



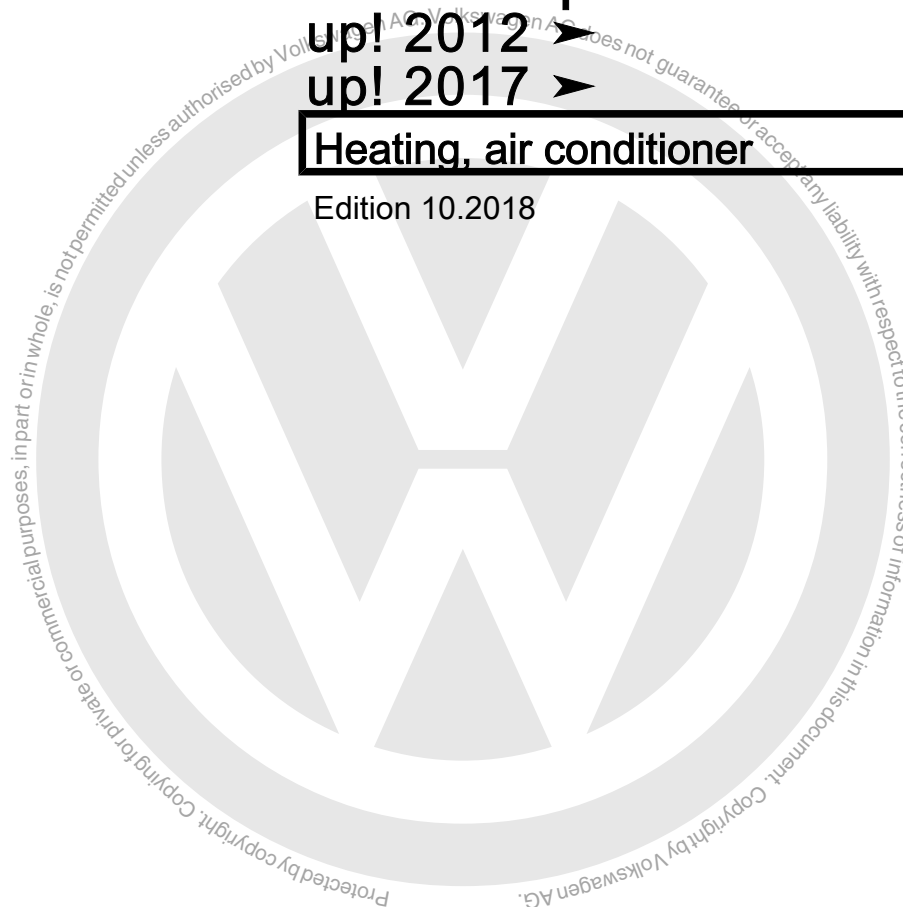
Workshop Manual

up! 2012 ➤

up! 2017 ➤

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.



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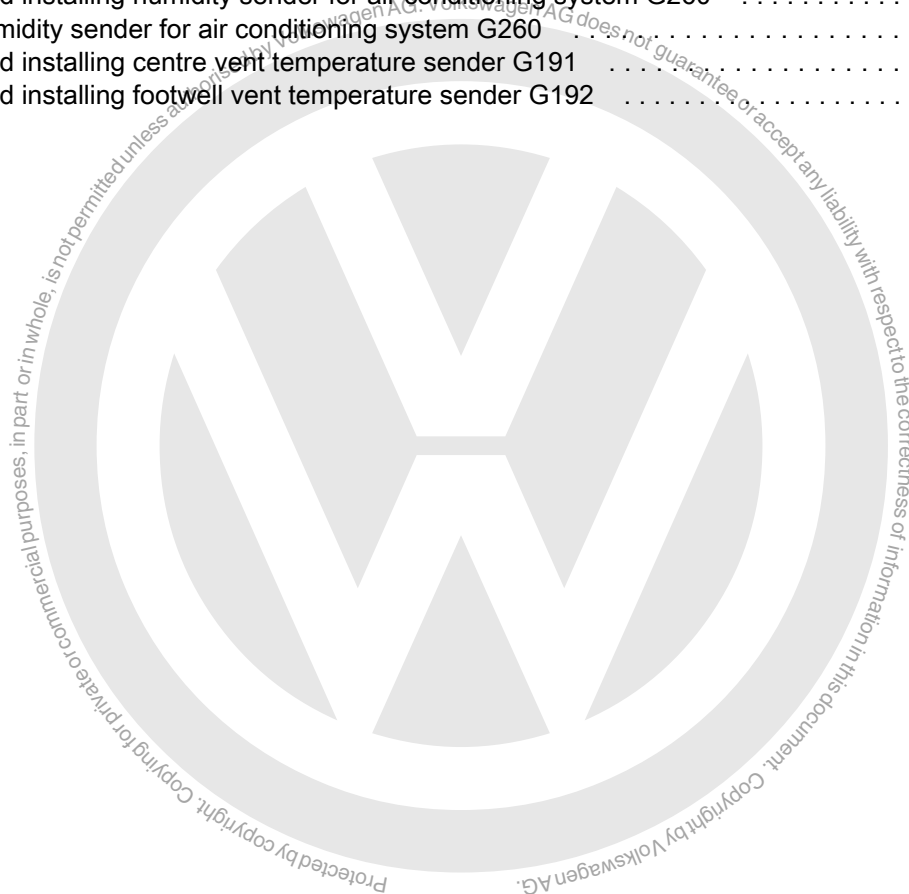
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00 – Technical data

1 Safety information

(VRL012155; Edition 10.2018)

⇒ [“1.1 Safety precautions when working on air conditioning systems”, page 1](#)

⇒ [“1.2 Safety precautions when handling refrigerants”, page 1](#)

⇒ [“1.3 Safety measures when working on vehicles with a start/stop system”, page 2](#)

⇒ [“1.4 Safety precautions when working in the vicinity of high-voltage components”, page 2](#)

1.1 Safety precautions when working on air conditioning systems

Risk of fatal injury and explosion from sources of ignition

Risk of fatal injury and explosion from sources of ignition in the vicinity of air conditioning systems and refrigerant tanks. Escaping refrigerant could ignite and cause an explosion. Risk of explosion leading to loss of life or serious injuries.

- Never bring sources of ignition close to air conditioning systems and refrigerant tanks.
- Avoid electrostatic discharge, sparks from tools striking surfaces and hot surfaces.

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.

1.2 Safety precautions when handling refrigerants

Risk of suffocation and poisoning from refrigerant

Coughing and nausea leading to suffocation and poisoning from refrigerant vapours possible.

- Never inhale refrigerant vapours.
- Only work on the refrigerant circuit and refrigerant tanks in well ventilated areas.
- Never work in or near cellars or other low lying areas.
- Switch on the extraction system.

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 protective 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.

1.3 Safety measures when working on vehicles with a start/stop system

Risk of injury due to unexpected motor start

If the vehicle's start/stop system is activated, the engine can start unexpectedly. A message in the dash panel insert indicates whether the start/stop system is activated.

- Deactivate start/stop system by switching off the ignition.

1.4 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.



2 General information

⇒ [“2.1 Notes concerning odours in air conditioned vehicles”, page 3](#)

⇒ [“2.2 Type plates”, page 3](#)

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 releases new procedures, corresponding information is found in the workshop manual ⇒ Air conditioning systems with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Possible complaints or ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Complaints; Odours from heater and air conditioner unit

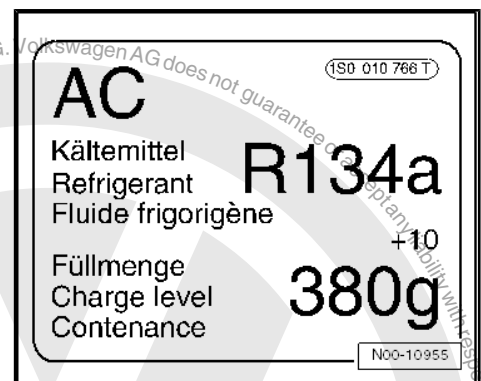
2.2 Type plates

⇒ [“2.2.1 Identification plates, refrigerant R134a”, page 3](#)

⇒ [“2.2.2 Identification plates, refrigerant R1234yf”, page 4](#)

2.2.1 Identification plates, refrigerant R134a

The identification plate indicating the refrigerant type and capacity can be found on the lock carrier





2.2.2 Identification plates, refrigerant R1234yf

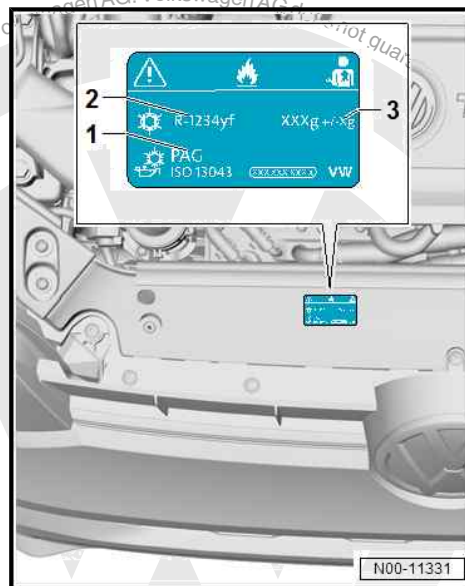
Identification plate with capacities for refrigerant R1234yf and refrigerant oil

- 1 - Designation of refrigerant oil
- 2 - Name of refrigerant
- 3 - Refrigerant capacity



Note

- ◆ A tolerance of $\pm 15\text{ g}$ is permissible although not indicated on the identification plate.
- ◆ Capacities for refrigerant R1234yf and refrigerant oil
⇒ "4 Technical data", page 7.





3 Repair notes

⇒ [“3.1 Working on refrigerant circuit”, page 5](#)

⇒ [“3.2 General repair instructions”, page 5](#)

⇒ [“3.3 Refrigerant circuit seals”, page 5](#)

3.1 Working on refrigerant circuit

In some countries special qualifications are required for any work for which the refrigerant circuit needs to be opened.

Additional information

- ◆ For notes on repair work on vehicles equipped with an air conditioning system and for handling refrigerant, refer to ⇒ Air conditioning systems with refrigerant R1234yf - General information; Rep. gr. 00 ; Safety instructions or ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; General information on the air conditioning system; Safety precautions when working on vehicles equipped with an air conditioning system and for handling refrigerant R134a .
- ◆ For notes on working with air conditioner service station on vehicles equipped with an air conditioning system, refer to ⇒ Air conditioning systems with refrigerant R1234yf - General information; Rep. gr. 87 ; Working with air conditioner service station or ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Working with air conditioner service station .
- ◆ Conditions and procedure for flushing with refrigerant R1234yf ⇒ Air conditioning systems with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Cleaning refrigerant circuit or ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Removing contamination from refrigerant circuit; Flushing refrigerant circuit with refrigerant R134a (cleaning) .
- ◆ Notes on testers and tools for repairs to vehicles with air conditioning can be found in ELSA under ⇒ Air conditioning systems with refrigerant R1234yf - General information or ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Testing equipment and tools .
- ◆ In some cases, it is no longer necessary on air conditioning systems with refrigerant R1234yf to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with refrigerant R1234yf; Rep. gr. 87 ; Refrigerant circuit; Renewing components .
- ◆ In some cases, it is no longer necessary on air conditioning systems with R134a refrigerant to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Renewing components .

3.2 General repair instructions

Never attempt to repair any heating and air conditioning system components. Defective components must be replaced with Genuine parts.

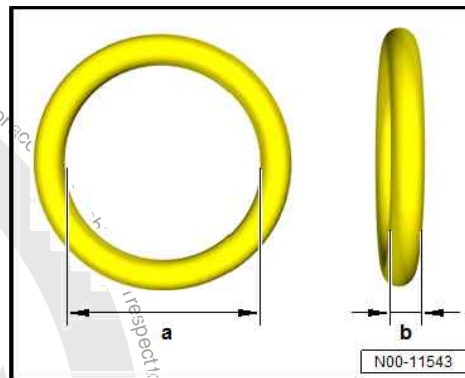
3.3 Refrigerant circuit seals

- ◆ Renew seals after removal.
- ◆ Moisten seals with refrigerant oil before installing.
- ◆ Ensure proper seating of seals on the pipe or in the groove.



- ◆ Work in a completely clean environment. Even the smallest contaminants, e.g. a hair, can cause leaks.
- ◆ Install only seals resistant to refrigerant R134a/R1234yf and respective refrigerant oil ⇒ Electronic parts catalogue (ETKA) .

The dimensions -a- and -b- depend on the fitting location of the seal ⇒ Electronic parts catalogue (ETKA) .





4 Technical data

⇒ ["4.1 Refrigerant capacity", page 7](#)

⇒ ["4.2 Refrigerant oil capacities", page 7](#)

⇒ ["4.3 Oil distribution", page 8](#)

4.1 Refrigerant capacity

⇒ ["4.1.1 Capacities for refrigerant R1234yf", page 7](#)

⇒ ["4.1.2 Capacities for refrigerant R134a", page 7](#)

4.1.1 Capacities for refrigerant R1234yf

Vehicles with manifold injection

Total capacity
330 g



Note

A tolerance of ± 15 g is permissible although not indicated on the identification plate.

Vehicles with TSI engine

Total capacity
450 g



Note

A tolerance of ± 15 g is permissible although not indicated on the identification plate.

4.1.2 Capacities for refrigerant R134a

Total capacity
380 g



Note

A tolerance of ± 15 g is permissible although not indicated on the identification plate.

4.2 Refrigerant oil capacities

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.

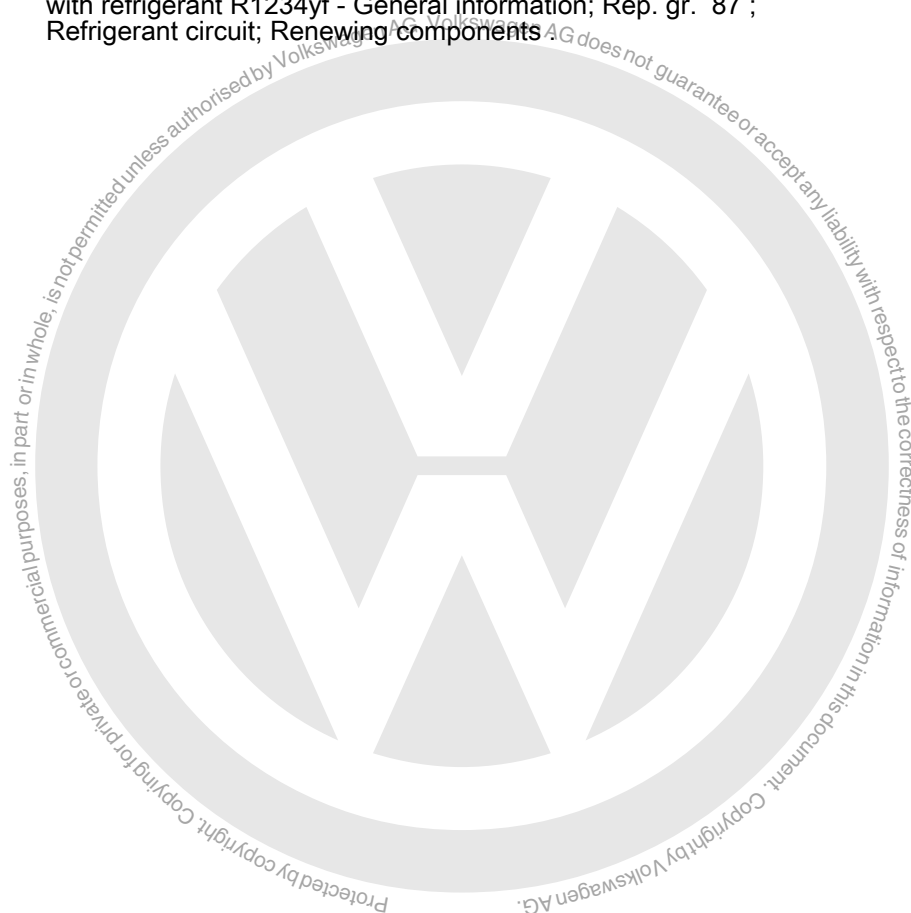


Model	Total capacity ¹⁾
DV9 Doowon	120 cm ³ ± 10 cm ³

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

4.3 Oil distribution

- ◆ During operation of the air conditioner, the refrigerant oil in the air conditioner compressor prior to initial operation is distributed throughout the refrigerant circuit.
- ◆ The distribution of the refrigerant oil depends on the operating mode of the air conditioner when it was switched off, the ambient temperatures etc. Consequently, it is not possible to make a general statement about how the refrigerant oil is distributed within the refrigerant circuit. Observe notes on replacing refrigerant circuit components ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Renewing components (Air conditioning system with refrigerant R134a, Renewing refrigerant circuit components) or ⇒ Air conditioning systems with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Renewing components





80 – Heating

1 Overview of fitting locations - heating

⇒ "1.1 Overview of fitting locations - components not located in passenger compartment", page 9

⇒ "1.2 Overview of fitting locations - components located in front section of passenger compartment", page 10

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 9

⇒ "1.1.2 Overview of fitting locations - components not located in passenger compartment, right-hand drive vehicles", page 10

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

1 - Forced ventilation of passenger compartment

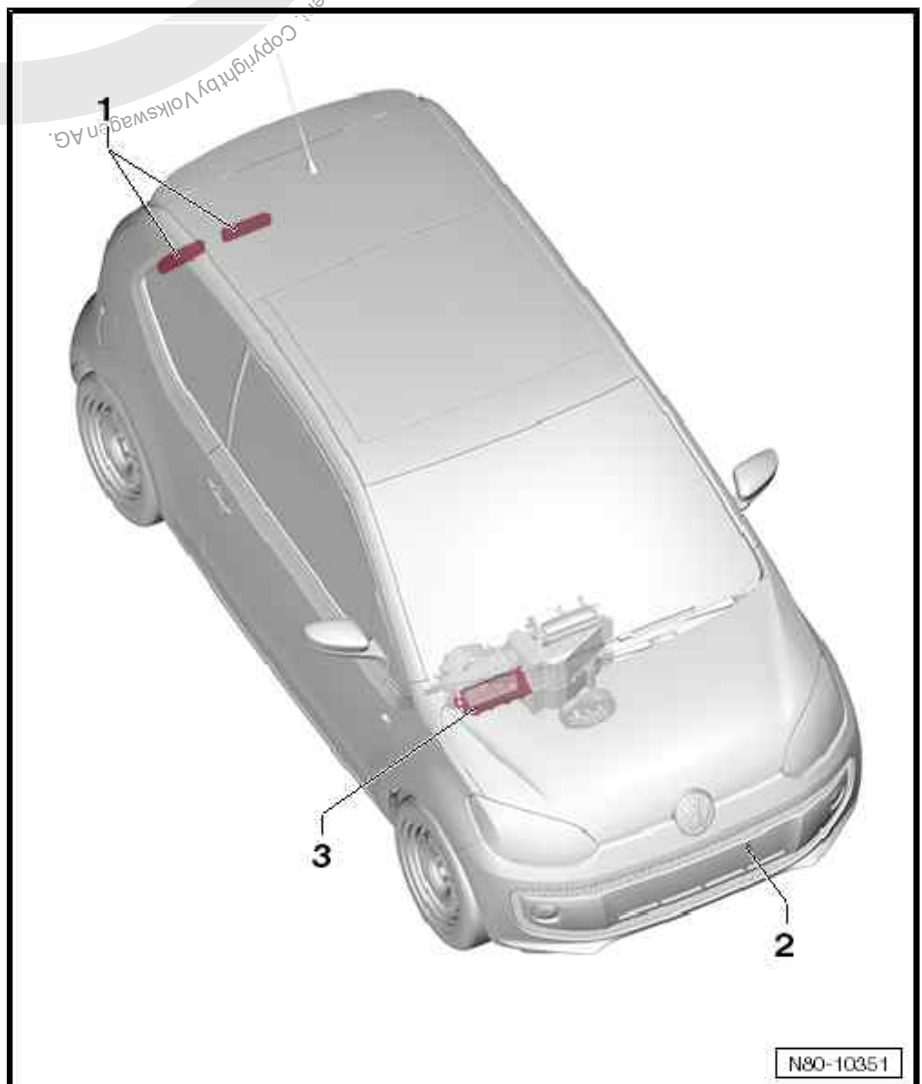
- ☐ Removing and installing
⇒ page 135

2 - Ambient temperature sensor - G17-

- ☐ Removing and installing
⇒ page 144

3 - Fresh air intake

- ☐ Removing and installing
⇒ page 136



N80-10351



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

1 - Forced ventilation of passenger compartment

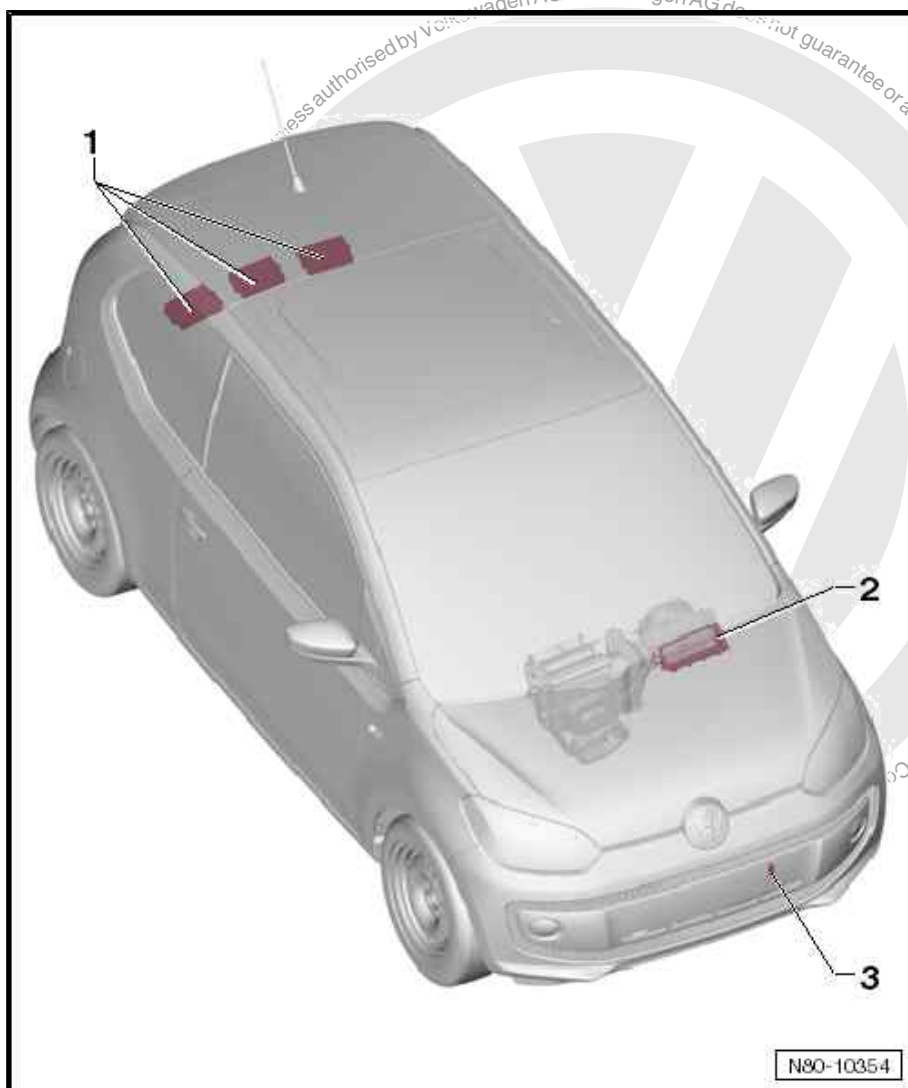
- ❑ Removing and installing
⇒ [page 135](#) .

2 - Fresh air intake

- ❑ Removing and installing
⇒ [page 136](#) .

3 - Ambient temperature sensor - G17-

- ❑ Removing and installing
⇒ [page 144](#) .



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

The following information applies to left-hand drive vehicles. A right-hand drive vehicle is similar.



1 - Defroster vent

- ☐ Removing and installing
⇒ [page 132](#) .

2 - Centre vent

- ☐ Removing and installing
⇒ [page 132](#) .

3 - Heater and air conditioning unit

- ☐ Removing and installing
⇒ [page 109](#) .
- ☐ Dismantling and assembling
⇒ [page 119](#) .

4 - Dash panel vent, side

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

5 - Right vent

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

6 - Operating and display unit

- ☐ Removing and installing
⇒ [page 140](#) .

7 - Right footwell vent

- ☐ Removing and installing
⇒ [page 134](#) .

8 - Left footwell vent

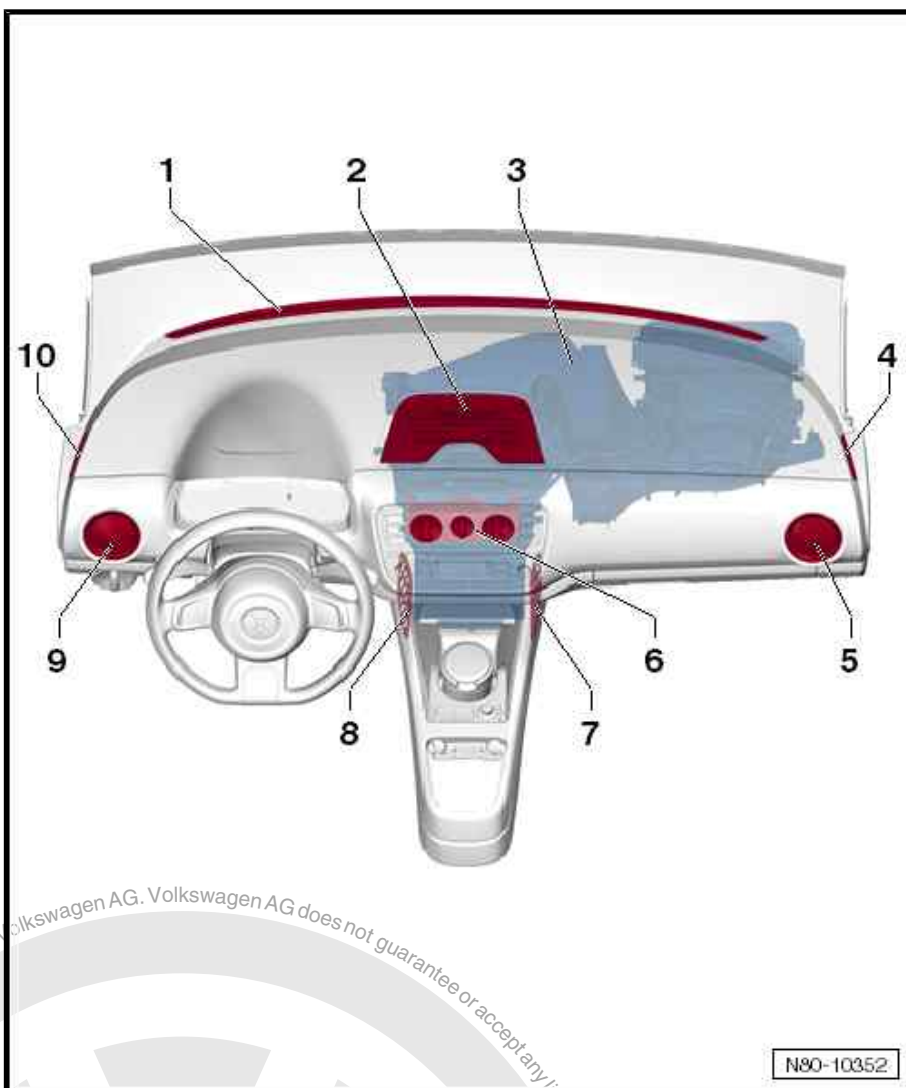
- ☐ Removing and installing
⇒ [page 134](#) .

9 - Left vent

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

10 - Dash panel vent, side

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





2 Actuators

⇒ **"2.1 Removing and installing temperature flap actuator",
page 12**

⇒ **"2.2 Removing and installing defroster and air distribution flap
actuator", page 12**

⇒ **"2.3 Removing and installing flexible shaft for air distribution",
page 12**

⇒ **"2.4 Removing and installing flexible shaft for temperature flap",
page 12**

2.1 Removing and installing temperature flap actuator

Removal and installation are identical with procedure for vehicles
with air conditioning system ⇒ **page 78** .

2.2 Removing and installing defroster and air distribution flap actuator

Removal and installation are identical with procedure for vehicles
with air conditioning system ⇒ **page 84** .

2.3 Removing and installing flexible shaft for air distribution

Removal and installation are identical with procedure for vehicles
with air conditioning system ⇒ **page 89** .

2.4 Removing and installing flexible shaft for temperature flap

Removal and installation are identical with procedure for vehicles
with air conditioning system ⇒ **page 90** .

3 Heater

⇒ [“3.1 Assembly overview – heater unit”, page 13](#)

⇒ [“3.2 Removing and installing fresh air blower V2”, page 14](#)

⇒ [“3.3 Removing and installing fresh air blower series resistor with overheating fuse N24”, page 14](#)

⇒ [“3.4 Removing and installing heat exchanger”, page 14](#)

⇒ [“3.5 Removing and installing heater unit”, page 14](#)

⇒ [“3.6 Dismantling and assembling heater unit”, page 14](#)

3.1 Assembly overview – heater unit

The following information applies to left-hand drive vehicles. A right-hand drive vehicle is similar.

1 - Housing, upper part

2 - Seal

3 - Air intake housing

- ☐ With fresh/recirculated air flap

4 - Fresh air blower series resistor with overheating fuse - N24-

- ☐ Removing and installing
⇒ [page 126](#)

5 - Fresh air blower - V2-

- ☐ Removing and installing
⇒ [page 122](#)

6 - Fresh air blower bracket

7 - Heater unit wiring harness

8 - Flexible shaft for air distribution

- ☐ Removing and installing
⇒ [page 89](#)

9 - Defroster and air distribution flap actuation unit

- ☐ Removing and installing
⇒ [page 84](#)

10 - Air distribution housing

11 - Temperature flap actuator

- ☐ Removing and installing
⇒ [page 78](#)

12 - Flexible shaft for temperature flap

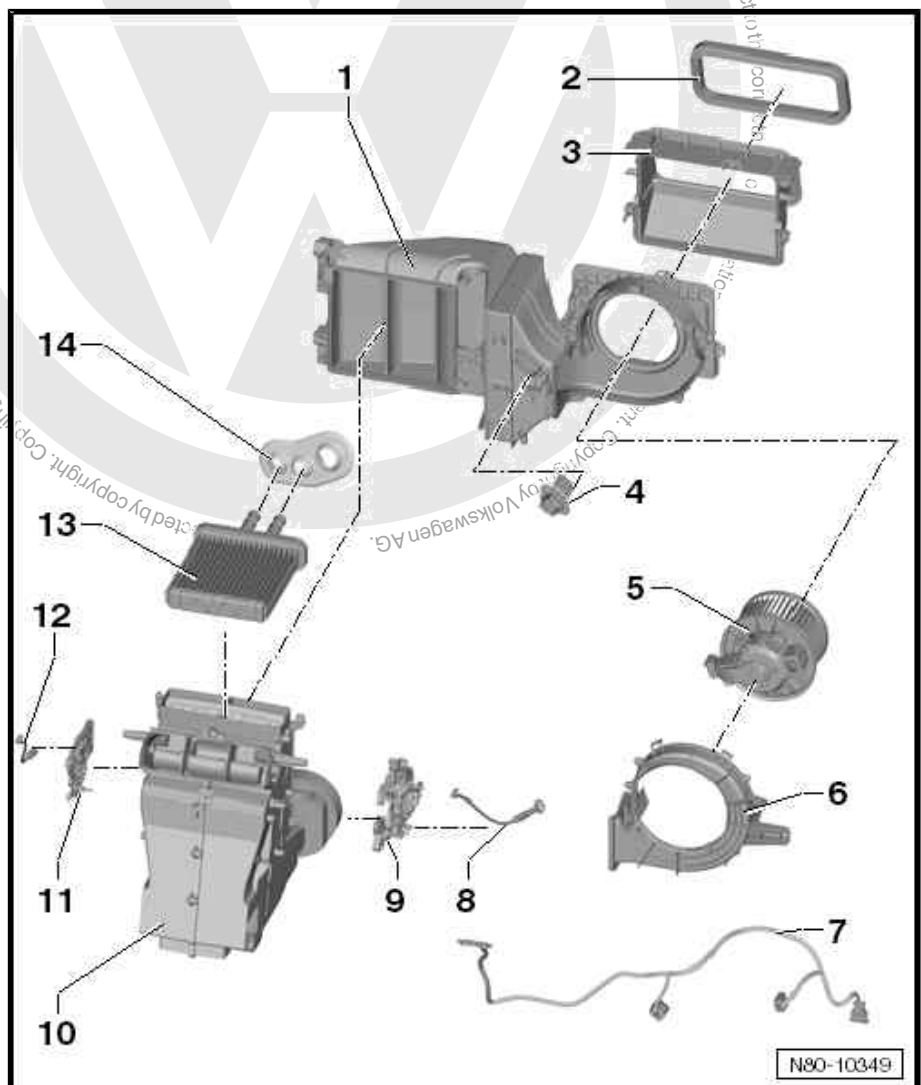
- ☐ Removing and installing
⇒ [page 90](#)

13 - Heat exchanger for heater

- ☐ Removing and installing ⇒ [page 128](#)

14 - Seal

- ☐ Note installation position ⇒ [page 130](#)





3.2 Removing and installing fresh air blower - V2-

Removal and installation are identical with procedure for vehicles with air conditioning system ➔ [page 122](#) .

3.3 Removing and installing fresh air blower series resistor with overheating fuse - N24-

Removal and installation are identical with procedure for vehicles with air conditioning system ➔ [page 126](#) .

3.4 Removing and installing heat exchanger

There is no requirement to drain the refrigerant and remove the expansion valve. Further removal and installation are identical with procedure for vehicles with air conditioning system ➔ [page 128](#) .

3.5 Removing and installing heater unit

There is no requirement to drain the refrigerant and remove the expansion valve. Further removal and installation are identical with procedure for vehicles with air conditioning system ➔ [page 109](#) .

3.6 Dismantling and assembling heater unit

There is no requirement to drain the refrigerant and to remove or disassemble the expansion valve and the evaporator. Further procedure is identical with procedure for vehicles with air conditioning system ➔ [page 119](#) .





4 Air duct

⇒ [“4.1 Assembly overview - air duct and air distribution in passenger compartment”, page 15](#)

⇒ [“4.2 Removing and installing centre vent”, page 15](#)

⇒ [“4.3 Removing vents on driver side or front passenger side”, page 15](#)

⇒ [“4.4 Removing and installing footwell vent on driver side or front passenger side”, page 15](#)

⇒ [“4.5 Removing and installing intermediate piece for defroster vent”, page 15](#)

⇒ [“4.6 Removing and installing intermediate piece for centre vent”, page 15](#)

⇒ [“4.6 Removing and installing intermediate piece for centre vent”, page 15](#)

⇒ [“4.8 Removing and installing forced ventilation for passenger compartment”, page 16](#)

⇒ [“4.9 Checking forced ventilation for passenger compartment”, page 16](#)

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

The assembly overview for air duct and air distribution is identical with the respective assembly overview for vehicles with air conditioning system ⇒ [page 131](#) .

4.2 Removing and installing centre vent

Removal and installation are identical with procedure for vehicles with air conditioning system ⇒ [page 132](#) .

4.3 Removing vents on driver side or front passenger side

Removal and installation are identical with procedure for vehicles with air conditioning system ⇒ [page 133](#) .

4.4 Removing and installing footwell vent on driver side or front passenger side

Removal and installation are identical with procedure for vehicles with air conditioning system ⇒ [page 134](#) .

4.5 Removing and installing intermediate piece for defroster vent

Removal and installation are identical with procedure for vehicles with air conditioning system ⇒ [page 133](#) .

4.6 Removing and installing intermediate piece for centre vent

Removal and installation are identical with procedure for vehicles with air conditioning system ⇒ [page 134](#) .

4.7 Removing and installing fresh air intake

Removal and installation are identical with procedure for vehicles with air conditioning system ⇒ [page 136](#) .



4.8 Removing and installing forced ventilation for passenger compartment

Removal and installation are identical with procedure for vehicles with air conditioning system ⇒ [page 135](#) .

4.9 Checking forced ventilation for passenger compartment

Removal and installation are identical with procedure for vehicles with air conditioning system ⇒ [page 135](#) .





5 Operating and display unit

⇒ [“5.1 Overview of operating and display unit”, page 17](#)

⇒ [“5.2 Removing and installing operating and display unit”, page 17](#)

⇒ [“5.3 Multi-pin connector pin assignment on back of operating and display unit”, page 18](#)

5.1 Overview of operating and display unit

1 - Rotary knob for setting temperature

- ☐ Anticlockwise: lowers temperature.
- ☐ Clockwise: increases temperature.

2 - Rotary knob for setting blower speed

- ☐ Anticlockwise: reduces blower speed.
- ☐ Clockwise: increases blower speed.

3 - Rotary knob for setting air distribution

- ☐ For setting active air vent

4 - Display for air distribution

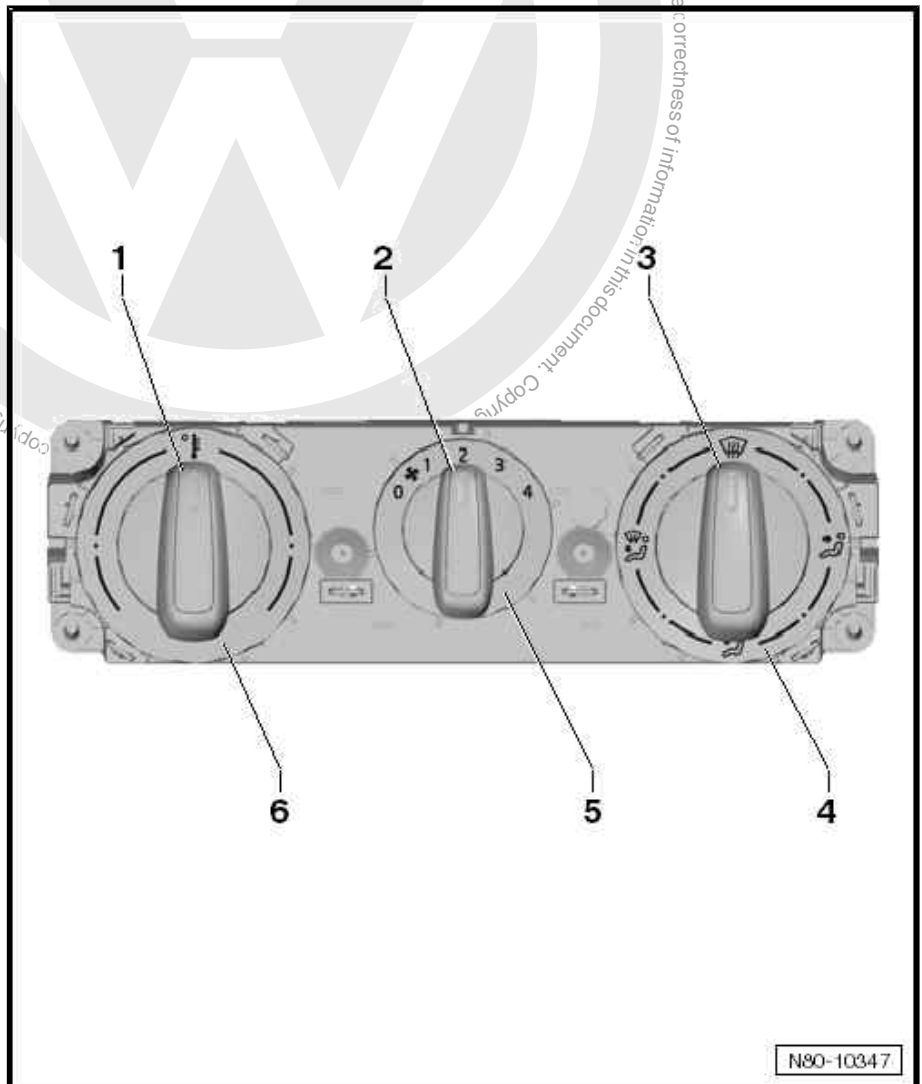
- ☐ Indicates position air outlet is set to

5 - Display for blower speed

- ☐ Indicates fan speed setting

6 - Temperature setting display

- ☐ Indicates set temperature range



5.2 Removing and installing operating and display unit

Removal and installation are identical with procedure for vehicles with air conditioning system ⇒ [page 140](#) .

5.3 Multi-pin connector pin assignment on back of operating and display unit

A - 5-pin blower connector

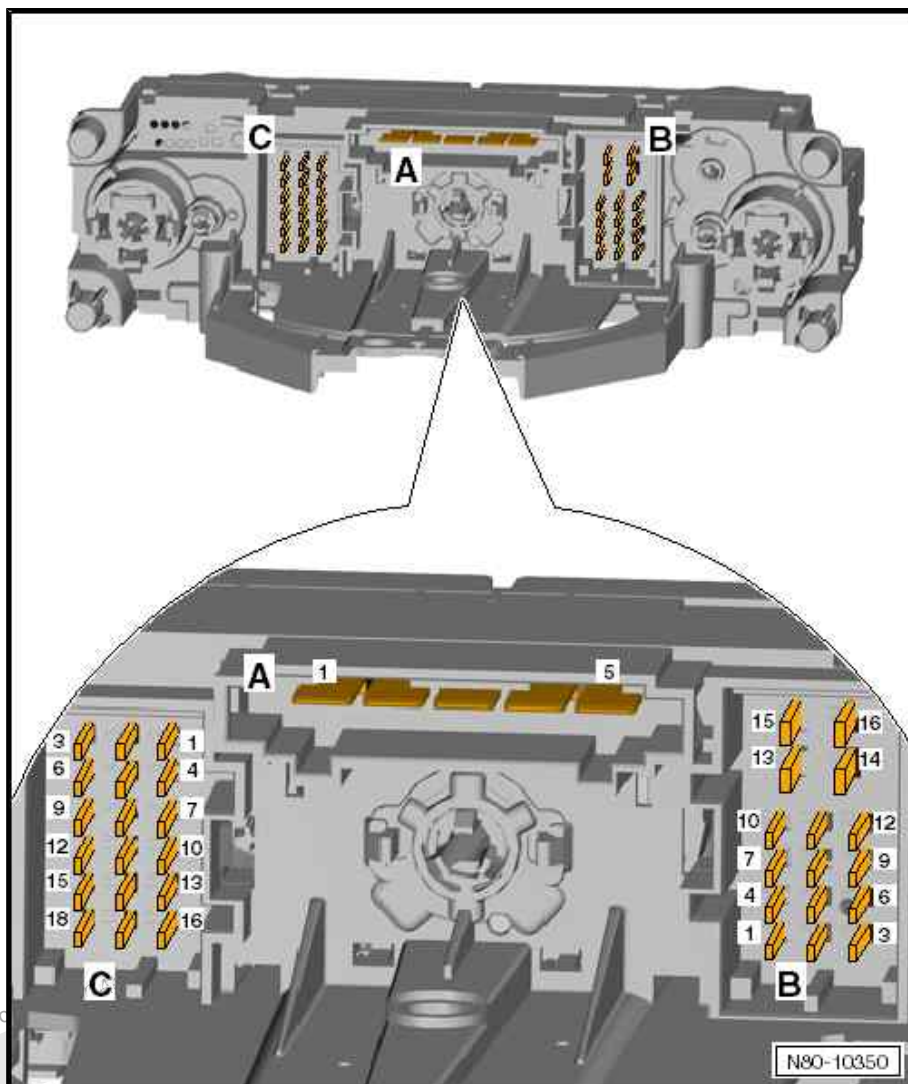
- ❑ Information on pin assignment can be found in the latest current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

B - 16-pin connector

- ❑ Information on pin assignment can be found in the latest current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

C - 18-pin connector

- ❑ Information on pin assignment can be found in the latest current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.





6 Other controlling and regulating components

⇒ ["6.1 Removing and installing ambient temperature sensor G17", page 19](#)

6.1 Removing and installing ambient temperature sensor - G17-

Removal and installation are identical with procedure for vehicles with air conditioning system ⇒ [page 144](#) .





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 20

⇒ "1.2 Overview of fitting locations - components located in front section of passenger compartment", page 23

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 20

⇒ "1.1.2 Overview of fitting locations - components not located in passenger compartment, right-hand drive vehicles", page 22

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



Note

- ◆ *In some cases, it is no longer necessary on air conditioning systems with refrigerant R1234yf to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with refrigerant R1234yf; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*
- ◆ *In some cases, it is no longer necessary on air conditioning systems with R134a refrigerant to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Renewing components .*



1 - Forced ventilation of passenger compartment

- ☐ Removing and installing
⇒ [page 135](#) .
- ☐ Checking ⇒ [page 135](#) .

2 - Expansion valve

- ☐ Removing and installing
⇒ [page 28](#) .

3 - High-pressure sender - G65-

- ☐ Removing and installing
⇒ [page 26](#) .

4 - Evacuating and charging valve, low-pressure side

- ☐ Removing and installing
⇒ [page 39](#) .

5 - Evacuating and charging valve, high-pressure side

- ☐ Removing and installing
⇒ [page 39](#) .

6 - Ambient temperature sensor - G17-

- ☐ Removing and installing
⇒ [page 144](#) .

7 - Condenser

- ☐ Removing and installing
⇒ [page 31](#) .

8 - Desiccant cartridge

- ☐ Removing and installing
⇒ [page 35](#) .

9 - Air conditioner compressor

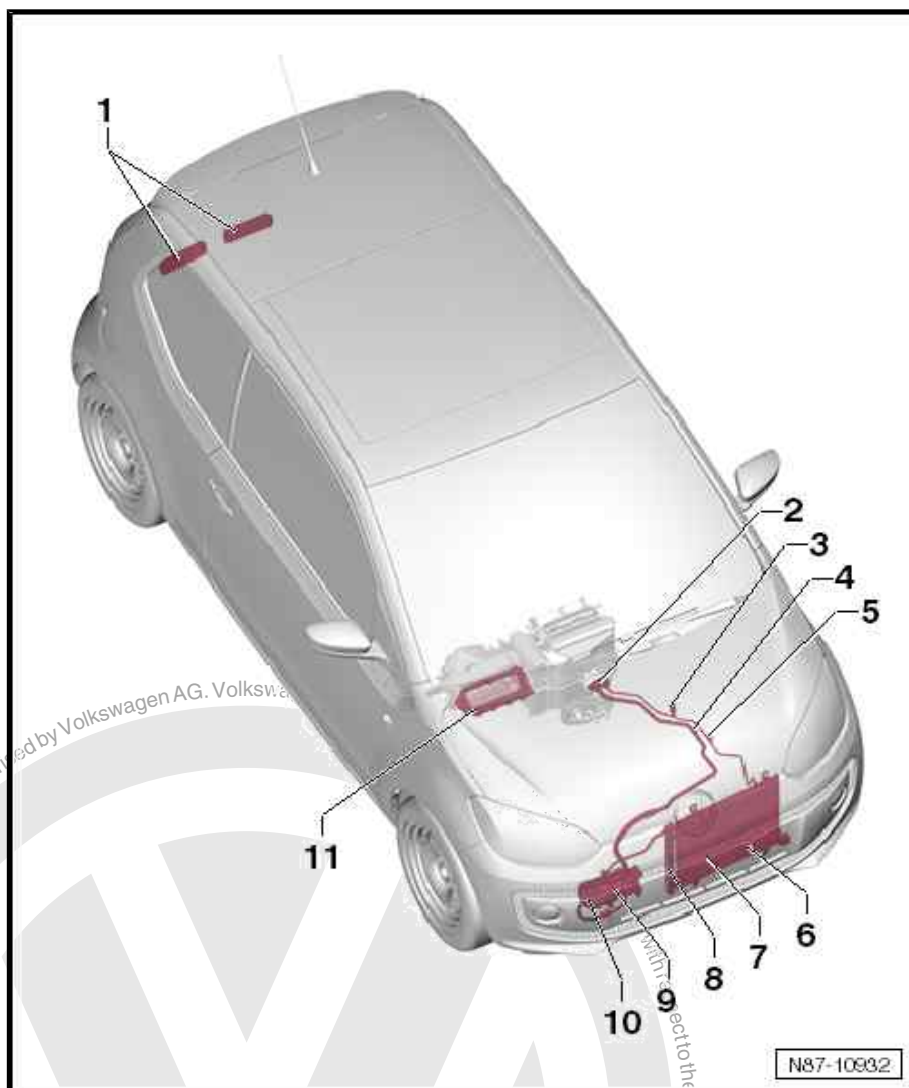
- ☐ Removing and installing
⇒ [page 64](#) .

10 - Air conditioning system magnetic clutch - N25-

- ☐ Removing and installing ⇒ [page 73](#) .

11 - Fresh air intake connecting piece

- ☐ Removing and installing ⇒ [page 136](#) .





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



Note

- ◆ In some cases, it is no longer necessary on air conditioning systems with refrigerant R1234yf to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with refrigerant R1234yf; Rep. gr. 87 ; Refrigerant circuit; Renewing components .
- ◆ In some cases, it is no longer necessary on air conditioning systems with R134a refrigerant to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Renewing components .

1 - Forced ventilation of passenger compartment

- ☐ Removing and installing ⇒ [page 135](#) .
- ☐ Checking ⇒ [page 135](#) .

2 - Fresh air intake connecting piece

- ☐ Removing and installing ⇒ [page 136](#) .

3 - High-pressure sender - G65-

- ☐ Removing and installing ⇒ [page 26](#) .

4 - Evacuating and charging valve, low-pressure side

- ☐ Removing and installing ⇒ [page 39](#) .

5 - Evacuating and charging valve, high-pressure side

- ☐ Removing and installing ⇒ [page 39](#) .

6 - Ambient temperature sensor - G17-

- ☐ Removing and installing ⇒ [page 144](#) .

7 - Condenser

- ☐ Removing and installing ⇒ [page 31](#) .

8 - Desiccant cartridge

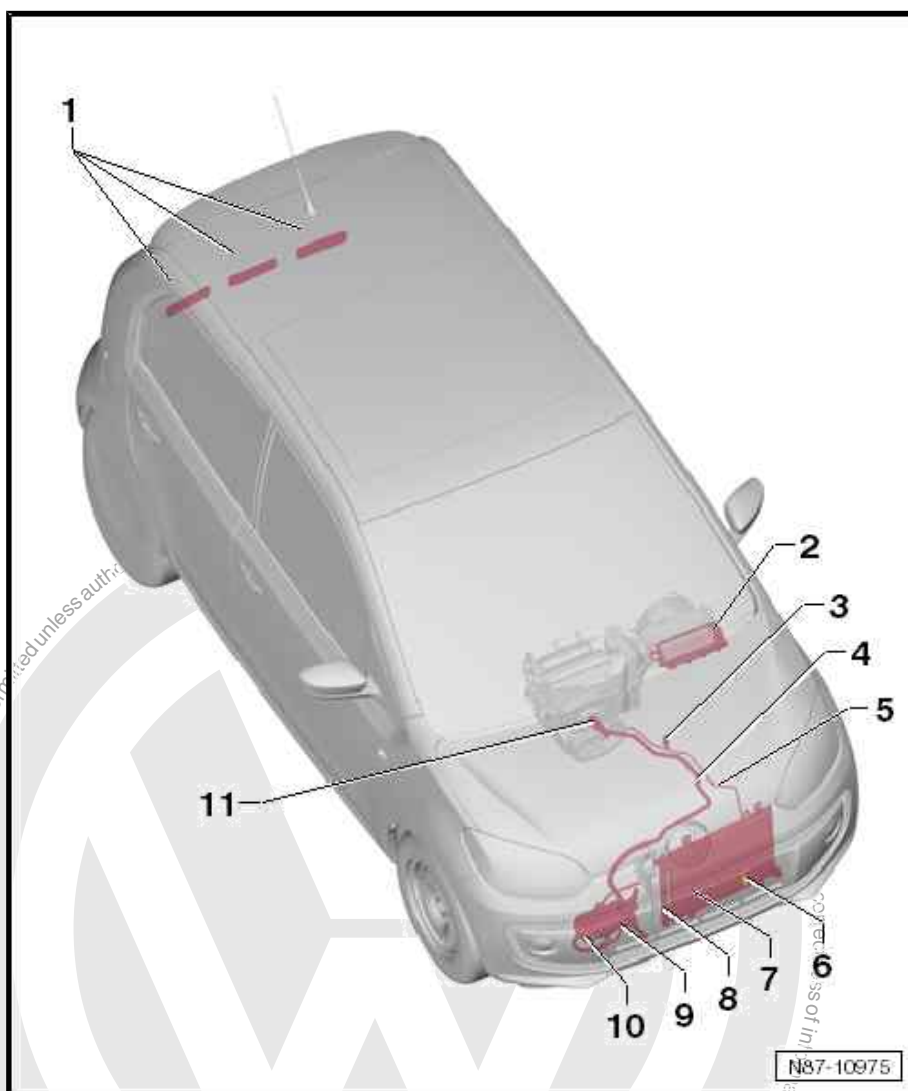
- ☐ Removing and installing ⇒ [page 35](#) .

9 - Air conditioner compressor

- ☐ Removing and installing ⇒ [page 64](#) .

10 - Air conditioning system magnetic clutch - N25-

- ☐ Removing and installing ⇒ [page 73](#) .





11 - Expansion valve

- ❑ Removing and installing ⇒ [page 28](#) .

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

The following information applies to left-hand drive vehicles. A right-hand drive vehicle is similar.

1 - Defroster vent

- ❑ Removing and installing ⇒ [page 132](#) .

2 - Centre vent

- ❑ Removing and installing ⇒ [page 132](#) .

3 - Heater and air conditioning unit

- ❑ Removing and installing ⇒ [page 109](#) .
- ❑ Dismantling and assembling ⇒ [page 119](#) .

4 - Dash panel vent, side

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

5 - Right vent

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

6 - Operating and display unit

- ❑ Removing and installing ⇒ [page 140](#) .

7 - Right footwell vent

- ❑ Removing and installing ⇒ [page 134](#) .

8 - Left footwell vent

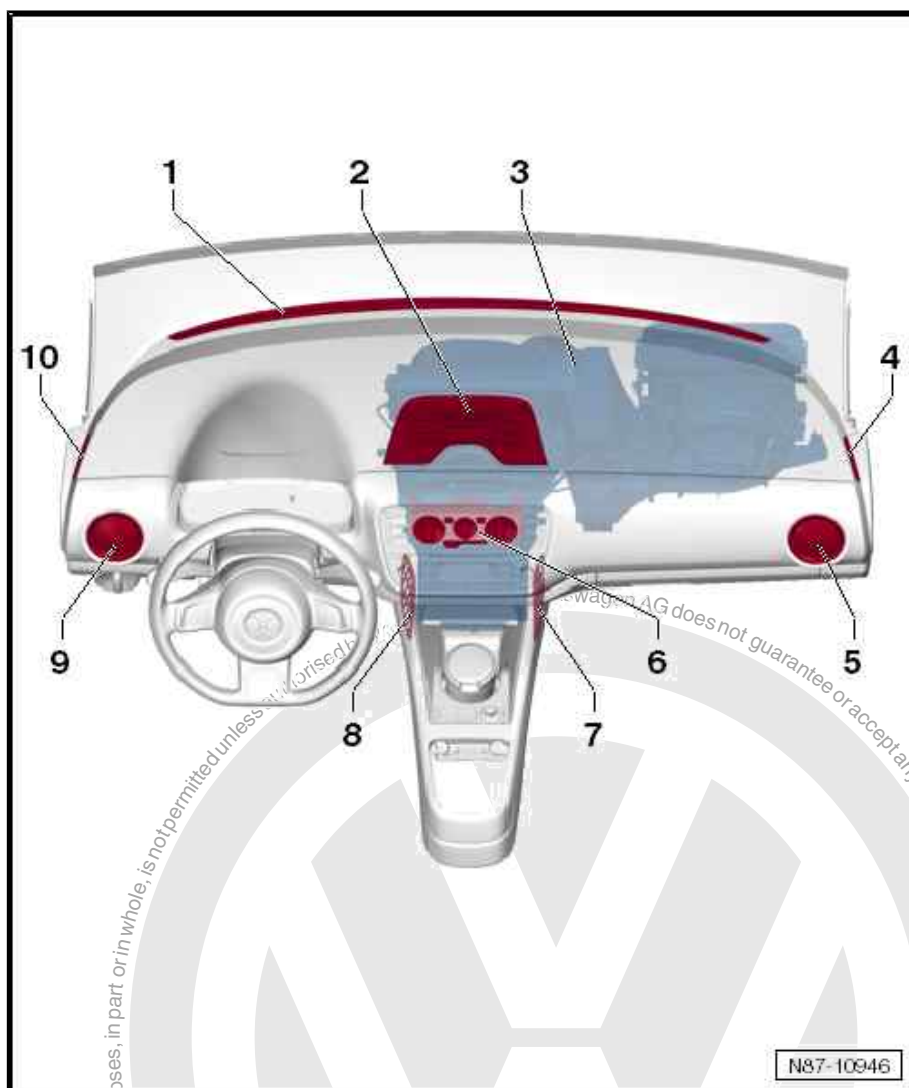
- ❑ Removing and installing ⇒ [page 134](#) .

9 - Left vent

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

10 - Dash panel vent, side

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





2 Refrigerant circuit

- ⇒ [“2.1 System overview - refrigerant circuit”, page 24](#)
- ⇒ [“2.2 Removing and installing high-pressure sender G65”, page 26](#)
- ⇒ [“2.3 Removing and installing expansion valve”, page 28](#)
- ⇒ [“2.4 Removing and installing condenser”, page 31](#)
- ⇒ [“2.5 Removing and installing desiccant bag or cartridge”, page 35](#)
- ⇒ [“2.6 Removing and installing evacuating and charging valves on low and high-pressure side”, page 39](#)
- ⇒ [“2.7 Commissioning of air conditioning system after filling refrigerant circuit”, page 41](#)
- ⇒ [“2.8 Removing and installing refrigerant line between condenser and evaporator”, page 42](#)
- ⇒ [“2.9 Removing and installing refrigerant line between condenser and air conditioner compressor”, page 48](#)
- ⇒ [“2.10 Removing and installing refrigerant line between air conditioner compressor and evaporator”, page 52](#)

2.1 System overview - refrigerant circuit

- ⇒ [“2.1.1 System overview - refrigerant circuit, vehicles with manifold injection”, page 24](#)
- ⇒ [“2.1.2 System overview - refrigerant circuit, vehicles with TSI engine”, page 25](#)

2.1.1 System overview - refrigerant circuit, vehicles with manifold injection

The following information applies to left-hand drive vehicles. A right-hand drive vehicle is similar.



Note

- ◆ *In some cases, it is no longer necessary on air conditioning systems with refrigerant R1234yf to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with refrigerant R1234yf; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*
- ◆ *In some cases, it is no longer necessary on air conditioning systems with R134a refrigerant to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Renewing components .*



1 - Expansion valve

- ☐ Removing and installing
⇒ [page 28](#) .

2 - High-pressure sender - G65-

- ☐ Removing and installing
⇒ [page 26](#) .
- ☐ 8 ± 1 Nm

3 - Evacuating and charging valve, low-pressure side

- ☐ Removing and installing
⇒ [page 39](#) .

4 - Evacuating and charging valve, high-pressure side

- ☐ Removing and installing
⇒ [page 39](#) .

5 - Condenser

- ☐ Removing and installing
⇒ [page 31](#) .

6 - Desiccant cartridge

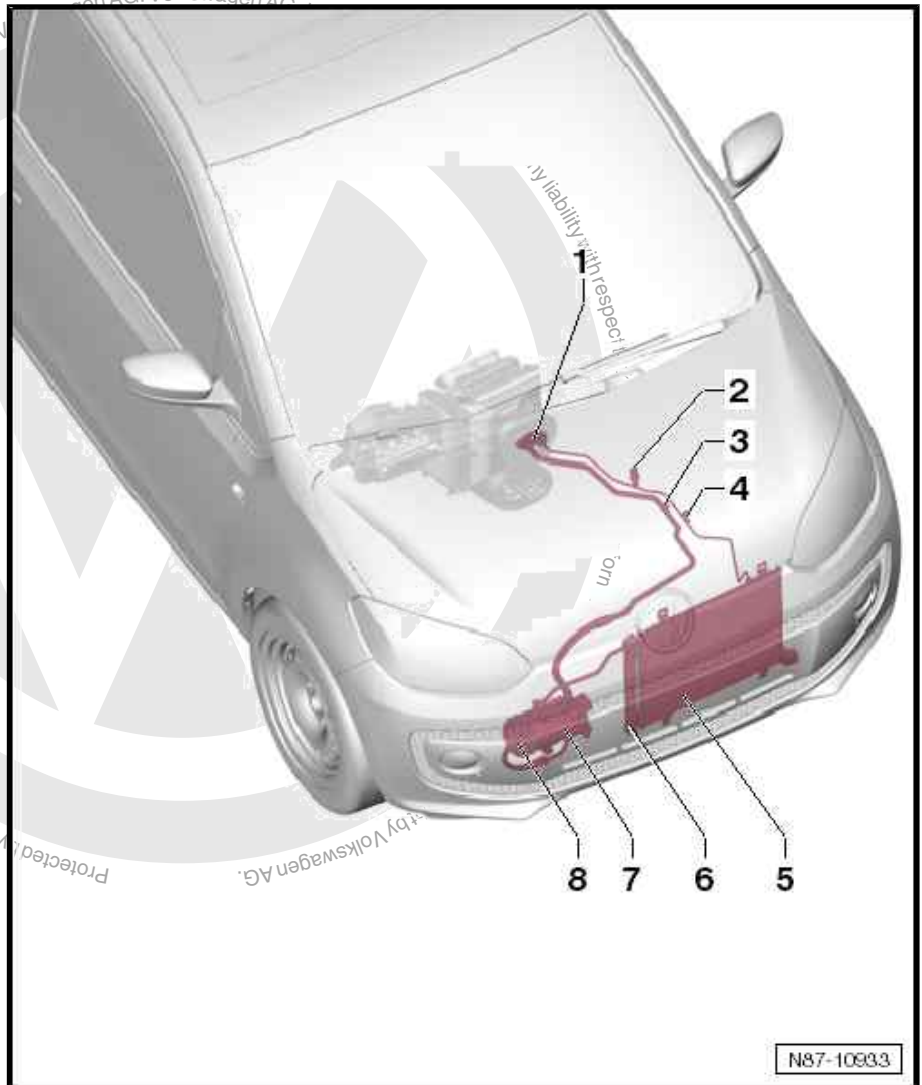
- ☐ Removing and installing
⇒ [page 35](#) .

7 - Air conditioner compressor

- ☐ Removing and installing
⇒ [page 64](#) .

8 - Air conditioning system magnetic clutch - N25-

- ☐ Removing and installing
⇒ [page 73](#) .



2.1.2 System overview - refrigerant circuit, vehicles with TSI engine

The following information applies to left-hand drive vehicles. A right-hand drive vehicle is similar.



Note

- ◆ In some cases, it is no longer necessary on air conditioning systems with refrigerant R1234yf to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with refrigerant R1234yf; Rep. gr. 87 ; Refrigerant circuit; Renewing components .
- ◆ In some cases, it is no longer necessary on air conditioning systems with R134a refrigerant to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Renewing components .



1 - Condenser

- ❑ Different versions. Refer to ⇒ Electronic parts catalogue .
- ❑ Removing and installing ⇒ [page 31](#)

2 - Refrigerant line between condenser and evaporator

- ❑ Removing and installing ⇒ [page 42](#)

3 - Service connection, high-pressure side

- ❑ Removing and installing ⇒ [page 39](#)
- ❑ Protective cap: 0.4 ± 0.1 Nm
- ❑ Valve: 2 ± 0.2 Nm

4 - Service connection, low-pressure side

- ❑ Removing and installing ⇒ [page 39](#)
- ❑ Protective cap: 0.4 ± 0.1 Nm
- ❑ Valve: 2 ± 0.2 Nm

5 - High-pressure sender - G65-

- ❑ Removing and installing ⇒ [page 26](#)
- ❑ 8 ± 1 Nm

6 - Refrigerant line air conditioner compressor-evaporator

- ❑ Removing and installing ⇒ [page 52](#)

7 - Bolts

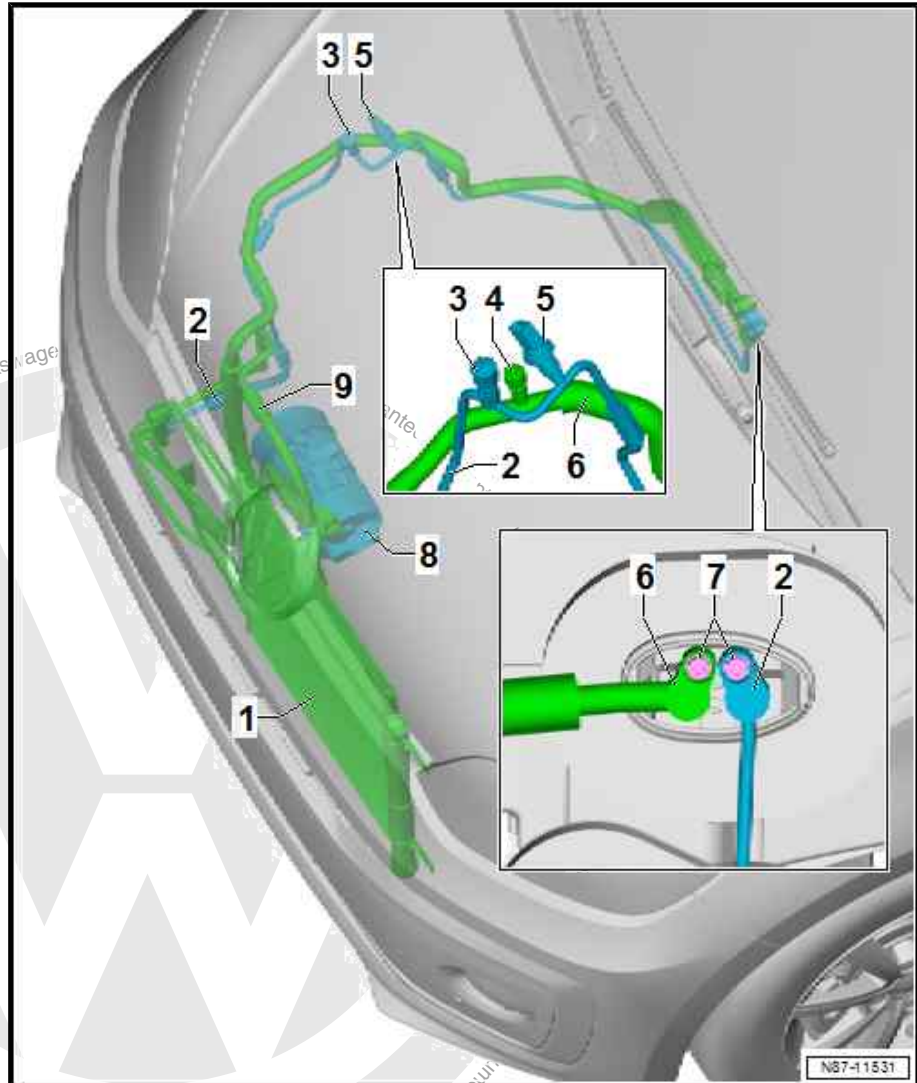
- ❑ 12 Nm

8 - Air conditioner compressor

- ❑ Assembly overview ⇒ [page 58](#)
- ❑ Removing and installing ⇒ [page 64](#)
- ❑ Removing from and installing on bracket ⇒ [page 64](#)

9 - Refrigerant line between condenser and air conditioner compressor

- ❑ Removing and installing ⇒ [page 48](#)



2.2 Removing and installing high-pressure sender - G65-

Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1410-

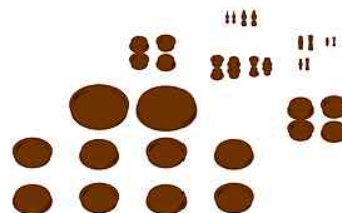
V.A.G 1410



W00-11174

- ◆ Engine bung set - VAS 6122-

VAS 6122



W00-11228

Removing



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 protective goggles.
- Counterhold refrigerant lines using a suitable tool.



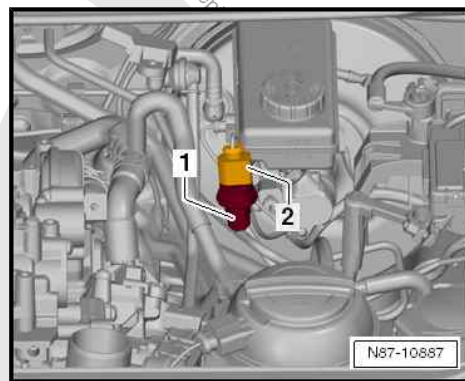
- Disconnect electrical connector -2-.
- Counterhold refrigerant lines using a suitable tool. While doing this, detach high-pressure sender - G65- -1-.

⚠ 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 protective 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.



- For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122- .
- Unscrew high-pressure sender - G65- -1-.

Installing

Install in reverse order of removal, observing the following:

- Renew seal for high pressure sender - G65- -1-.

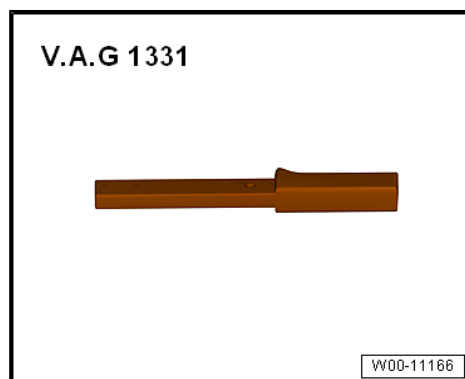
Specified torques

Component	Specified torque
High-pressure sender - G65-	8 Nm

2.3 Removing and installing expansion valve

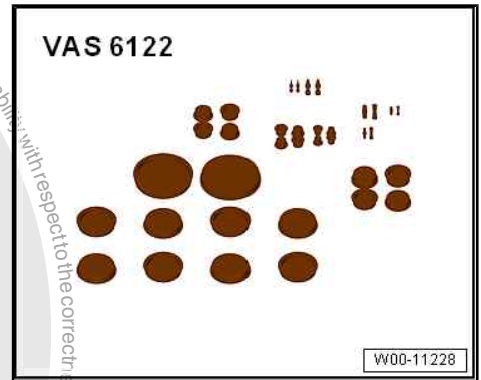
Special tools and workshop equipment required

- ♦ Torque wrench - V.A.G 1331-





◆ Engine bung set - VAS 6122-



1 - Seal between evaporator housing and plenum chamber bulkhead

2 - O-ring

☐ Renew

3 - Expansion valve

☐ Aperture must be sealed against splashed water.

4 - O-ring

☐ Renew

5 - High-pressure refrigerant line

6 - Low-pressure refrigerant line

7 - Socket head bolt with washer

☐ 5 Nm

8 - Bolts

☐ 12 Nm

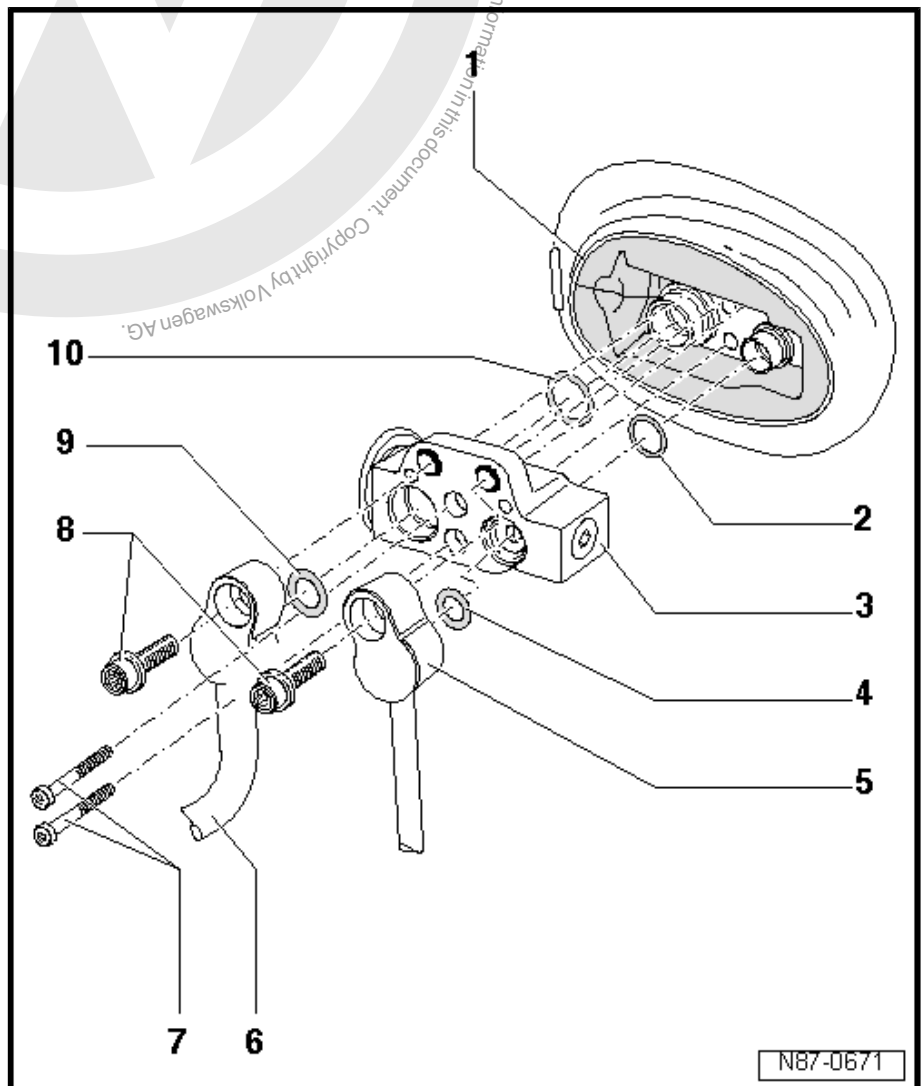
☐ Qty. 2

9 - Seal

☐ Renew

10 - Seal

☐ Renew



Removing

- Remove air filter housing ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .

Vehicles with R134a refrigerant

- Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .



Vehicles with R1234yf refrigerant

- Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit .

Continued for all vehicles

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 protective 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.

- For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122- .
- Unscrew bolts -8-.
- Pull out refrigerant lines -5- and -6-.
- Unscrew bolts -7-.
- Remove expansion valve -3-.

Installing

Install in reverse order of removal, observing the following:

- Renew seals -2-, -4-, -9- and -10-.

NOTICE

Risk of damage to air conditioner compressor if refrigerant circuit is empty.

- Never start the engine if the refrigerant circuit is empty.

Vehicles with R134a refrigerant

- Charge refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Detecting leaks in refrigerant circuit .

Vehicles with R1234yf refrigerant

- Charge refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Charging refrigerant circuit .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Refrigerant circuit; Detecting leaks .



2.4 Removing and installing condenser

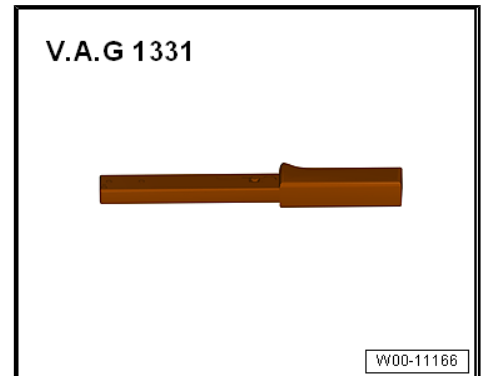
⇒ ["2.4.1 Removing and installing condenser, vehicles with manifold injection", page 31](#)

⇒ ["2.4.2 Removing and installing condenser, vehicles with TSI engine", page 33](#)

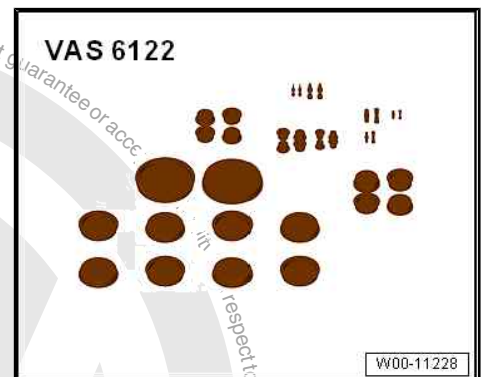
2.4.1 Removing and installing condenser, vehicles with manifold injection

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



- ◆ Engine bung set - VAS 6122-



Removing

- Remove front bumper ⇒ General body repairs, exterior; Rep. gr. 63; Front bumper; Removing and installing bumper cover.
- Partly remove washer fluid reservoir and attach on side ⇒ Electrical system; Rep. gr. 92; Windscreen washer system; Removing and installing washer fluid reservoir.

Vehicles with R134a refrigerant

- Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00; Working with air conditioner service station.

Vehicles with R1234yf refrigerant

- Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87; Working with air conditioner service station; Draining refrigerant circuit.



Continued for all vehicles

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 protective 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.

- For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122- .
- Remove bolts -1- (12 Nm).
- Remove refrigerant lines -2- from condenser.
- Push condenser -4- in direction of -arrow A- out of brackets -3- and -5- and remove downwards.

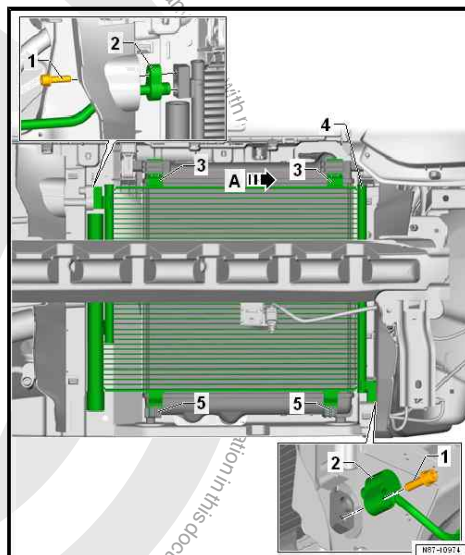
Installing

- Install in reverse order of removal, observing the following:
- If the condenser has been renewed, 10% of the total quantity of refrigerant oil specified for the fitted air conditioning compressor must be filled into the refrigerant circuit
⇒ **“4 Technical data”, page 7** .
- Moisten new seals with refrigerant oil before installing refrigerant line.

NOTICE

Risk of damage to air conditioner compressor if refrigerant circuit is empty.

- Never start the engine if the refrigerant circuit is empty.



Vehicles with R134a refrigerant

- Charge refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Detecting leaks in refrigerant circuit .

Vehicles with R1234yf refrigerant

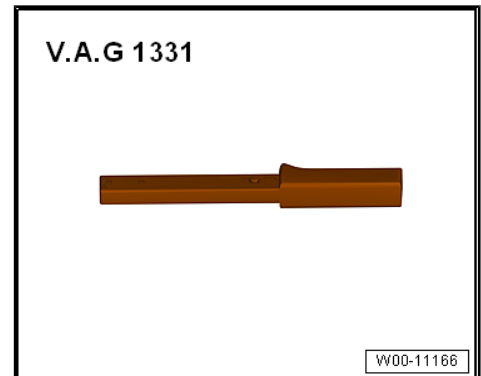
- Charge refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Charging refrigerant circuit .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Refrigerant circuit; Detecting leaks .



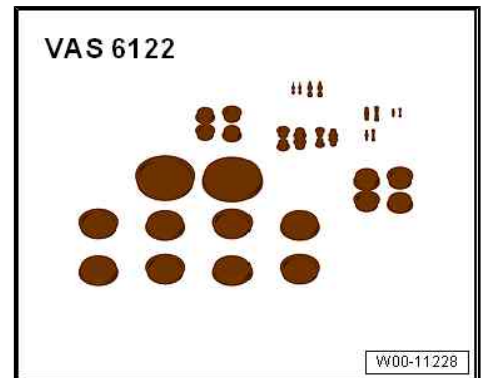
2.4.2 Removing and installing condenser, vehicles with TSI engine

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



- ◆ Engine bung set - VAS 6122-



Removing

- Remove front bumper ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Removing and installing bumper cover .
- Partly remove washer fluid reservoir and attach on side ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .
- Unclip air ducts on right.

Vehicles with R134a refrigerant

- Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .

Vehicles with R1234yf refrigerant

- Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit .



Continued for all vehicles

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 protective 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.

- For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122-.
- Remove bolts -2- (12 Nm).
- Remove refrigerant lines -3- from condenser -1-.
- Unscrew bolt from block connection of condenser -1-.
- Unhook condenser -1- from retainers -arrows- and remove downwards.

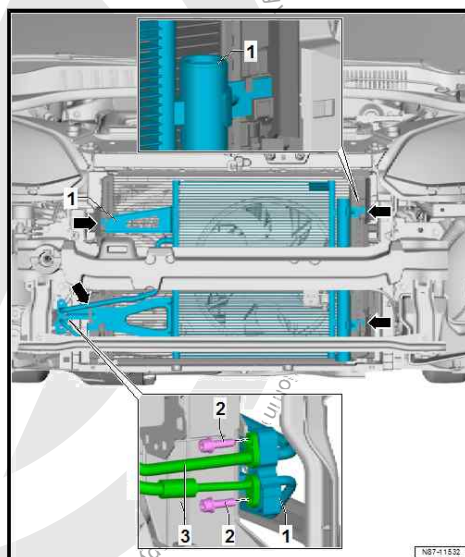
Installing

- Install in reverse order of removal, observing the following:
- If the condenser has been renewed, 10% of the total quantity of refrigerant oil specified for the fitted air conditioning compressor must be filled into the refrigerant circuit
⇒ ["4 Technical data", page 7](#).
- Moisten new seals with refrigerant oil before installing refrigerant line.

NOTICE

Risk of damage to air conditioner compressor if refrigerant circuit is empty.

- Never start the engine if the refrigerant circuit is empty.



Vehicles with R134a refrigerant

- Charge refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Detecting leaks in refrigerant circuit .

Vehicles with R1234yf refrigerant

- Charge refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Charging refrigerant circuit .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Refrigerant circuit; Detecting leaks .



2.5 Removing and installing desiccant bag or cartridge

⇒ [“2.5.1 Removing and installing desiccant bag/cartridge, Keihin”, page 35](#)

⇒ [“2.5.2 Removing and installing desiccant bag/cartridge, Mahle/Delphi”, page 37](#)

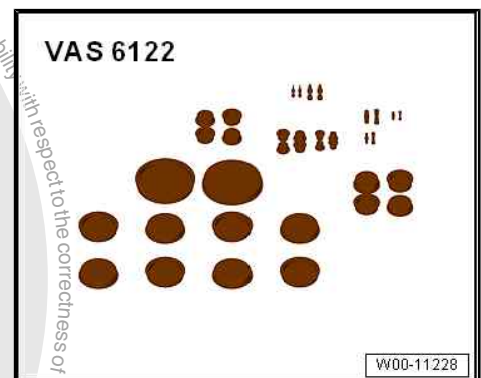
2.5.1 Removing and installing desiccant bag/cartridge, Keihin

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-



- ◆ Engine bung set - VAS 6122-



Removing

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

Vehicles with R134a refrigerant

- Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .

Vehicles with R1234yf refrigerant

- Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit .



Continued for all vehicles

⚠ 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 protective 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- (5 Nm).
- Pull desiccant cartridge 2- out of condenser -1- using a suitable tool.
- Seal open receiver immediately with plug -1- to prevent ingress of dirt and moisture.

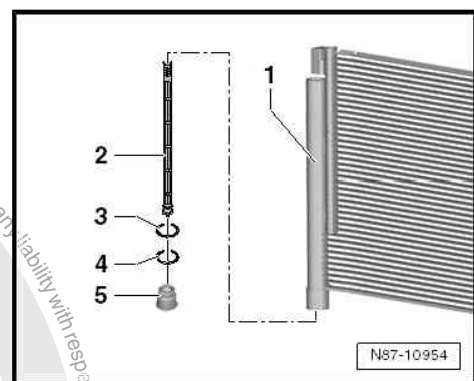
Installing

Install in reverse order of removal, observing the following:



Note

The protective cap, seals and desiccant bag must always be renewed after opening the receiver ⇒ Electronic parts catalogue (ETKA).



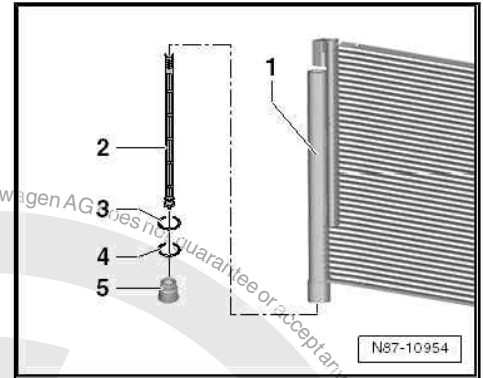


- Insert new desiccant cartridge -2- in condenser -1-.
- Seals -3- and -4- must be renewed.
- Ensure proper seating of cap -5- (5 Nm).

! NOTICE

Risk of damage to air conditioner compressor if refrigerant circuit is empty.

- **Never start the engine if the refrigerant circuit is empty.**



Vehicles with R134a refrigerant

- Charge refrigerant circuit ➔ Air conditioning system with R134a refrigerant; Rep. gr. 00; Working with air conditioner service station .
- Perform leakage test on re-established line connections of refrigerant circuit ➔ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Detecting leaks in refrigerant circuit .

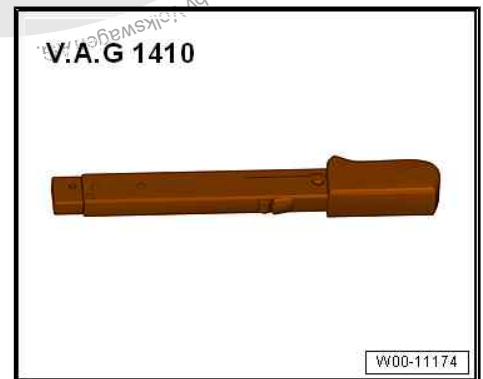
Vehicles with R1234yf refrigerant

- Charge refrigerant circuit ➔ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Charging refrigerant circuit .
- Perform leakage test on re-established line connections of refrigerant circuit ➔ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Refrigerant circuit; Detecting leaks .

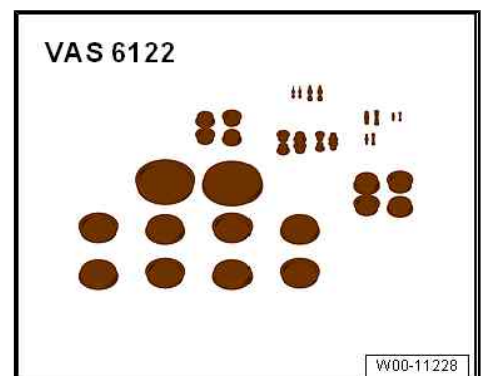
2.5.2 Removing and installing desiccant bag/cartridge, Mahle/Delphi

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-



- ◆ Engine bung set - VAS 6122-





Removing

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

Vehicles with R134a refrigerant

- Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .

Vehicles with R1234yf refrigerant

- Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit .

Continued for all vehicles

⚠ 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 protective 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-.
- Pull desiccant cartridge -2- out of condenser -1- using a suitable tool.
- Seal open receiver immediately with plug -A- to prevent ingress of dirt and moisture.

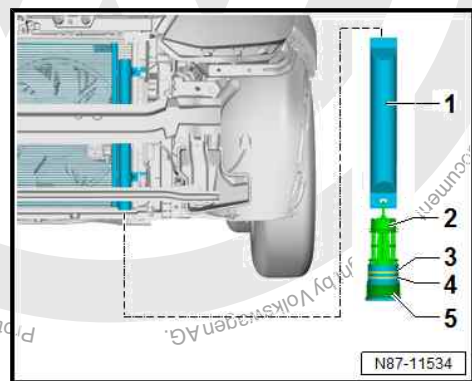
Installing

Install in reverse order of removal, observing the following:



Note

The protective cap, seals and desiccant bag must always be renewed after opening the receiver ⇒ Electronic parts catalogue (ETKA) .





- Insert new desiccant cartridge -2- in condenser -1-.
- Seals -3- and -4- must be renewed.
- Make sure cap -5- is seated correctly.

! NOTICE

Risk of damage to air conditioner compressor if refrigerant circuit is empty.

- **Never start the engine if the refrigerant circuit is empty.**

Vehicles with R134a refrigerant

- Charge refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Detecting leaks in refrigerant circuit .

Vehicles with R1234yf refrigerant

- Charge refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Charging refrigerant circuit .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Refrigerant circuit; Detecting leaks .

Specified torques

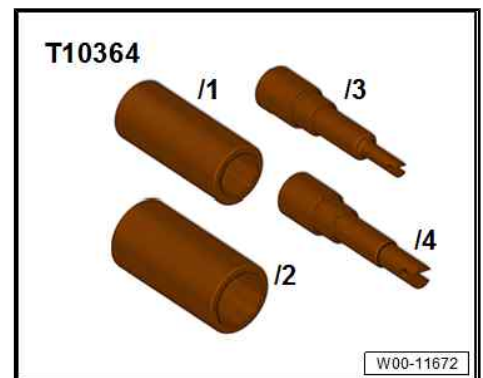
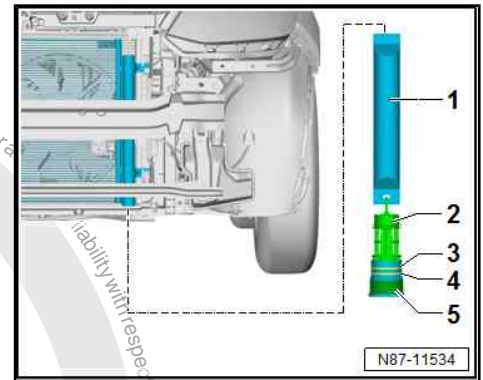
Component	Specified torque
Cap -5-	12 Nm

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

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

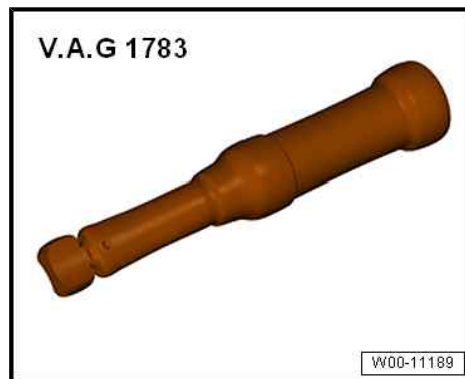
Special tools and workshop equipment required

- ♦ Adapter set for service connections - T10364-

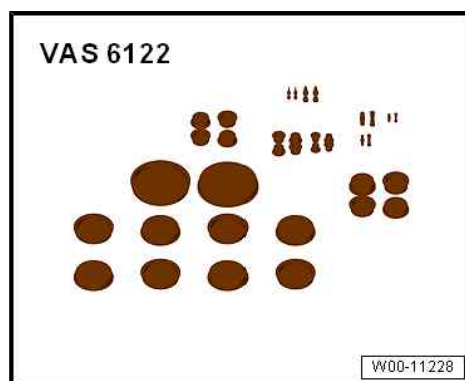




- ◆ Torque wrench - V.A.G 1783-



- ◆ Engine bung set - VAS 6122-



Removing

Vehicles with R134a refrigerant

- Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .

Vehicles with R1234yf refrigerant

- Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit .

Continued for all vehicles

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 protective 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.

- For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122- .



Note

Disregard items -3- and -4-.

- Unscrew valve core -1- and -2- with adapter set for service connections - T10364- .

Installing

Install in reverse order of removal, observing the following:



NOTICE

Risk of damage to air conditioner compressor if refrigerant circuit is empty.

- Never start the engine if the refrigerant circuit is empty.

Vehicles with R134a refrigerant

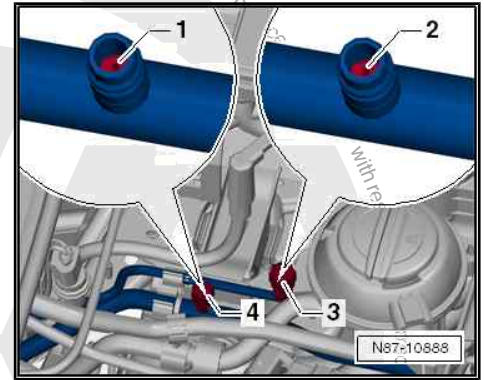
- Charge refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Detecting leaks in refrigerant circuit .

Vehicles with R1234yf refrigerant

- Charge refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Charging refrigerant circuit .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Refrigerant circuit; Detecting leaks .

Specified torques

Component	Specified torque
Valve core -1- and -2-	2.5 Nm



2.7 Commissioning of air conditioning system after filling refrigerant circuit



NOTICE

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

- After installing a new air conditioner compressor or adding new refrigerant oil, fully turn the air conditioner compressor 10 times by hand before the poly V-belt is fitted.
- Start engine with air conditioner compressor switched off (version with magnetic clutch).
- Set air conditioner compressor to lowest possible setting; select "ECON" mode or "A/C Off" (if version without magnetic clutch but with regulating valve).
- Wait until idling speed has stabilised:



- Switch air conditioner compressor on and let system run for at least 2 minutes with engine idling.

NOTICE

Risk of damage to the air conditioner compressor or air conditioner service station.

Opening the valves with the air conditioning system switched on can cause a short circuit between the high pressure and low pressure side.

- **Never open valves on the high pressure or low pressure side with the air conditioning system switched on.**
- If necessary, check pressures in refrigerant circuit using air conditioner service station .
- Switch off engine.
- Turn out handwheel on quick-release coupling adapter.
- Detach the charging hose from the refrigerant circuit.
- Screw protective caps back on.

2.8 Removing and installing refrigerant line between condenser and evaporator

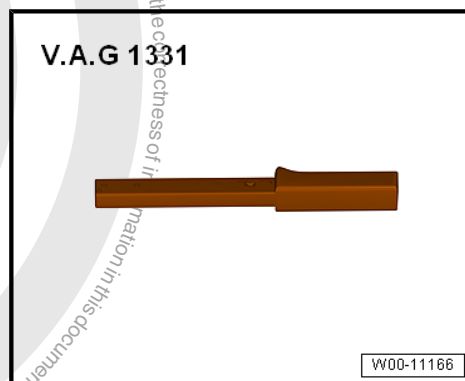
⇒ **“2.8.1 Removing and installing refrigerant line between condenser and evaporator, vehicles with manifold injection”, page 42**

⇒ **“2.8.2 Removing and installing refrigerant line between condenser and evaporator, vehicles with TSI engine”, page 44**

2.8.1 Removing and installing refrigerant line between condenser and evaporator, vehicles with manifold injection

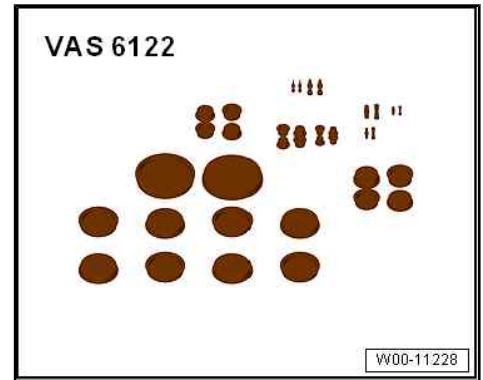
Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-





◆ Engine bung set - VAS 6122-



Removing

- Remove air filter housing ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .
- Remove left headlight ⇒ Rep. gr. 94 ; Headlights; Assembly overview - headlights .
- Move lock carrier to service position ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Moving to and from service position .
- Detach washer fluid reservoir ⇒ Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .

Vehicles with R134a refrigerant

- Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .

Vehicles with R1234yf refrigerant

- Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit .

Continued for all vehicles

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 protective 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.**

- For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122- .



- Remove bolts -2- and -6-.
- Disconnect electrical connector -4-.
- Unclip refrigerant line -1- from retainers -3- and -5-.
- Remove refrigerant line -1-.

Installing

Install in reverse order of removal, observing the following:



Note

Ensure proper seating of seals in the groove of the respective refrigerant line.



NOTICE

Risk of damage to air conditioner compressor if refrigerant circuit is empty.

- **Never start the engine if the refrigerant circuit is empty.**

Vehicles with R134a refrigerant

- Charge refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Detecting leaks in refrigerant circuit .

Vehicles with R1234yf refrigerant

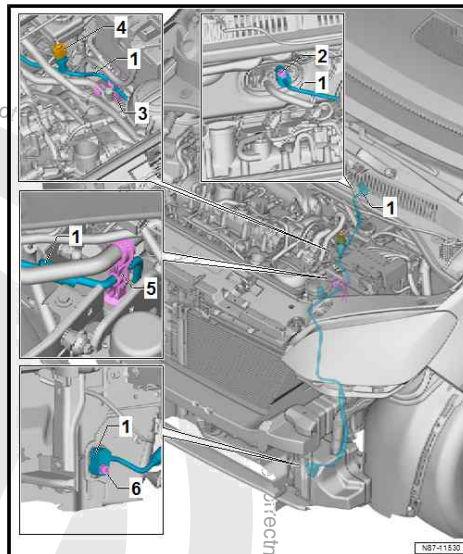
- Charge refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Charging refrigerant circuit .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Refrigerant circuit; Detecting leaks .

Specified torques

- ♦ ⇒ [“2.1 System overview - refrigerant circuit”, page 24](#)
- ♦ ⇒ [“3.1 Assembly overview - drive unit of air conditioner compressor”, page 58](#)
- ♦ Headlights; Assembly overview - headlights ⇒ Rep. gr. 94 ; Headlights; Assembly overview - headlights .

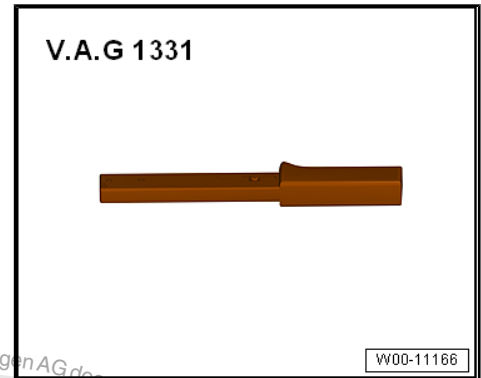
2.8.2 Removing and installing refrigerant line between condenser and evaporator, vehicles with TSI engine

Special tools and workshop equipment required

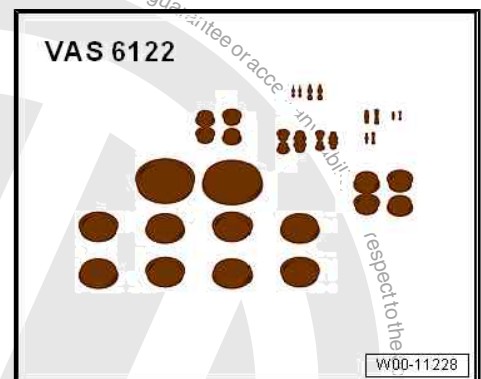




◆ Torque wrench - V.A.G 1331-



◆ Engine bung set - VAS 6122-



Removing

- Remove air filter housing ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .
- Remove right headlight ⇒ Rep. gr. 94 ; Headlights; Assembly overview - headlights .
- Move lock carrier to service position ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Moving to and from service position .

Vehicles with R134a refrigerant

- Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .

Vehicles with R1234yf refrigerant

- Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit .



Continued for all vehicles



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 protective 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.
- For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122- .



- Unscrew refrigerant line -3-.
- Disconnect electrical connector -4-.
- Unscrew bolts -2- and -5-.
- Unclip refrigerant line -1- from retainer -3-.
- Remove refrigerant line -1-.

Installing

Install in reverse order of removal, observing the following:



Note

Ensure proper seating of seals in the groove of the respective refrigerant line.



NOTICE

Risk of damage to air conditioner compressor if refrigerant circuit is empty.

- **Never start the engine if the refrigerant circuit is empty.**

Vehicles with R134a refrigerant

Charge refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .

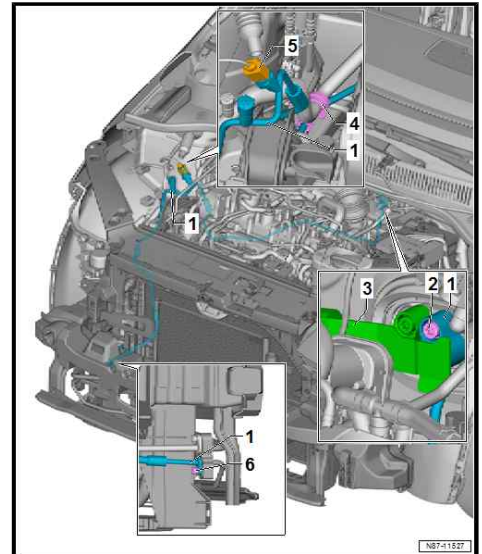
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Detecting leaks in refrigerant circuit .

Vehicles with R1234yf refrigerant

- Charge refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Charging refrigerant circuit .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Refrigerant circuit; Detecting leaks .

Specified torques

- ◆ ⇒ ["2.1 System overview - refrigerant circuit", page 24](#)
- ◆ ⇒ ["3.1 Assembly overview - drive unit of air conditioner compressor", page 58](#)
- ◆ Headlights; Assembly overview - headlights ⇒ Rep. gr. 94 ; Headlights; Assembly overview - headlights .





2.9 Removing and installing refrigerant line between condenser and air conditioner compressor

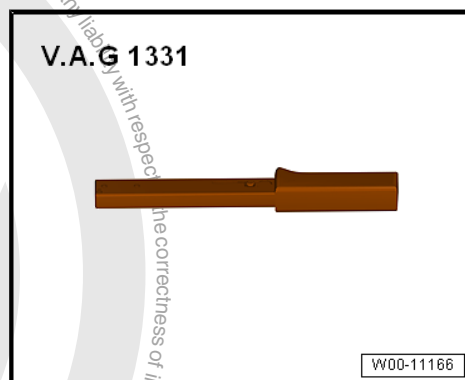
⇒ **"2.9.1 Removing and installing refrigerant line between condenser and air conditioner compressor, vehicles with manifold injection", page 48**

⇒ **"2.9.2 Removing and installing refrigerant line between condenser and air conditioner compressor, vehicles with TSI engine", page 50**

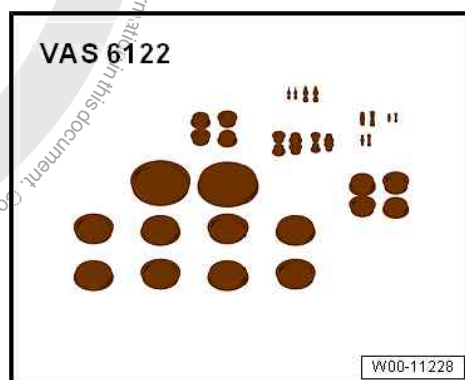
2.9.1 Removing and installing refrigerant line between condenser and air conditioner compressor, vehicles with manifold injection

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



- ◆ Engine bung set - VAS 6122-



Removing

- Move lock carrier to service position ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Moving to and from service position .

Vehicles with R134a refrigerant

- Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .

Vehicles with R1234yf refrigerant

- Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit .



Continued for all vehicles

⚠ 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 protective 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.

- For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122- .
- Unscrew bolts -2- and -3-.
- Remove refrigerant line -1-.

Installing

Install in reverse order of removal, observing the following:

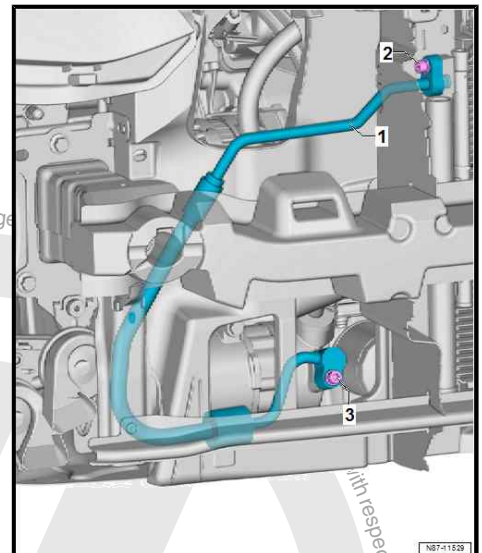
Note

Ensure proper seating of seals in the groove of the respective refrigerant line.

⚠ NOTICE

Risk of damage to air conditioner compressor if refrigerant circuit is empty.

- Never start the engine if the refrigerant circuit is empty.



Vehicles with R134a refrigerant

- Charge refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Detecting leaks in refrigerant circuit .

Vehicles with R1234yf refrigerant

- Charge refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Charging refrigerant circuit .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Refrigerant circuit; Detecting leaks .

Specified torques

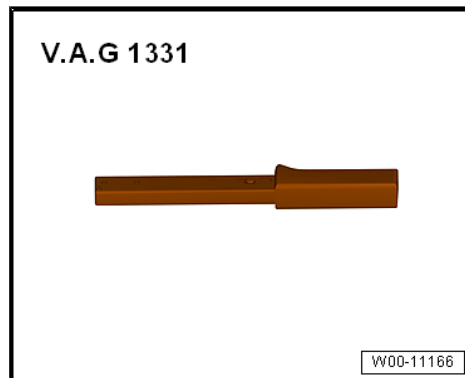
- ◆ ⇒ [“2.1 System overview - refrigerant circuit”, page 24](#)
- ◆ ⇒ [“3.1 Assembly overview - drive unit of air conditioner compressor”, page 58](#)



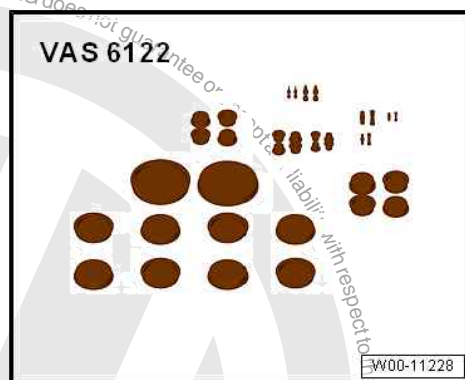
2.9.2 Removing and installing refrigerant line between condenser and air conditioner compressor, vehicles with TSI engine

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



- ◆ Engine bung set - VAS 6122-



Removing

- Move lock carrier to service position ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Moving to and from service position .

Vehicles with R134a refrigerant

- Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .

Vehicles with R1234yf refrigerant

- Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit .



Continued for all vehicles

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 protective 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.

- For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122- .
- Unscrew bolts -2- and -3-.
- Remove refrigerant line -1-.

Installing

Install in reverse order of removal, observing the following:



Note

Ensure proper seating of seals in the groove of the respective refrigerant line.

NOTICE

Risk of damage to air conditioner compressor if refrigerant circuit is empty.

- Never start the engine if the refrigerant circuit is empty.

Vehicles with R134a refrigerant

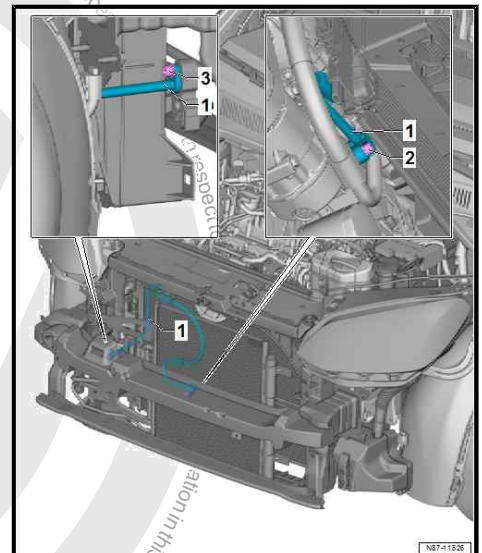
- Charge refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Detecting leaks in refrigerant circuit .

Vehicles with R1234yf refrigerant

- Charge refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Charging refrigerant circuit .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Refrigerant circuit; Detecting leaks .

Specified torques

- ◆ ⇒ [“2.1 System overview - refrigerant circuit”, page 24](#)
- ◆ ⇒ [“3.1 Assembly overview - drive unit of air conditioner compressor”, page 58](#)





2.10 Removing and installing refrigerant line between air conditioner compressor and evaporator

⇒ "2.10.1 Removing and installing refrigerant line between air conditioner compressor and evaporator, vehicles with manifold injection", page 52

⇒ "2.10.2 Removing and installing refrigerant line between air conditioner compressor and evaporator, vehicles with TSI engine", page 54

2.10.1 Removing and installing refrigerant line between air conditioner compressor and evaporator, vehicles with manifold injection

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-

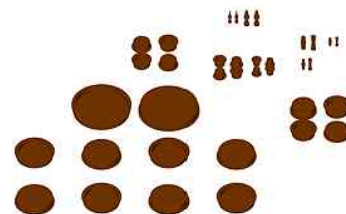
V.A.G 1331



W00-11166

- ◆ Engine bung set - VAS 6122-

VAS 6122



W00-11228

Removing

- Remove air filter housing ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .
- Remove left headlight ⇒ Rep. gr. 94 ; Headlights; Assembly overview - headlights .
- Move lock carrier to service position ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Moving to and from service position .

Vehicles with R134a refrigerant

- Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .



Vehicles with R1234yf refrigerant

- Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit .

Continued for all vehicles

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 protective 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.
- For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122-



- Remove bolts -2- and -6-.
- Unclip refrigerant line -1- from retainers -3-, -4- and -5-.
- Remove refrigerant line -1-.

Installing

Install in reverse order of removal, observing the following:



Note

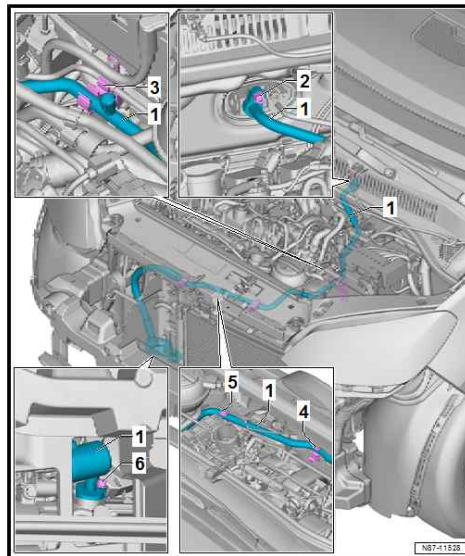
Ensure proper seating of seals in the groove of the respective refrigerant line.



NOTICE

Risk of damage to air conditioner compressor if refrigerant circuit is empty.

- **Never start the engine if the refrigerant circuit is empty.**



Vehicles with R134a refrigerant

- Charge refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Detecting leaks in refrigerant circuit .

Vehicles with R1234yf refrigerant

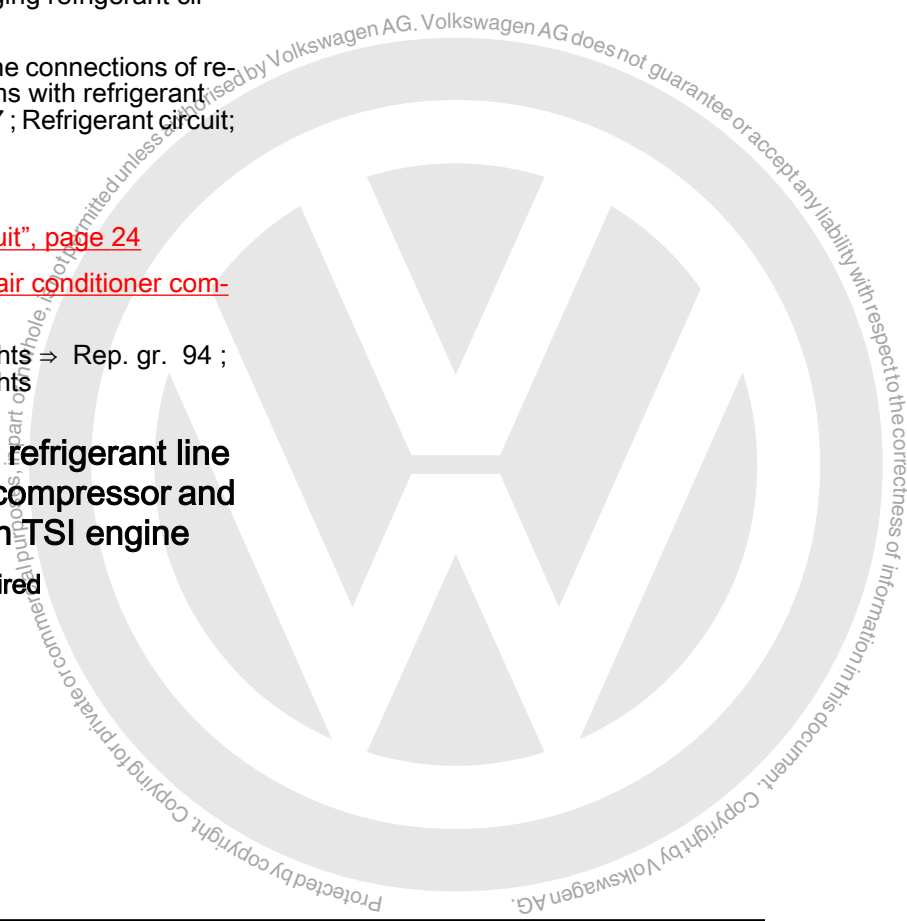
- Charge refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Charging refrigerant circuit .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Refrigerant circuit; Detecting leaks .

Specified torques

- ♦ ⇒ [“2.1 System overview - refrigerant circuit”, page 24](#)
- ♦ ⇒ [“3.1 Assembly overview - drive unit of air conditioner compressor”, page 58](#)
- ♦ Headlights; Assembly overview - headlights ⇒ Rep. gr. 94 ;
Headlights; Assembly overview - headlights

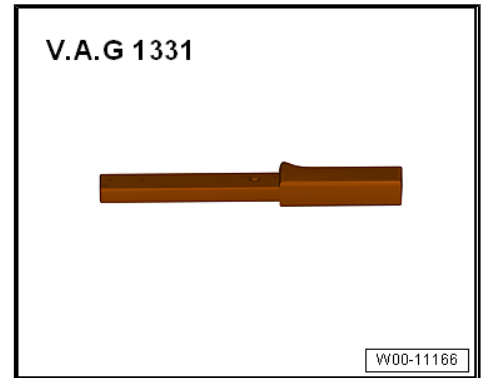
2.10.2 Removing and installing refrigerant line between air conditioner compressor and evaporator, vehicles with TSI engine

Special tools and workshop equipment required

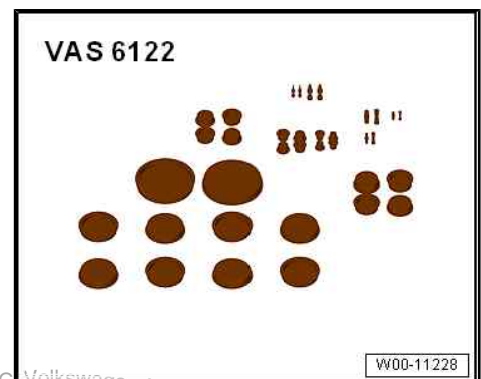




- ◆ Torque wrench - V.A.G 1331-



- ◆ Engine bung set - VAS 6122-



Removing

- Remove air filter housing ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .
- Remove right headlight ⇒ Rep. gr. 94 ; Headlights; Assembly overview - headlights .
- Move lock carrier to service position ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Moving to and from service position .

Vehicles with R134a refrigerant

- Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .

Vehicles with R1234yf refrigerant

- Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit .



Continued for all vehicles

⚠ 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 protective 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.

- For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122- .





- Unscrew bolts -2- and -5-.
- Unclip refrigerant line -1- from retainers -3- and -4-.
- Remove refrigerant line -1-.

Installing

Install in reverse order of removal, observing the following:



Note

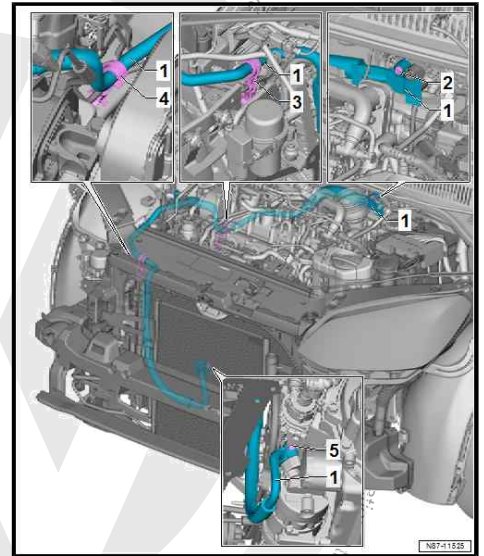
Ensure proper seating of seals in the groove of the respective refrigerant line.



NOTICE

Risk of damage to air conditioner compressor if refrigerant circuit is empty.

- Never start the engine if the refrigerant circuit is empty.



Vehicles with R134a refrigerant

- Charge refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Detecting leaks in refrigerant circuit .

Vehicles with R1234yf refrigerant

- Charge refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Charging refrigerant circuit .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Refrigerant circuit; Detecting leaks .

Specified torques

- ◆ ⇒ [“2.1 System overview - refrigerant circuit”, page 24](#)
- ◆ ⇒ [“3.1 Assembly overview - drive unit of air conditioner compressor”, page 58](#)
- ◆ Headlights; Assembly overview - headlights ⇒ Rep. gr. 94 ; Headlights; Assembly overview - headlights



3 Air conditioner compressor

⇒ "3.1 Assembly overview - drive unit of air conditioner compressor", page 58

⇒ "3.2 Assembly overview - pulley", page 60

⇒ "3.3 Removing air conditioning compressor from and installing on bracket", page 60

⇒ "3.4 Removing and installing air conditioner compressor", page 64

⇒ "3.5 Removing and installing air conditioning system magnetic clutch N25 ", page 73

3.1 Assembly overview - drive unit of air conditioner compressor



Note

- ◆ *In some cases, it is no longer necessary on air conditioning systems with refrigerant R1234yf to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with refrigerant R1234yf; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*
- ◆ *In some cases, it is no longer necessary on air conditioning systems with R134a refrigerant to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Renewing components .*





1 - Air conditioner compressor

2 - Refrigerant line, low-pressure side

3 - M8x28 bolt

□ 25 Nm

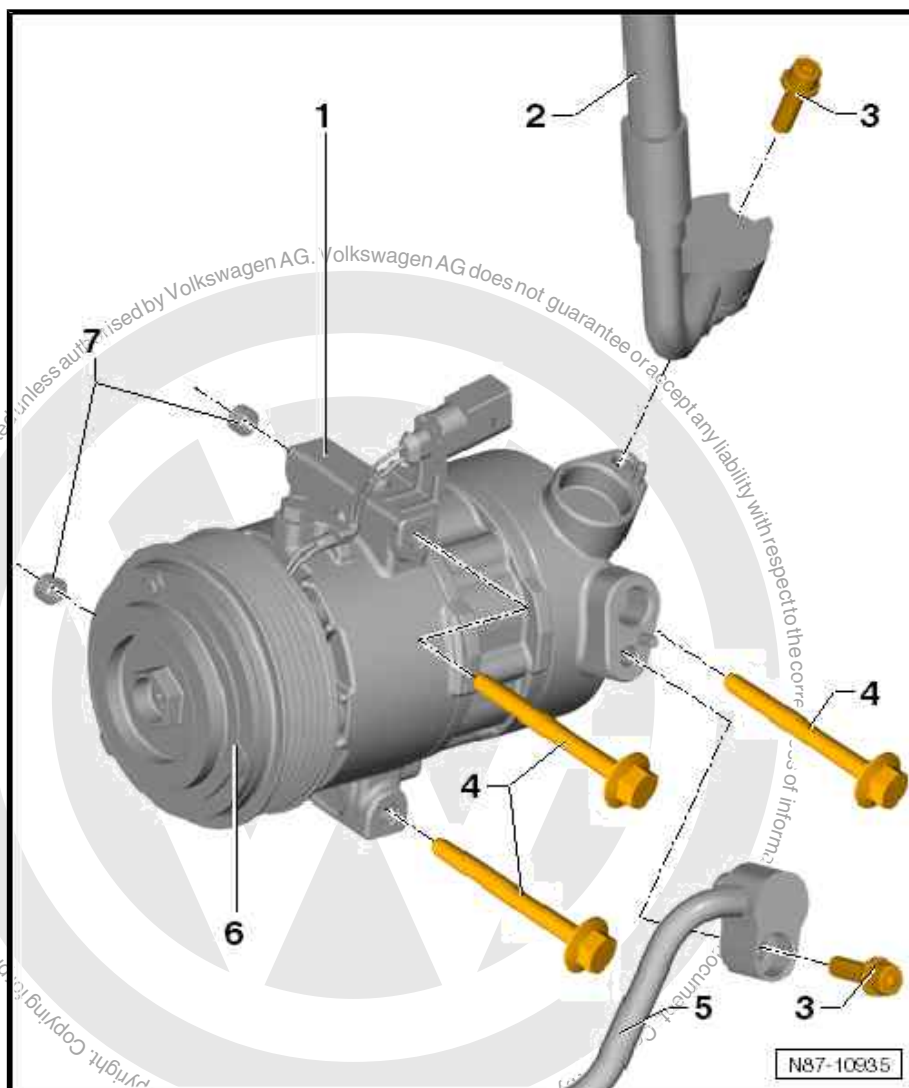
4 - M8x95 bolt

□ 23 Nm

5 - Refrigerant line, high-pressure side

6 - Air conditioning system magnetic clutch - N25- with connector.

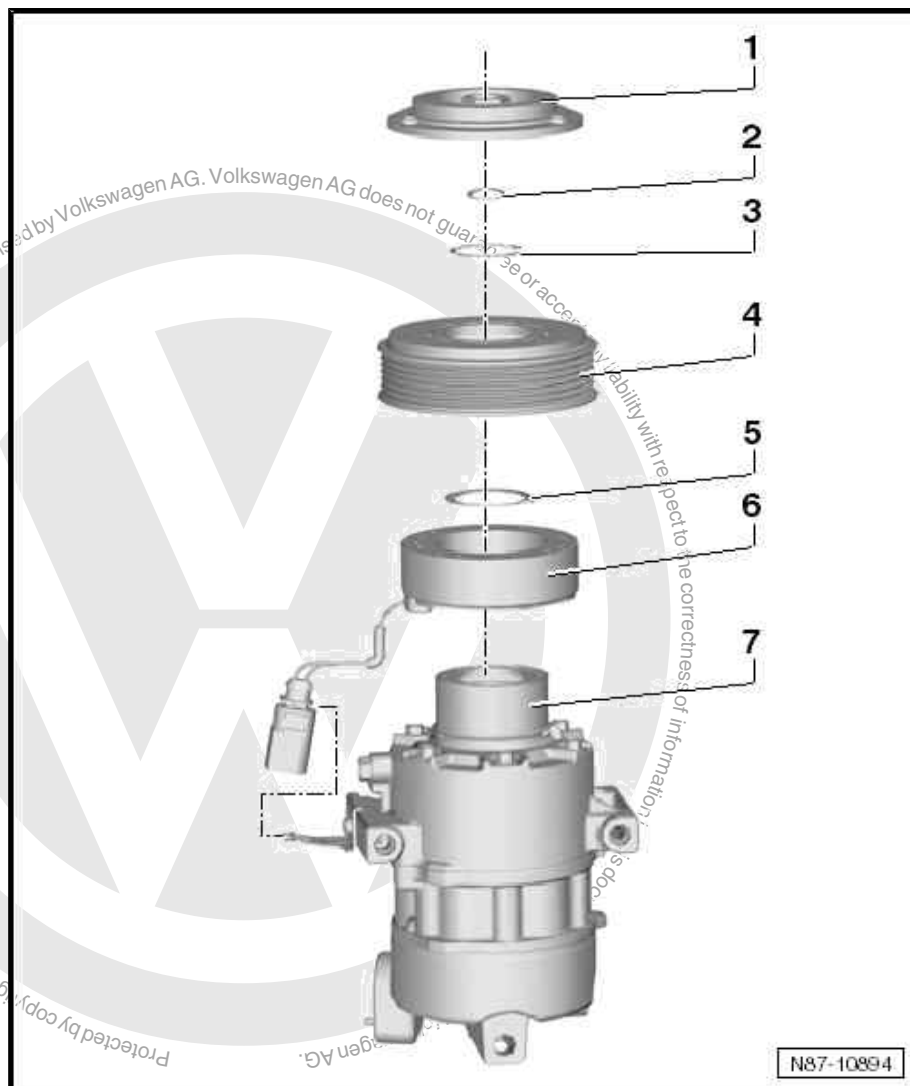
7 - Centring sleeves





3.2 Assembly overview - pulley

- 1 - End cap with shaft nut
□ 20 - 2 Nm
- 2 - Spacer
- 3 - Circlip
- 4 - Poly V-belt pulley
- 5 - Retaining ring
- 6 - Air conditioning system magnetic clutch - N25-
- 7 - Air conditioner compressor



3.3 Removing air conditioning compressor from and installing on bracket

⇒ [“3.3.1 Removing and installing air conditioner compressor on bracket, vehicles with manifold injection”, page 60](#)

⇒ [“3.3.2 Removing and installing air conditioner compressor on bracket, vehicles with TSI engine”, page 62](#)

3.3.1 Removing and installing air conditioner compressor on bracket, vehicles with manifold injection

Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1331-

V.A.G 1331



VW00-11166

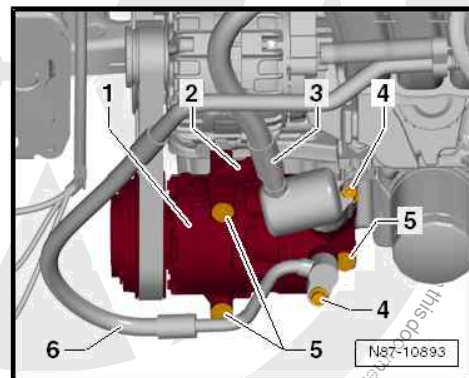
Removing

- Remove front bumper ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Removing and installing bumper cover .
- Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block, pulley end; Removing and installing poly V-belt .
- Separate connector -2- from air conditioner compressor -1-.
- Unscrew hexagon bolts -5- and remove air conditioner compressor -1-.



Note

If only the ancillary bracket is to be removed, the refrigerant lines on the air conditioner compressor must not be released.



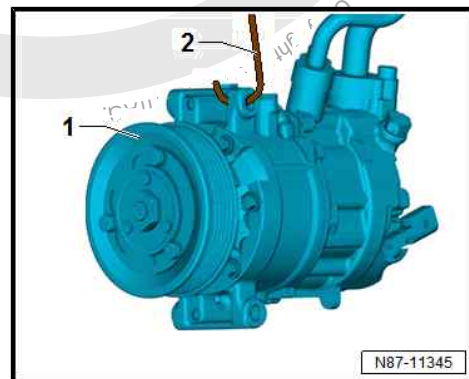
N87-10893

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

Installing

The installation is carried out in reverse order of removal. Observe the following:

- Thoroughly clean contact surfaces on air conditioner compressor and bracket.



N87-11345



- Insert dowel sleeves -1- into air conditioner compressor.



Note

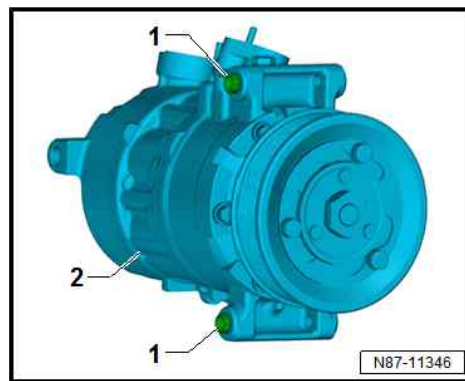
Ensure that dowel sleeves are properly seated and that contact surfaces are clean. Improperly fitted dowel sleeves or dirty or damaged contact surfaces can cause deviations in alignment of air conditioner compressor and engine. In the course of operation, misalignment will result in damage to the air conditioner compressor.



NOTICE

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

- After installing a new air conditioner compressor or adding new refrigerant oil, fully turn the air conditioner compressor 10 times by hand before the poly V-belt is fitted.



Specified torques

- ♦ ⇒ [“3.1 Assembly overview + drive unit of air conditioner compressor”, page 58](#)

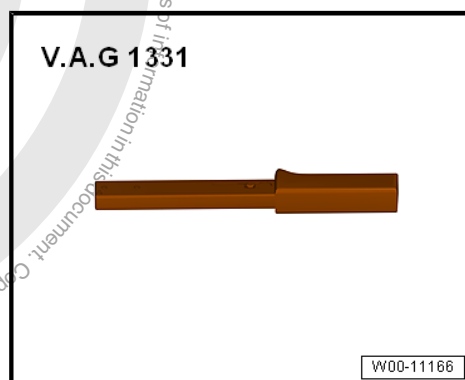
Note the following when starting engine for first time after filling the refrigerant circuit:

- Observe notes on commissioning the air conditioning system after installing the air conditioner compressor ⇒ Air conditioning system with refrigerant R134a or ⇒ Air conditioning systems with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Renewing components .

3.3.2 Removing and installing air conditioner compressor on bracket, vehicles with TSI engine

Special tools and workshop equipment required

- ♦ Torque wrench - V.A.G 1331-



Removing

- Move lock carrier to service position ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Moving to and from service position .
- Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block, pulley end; Removing and installing poly V-belt .

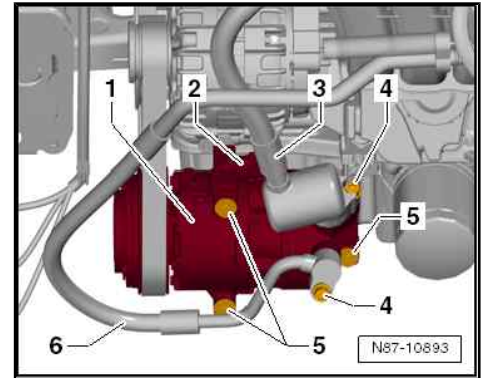


- Separate connector -2- from air conditioner compressor -1-.
- Unscrew hexagon bolts -5- and remove air conditioner compressor -1-.



Note

If only the ancillary bracket is to be removed, the refrigerant lines on the air conditioner compressor must not be released.

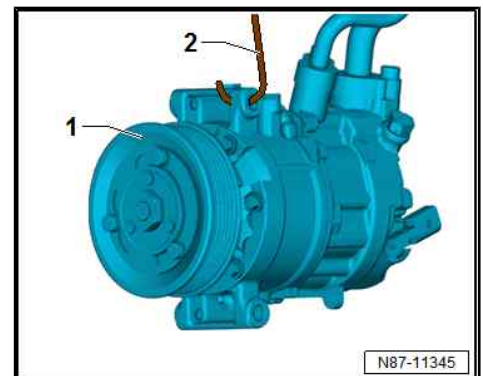


- Secure air conditioner compressor -1- to body with suitable material (e.g. welding wire -2-).

Installing

The installation is carried out in reverse order of removal. Observe the following:

- Thoroughly clean contact surfaces on air conditioner compressor and bracket.

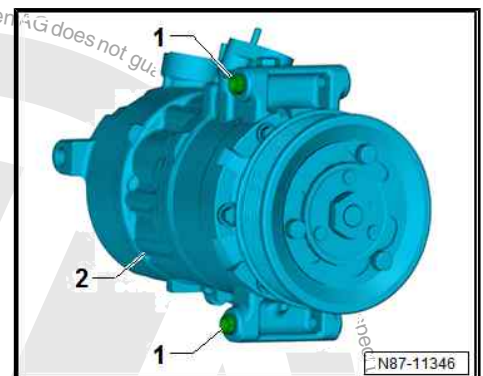


- Insert dowel sleeves -1- into air conditioner compressor.



Note

Ensure that dowel sleeves are properly seated and that contact surfaces are clean. Improperly fitted dowel sleeves or dirty or damaged contact surfaces can cause deviations in alignment of air conditioner compressor and engine. In the course of operation, misalignment will result in damage to the air conditioner compressor.



NOTICE

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

- After installing a new air conditioner compressor or adding new refrigerant oil, fully turn the air conditioner compressor 10 times by hand before the poly V-belt is fitted.

Specified torques

- ◆ ➤ ["3.1 Assembly overview - drive unit of air conditioner compressor", page 58](#)

Note the following when starting engine for first time after filling the refrigerant circuit:

- Observe notes on commissioning the air conditioning system after installing the air conditioner compressor ➤ Air conditioning system with refrigerant R134a or ➤ Air conditioning systems with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Renewing components .



3.4 Removing and installing air conditioner compressor

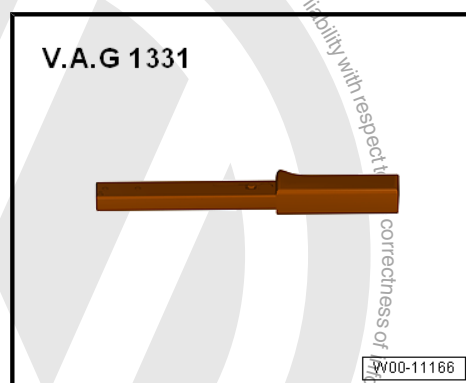
⇒ [“3.4.1 Removing and installing air conditioner compressor, vehicles with manifold injection”, page 64](#)

⇒ [“3.4.2 Removing and installing air conditioner compressor, vehicles with TSI engine”, page 68](#)

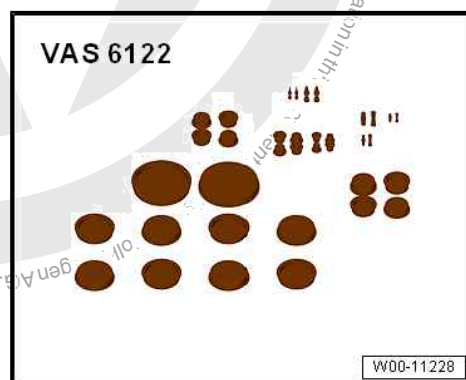
3.4.1 Removing and installing air conditioner compressor, vehicles with manifold injection

Special tools and workshop equipment required

◆ Torque wrench - V.A.G 1331-



◆ Engine bung set - VAS 6122-



◆ Vehicle diagnostic tester



Note

If only ancillary bracket is to be removed, refrigerant lines on air conditioner compressor must not be loosened ⇒ [page 60](#) .

Removing

- Remove front bumper ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Removing and installing bumper cover .
- Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block, pulley end; Removing and installing poly V-belt .

Vehicles with R134a refrigerant

- Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .



Vehicles with R1234yf refrigerant

- Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit .

Continued for all vehicles

CAUTION

Risk of freezing injury caused by escaping pressurised refrigerant.

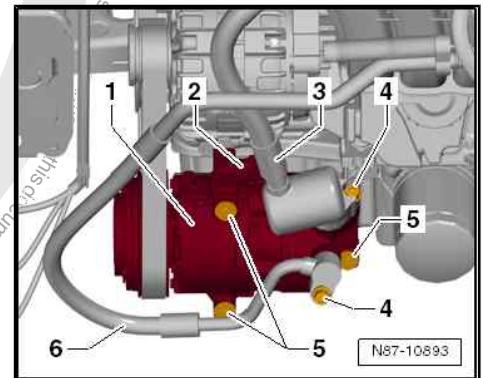
There is a risk of injury to the skin and parts of the body due to freezing.

- **Wear protective gloves.**
 - **Wear protective 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.**
- For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122- .
 - Disconnect electrical connector -2-.

Note

The upper bolt -4- of refrigerant lines -3- can be accessed through the maintenance opening in the lock carrier.

- Unscrew bolts -4-.
- Disconnect refrigerant lines -3- and -6- from air conditioner compressor -1-.
- Unscrew bolts -5-. At the same time, remove air conditioner compressor -1-.



Installing

Install in reverse order of removal, observing the following:

- If air conditioner compressor has been renewed, check poly-V belt for damage and renew as needed ⇒ Rep. gr. 13 ; Cylinder block, belt end; Removing and installing poly-V belt .
- Clean contact surfaces of air conditioner compressor and holder.

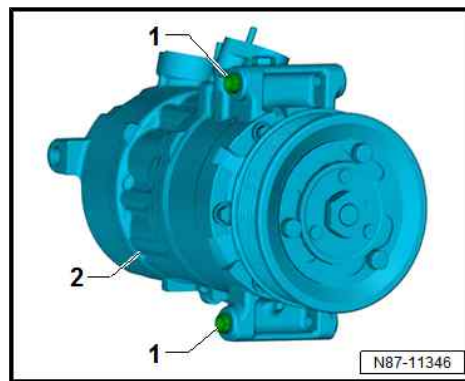


- Insert dowel sleeves -1- into air conditioner compressor -2-.



Note

- ◆ *Improperly fitted dowel sleeves or dirty or damaged contact surfaces can cause deviations in alignment of air conditioner compressor and engine. Deviations in alignment will eventually damage the air condition compressor.*
- ◆ *If the air conditioner compressor is renewed on account of problems (e.g. internal damage), the refrigerant circuit must be cleaned ⇒ Air conditioning systems with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*
- ◆ *When it is removed, the air conditioner compressor contains an indeterminate amount of refrigerant oil. For this reason, it is important to observe the notes on renewing the air conditioner compressor ⇒ Air conditioning systems with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*



On air conditioning systems with R1234yf refrigerant

If the air conditioner compressor is replaced, the following table gives an indication as to whether the refrigerant circuit needs to be flushed before the new air conditioner compressor is installed.

The necessity for flushing depends on the supplier and the refrigerant oil that it uses.

		Supplier of replacement compressor		
		Denso	Mahle/Delphi	Sanden
Supplier of air conditioner compressor installed in vehicle	Denso	Do not flush	Flush	Flush
	Mahle/Delphi	Flush	Do not flush	Do not flush
	Sanden	Flush	Do not flush	Do not flush

- If necessary according to table, flush refrigerant circuit ⇒ Air conditioning systems with R1234yf refrigerant - General information; Rep. gr. 87 ; Refrigerant circuit; Cleaning refrigerant circuit .

Continued for all vehicles



NOTICE


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

- After installing a new air conditioner compressor or adding new refrigerant oil, fully turn the air conditioner compressor 10 times by hand before the poly V-belt is fitted.

Note the following when starting engine for first time after filling the refrigerant circuit

- Start engine with air conditioner compressor switched off (control lamp in **A/C** button is off) and wait until idling speed is stable.
- Open dash panel vents.



- Set temperature to “Lo” on heater and air conditioning controls
– EX21- or on temperature preselection.
- Switch on air conditioner compressor (control lamp in  button lights up) and let it run for at least 5 minutes with engine at idling speed.



Note

- ◆ *The air conditioner compressor is driven by the poly V-belt pulley (not fitted with a magnetic clutch).*
 - ◆ *If an air conditioner compressor seizes, the overload protection separates from the air conditioner compressor shaft. The seizure can normally be detected by the bulges in the poly V-belt pulley. Another indication of a seizure is abraded rubber material around the poly V-belt pulley.*
 - ◆ *The air conditioner compressor has an internal oil circuit to ensure that the air conditioner compressor is not damaged when the refrigerant circuit is empty. This means that approx. 40 to 50 cm³ of refrigerant oil remain in the air conditioner compressor.*
 - ◆ *Only start engine when refrigerant circuits are charged.*
 - ◆ *Only start engine when refrigerant circuit has been correctly installed. If, for example, the refrigerant lines are not connected to the air conditioner compressor and the engine is running, the compressor may heat up so much through internal warming that it will be damaged beyond repair.*
 - ◆ *The air conditioner compressor regulating valve - N280- is not activated when the refrigerant circuit is empty and the air conditioner compressor idles with the engine.*
 - ◆ *If it is necessary to start engine with an empty refrigerant circuit:*
 - ◆ *The refrigerant circuit must be fully assembled.*
 - ◆ *At least ¼ of the quantity of refrigerant oil specified for this refrigerant circuit must be in the air conditioner compressor.*
 - ◆ *The engine speed must not exceed 2000 rpm.*
 - ◆ *Run engine only as long as absolutely necessary, max. 10 min.*
- Moisten new seals with refrigerant oil before installing refrigerant line.



NOTICE

Risk of damage to air conditioner compressor if refrigerant circuit is empty.

- **Never start the engine if the refrigerant circuit is empty.**

Vehicles with R134a refrigerant

- Charge refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Detecting leaks in refrigerant circuit .



Vehicles with R1234yf refrigerant

- Charge refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Charging refrigerant circuit .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Refrigerant circuit; Detecting leaks .

Continued for all vehicles

- Commissioning air conditioning system after charging refrigerant circuit ⇒ [page 41](#) .

Procedure for installing new air conditioner compressor on vehicles with Climatronic

- Use ⇒ Vehicle diagnostic tester to perform Running-in air conditioner compressor.

Continued for all vehicles

- Check operation of heater and air conditioning system.

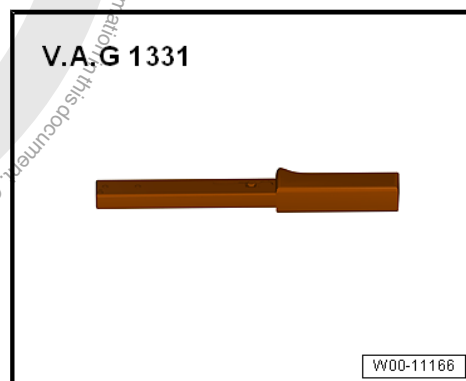
Specified torques

- ♦ ⇒ [“3.1 Assembly overview - drive unit of air conditioner compressor”, page 58](#)

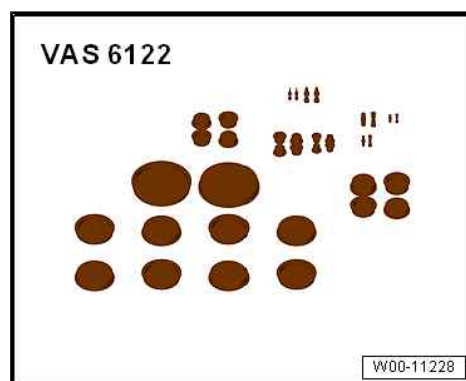
3.4.2 Removing and installing air conditioner compressor, vehicles with TSI engine

Special tools and workshop equipment required

- ♦ Torque wrench - V.A.G 1331-



- ♦ Engine bung set - VAS 6122-



- ♦ Vehicle diagnostic tester



Note

- ◆ If a new air conditioner compressor is installed, a compressor run-in must be carried out using ⇒ *Vehicle diagnostic tester*.
- ◆ If only ancillary bracket is to be removed, refrigerant lines on air conditioner compressor must not be loosened ⇒ *page 60*.

Removing

- Move lock carrier to service position ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Moving to and from service position .
- Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block, pulley end; Removing and installing poly V-belt .

Vehicles with R134a refrigerant

- Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .

Vehicles with R1234yf refrigerant

- Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit .

Continued for all vehicles



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 protective 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.

- For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122- .



- Disconnect electrical connector -2-.



Note

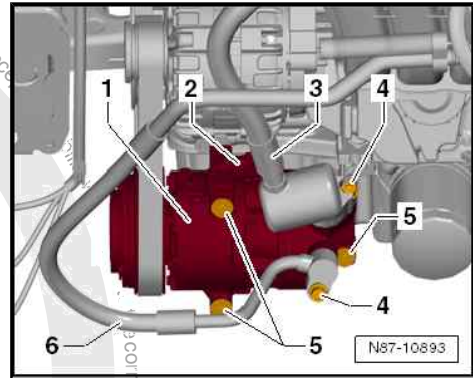
The upper bolt -4- of refrigerant lines -3- can be accessed through the maintenance opening in the lock carrier.

- Remove bolts -4- (23 Nm).
- Disconnect refrigerant lines -3- and -6- from air conditioner compressor -1-.
- Unscrew bolts -5-. At the same time, remove air conditioner compressor -1-.

Installing

Install in reverse order of removal, observing the following:

- If air conditioner compressor has been renewed, check poly-V belt for damage and renew as needed ⇒ Rep. gr. 13 ; Cylinder block, belt end; Removing and installing poly-V belt .
- Clean contact surfaces of air conditioner compressor and holder.



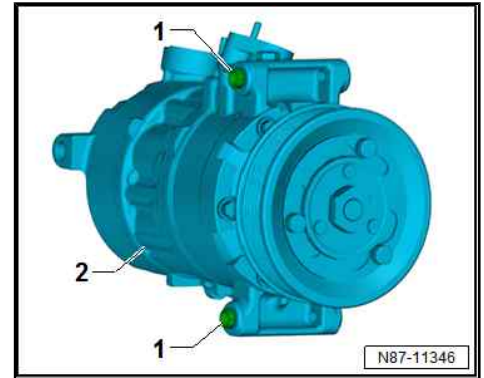


- Insert dowel sleeves -1- into air conditioner compressor -2-.



Note

- ◆ *Improperly fitted dowel sleeves or dirty or damaged contact surfaces can cause deviations in alignment of air conditioner compressor and engine. Deviations in alignment will eventually damage the air condition compressor.*
- ◆ *If the air conditioner compressor is renewed on account of problems (e.g. internal damage), the refrigerant circuit must be cleaned ⇒ Air conditioning systems with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*
- ◆ *When it is removed, the air conditioner compressor contains an indeterminate amount of refrigerant oil. For this reason, it is important to observe the notes on renewing the air conditioner compressor ⇒ Air conditioning systems with refrigerant R1234yf - General information; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*



On air conditioning systems with R1234yf refrigerant

If the air conditioner compressor is replaced, the following table gives an indication as to whether the refrigerant circuit needs to be flushed before the new air conditioner compressor is installed.

The necessity for flushing depends on the supplier and the refrigerant oil that it uses.

		Supplier of replacement compressor		
		Denso	Mahle/Delphi	Sanden
Supplier of air conditioner compressor installed in vehicle	Denso	Do not flush	Flush	Flush
	Mahle/Delphi	Flush	Do not flush	Do not flush
	Sanden	Flush	Do not flush	Do not flush

- If necessary according to table, flush refrigerant circuit ⇒ Air conditioning systems with R1234yf refrigerant - General information; Rep. gr. 87 ; Refrigerant circuit; Cleaning refrigerant circuit .

Continued for all vehicles



NOTICE


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

- After installing a new air conditioner compressor or adding new refrigerant oil, fully turn the air conditioner compressor 10 times by hand before the poly V-belt is fitted.

Note the following when starting engine for first time after filling the refrigerant circuit

- Start engine with air conditioner compressor switched off (control lamp in **A/C** button is off) and wait until idling speed is stable.
- Open dash panel vents.



- Set temperature to “Lo” on heater and air conditioning controls
– EX21- or on temperature preselection.
- Switch on air conditioner compressor (control lamp in  button lights up) and let it run for at least 5 minutes with engine at idling speed.



Note

- ◆ *The air conditioner compressor is driven by the poly V-belt pulley (not fitted with a magnetic clutch).*
- ◆ *If an air conditioner compressor seizes, the overload protection separates from the air conditioner compressor shaft. The seizure can normally be detected by the bulges in the poly V-belt pulley. Another indication of a seizure is abraded rubber material around the poly V-belt pulley.*
- ◆ *The air conditioner compressor has an internal oil circuit to ensure that the air conditioner compressor is not damaged when the refrigerant circuit is empty. This means that approx. 40 to 50 cm³ of refrigerant oil remain in the air conditioner compressor.*
- ◆ *Only start engine when refrigerant circuits are charged.*
- ◆ *Only start engine when refrigerant circuit has been correctly installed. If, for example, the refrigerant lines are not connected to the air conditioner compressor and the engine is running, the compressor may heat up so much through internal warming that it will be damaged beyond repair.*
- ◆ *The air conditioner compressor regulating valve - N280- is not activated when the refrigerant circuit is empty and the air conditioner compressor idles with the engine.*
- ◆ *If it is necessary to start engine with an empty refrigerant circuit:*
- ◆ *The refrigerant circuit must be fully assembled.*
- ◆ *At least ¼ of the quantity of refrigerant oil specified for this refrigerant circuit must be in the air conditioner compressor.*
- ◆ *The engine speed must not exceed 2000 rpm.*
- ◆ *Run engine only as long as absolutely necessary, max. 10 min.*

- Moisten new seals with refrigerant oil before installing refrigerant line.



NOTICE

Risk of damage to air conditioner compressor if refrigerant circuit is empty.

- **Never start the engine if the refrigerant circuit is empty.**

Vehicles with R134a refrigerant

- Charge refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Detecting leaks in refrigerant circuit .



Vehicles with R1234yf refrigerant

- Charge refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Charging refrigerant circuit .
- Perform leakage test on re-established line connections of refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Refrigerant circuit; Detecting leaks .

Continued for all vehicles

- Commissioning air conditioning system after charging refrigerant circuit ⇒ [page 41](#) .

Procedure for installing new air conditioner compressor on vehicles with Climatronic

- Use ⇒ Vehicle diagnostic tester to perform Running-in air conditioner compressor.

Continued for all vehicles

- Check operation of heater and air conditioning system.

Specified torques

- ◆ ⇒ [“3.1 Assembly overview - drive unit of air conditioner compressor”, page 58](#)

3.5 Removing and installing air conditioning system magnetic clutch - N25-

⇒ [“3.5.1 Removing and installing air conditioning system magnetic clutch N25 , vehicles with manifold injection”, page 73](#)

⇒ [“3.5.2 Removing and installing air conditioning system magnetic clutch N25 , vehicles with TSI engine”, page 74](#)

3.5.1 Removing and installing air conditioning system magnetic clutch - N25- , vehicles with manifold injection

Removing



Note

The air conditioner compressor need not be removed.

- Detach right wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Removing and installing front wheel housing liner .
- Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block, pulley end; Removing and installing poly V-belt .



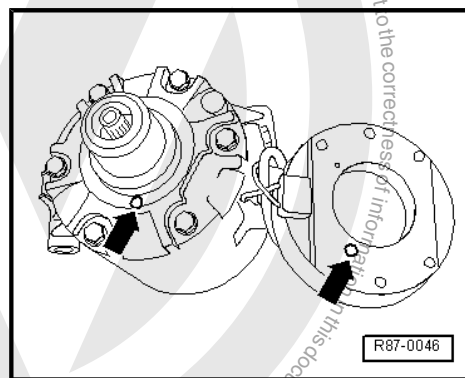
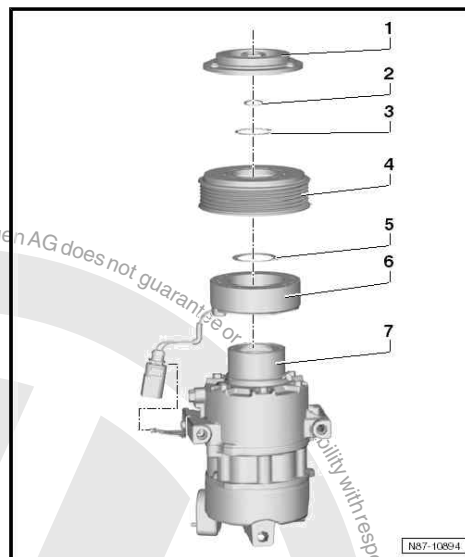
- Counterhold air conditioner shaft -7- and unscrew cap -1- (20 – 2 Nm).
- Disconnect electrical connector.
- Remove shim -2-.
- Remove circlip -3- using suitable pliers.
- Remove poly V-belt pulley -4-.
- Remove retaining ring -5- using suitable pliers.
- Remove air conditioning system magnetic clutch - N25- -6- from air conditioner compressor -7-.

Installing

- Note locking mechanism -arrows- for securing magnetic clutch on air conditioner compressor.

- Specified torque for cap (20 – 2 Nm).

Further installation is performed in the reverse order.



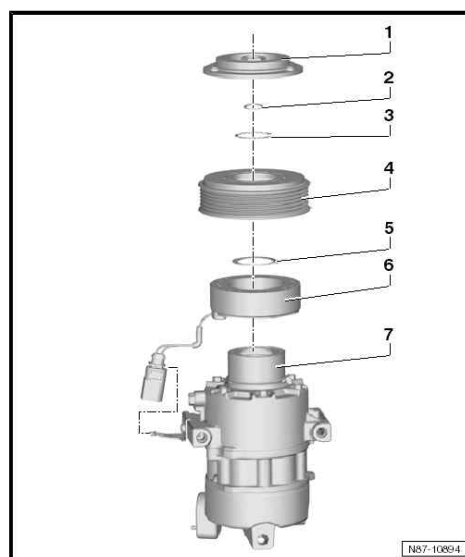
3.5.2 Removing and installing air conditioning system magnetic clutch - N25- , vehicles with TSI engine

Removing

- Remove air conditioner compressor
⇒ [“3.4.2 Removing and installing air conditioner compressor, vehicles with TSI engine”, page 68](#) .
- Counterhold air conditioner shaft -7- and unscrew cap -1- (20 – 2 Nm).
- Disconnect electrical connector.
- Remove shim -2-.
- Remove circlip -3- using suitable pliers.
- Remove poly V-belt pulley -4-.
- Remove retaining ring -5- using suitable pliers.
- Remove air conditioning system magnetic clutch - N25- -6- from air conditioner compressor -7-.

Installing

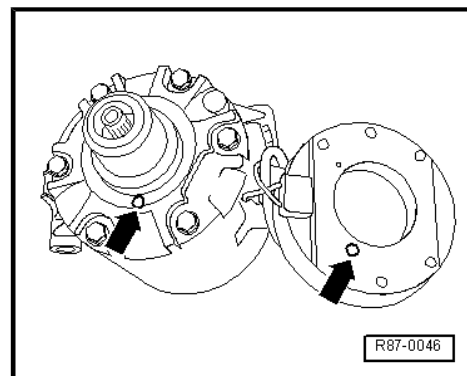
- Note locking mechanism -arrows- for securing magnetic clutch on air conditioner compressor.





- Specified torque for cap (20 – 2 Nm).

Further installation is performed in the reverse order.





4 Control motors/actuators

⇒ ["4.1 Overview of fitting locations - front control motors", page 76](#)

⇒ ["4.2 Removing and installing temperature flap control motor V68 ", page 78](#)

⇒ ["4.3 Removing and installing centre flap control motor V70 ", page 80](#)

⇒ ["4.4 Removing and installing air flow flap control motor V71 ", page 82](#)

⇒ ["4.5 Removing and installing defroster flap control motor V107 ", page 84](#)

⇒ ["4.6 Removing and installing temperature flap actuator", page 86](#)

⇒ ["4.7 Removing and installing fresh air/recirculated air flap actuator", page 88](#)

⇒ ["4.8 Removing and installing flexible shaft for air distribution", page 89](#)

⇒ ["4.9 Removing and installing flexible shaft for temperature flap", page 90](#)

⇒ ["4.10 Removing and installing fresh air/recirculated air flap cable", page 91](#)

4.1 Overview of fitting locations - front control motors

⇒ ["4.1.1 Overview of fitting locations - front control motors, LHD vehicles", page 76](#)

⇒ ["4.1.2 Overview of fitting locations - front control motors, RHD vehicles", page 78](#)

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 84](#)
- ☐ Renewing: initiate basic setting using vehicle diagnostic tester .

2 - Temperature flap control motor - V68-

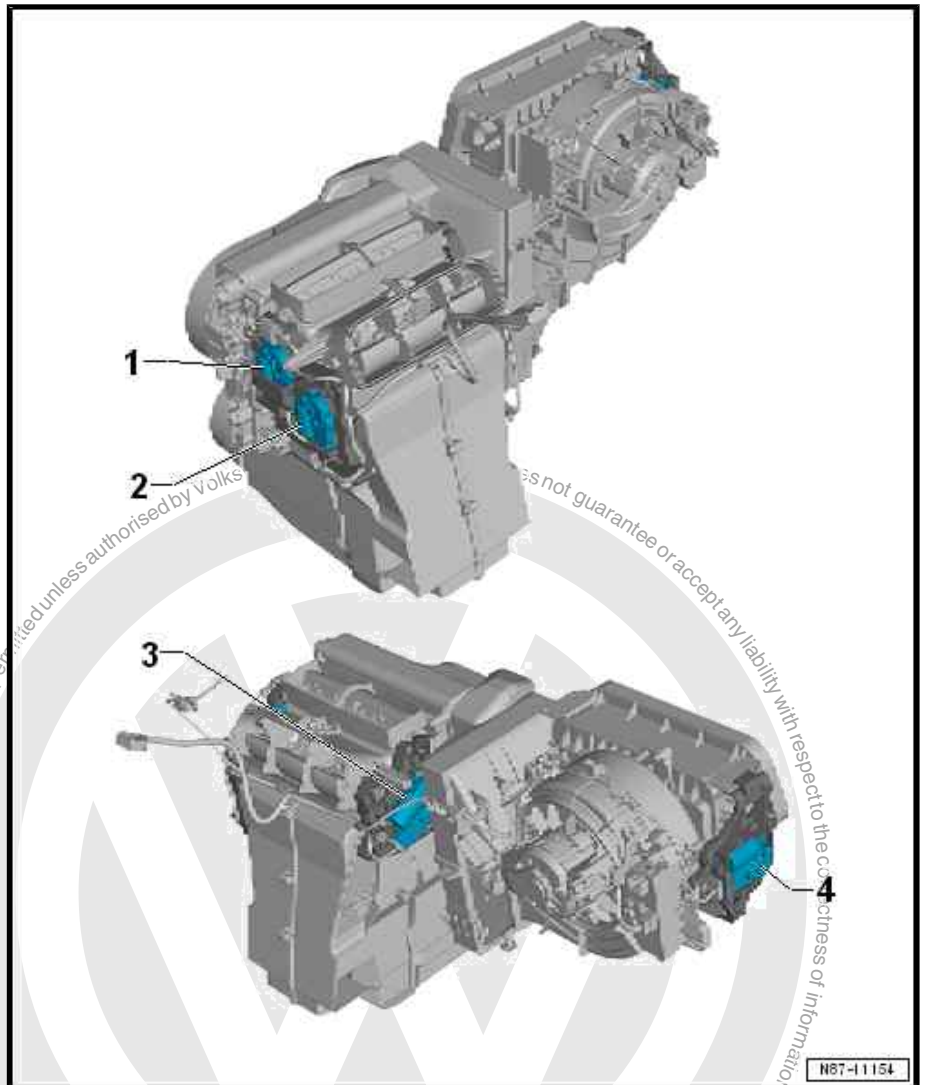
- ☐ Checking: vehicle diagnostic tester
- ☐ Removing and installing
⇒ [page 78](#)
- ☐ Renewing: initiate basic setting using vehicle diagnostic tester .

3 - Central flap control motor - V70-

- ☐ Checking: vehicle diagnostic tester
- ☐ Removing and installing
⇒ [page 80](#)
- ☐ Renewing: initiate basic setting using vehicle diagnostic tester .

4 - Air flow flap control motor - V71-

- ☐ Checking: vehicle diagnostic tester
- ☐ Removing and installing
⇒ [page 82](#)
- ☐ 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 83](#)
- ☐ Renewing: initiate basic setting using vehicle diagnostic tester .

2 - Defroster flap control motor - V107-

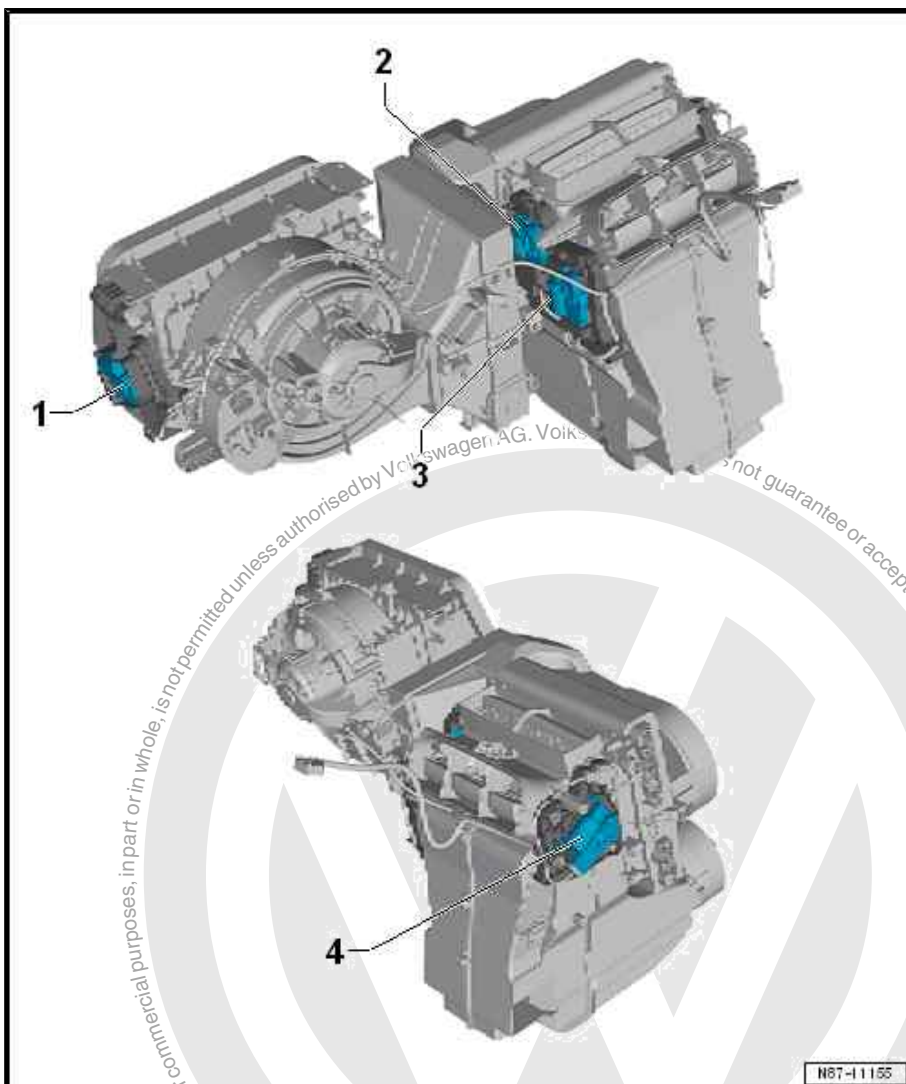
- ☐ Checking: vehicle diagnostic tester
- ☐ Removing and installing
⇒ [page 85](#)
- ☐ Renewing: initiate basic setting using vehicle diagnostic tester .

3 - Temperature flap control motor - V68-

- ☐ Checking: vehicle diagnostic tester
- ☐ Removing and installing
⇒ [page 79](#)
- ☐ Renewing: initiate basic setting using vehicle diagnostic tester .

4 - Central flap control motor - V70-

- ☐ Checking: vehicle diagnostic tester
- ☐ Removing and installing
⇒ [page 81](#)
- ☐ 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 78](#)

⇒ [“4.2.2 Removing and installing temperature flap control motor V68 , right-hand drive vehicles”, page 79](#)

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

Installing

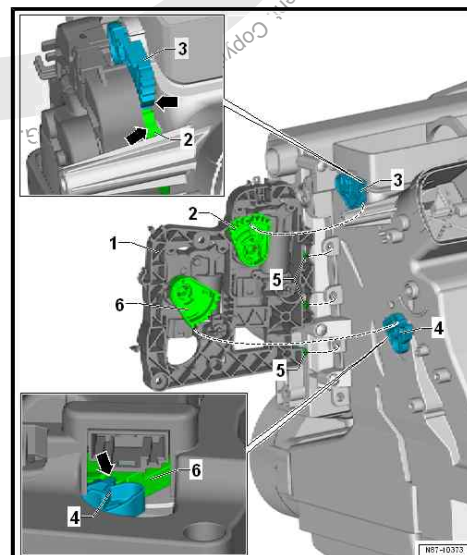
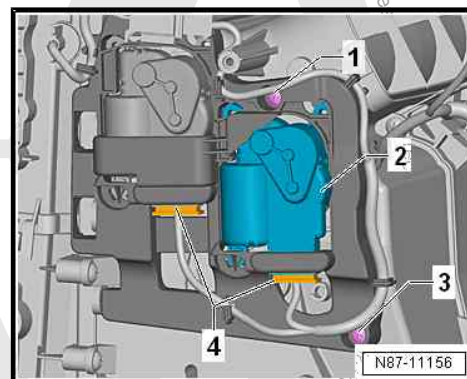
- Install in reverse order of removal, observing the following:



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.
- Further installation is performed in the reverse order.



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

Installing

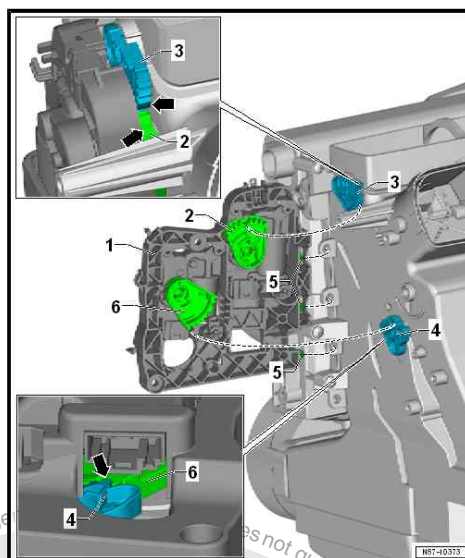
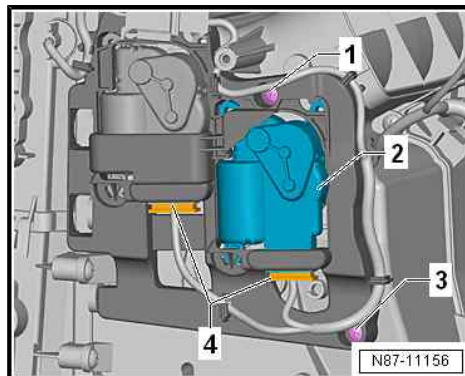
- Install in reverse order of removal, observing the following:



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.
- Further installation is performed in the reverse order.



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 80](#)

⇒ [“4.3.2 Removing and installing centre flap control motor V70 , right-hand drive vehicles”, page 81](#)

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 .
- Separate connector -4-.
- Remove bolts -1-, -3- and -5-.
- Remove centre flap control motor - V70- -2- together with bracket.

Installing

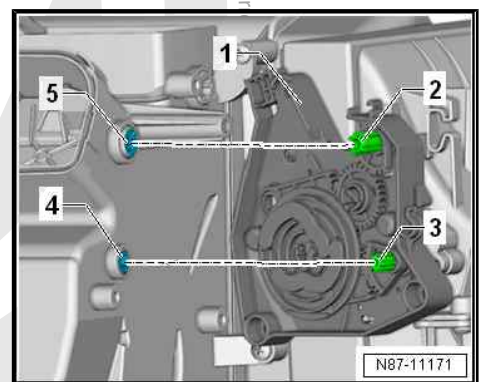
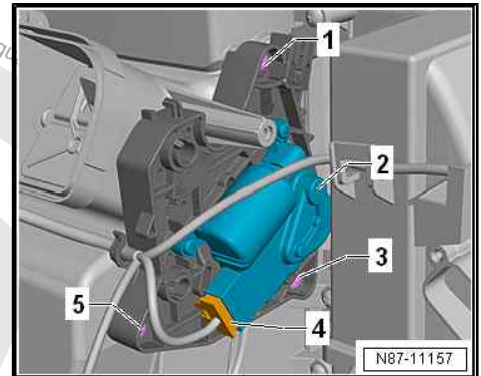
- Install in reverse order of removal, observing the following:



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.
- Further installation is performed in the reverse order.



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

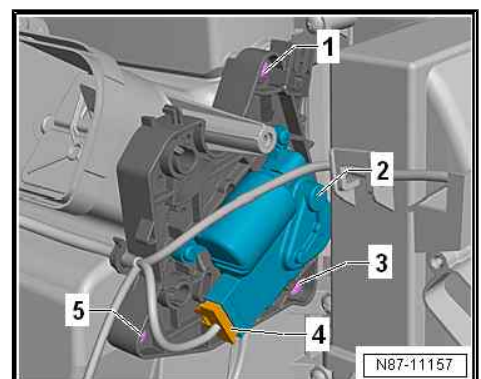
Installing

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



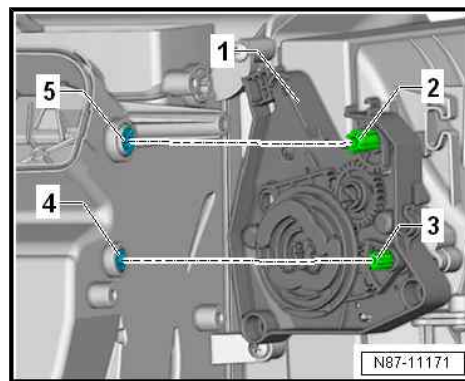
Note

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.
- Further installation is performed in the reverse order.



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 82](#)

⇒ [“4.4.2 Removing and installing air flow flap control motor V71 , right-hand drive vehicles”, page 83](#)

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

Special tools and workshop equipment required

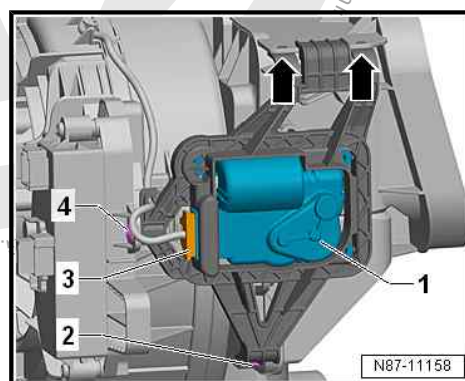
- ◆ Bit ratchet
- ◆ Angled screwdriver - VAS 6800-

Removing

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

Installing

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

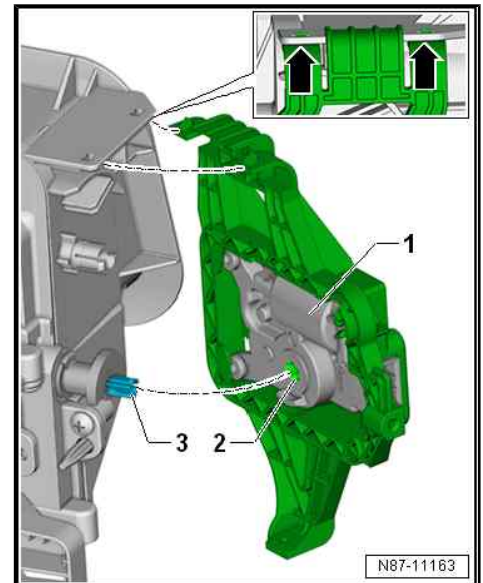




- Attach air flow flap control motor - V71- -arrows-.
- Fit air flow flap control motor - V71- -1- onto shaft.

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-.
- Further installation is performed in the reverse order.



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



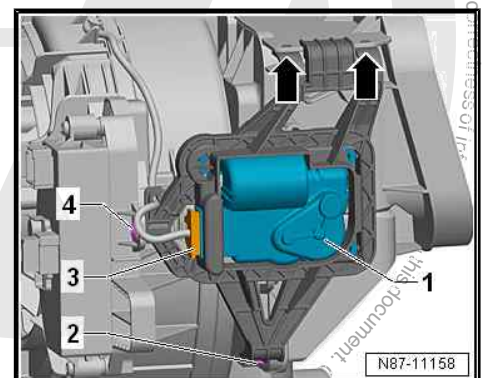
Note

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 .
- Separate electrical connector -3-.
- Remove bolts -2- and -4-.
- Unhook and remove air flow flap control motor - V71- -1- -arrows-.

Installing

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

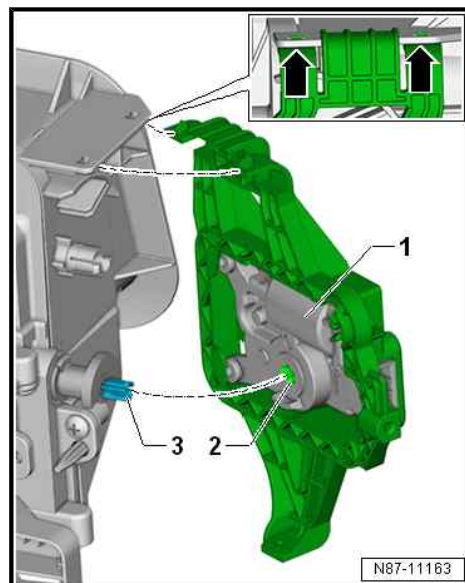




- Attach air flow flap control motor - V71- -arrows-.
- Fit air flow flap control motor - V71- -1- onto shaft.

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-.
- Further installation is performed in the reverse order.



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 84](#)

⇒ [“4.5.2 Removing and installing defroster flap control motor V107 , right-hand drive vehicles”, page 85](#)

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

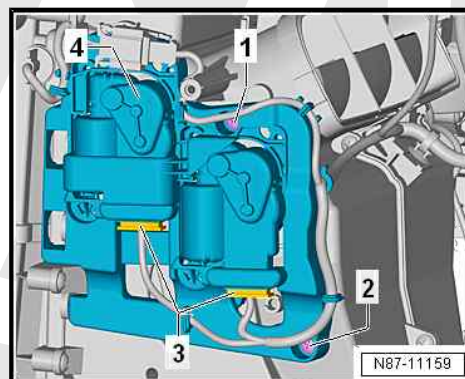
Installing

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



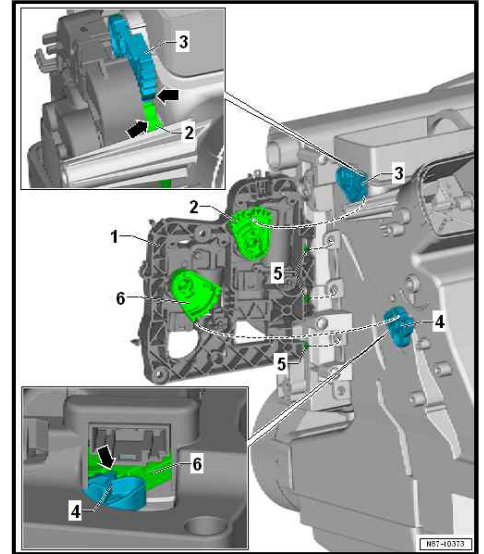
Note

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.
- Further installation is performed in the reverse order.



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

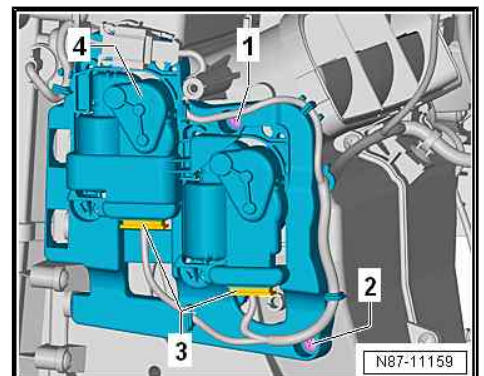
Installing

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



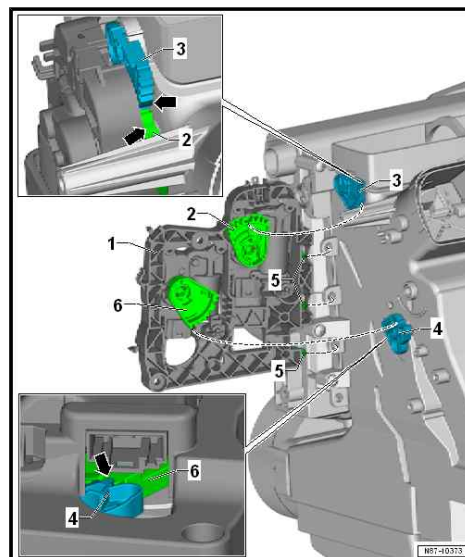
Note

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.
- Further installation is performed in the reverse order.



4.6 Removing and installing temperature flap actuator

⇒ **"4.6.1 Removing and installing temperature flap actuator, left-hand drive vehicles", page 86**

⇒ **"4.6.2 Removing and installing temperature flap actuator, right-hand drive vehicles", page 87**

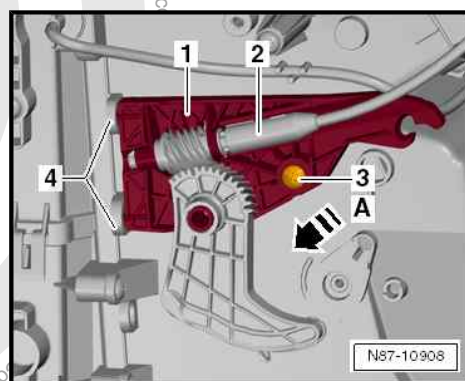
4.6.1 Removing and installing temperature flap actuator, left-hand drive vehicles

Special tools and workshop equipment required

- ◆ Angled screwdriver - VAS 6800-

Removing

- Remove dash panel trim on driver side ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing dash panel trim on driver side .
- Disconnect flexible shaft -2- from actuator -1-.
- Unscrew bolt -3- (1.5 Nm).
- Swivel actuator -1- in direction of -arrow A- and remove it from mountings -4-.



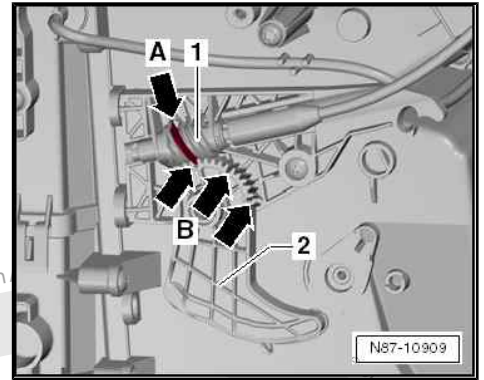


Installing

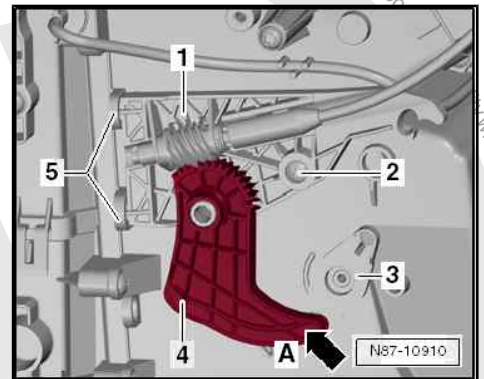


Note

- ◆ Before installing, check that position of worm drive -1- and cam segment -2- align.
- ◆ The raised winding (dark hatched area) -arrow A- must engage in the deeper tooth gaps -arrows B-.



- Fit actuator -1- into mountings -5-.
- Hook toothed segment -4- into mounting -arrow A- of temperature flap -3-.
- ◆ Check function of actuator.



Note

It must be possible to move the temperature flap to its end positions easily and smoothly.

Adjustment of temperature flap not OK:

- Remove actuator and repeat installation, as described.

Adjustment of temperature flap OK:

- Further installation is performed in the reverse order.

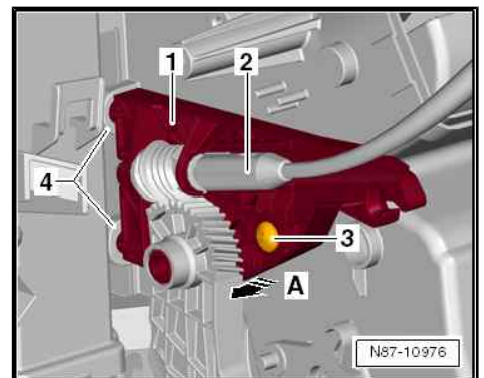
4.6.2 Removing and installing temperature flap actuator, right-hand drive vehicles

Special tools and workshop equipment required

- ◆ Angled screwdriver - VAS 6800-

Removing

- Remove dash panel trim on driver side ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing dash panel trim on driver side .
- Disconnect flexible shaft -2- from actuator -1-.
- Unscrew bolt -3- (1.5 Nm).
- Swivel actuator -1- in direction of -arrow A- and remove it from mountings -4-.



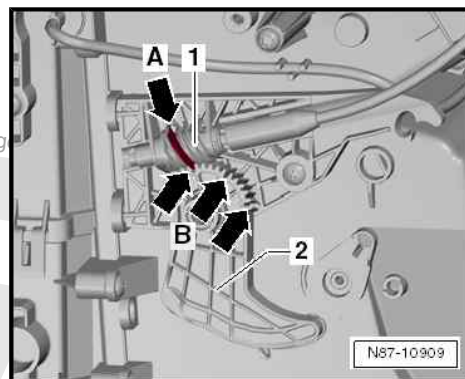


Installing



Note

- ◆ Before installing, check that position of worm drive -1- and cam segment -2- align.
- ◆ The raised winding (dark hatched area) -arrow A- must engage in the deeper tooth gaps -arrows B-.

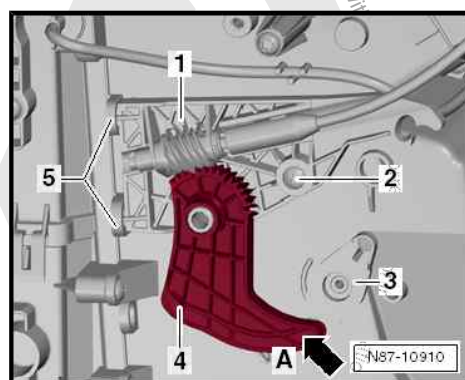


- Fit actuator -1- into mountings -5-.
- Hook toothed segment -4- into mounting -arrow A- of temperature flap -3-.
- ◆ Check function of actuator.



Note

It must be possible to move the temperature flap to its end positions easily and smoothly.



Adjustment of temperature flap not OK:

- Remove actuator and repeat installation, as described.

Adjustment of temperature flap OK:

- Further installation is performed in the reverse order.

4.7 Removing and installing fresh air/recirculated air flap actuator

⇒ [“4.7.1 Removing and installing fresh air/recirculated air flap actuator, left-hand drive vehicles”, page 88](#)

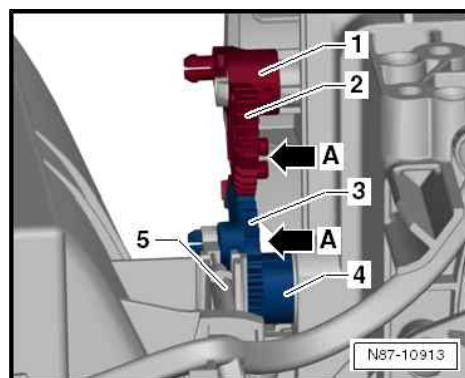
⇒ [“4.7.2 Removing and installing fresh air/recirculated air flap actuator, right-hand drive vehicles”, page 89](#)

4.7.1 Removing and installing fresh air/recirculated air flap actuator, left-hand drive vehicles

Removing

- Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .
- Detach fresh/recirculated air flap cable -5- from fresh/recirculated air flap.
- Pull actuators -1- and -4- off housing.

Installing





- Before installing, check that actuators -2- and -3- are properly aligned with notches -arrow A-.
- ◆ Check function of actuator.



Note

It must be possible to move the fresh/recirculated air flap actuator to its end positions easily and smoothly.

Adjustment of fresh/recirculated air flap actuator not OK:

- Remove actuator and repeat installation, as described.

Adjustment of fresh/recirculated air flap actuator OK:

- Further installation is performed in the reverse order.

4.7.2 Removing and installing fresh air/recirculated air flap actuator, right-hand drive vehicles

Removing

- Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .
- Detach fresh/recirculated air flap cable -5- from fresh/recirculated air flap.
- Pull actuators -1- and -4- off housing.

Installing

- Before installing, check that actuators -2- and -3- are properly aligned with notches -arrow A- and -arrow B-.
- ◆ Check function of actuator.



Note

It must be possible to move the fresh/recirculated air flap actuator to its end positions easily and smoothly.

Adjustment of fresh/recirculated air flap actuator not OK:

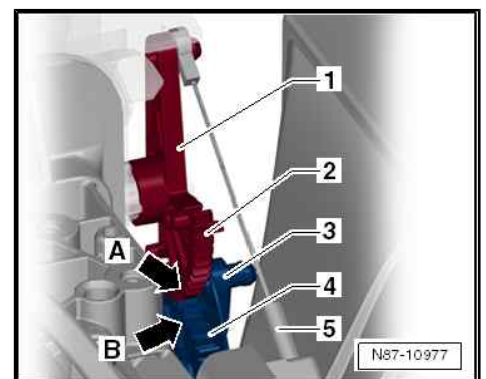
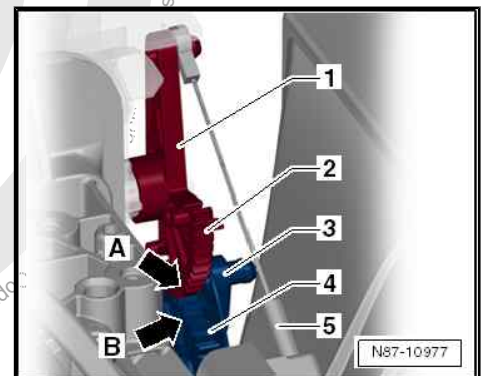
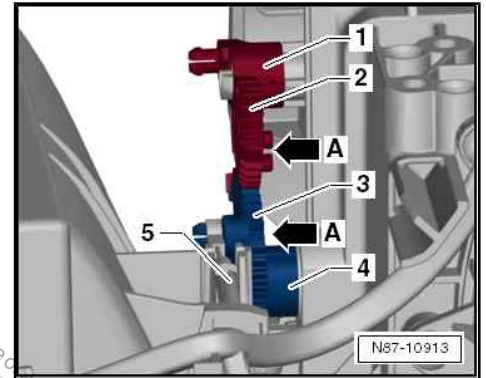
- Remove actuator and repeat installation, as described.

Adjustment of fresh/recirculated air flap actuator OK:

- Further installation is performed in the reverse order.

4.8 Removing and installing flexible shaft for air distribution

The following information applies to left-hand drive vehicles. A right-hand drive vehicle is similar.



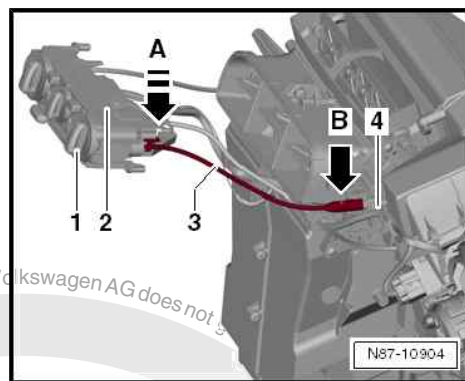


Removing

- Remove glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .
- Remove operating and display unit ⇒ [page 140](#) .

Move flexible shaft to following position:

- Turn rotary knob for air distribution -1- until locking mechanism -arrow B- in flexible shaft -3- is visible in gears -4-.
- Release catch -arrow B- of flexible shaft -3- using a small screwdriver and pull out shaft from gears -4-.
- Release catch -arrow A- of flexible shaft -3- and remove shaft from operating and display unit -2-.



Installing

- Install in reverse order of removal.

Checking function

Flexible shaft for air distribution flap actuator:

- Run fresh air blower at highest speed. If air flows out of defroster vent in "Defrost" position and no air flows out of footwell vent, flexible shaft is correctly installed. Otherwise, remove flexible shaft from fresh air and heated air controls, turn control knob $1/2$ a rotation (180°) and refit flexible shaft. Repeat test.

4.9 Removing and installing flexible shaft for temperature flap

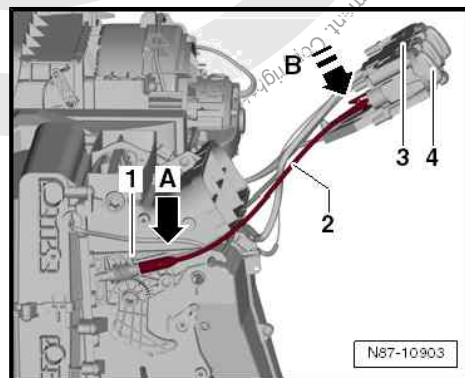
The following information applies to left-hand drive vehicles. A right-hand drive vehicle is similar.

Removing

- Remove dash panel trim on driver side ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing dash panel trim on driver side .
- Remove operating and display unit ⇒ [page 140](#) .

Move flexible shaft to following position:

- Turn rotary knob for temperature regulation -4- until catch -arrow A- of flexible shaft -2- is visible on temperature flap actuator -1-.
- Release catch -arrow A- of flexible shaft -2- using a small screwdriver and pull out shaft from temperature flap actuator -1-.
- Release catch -arrow B- of flexible shaft -2- and remove shaft from operating and display unit -3-.



Installing

- Install in reverse order of removal.

Checking function

- Check whether temperature knob can be easily turned from "Cold" to "Warm".



4.10 Removing and installing fresh air/recirculated air flap cable

The following information applies to left-hand drive vehicles. A right-hand drive vehicle is similar.

Removing

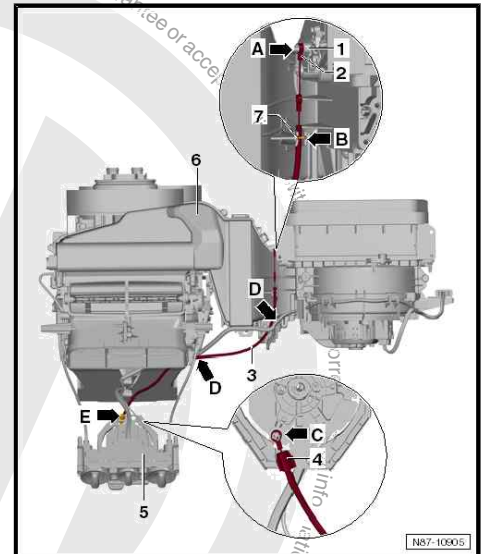
- Remove glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .
- Remove operating and display unit ⇒ [page 140](#) .
- Unhook Bowden cable from operating and display unit -arrow C- and remove clip -4- from operating and display unit.
- Unhook Bowden cable from retainers -arrow D- and -arrow B-.
- Unhook and remove Bowden cable -2- from actuator -1- -arrow A-.

Installing

- Install in reverse order of removal.

Checking function

- Check whether slide control for fresh air/recirculated air can be moved easily and smoothly.







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", page 93

⇒ "5.2 Assembly overview - evaporator housing", page 100

⇒ "5.3 Removing and installing evaporator", page 102

⇒ "5.4 Removing and installing evaporator temperature sensor G308", page 108

⇒ "5.5 Removing and installing heater and air conditioning unit", page 109

⇒ "5.6 Dismantling and assembling heater and air conditioning unit", page 119

⇒ "5.7 Removing and installing dust and pollen filter", page 121

⇒ "5.8 Removing and installing fresh air blower V2", page 122

⇒ "5.9 Removing and installing fresh air blower series resistor with overheating fuse N24", page 125

⇒ "5.10 Removing and installing fresh air blower control unit J126", page 126

⇒ "5.11 Removing and installing heat exchanger", page 128

⇒ "5.12 Removing and installing condensation drain", page 130

⇒ "5.13 Checking condensation drain", page 130

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, air conditioning system with electric and manual controls, left-hand drive vehicles", page 93

⇒ "5.1.2 Assembly overview - add-on parts of heater and air conditioning unit and of air intake box, air conditioning system with electric and manual controls, right-hand drive vehicles", page 95

⇒ "5.1.3 Assembly overview - add-on parts of heater and air conditioning unit and of air intake box, Climatronic, left-hand drive vehicles", page 97

⇒ "5.1.4 Assembly overview - add-on parts of heater and air conditioning unit and of air intake box, Climatronic, right-hand drive vehicles", page 99

5.1.1 Assembly overview - add-on parts of heater and air conditioning unit and of air intake box, air conditioning system with electric and manual controls, left-hand drive vehicles



Note

- ◆ *In some cases, it is no longer necessary on air conditioning systems with refrigerant R1234yf to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with refrigerant R1234yf; Rep. gr. 87; Refrigerant circuit; Renewing components.*



- ◆ In some cases, it is no longer necessary on air conditioning systems with R134a refrigerant to renew the desiccant bag each time the refrigerant circuit is opened ➔ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Renewing components .

1 - Air distribution housing

2 - Defroster and air distribution flap actuation unit

- ❑ Removing and installing
➔ [page 84](#)

3 - Fresh/recirculated air flap actuator

- ❑ Removing and installing
➔ [page 88](#)

4 - Seal

5 - Air intake housing

6 - Fresh/recirculated air flap

7 - Upper part of evaporator housing

8 - Lower part of evaporator housing

9 - Heater and air conditioning unit wiring harness

10 - Fresh air blower - V2-

- ❑ Removing and installing
➔ [page 122](#)

11 - Fresh air blower bracket

12 - Fresh air blower series resistor with overheating fuse - N24-

- ❑ Removing and installing
➔ [page 126](#)

13 - Cover

- ❑ For dust and pollen filter

14 - Dust and pollen filter

- ❑ Removing and installing ➔ [page 121](#)

15 - Fresh/recirculated air flap cable

- ❑ Removing and installing ➔ [page 91](#)

16 - Evaporator temperature sensor - G308-

- ❑ Removing and installing ➔ [page 108](#)

17 - Flexible shaft for air distribution

- ❑ Removing and installing ➔ [page 89](#)

18 - Flexible shaft for temperature flap

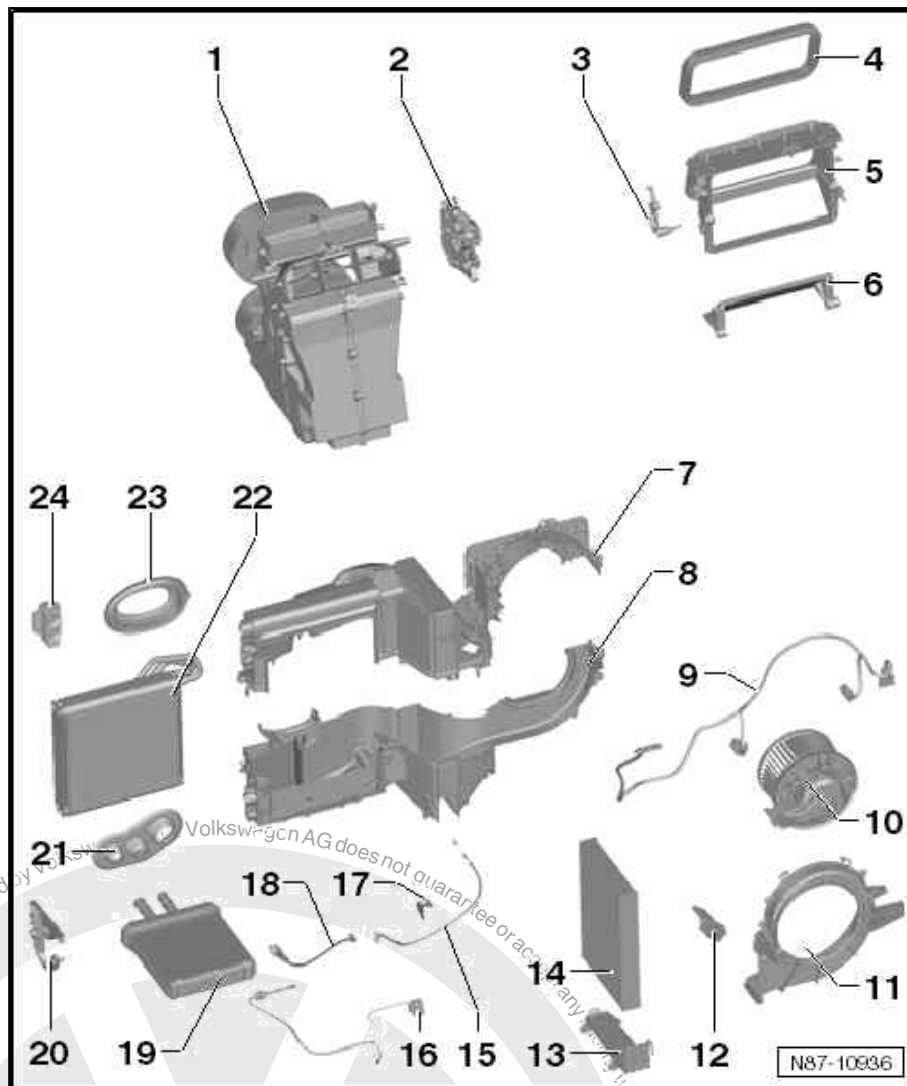
- ❑ Removing and installing ➔ [page 90](#)

19 - Heat exchanger for heater

- ❑ Removing and installing ➔ [page 128](#)

20 - Temperature flap actuator

- ❑ Removing and installing ➔ [page 78](#)





21 - Seal

- ❑ Note installation position ⇒ [page 130](#)

22 - Evaporator

- ❑ Removing and installing ⇒ [page 102](#)

23 - Seal

- ❑ Note installation position ⇒ [page 105](#)

24 - Expansion valve

- ❑ Removing and installing ⇒ [page 28](#)

5.1.2 Assembly overview - add-on parts of heater and air conditioning unit and of air intake box, air conditioning system with electric and manual controls, right-hand drive vehicles



Note

- ◆ *In some cases, it is no longer necessary on air conditioning systems with refrigerant R1234yf to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with refrigerant R1234yf; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*
- ◆ *In some cases, it is no longer necessary on air conditioning systems with R134a refrigerant to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Renewing components .*





1 - Air distribution housing

2 - Defroster and air distribution flap actuation unit

- ❑ Removing and installing
⇒ [page 84](#)

3 - Seal

4 - Air intake housing

5 - Fresh/recirculated air flap actuator

- ❑ Removing and installing
⇒ [page 88](#)

6 - Fresh/recirculated air flap

7 - Upper part of evaporator housing

8 - Lower part of evaporator housing

9 - Heater and air conditioning unit wiring harness

10 - Fresh air blower - V2-

- ❑ Removing and installing
⇒ [page 122](#)

11 - Fresh air blower bracket

12 - Fresh air blower series resistor with overheating fuse - N24-

- ❑ Removing and installing
⇒ [page 126](#)

13 - Cover

- ❑ For dust and pollen filter

14 - Dust and pollen filter

- ❑ Removing and installing ⇒ [page 121](#)

15 - Evaporator temperature sensor - G308-

- ❑ Removing and installing ⇒ [page 108](#)

16 - Fresh/recirculated air flap cable

- ❑ Removing and installing ⇒ [page 91](#)

17 - Flexible shaft for air distribution

- ❑ Removing and installing ⇒ [page 89](#)

18 - Flexible shaft for temperature flap

- ❑ Removing and installing ⇒ [page 90](#)

19 - Heat exchanger for heater

- ❑ Removing and installing ⇒ [page 128](#)

20 - Seal

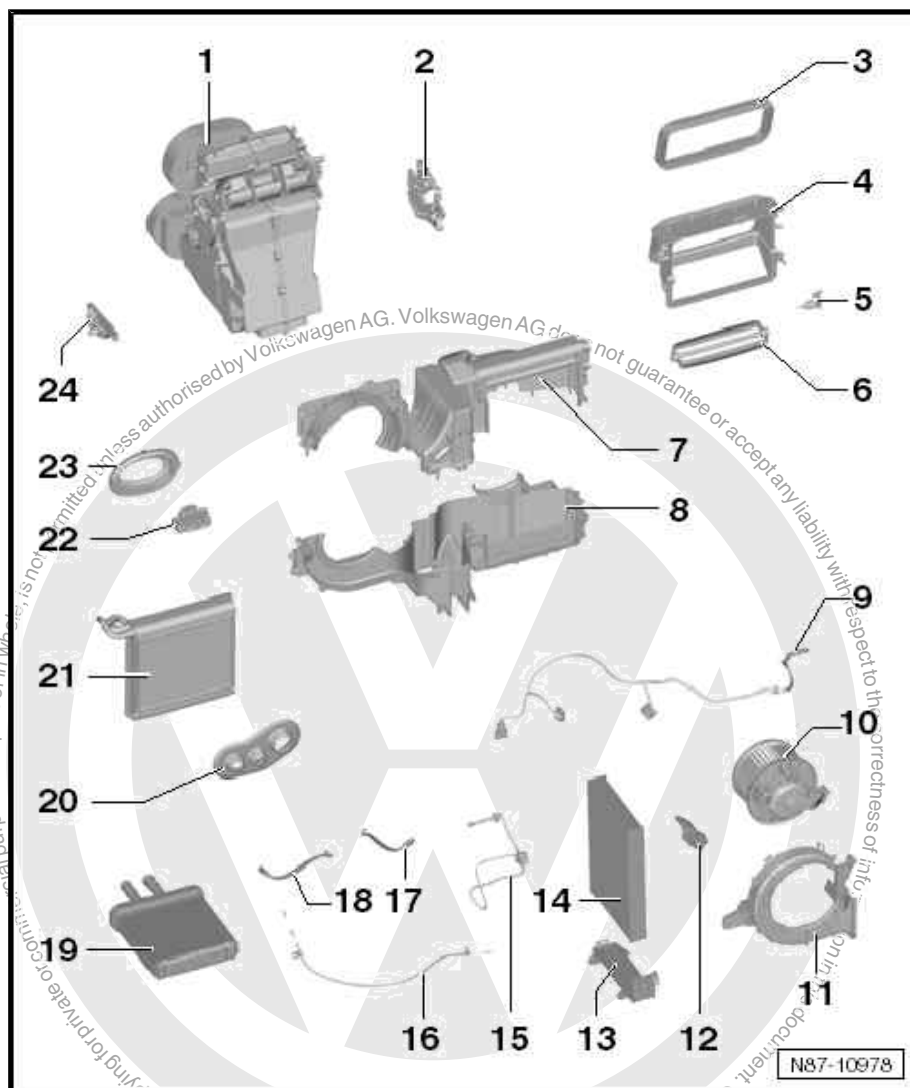
- ❑ Note installation position ⇒ [page 130](#)

21 - Evaporator

- ❑ Removing and installing ⇒ [page 102](#)

22 - Expansion valve

- ❑ Removing and installing ⇒ [page 28](#)





23 - Seal

- ❑ Note installation position ➔ [page 105](#)

24 - Temperature flap actuator

- ❑ Removing and installing ➔ [page 78](#)

5.1.3 Assembly overview - add-on parts of heater and air conditioning unit and of air intake box, Climatronic, left-hand drive vehicles



Note

- ◆ *In some cases, it is no longer necessary on air conditioning systems with refrigerant R1234yf to renew the desiccant bag each time the refrigerant circuit is opened ➔ Air conditioning system with refrigerant R1234yf; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*
- ◆ *In some cases, it is no longer necessary on air conditioning systems with R134a refrigerant to renew the desiccant bag each time the refrigerant circuit is opened ➔ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Renewing components .*



1 - Air distribution housing

2 - Central flap control motor - V70-

- ☐ Removing and installing ➔ [page 80](#)

3 - Seal

4 - Air intake housing

5 - Air flow flap

6 - Air flow flap control motor - V71-

- ☐ Removing and installing ➔ [page 82](#)

7 - Upper part of evaporator housing

8 - Lower part of evaporator housing

9 - Fresh air blower - V2-

- ☐ Removing and installing ➔ [page 122](#)

10 - Fresh air blower control unit - J126-

- ☐ Removing and installing ➔ [page 126](#)

11 - Fresh air blower bracket

12 - Dust and pollen filter

- ☐ Removing and installing ➔ [page 121](#)

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 148](#)

16 - Centre vent temperature sender - G191-

- ☐ Removing and installing ➔ [page 148](#)

17 - Wiring harness for control motors

18 - Heat exchanger for heater

- ☐ Removing and installing ➔ [page 128](#)

19 - Seal

- ☐ Note installation position ➔ [page 130](#)

20 - Evaporator

- ☐ Removing and installing ➔ [page 102](#)

21 - Evaporator temperature sensor - G308-

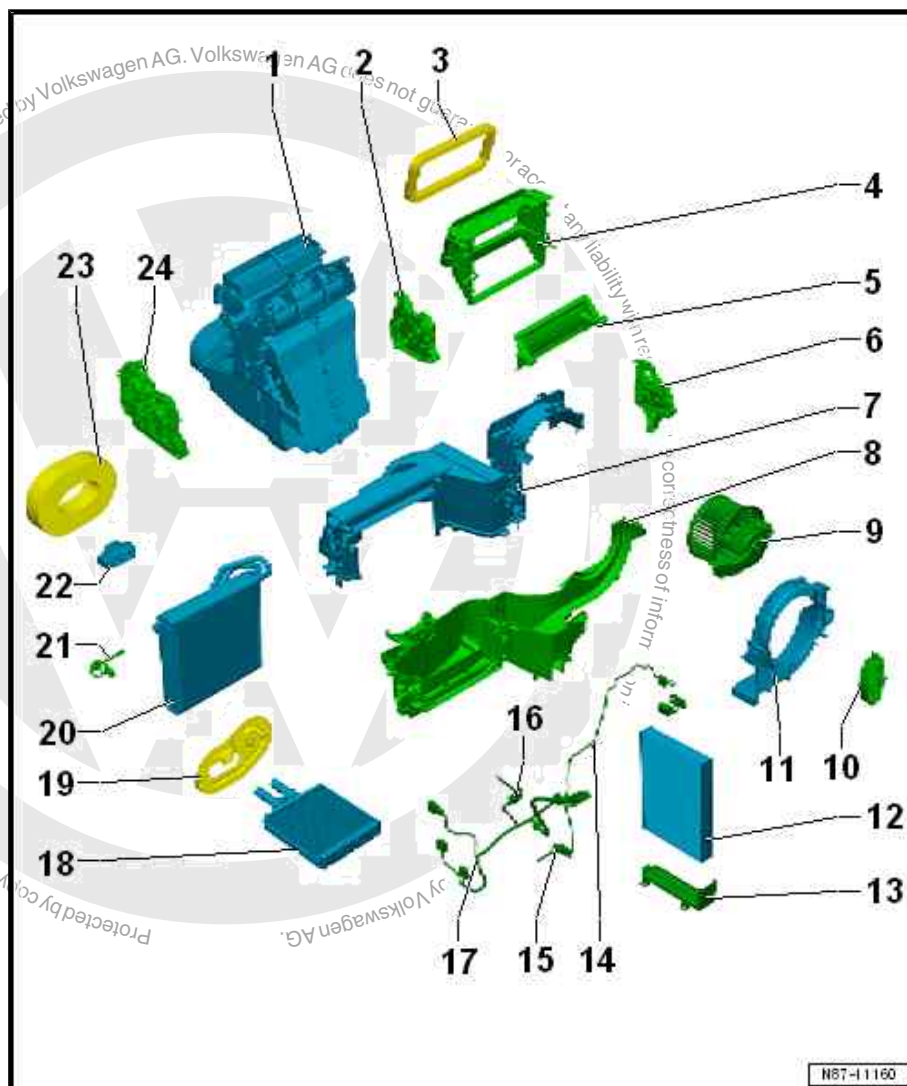
- ☐ Removing and installing ➔ [page 108](#)

22 - Expansion valve

- ☐ Removing and installing ➔ [page 28](#)

23 - Seal

- ☐ Note installation position ➔ [page 105](#)





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

- ❑ Removing and installing ➔ [page 76](#)

5.1.4 Assembly overview - add-on parts of heater and air conditioning unit and of air intake box, Climatronic, right-hand drive vehicles



Note

- ◆ In some cases, it is no longer necessary on air conditioning systems with refrigerant R1234yf to renew the desiccant bag each time the refrigerant circuit is opened ➔ Air conditioning system with refrigerant R1234yf; Rep. gr. 87; Refrigerant circuit; Renewing components.
- ◆ In some cases, it is no longer necessary on air conditioning systems with R134a refrigerant to renew the desiccant bag each time the refrigerant circuit is opened ➔ Air conditioning system with R134a refrigerant; Rep. gr. 00; Renewing components.

1 - Air distribution housing

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

- ❑ Removing and installing ➔ [page 76](#)

3 - Seal

4 - Air intake housing

5 - Air flow flap

6 - Air flow flap control motor - V71-

- ❑ Removing and installing ➔ [page 82](#)

7 - Upper part of evaporator housing

8 - Lower part of evaporator housing

9 - Fresh air blower - V2-

- ❑ Removing and installing ➔ [page 122](#)

10 - Fresh air blower bracket

11 - Fresh air blower control unit - J126-

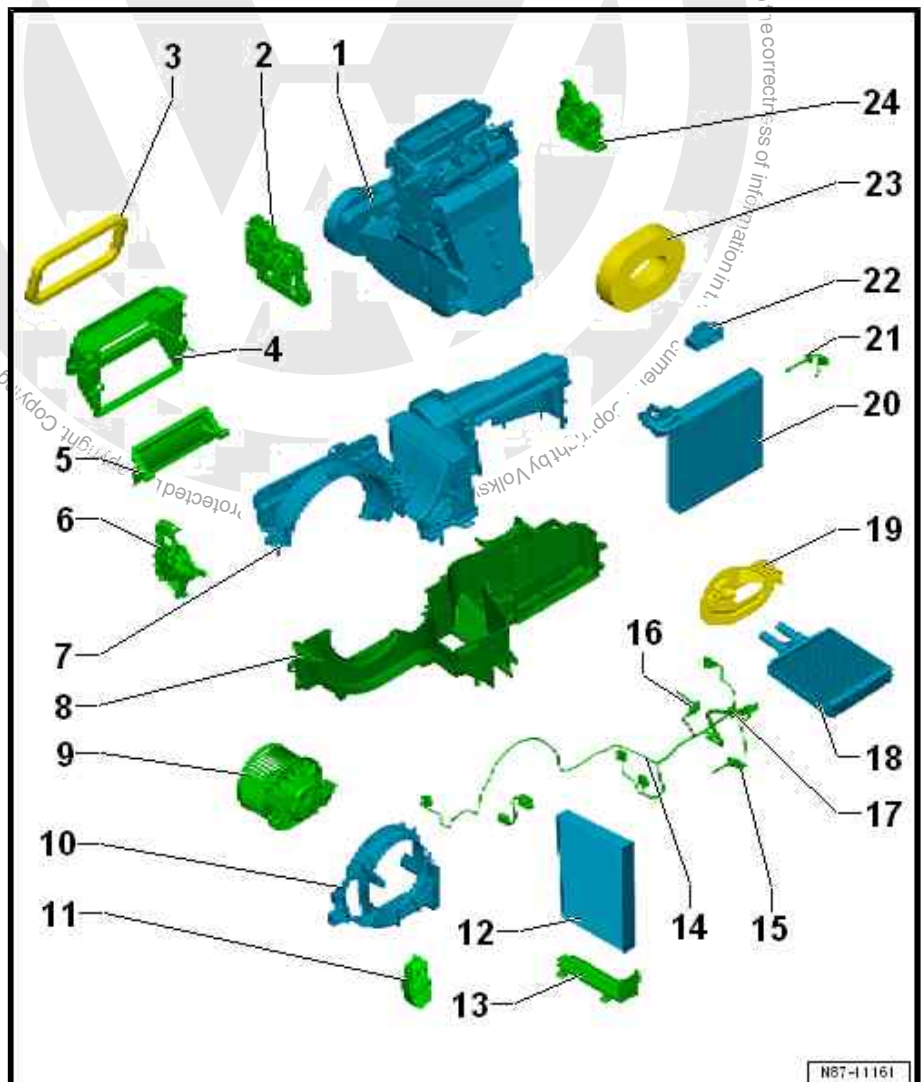
- ❑ Removing and installing ➔ [page 126](#)

12 - Dust and pollen filter

- ❑ Removing and installing ➔ [page 121](#)

13 - Cover

- ❑ For dust and pollen filter



N87-11161



14 - Wiring harness for fresh air blower - V2-

15 - Footwell vent temperature sender - G192-

- ❑ Removing and installing ➔ [page 148](#)

16 - Centre vent temperature sender - G191-

- ❑ Removing and installing ➔ [page 148](#)

17 - Wiring harness for control motors

18 - Heat exchanger for heater

- ❑ Removing and installing ➔ [page 128](#)

19 - Seal

- ❑ Note installation position ➔ [page 130](#)

20 - Evaporator

- ❑ Removing and installing ➔ [page 102](#)

21 - Evaporator temperature sensor - G308-

- ❑ Removing and installing ➔ [page 108](#)

22 - Expansion valve

- ❑ Removing and installing ➔ [page 28](#)

23 - Seal

- ❑ Note installation position ➔ [page 105](#)

24 - Central flap control motor - V70-

- ❑ Removing and installing ➔ [page 80](#)

5.2 Assembly overview - evaporator housing

➔ ["5.2.1 Assembly overview - evaporator housing, left-hand drive vehicles", page 100](#)

➔ ["5.2.2 Assembly overview - evaporator housing, right-hand drive vehicles", page 101](#)

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



Note

- ◆ *In some cases, it is no longer necessary on air conditioning systems with refrigerant R1234yf to renew the desiccant bag each time the refrigerant circuit is opened ➔ Air conditioning system with refrigerant R1234yf; Rep. gr. 87 ; Refrigerant circuit; Renewing components .*
- ◆ *In some cases, it is no longer necessary on air conditioning systems with R134a refrigerant to renew the desiccant bag each time the refrigerant circuit is opened ➔ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Renewing components .*



1 - Evaporator housing, upper part

2 - Seal

- ❑ Note installation position ⇒ [page 105](#)

3 - Expansion valve

- ❑ Removing and installing ⇒ [page 28](#)

4 - Socket head bolt with washer

- ❑ 5 Nm

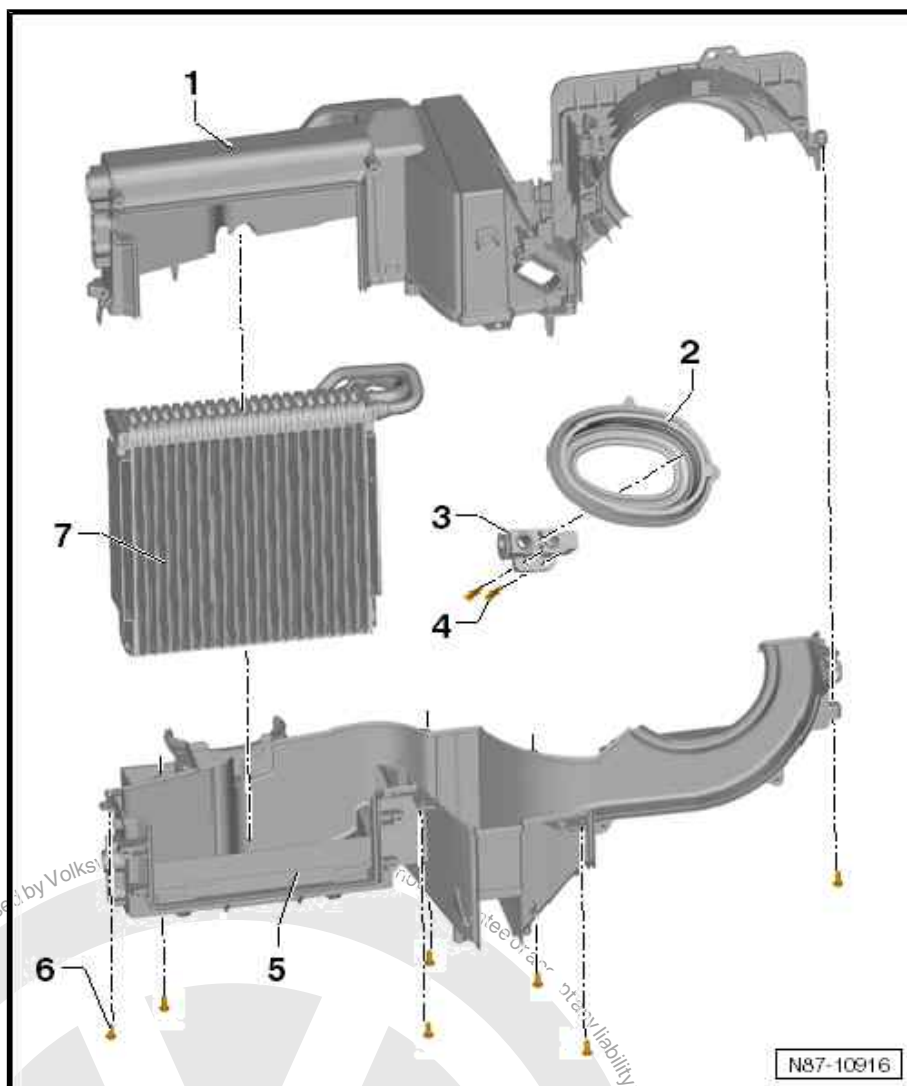
5 - Evaporator housing, lower part

6 - Bolt

- ❑ 1.5 Nm

7 - Evaporator

- ❑ Removing and installing ⇒ [page 102](#)



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



Note

- ◆ In some cases, it is no longer necessary on air conditioning systems with refrigerant R1234yf to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with refrigerant R1234yf; Rep. gr. 87; Refrigerant circuit; Renewing components.
- ◆ In some cases, it is no longer necessary on air conditioning systems with R134a refrigerant to renew the desiccant bag each time the refrigerant circuit is opened ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00; Renewing components.



1 - Evaporator housing, upper part

2 - Evaporator

- ❑ Removing and installing
⇒ [page 102](#) .

3 - Evaporator housing, lower part

4 - Bolt

- ❑ 1.5 Nm

5 - Seal

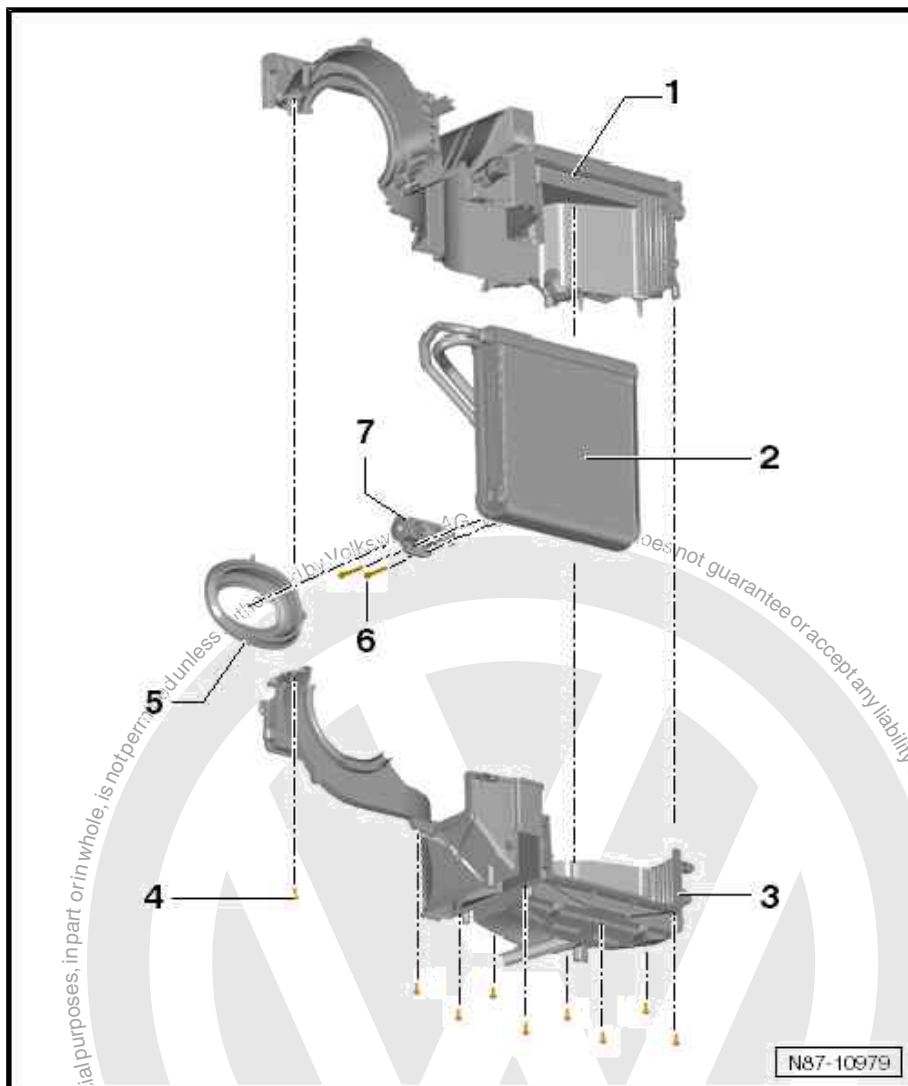
- ❑ Note installation position
⇒ [page 105](#)

6 - Socket head bolt with washer

- ❑ 5 Nm

7 - Expansion valve

- ❑ Removing and installing
⇒ [page 28](#) .



5.3 Removing and installing evaporator

⇒ [“5.3.1 Removing and installing evaporator, left-hand drive vehicles”, page 102](#)

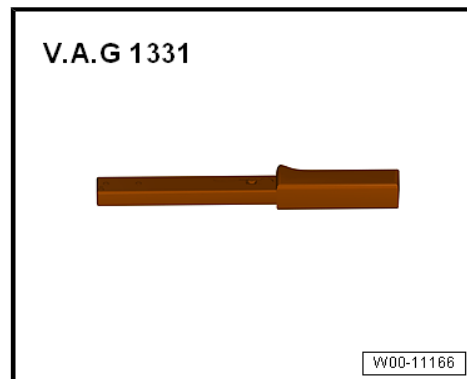
⇒ [“5.3.2 Removing and installing evaporator, right-hand drive vehicles”, page 105](#)

5.3.1 Removing and installing evaporator, left-hand drive vehicles

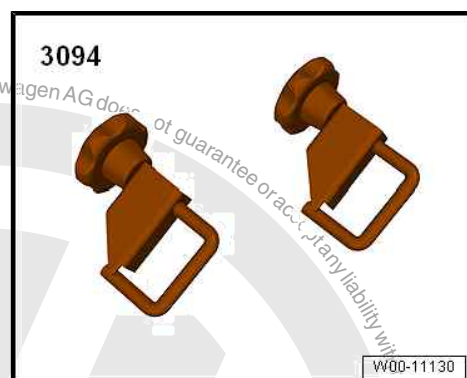
Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1331/-



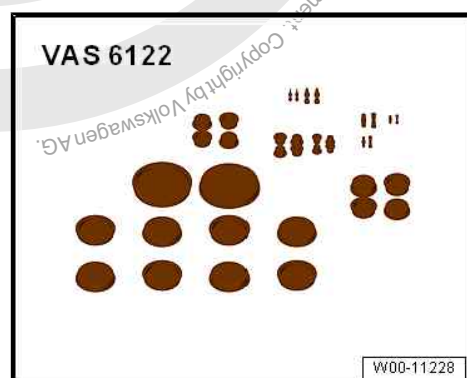
- ◆ Hose clamps to 25 mm - 3094-



- ◆ Drip tray for workshop hoist - VAS 6208-



- ◆ Engine bung set - VAS 6122-



- ◆ Air conditioner service station
- ◆ Commercially available compressed air pistol



Removing

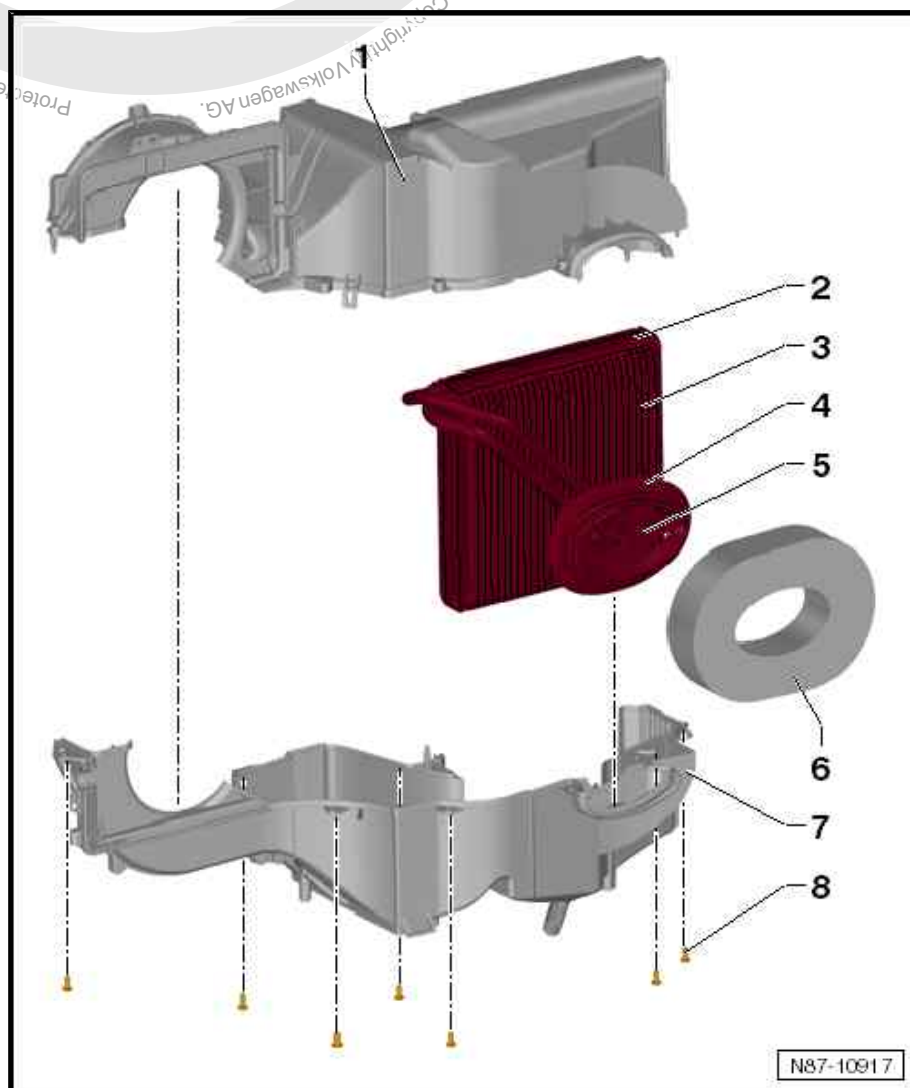
- Evacuate refrigerant circuit using air conditioner service station before opening refrigerant circuit. Observe notes ➔ **“3.1 Working on refrigerant circuit”, page 5**.

⚠ 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 protective 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 109**.
 - Dismantling evaporator housing ➔ **page 100**.

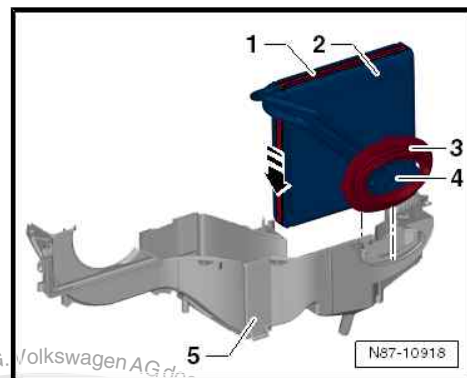




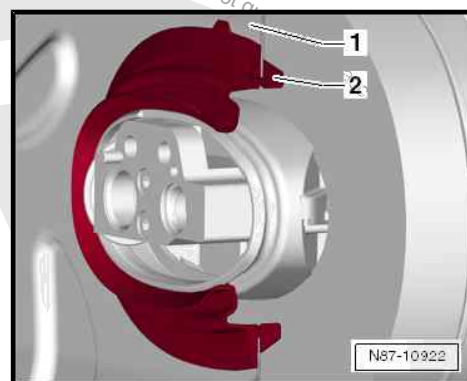
- Remove evaporator -3- from lower part of evaporator housing -7-.

Installing

Ensure proper seating of gasket -3-:

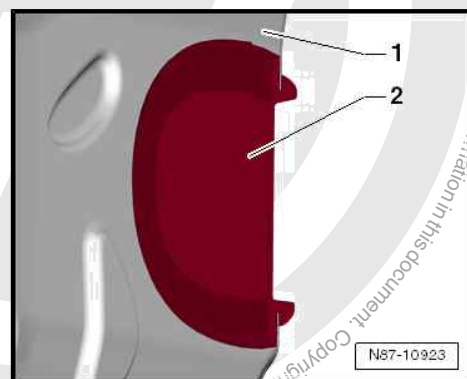


Vehicles with air conditioning system



Vehicles without air conditioning system

- Further installation is performed in the reverse order.



5.3.2 Removing and installing evaporator, right-hand drive vehicles

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331/-





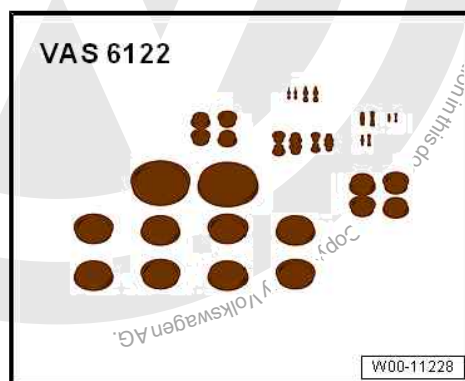
- ◆ Hose clamps to 25 mm - 3094-



- ◆ Drip tray for workshop hoist - VAS 6208-



- ◆ Engine bung set - VAS 6122-



- ◆ Air conditioner service station
- ◆ Commercially available compressed air pistol

Removing

- Evacuate refrigerant circuit using air conditioner service station before opening refrigerant circuit. Observe notes
⇒ ["3.1 Working on refrigerant circuit", page 5](#) .



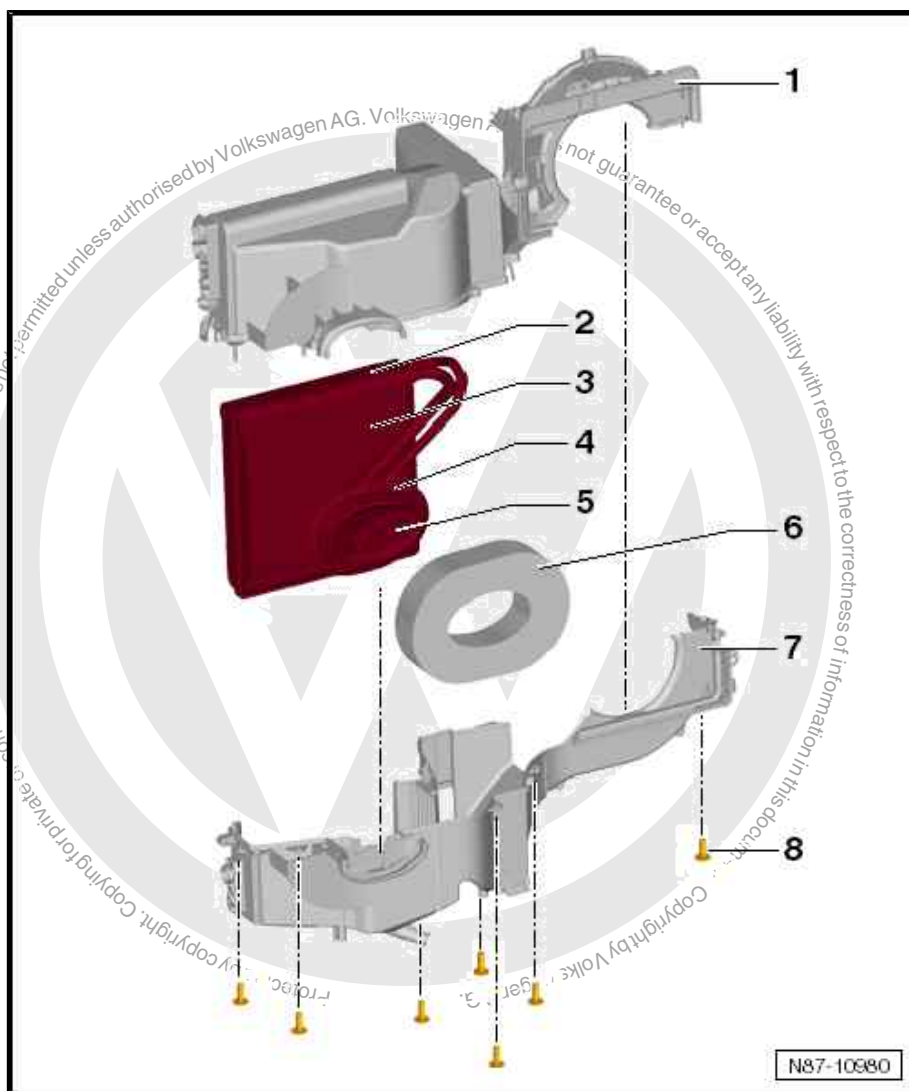
CAUTION

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 protective 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 109](#) .
- Dismantling evaporator housing ⇒ [page 100](#) .



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



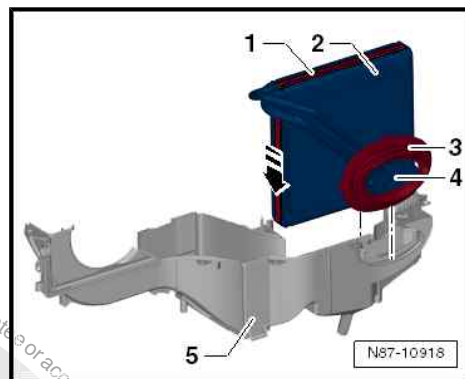
Installing



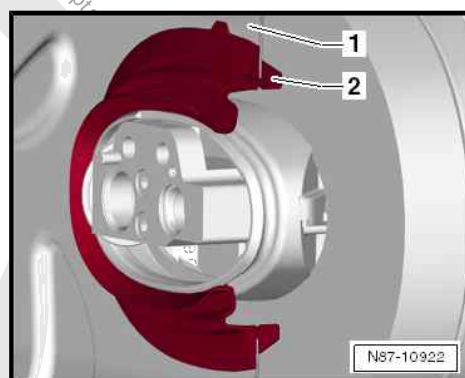
Note

The diagram shows a left-hand drive vehicle.

Ensure proper seating of gasket -3-:

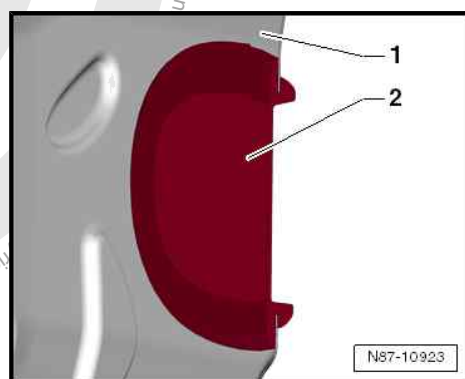


Vehicles with air conditioning system



Vehicles without air conditioning system

- Further installation is performed in the reverse order.



5.4 Removing and installing evaporator temperature sensor - G308-

⇒ [“5.4.1 Removing and installing evaporator temperature sensor G308 , left-hand drive vehicles”, page 108](#)

⇒ [“5.4.2 Removing and installing evaporator temperature sensor G308 , right-hand drive vehicles”, page 109](#)

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

Removing

- Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .
- Remove intermediate piece for defroster vent ⇒ [page 133](#) .



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

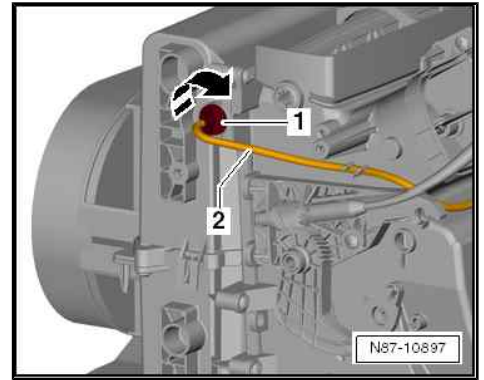
Installing

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



Note

Ensure that evaporator temperature sensor - G308- wiring is routed correctly.



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

Removing

- Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .
- Remove intermediate piece for defroster vent ⇒ [page 133](#) .
- Disconnect line -2- from evaporator temperature sensor - G308- -3-.
- Turn evaporator temperature sensor - G308- -1- 90° in direction of -arrow- and remove.

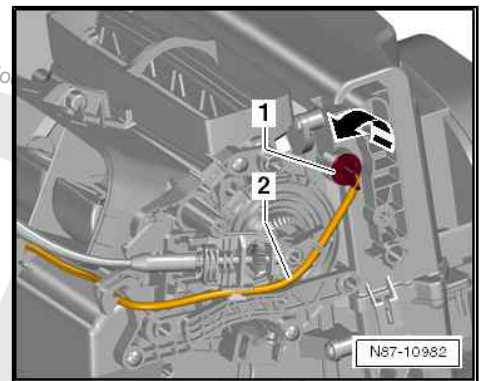
Installing

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



Note

Ensure that 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 109](#)

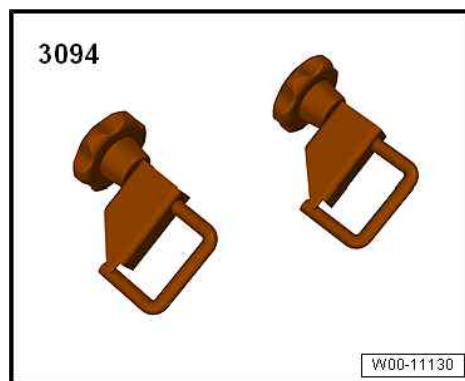
⇒ [“5.5.2 Removing and installing heater and air conditioning unit, right-hand drive vehicles”, page 114](#)

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

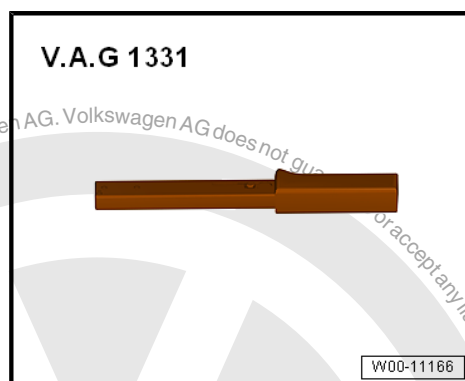
Special tools and workshop equipment required



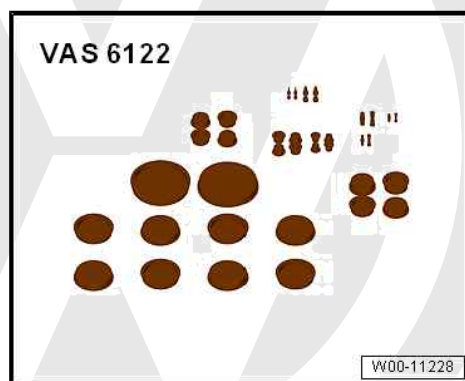
- ◆ Hose clamps to 25 mm - 3094-



- ◆ Torque wrench - V.A.G 1331-



- ◆ Engine bung set - VAS 6122-



- ◆ Drip tray for workshop hoist - VAS 6208-



- ◆ Compressed air gun

Removing

- Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery;
Disconnecting and reconnecting battery .



- Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .
- Remove air filter ⇒ Rep. gr. 23 ; Air filter; Removing and installing air filter housing -
- Cover floor covering at front.

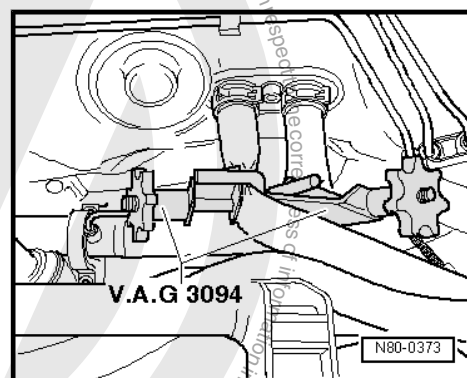
⚠ CAUTION

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

Skin and other parts of the body may be scalded.

- **Wear protective gloves.**
- **Wear protective goggles.**
- **Reduce excess pressure by covering cap of coolant expansion tank with cloths and opening it carefully.**

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





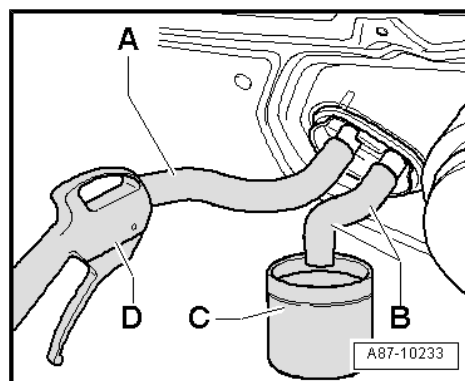
- Push a piece of hose -A- and -B- onto both connections to heat exchanger.
- Hold a container -C- under hose from lower connection -B-.
- Using a compressed air gun -D-, carefully blow coolant out of heat exchanger into container -C- via hose -A-.

Vehicles with R134a refrigerant

- Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .

Vehicles with R1234yf refrigerant

- Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit .



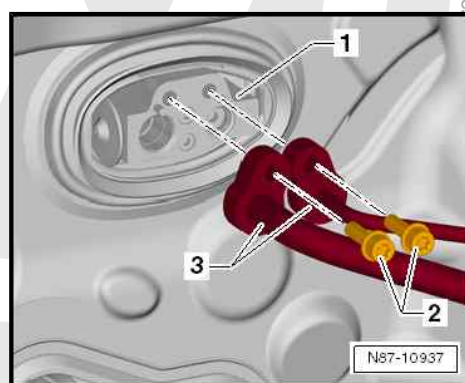
Continued for all vehicles

⚠ 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 protective 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.
-
- For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122- .
 - Unscrew bolts -2- (12 Nm) for refrigerant lines -3- which are accessible from engine compartment.
 - Disconnect refrigerant lines from expansion valve -1-.
 - Cover floor covering in interior of vehicle with a waterproof foil and absorbent paper.
 - Disconnect electrical connectors from heater and air conditioning unit.
 - Remove intermediate piece for defroster vent ⇒ [page 133](#) .
 - Remove intermediate piece for centre vent ⇒ [page 134](#) .





1 - Dash panel central tube

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

2 - Bolt

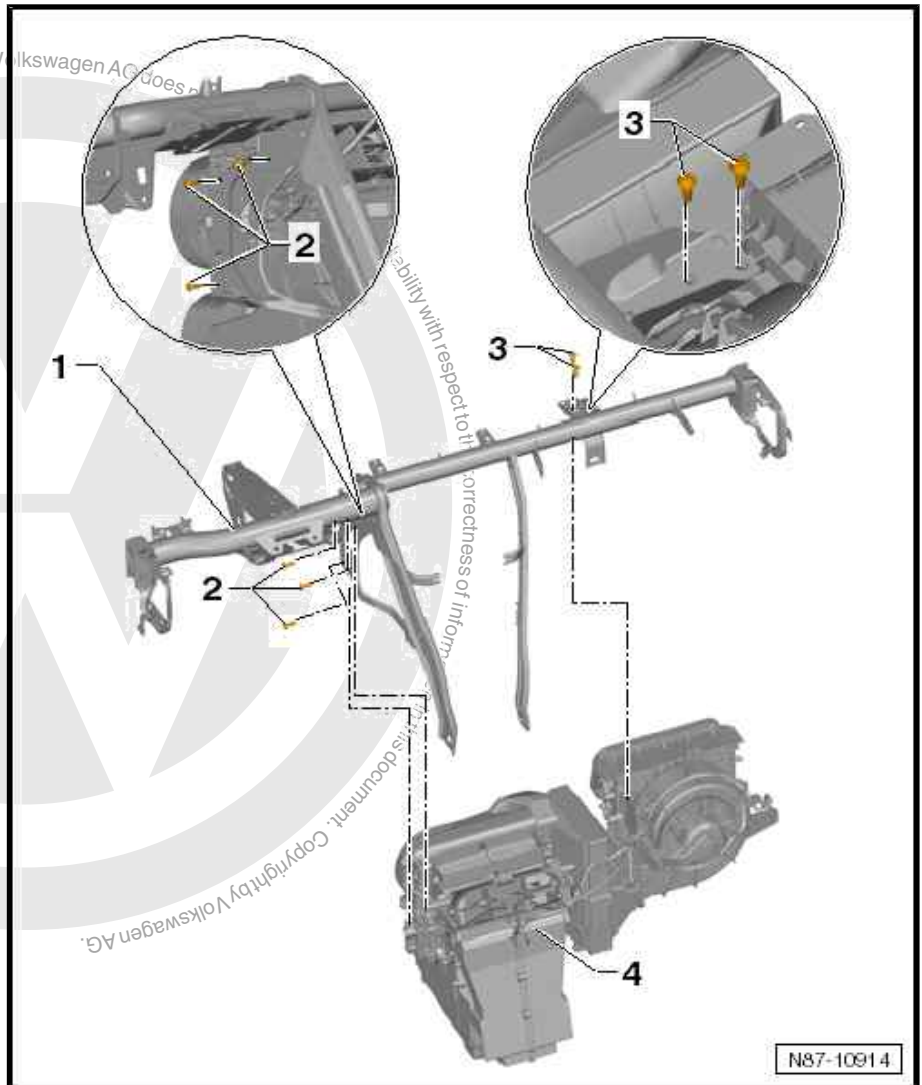
- ❑ Qty. 3
- ❑ 3.5 Nm

3 - Bolt

- ❑ Qty. 2
- ❑ 3.5 Nm

4 - Heater and air conditioning unit

- ❑ Removing and installing
⇒ [page 109](#)



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



Note

The following work steps must be performed by a second mechanic.

- Remove heater and air conditioning unit to the side.



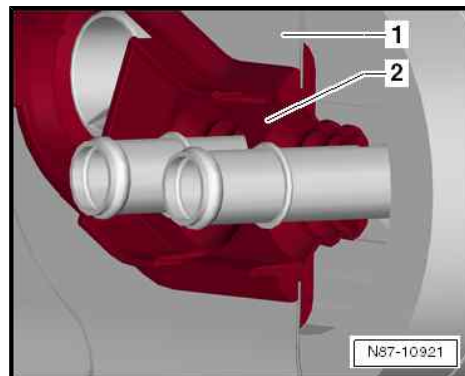
Installing

- 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 130](#).



NOTICE

Risk of damage to air conditioner compressor if refrigerant circuit is empty.

- Never start the engine if the refrigerant circuit is empty.

Vehicles with R134a refrigerant

- Charge refrigerant circuit ➔ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .
- Perform leakage test on re-established line connections of refrigerant circuit ➔ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Detecting leaks in refrigerant circuit .

Vehicles with R1234yf refrigerant

- Charge refrigerant circuit ➔ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Charging refrigerant circuit .
- Perform leakage test on re-established line connections of refrigerant circuit ➔ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Refrigerant circuit; Detecting leaks .

Continued for all vehicles

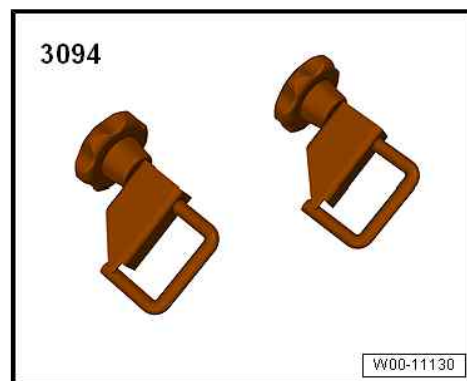
- Fill up with coolant ➔ Rep. gr. 19 ; Cooling system/coolant; Draining and filling coolant .
- Check operation of heater and air conditioning system.

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

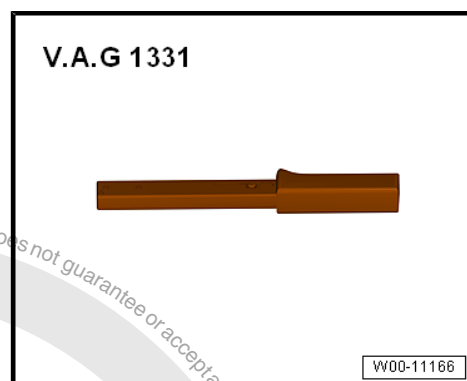
Special tools and workshop equipment required



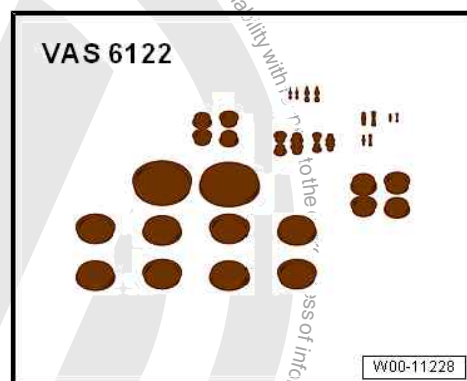
- ◆ Hose clamps to 25 mm - 3094-



- ◆ Torque wrench - V.A.G 1331-



- ◆ Engine bung set - VAS 6122-



- ◆ Drip tray for workshop hoist - VAS 6208-



- ◆ Compressed air gun

Removing

- Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery;
Disconnecting and reconnecting battery .



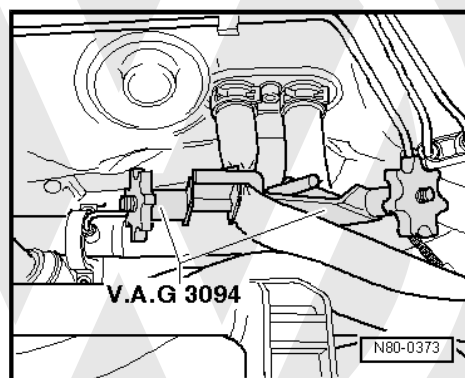
- Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .
- Remove air filter ⇒ Rep. gr. 23 ; Air filter; Removing and installing air filter housing -
- Cover floor covering at front.

⚠ CAUTION

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

Skin and other parts of the body may be scalded.

- Wear protective gloves.
 - Wear protective goggles.
 - Reduce excess pressure by covering cap of coolant expansion tank with cloths and opening it carefully.
-
- Mark and clamp off coolant hoses in engine compartment using hose clamps up to 40 mm - 3093- and remove from heat exchanger.





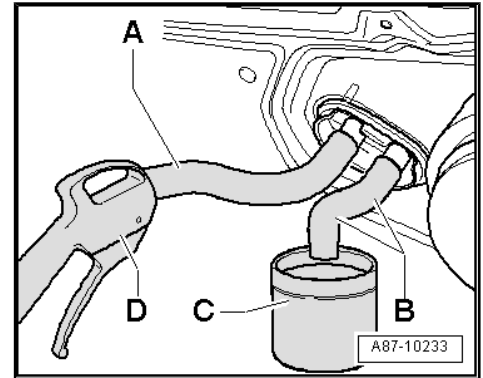
- Push a piece of hose -A- and -B- onto both connections to heat exchanger.
- Hold a container -C- under hose from lower connection -B-.
- Using a compressed air gun -D-, carefully blow coolant out of heat exchanger into container -C- via hose -A-.

Vehicles with R134a refrigerant

- Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .

Vehicles with R1234yf refrigerant

- Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit.



Continued for all vehicles

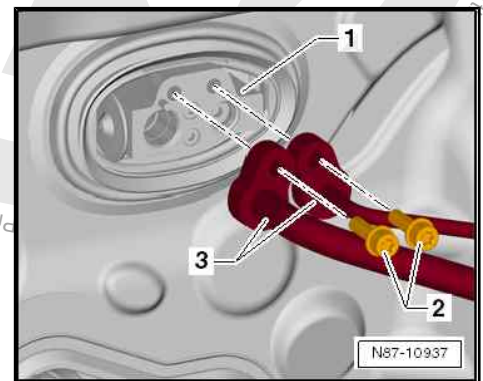
⚠ CAUTION

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 protective 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.

- For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122- .
- Unscrew bolts -2- (12 Nm) for refrigerant lines -3- which are accessible from engine compartment.
- Disconnect refrigerant lines from expansion valve -1-.
- Cover floor covering in interior of vehicle with a waterproof foil and absorbent paper.
- Disconnect electrical connectors from heater and air conditioning unit.
- Remove intermediate piece for defroster vent ⇒ [page 133](#) .
- Remove intermediate piece for centre vent ⇒ [page 134](#) .





1 - Dash panel central tube

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

2 - Bolt

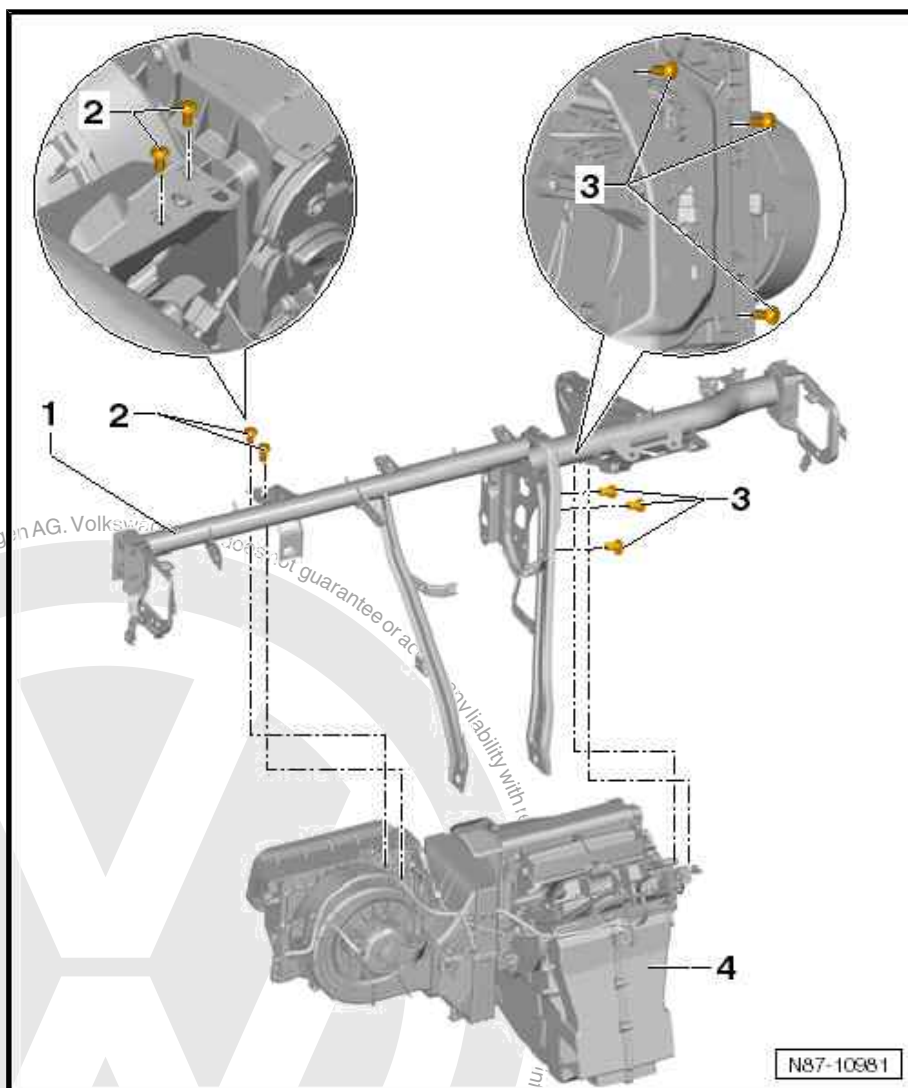
- ❑ Qty. 2
- ❑ 3.5 Nm

3 - Bolt

- ❑ Qty. 3
- ❑ 3.5 Nm

4 - Heater and air conditioning unit

- ❑ Removing and installing
⇒ [page 109](#)



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



Note

The following work steps must be performed by a second mechanic.

- Remove heater and air conditioning unit to the side.



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

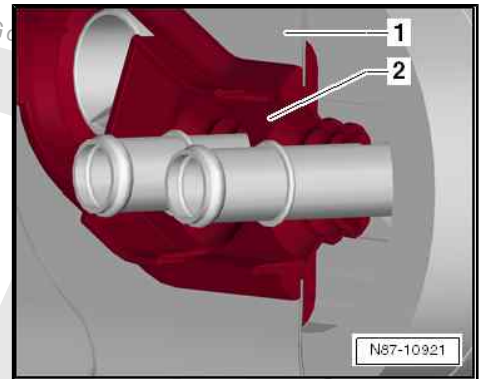
- ◆ Ensure that seal -2- in plenum chamber bulkhead -1- is properly seated.
- ◆ The condensate drain connection must not be covered by the seal -2- ➔ [page 130](#).



NOTICE

Risk of damage to air conditioner compressor if refrigerant circuit is empty.

- Never start the engine if the refrigerant circuit is empty.



Vehicles with R134a refrigerant

- Charge refrigerant circuit ➔ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .
- Perform leakage test on re-established line connections of refrigerant circuit ➔ Air conditioning system with refrigerant R134a; Rep. gr. 00 ; Detecting leaks in refrigerant circuit .

Vehicles with R1234yf refrigerant

- Charge refrigerant circuit ➔ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Charging refrigerant circuit .
- Perform leakage test on re-established line connections of refrigerant circuit ➔ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Refrigerant circuit; Detecting leaks .

Continued for all vehicles

- Fill up with coolant ➔ Rep. gr. 19 ; Cooling system/coolant; Draining and filling coolant .
- Check operation of heater and air conditioning system.

5.6 Dismantling and assembling heater and air conditioning unit

The following information applies to left-hand drive vehicles. A right-hand drive vehicle is similar.



1 - Air distribution housing

2 - Defroster and air distribution flap actuation unit

- ❑ Removing and installing
⇒ [page 84](#)

3 - Fresh/recirculated air flap actuator

- ❑ Removing and installing
⇒ [page 88](#)

4 - Seal

5 - Air intake housing

6 - Fresh/recirculated air flap

7 - Upper part of evaporator housing

8 - Lower part of evaporator housing

9 - Heater and air conditioning unit wiring harness

10 - Fresh air blower - V2-

- ❑ Removing and installing
⇒ [page 122](#)

11 - Fresh air blower bracket

12 - Fresh air blower series resistor with overheating fuse - N24-

- ❑ Removing and installing
⇒ [page 126](#)

13 - Cover

- ❑ For dust and pollen filter

14 - Dust and pollen filter

- ❑ Removing and installing ⇒ [page 121](#)

15 - Fresh/recirculated air flap cable

- ❑ Removing and installing ⇒ [page 91](#)

16 - Evaporator temperature sensor - G308-

- ❑ Removing and installing ⇒ [page 108](#)

17 - Flexible shaft for air distribution

- ❑ Removing and installing ⇒ [page 89](#)

18 - Flexible shaft for temperature flap

- ❑ Removing and installing ⇒ [page 90](#)

19 - Heat exchanger for heater

- ❑ Removing and installing ⇒ [page 128](#)

20 - Temperature flap actuator

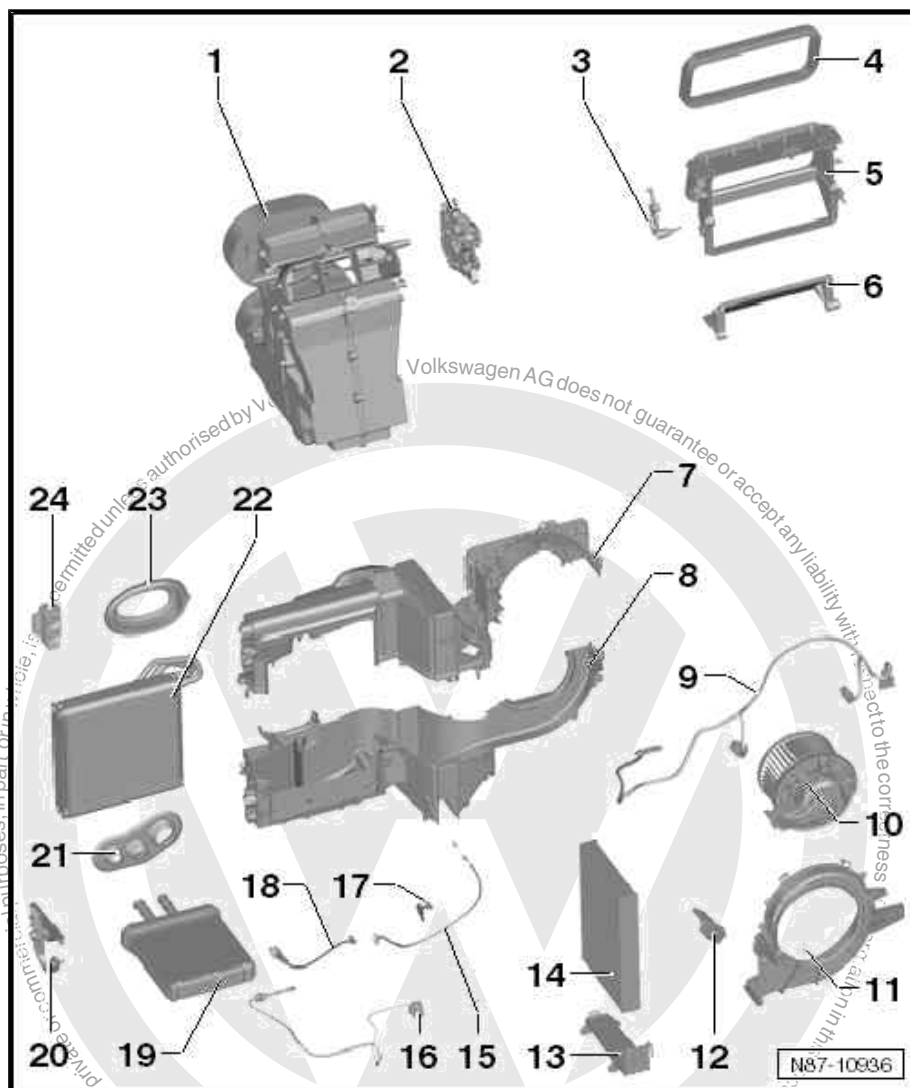
- ❑ Removing and installing ⇒ [page 78](#)

21 - Seal

- ❑ Note installation position ⇒ [page 130](#)

22 - Evaporator

- ❑ Removing and installing ⇒ [page 102](#)





23 - Seal

- Note installation position ⇒ [page 105](#)

24 - Expansion valve

- Removing and installing ⇒ [page 28](#)

5.7 Removing and installing dust and pollen filter

⇒ ["5.7.1 Removing and installing dust and pollen filter, left-hand drive vehicles", page 121](#)

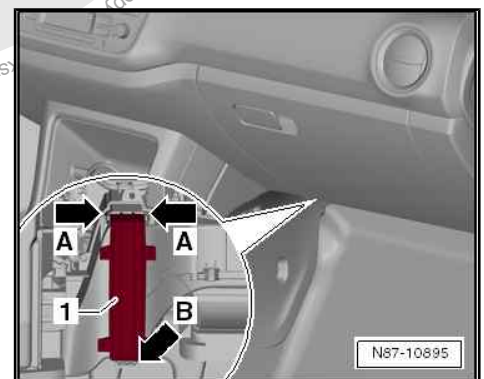
⇒ ["5.7.2 Removing and installing dust and pollen filter, right-hand drive vehicles", page 121](#)

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.

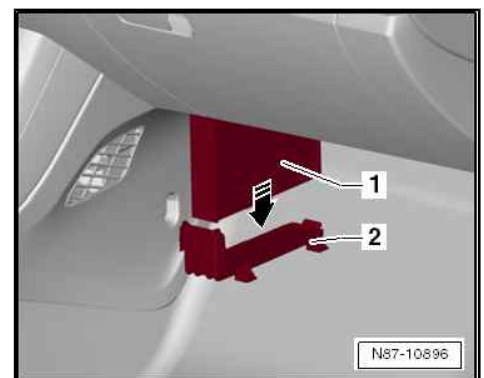
- Press locking lugs -arrow A- inwards and fold dust and pollen filter cover -1- downwards.
- Unhook and remove dust and pollen filter cover -1- from mounting -arrow B-.



- 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 of removal.



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

Removing

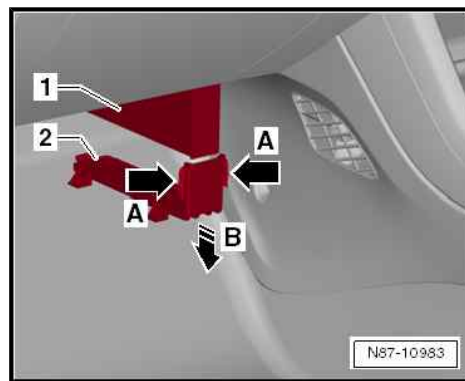
The dust and pollen filter is accessible from the footwell on the front passenger side.



- 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 of removal.



5.8 Removing and installing fresh air blower - V2-

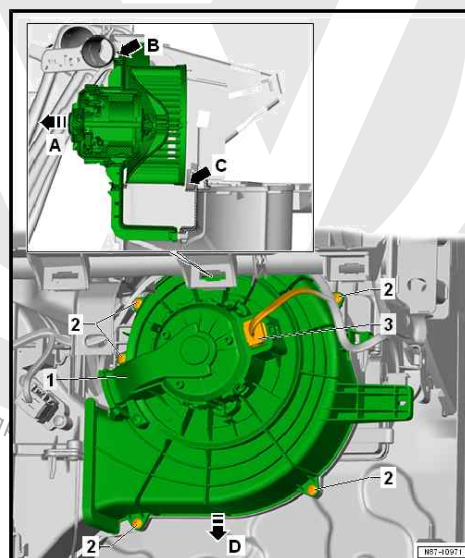
⇒ [“5.8.1 Removing and installing fresh air blower V2 , left-hand drive vehicles”, page 122](#)

⇒ [“5.8.2 Removing and installing fresh air blower V2 , right-hand drive vehicles”, page 123](#)

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

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-.
- Remove bolts -2- (1 Nm).
- 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

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

- The connector must engage correctly in the housing.

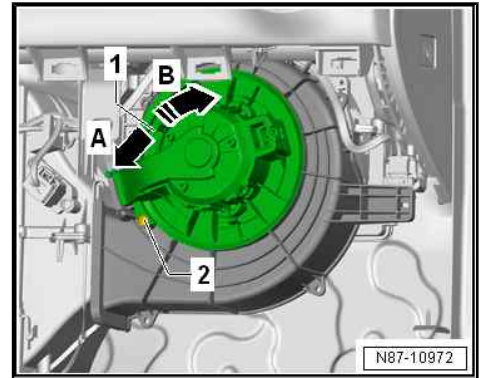


NOTICE

Improper handling may damage the fresh air blower.

Imbalance leading to customer complaints may occur during operation.

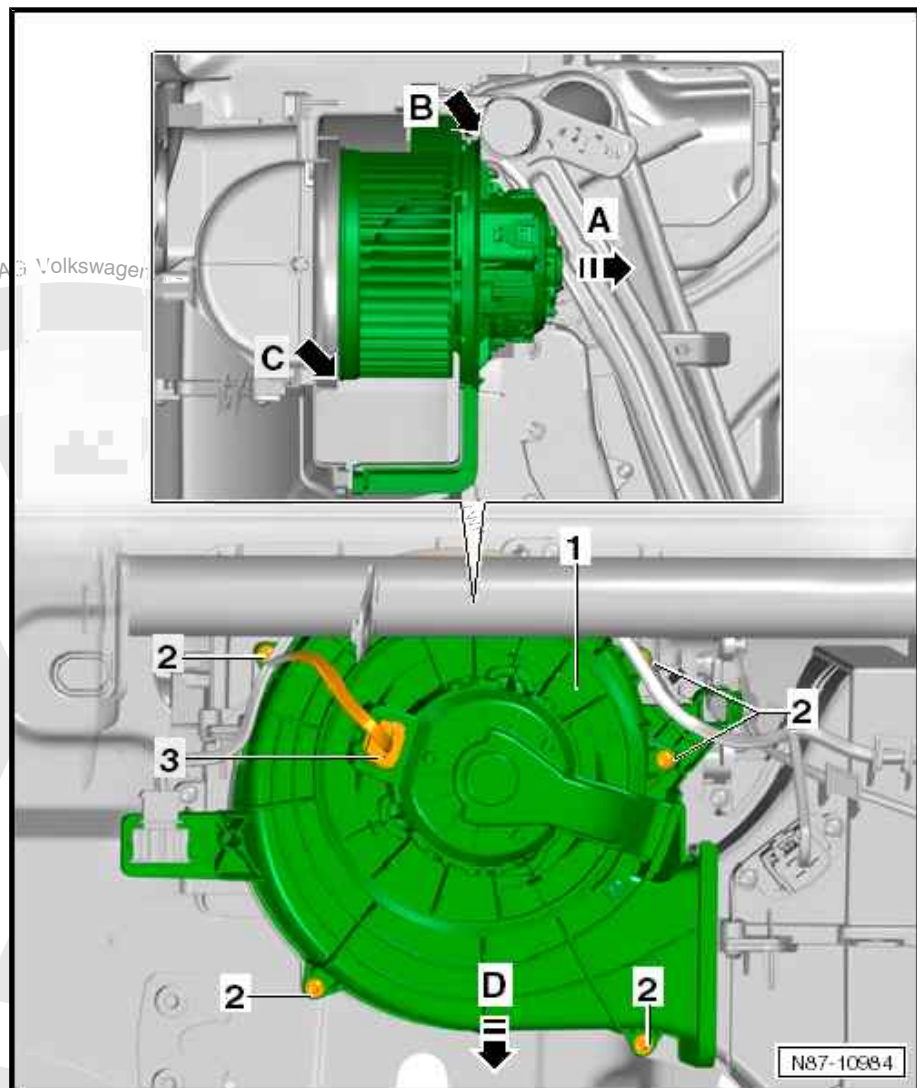
- Avoid applying excessive pressure to the fan wheel.
- Never change position of the balancing weights on fan wheel.



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

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-.



- Remove bolts -2- (1 Nm).
- 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 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

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

5.9 Removing and installing fresh air blower series resistor with overheating fuse - N24-

⇒ [“5.9.1 Removing and installing fresh air blower series resistor with overheating fuse N24 , left-hand drive vehicles”, page 125](#)

⇒ [“5.9.2 Removing and installing fresh air blower series resistor with overheating fuse N24 , right-hand drive vehicles”, page 126](#)

5.9.1 Removing and installing fresh air blower series resistor with overheating fuse - N24- , left-hand drive vehicles

Removing

- Remove glove compartment ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .
- Separate connector -1- on fresh air blower series resistor with overheating fuse - N24- -2-.
- Remove bolts -3- (1 Nm).



CAUTION

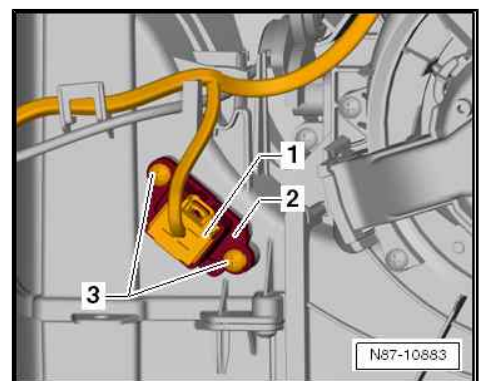
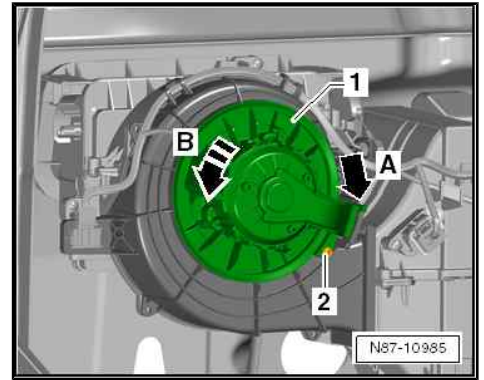
Risk of burns when touching hot cooling surface of control unit.
Risk of burns to the hands.

- Wear protective gloves.

- Pull out fresh air blower series resistor with overheating fuse - N24- -2-.

Installing

- Install in reverse order of removal.





5.9.2 Removing and installing fresh air blower series resistor with overheating fuse - N24- , right-hand drive vehicles

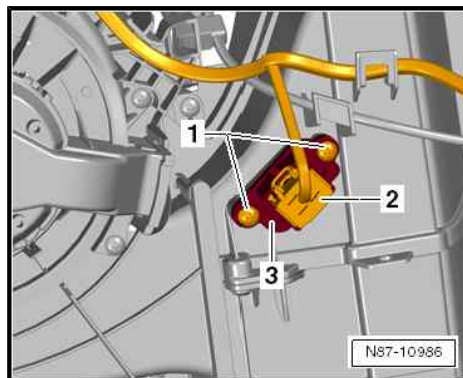
Removing

- Remove glove compartment ➔ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .
- Separate connector -2- on fresh air blower series resistor with overheating fuse - N24- -3-.
- Remove bolts -1- (1 Nm).

⚠ CAUTION

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

- Pull out fresh air blower series resistor with overheating fuse - N24- -2-.



Installing

- Install in reverse order of removal.

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

⇒ [“5.10.1 Removing and installing fresh air blower control unit J126 , left-hand drive vehicles”, page 126](#)

⇒ [“5.10.2 Removing and installing fresh air blower control unit J126 , right-hand drive vehicles”, page 127](#)

5.10.1 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 127](#) .

Removing

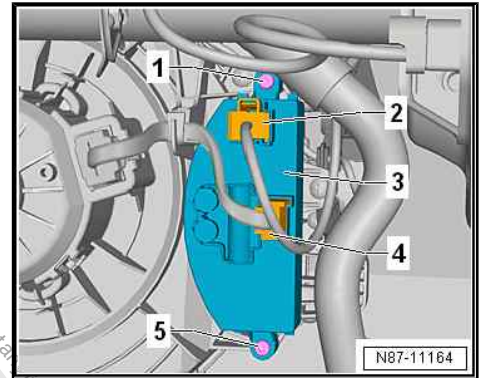
- Remove glove compartment ➔ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .



- 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 .

5.10.2 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 128](#) .

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:

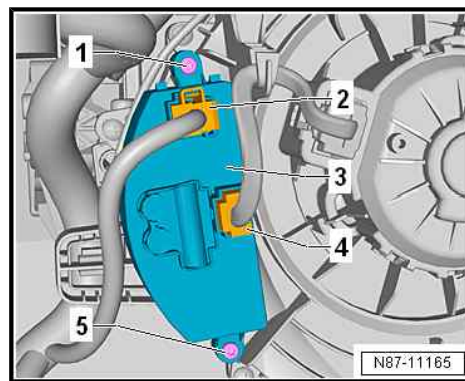
Component	Specified torque
Bolts on fresh air blower control unit - J126-	1 Nm

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

5.11 Removing and installing heat exchanger

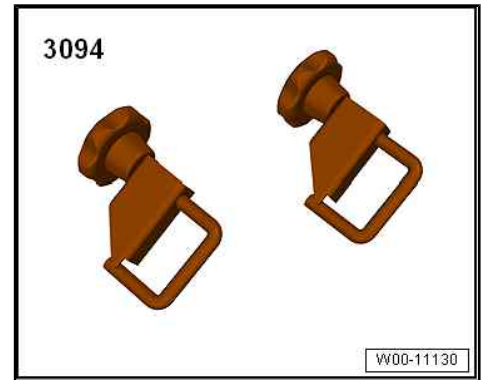
Special tools and workshop equipment required

- ◆ Drip tray for workshop hoist - VAS 6208-

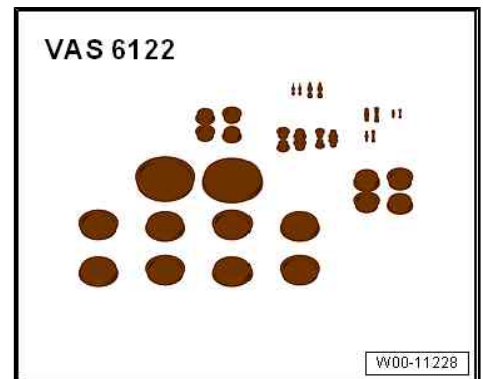




- ◆ Hose clamps to 25 mm - 3094-



- ◆ Engine bung set - VAS 6122-



- ◆ Commercially available compressed air pistol

Removing

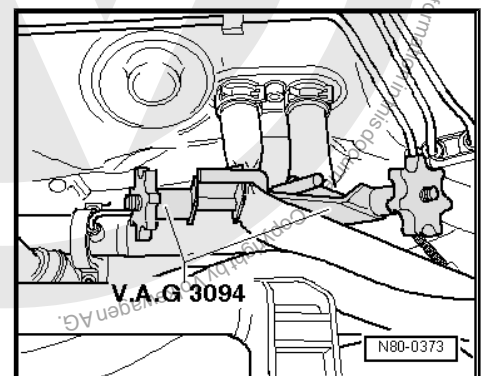
- Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and reconnecting battery .

⚠ CAUTION

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

Skin and other parts of the body may be scalded.

- Wear protective gloves.
- Wear protective goggles.
- Reduce excess pressure by covering cap of coolant expansion tank with cloths and opening it carefully.
- Remove air filter ⇒ Rep. gr. 23 ; Air filter; Removing and installing air filter housing -
- 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-.
- Remove heater and air conditioning unit ⇒ [page 109](#) .
- Dismantling heater and air conditioning unit ⇒ [page 119](#) .
- Remove heat exchanger.

Installing

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

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

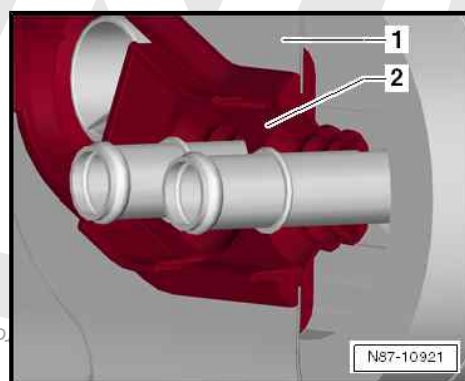
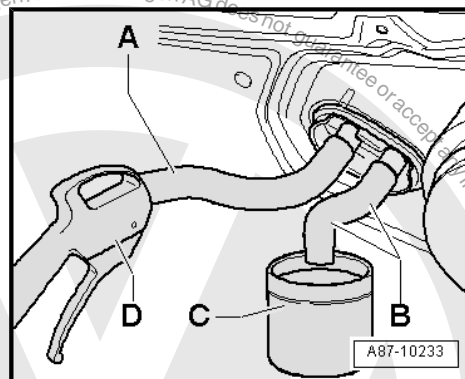
Seal between evaporator housing and plenum chamber bulkhead



Note

After renewal of heat exchanger, renew coolant.

- Fill up with coolant ⇒ Rep. gr. 19 ; Cooling system/coolant;
Draining and filling coolant .



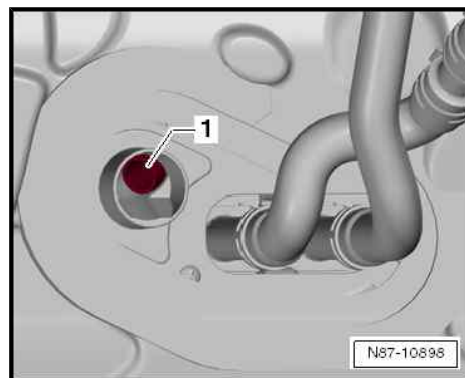
5.12 Removing and installing condensation drain

Condensate drain connection



Note

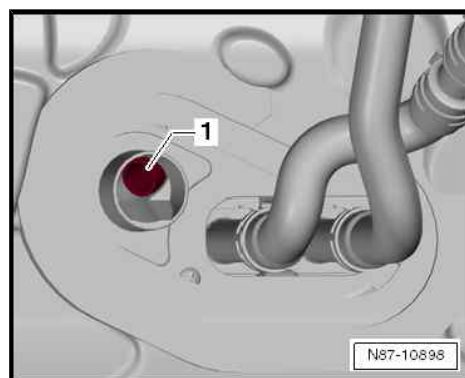
- ◆ The condensate drain connection -1- is located behind the heat shield.
- ◆ The condensate drain connection -1- is a permanent part of the heater and air conditioning unit and cannot be removed or installed separately.



5.13 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”, page 131](#)
- ⇒ [“6.2 Removing and installing centre vent”, page 132](#)
- ⇒ [“6.3 Removing and installing defroster vent”, page 132](#)
- ⇒ [“6.4 Removing and installing dash panel vent, side”, page 133](#)
- ⇒ [“6.5 Removing and installing right or left vent”, page 133](#)
- ⇒ [“6.6 Removing and installing air duct for defroster vent”, page 133](#)
- ⇒ [“6.7 Removing and installing air duct for centre dash panel vent”, page 134](#)
- ⇒ [“6.8 Removing and installing right or left footwell vent”, page 134](#)
- ⇒ [“6.9 Checking forced ventilation for passenger compartment”, page 135](#)
- ⇒ [“6.10 Removing and installing forced ventilation for passenger compartment”, page 135](#)
- ⇒ [“6.11 Removing and installing fresh air intake”, page 136](#)

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

The following information applies to left-hand drive vehicles. A right-hand drive vehicle is similar.



1 - Dash panel

2 - Defroster vent

- ❑ Removing and installing
⇒ [page 132](#) .

3 - Intermediate piece for defroster vent

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

4 - Removing and installing centre vent

- ❑ Removing and installing
⇒ [page 132](#) .

5 - Dash panel vent, side

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

6 - Vent on driver or front passenger side

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

7 - Intermediate piece for centre vent

- ❑ Removing and installing
⇒ [page 134](#) .

8 - Footwell vent on driver side or front passenger side

- ❑ Removing and installing
⇒ [page 134](#) .

9 - Footwell vent on driver side or front passenger side

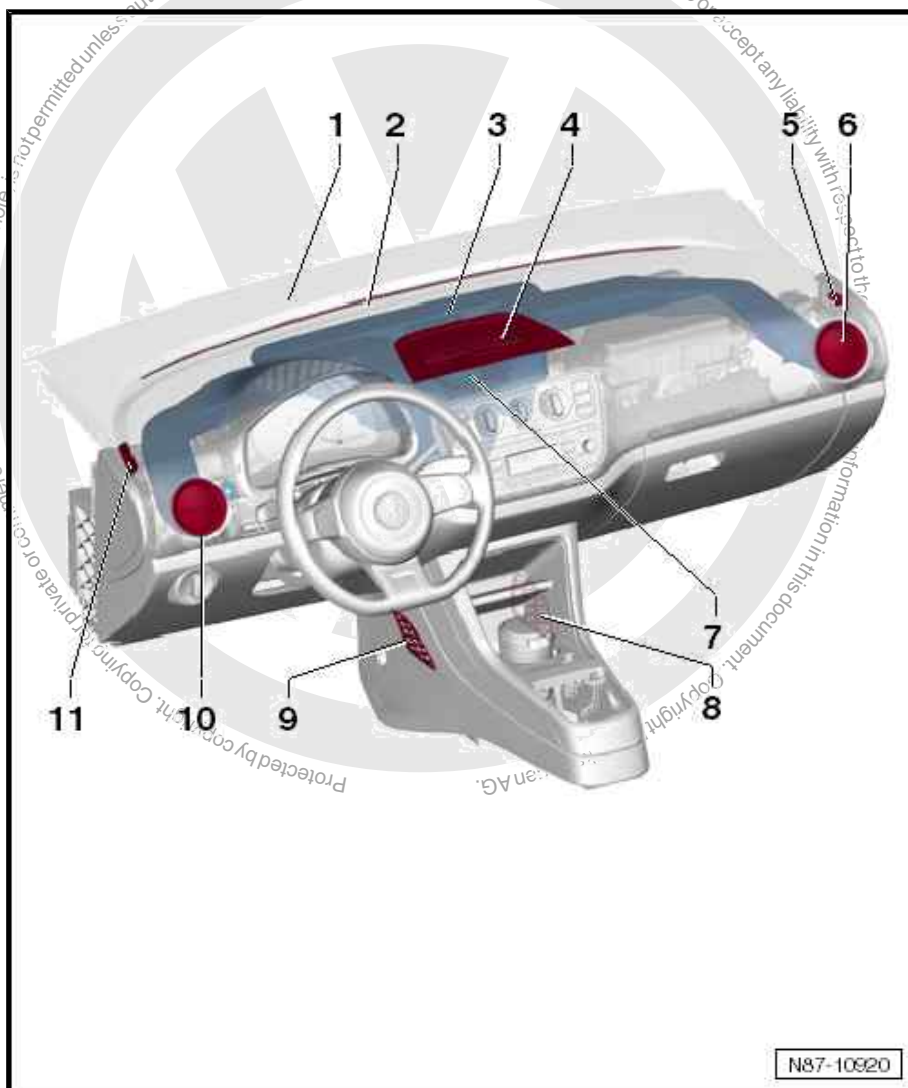
- ❑ Removing and installing
⇒ [page 134](#) .

10 - Vent on driver or front passenger side

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

11 - Dash panel vent, side

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



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

The following information applies to left-hand drive vehicles. A right-hand drive vehicle is similar.

Special tools and workshop equipment required

- ◆ Hook - 3438-



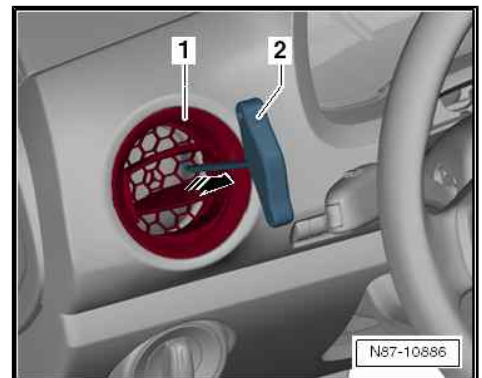
Removing

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

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

The following information applies to left-hand drive vehicles. A right-hand drive vehicle is similar.

Removing

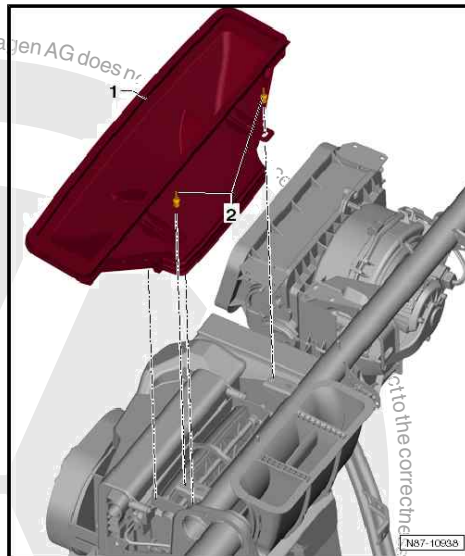
- Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .



- Remove clips -2-.
- Remove air duct 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 dash panel vent

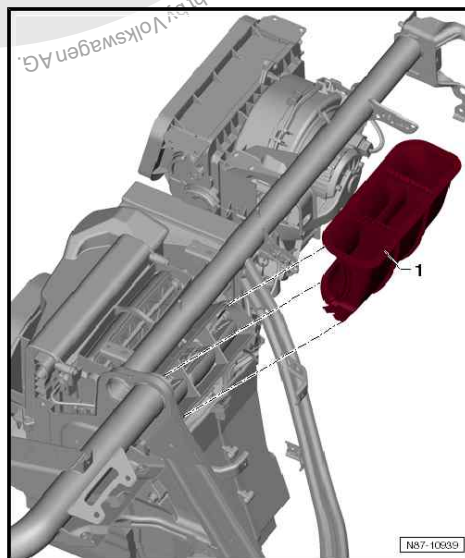
The following information applies to left-hand drive vehicles. A right-hand drive vehicle is similar.

Removing

- Remove dash panel ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel .
- Remove air duct for centre dash panel vent -1- upwards from heater and air conditioning unit -2-.

Installing

Install in reverse order of removal.



6.8 Removing and installing right or left foot-well vent

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



6.9 Checking forced ventilation for passenger compartment

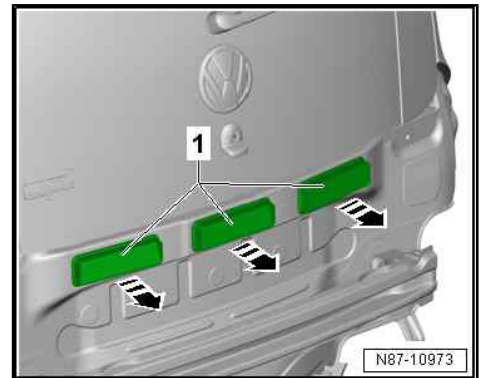


Note

- ◆ 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

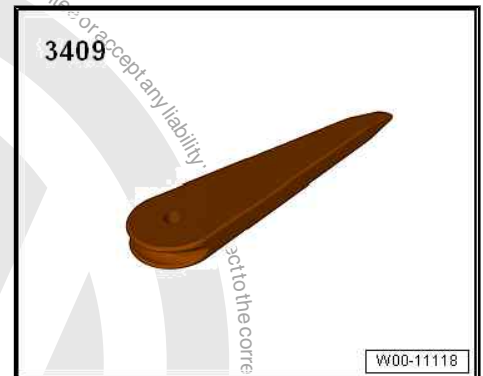
- The sealing lips in the ventilation frame -1- must be free to move and close by themselves.



6.10 Removing and installing forced ventilation for passenger compartment

Special tools and workshop equipment required

- ◆ Removal wedge - 3409



Removing

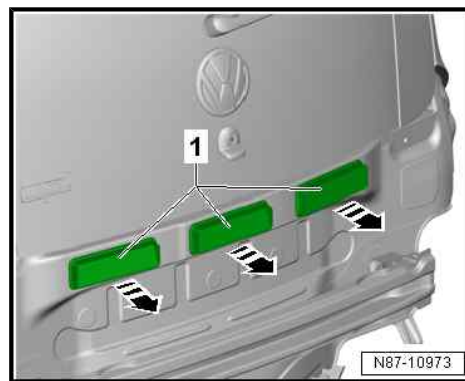
- Remove rear bumper cover ⇒ General body repairs, exterior; Rep. gr. 63; Rear bumper; Removing and installing bumper cover .



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

Installing

- Ventilation frame must engage audibly.
- Further installation is performed in the reverse order.



6.11 Removing and installing fresh air intake

⇒ ["6.11.1 Removing and installing fresh air intake, left-hand drive vehicles", page 136](#)

⇒ ["6.11.2 Removing and installing fresh air intake , right-hand drive vehicles", page 137](#)

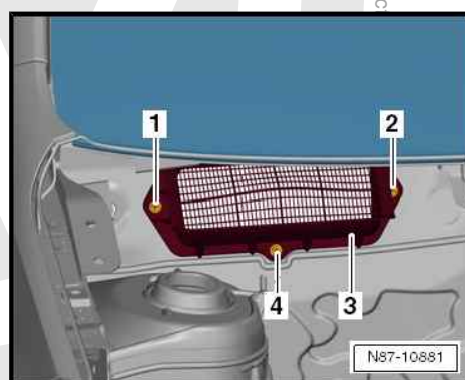
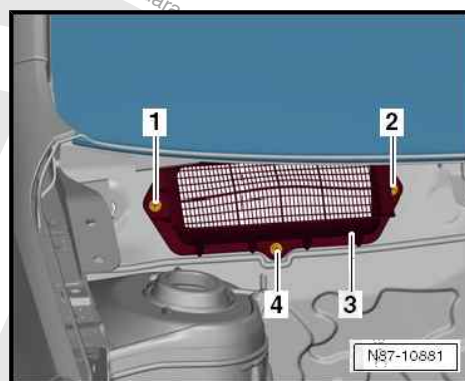
6.11.1 Removing and installing fresh air intake, left-hand drive vehicles

Removing

- Remove right plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .
- Loosen nuts (2.5 Nm) -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- to 2.5 Nm.
- Tighten nuts -1- and -2- to 2.5 Nm.
- Further installation is performed in the reverse order.





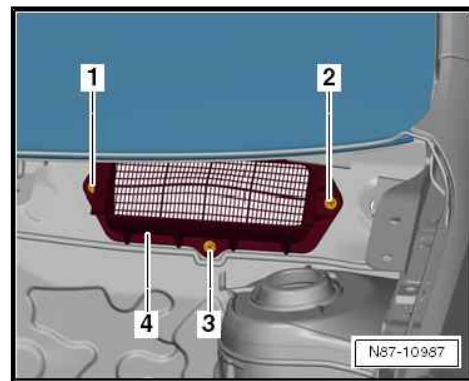
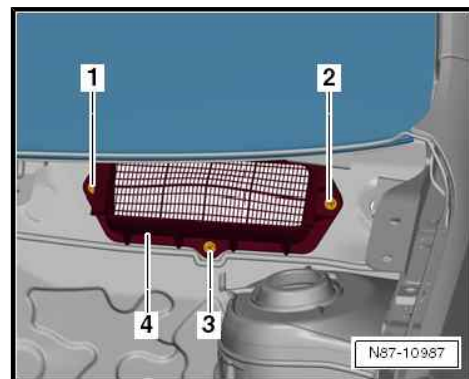
6.11.2 Removing and installing fresh air intake , right-hand drive vehicles

Removing

- Remove right plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .
- Loosen nuts (2.5 Nm) -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- to 2.5 Nm.
- Tighten nuts -1- and -2- to 2.5 Nm.
- Further installation is performed in the reverse order.





7 Operating and display unit

⇒ "7.1 Overview of operating and display unit", page 138

⇒ "7.2 Removing and installing operating and display unit", page 140

7.1 Overview of operating and display unit

⇒ "7.1.1 Overview of operating and display unit, Climatronic", page 138

⇒ "7.1.2 Overview of control and display unit, air conditioning system with electric and manual controls, from week 22/2012", page 139

⇒ "7.1.3 Overview of control and display unit, air conditioning system with electric and manual controls, to week 21/2012", page 140

7.1.1 Overview of 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.

7.1.2 Overview of control and display unit, air conditioning system with electric and manual controls, from week 22/2012

1 - Temperature setting display

- ☐ Indicates set temperature range

2 - Rotary knob for setting temperature

- ☐ Anticlockwise: lowers temperature.
- ☐ Clockwise: increases temperature.

3 - **A/C** button

- ☐ Switches the air conditioner compressor on via the air conditioning system magnetic clutch - N25- .

4 - Display for blower speed

- ☐ Indicates fan speed setting

5 - Rotary knob for setting blower speed

- ☐ Anticlockwise: reduces blower speed.
- ☐ Clockwise: increases blower speed.

6 - Display for air distribution

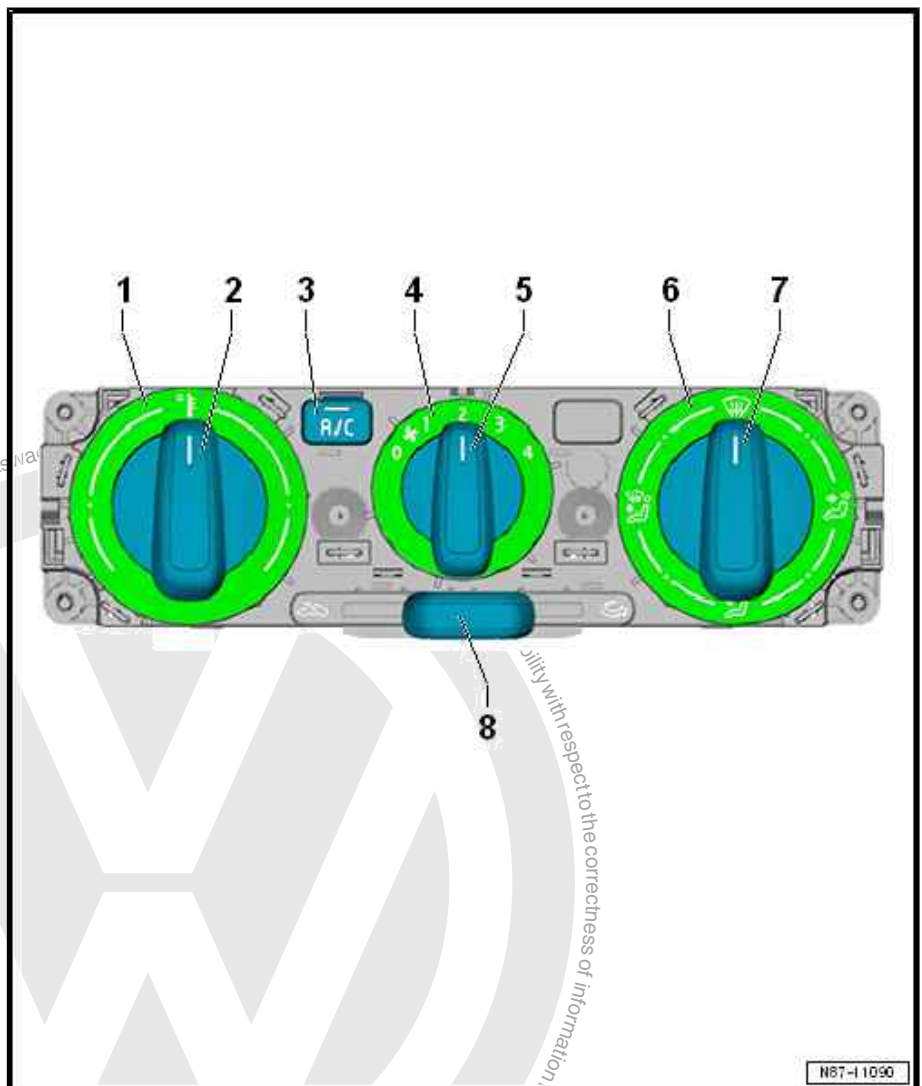
- ☐ Indicates position air outlet is set to

7 - Rotary knob for setting air distribution

- ☐ For setting active air vent

8 - Slide control for fresh air/recirculated air

- ☐ If the slide control is moved all the way to the right, recirculated air mode is set to maximum and polluted air is prevented from entering the interior.



N87-I 1090



7.1.3 Overview of control and display unit, air conditioning system with electric and manual controls, to week 21/2012

1 - Rotary knob for setting temperature

- ☐ Anticlockwise: lowers temperature.
- ☐ Clockwise: increases temperature.

2 - **A/C** button

- ☐ Switches the air conditioner compressor on via the air conditioning system magnetic clutch - N25- .

3 - Display for blower speed

- ☐ Indicates fan speed setting

4 - Rotary knob for setting blower speed

- ☐ Anticlockwise: reduces blower speed.
- ☐ Clockwise: increases blower speed.

5 - Rotary knob for setting air distribution

- ☐ For setting active air vent

6 - Display for air distribution

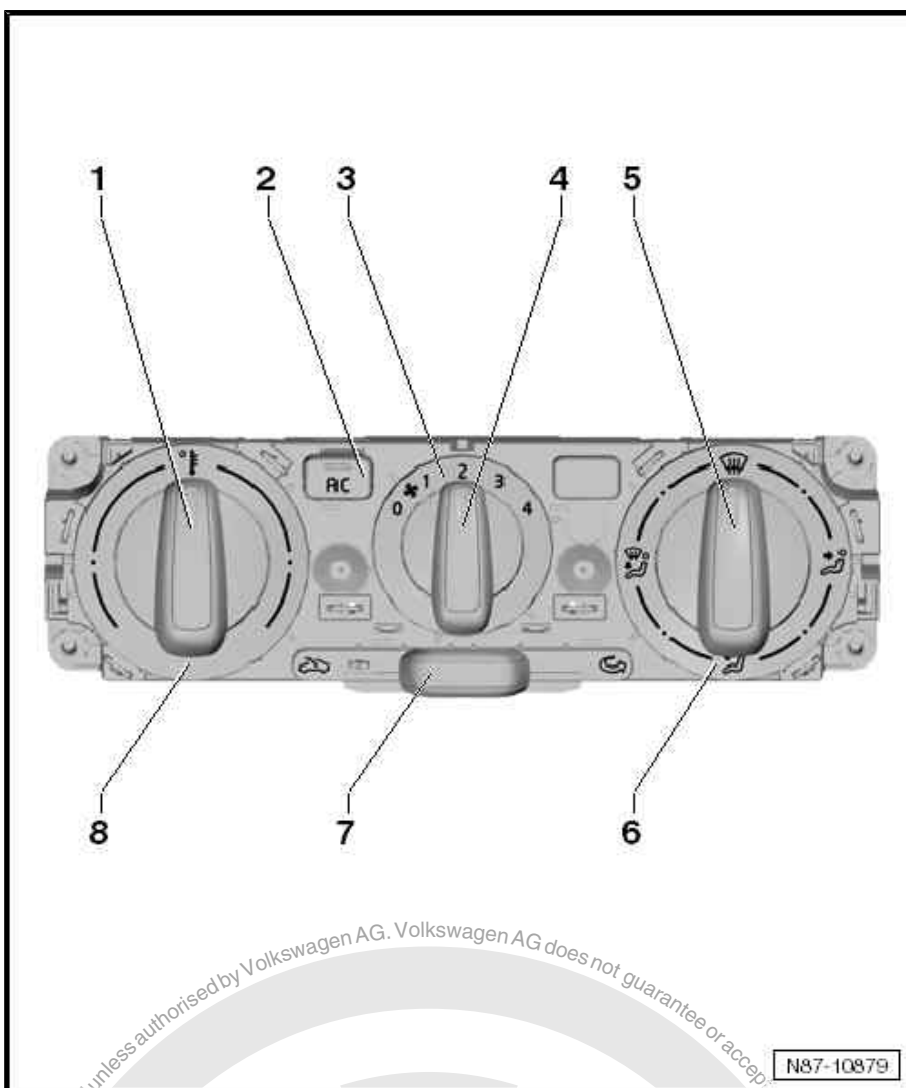
- ☐ Indicates position air outlet is set to

7 - Slide control for fresh air/recirculated air

- ☐ If the slide control is moved all the way to the right, recirculated air mode is set to maximum and polluted air is prevented from entering the interior.

8 - Temperature setting display

- ☐ Indicates set temperature range



7.2 Removing and installing operating and display unit

⇒ [“7.2.1 Removing and installing operating and display unit, air conditioning system with electric/manual controls”, page 140](#)

⇒ [“7.2.2 Removing and installing operating and display unit, Climatronic”, page 142](#)

7.2.1 Removing and installing operating and display unit, air conditioning system with electric/manual controls

Special tools and workshop equipment required

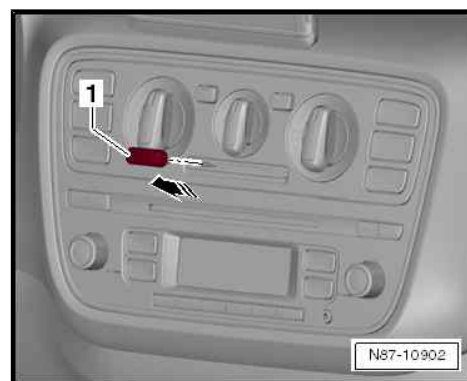


◆ Removal wedge - 3409-

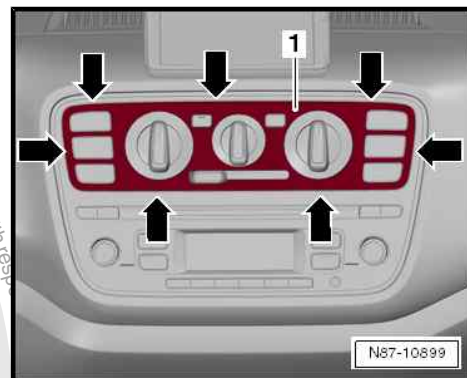


Removing

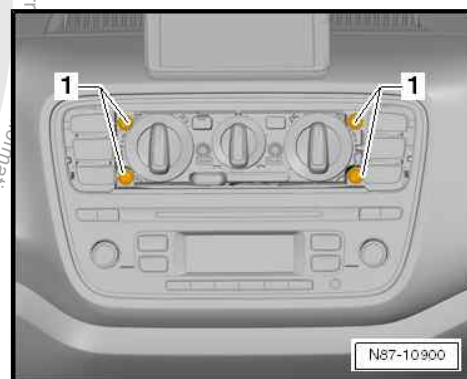
- Remove sliding control for fresh and recirculated air -1- in direction of -arrow-.



- Unclip trim -1- using removal wedge - 3409- at locations marked by -arrows-, and remove trim -1-.

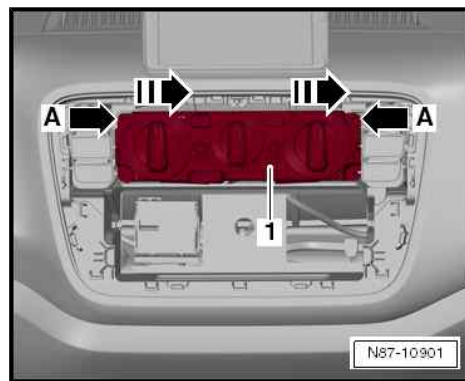


- Remove bolts -1- (1.5 Nm).
- Depending on vehicle equipment, remove radio ⇒ Communication; Rep. gr. 91 ; Radio; Removing and installing radio or remove centre trim ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing mounting frame for radio/navigation system .





- Unhook operating and display unit -1- in direction of -arrow- from mountings -arrows A- and pull out forwards.
- Separate connectors from operating and display unit -1-.



- Detach flexible shafts -1- for defroster and air distribution flap and temperature flap as well as fresh air/recirculated air flap cable from operating and display unit -2-.
- Remove operating and display unit.

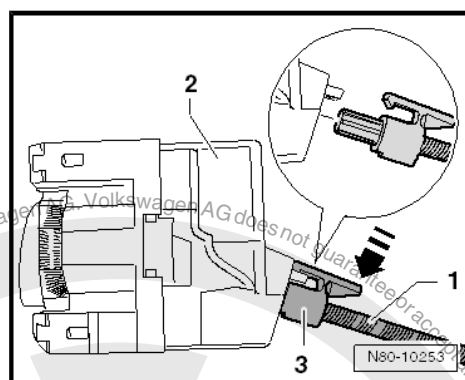


Note

The flexible shaft connection -3- is referred to as a "terminal".

Installing

- Install in the reverse order of removal, observing the following:
- ◆ Always install slide control for fresh air/recirculated air with plug-in socket pointing upwards.



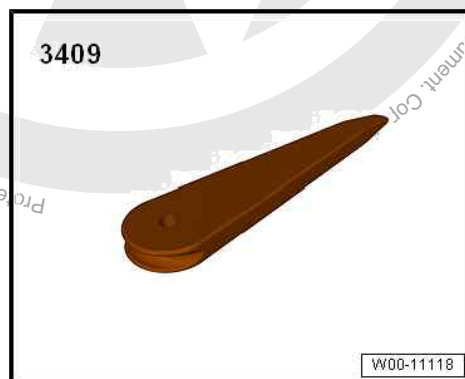
Note

When the flexible shafts are installed, the actuators and rotary knobs on the heated air and fresh air controls must be positioned correctly relative to each other, otherwise the system will malfunction.

7.2.2 Removing and installing operating and display unit, Climatronic

Special tools and workshop equipment required

- ◆ Removal wedge - 3409-



Removing

- Remove radio ⇒ Communication; Rep. gr. 91 ; Radio; Removing and installing radio .
- Separate connectors.



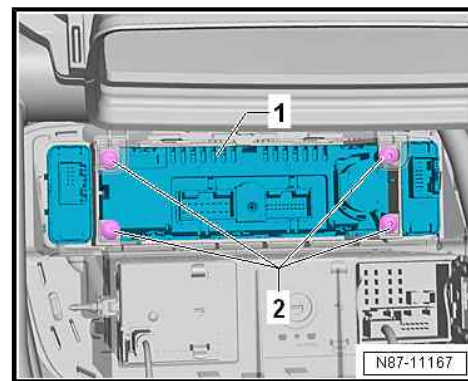
- Unscrew bolts -2-.
- Remove operating and display unit -1-.

Installing

Install in reverse order of removal.

Specified torque:

Component	Specified torque
Bolts on operating and display unit	2 Nm





8 Other controlling and regulating components

⇒ ["8.1 Removing and installing ambient temperature sensor G17", page 144](#)

⇒ ["8.2 Removing and installing sunlight penetration photosensor G107", page 144](#)

⇒ ["8.3 Removing and installing humidity sender for air conditioning system G260", page 145](#)

⇒ ["8.5 Removing and installing centre vent temperature sender G191", page 148](#)

⇒ ["8.6 Removing and installing footwell vent temperature sender G192", page 148](#)

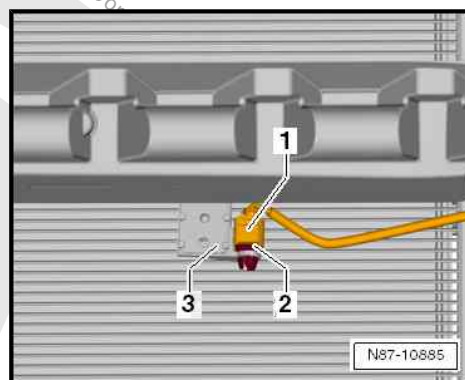
8.1 Removing and installing ambient temperature sensor - G17-

Removing

- Remove front bumper ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Removing and installing bumper cover .
- 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 of removal.



8.2 Removing and installing sunlight penetration photosensor - G107-

Special tools and workshop equipment required

- ◆ Removal wedge - 3409-



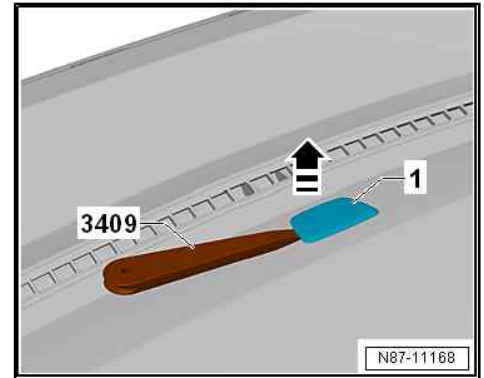


Removing

- 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 of removal.



8.3 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 consumers and withdraw ignition key.
- Remove cover from interior mirror ⇒ General body repairs, interior; Rep. gr. 68 ; Interior mirror; Assembly overview - interior mirror .

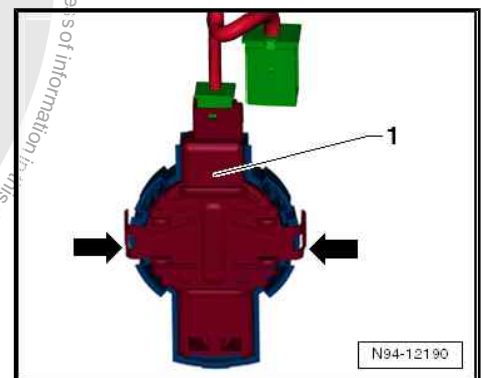


Note

Wait for 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.

Installing

Install in reverse order of removal, observing the following:

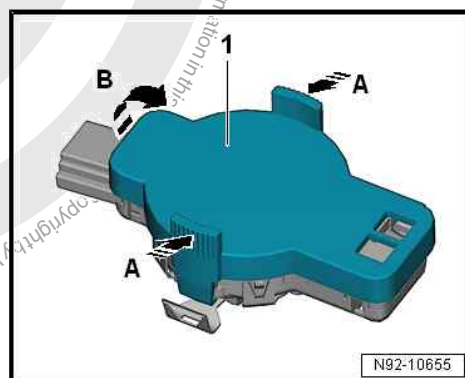
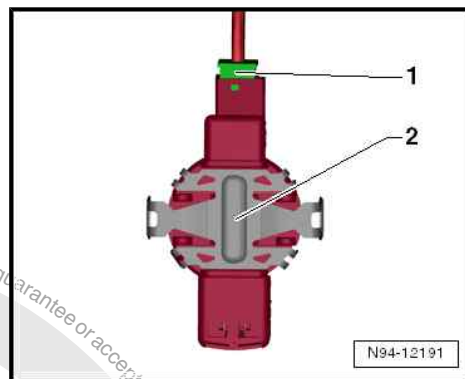
- Prior to installation, thoroughly clean the surface of the windscreen within the retaining frame for humidity sender for air conditioning system - G260- , and make sure to completely remove any remains of the coupling pad adhering to the windscreen.
- Check the coupling pad surface of the humidity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

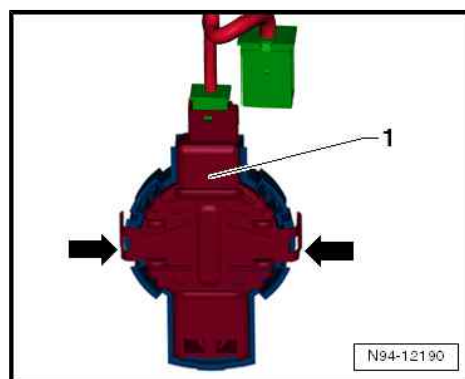


- Fit connector.
- Insert rain and light sensor - G397- -1- into retaining frame on windscreen.
- Push in retaining clip on both sides -arrows- until it engages audibly.



Note

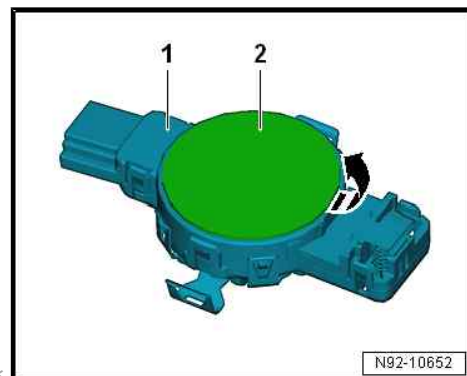
- ♦ *Even if the sensor is installed correctly, small air bubbles may initially appear between the windscreen and the coupling pad. After approx. 10 minutes, the contact surface must be free of bubbles.*
- ♦ *If the contact surface is not free of bubbles after 10 minutes, the rain and light sensor - 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.*





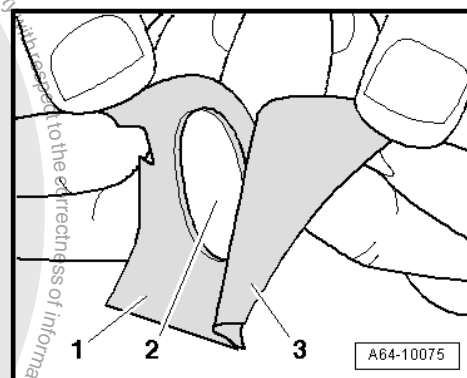
8.4 Repairing humidity sender for air conditioning system - G260-

- Remove rain and light sensor - G397- ⇒ [page 145](#) .
- Carefully remove sensor film -2- or any sensor film 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.

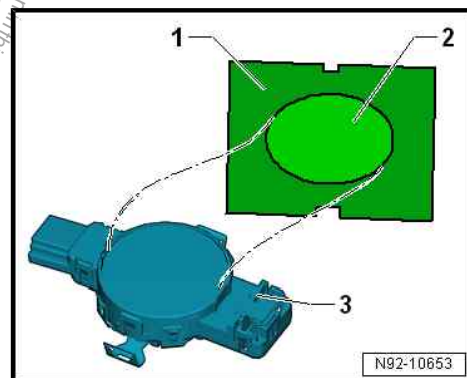


- Pull silicone paper -3- off sensor film -2-.

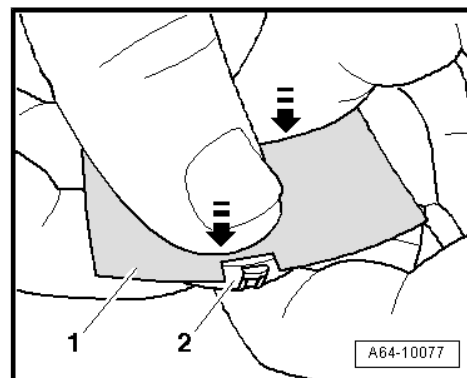
Transparent protective film -1- remains on sensor film initially as an assembly aid.



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

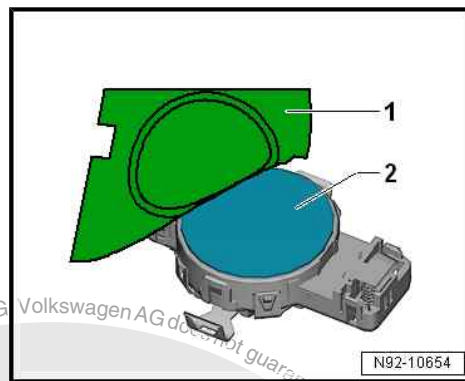


- Using protective film -1-, press sensor film onto rain and light sensor - G397- -2- ensuring there are no bubbles.





- Pull transparent protective film -1- off sensor film -2-.
- Install rain and light sensor - G397- ➔ [page 145](#) .



8.5 Removing and installing centre vent temperature sender - G191-

Special tools and workshop equipment required

- ◆ Removal wedge - 3409-



Removing

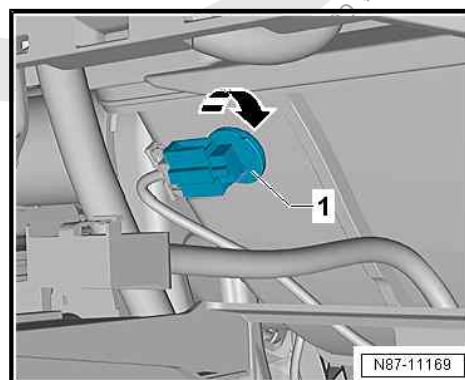
- Remove radio ➔ Communication; Rep. gr. 91 ; Radio; Removing and installing radio .
- Separate electrical connector.
- Turn centre vent temperature sender - G191- -1- by 90°, and remove it.

Installing

- Install in reverse order of removal.

Specified torque

- ◆ Removing and installing radio ➔ Communication; Rep. gr. 91 ; Radio units/radio navigation systems; Removing and installing radio units/radio navigation systems .



8.6 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 .
- Separate electrical connector.
- Turn footwell vent temperature sender - G192- -1- by 90°, and remove it.

Installing

- Install in reverse order of removal.

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 .

