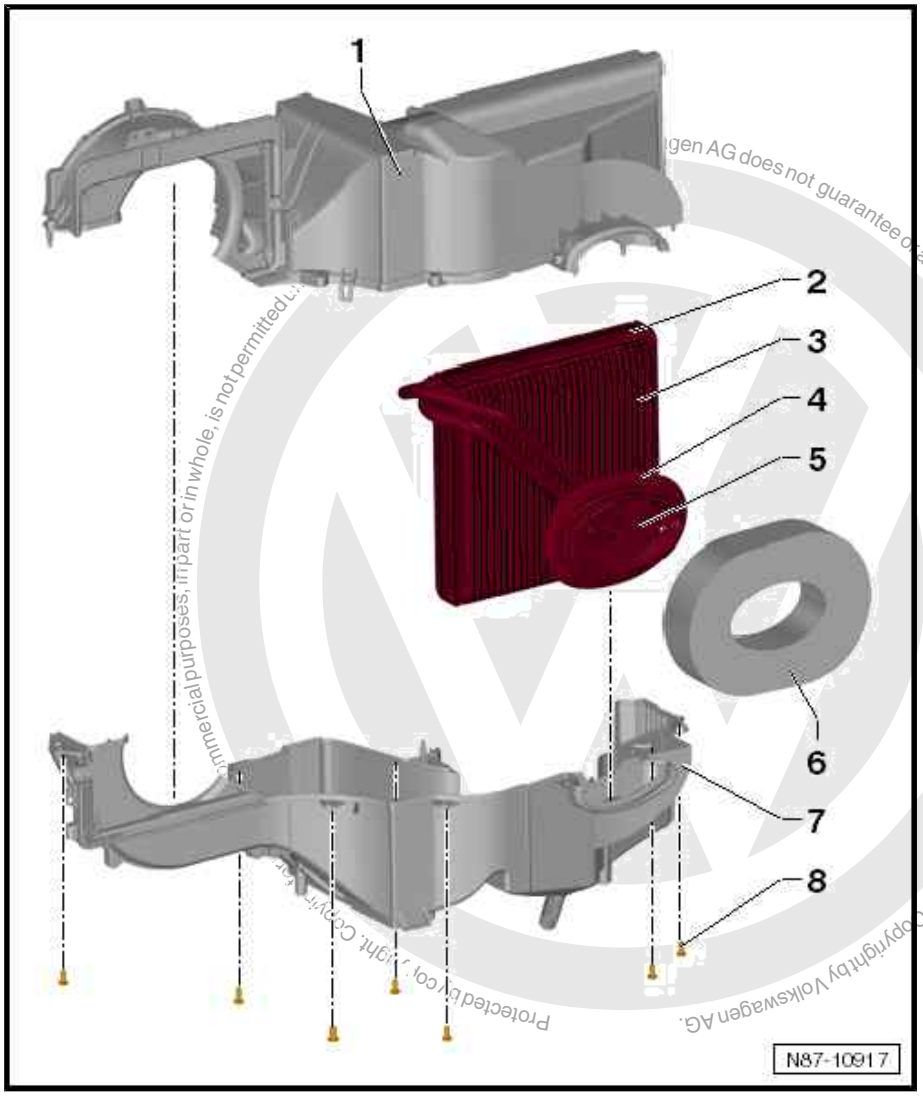
Risk of freezing injury caused by escaping pressurised refrigerant.

There is a risk of injury to the skin and parts of the body due to freezing.

- **Wear protective gloves.**
- **Wear safety goggles.**
- **Extract refrigerant and open the refrigerant circuit immediately afterwards.**
- **If more than 10 minutes have passed since the refrigerant was extracted, repeat the extraction process before opening the refrigerant circuit. Pressure could build up in the refrigerant circuit from continued evaporation.**

– Remove heater and air conditioning unit ⇒ page 55 .

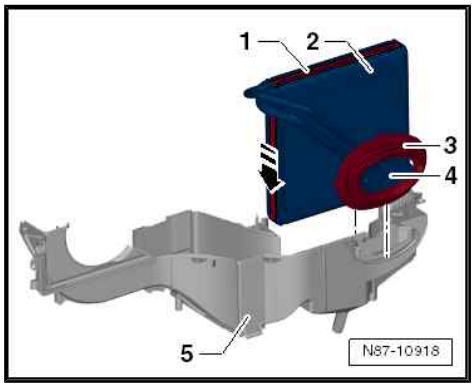
– Dismantling evaporator housing ⇒ page 46 .



– Remove evaporator -3- from lower part of evaporator housing -7-.

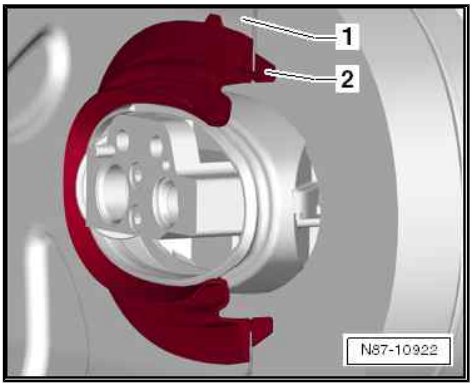
Installing

Ensure proper seating of gasket -3-:



Vehicles with air conditioning system

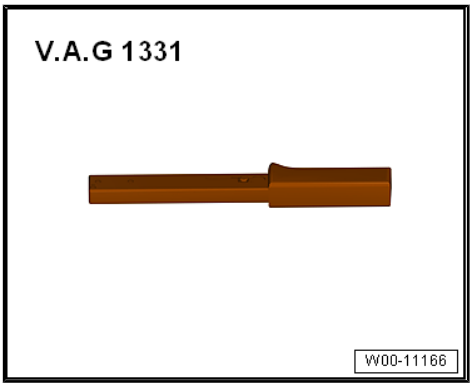
– Continue installation in reverse order of removal.



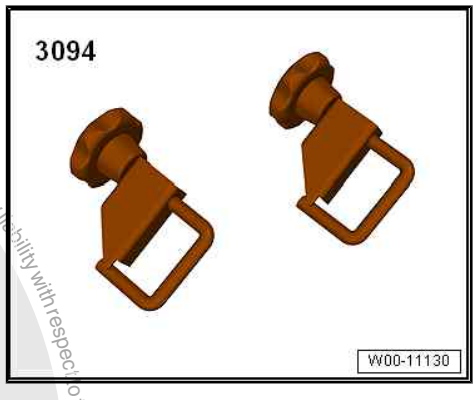
5.3.2 Removing and installing evaporator, right-hand drive vehicles

Special tools and workshop equipment required

♦ Torque wrench - V.A.G 1331/- (5 to 50 Nm)

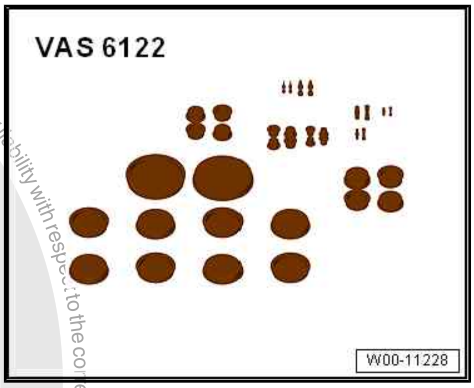


♦ Hose clamps to 25 mm - 3094-



♦ Drip tray for workshop hoist - VAS 6208-

- ♦ Engine bung set - VAS 6122-



- ♦ Air conditioner service station
- ♦ Commercially available compressed air gun

Removing

Note

- ♦ *The refrigerant must be extracted beforehand, with the air conditioning service station .*
- ♦ *The previously used air conditioner service stations can still be used ⇒ Volkswagen Workshop Equipment catalogue.*
- ♦ *To prevent the intrusion of moisture, all components of the refrigerant circuit which have been opened must be sealed with suitable plugs.*
- ♦ *Releasing refrigerant into the environment is a punishable offence.*

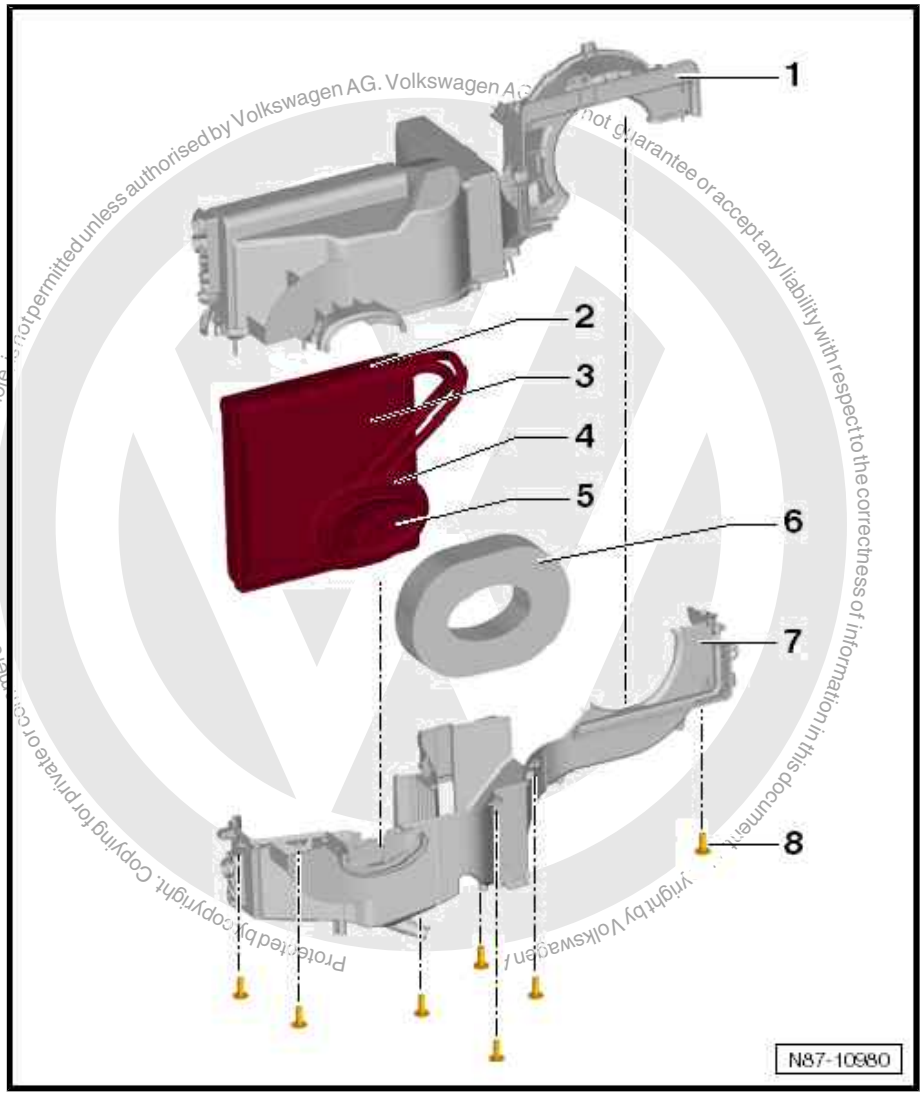
CAUTION

Risk of freezing injury caused by escaping pressurised refrigerant.

There is a risk of injury to the skin and parts of the body due to freezing.

- Wear protective gloves.
- Wear safety goggles.
- Extract refrigerant and open the refrigerant circuit immediately afterwards.
- If more than 10 minutes have passed since the refrigerant was extracted, repeat the extraction process before opening the refrigerant circuit. Pressure could build up in the refrigerant circuit from continued evaporation.

- Remove heater and air conditioning unit ⇒ page 55 .
- Dismantling evaporator housing ⇒ page 46 .



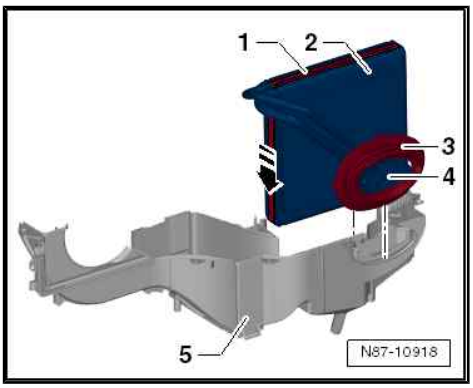
– Remove evaporator -3- from lower part of evaporator housing -7-.

Installing

Note

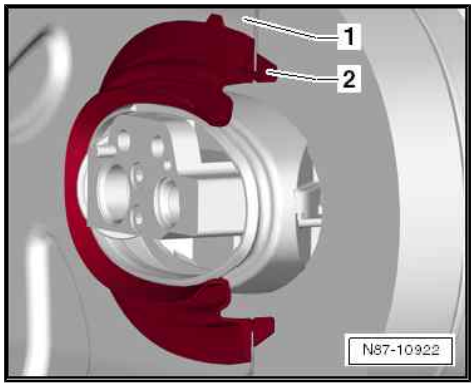
The diagram shows a left-hand drive vehicle.

Ensure proper seating of gasket -3-:



Vehicles with air conditioning system

– Continue installation in reverse order of removal.



5.4 Removing and installing evaporator temperature sensor - G308-

⇒ “5.4.1 Removing and installing evaporator temperature sensor G308 , left-hand drive vehicles”, page 54

⇒ “5.4.2 Removing and installing evaporator temperature sensor G308 , right-hand drive vehicles”, page 55

5.4.1 Removing and installing evaporator temperature sensor - G308- , left-hand drive vehicles

Note

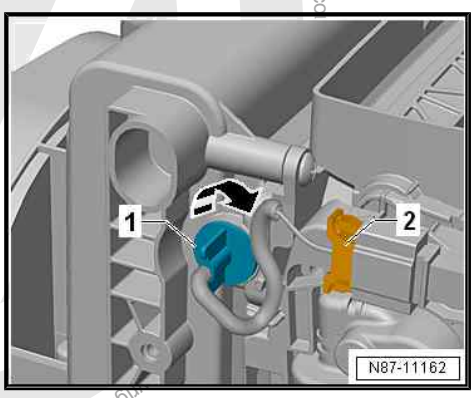
The evaporator temperature sensor - G308- is located on the left side of the heater and air conditioning unit.

Removing

– Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .

– Disconnect connector -2-.

– Turn evaporator temperature sensor - G308- -1- 90° in direction of -arrow- and remove.



Installing

– Install evaporator temperature sensor - G308- in reverse order of removal.

Note

Make sure that the evaporator temperature sensor - G308- wiring is routed correctly.

5.4.2 Removing and installing evaporator temperature sensor - G308- , right-hand drive vehicles

Note

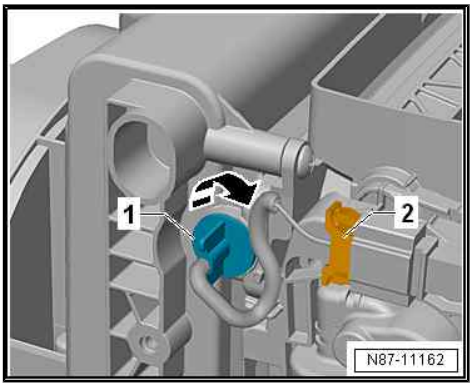
The illustration shows a left-hand drive vehicle. But removal and installation are analogous. The evaporator temperature sensor - G308- is located on the right side of the heater and air conditioning unit.

Removing

– Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .

– Disconnect connector -2-.

– Turn evaporator temperature sensor - G308- -1- 90° in direction of -arrow- and remove.



Installing

– Install evaporator temperature sensor - G308- in reverse order of removal.

Note

Make sure that the evaporator temperature sensor - G308- wiring is routed correctly.

5.5 Removing and installing heater and air conditioning unit

⇒ “5.5.1 Removing and installing heater and air conditioning unit, left-hand drive vehicles”, page 55

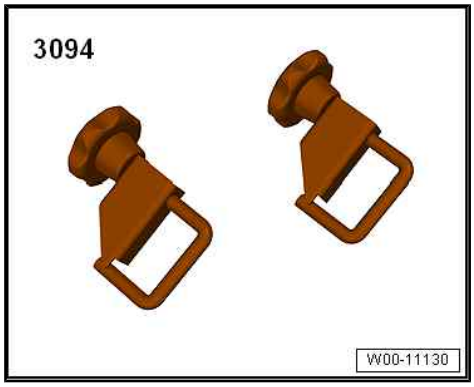
⇒ “5.5.2 Removing and installing heater and air conditioning unit, right-hand drive vehicles”, page 59

5.5.1 Removing and installing heater and air conditioning unit, left-hand drive vehicles

Special tools and workshop equipment required

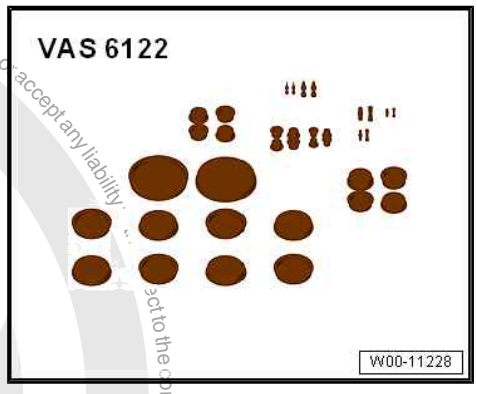
♦ Torque wrench - V.A.G 1331/- (5 to 50 Nm)

- Hose clamps to 25 mm - 3094-



- Drip tray for workshop hoist - VAS 6208-

- Engine bung set - VAS 6122-



- Air conditioner service station
- Commercially available compressed air gun

Removing

– Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

– Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .

– Cover floor covering at front.

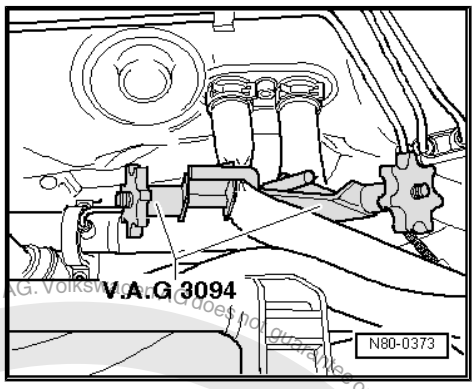
CAUTION

On a warm engine, the cooling system is under high pressure. Danger of scalding by steam and hot coolant.

There is a risk of injury to the skin and parts of the body due to scalding.

- **Wear protective gloves.**
- **Wear safety goggles.**
- **To relieve pressure, cover the cap of the coolant expansion tank with a cloth, and open it carefully.**

– Mark and clamp off coolant hoses in engine compartment using hose clamps up to 40 mm - 3093- and remove from heat exchanger.

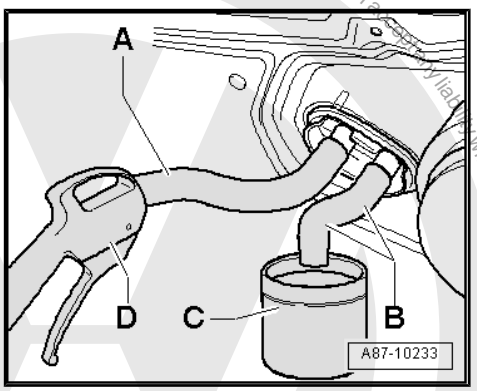


– Push a piece of hose -A- and -B- onto both connections to heat exchanger.

– Hold a container -C- under hose from lower connection -B-.

– Using a compressed air gun -D-, carefully blow coolant out of heat exchanger into container -C- via hose -A-.

– Extract refrigerant with air conditioning service station .



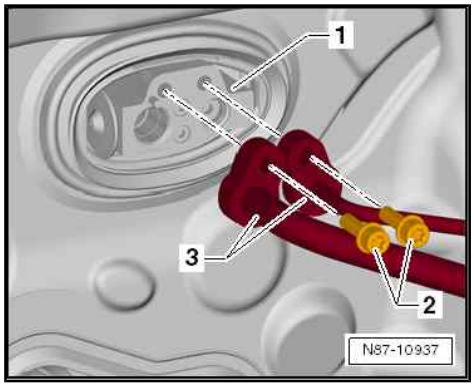
CAUTION

Risk of freezing injury caused by escaping pressurised refrigerant.

There is a risk of injury to the skin and parts of the body due to freezing.

- **Wear protective gloves.**
- **Wear safety goggles.**
- **Extract refrigerant and open the refrigerant circuit immediately afterwards.**
- **If more than 10 minutes have passed since the refrigerant was extracted, repeat the extraction process before opening the refrigerant circuit. Pressure could build up in the refrigerant circuit from continued evaporation.**

– From engine compartment, unscrew bolts -2- for refrigerant lines -3-.
– Disconnect refrigerant lines -3- from expansion valve -1-.



Note

- *Seal open connections.*
- *To seal open connections of expansion valve, use e.g. sealing cover from spare expansion valve.*

– Cover floor covering in interior of vehicle with a waterproof foil and absorbent paper.
– Disconnect connectors from heater and air conditioner unit.
– Remove intermediate piece for defroster vent ⇒ page 76 .
– Remove intermediate piece for centre vent ⇒ page 77 .

1 - Central tube for dash panel

❑ Removing and installing ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Removing and installing central tube for dash panel .

2 - Bolt

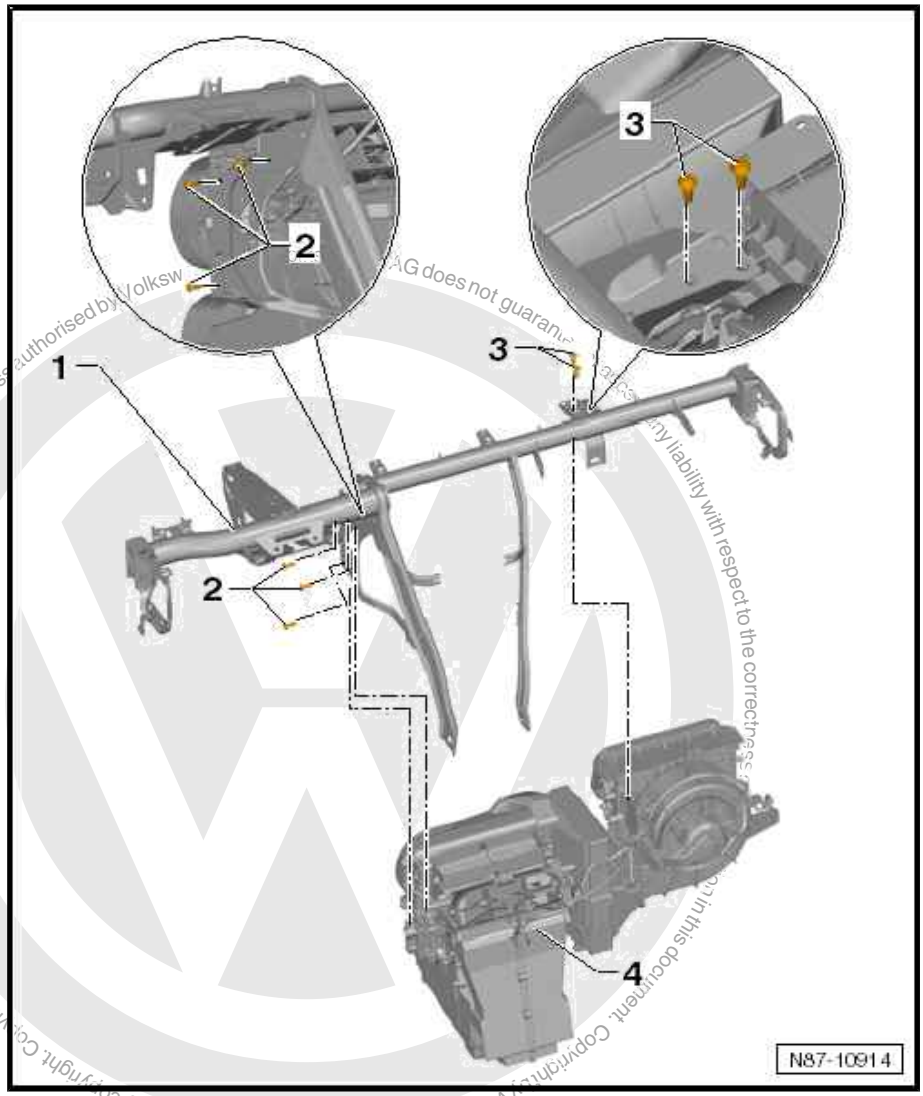
❑ Qty. 3
❑ 3.5 Nm

3 - Bolt

❑ Qty. 2
❑ 3.5 Nm

4 - Heater and air conditioning unit

❑ Removing and installing ⇒ page 55



Note

- *Install all cable ties and other fasteners for the wiring harness at the same places from which they were detached or cut when the air conditioner was removed.*
- *The air conditioning wiring harness is removed along with the heater and air conditioning unit.*

– Unscrew bolts -2- and -3-.

– Remove central tube for dash panel -1- ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Removing and installing central tube for dash panel .

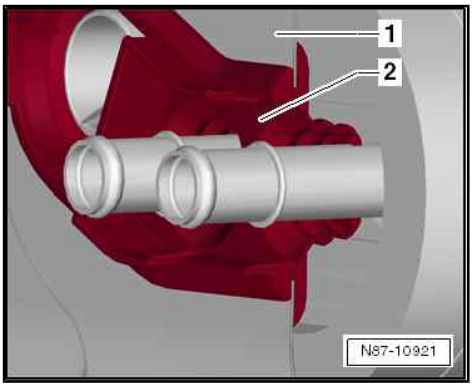
– Remove heater and air conditioner unit.

Installing

– Install in reverse order of removal, observing the following:

– Install seal -2- on heater and air conditioning unit first.

– When installing heater and air conditioning unit, pull seal -2- through bulkhead -1-.



Note

- *Ensure that seal -2- in plenum chamber bulkhead -1- is properly seated.*
- *The condensate drain connection must not be covered by the seal -2- ⇒ page 73 .*

– After installation, fill with coolant ⇒ Electric drive; Rep. gr. 93 ; Cooling system/coolant, vehicles with high-voltage system; Draining and filling coolant .

– Fill with refrigerant ⇒ page 6 .

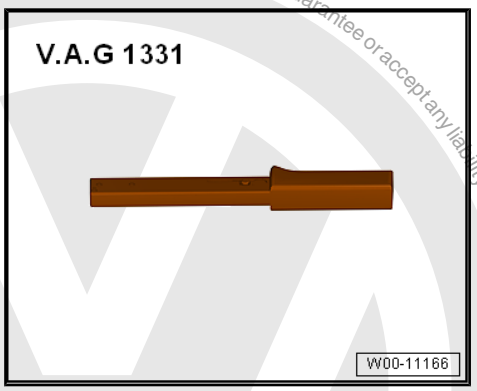
Specified torque:

- ⇒ “2.3 Removing and installing expansion valve”, page 17
- Install dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel
- Install central tube for dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Removing and installing central tube for dash panel .
- Connect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

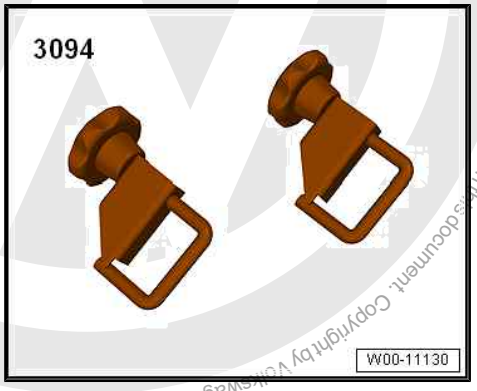
5.5.2 Removing and installing heater and air conditioning unit, right-hand drive vehicles

Special tools and workshop equipment required

- Torque wrench - V.A.G 1331/- (5 to 50 Nm)

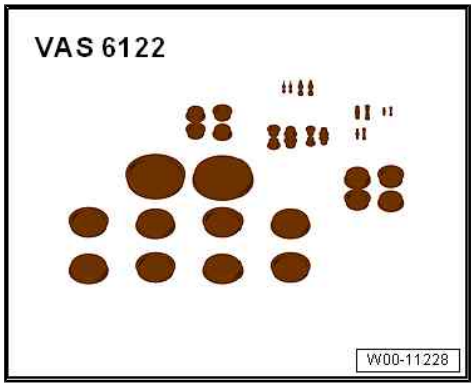


- Hose clamps to 25 mm - 3094-



- Drip tray for workshop hoist - VAS 6208-

- Engine bung set - VAS 6122-



- Air conditioner service station
- Commercially available compressed air gun

Removing

– Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

– Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .

– Cover floor covering at front.

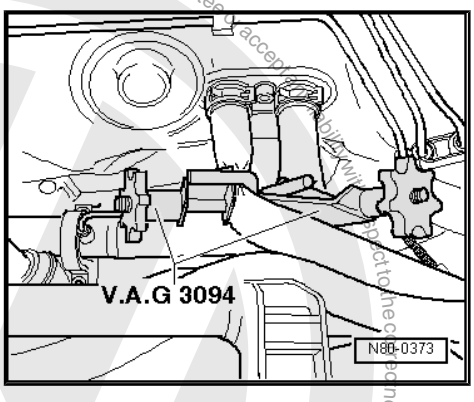
CAUTION

On a warm engine, the cooling system is under high pressure. Danger of scalding by steam and hot coolant.

There is a risk of injury to the skin and parts of the body due to scalding.

- **Wear protective gloves.**
- **Wear safety goggles.**
- **To relieve pressure, cover the cap of the coolant expansion tank with a cloth, and open it carefully.**

– Mark and clamp off coolant hoses in engine compartment using hose clamps up to 40 mm - 3093- and remove from heat exchanger.

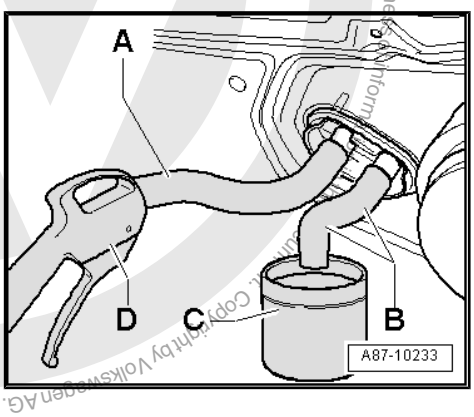


– Push a piece of hose -A- and -B- onto both connections to heat exchanger.

– Hold a container -C- under hose from lower connection -B-.

– Using a compressed air gun -D-, carefully blow coolant out of heat exchanger into container -C- via hose -A-.

– Extract refrigerant with air conditioning service station .



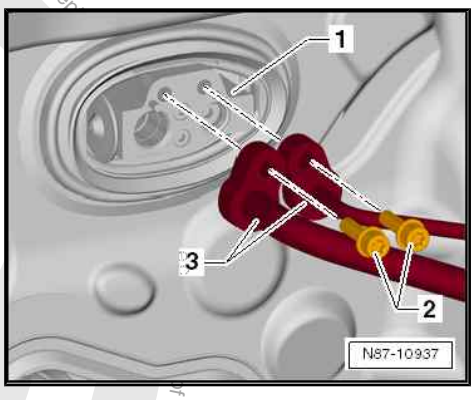
CAUTION

Risk of freezing injury caused by escaping pressurised refrigerant.

There is a risk of injury to the skin and parts of the body due to freezing.

- **Wear protective gloves.**
- **Wear safety goggles.**
- **Extract refrigerant and open the refrigerant circuit immediately afterwards.**
- **If more than 10 minutes have passed since the refrigerant was extracted, repeat the extraction process before opening the refrigerant circuit. Pressure could build up in the refrigerant circuit from continued evaporation.**

– From engine compartment, unscrew bolts -2- for refrigerant lines -3-.
– Disconnect refrigerant lines -3- from expansion valve -1-.



Note

- *Seal open connections.*
- *To seal open connections of expansion valve, use e.g. sealing cover from spare expansion valve.*

– Cover floor covering in interior of vehicle with a waterproof foil and absorbent paper.
– Disconnect connectors from heater and air conditioner unit.
– Remove intermediate piece for defroster vent ⇒ page 76 .
– Remove intermediate piece for centre vent ⇒ page 77 .

1 - Central tube for dash panel

❑ Removing and installing ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Removing and installing central tube for dash panel .

2 - Bolt

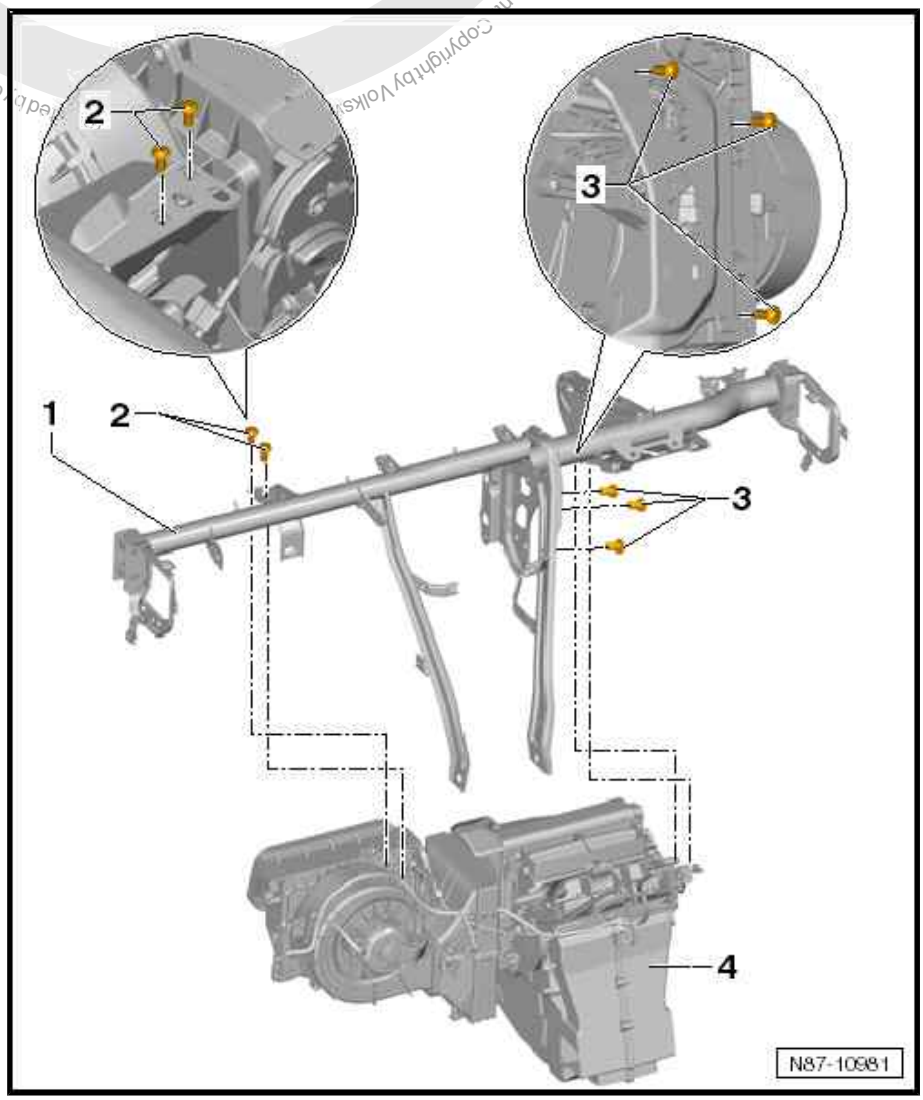
❑ Qty. 2
❑ 3.5 Nm

3 - Bolt

❑ Qty. 3
❑ 3.5 Nm

4 - Heater and air conditioning unit

❑ Removing and installing ⇒ page 55



Note

- *Install all cable ties and other fasteners for the wiring harness at the same places from which they were detached or cut when the air conditioner was removed.*
- *The air conditioning wiring harness is removed along with the heater and air conditioning unit.*

– Unscrew bolts -2- and -3-.

– Remove central tube for dash panel -1- ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Removing and installing central tube for dash panel .

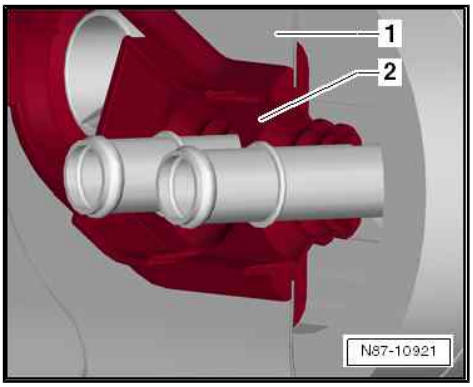
– Remove heater and air conditioner unit.

Installing

– Install in reverse order of removal, observing the following:

– Install seal -2- on heater and air conditioning unit first.

– When installing heater and air conditioning unit, pull seal -2- through bulkhead -1-.



Note

- *Ensure that seal -2- in plenum chamber bulkhead -1- is properly seated.*
- *The condensate drain connection must not be covered by the seal -2- ⇒ page 73 .*

– After installation, fill with coolant ⇒ Electric drive; Rep. gr. 93 ; Cooling system/coolant, vehicles with high-voltage system; Draining and filling coolant .

– Fill with refrigerant ⇒ page 6 .

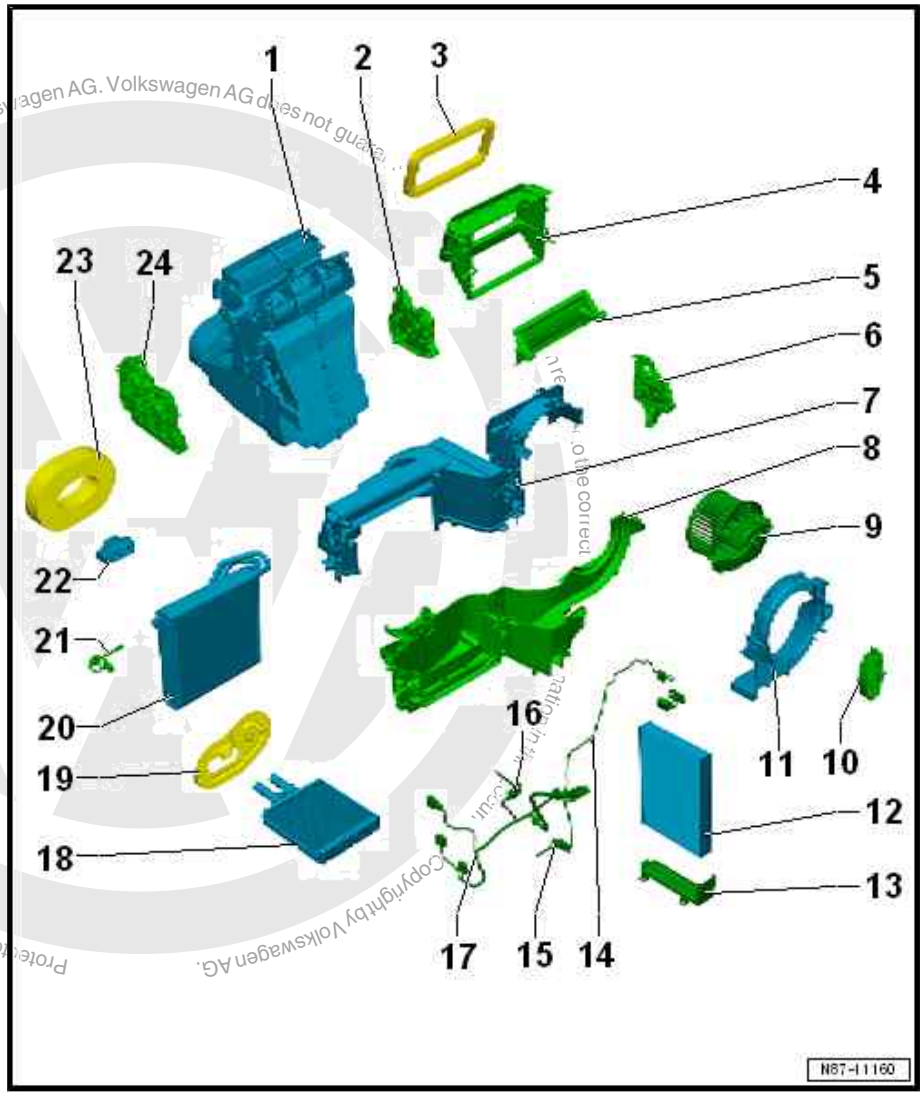
Specified torque:

- ⇒ “2.3 Removing and installing expansion valve”, page 17
- Install dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel
- Install central tube for dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Removing and installing central tube for dash panel .
- Connect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

5.6 Dismantling and assembling heater and air conditioning unit

Note

The diagram shows a left-hand drive vehicle. Removal and installation are analogous for right-hand drive units.



1 - Air distribution housing

2 - Central flap control motor - V70-

- ❑ Removing and installing ⇒ page 36

3 - Seal

4 - Air intake housing

5 - Air flow flap

6 - Air flow flap control motor - V71-

- ❑ Removing and installing ⇒ page 38

7 - Upper part of evaporator housing

8 - Lower part of evaporator housing

9 - Fresh air blower - V2-

- ❑ Removing and installing ⇒ page 66

10 - Fresh air blower control unit - J126-

- ❑ Removing and installing ⇒ page 69

11 - Fresh air blower bracket

12 - Dust and pollen filter

- ❑ Removing and installing ⇒ page 65

13 - Cover

- ❑ For dust and pollen filter

14 - Wiring harness for fresh air blower - V2-

15 - Footwell vent temperature sender - G192-

- ❑ Removing and installing ⇒ page 91

16 - Centre vent temperature sender - G191-

- ❑ Removing and installing ⇒ page 91

17 - Wiring harness for control motors

18 - Heat exchanger for heater

- ❑ Removing and installing ⇒ page 71

19 - Seal

- ❑ Note installation position ⇒ page 73

20 - Evaporator

- ❑ Removing and installing ⇒ page 47

21 - Evaporator temperature sensor - G308-

- ❑ Removing and installing ⇒ page 54

22 - Expansion valve

- ❑ Removing and installing ⇒ page 17

23 - Seal

- ❑ Note installation position ⇒ page 51

24 - Temperature flap control motor - V68- and defroster flap control motor - V107-

❑ Removing and installing ⇒ page 33

5.7 Removing and installing dust and pollen filter

⇒ "5.7.1 Removing and installing dust and pollen filter, left-hand drive vehicles", page 65

⇒ "5.7.2 Removing and installing dust and pollen filter, right-hand drive vehicles", page 65

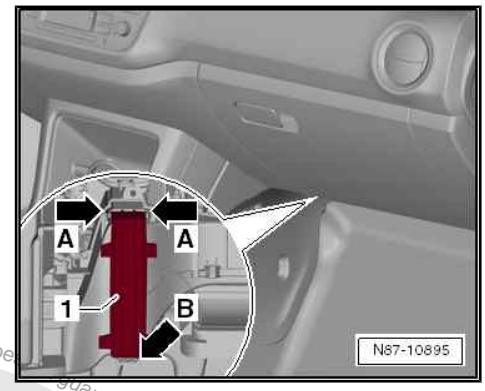
5.7.1 Removing and installing dust and pollen filter, left-hand drive vehicles

Removing

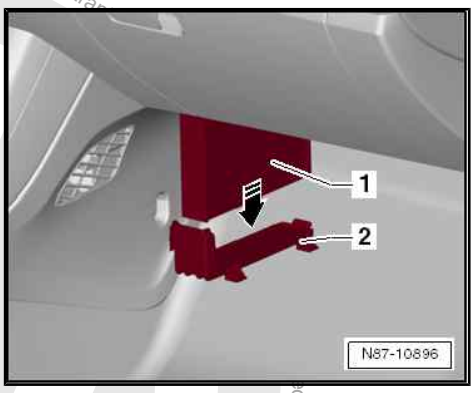
The dust and pollen filter is accessible from the footwell on the front passenger side.

– Press locking lugs -arrow A- inwards and fold dust and pollen filter cover -1- downwards.

– Unhook and remove dust and pollen filter cover -1- from mounting -arrow B-.



– Pull dust and pollen filter -1- in -direction of arrow- out of heater unit.



Installing

– Observe installation position of dust and pollen filter.

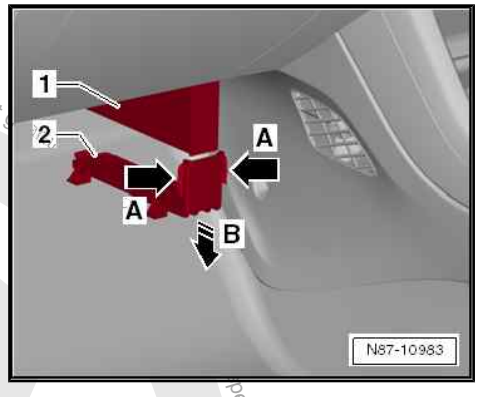
– Install in reverse order.

5.7.2 Removing and installing dust and pollen filter, right-hand drive vehicles

Removing

The dust and pollen filter is accessible from the footwell on the front passenger side.

– Press locking lugs -arrow A- inwards and fold dust and pollen filter cover -2- downwards.
– Pull dust and pollen filter -1- in -direction of arrow B- out of heater unit.



Installing

– Observe installation position of dust and pollen filter.
– Install in reverse order.

5.8 Removing and installing fresh air blower - V2-

⇒ “5.8.1 Removing and installing fresh air blower V2 , left-hand drive vehicles”, page 66

⇒ “5.8.2 Removing and installing fresh air blower V2 , right-hand drive vehicles”, page 67

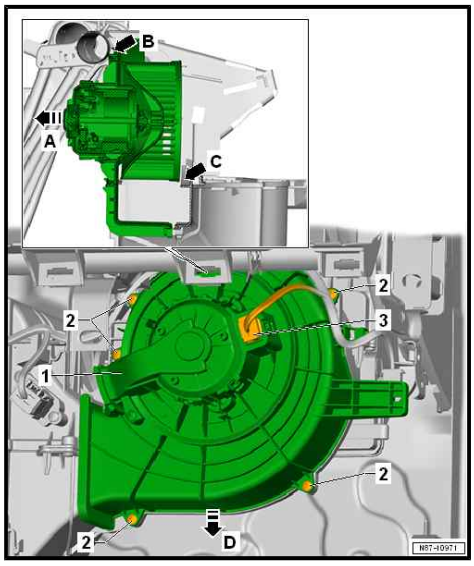
5.8.1 Removing and installing fresh air blower - V2-, left-hand drive vehicles

Note

The illustration shows an left-hand drive version of the up!. Removal and installation are analogous.

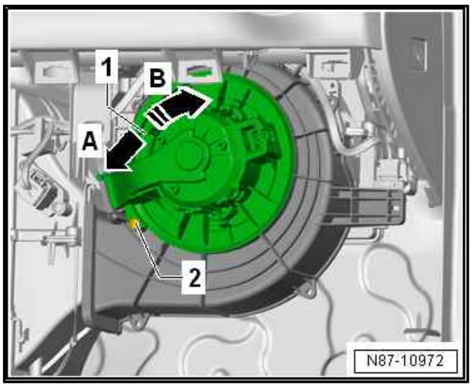
Removing

– Remove glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .
– Disconnect connector -3- on fresh air blower - V2- -1-.
– Unscrew bolts -2-.
– Tilt housing with fresh air blower - V2- forwards in -direction of arrow A-, taking care that the fresh air blower - V2- does not make contact at points -arrow B- and -arrow C-.
– Pull housing with fresh air blower - V2- downwards slightly in -direction of arrow D-.



– Loosen bolt -2-.

– Press retaining lug -arrow A- to the left, turn fresh air blower - V2- -1- in -in direction of arrow B- and remove it from housing.



Note

If the fresh air blower - V2- is to be reused, do not set it on fan wheel.

Installing

Install in reverse order of removal, observing the following:

– The connector must engage correctly in the housing.

NOTICE

Improper handling may damage the fresh air blower.

Imbalance leading to customer complaints may occur during operation.

– **Avoid applying excessive pressure to the fan wheel.**

– **Never change position of the balancing weights on fan wheel.**

Specified torque:

Component	Specified torque
Bolts on fresh air blower bracket	1 Nm

♦ Install glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .

5.8.2 Removing and installing fresh air blower - V2- , right-hand drive vehicles

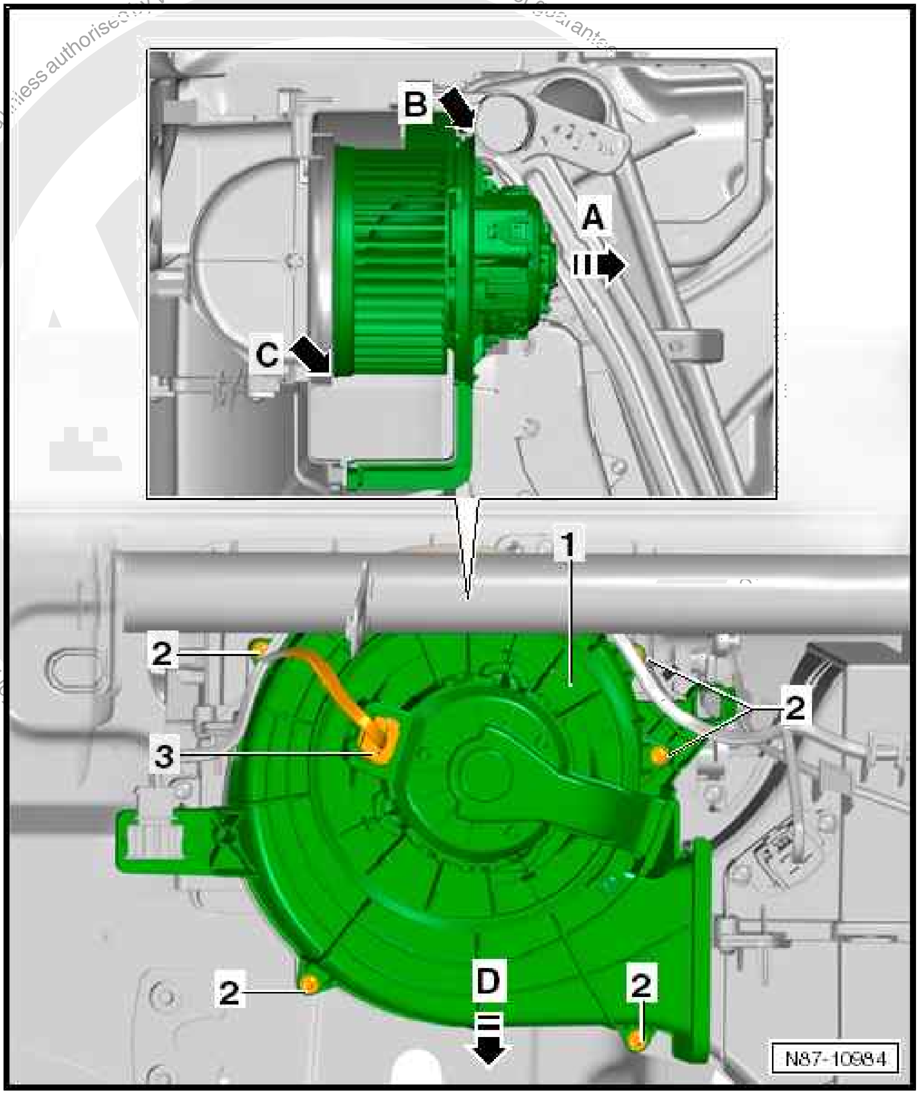
Note

The illustration shows an right-hand drive version of the up!. Removal and installation are analogous.

Removing

– Remove glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .

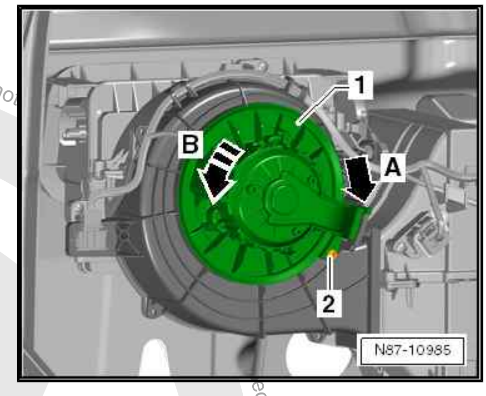
– Disconnect connector -3- on fresh air blower - V2- -1-.



– Unscrew bolts -2-.

– Tilt housing with fresh air blower - V2- forwards in -direction of arrow A-, taking care that the fresh air blower - V2- does not make contact at points -arrow B- and -arrow C-.

– Pull housing with fresh air blower - V2- downwards slightly in -direction of arrow D-.



– Loosen bolt -2-.

– Press retaining lug -arrow A- to right; then turn fresh air blower - V2- -1- in direction of -arrow B-, and remove it from housing.

Note

If the fresh air blower - V2- is to be reused, do not set it on fan wheel.

Installing

Install in reverse order of removal, observing the following:

– The connector must engage correctly in the housing.

NOTICE

Improper handling may damage the fresh air blower.

Imbalance leading to customer complaints may occur during operation.

– **Avoid applying excessive pressure to the fan wheel.**

– **Never change position of the balancing weights on fan wheel.**

Specified torque:

Component	Specified torque
Bolts on fresh air blower bracket	1 Nm

♦ Install glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .

5.9 Removing and installing fresh air blower control unit - J126-

⇒ “5.9.1 Removing and installing fresh air blower control unit J126 , left-hand drive vehicles”, page 69

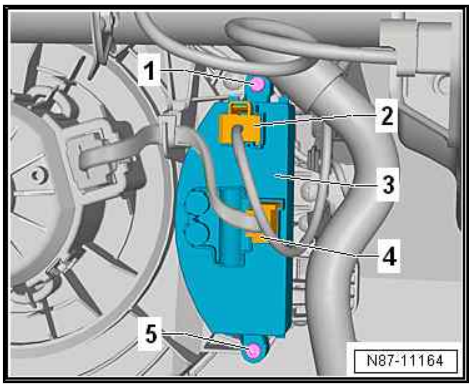
⇒ “5.9.2 Removing and installing fresh air blower control unit J126 , right-hand drive vehicles”, page 70

5.9.1 Removing and installing fresh air blower control unit - J126- , left-hand drive vehicles

As of week 12/2014, a new fresh air blower control unit - J126- and a new housing for the heater and air conditioning unit have been introduced ⇒ page 70 .

Removing

– Remove glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .



– Disconnect connectors -2- and -4- from fresh air blower control unit - J126- -3-.

– Unscrew bolts -1- and -5-.

> **⚠ CAUTION**
>
> Risk of burns when touching hot cooling surface of control unit.
>
> Risk of burns to the hands.
>
> – Wear protective gloves.

– Remove fresh air blower control unit - J126- -3-.

Installing

– Install in the reverse order of removal. When doing this, note the following:

As of week 12/2014, a new fresh air blower control unit - J126- and a new housing for the heater and air conditioning unit have been introduced .

Situation: new housing and old fresh air blower control unit - J126-

• Add seal between housing and fresh air blower control unit - J126- ⇒ Electronic parts catalogue (ETKA) .

Situation: old housing and new fresh air blower control unit - J126-

• Raise fresh air blower control unit - J126- by fitting 2 x 3 spacers (0.8 mm) between housing and fresh air blower control unit - J126- ⇒ Electronic parts catalogue (ETKA) .

• Seal the gap with a seal ⇒ Electronic parts catalogue (ETKA) .

Specified torque:

Component	Specified torque
Bolts on fresh air blower control unit - J126-	1 Nm

♦ Install glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .

5.9.2 Removing and installing fresh air blower control unit - J126- , right-hand drive vehicles

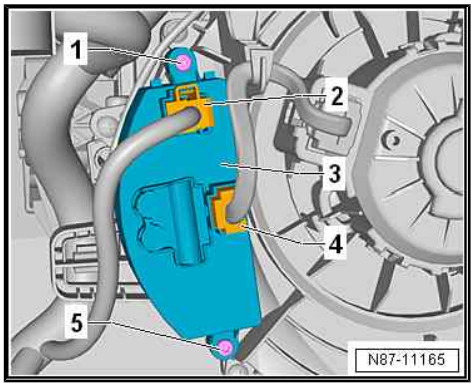
As of week 12/2014, a new fresh air blower control unit - J126- and a new housing for the heater and air conditioning unit have been introduced ⇒ page 71 .

Removing

– Remove glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .

– Disconnect connectors -2- and -4- from fresh air blower control unit - J126- -3-.

– Unscrew bolts -1- and -5-.



CAUTION

Risk of burns when touching hot cooling surface of control unit.
Risk of burns to the hands.
– Wear protective gloves.

– Remove fresh air blower control unit - J126- -3-.

Installing

– Install in the reverse order of removal. When doing this, note the following:

As of week 12/2014, a new fresh air blower control unit - J126- and a new housing for the heater and air conditioning unit have been introduced .

Situation: new housing and old fresh air blower control unit - J126-

- Add seal between housing and fresh air blower control unit - J126- ⇒ Electronic parts catalogue (ETKA) .

Situation: old housing and new fresh air blower control unit - J126-

- Raise fresh air blower control unit - J126- by fitting 2 x 3 spacers (0.8 mm) between housing and fresh air blower control unit - J126- ⇒ Electronic parts catalogue (ETKA) .
- Seal the gap with a seal ⇒ Electronic parts catalogue (ETKA) .

Specified torque:

Component	Specified torque
Bolts on fresh air blower control unit - J126-	1 Nm

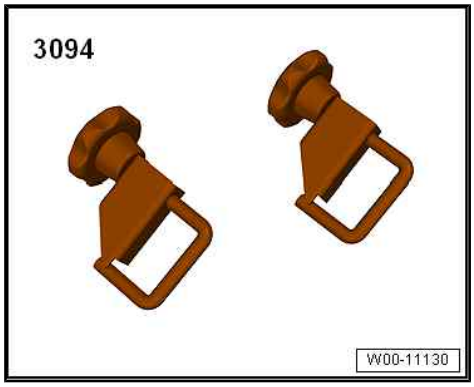
♦ Install glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .

5.10 Removing and installing heat exchanger

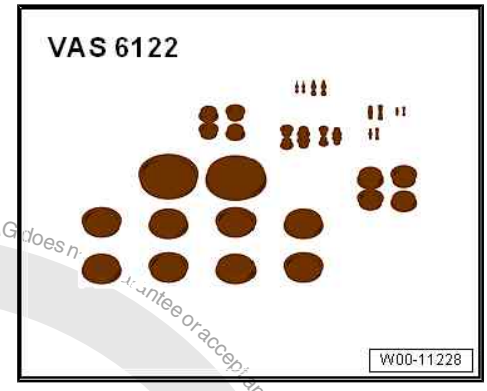
Special tools and workshop equipment required

♦ Drip tray for workshop hoist - VAS 6208-

- Hose clamps to 25 mm - 3094-



- Compressed air gun, commercially available
- Engine bung set - VAS 6122-



Removing

– Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

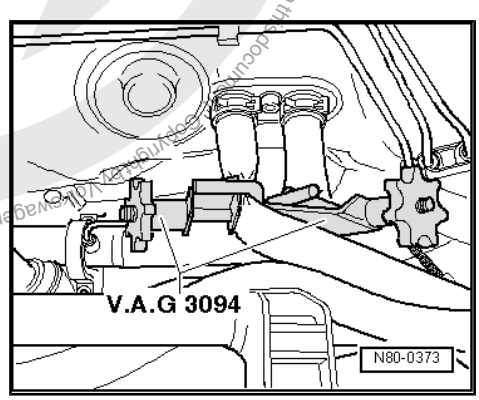
⚠ CAUTION

On a warm engine, the cooling system is under high pressure. Danger of scalding by steam and hot coolant.

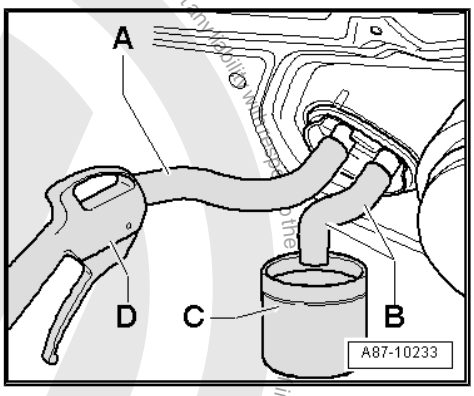
There is a risk of injury to the skin and parts of the body due to scalding.

- **Wear protective gloves.**
- **Wear safety goggles.**
- **To relieve pressure, cover the cap of the coolant expansion tank with a cloth, and open it carefully.**

– Mark and clamp off coolant hoses in engine compartment using hose clamps up to 25 mm - 3094- and remove from heat exchanger.



– Push a piece of hose -A- and -B- onto both connections to heat exchanger.
– Hold a container -C- under hose from lower connection -B-.
– Using a compressed air gun -D-, carefully blow coolant out of heat exchanger into container -C- via hose -A-.
– Remove heater and air conditioning unit ⇒ page 55 .
– Dismantling heater and air conditioning unit ⇒ page 63 .
– Remove heat exchanger.



Installing

Install in reverse order of removal, observing the following:

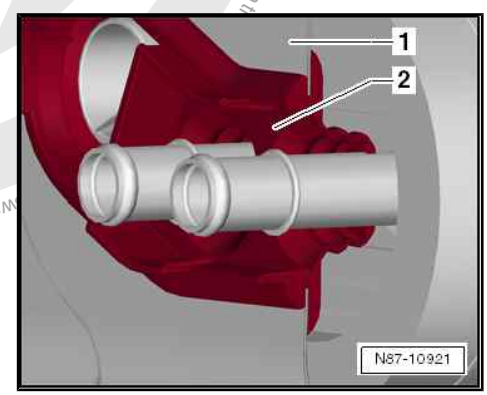
– Ensure proper installation position of coolant hoses and seal between heat exchanger and plenum chamber bulkhead.

Seal between evaporator housing and plenum chamber bulkhead

Note

After renewal of heat exchanger, renew coolant.

– Fill with coolant ⇒ Electric drive; Rep. gr. 93 ; Cooling system/ coolant, vehicles with high-voltage system; Draining and filling coolant .

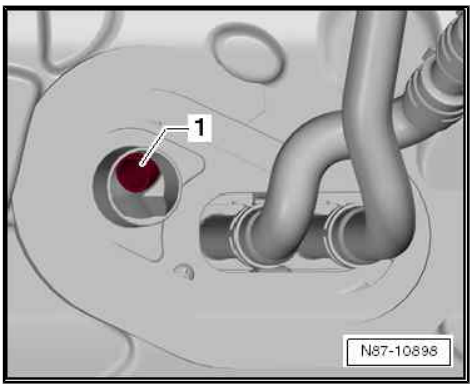


5.11 Removing and installing condensation drain

Condensate drain connection

Note

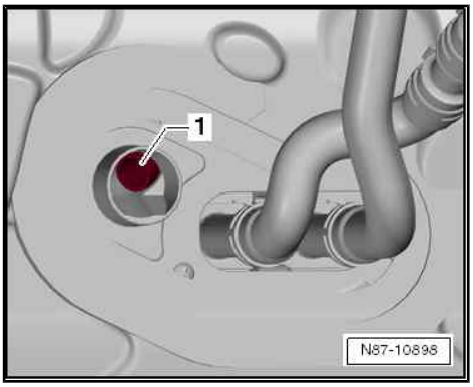
- *The condensate drain connection -1- is located behind the heat shield.*
- *The condensate drain connection -1- is a permanent part of the heater and air conditioning unit and cannot be removed or installed separately.*



5.12 Checking condensation drain

Condensate drain connection

- The condensate drain connection -1- must not be blocked by wax, dirt or seal.



6 Air duct

6.1 Assembly overview - air duct and air distribution in passenger compartment

Note

The illustration shows an left-hand drive version of the up!.

1 - Dash panel

2 - Defroster vent

- ❑ Removing and installing ⇒ page 75

3 - Intermediate piece for defroster vent

- ❑ Removing and installing ⇒ page 76

4 - Removing and installing centre vent

- ❑ Removing and installing ⇒ page 75

5 - Dash panel vent, side

- ❑ Removing and installing ⇒ page 76

6 - Vent on driver or front passenger side

- ❑ Removing and installing ⇒ page 76

7 - Intermediate piece for centre vent

- ❑ Removing and installing ⇒ page 77

8 - Footwell vent on driver side or front passenger side

- ❑ Removing and installing ⇒ page 77

9 - Footwell vent on driver side or front passenger side

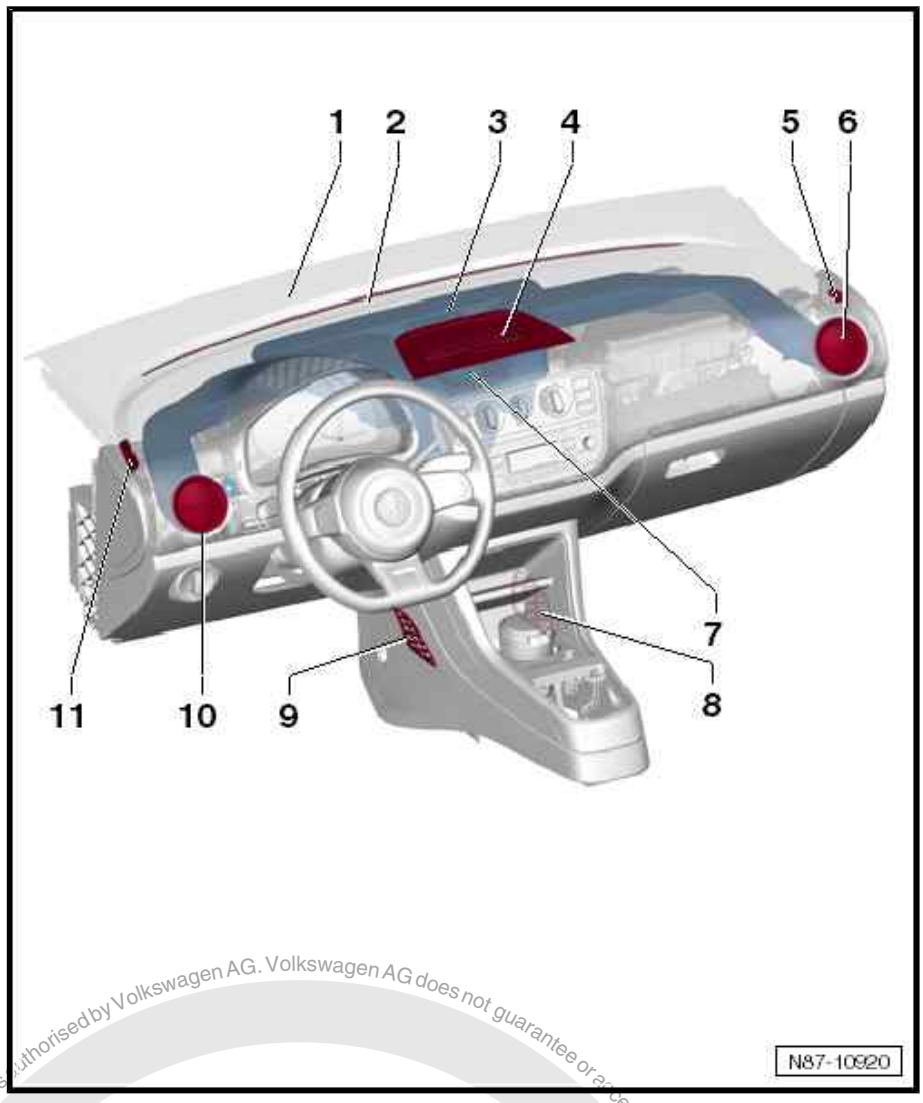
- ❑ Removing and installing ⇒ page 77

10 - Vent on driver or front passenger side

- ❑ Removing and installing ⇒ page 76

11 - Dash panel vent, side

- ❑ Removing and installing ⇒ page 76



6.2 Removing and installing centre vent

Note

The vent is a permanent part of the dash panel and cannot be removed.

6.3 Removing and installing defroster vent

Note

The vent is a permanent part of the dash panel and cannot be removed.

6.4 Removing and installing dash panel vent, side

Note

The vent is a permanent part of the dash panel and cannot be removed.

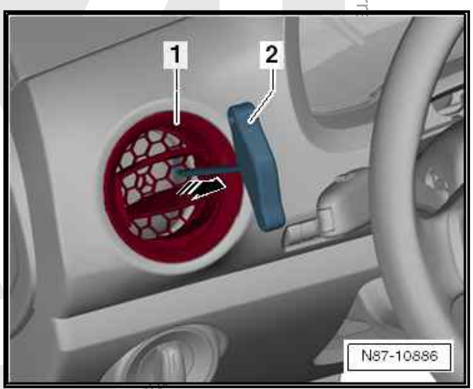
6.5 Removing and installing right or left vent

Special tools and workshop equipment required

- ♦ Hook - 3438-

Removing

– Pull out vent -1- in direction of -arrow- using hook - 3438- -2-.



Note

The diagram shows a left-hand drive vehicle.

The removal of the vents on both sides is identical, but one is a mirror image of the other.

Installing

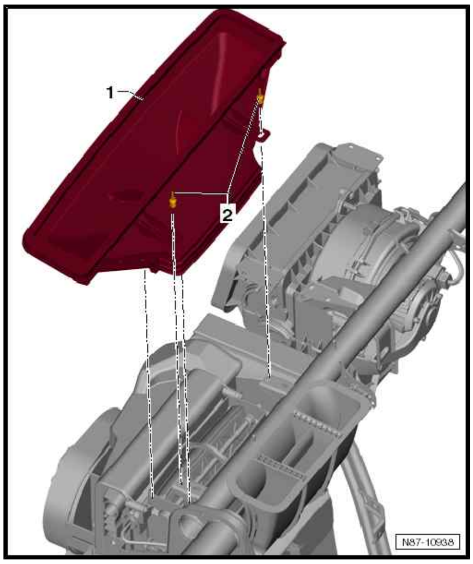
– Press vent in lightly until it locates.

6.6 Removing and installing air duct for defroster vent

Removing

– Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .

– Remove clips -2-.



Note

The diagram shows a left-hand drive vehicle.

– Remove intermediate piece for defroster vent -1- from heater and air conditioning unit.

Installing

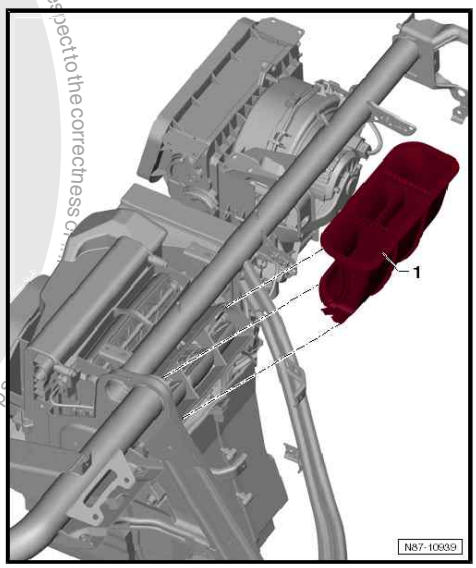
Install in reverse order of removal.

6.7 Removing and installing air duct for centre vent

Removing

– Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .

– Remove intermediate piece for centre vent -1- upwards from heater and air conditioning unit -2-.



Note

The diagram shows a left-hand drive vehicle.

Installing

Install in reverse order of removal.

6.8 Removing and installing footwell air vents on driver and front passenger sides

The vents are permanent parts of the heater and cannot be removed.

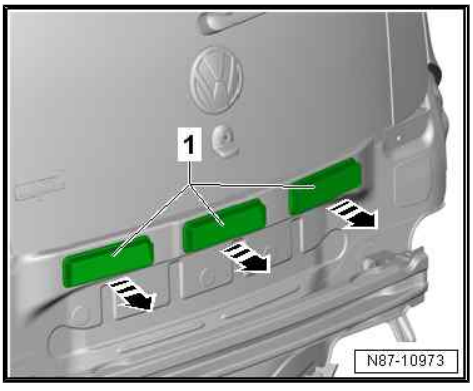
6.9 Checking forced ventilation for passenger compartment

Note

- *The stale air escapes via ventilation outlets in the luggage compartment trim.*
- *If the ventilation is to work properly, the vent openings must not be covered.*
- *The ventilation frames can be found on the cross panel under the bumper.*

Check

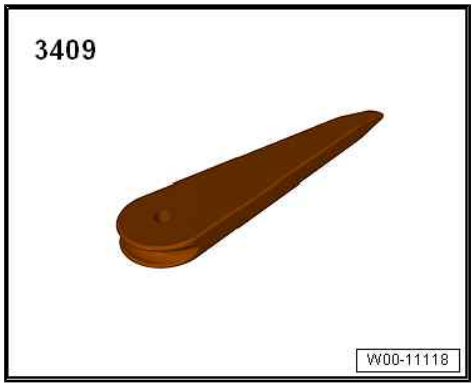
– The sealing lips in the ventilation frame -1- must be free to move and close by themselves.



6.10 Removing and installing forced ventilation for passenger compartment

Special tools and workshop equipment required

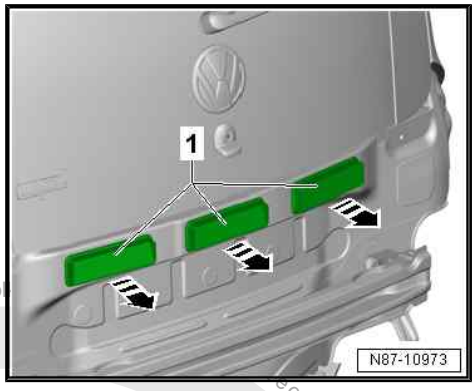
- Removal wedge - 3409-



Removing

– Remove rear bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Rear bumper; Removing and installing rear bumper .

– Unclip ventilation frame -1- in direction of -arrow- from cross panel using removal wedge - 3409- .



Installing

– Ventilation frame must engage audibly.

– Continue installation in reverse order of removal.

6.11 Removing and installing fresh air intake

⇒ “6.11.1 Removing and installing fresh air intake, left-hand drive vehicles”, page 78

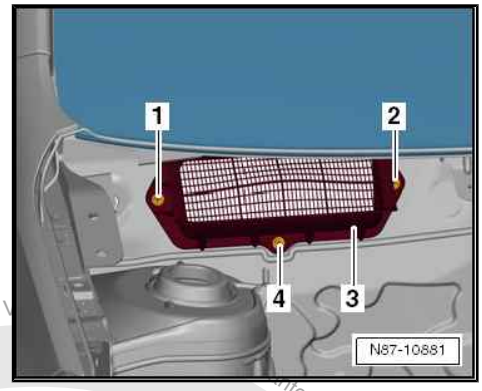
⇒ “6.11.2 Removing and installing fresh air intake , right-hand drive vehicles”, page 79

6.11.1 Removing and installing fresh air intake, left-hand drive vehicles

Removing

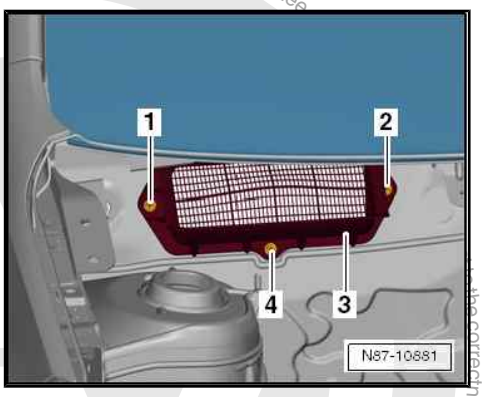
– Remove right plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .

– Loosen nuts -1-, -2- and -4-.
– Remove fresh air intake connecting piece -3- from plenum chamber.



Installing

– Fit fresh air intake connecting piece -3-, and start nuts -1- and -2-.
– Tighten nut -4-.
– Tighten nuts -1- and -2-.
– Continue installation in reverse order of removal.



Specified torques:

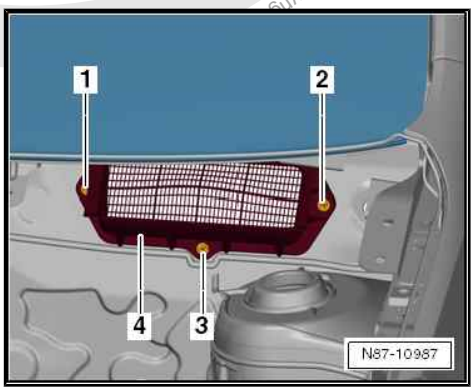
Component	Specified torque
Nut	2.5 Nm

♦ Install right plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .

6.11.2 Removing and installing fresh air intake , right-hand drive vehicles

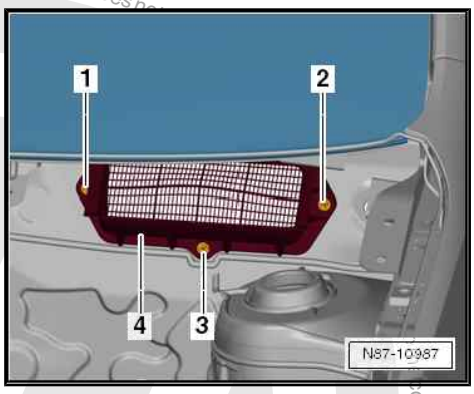
Removing

– Remove left plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .
– Loosen nuts -1-, -2- and -3-.
– Remove fresh air intake connecting piece -4- from plenum chamber.



Installing

– Fit fresh air intake connecting piece -4-, and start nuts -1- and -2-.
– Tighten nut -3-.
– Tighten nuts -1- and -2-.
– Continue installation in reverse order of removal.



Specified torques:

Component	Specified torque
Nut	2.5 Nm

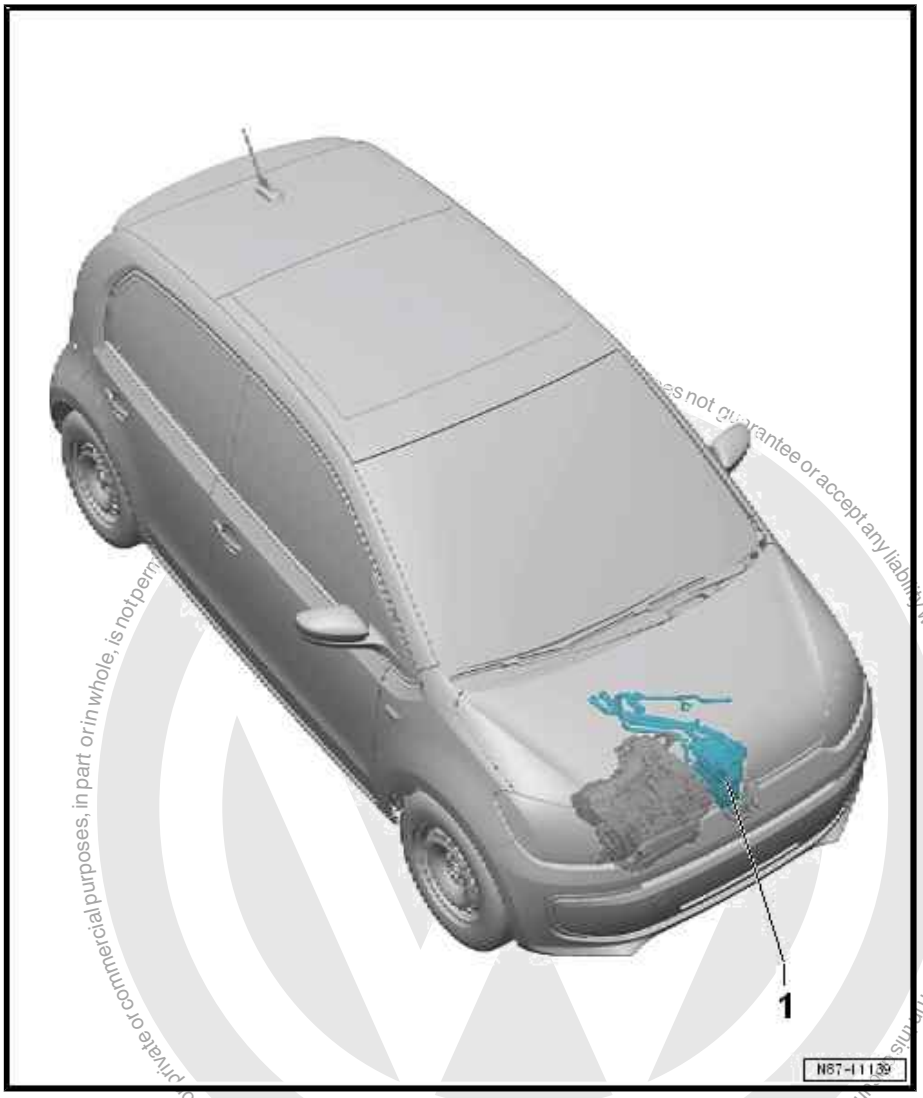
♦ Install left plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .

7 Coolant circuit

7.1 Overview of fitting locations – coolant circuit

1 - High-voltage heater (PTC) - Z115-

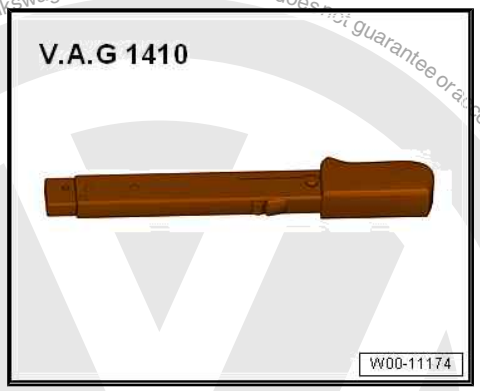
- ❑ With control unit for high-voltage heater (PTC) - J848-
- ❑ Removing and installing ⇒ page 81



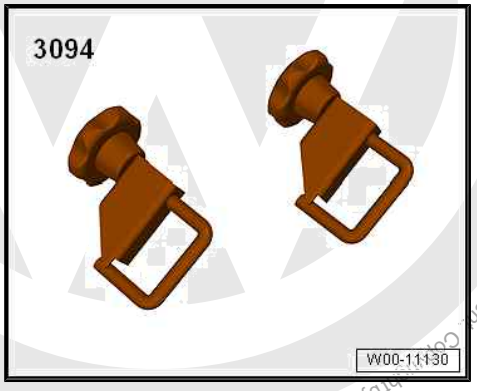
7.2 Removing and installing high-voltage heater (PTC) - Z115- / high-voltage heater (PTC) - J848-

Special tools and workshop equipment required

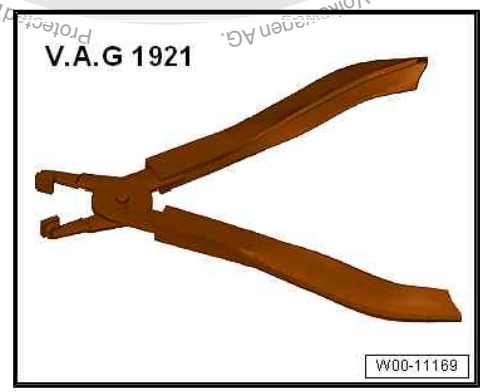
- Torque wrench - V.A.G 1410/-



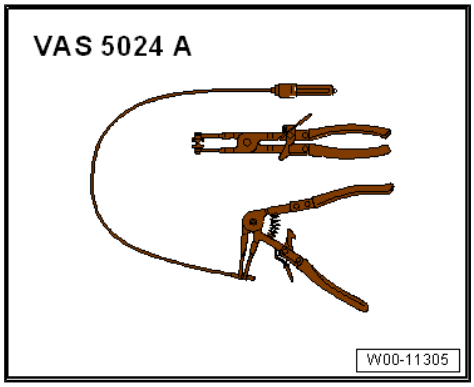
- Hose clamps, up to 25 mm in diameter - 3094-



- Hose clip pliers - V.A.G 1921-



- Pliers for spring-type clips - VAS 5024A-



- Commercially available Torx-30 IPR

Removing

– Observe safety precautions when working on the high-voltage system ⇒ page 1 .

– Observe safety precautions when working in the vicinity of high-voltage components ⇒ page 2 .

– Observe the risk classification of the high-voltage system ⇒ Electric drive; Rep. gr. 00 ; Risk classification of the high-voltage system .

DANGER

Danger to life from high voltage.

Severe or fatal injury from electric shock.

– The high-voltage system must be de-energised by a suitably qualified technician.

– De-energise high-voltage system ⇒ Electric drive; Rep. gr. 93; De-energising high-voltage system .

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

CAUTION

On a warm engine, the cooling system is under high pressure. Danger of scalding by steam and hot coolant.

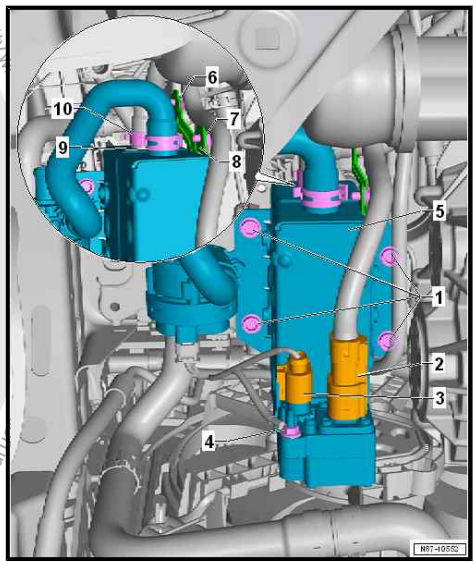
There is a risk of injury to the skin and parts of the body due to scalding.

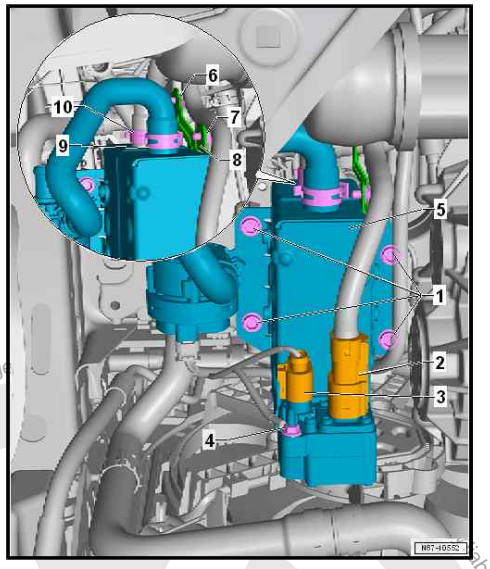
– Wear protective gloves.

– Wear safety goggles.

– To relieve pressure, cover the cap of the coolant expansion tank with a cloth, and open it carefully.

– Disconnect connector -3- from high-voltage heater (PTC) - Z115- -5-.





– Disconnect high-voltage connector -2- from high-voltage heater (PTC) - Z115- -5-.
– Disconnect earth wire -4- from high-voltage heater (PTC) - Z115- -5-.
– Open spring-type clips -9- and -10-.
– Disconnect coolant hoses from high-voltage heater (PTC) - Z115- -5-.
– Unclip high-voltage cable retainers -6- and -7- from bracket -8-.
– Unscrew bolts -1-, and remove high-voltage heater (PTC) - Z115- -5- with bracket downwards.

Installing

Install in reverse order of removal, observing the following:

– Allow new coolant to flow through openings of coolant hoses into high-voltage heater (PTC) - Z115- .
– As soon as coolant escapes from coolant hose connection (- Z115- completely filled with coolant), attach coolant hoses to -Z115- .

Note

- *To make sure the -Z115- is completely filled with coolant, hold connection for coolant hoses as high as possible when the coolant flows in.*
- *If the -Z115- has been removed and installed as described above, there should not be any air in the coolant circuit of the engine. If, however, there is still air in the coolant circuit, bleed coolant circuit ⇒ Rep. gr. 19 ; Cooling system, coolant .*

– If necessary, fill coolant in coolant expansion tank ⇒ Rep. gr. 19 ; Cooling system, coolant .

WARNING

Danger to life from high voltage.

Risk of severe or fatal injury due to electric shock.

– Have a qualified technician re-energise the high-voltage system.

– Re-energise high-voltage system ⇒ Electric drive; Rep. gr. 93 ; Re-energising high-voltage system .

Specified torque:

Component	Specified torque
Bolts on high-voltage heater (PTC) - Z115-	20 Nm
Nut on earth wire	9 Nm

8 Operating and display unit

⇒ “8.1 Overview - operating and display unit”, page 85

⇒ “8.2 Removing and installing operating and display unit”, page 86

8.1 Overview - operating and display unit

Climatronic

1 - Button for interior temperature regulation

- ❑ Increase temperature

2 - Button for interior temperature regulation

- ❑ Decrease temperature

3 - Display

- ❑ Displays the set temperature and activated functions

4 - Button for blower speed adjustment

- ❑ The blower speed is controlled automatically.
- ❑ Press this button to adjust the blower speed manually.

5 - Button for blower speed adjustment

- ❑ The blower speed is controlled automatically.
- ❑ Press this button to adjust the blower speed manually.

6 - AC button

- ❑ To switch the air conditioner compressor on or off.

7 - AUTO button

- ❑ In automatic mode, the Climatronic maintains the selected interior temperature automatically. With this setting, the vent air temperature, the blower speed and the air distribution are controlled automatically.

8 - Button to regulate air distribution in footwell

9 - Button to regulate air distribution in vehicle interior

10 - Button to regulate windscreen air distribution

11 - Button for fresh air and air recirculation mode

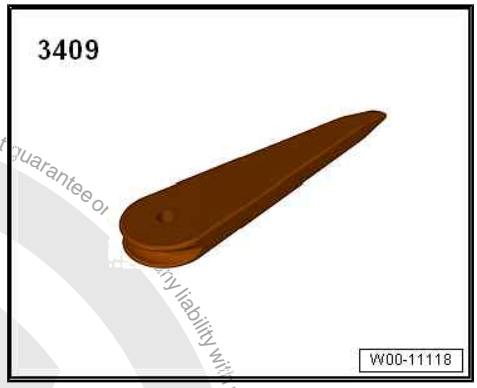
12 - Defroster button

- ❑ Air drawn in from the outside is channelled to the windscreen and air recirculation mode is automatically switched off.

8.2 Removing and installing operating and display unit

Special tools and workshop equipment required

- Removal wedge - 3409-



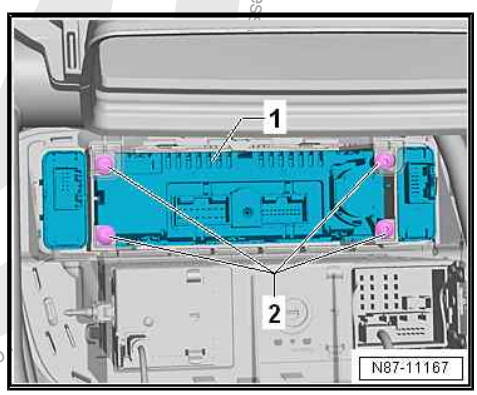
Removing

– Remove radio ⇒ Communication; Rep. gr. 91 ; Radio units/ radio navigation systems; Removing and installing radio units/ radio navigation systems .

– Disconnect connectors.

– Unscrew bolts -2-.

– Remove operating and display unit -1-.



Installing

Install in reverse order.

Specified torque:

Component	Specified torque
Bolts on operating and display unit	2 Nm

9 Other controlling and regulating components

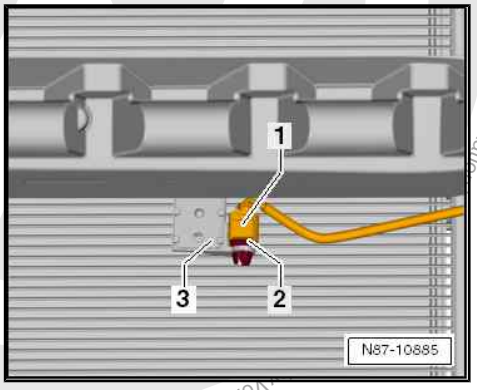
9.1 Removing and installing ambient temperature sensor - G17-

Removing

– Remove front bumper ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Removing and installing front bumper .

– Disconnect connector -1- from temperature sensor for ambient temperature - G17- -2-.

– Remove temperature sensor for ambient temperature - G17- -2- from bracket -3-.



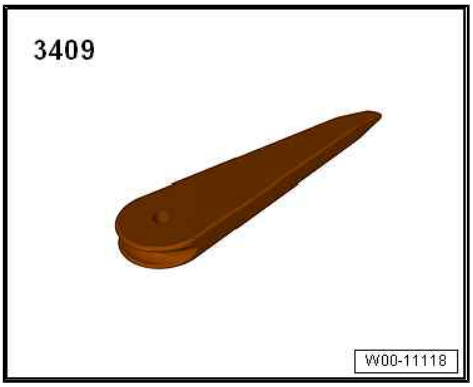
Installing

– Install in reverse order.

9.2 Removing and installing sunlight penetration photosensor - G107-

Special tools and workshop equipment required

♦ Removal wedge - 3409-

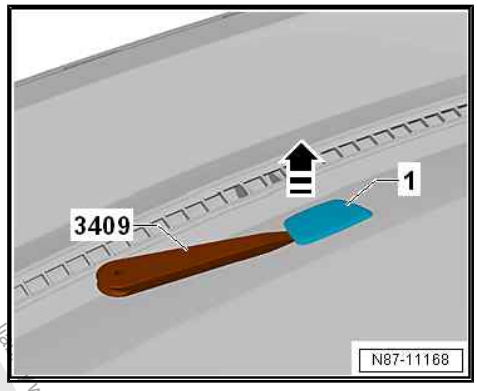


Removing

– Unclip sunlight penetration photosensor - G107- -1- from dash panel in direction of arrow.

– Secure wiring harness of sunlight penetration photosensor - G107- against slipping into dash panel.

– Disconnect electrical connector.



Removing

– Install in reverse order.

9.3 Removing and installing humidity sender for air conditioning system - G260-

Note

- *The humidity sender for air conditioning system - G260- has a silicon layer (coupling pad) which forms the contact surface to the windscreen.*
- *The humidity sender for air conditioning system - G260- is designed for reuse. A prerequisite for re-use is that the coupling pad is not damaged or dirty (check!).*
- *Diagnosis is carried out via onboard supply control unit - J519- .*

Removing

– Switch off ignition and all electrical equipment, and then remove ignition key.

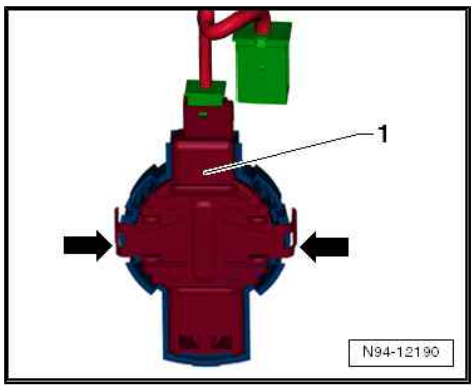
– Remove cover from interior mirror ⇒ General body repairs, interior; Rep. gr. 68 ; Interior mirror; Assembly overview - interior mirror .

Note

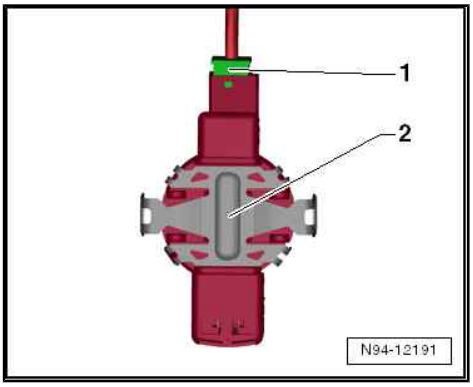
Wait at least 1 minute after releasing the retaining clip. This is necessary to ensure that the silicone coating is relieved of tension and will not be damaged during removal.

– Release retaining clip on left and right -arrows-.

– Starting from top, carefully lever humidity sender for air conditioning system - G260- -1- out of retaining frame on windscreen.



– Release and pull off connector -1-, and remove humidity sender for air conditioning system - G260- -2-.
– Store removed humidity sender for air conditioning system - G260- so that coupling pad cannot be damaged or soiled from dust etc. until it is ready to be reinstalled.



Installation

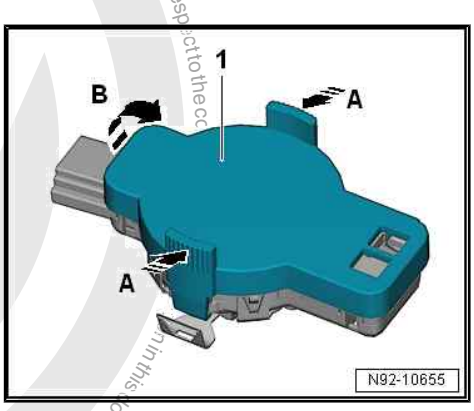
Install in reverse order of removal, observing the following:

– Prior to installation, thoroughly clean the surface of the windscreen within the retaining frame for humidity sender for air conditioning system - G260- , and make sure to completely remove any remains of the coupling pad adhering to the windscreen.
– Check the coupling pad surface of the humidity sender for air conditioning system - G260- for damage, and renew the sender if necessary.

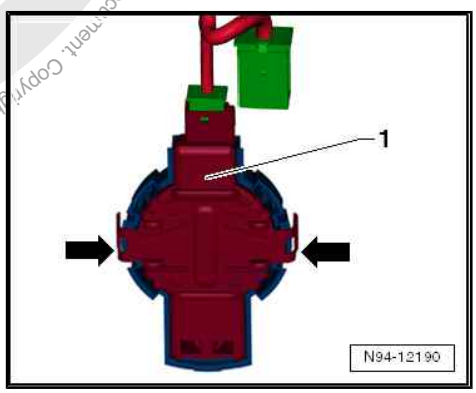
Note

If the surface of the coupling pad on the rain and light sensor - G397- is soiled, it may be possible to clean it by "bonding on" and then "pulling off" one or more adhesive strips.

– Thoroughly clean windscreen in area of retaining plate.
– If necessary, remove protective cap -1- from new rain and light sensor - G397- .
– Push grip in direction of arrow -A-.
– Remove protective cap -1- in direction of arrow -B-.



– Fit connector.
– Insert rain and light sensor - G397- -1- into retaining frame on windscreen.
– Push in retaining clip on both sides -arrows- until it engages audibly.



Note

- *Even if the sensor is installed correctly, small air bubbles may initially appear between the windscreen and the coupling pad. After approx. 10 minutes, the contact surface must be free of bubbles.*
- *If the contact surface is not free of bubbles after 10 minutes, the rain and light sensor - G397- must be removed and installed anew.*
- *Air bubbles between the windscreen and the coupling pad will cause the rain and light sensor - G397- to malfunction.*
- *Code rain and light sensor - G397- ⇒ Vehicle diagnostic tester.*

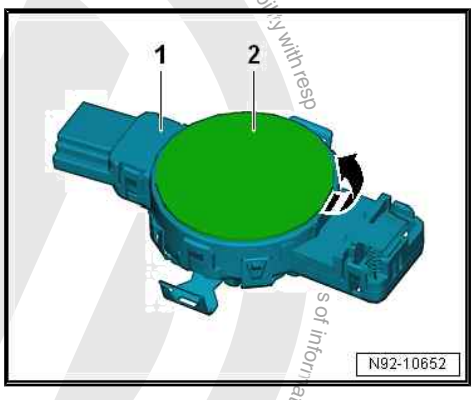
9.4 Repairing humidity sender for air conditioning system - G260-

– Remove rain and light sensor - G397- ⇒ page 88 .

– Carefully remove sensor foil -2- or any sensor foil residue from rain and light sensor - G397- -1-.

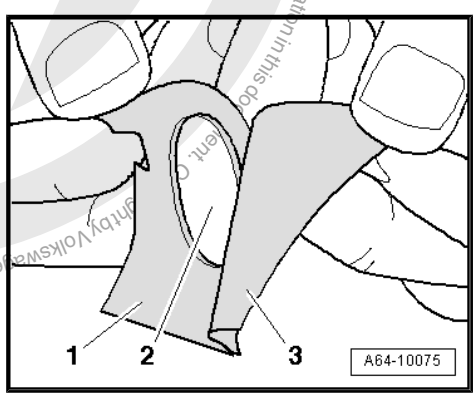
– Remove any film residue from sensor surface.

– Clean sensor surfaces with cleaning solution D 009 401 04.

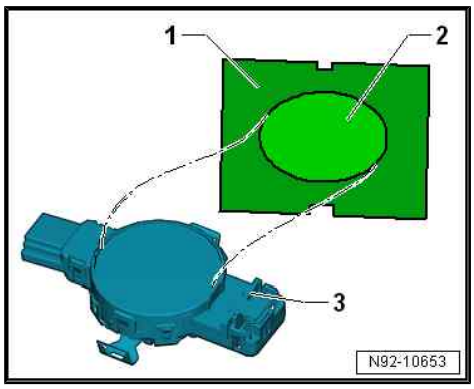


– Pull silicone paper -3- off sensor foil -2-.

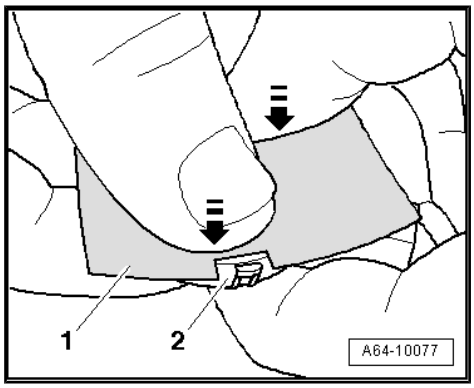
Initially, the transparent protective film -1- remains on sensor film as an assembly aid.



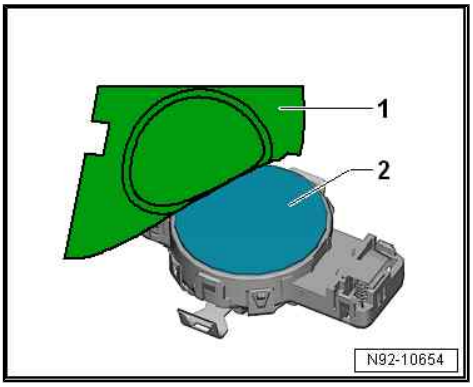
– With the aid of transparent protective film -1-, place sensor film -2- onto rain and light sensor - G397- -3-.



– Press sensor foil through protective film -1- onto rain and light sensor - G397- -2- making sure there are no air bubbles.



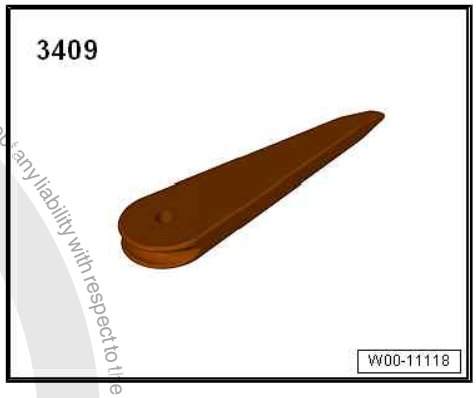
– Peel transparent protective film -1- off sensor foil -2-.
– Install rain and light sensor - G397- ⇒ page 88 .



9.5 Removing and installing centre vent temperature sender - G191-

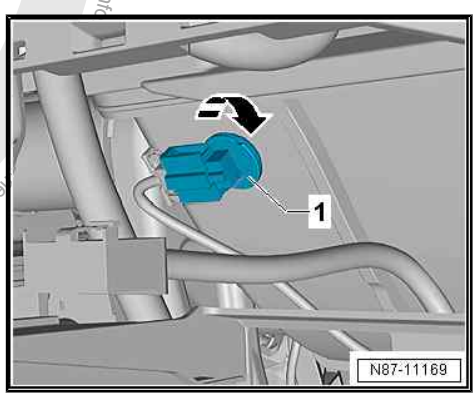
Special tools and workshop equipment required

♦ Removal wedge - 3409-



Removing

– Remove radio ⇒ Communication; Rep. gr. 91 ; Radio units/radio navigation systems; Removing and installing radio units/radio navigation systems .
– Disconnect electrical connector.
– Turn centre vent temperature sender - G191- -1- by 90°, and remove it.



Installing

– Install in reverse order.

Specified torque

♦ Removing and installing radio ⇒ Communication; Rep. gr. 91 ; Radio units/radio navigation systems; Removing and installing radio units/radio navigation systems .

9.6 Removing and installing footwell vent temperature sender - G192-

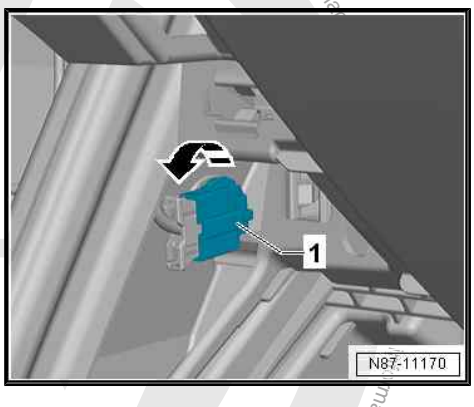
Special tools and workshop equipment required

♦ Vehicle diagnostic tester

Removing

– Remove glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .

– Remove lower part of centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Assembly overview – centre console .
– Disconnect electrical connector.
– Turn footwell vent temperature sender - G192- -1- by 90°, and remove it.



Installing

– Install in reverse order.

Specified torque

♦ Removing and installing glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .
♦ Removing and installing lower part of centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Assembly overview – centre console .