



Repair Manual Golf 2015 ➤ Golf Variant 2015 ➤

Heating, Ventilation and Air Conditioning

Edition 12.2015





List of Workshop Manual Repair Groups

Repair Group

00 - General, Technical Data

80 - Heating, Ventilation

87 - Air Conditioning



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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00 – General, Technical Data

1 Identification

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⇒ [“1.1 Heater and A/C Unit Identification”, page 1](#)

1.1 Heater and A/C Unit Identification

⇒ [“1.1.1 Heater and A/C Unit Identification, Valeo”, page 1](#)

⇒ [“1.1.2 Heater and A/C Unit Identification, Denso”, page 1](#)

1.1.1 Heater and A/C Unit Identification, Valeo

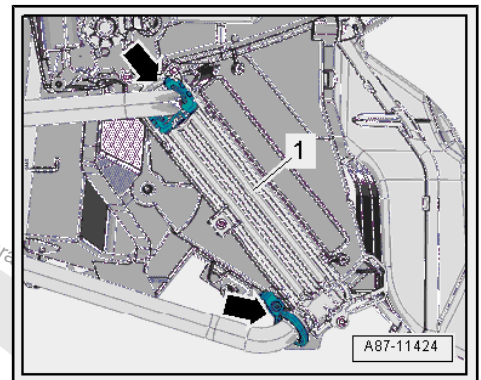


Note

Correct allocation must be observed when replacing components. Interchanging components from different manufacturers is not permitted. Refer to the Parts Catalog.

- Remove the left footwell center console trim. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console; Overview - Center Console .

If the layout of the coolant pipe on the heater core looks like the one shown in the illustration, then the heater and Air Conditioning (A/C) unit is from the manufacturer Valeo.



1.1.2 Heater and A/C Unit Identification, Denso



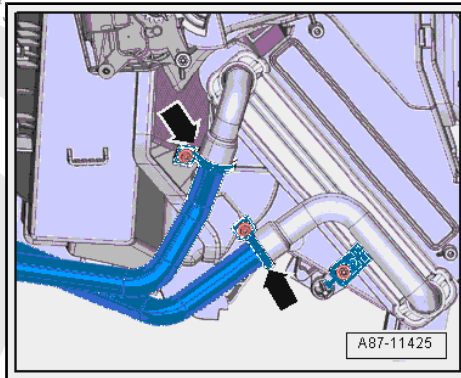
Note

Correct allocation must be observed when replacing components. Interchanging components from different manufacturers is not permitted. Refer to the Parts Catalog.

- Remove the left footwell center console trim. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console; Overview - Center Console .



If the layout of the coolant pipe on the heater core looks like the one shown in the illustration, then the heater and Air Conditioning (A/C) unit is from the manufacturer Denso.





2 General Information

⇒ [“2.1 Odors in Vehicles with A/C System”, page 3](#)

⇒ [“2.2 Vehicles with Start/Stop System General Information”, page 3](#)

⇒ [“2.3 Repairing Vehicles Equipped with A/C and Handling Refrigerants”, page 4](#)

⇒ [“2.4 Type Label”, page 4](#)

2.1 Odors in Vehicles with A/C System



Note

- ◆ Numerous procedures varying in their application and effect are available on the market for cleaning the evaporator.
- ◆ Currently, Volkswagen approves using Ultrasound A/C Cleaner - VAS6189A- or Suction Feed Spray Gun - VAG1538- and a spray nozzle to clean the evaporator.
- ◆ Should Volkswagen test and approve other methods, the information will be published in the ⇒ [Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information](#) .

2.2 Vehicles with Start/Stop System General Information



Note

Read Safety Precautions When Working on Vehicles With Start/Stop System. Refer to
⇒ [“3.2 Start/Stop System Safety Precautions”, page 5](#) .

If the vehicle has a start-stop system, perform the following termination conditions to deactivate the start-stop function:

- ◆ Use the Start/Stop button to switch off the Start/Stop System.
- ◆ The battery state of charge does not make it possible to start the engine again (start voltage prediction).
- ◆ The defrost function is active.
- ◆ The heated front windshield is active.
- ◆ The selected temperature deviates more than 8 °C (46 °F) from the actual temperature inside the vehicle.
- ◆ The engine RPM exceeds 1,200 RPM.
- ◆ The Generator - C- is faulty, for example, the ribbed belt is torn.
- ◆ The coolant temperature is not in the specified range of 25 °C to 100 °C (77 to 212 °F).
- ◆ Increasing the blower speed by more than four steps.



2.3 Repairing Vehicles Equipped with A/C and Handling Refrigerants



Note

- ◆ *ELSA contains all the information regarding performing repairs on vehicles with air conditioning and working with refrigerant. Refer to ➤ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .*
- ◆ *Information on tools for repairs in vehicles with climate control system can be found in ELSA. Refer to ➤ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .*
- ◆ *ELSA contains usage information for the A/C service station when working on vehicles with an A/C system. Refer to ➤ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .*



Caution

Do not bend or kink refrigerant lines excessively.

There is a foil inside the refrigerant lines that can be destroyed.

Refrigerant lines must not be bent beyond a radius less than $r = 100 \text{ mm}$.



WARNING

Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- **Extract the refrigerant and immediately open the refrigerant circuit after that.**
- **If the refrigerant was extracted more than 10 minutes in the past and the refrigerant circuit was not opened, extract the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.**

2.4 Type Label

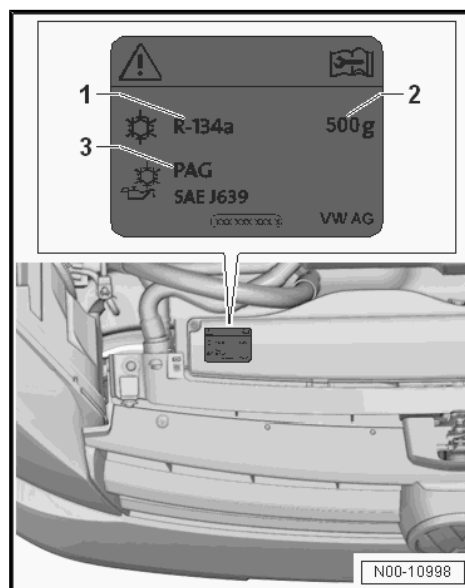
Type Label for the Refrigerant R134a and Refrigerant Oil Capacities

- 1 - Refrigerant name
- 2 - Refrigerant capacity
- 3 - Refrigerant oil name



Note

- ◆ *In deviation from the type label, a filling tolerance of 500 ± 15 grams is permitted.*
- ◆ *Refrigerant R134a and refrigerant oil capacities. Refer to ➤ ["5 Technical Data", page 8](#) .*





3 Safety Precautions

⇒ **"3.1 Handling Refrigerant Safety Precautions", page 5**

⇒ **"3.2 Start/Stop System Safety Precautions", page 5**

3.1 Handling Refrigerant Safety Precautions



Note

- ◆ *ELSA contains all safety precautions regarding performing repairs on vehicles with air conditioning and working with refrigerant. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .*
- ◆ *Information on tools for repairs in vehicles with climate control system can be found in ELSA. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .*
- ◆ *If there are unpleasant odors coming from the evaporator, clean it with the Ultrasound A/C Cleaner - VAS6189B- or with a Suction Feed Spray Gun - VAG1538- . The operating instructions are provided with the tools.*



Caution

Do not bend or kink refrigerant lines excessively.

There is a foil inside the refrigerant lines that can be destroyed.

Refrigerant lines must not be bent beyond a radius less than $r = 100 \text{ mm}$.

Additional Information

- ◆ Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations

3.2 Start/Stop System Safety Precautions



WARNING

On vehicles with the Start/Stop System, the engine could start automatically and cause serious personal injury.

- ◆ *If the Start/Stop System is activated (recognizable by a message in the instrument cluster), it is possible to start the engine automatically.*
- ◆ *Make sure the Start/Stop System is deactivated is deactivated (ignition switched off) whenever working on the vehicle.*



4 Repair Information

⇒ **"4.1 Refrigerant Circuit, Specialized Repairs", page 6**

4.1 Refrigerant Circuit, Specialized Repairs



Note

- ◆ *ELSA contains all information regarding performing repairs on vehicles with air conditioning and working with refrigerant. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .*
- ◆ *Information on tools for repairs in vehicles with climate control system can be found in ELSA. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; Special Tools .*
- ◆ *ELSA contains usage information for the Air Conditioning (A/C) service station when working on vehicles with an A/C system. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information.*
- ◆ *Under certain conditions, the dryer bag should no longer be replaced each time the refrigerant circuit is opened. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information in ELSA.*
- ◆ *The procedure for flushing with refrigerant R134a is described in ELSA. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .*



WARNING

Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- ***Extract the refrigerant and immediately open the refrigerant circuit after that.***
- ***If the refrigerant was extracted more than 10 minutes in the past and the refrigerant circuit was not opened, extract the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.***



Note

- ◆ *Flush the refrigerant circuit with R134a refrigerant under the following conditions:*
- ◆ *In the event of dirt or other contamination in the refrigerant circuit.*
- ◆ *If vacuum reading is not maintained on evacuating a leak-free refrigerant circuit (pressure build-up due to moisture in refrigerant circuit).*
- ◆ *If the refrigerant circuit has been left open for longer than normal (for example, following an accident).*
- ◆ *If pressure and temperature measurements in the refrigerant circuit indicate the likelihood of moisture*
- ◆ *In the event of doubt about the amount of refrigerant oil in the circuit.*
- ◆ *The A/C compressor must be replaced on account of internal damage (for example, noise or no output).*



5 Technical Data

⇒ [“5.1 Refrigerant R134a Capacities”, page 8](#)

⇒ [“5.2 Refrigerant Oil”, page 8](#)

⇒ [“5.3 Oil Distribution”, page 8](#)

5.1 Refrigerant R134a Capacities

Complete R134a refrigerant capacity. Refer to Fluid Capacity book.

5.2 Refrigerant Oil

Important Information

Refrigerant oil is hygroscopic (attracts moisture). Close any opened containers immediately after use to prevent moisture from entering.



Note

- ◆ *The special refrigerant oil (for use with refrigerant circuits R134a only) is no longer obtainable on the refrigerant/machine oil market.*
- ◆ *Do not use refrigerant oil that was stored for long periods of time in open containers.*

Refrigerant Oil Can be Obtained Using Following Part Number; For:	
6SES14C; Denso	G 052 300 A2
11PXE14; Sanden	G 052 154 A2
6CVC140; Delphi	G 052 154 A2 / G 052 300 A2

Complete R134a refrigerant capacity. Refer to Fluid Capacity book.

5.3 Oil Distribution

The oil, which is located in the sump of the Air Conditioning (A/C) compressor before initially switching on the air conditioner system, is distributed through the refrigerant circuit as follows:

- ◆ A/C compressor approximately 50%
- ◆ Condenser approximately 10%
- ◆ Suction hose approximately 10%
- ◆ Evaporator approximately 20%
- ◆ Receiver/dryer approximately 10%



80 – Heating, Ventilation

1 Component Location Overview - Heating

⇒ [“1.1 Component Location Overview - Components Outside of Passenger Compartment”, page 9](#)

⇒ [“1.2 Component Location Overview - Components Inside Front Passenger Compartment”, page 10](#)

1.1 Component Location Overview - Components Outside of Passenger Compartment

1 - Vehicle Interior Forced Air Extraction

- ☐ Check using the Vehicle Diagnostic Tester . Refer to
⇒ [“5.9 Passenger Compartment Forced Air Extraction, Checking”, page 119](#) .
- ☐ Removing and installing. Refer to
⇒ [“5.10 Passenger Compartment Forced Air Extraction, Removing and Installing”, page 119](#) .

2 - Outside Air Temperature Sensor - G17-

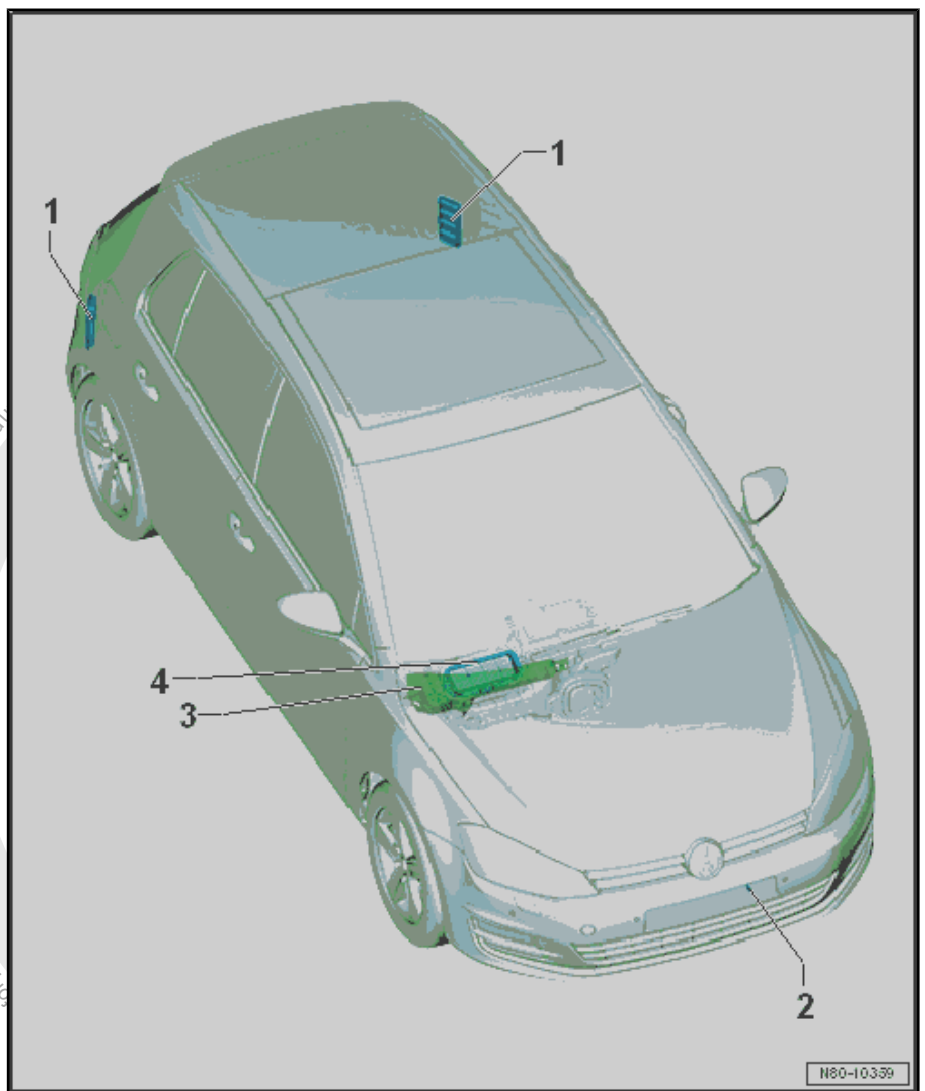
- ☐ Removing and installing. Refer to
⇒ [“8.4 Outside Air Temperature Sensor G17, Removing and Installing”, page 153](#) .

3 - Fresh Air Intake Cover

- ☐ Removing and installing. Refer to
⇒ [“5.3 Fresh Air Intake Cover, Removing and Installing”, page 115](#) .

4 - Fresh Air Intake

- ☐ Removing and installing. Refer to
⇒ [“5.2 Fresh Air Intake, Removing and Installing”, page 115](#) .





1.2 Component Location Overview - Components Inside Front Passenger Compartment

1 - Driver Side Footwell Vent

- ❑ Removing and installing. Refer to
⇒ [“5.5 Driver Side Footwell Vent, Removing and Installing”, page 117](#) .
- ❑ Overview. Refer to
⇒ [“5.1 Overview - Air Routing and Air Distribution in Passenger Compartment”, page 113](#) .

2 - Temperature Regulator Door Motor - V68-

- ❑ Removing and installing. Refer to
⇒ [“7.5 Left Temperature Door Motor V158 with Left Temperature Door Potentiometer/Actuator G220, Removing and Installing”, page 136](#) .

3 - Air Distribution Door Motor - V428-

- ❑ Removing and installing. Refer to
⇒ [“7.8 Front Air Distribution Door Motor V426 with Air Distribution Door Motor Position Sensor G642, Removing and Installing”, page 143](#) .

4 - Dust and Pollen Filter

- ❑ Removing and installing. Refer to
⇒ [“4.11 Dust and Pollen Filter, Removing and Installing”, page 92](#) .

5 - Recirculation Door Motor - V113-

- ❑ Removing and installing. Refer to
⇒ [“7.4 Recirculation Door Motor V113, Removing and Installing”, page 134](#) .

6 - Fresh Air Blower - V2-

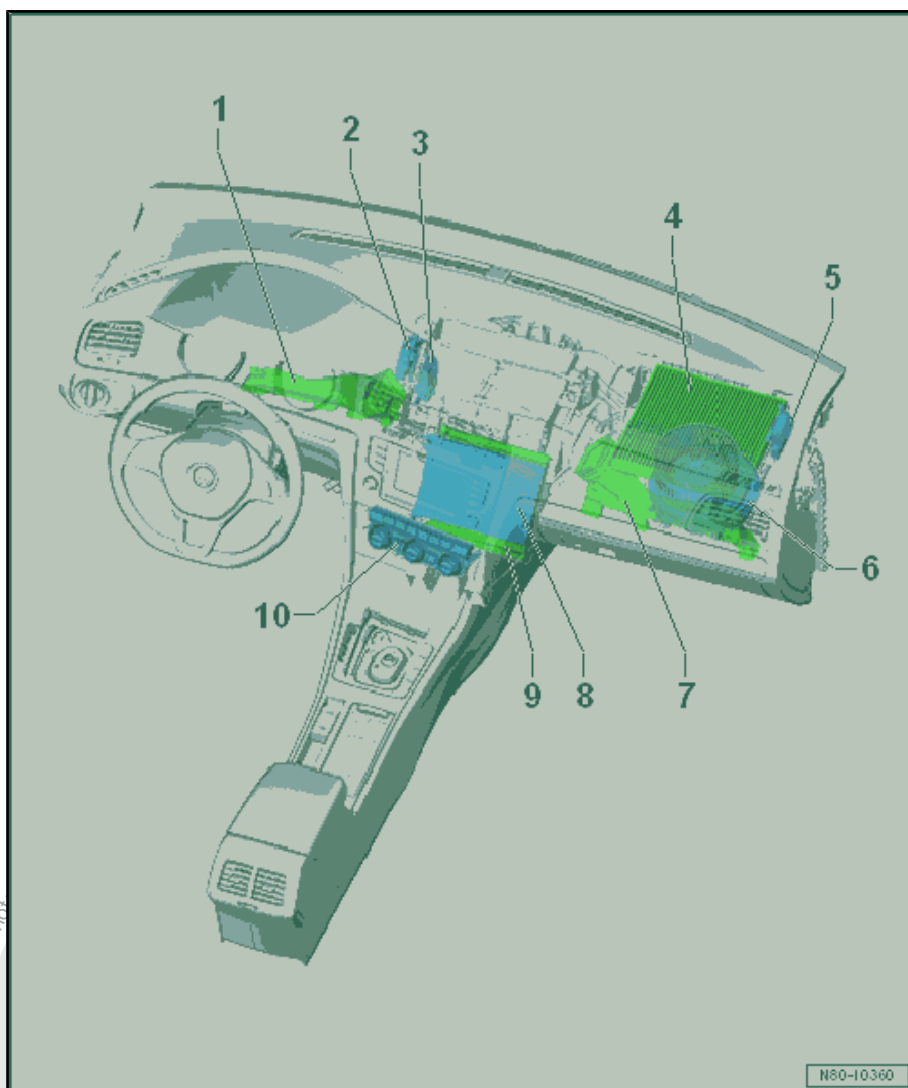
- ❑ Removing and installing. Refer to ⇒ [“4.12 Fresh Air Blower V2, Removing and Installing”, page 95](#) .

7 - Front Passenger Side Footwell Vent

- ❑ Removing and installing. Refer to
⇒ [“5.6 Front Passenger Side Footwell Vent, Removing and Installing”, page 117](#) .
- ❑ Overview. Refer to
⇒ [“5.1 Overview - Air Routing and Air Distribution in Passenger Compartment”, page 113](#) .

8 - Auxiliary Heater Heating Element - Z35- with Auxiliary Air Heater Control Module - J604-

- ❑ Checking. Refer to
⇒ [“4.13 Auxiliary Heater Heating Element Z35 with Auxiliary Air Heater Control Module J604, Checking”, page 96](#) .
- ❑ Removing and installing. Refer to
⇒ [“4.14 Auxiliary Heater Heating Element Z35 with Auxiliary Air Heater Control Module J604, Removing and Installing”, page 97](#) .





9 - Heater Core

- ❑ Removing and installing. Refer to ➔ [“4.15 Heater Core, Removing and Installing”, page 98](#) .

10 - Display and Control Head

- ❑ Removing and installing. Refer to
➔ [“6.2 Display and Control Head, Removing and Installing”, page 126](#) .





2 Actuators

⇒ [“2.1 Component Location Overview - Front Actuators”, page 12](#)

⇒ [“2.2 Temperature Regulator Door Motor V68 with Temperature Regulator Door Motor Position Sensor G92 , Removing and Installing”, page 13](#)

⇒ [“2.3 Recirculation Door Motor V113 , Removing and Installing”, page 13](#)

⇒ [“2.4 Air Distribution Door Motor V428 with Position Sensor Air Distribution Door Motor Position Sensor G645 , Removing and Installing”, page 13](#)

2.1 Component Location Overview - Front Actuators

1 - Temperature Regulator Door Motor - V68-

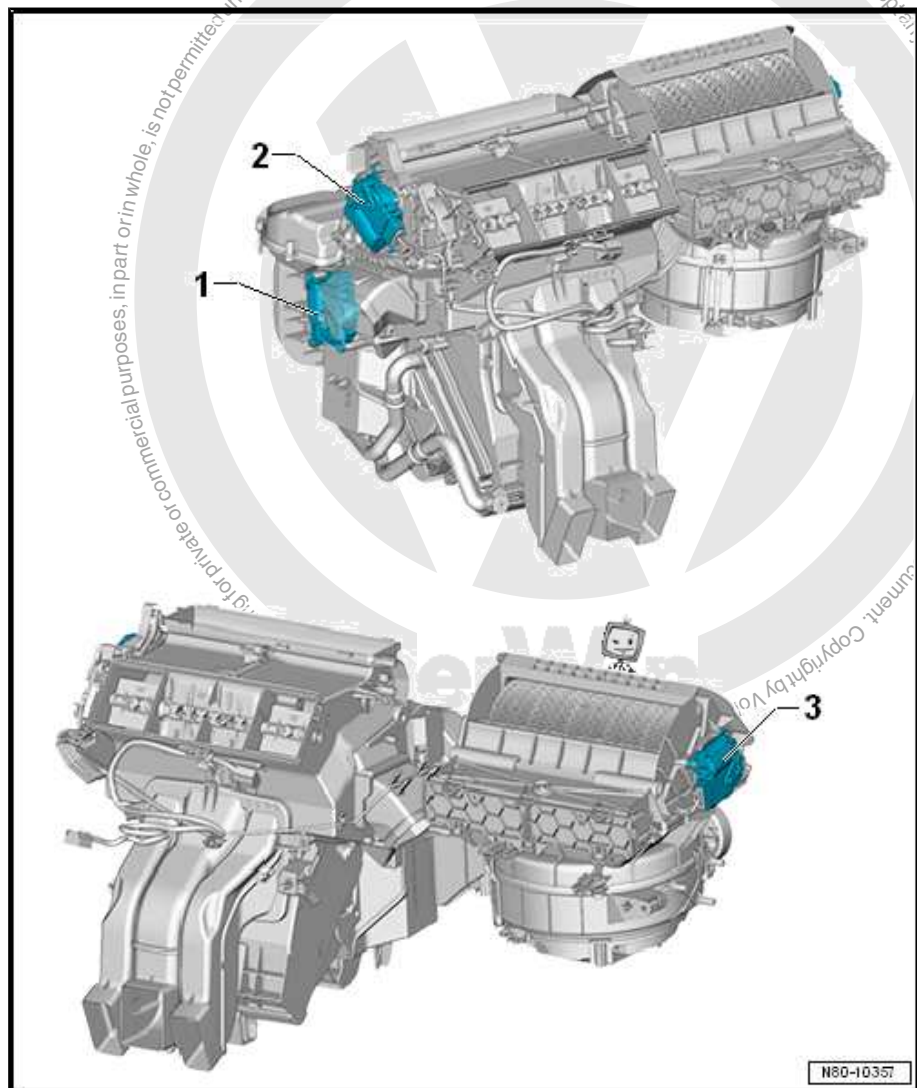
- ☐ Check using the Vehicle Diagnostic Tester .
- ☐ Removing and installing. Refer to
⇒ [“7.2 Temperature Regulator Door Motor V68 with Temperature Regulator Door Motor Position Sensor G92 , Removing and Installing”, page 131](#) .
- ☐ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester

2 - Air Distribution Door Motor - V428-

- ☐ Check using the Vehicle Diagnostic Tester .
- ☐ Removing and installing. Refer to
⇒ [“7.9 Air Distribution Door Motor V428 with Position Sensor Air Distribution Door Motor Position Sensor G645 , Removing and Installing”, page 144](#) .
- ☐ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester

3 - Recirculation Door Motor - V113-

- ☐ Check using the Vehicle Diagnostic Tester .
- ☐ Removing and installing. Refer to
⇒ [“7.4 Recirculation Door Motor V113 , Removing and Installing”, page 134](#) .
- ☐ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester





2.2 Temperature Regulator Door Motor - V68- with Temperature Regulator Door Motor Position Sensor - G92- , Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to
⇒ [“7.2 Temperature Regulator Door Motor V68 with Temperature Regulator Door Motor Position Sensor G92 , Removing and Installing”, page 131](#)

2.3 Recirculation Door Motor - V113- , Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to
⇒ [“7.4 Recirculation Door Motor V113 , Removing and Installing”, page 134](#) .

2.4 Air Distribution Door Motor - V428- with Position Sensor Air Distribution Door Motor Position Sensor - G645- , Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to
⇒ [“7.9 Air Distribution Door Motor V428 with Position Sensor Air Distribution Door Motor Position Sensor G645 , Removing and Installing”, page 144](#) .



3 Heater

⇒ [“3.1 Overview - Heater”, page 14](#)

⇒ [“3.2 Fresh Air Blower V2 , Removing and Installing”, page 19](#)

⇒ [“3.3 Fresh Air Blower Control Module J126 , Removing and Installing”, page 19](#)

⇒ [“3.4 Dust and Pollen Filter, Removing and Installing”, page 19](#)

⇒ [“3.5 Heater, Removing and Installing”, page 19](#)

⇒ [“3.6 Heater, Disassembling and Assembling”, page 19](#)

⇒ [“3.7 Auxiliary Heater Heating Element Z35 with Auxiliary Air Heater Control Module J604 , Checking”, page 20](#)

⇒ [“3.8 Auxiliary Heater Heating Element Z35 with Auxiliary Air Heater Control Module J604 , Removing and Installing”, page 20](#)

⇒ [“3.9 Heater Core, Removing and Installing”, page 20](#)

⇒ [“3.10 Partition, Removing and Installing”, page 20](#)

3.1 Overview - Heater



Note

- ◆ *There are different versions and manufacturers of the heater. Individual components of the different heaters are similar but not the same. Interchanging components from different manufacturers is not permitted. Refer to the Parts Catalog.*
- ◆ *A heater manufactured by “Valeo” is shown in the following illustrations. For distinguishing characteristics between manufacturers. Refer to*
⇒ [“1.1 Heater and A/C Unit Identification”, page 1](#) .



Heater, Door Control



1 - Operating Lever

- ☐ For operating the defroster and air distribution door

2 - Air Distribution Door Motor - V428-

- ☐ With the Air Distribution Door Motor Position Sensor - G645-
- ☐ To check, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function. Refer to ➔ Wiring diagrams, Troubleshooting & Component locations.
- ☐ Removing and installing. Refer to ➔ ["7.9 Air Distribution Door Motor V428 with Position Sensor Air Distribution Door Motor Position Sensor G645, Removing and Installing", page 144](#).

3 - Screw

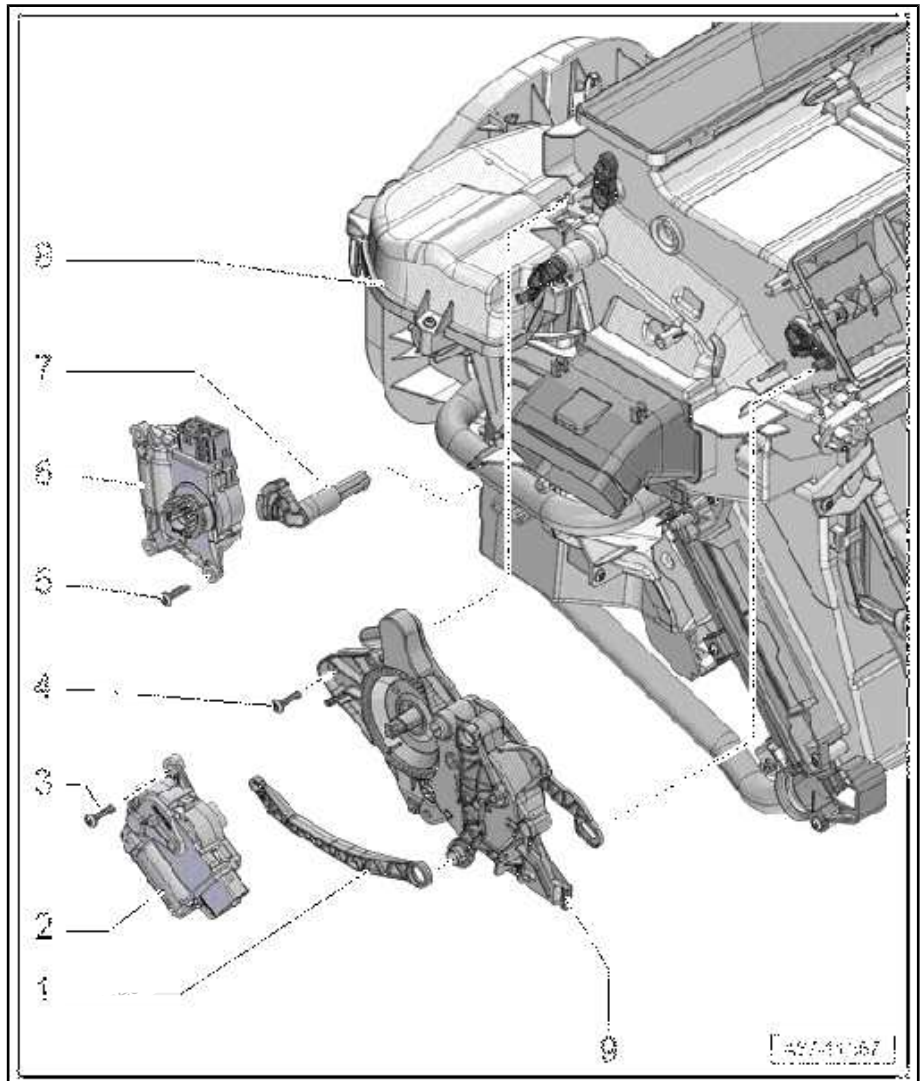
- ☐ 1 Nm
- ☐ Quantity: 2

4 - Screw

- ☐ 1 Nm
- ☐ Quantity: 3

5 - Screw

- ☐ 1 Nm
- ☐ Quantity: 2



6 - Temperature Regulator Door Motor - V68-

- ☐ With the Temperature Regulator Door Motor Position Sensor - G92-
- ☐ To check, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function. Refer to ➔ Wiring diagrams, Troubleshooting & Component locations.
- ☐ Removing and installing. Refer to ➔ ["7.2 Temperature Regulator Door Motor V68 with Temperature Regulator Door Motor Position Sensor G92, Removing and Installing", page 131](#).

7 - Operating Lever

- ☐ For the operating of the warm air door

8 - Heater

- ☐ There are different versions. Refer to ➔ ["1.1 Heater and A/C Unit Identification", page 1](#).
- ☐ Interchanging components is not permitted.
- ☐ The following illustrations show the heater manufactured by "Valeo"
- ☐ The design is largely the same as the heater and Air Conditioning (A/C) unit design.
- ☐ The expansion valve, condensation water drain, evaporator, etc. are not present.
- ☐ (Only on vehicles without an A/C system) instead of the evaporator an airflow limiter is installed.
- ☐ The seal for the plenum chamber rear wall does not have an opening for the expansion valve or it is sealed with a foam body.
- ☐ Removing and installing. Refer to ➔ ["4.5 Heater and A/C Unit, Removing and Installing", page 83](#).



9 - Defroster- and Air Distribution Door Actuator

- ☐ Removing and installing. Refer to
⇒ ["7.10 Air Distribution Door Adjuster, Removing and Installing", page 147](#) .

Heater, Heater Core, Auxiliary Heater Heating Element

1 - Screw

- ☐ 2 Nm

2 - Coolant Pipe for the Heater Core

- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Coolant supply from engine
- ☐ Removing and installing. Refer to
⇒ ["4.16 Heater Core Coolant Pipes, Removing and Installing", page 106](#) .

3 - Clamp

4 - Coolant Pipe for the Heater Core

- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Coolant return to engine
- ☐ Removing and installing. Refer to
⇒ ["4.16 Heater Core Coolant Pipes, Removing and Installing", page 106](#) .

5 - Seal

- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Replacing

6 - Cover

- ☐ For the heater core

7 - Screw

- ☐ 1 Nm

8 - Foam Spacer

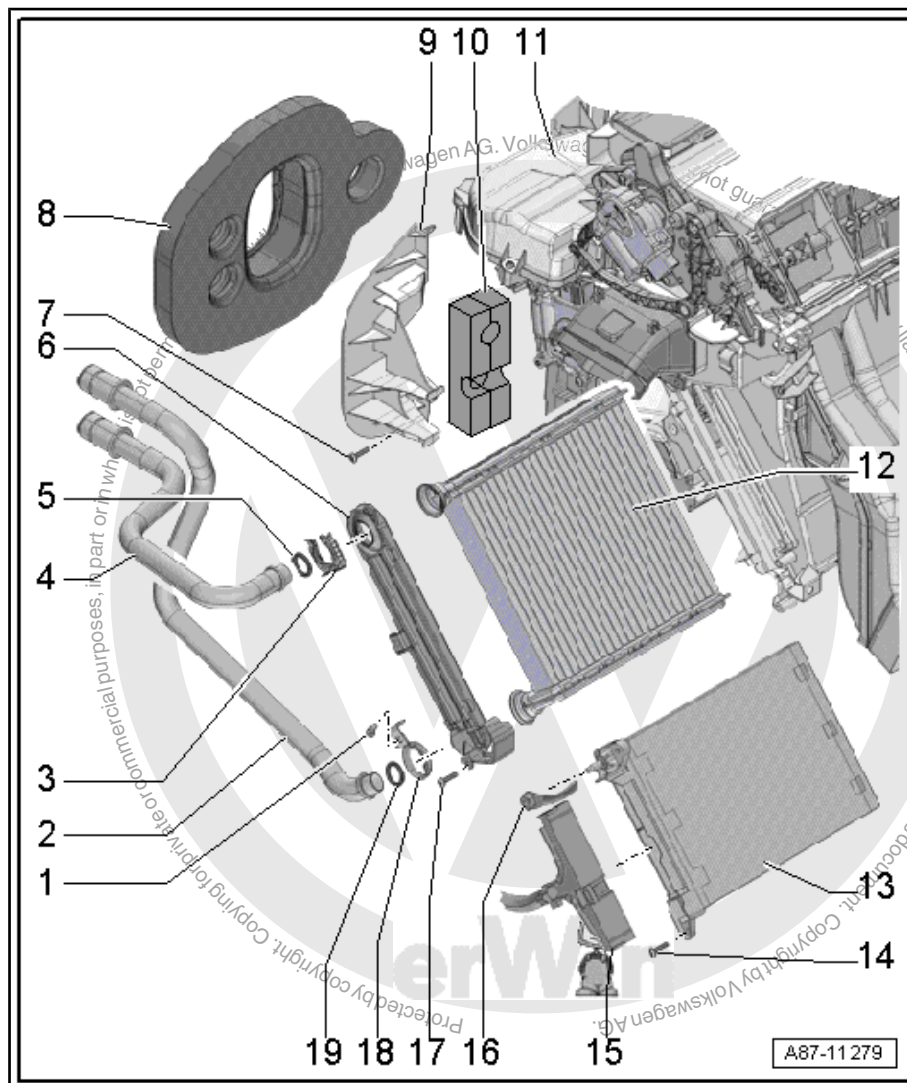
- ☐ For sealing/insulating
- ☐ For vehicles without an A/C system, without opening for the expansion valve. Refer to the Parts Catalog.
- ☐ Observe installed position

9 - Bracket

- ☐ For the coolant pipes

10 - Foam Piece

- ☐ For insulating
- ☐ Observe installed position





11 - Heater

- ☐ For vehicles without an Auxiliary Heater Heating Element - Z35- with Auxiliary Air Heater Control Module - J604- , the opening for the auxiliary heater is closed.
- ☐ Removing and installing. Refer to ⇒ [“4.5 Heater and A/C Unit, Removing and Installing”, page 83](#) .

12 - Heater Core

- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Removing and installing. Refer to ⇒ [“4.15 Heater Core, Removing and Installing”, page 98](#) .

13 - Auxiliary Heater Heating Element - Z35- with Auxiliary Air Heater Control Module - J604-

- ☐ Checking. Refer to
⇒ [“4.13 Auxiliary Heater Heating Element Z35 with Auxiliary Air Heater Control Module J604 , Checking”, page 96](#) .
- ☐ Removing and installing. Refer to
⇒ [“4.14 Auxiliary Heater Heating Element Z35 with Auxiliary Air Heater Control Module J604 , Removing and Installing”, page 97](#) .

14 - Screw

- ☐ 2 Nm
- ☐ Quantity: 2

15 - Wire

- ☐ For the Auxiliary Heater Heating Element - Z35- with Auxiliary Air Heater Control Module - J604-

16 - Ground (GND) Cable for the Auxiliary Heater Heating Element - Z35- with Auxiliary Air Heater Control Module - J604-

- ☐ Nut 9 ± 1 Nm
- ☐ For the auxiliary heater

17 - Screw

- ☐ 2 Nm
- ☐ Quantity: 3

18 - Hose Clamp

19 - Seal

- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Replacing

Air Intake Duct, Dust and Pollen Filter, Fresh Air Blower, Door Control





1 - Plastic Screw or Plug (depending on version)

- ☐ 0.3 Nm
- ☐ Quantity: 2

2 - Partition

- ☐ Removing and installing. Refer to ➤ ["4.20 Partition, Removing and Installing", page 112](#).

3 - Fresh Air Blower Housing and Dust and Pollen Filter

4 - Screw

- ☐ 1 Nm
- ☐ Quantity: 2

5 - Air Intake Duct

- ☐ Do not dismantle
- ☐ With fresh- and air recirculation door
- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Removing and installing. Refer to ➤ ["5.4 Air Intake Duct, Removing and Installing", page 116](#).

6 - Not Installed

Only for vehicles with Climatronic.

7 - Not Installed

Only for vehicles with Climatronic.

8 - Recirculation Door Motor - V113-

- ☐ Without position sensor with end switches in the end stops. Refer to ➤ Wiring diagrams, Troubleshooting & Component locations.
- ☐ To check, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function. Refer to ➤ Wiring diagrams, Troubleshooting & Component locations.
- ☐ Removing and installing. Refer to ➤ ["7.4 Recirculation Door Motor V113, Removing and Installing", page 134](#).

9 - Screw

- ☐ 1 Nm
- ☐ Quantity: 2

10 - Dust and Pollen Filter

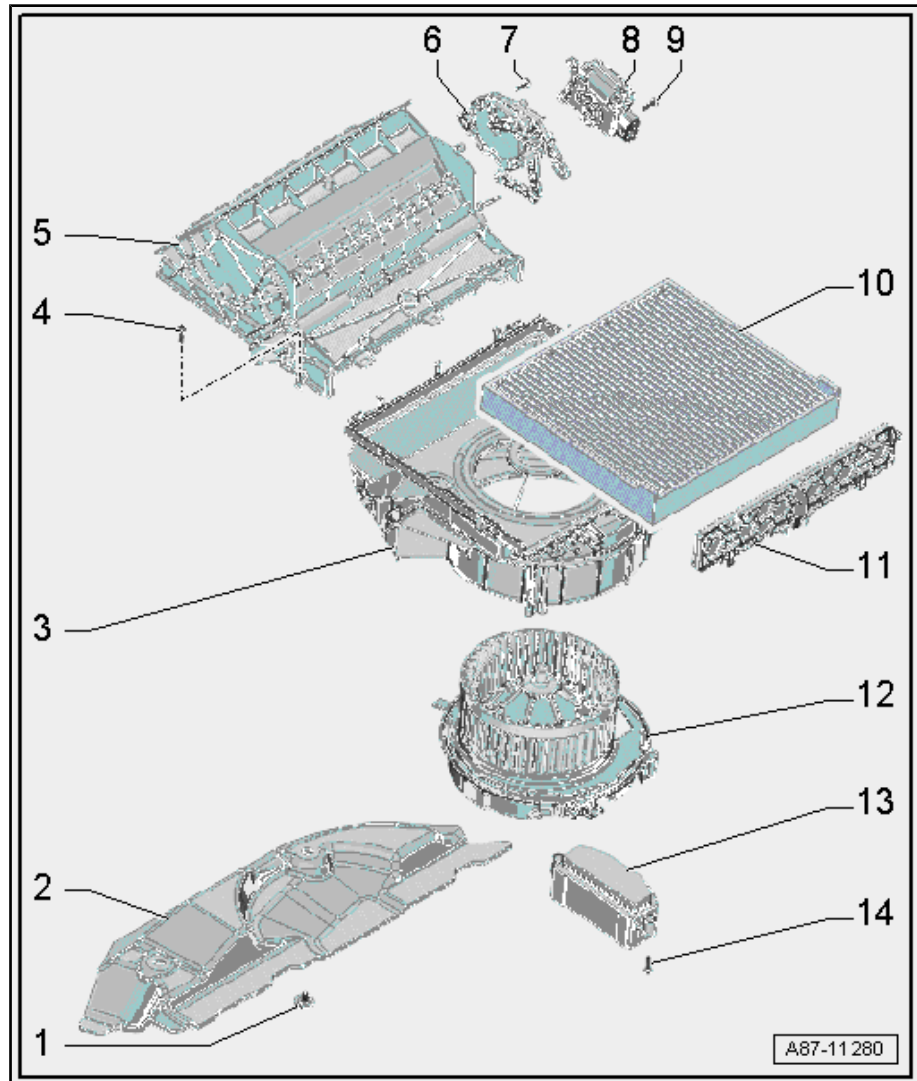
- ☐ There are different versions. Refer to the Parts Catalog.



Note

On vehicles without an A/C system and on vehicles with electric-manual climate control system without an activated charcoal insert from the manufacturer.

- ☐ Replacement interval. Refer to ➤ Maintenance Intervals; Rep. Gr. 03.





- ❑ Removing and installing. Refer to ➤ [“4.11 Dust and Pollen Filter, Removing and Installing”, page 92](#) .

11 - Cover

- ❑ For dust and pollen filter

12 - Fresh Air Blower - V2-

- ❑ To check, use the Vehicle Diagnostic Tester in the “Guided Fault Finding” function. Refer to ➤ Wiring diagrams, Troubleshooting & Component locations.
- ❑ Removing and installing. Refer to ➤ [“4.12 Fresh Air Blower V2 , Removing and Installing”, page 95](#) .

13 - Fresh Air Blower Control Module - J126-

- ❑ To check, use the Vehicle Diagnostic Tester in the “Guided Fault Finding” function. Refer to ➤ Wiring diagrams, Troubleshooting & Component locations.
- ❑ Removing and installing. Refer to ➤ [“4.10 Fresh Air Blower Control Module J126 , Removing and Installing”, page 91](#) .

14 - Screw

- ❑ 1 Nm
- ❑ Quantity: 2

3.2 Fresh Air Blower - V2- , Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to ➤ [“4.12 Fresh Air Blower V2 , Removing and Installing”, page 95](#) .

3.3 Fresh Air Blower Control Module - J126- , Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to ➤ [“4.10 Fresh Air Blower Control Module J126 , Removing and Installing”, page 91](#) .

3.4 Dust and Pollen Filter, Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to ➤ [“4.11 Dust and Pollen Filter, Removing and Installing”, page 92](#) .

3.5 Heater, Removing and Installing

It is not necessary to extract the refrigerant and remove the expansion valve. The further removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to ➤ [“4.5 Heater and A/C Unit, Removing and Installing”, page 83](#) .

3.6 Heater, Disassembling and Assembling

It is not necessary to extract the refrigerant and remove the expansion valve and the evaporator or to disassemble. The further procedure is identical to vehicles with an Air Conditioning (A/C) system. Refer to ➤ [“4.6 Heater and A/C Unit, Disassembling and Assembling”, page 87](#) .



3.7 Auxiliary Heater Heating Element - Z35- with Auxiliary Air Heater Control Module - J604- , Checking

Checking is identical to vehicles with an Air Conditioning (A/C) system. Refer to

⇒ ["4.13 Auxiliary Heater Heating Element Z35 with Auxiliary Air Heater Control Module J604 , Checking", page 96](#) .

3.8 Auxiliary Heater Heating Element - Z35- with Auxiliary Air Heater Control Module - J604- , Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to

⇒ ["4.14 Auxiliary Heater Heating Element Z35 with Auxiliary Air Heater Control Module J604 , Removing and Installing", page 97](#) .

3.9 Heater Core, Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to

⇒ ["4.15 Heater Core, Removing and Installing", page 98](#) .

3.10 Partition, Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to

⇒ ["4.20 Partition, Removing and Installing", page 112](#) .



4 Air Routing

⇒ [“4.1 Overview - Air Routing and Air Distribution in Passenger Compartment”, page 21](#)

⇒ [“4.2 Driver Side Footwell Vent, Removing and Installing”, page 21](#)

⇒ [“4.3 Front Passenger Side Footwell Vent, Removing and Installing”, page 21](#)

⇒ [“4.4 Rear Footwell Vent, Removing and Installing”, page 21](#)

⇒ [“4.5 Fresh Air Intake, Removing and Installing”, page 22](#)

⇒ [“4.6 Fresh Air Intake Cover, Removing and Installing”, page 22](#)

⇒ [“4.7 Air Intake Duct, Removing and Installing”, page 22](#)

⇒ [“4.8 Passenger Compartment Forced Air Extraction, Checking”, page 22](#)

⇒ [“4.9 Passenger Compartment Forced Air Extraction, Removing and Installing”, page 22](#)

⇒ [“4.10 Air Guide for the Defrost Air Vent, Removing and Installing”, page 22](#)

⇒ [“4.11 Air Guide for Center Vent, Removing and Installing”, page 22](#)

4.1 Overview - Air Routing and Air Distribution in Passenger Compartment

The overview of the air ducts and air distribution in the vehicle interior is identical to a vehicle with an Air Conditioning (A/C) system. Refer to

⇒ [“5.1 Overview - Air Routing and Air Distribution in Passenger Compartment”, page 113](#).

4.2 Driver Side Footwell Vent, Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to

⇒ [“5.5 Driver Side Footwell Vent, Removing and Installing”, page 117](#).

4.3 Front Passenger Side Footwell Vent, Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to

⇒ [“5.6 Front Passenger Side Footwell Vent, Removing and Installing”, page 117](#).

4.4 Rear Footwell Vent, Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to

⇒ [“5.7 Rear Footwell Vent, Removing and Installing”, page 118](#).



4.5 Fresh Air Intake, Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to
⇒ [“5.2 Fresh Air Intake, Removing and Installing”, page 115](#) .

4.6 Fresh Air Intake Cover, Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to
⇒ [“5.3 Fresh Air Intake Cover, Removing and Installing”, page 115](#) .

4.7 Air Intake Duct, Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to
⇒ [“5.4 Air Intake Duct, Removing and Installing”, page 116](#) .

4.8 Passenger Compartment Forced Air Extraction, Checking

The test is identical to a vehicle with an Air Conditioning (A/C) system. Refer to
⇒ [“5.9 Passenger Compartment Forced Air Extraction, Checking”, page 119](#) .

4.9 Passenger Compartment Forced Air Extraction, Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to
⇒ [“5.10 Passenger Compartment Forced Air Extraction, Removing and Installing”, page 119](#) .

4.10 Air Guide for the Defrost Air Vent, Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to
⇒ [“5.11 Air Guide for Defrost Air Vent, Removing and Installing”, page 120](#) .

4.11 Air Guide for Center Vent, Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to
⇒ [“5.12 Air Guide for Center Vent, Removing and Installing”, page 121](#) .



5 Display and Control Head

⇒ ["5.1 Overview - Display and Control Head", page 23](#)

⇒ ["5.2 Display and Control Head, Removing and Installing", page 24](#)

5.1 Overview - Display and Control Head



Note

Not all the buttons are used, depending on the vehicle equipment level and may vary in location.

1 - Heated Driver Seat Adjuster - E94-

- ☐ Optional
- ☐ The seat heating as 3 settings. An LED indicates which setting is selected.
- ☐ If no LED is illuminated, the seat heater is switched off.

2 - Rear Window Defogger Button

- ☐ Rear window defroster remains on for 4 to 20 minutes, depending on exterior temperature.

3 - Recirculating Air Mode Button



Note

The recirculating air mode is active during ignition and return air mode.

4 - Heated Front Passenger Seat Adjuster - E95-

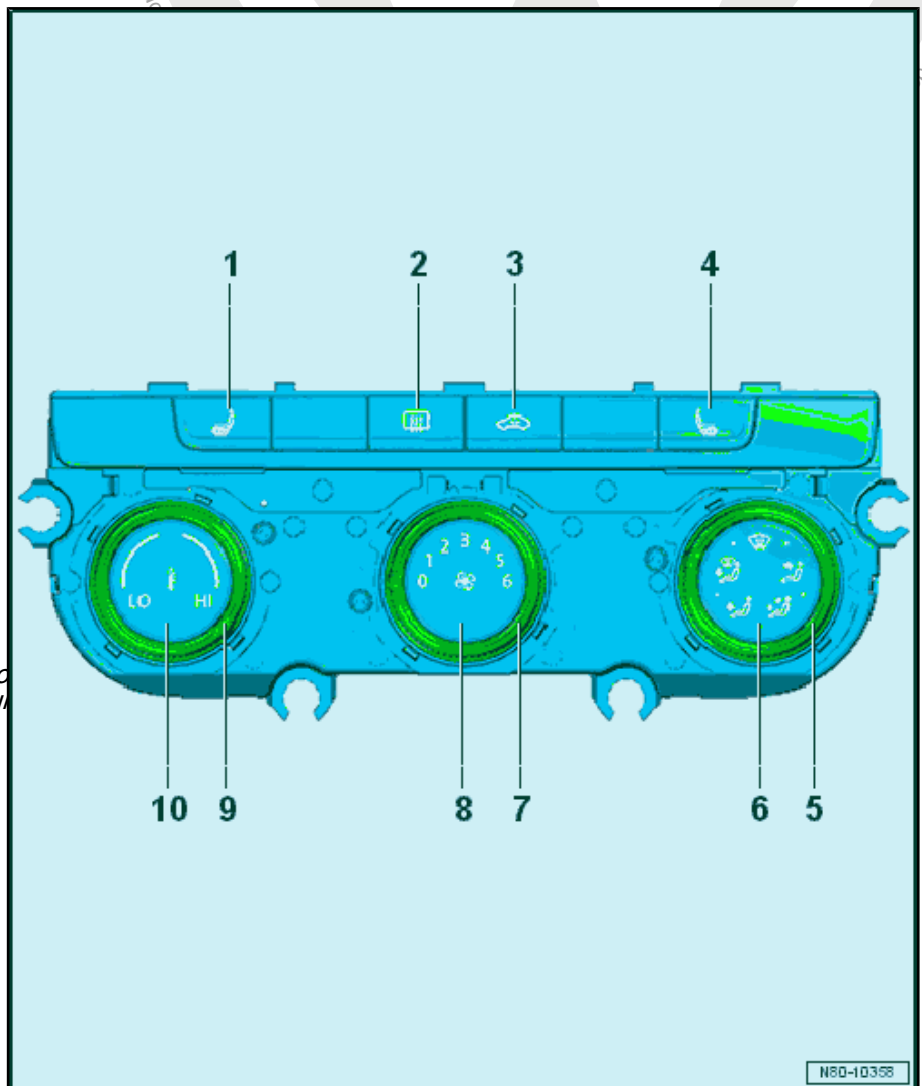
- ☐ Optional
- ☐ The seat heating as 3 settings. An LED indicates which setting is selected.
- ☐ If no LED is illuminated, the seat heater is switched off.

5 - Air Distribution Control Knob

6 - Air Distribution Display

7 - Blower Speed Control Knob

- ☐ To the left: decreases the blower speed
- ☐ To the right: increases the blower speed





8 - Blower Speed Display

9 - Temperature Control Knob

- ☐ To the left: lower the temperature
- ☐ To the right: increases the temperature

10 - Temperature Setting Display

5.2 Display and Control Head, Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to ["6.2 Display and Control Head, Removing and Installing", page 126](#).



6 Additional Components for Control and Regulation

⇒ ["6.1 Outside Air Temperature Sensor G17 , Removing and Installing", page 25](#)

6.1 Outside Air Temperature Sensor - G17- , Removing and Installing

The removal and installation is identical to vehicles with an Air Conditioning (A/C) system. Refer to

⇒ ["8.4 Outside Air Temperature Sensor G17 , Removing and Installing", page 153](#) .



87 – Air Conditioning

1 Component Location Overview - A/C System

⇒ [“1.1 Component Location Overview - Components Outside of Passenger Compartment”, page 26](#)

⇒ [“1.2 Component Location Overview - Components Inside Front Passenger Compartment”, page 29](#)

1.1 Component Location Overview - Components Outside of Passenger Compartment

1 - Vehicle Interior Forced Air Extraction

- ❑ Check using the Vehicle Diagnostic Tester . Refer to
⇒ [“5.9 Passenger Compartment Forced Air Extraction, Checking”, page 119](#) .
- ❑ Removing and installing. Refer to
⇒ [“5.10 Passenger Compartment Forced Air Extraction, Removing and Installing”, page 119](#) .

2 - A/C Humidity Sensor - G260-

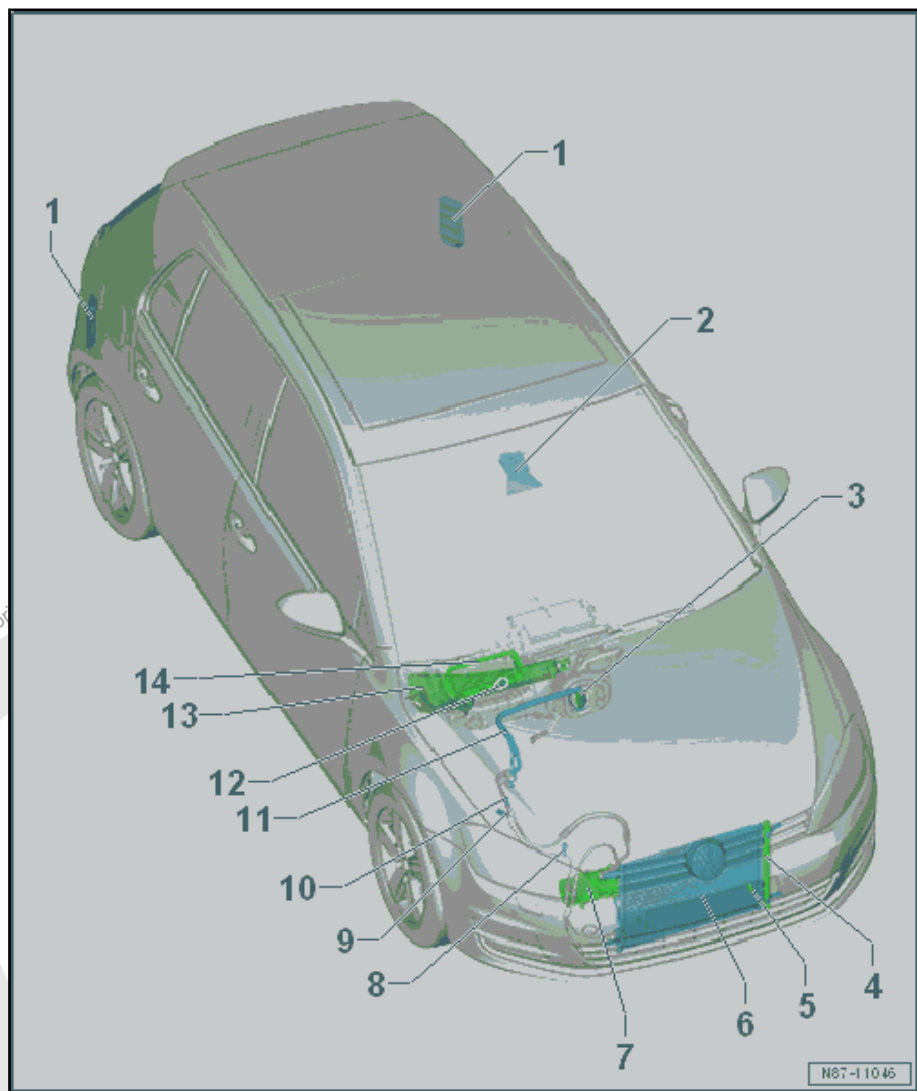
- ❑ Checking: via the Vehicle Electrical System Control Module - J519- using the Vehicle Diagnostic Tester in the “Guided Fault Finding” function. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- ❑ Removing and installing. Refer to
⇒ [“8.5 A/C Humidity Sensor G260 , Removing and Installing”, page 153](#) .

3 - Expansion Valve

- ❑ Removing and installing. Refer to
⇒ [“2.4 Expansion Valve, Removing and Installing”, page 37](#) .
- ❑ Tightening Specifications. Refer to ⇒ [“2.1 System Overview - Refrigerant Circuit”, page 32](#) .

4 - Dryer Bag

- ❑ Removing and installing. Refer to ⇒ [“2.6 Dryer Bag, Removing and Installing”, page 42](#) .
- ❑ Overview. Refer to ⇒ [“2.2 Overview - Condenser”, page 35](#) .





5 - Outside Air Temperature Sensor - G17-

- ☐ Checking: via the Vehicle Electrical System Control Module - J519- using the Vehicle Diagnostic Tester in the "Guided Fault Finding" function. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- ☐ Removing and installing. Refer to
⇒ ["8.4 Outside Air Temperature Sensor G17 , Removing and Installing", page 153](#) .

6 - Condenser

- ☐ With integrated receiver/dryer
- ☐ Overview. Refer to ⇒ ["2.2 Overview - Condenser", page 35](#) .
- ☐ Removing and installing. Refer to ⇒ ["2.5 Condenser, Removing and Installing", page 40](#) .



Note

Under certain conditions, the receiver/dryer and the dryer bag does not need to be replaced each time the refrigerant circuit is opened. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .

7 - A/C Compressor

- ☐ Overview. Refer to ⇒ ["3.1 Overview - A/C Compressor Power Unit", page 57](#) .
- ☐ Removing and installing. Refer to ⇒ ["3.4 A/C Compressor, Removing and Installing", page 63](#) .
- ☐ Removing from and attaching to the bracket. Refer to
⇒ ["3.3 A/C Compressor, Removing and Installing on Bracket", page 61](#) .

8 - Evacuating and Charging Valve, High Pressure Side



Caution

***Danger due to refrigerant coming out under pressure when there is a defective valve in the refrigerant circuit.
Danger of frost bite to skin and other parts of the body.
Only remove when the refrigerant circuit is empty. The connection does not have a valve. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .***

- ☐ Removing and installing. Refer to
⇒ ["2.9 Evacuating and Charging Valve, Removing and Installing, Low and High Pressure Side", page 55](#) .

9 - Refrigerant Circuit Pressure Sensor - G805-

- ☐ 8 Nm
- ☐ To check, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- ☐ Removing and installing. Refer to
⇒ ["2.3 Refrigerant Circuit Pressure Sensor G805 , Removing and Installing", page 36](#) .



10 - Evacuating and Charging Valve, Low Pressure Side



Caution

*Danger due to refrigerant coming out under pressure when there is a defective valve in the refrigerant circuit.
Danger of frost bite to skin and other parts of the body.
Only remove when the refrigerant circuit is empty. The connection does not have a valve. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information.*

- ☐ Removing and installing. Refer to ⇒ ["2.9 Evacuating and Charging Valve, Removing and Installing, Low and High Pressure Side", page 55](#).

11 - Refrigerant Line with Inner Heat Exchanger

- ☐ From the condenser and Air Conditioning (A/C) compressor
- ☐ Removing and installing. Refer to ⇒ ["2.7 Refrigerant Lines with Inner Heat Exchanger, Removing and Installing", page 52](#).

12 - Air Quality Sensor - G238-

- ☐ Checking. Refer to Vehicle Diagnostic Tester in the "Guided Fault Finding" function and ⇒ Wiring diagrams, Troubleshooting & Component locations.
- ☐ Removing and installing. Refer to ⇒ ["8.2 Air Quality Sensor G238, Removing and Installing", page 151](#).
- ☐ Function mode. Refer to ⇒ ["8.3 Function of Air Quality Sensor G238", page 151](#).
- ☐ Only for vehicles with Climatronic.

13 - Fresh Air Intake Cover

- ☐ Removing and installing. Refer to ⇒ ["5.3 Fresh Air Intake Cover, Removing and Installing", page 115](#).

14 - Fresh Air Intake

- ☐ Removing and installing. Refer to ⇒ ["5.2 Fresh Air Intake, Removing and Installing", page 115](#).



1.2 Component Location Overview - Components Inside Front Passenger Compartment

1 - Left Vent Temperature Sensor - G150-

- ❑ Only for vehicles with Climatronic.
- ❑ To check, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- ❑ An incorrectly installed vent temperature sensor causes flow-generated noise
- ❑ Removing and installing. Refer to ⇒ ["8.6 Left Vent Temperature Sensor G150, Removing and Installing", page 153](#).

2 - Driver Side Footwell Vent

- ❑ Removing and installing. Refer to ⇒ ["5.5 Driver Side Footwell Vent, Removing and Installing", page 117](#).
- ❑ Overview. Refer to ⇒ ["5.1 Overview - Air Routing and Air Distribution in Passenger Compartment", page 113](#).

3 - Footwell Vent Temperature Sensor - G192-

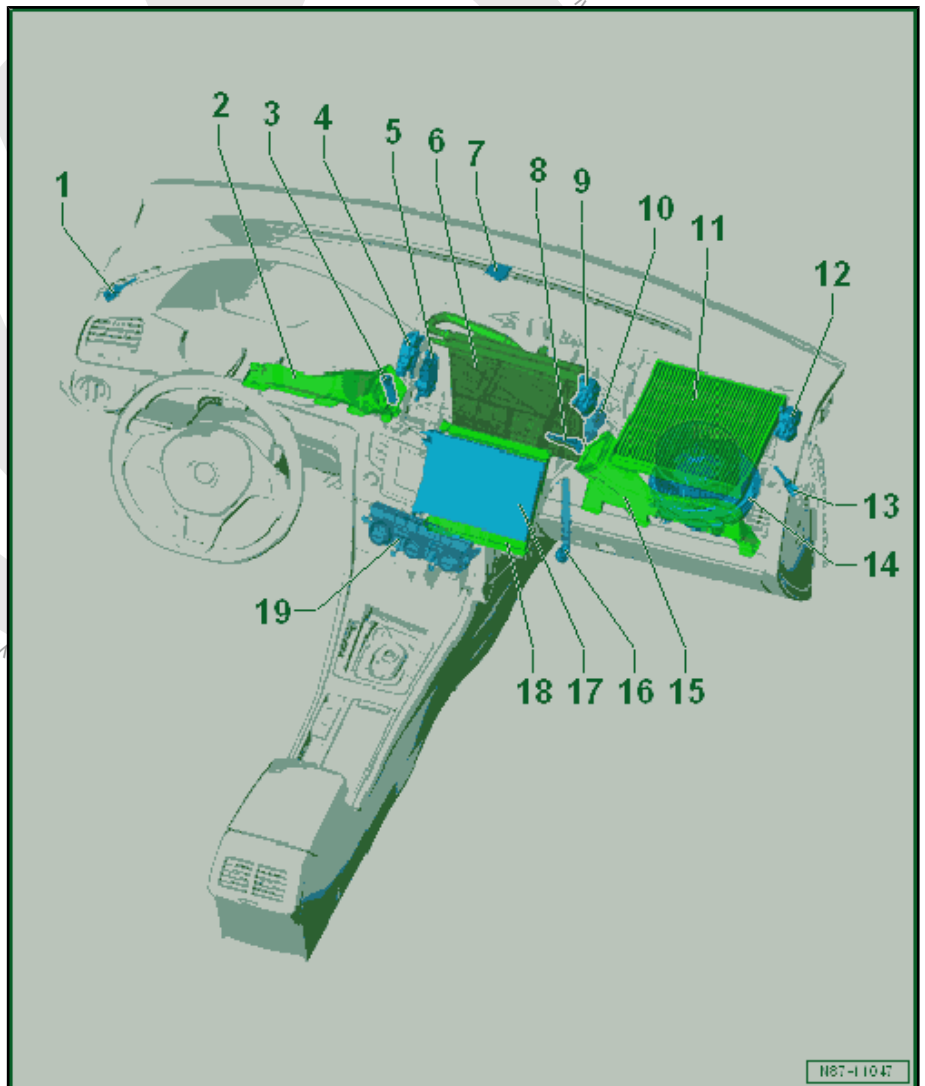
- ❑ Only for vehicles with Climatronic.
- ❑ To check, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- ❑ Removing and installing. Refer to ⇒ ["8.8 Footwell Vent Temperature Sensor G192, Removing and Installing", page 155](#).

4 - Front Air Distribution Door Motor - V426- or Air Distribution Door Motor - V428-

- ❑ Removing and installing. Refer to ⇒ ["7.8 Front Air Distribution Door Motor V426 with Air Distribution Door Motor Position Sensor G642, Removing and Installing", page 143](#).
- ❑ Component Location Overview. Refer to ⇒ ["7.1 Component Location Overview - Front Actuators", page 128](#).

5 - Left Temperature Door Motor - V158- or Temperature Regulator Door Motor - V68-

- ❑ Removing and installing. Refer to ⇒ ["7.5 Left Temperature Door Motor V158 with Left Temperature Door Potentiometer/Actuator G220, Removing and Installing", page 136](#).
- ❑ Component Location Overview. Refer to ⇒ ["7.1 Component Location Overview - Front Actuators", page 128](#).





6 - Evaporator

- ☐ Only for vehicles with an Air Conditioning (A/C) system.
- ☐ Removing and installing. Refer to ⇒ [“4.9 Evaporator, Removing and Installing”, page 90](#) .

7 - Sunlight Photo Sensor - G107-

- ☐ Only for vehicles with Climatronic.
- ☐ Removing and installing. Refer to ⇒ [“8.1 Sunlight Photo Sensor G107 , Removing and Installing”, page 150](#) .

8 - Evaporator Temperature Sensor - G308-

- ☐ Only for vehicles with an A/C system.
- ☐ To check, use the Vehicle Diagnostic Tester in the “Guided Fault Finding” function. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- ☐ Removing and installing. Refer to ⇒ [“4.17 Evaporator Temperature Sensor G308 , Removing and Installing”, page 108](#) .

9 - Defroster Door Motor - V107-

- ☐ Only for vehicles with Climatronic.
- ☐ Removing and installing. Refer to ⇒ [“7.3 Defroster Door Motor V107 with Defroster Door Motor Position Sensor G135 , Removing and Installing”, page 132](#) .
- ☐ Component Location Overview. Refer to ⇒ [“7.1 Component Location Overview - Front Actuators”, page 128](#) .

10 - Right Temperature Door Motor - V159-

- ☐ Only for vehicles with Climatronic.
- ☐ Removing and installing. Refer to ⇒ [“7.6 Right Temperature Door Motor V159 with Right Temperature Door Potentiometer/Actuator G221 , Removing and Installing”, page 138](#) .
- ☐ Component Location Overview. Refer to ⇒ [“7.1 Component Location Overview - Front Actuators”, page 128](#) .

11 - Dust and Pollen Filter

- ☐ Removing and installing. Refer to ⇒ [“4.11 Dust and Pollen Filter, Removing and Installing”, page 92](#) .

12 - Recirculation Door Motor - V113- or Fresh Air/Recirculating Air/Back Pressure Door Motor - V425-

- ☐ Recirculation Door Motor - V113- , Removing and installing. Refer to ⇒ [“7.4 Recirculation Door Motor V113 , Removing and Installing”, page 134](#) .
- ☐ Fresh Air/Recirculating Air/Back Pressure Door Motor - V425- , Removing and installing. Refer to ⇒ [“7.7 Fresh Air/Recirculating Air/Back Pressure Door Motor V425 with Fresh Air/Recirculating Air/Back Pressure Door Motor Position Sensor G644 , Removing and Installing”, page 140](#) .
- ☐ Component Location Overview. Refer to ⇒ [“7.1 Component Location Overview - Front Actuators”, page 128](#) .

13 - Right Vent Temperature Sensor - G151-

- ☐ Only for vehicles with Climatronic.
- ☐ To check, use the Vehicle Diagnostic Tester in the “Guided Fault Finding” function. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- ☐ Removing and installing. Refer to ⇒ [“8.7 Right Vent Temperature Sensor G151 , Removing and Installing”, page 154](#) .
- ☐ An incorrectly installed vent temperature sensor causes flow-generated noise

14 - Fresh Air Blower - V2-

- ☐ Removing and installing. Refer to ⇒ [“4.12 Fresh Air Blower V2 , Removing and Installing”, page 95](#) .

15 - Front Passenger Side Footwell Vent

- ☐ Removing and installing. Refer to ⇒ [“5.6 Front Passenger Side Footwell Vent, Removing and Installing”, page 117](#) .
- ☐ Overview. Refer to ⇒ [“5.1 Overview - Air Routing and Air Distribution in Passenger Compartment”, page 113](#) .



16 - Condensation Water Drain Hose

- ☐ Only for vehicles with an A/C system.
- ☐ Checking. Refer to ⇒ [“4.18 Condensation Water Drain, Checking”, page 109](#) .
- ☐ Removing and installing. Refer to
⇒ [“4.19 Condensation Water Drain, Removing and Installing”, page 110](#) .

17 - Auxiliary Heater Heating Element - Z35- with Auxiliary Air Heater Control Module - J604-

- ☐ Checking. Refer to
⇒ [“4.13 Auxiliary Heater Heating Element Z35 with Auxiliary Air Heater Control Module J604 , Checking”, page 96](#) .
- ☐ Removing and installing. Refer to
⇒ [“4.14 Auxiliary Heater Heating Element Z35 with Auxiliary Air Heater Control Module J604 , Removing and Installing”, page 97](#) .

18 - Heater Core

- ☐ Removing and installing. Refer to ⇒ [“4.15 Heater Core, Removing and Installing”, page 98](#) .

19 - Display and Control Head

- ☐ Removing and installing. Refer to
⇒ [“6.2 Display and Control Head, Removing and Installing”, page 126](#) .





2 Refrigerant Circuit

⇒ [“2.1 System Overview - Refrigerant Circuit”, page 32](#)

⇒ [“2.2 Overview - Condenser”, page 35](#)

⇒ [“2.3 Refrigerant Circuit Pressure Sensor G805 , Removing and Installing”, page 36](#)

⇒ [“2.4 Expansion Valve, Removing and Installing”, page 37](#)

⇒ [“2.5 Condenser, Removing and Installing”, page 40](#)

⇒ [“2.6 Dryer Bag, Removing and Installing”, page 42](#)

⇒ [“2.7 Refrigerant Lines with Inner Heat Exchanger, Removing and Installing”, page 52](#)

⇒ [“2.8 Low Pressure Side Refrigerant Line Balance Weight, Removing and Installing”, page 54](#)

⇒ [“2.9 Evacuating and Charging Valve, Removing and Installing, Low and High Pressure Side”, page 55](#)

2.1 System Overview - Refrigerant Circuit

- When working on the refrigerant circuit, note the information.
Refer to
⇒ [“4.1 Refrigerant Circuit, Specialized Repairs”, page 6](#) .

1 - Refrigerant Line - Low Pressure Side

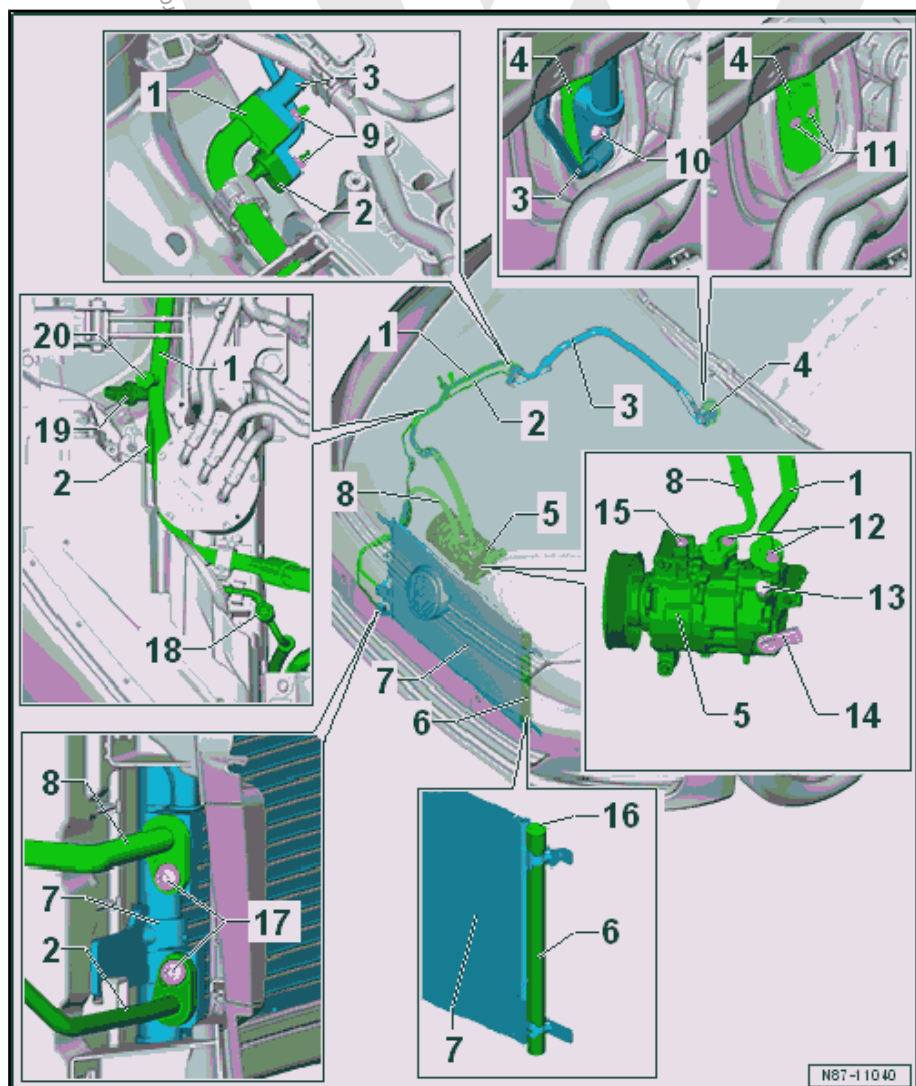
- ❑ To the refrigerant line with the inner heat exchanger
- ❑ An additional balance weight may be present on this refrigerant line depending on the refrigerant line version and the production period. Refer to the Parts Catalog.
- ❑ Balance weight removing and installing. Refer to
⇒ [“2.8 Low Pressure Side Refrigerant Line Balance Weight, Removing and Installing”, page 54](#) .

2 - Refrigerant Line - High Pressure Side

- ❑ To the refrigerant line with the inner heat exchanger

3 - Refrigerant Line with Inner Heat Exchanger

- ❑ In the inner heat exchanger, the flowing fluid warm refrigerant on the high pressure side is delivered into the low pressure side as flowing, vapor, cold refrigerant to increase the efficiency of the Air Condi-





tioning (A/C) system

- ☐ From the condenser and A/C compressor
- ☐ Removing and installing. Refer to
⇒ [“2.7 Refrigerant Lines with Inner Heat Exchanger, Removing and Installing”, page 52](#) .

4 - Expansion Valve

- ☐ Function and removal and installation. Refer to
⇒ [“2.4 Expansion Valve, Removing and Installing”, page 37](#)

5 - A/C Compressor

- ☐ Overview. Refer to ⇒ [“3.1 Overview - A/C Compressor Power Unit”, page 57](#) .
- ☐ Removing and installing. Refer to ⇒ [“3.4 A/C Compressor, Removing and Installing”, page 63](#) .
- ☐ Removing from and attaching to the bracket. Refer to
⇒ [“3.3 A/C Compressor, Removing and Installing on Bracket”, page 61](#) .

6 - Receiver/Dryer with Dryer Bag



Note

Under certain conditions, the receiver/dryer and the dryer bag does not need to be replaced each time the refrigerant circuit is opened. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .

- ☐ Denso condenser. Refer to
⇒ [“2.6.1 Dryer Bag, Removing and Installing, Denso Condenser”, page 42](#) .
- ☐ Modine condenser. Refer to
⇒ [“2.6.2 Dryer Bag, Removing and Installing, Modine Condenser”, page 44](#) .

7 - Condenser

- ☐ Overview. Refer to ⇒ [“2.2 Overview - Condenser”, page 35](#) .
- ☐ Removing and installing. Refer to ⇒ [“2.5 Condenser, Removing and Installing”, page 40](#) .
- ☐ There are different versions. Refer to the Parts Catalog.

8 - Refrigerant Line

- ☐ To the condenser

9 - Nut

- ☐ 8 Nm

10 - Bolt

- ☐ 8 Nm

11 - Bolt

- ☐ 10 Nm

12 - Bolt

- ☐ 22 Nm

13 - Relief Valve on A/C Compressor

- ☐ Checking. Refer to ⇒ [“3.5 Pressure Relieve Valve on A/C Compressor, Checking”, page 67](#) .

14 - Connector with A/C Compressor Regulator Valve - N280-

15 - Oil Drain Plug

- ☐ Tightening specification:
- ◆ Denso A/C compressor - 30 Nm
- ◆ Sanden A/C compressor - 10 Nm



Caution

For faulty oil drain plug seal on the A/C compressor.

Only remove when the refrigerant circuit is empty. The connection does not have a valve. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .

- ☐ There are different versions. Refer to the Parts Catalog.

16 - Cap

- ☐ Modine: 5 Nm
- ☐ There are different versions. Refer to the Parts Catalog.

17 - Bolt

- ☐ 8 Nm

18 - High Pressure Side Service Connection

- ☐ Cap: 0.4 ± 0.1 Nm
- ☐ Valve: 2 ± 0.2 Nm
- ☐ Removing and installing. Refer to [⇒ "2.9 Evacuating and Charging Valve, Removing and Installing, Low and High Pressure Side", page 55](#) .

19 - Refrigerant Circuit Pressure Sensor - G805-

- ☐ 5 ± 1 Nm
- ☐ Removing and installing. Refer to [⇒ "2.3 Refrigerant Circuit Pressure Sensor G805 , Removing and Installing", page 36](#) .

20 - Low Pressure Side Service Connection

- ☐ Cap: 0.4 ± 0.1 Nm
- ☐ Valve: 2 ± 0.2 Nm
- ☐ Removing and installing. Refer to [⇒ "2.9 Evacuating and Charging Valve, Removing and Installing, Low and High Pressure Side", page 55](#) .



2.2 Overview - Condenser



Note

Different versions are available. Refer to the Parts Catalog. The image displayed is a Modine condenser.

1 - Condenser

- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Removing and installing. Refer to ["2.5 Condenser, Removing and Installing", page 40](#).

2 - Seal

- ☐ Replacing. Refer to the Parts Catalog for the versions
- ☐ Coat with refrigerant oil before installing

3 - Refrigerant Line

- ☐ To the inner heat exchanger

4 - Bolt

- ☐ 8 Nm

5 - Bolt

- ☐ 8 Nm

6 - Refrigerant Line

- ☐ From the Air Conditioning (A/C) compressor

7 - Seal

- ☐ Replacing. Refer to the Parts Catalog for the versions
- ☐ Coat with refrigerant oil before installing

8 - Bracket

- ☐ For the refrigerant lines

9 - Cap

- ☐ Modine: 3 Nm
- ☐ There are different versions. Refer to the Parts Catalog.

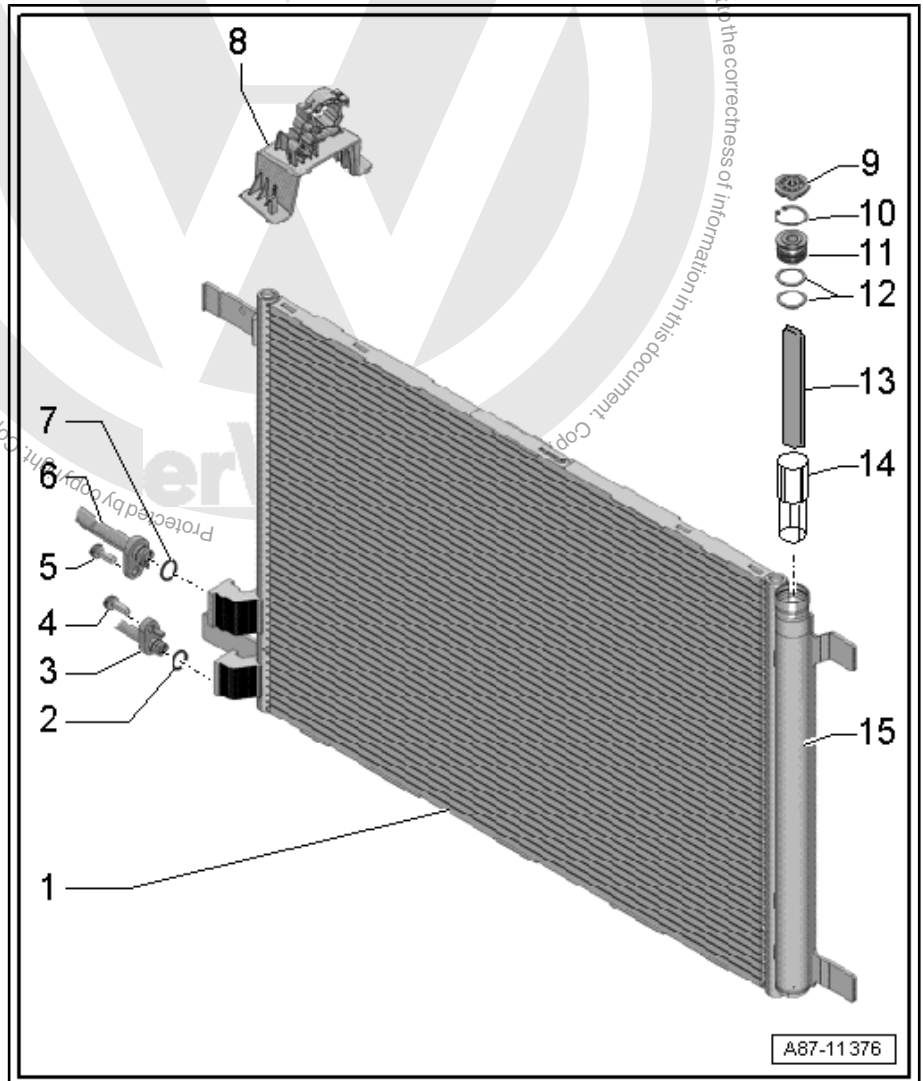
10 - Snap Ring

11 - Cap

- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Replace if damaged

12 - Seal

- ☐ Replacing. Refer to the Parts Catalog for the versions
- ☐ Coat with refrigerant oil before installing





13 - Dryer Bag

- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Removing and installing:
- ◆ Denso condenser. Refer to ⇒ ["2.6.1 Dryer Bag, Removing and Installing, Denso Condenser", page 42](#) .
- ◆ Modine condenser. Refer to ⇒ ["2.6.2 Dryer Bag, Removing and Installing, Modine Condenser", page 44](#) .
- ◆ Keihin condenser. Refer to ⇒ ["2.6.3 Dryer Bag, Removing and Installing, Keihin Condenser", page 47](#) .

14 - Strainer

- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Removal and installation
- ◆ Denso condenser. Refer to ⇒ ["2.6.1 Dryer Bag, Removing and Installing, Denso Condenser", page 42](#) .
- ◆ Modine condenser. Refer to ⇒ ["2.6.2 Dryer Bag, Removing and Installing, Modine Condenser", page 44](#) .
- ◆ Keihin condenser. Refer to ⇒ ["2.6.3 Dryer Bag, Removing and Installing, Keihin Condenser", page 47](#) .

15 - Receiver/Dryer

- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Is integrated on this version of the condenser



Note

Under certain conditions, the receiver/dryer and the dryer bag does not need to be replaced each time the refrigerant circuit is opened. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .

2.3 Refrigerant Circuit Pressure Sensor - G805- , Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm - VAG1331-
- ◆ Commercially Available 12-edge 1/2" Socket Long, 24 Opening

Removing

- When working on the refrigerant circuit, note the information. Refer to ⇒ ["4.1 Refrigerant Circuit, Specialized Repairs", page 6](#) .



WARNING

Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- ***If refrigerant drips out of the refrigerant pipe for longer than 1 second when loosening the Refrigerant Circuit Pressure Sensor - G805-, then tighten the Refrigerant Circuit Pressure Sensor - G805- again. The check valve inside the refrigerant pipe is faulty and must be replaced.***
- ***Extract the refrigerant and immediately open the refrigerant circuit after that.***
- ***If the refrigerant was extracted more than 10 minutes in the past and the refrigerant circuit was not opened, extract the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.***



WARNING

Danger due to refrigerant coming out under pressure.

- ***Refrigerant will leak out if improper work is performed when removing and installing.***

Connection damage can be caused.

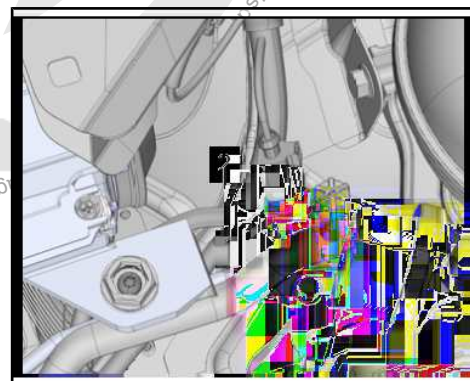
- Disconnect the connector -2-.
- Counterhold the refrigerant line with a suitable tool.
- Remove the pressure sensor -1- with a Commercially Available 12-Edge 1/2" Socket Long, 24mm.

Installing

Install in reverse order of removal.

Tightening Specifications

- ◆ Refer to Refrigerant Circuit Pressure Sensor - G805-
-item 19- ➔ [Item 19 \(page 34\)](#) .



2.4 Expansion Valve, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm - VAG1331-
- ◆ A/C Service Station - VAS6007A- or succeeding model
- ◆ Engine Bung Set - VAS6122-

Functions

- ◆ The expansion valve atomizes the streaming refrigerant and controls the flow quantity so that the vapor is gaseous only at the evaporator outlet, depending on the heat transmission.

Removing

- When working on the refrigerant circuit, note the information.
Refer to
➔ ["4.1 Refrigerant Circuit, Specialized Repairs", page 6](#) .

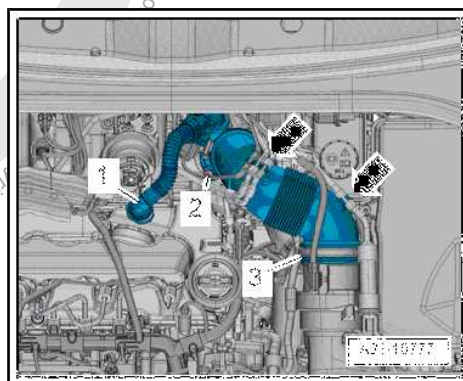


Note

- ♦ *Refrigerant must be extracted beforehand using, for example, the A/C Service Station - VAS6007A- .*
- ♦ *The previously used service stations can still be used see equipment catalog.*
- ♦ *To prevent the ingress of dampness all components of the refrigerant circuit which have been opened must be sealed with suitable plugs.*
- ♦ *On some vehicles, connecting pipe from charge air cooler should be removed. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 21 ; Charge Air System; Overview - Charge Air System .*

Vehicles with a TDI Engine

- Press the release buttons on the hose -1- for the crankcase ventilation and remove the hose from the cylinder head cover.
- Free up the vacuum hoses at the air guide pipe -arrows-.
- Loosen the hose clamp -3-.
- Pivot the air guide pipe with the connection rearward and remove from the turbocharger.



All Vehicles

- Remove the sheet metal nuts -1 and 3-.
- Fold the heat shield -2- as far forward as possible -arrow-.

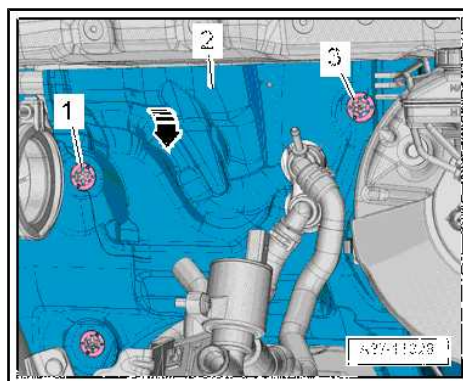


WARNING

Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

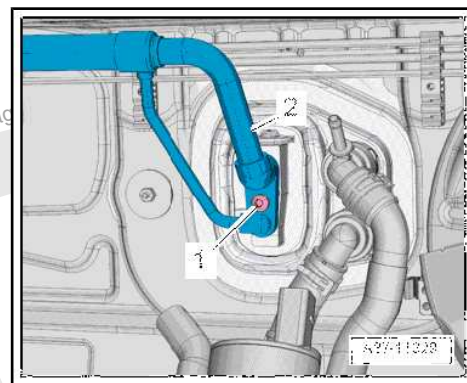
- ***Extract the refrigerant and immediately open the refrigerant circuit after that.***
- ***If the refrigerant was extracted more than 10 minutes in the past and the refrigerant circuit was not opened, extract the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.***



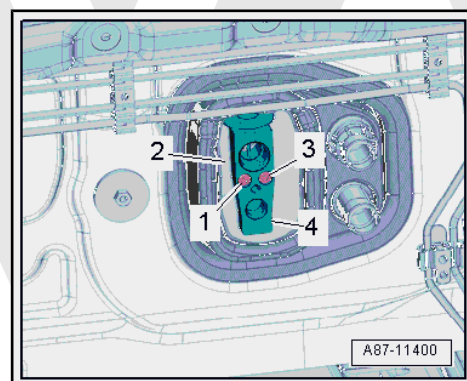
- Extract refrigerant.



- Remove the bolt -1-.
- Disconnect the refrigerant line -2- with the inner heat exchanger from the expansion valve.



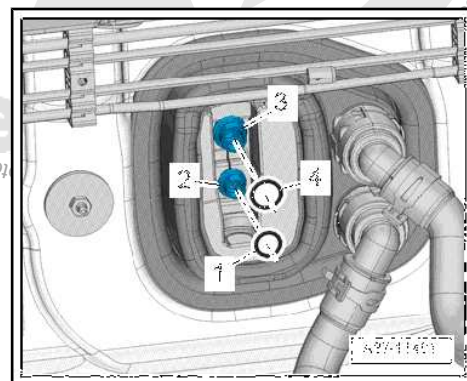
- Remove the bolts -1 and 3-.
- Remove the expansion valve -4- from the heat shield insulation -2-.
- Seal the open lines and connections with clean plugs from the Engine Bung Set - VAS6122- .



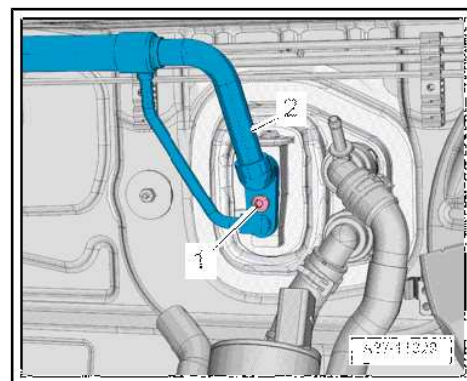
Installing

Install in reverse order of removal. Note the following

- Replace the seals, version. Refer to the Parts Catalog
- Replace the seals -1 and 4- on the connecting tubes -2 and 3- to the evaporator.



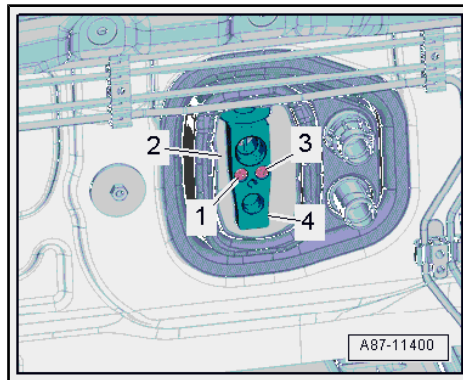
- Press in the refrigerant pipe -2- by hand on the expansion valve.
- Install the bolt -1- by hand and the tighten to the specified tightening specification.





Note

- ◆ The expansion valve is available in different versions (same housing but different control characteristic). Refer to the Parts Catalog for allocation.
- ◆ Inspect the refrigerant pipes leading to the evaporator for debris and damage.
- ◆ Coat the seals with refrigerant oil before installing.
- ◆ Pay attention that the seal on the evaporator connecting tube is seated correctly.
- ◆ If the heat protection insulation -2- is missing or not installed correctly, it can cause reduced output of the Air Conditioning (A/C) system (change of the set control characteristic due to radiant heat).



Tightening Specifications

- ◆ Refer to
⇒ ["2.1 System Overview - Refrigerant Circuit", page 32](#)

2.5 Condenser, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm - VAG1331-
- ◆ A/C Service Station - VAS6007A- or succeeding model



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Cap
- ◆ Seals
- ◆ Dryer bag



Note

- ◆ Refrigerant must be extracted beforehand using, for example, the A/C Service Station - VAS6007A-.
- ◆ The previously used service stations can still be used see equipment catalog.
- ◆ To prevent the ingress of dampness all components of the refrigerant circuit which have been opened must be sealed with suitable plugs.
- ◆ Environmentally hazardous draining of refrigerant is an offense punishable by law.

Perform the following work first:

- Turn off all electric consumers.
- Turn off the ignition.
- Remove the key.



- Extract the refrigerant, for example, using the A/C Service Station - VAS6007A- .

Removing

- When working on the refrigerant circuit, note the information. Refer to
⇒ [“4.1 Refrigerant Circuit, Specialized Repairs”, page 6](#) .
- Remove the front bumper cover. Refer to ⇒ Body Exterior; Rep. Gr. 63 ; Front Bumper; Bumper Cover, Removing and Installing .
- Release the air guide -2- from the mount -arrow- upward.
- Press the attachment -4- downward in direction of -arrow- and pull the air guide -2- forward.
- Remove the air guide downward.

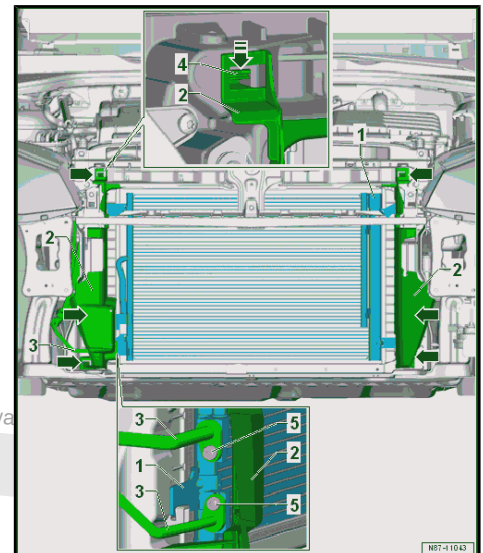


WARNING

Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- ***Extract the refrigerant and immediately open the refrigerant circuit after that.***
- ***If the refrigerant was extracted more than 10 minutes in the past and the refrigerant circuit was not opened, extract the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.***



- Remove the bolts -5-.
- Remove the refrigerant lines -3- from the connection on the condenser.
- Seal off the line connections.
- Have a second technician release the left and right tabs -1- in direction of -arrow A- and remove the condenser -3- upward out of the mounts -B arrows-.
- Remove the condenser -3- downward.

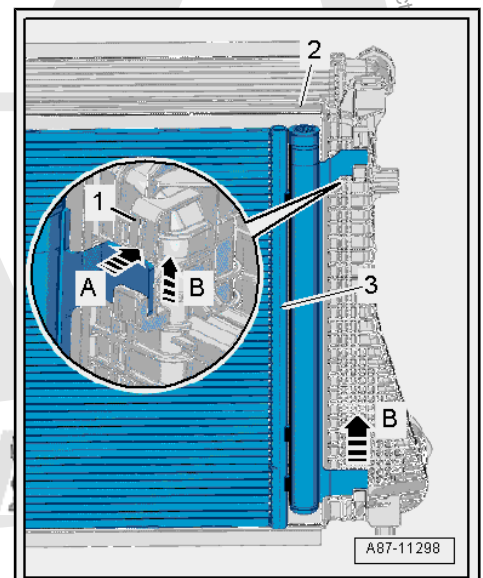
Installing

Install in reverse order of removal. Note the following:

- Replace the seals.

Tightening Specifications

- ◆ Refer to ⇒ [“2.2 Overview - Condenser”, page 35](#)
- ◆ Overview - Front Bumper. Refer to ⇒ Body Exterior; Rep. Gr. 63 ; Front Bumper ,





2.6 Dryer Bag, Removing and Installing

⇒ [“2.6.1 Dryer Bag, Removing and Installing, Denso Condenser”, page 42](#)

⇒ [“2.6.2 Dryer Bag, Removing and Installing, Modine Condenser”, page 44](#)

⇒ [“2.6.3 Dryer Bag, Removing and Installing, Keihin Condenser”, page 47](#)

2.6.1 Dryer Bag, Removing and Installing, Denso Condenser

Special tools and workshop equipment required

- ◆ Commercially Available Pick-up Tool



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Cap
- ◆ Seals
- ◆ Dryer bag



Note

- ◆ See notes. Refer to
⇒ [“2.1 System Overview - Refrigerant Circuit”, page 32](#) .
 - ◆ Refrigerant must be extracted beforehand using, for example, the A/C Service Station - VAS6007A- .
 - ◆ The previously used service stations can still be used see equipment catalog.
 - ◆ To prevent the ingress of dampness all components of the refrigerant circuit which have been opened must be sealed with suitable plugs.
- Extract refrigerant, for example, using A/C Service Station - VAS6007A- , only then open the refrigerant circuit.

Removing

- When working on the refrigerant circuit, note the information. Refer to
⇒ [“4.1 Refrigerant Circuit, Specialized Repairs”, page 6](#) .
- Remove, depending on the charge air system engine components. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 21 ; Charge Air System; Overview - Charge Air System .
- Remove the radiator grille. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Radiator Grille/Front Trim; Radiator Grille, Removing and Installing .



- Have a second technician release the left and right tabs -1- in direction of -arrow A- and remove the condenser -3- upward out of the mounts in direction of -arrow B-.
- Move the condenser as far forward as possible.

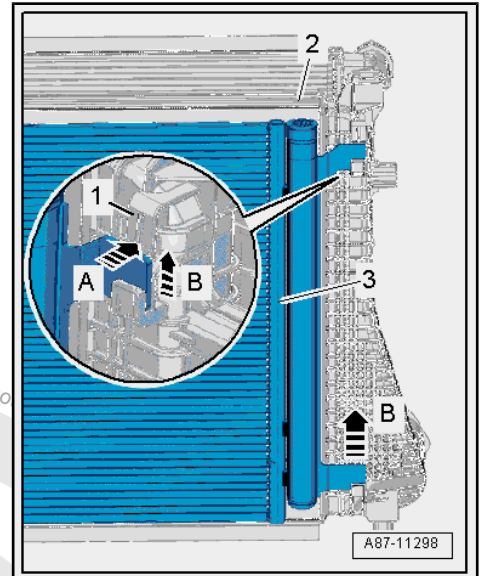


WARNING

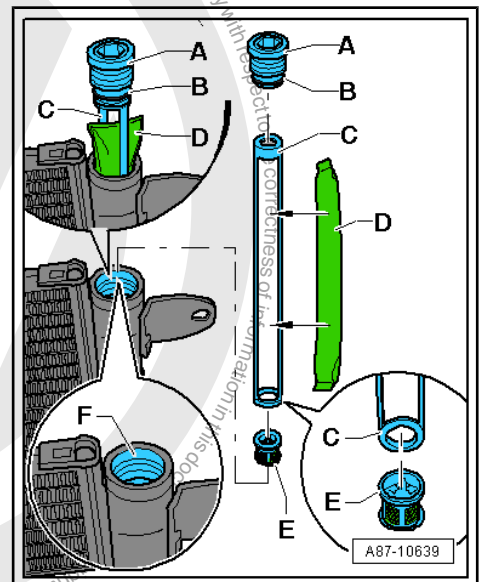
Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- ***Extract the refrigerant and immediately open the refrigerant circuit after that.***
- ***If the refrigerant was extracted more than 10 minutes in the past and the refrigerant circuit was not opened, extract the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.***



- Remove the sealing plug -A-.
- Remove the dryer carrier -C- with the dryer bag -D- upward from the receiver/dryer.
- Remove the filter element -E- upward from the receiver/dryer using, for example, a pick-up tool.
- Seal the open receiver/dryer with the sealing plug -A- to prevent dirt and moisture from getting in.





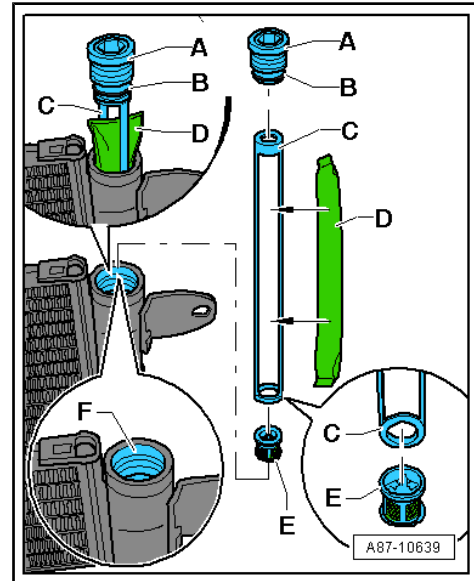
Installing

Install in reverse order of removal. Note the following:



Note

- ◆ *Replace the sealing plug, seal and dryer bag after every opening of the receiver/dryer. Refer to Parts Catalog.*
- ◆ *Keep the dryer bag air-tight package closed as long as possible. Do not remove the dryer bag until just before replacing the dryer bag in the condenser. The dryer bag absorbs moisture in a very short time and become unusable.*
- ◆ *Coat the seals for the plug with refrigerant oil before installing.*
- Using the opening, inspect the receiver/dryer on the condenser for dirt and damage on the threaded- and sealing surfaces.
- Install the filter element -E- with the correct side into the condenser receiver/dryer.
- Remove the dryer bag -D- from the package and insert it into the dryer carrier -C-.
- Insert the dryer bag together with the dryer cartridge into the condenser receiver/dryer.
- Position and install the sealing plug -A-.



Tightening Specifications

- ◆ Refer to ➔ ["2.2 Overview - Condenser", page 35](#)
- ◆ Radiator Grille/Front Trim; Overview - Radiator Grille. Refer to ➔ Body Exterior; Rep. Gr. 66 ; Radiator Grille/Front Trim; Radiator Grille, Removing and Installing .

2.6.2 Dryer Bag, Removing and Installing, Modine Condenser

Special tools and workshop equipment required

- ◆ T50 Socket



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Cap
- ◆ Seals
- ◆ Dryer bag

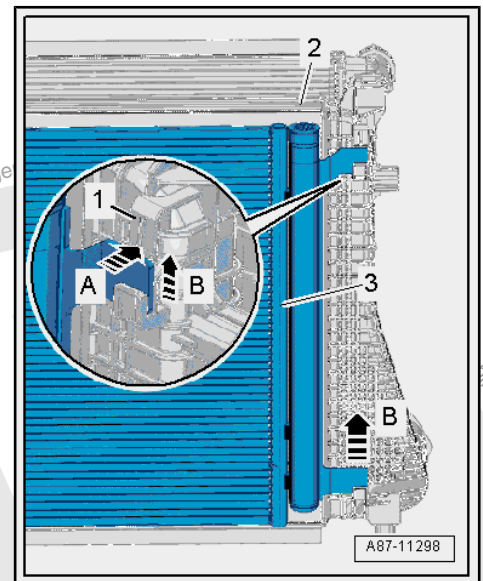


Note

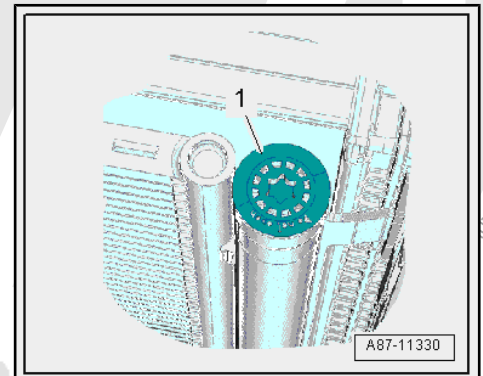
- ◆ See notes. Refer to
⇒ ["2.1 System Overview - Refrigerant Circuit", page 32](#) .
 - ◆ Refrigerant must be extracted beforehand using, for example, the A/C Service Station - VAS6007A- .
 - ◆ The previously used service stations can still be used see equipment catalog.
 - ◆ To prevent the ingress of dampness all components of the refrigerant circuit which have been opened must be sealed with suitable plugs.
- Extract refrigerant, for example, using A/C Service Station - VAS6007A- , only then open the refrigerant circuit.

Removing

- When working on the refrigerant circuit, note the information. Refer to
⇒ ["4.1 Refrigerant Circuit, Specialized Repairs", page 6](#) .
- Remove, depending on the charge air system engine components. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 21 ; Charge Air System; Overview - Charge Air System .
- Remove the radiator grille. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Radiator Grille/Front Trim; Radiator Grille, Removing and Installing .
- Have a second technician release the left and right tabs -1- in direction of -arrow A- and remove the condenser -3- upward out of the mounts in direction of -arrow B-.
- Move the condenser as far forward as possible.



- Remove the cap -1- using the T50 Socket .





- Push in the cap -1- slightly.

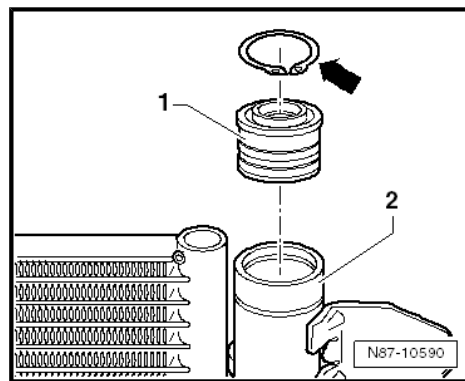


WARNING

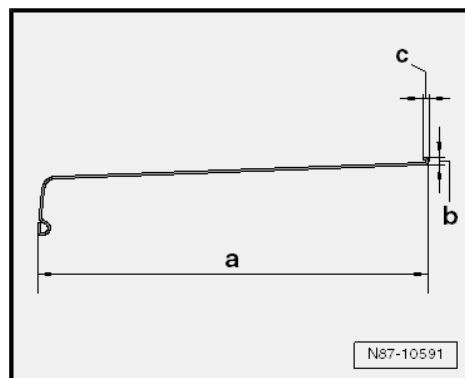
Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- ***Extract the refrigerant and immediately open the refrigerant circuit after that.***
- ***If the refrigerant was extracted more than 10 minutes in the past and the refrigerant circuit was not opened, extract the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.***

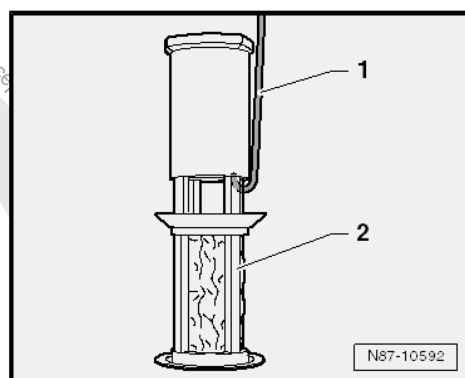


- Remove the snap ring -arrow-.
- Install a M12 bolt in the cover and carefully pull it out of the receiver/dryer -2-.
- Remove the dryer bag with a commercially available pick-up tool from the receiver/dryer.
- Make a 2 mm diameter welding wire with the following dimensions.
 - a - 380 mm
 - b - maximum 7 mm
 - c - maximum 6 mm

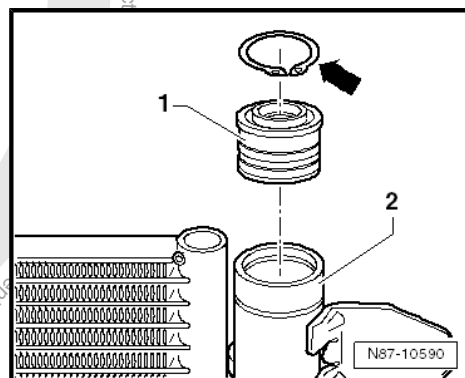


Hook the welding wire onto the strainer exactly as illustrated to prevent damage to the receiver/dryer

- Carefully remove the filter (strainer) -2- from the receiver/dryer with the welding wire -1-.



- If the work is not completed, close open receiver/dryer with the cap -1- to prevent dirt and moisture from entering.





Installing

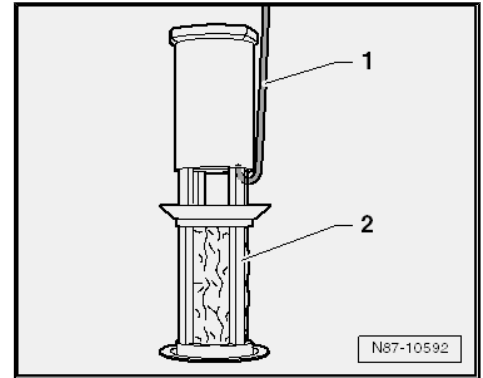
Install in reverse order of removal. Note the following:



Note

Replace the cap, seal and dryer bag after every opening of the receiver/dryer. Refer to Parts Catalog.

- Using the opening, inspect the receiver/dryer on the condenser for dirt and damage on the threaded- and sealing surfaces.
- Insert the filter element (with strainer) -2- with the correct side into the condenser receiver/dryer.
- The filter element must be pushed in until stop.



Note

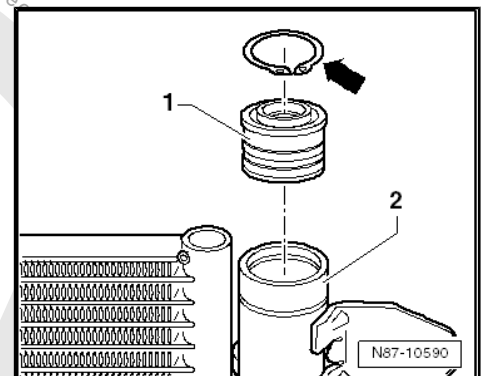
Keep the dryer bag air-tight package closed as long as possible. Do not remove the dryer bag until just before replacing the dryer bag in the condenser. The dryer bag absorbs moisture in a very short time and become unusable.

- Remove the dryer bag from the package and insert it into the condenser receiver/dryer.
- Insert the cap -1- and push it far enough downward so that the circlip -arrow- can engage in the groove.



Note

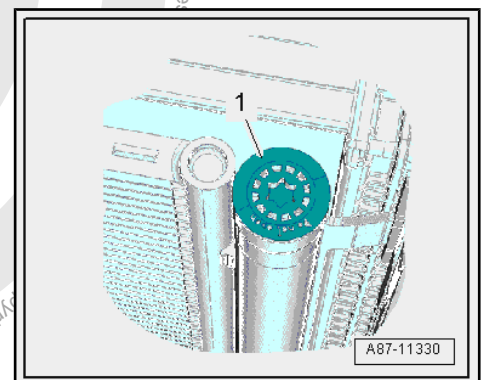
Coat the seal for the cap with refrigerant oil before installing.



- Install the cap -1- using the T50 Socket .

Tightening Specifications

- ◆ ⇒ [“2.2 Overview - Condenser”, page 35](#)
- ◆ Radiator Grille/Front Trim; Overview - Radiator Grille. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Radiator Grille/Front Trim; Radiator Grille, Removing and Installing .



2.6.3 Dryer Bag, Removing and Installing, Keihin Condenser

Special tools and workshop equipment required

- ◆ A/C Service Station - VAS6007A-
- ◆ T50 Socket



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Cap
- ◆ Seals
- ◆ Dryer bag



Note

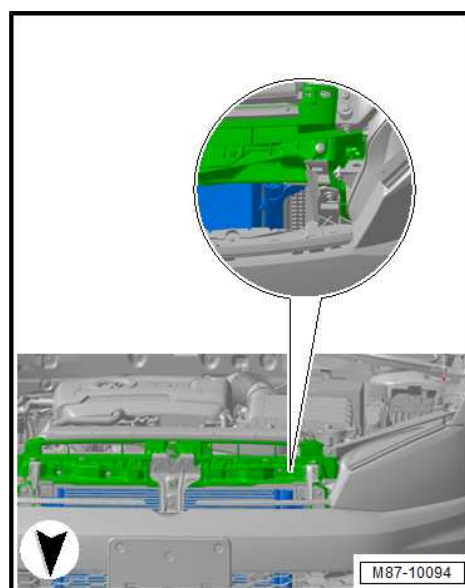
- ◆ See notes. Refer to
⇒ ["2.1 System Overview - Refrigerant Circuit", page 32](#) .
 - ◆ Refrigerant must be extracted beforehand using, for example, the A/C Service Station - VAS6007A- .
 - ◆ The previously used service stations can still be used. Refer to the V.A.G workshop equipment catalog.
 - ◆ All open refrigerant circuit components must be sealed with suitable plugs to prevent any humidity from entering them.
- Extract the refrigerant, using for example the A/C Service Station - VAS6007A- , only then open the refrigerant circuit.

Removing

- When working on the refrigerant circuit, note the information. Refer to
⇒ ["4.1 Refrigerant Circuit, Specialized Repairs", page 6](#) .
- Remove, depending on the charge air system engine components. Refer to ⇒ Rep. Gr. 21 ; Overview - Charge Air System .
- Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Radiator Grille/Front Trim; Radiator Grille, Removing and Installing .

Vehicles without Direct Access to the Cap

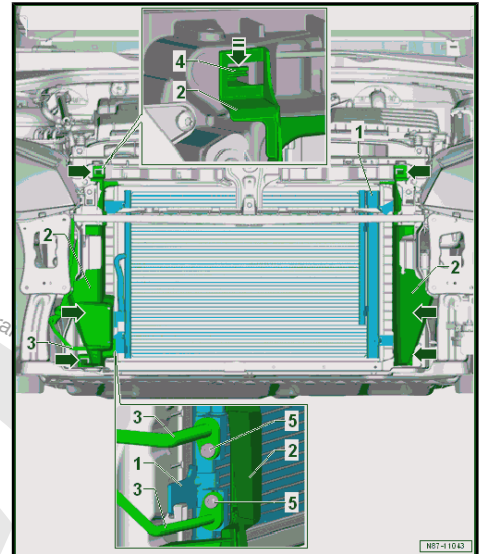
- Remove the front bumper cover. Refer to ⇒ Body Exterior; Rep. Gr. 63 ; Front Bumper; Bumper Cover, Removing and Installing .





- Release the air guide -2- from the mount -arrow- upward.
- Press the retainer -4- downward in the direction of the -arrow- and pull the air guide -2- forward.
- Remove the air guide downward.

Vehicles with Direct Access to the Cap

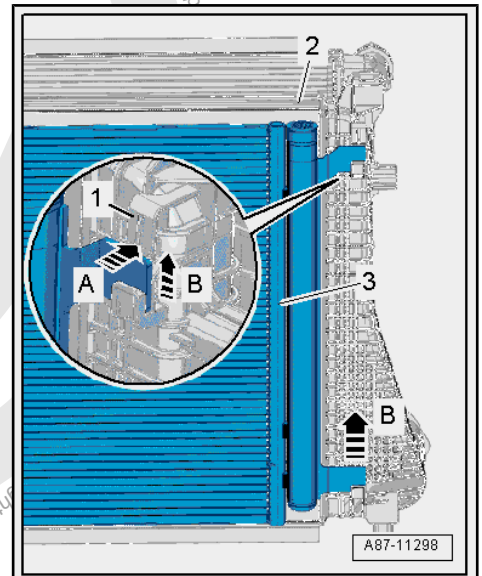


- Have a second technician release the left and right tabs -1- in the direction of the -arrow A- and remove the condenser -3- upward out of the mounts in the direction of the -arrow B-.

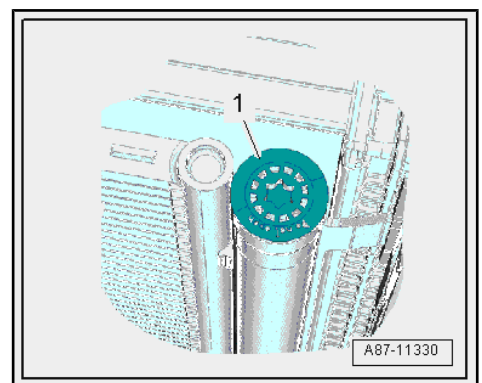
All Vehicles

- Move the condenser as far forward as possible.

Dryer Bag, Version 1



- Remove the cap -1- using the T50 Socket .





- Push in the cap -1- slightly.

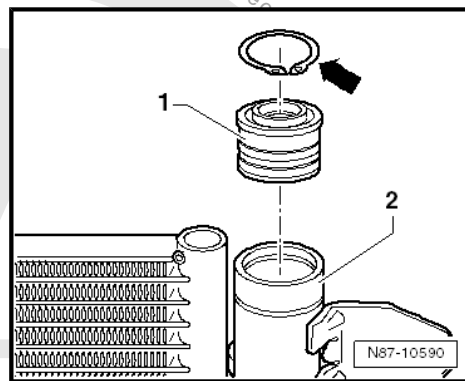


WARNING

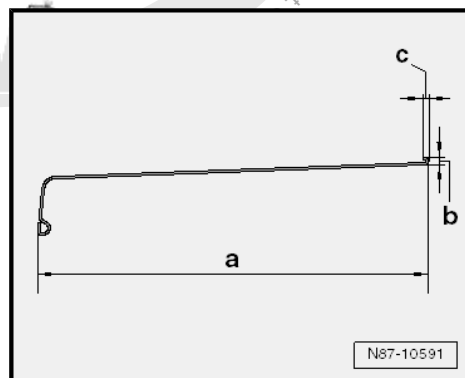
Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- ***Evacuate the refrigerant and immediately open the refrigerant circuit afterward.***
- ***If more than 10 minutes have elapsed since evacuating the refrigerant and the refrigerant circuit was not opened, evacuate the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.***

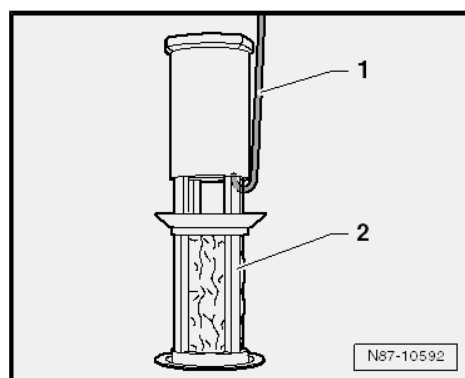


- Remove the snap ring -arrow-.
 - Install a M12 bolt in the cover and carefully pull it out of the receiver/dryer -2-.
 - Remove the dryer bag with a commercially available pick-up tool from the receiver/dryer.
 - Make a 2 mm welding wire with the following dimensions.
- a - 380 mm
b - maximum 7 mm
c - maximum 6 mm



Hook the welding wire onto the strainer exactly as illustrated to prevent damage to the receiver/dryer

- Carefully remove the strainer -2- from the receiver/dryer using the welding wire -1-.



- If the work is not completed, close open receiver/dryer with the cap -1- to prevent dirt and moisture from entering.

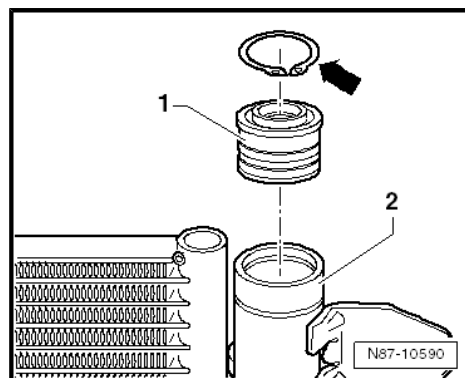
Installing

Install in reverse order of removal and note the following:



Note

Replace the cap, seal and dryer bag after every opening of the receiver/dryer. Refer to Parts Catalog.





- Using the opening, inspect the receiver/dryer on the condenser for dirt and damage on the threaded- and sealing surfaces.
- Insert the filter element (with screen) -2- into the condenser receiver/dryer on the proper side.
- The filter element must be pushed in until stop.



Note

Keep the dryer bag air-tight package closed as long as possible. Do not remove the dryer bag until just before replacing the dryer bag in the condenser. The dryer bag absorbs moisture in a very short time and become unusable.

- Remove the dryer bag from the package and insert it into the condenser receiver/dryer.
- Insert the cap -1- and push it far enough downward so that the snap ring -arrow- can engage in the groove.



Note

Coat the seal for the cap with refrigerant oil before installing.

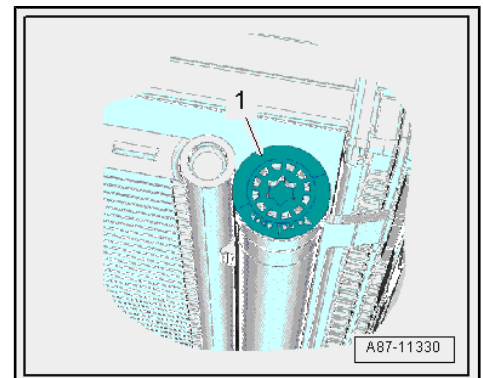
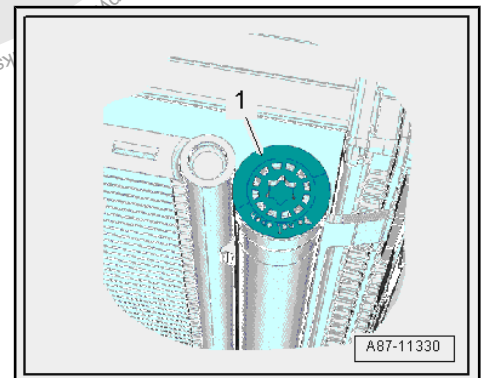
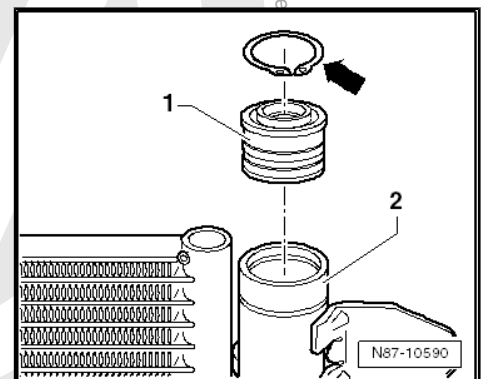
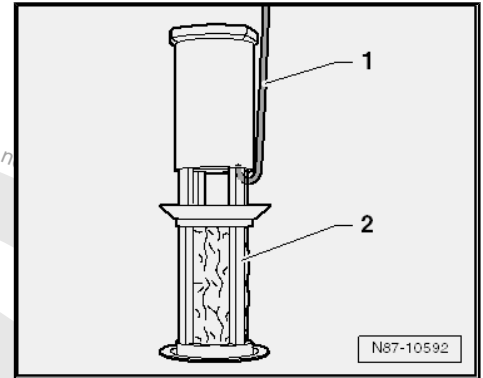
- Install the cap -1- using the T50 Socket .

Tightening Specifications

- ◆ Refer to ⇒ [“2.2 Overview - Condenser”, page 35](#)
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Radiator Grille/Front Trim; Overview - Radiator Grille .

Dryer Bag, Version 2

- Remove the cap -1- using the T50 Socket .



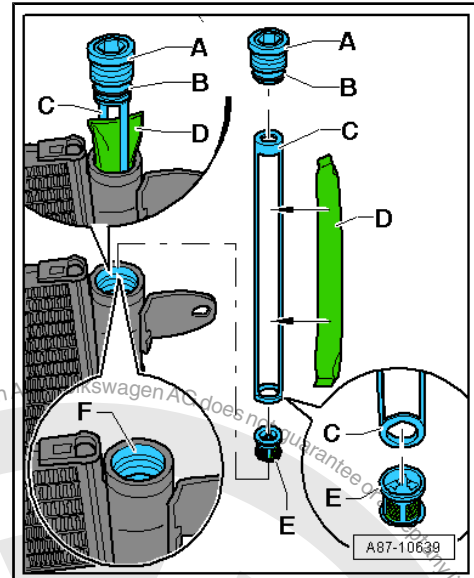


- Remove the dryer bag -D- upward from the receiver/dryer.



Note

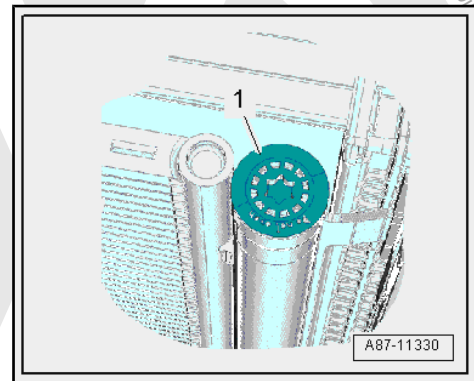
Coat the seal for the cap with refrigerant oil before installing.



- Install the cap -1- using the T50 Socket.

Tightening Specifications

- ◆ Refer to ⇒ [“2.2 Overview - Condenser”, page 35](#)
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Radiator Grille/Front Trim; Overview - Radiator Grille .



2.7 Refrigerant Lines with Inner Heat Exchanger, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm - VAG1331-
- ◆ A/C Service Station - VAS6007A- or succeeding model
- ◆ Engine Bung Set - VAS6122-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Seals



Note

Certain tools are required to discharge the refrigerant circuit, these work procedures must only be performed by trained personnel as well. Refer to ⇒ Refrigerant R134a Servicing .

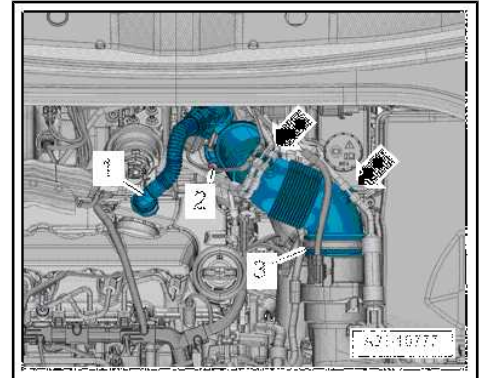


Removing

- Extract refrigerant, for example, using A/C Service Station - VAS6007A- , only then open the refrigerant circuit.

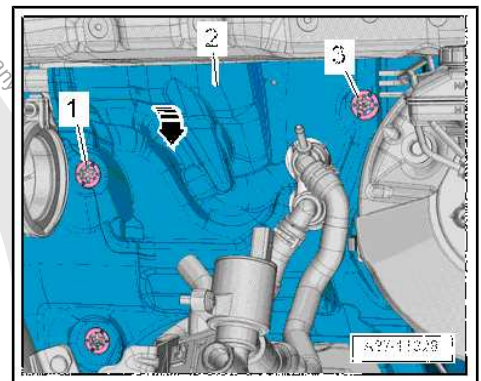
Vehicles with a TDI Engine

- Press the release buttons on the hose -1- for the crankcase ventilation and remove the hose from the cylinder head cover.
- Free up the vacuum hoses at the air guide pipe -arrows-.
- Loosen the hose clamp -3-.
- Remove the bolt -2- and tilt the air guide pipe with the connection downward and remove it from the turbocharger.



For All Vehicles

- Remove the sheet metal nuts -1 and 3-.
- Fold the heat shield -2- as far forward as possible -arrow-.



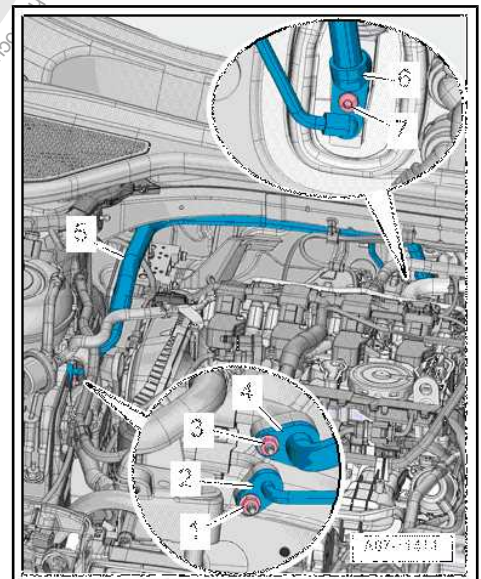
WARNING

Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- ***Extract the refrigerant and immediately open the refrigerant circuit after that.***
- ***If the refrigerant was extracted more than 10 minutes in the past and the refrigerant circuit was not opened, extract the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.***

- Remove the bolt -7-.
- Disconnect the refrigerant line -6- with the inner heat exchanger from the expansion valve.
- Remove the nuts -1 and 3- and remove the refrigerant lines -2 and 4-.
- Remove the refrigerant line -5- with the inner heat exchanger.
- Seal the open lines and connections with clean plugs from the Engine Bung Set - VAS6122- .





Installing

Install in reverse order of removal. Note the following:

- Refer to ➤ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 21 ; Turbocharger; Overview - Turbocharger .
- Replace the seals. Refer to the Parts Catalog. for the correct version.
- Clean the connections on the expansion valve -2- and on the inner heat exchanger -4- and inspect them for damage.
- Thoroughly clean the refrigerant lines around the connection area and check for damage.

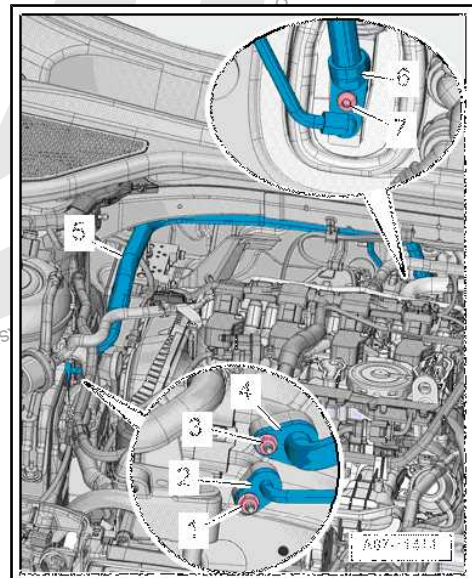
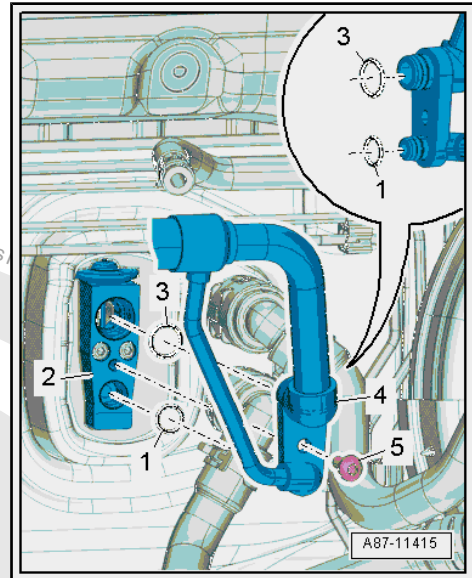


Note

- ◆ *Coat the seals with refrigerant oil before installing.*
- ◆ *Make sure the seals fit correctly inside the groove on each refrigerant line.*
- Insert the seals -1 and 3- into the groove on the inner heat exchanger connection.
- Insert the inner heat exchanger on the expansion valve.
- Tighten the bolt -5-.
- Install the refrigerant lines -2 and 4- with the inner heat exchanger on the connections.
- Install and tighten the nuts -1 and 3-.

Tightening Specifications

- ◆ Refer to
➔ ["2.1 System Overview - Refrigerant Circuit", page 32](#).



2.8 Low Pressure Side Refrigerant Line Balance Weight, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm - VAG1331-

Removing



Note

- ◆ *It is required to remove the refrigerant line to remove and install the balance weight.*
- ◆ *An additional balance -2- weight may be present on this refrigerant line -1- depending on the refrigerant line version and the production period. Refer to the Parts Catalog.*



- Remove the bolts -3-.
- Remove the balance weight -2- from the refrigerant line - low pressure side -1-.

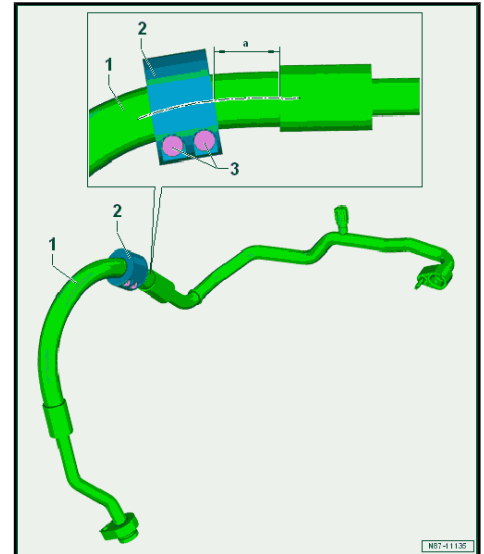
Installing

- Install the balance weight -2- to the specified dimension -a- 30 ± 5 mm on the refrigerant line-low pressure side -1-.
- Tighten the bolts -3-.



Note

- ◆ Pay attention, that the balance weight -2- is seated securely on the refrigerant line and does not touch or can come in contact with other components during operation.
- ◆ The refrigerant line-low pressure side -1- must not be crushed by the additional weight -B-.



Tightening Specification

Component	Tightening Specifications
Balance weight bolts	10 ± 1 Nm

2.9 Evacuating and Charging Valve, Removing and Installing, Low and High Pressure Side

Special tools and workshop equipment required

- ◆ Torque Wrench 1783 - 2-10Nm - VAG1783-
- ◆ A/C Service Station - VAS6007A- (or succeeding model)
- ◆ Torque Wrench 1783 - 1/4" Drive Ratchet - VAS6234-
- ◆ Refrigerant Sockets - T10364-



Note

- ◆ Environmentally hazardous draining of refrigerant is an offense punishable by law.
- ◆ To prevent the ingress of dampness, all components of the refrigerant circuit which have been opened must be sealed with suitable plugs.

Removing

- When working on the refrigerant circuit, note the information. Refer to
⇒ ["4.1 Refrigerant Circuit, Specialized Repairs", page 6](#) .



- Remove the cap -3-.



WARNING

Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- ***Extract the refrigerant and immediately open the refrigerant circuit after that.***
- ***If the refrigerant was extracted more than 10 minutes in the past and the refrigerant circuit was not opened, extract the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.***

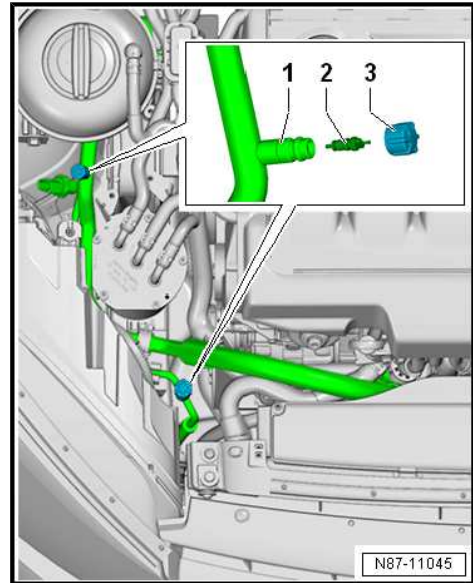
- Extract the refrigerant circuit, for example, using the A/C Service Station - VAS6007A- (or succeeding model). Then immediately replace the valve -2-.
- Remove the valve insert -2- from the refrigerant line.

Installing

- Install in reverse order of removal.

Tightening Specifications

- ◆ Refer to
⇒ ["2.1 System Overview - Refrigerant Circuit", page 32](#)





3 A/C Compressor

⇒ [“3.1 Overview - A/C Compressor Power Unit”, page 57](#)

⇒ [“3.2 Overview - Belt Pulley”, page 59](#)

⇒ [“3.3 A/C Compressor, Removing and Installing on Bracket”, page 61](#)

⇒ [“3.4 A/C Compressor, Removing and Installing”, page 63](#)

⇒ [“3.5 Pressure Relieve Valve on A/C Compressor, Checking”, page 67](#)

⇒ [“3.6 Belt Pulley, Removing and Installing”, page 68](#)

3.1 Overview - A/C Compressor Power Unit



Note

The illustration shows one version. Refer to the Parts Catalog for allocation.

1 - Ribbed Belt

- ☐ Removing and installing. Refer to ⇒ Rep. Gr. 13 ; Cylinder Block, Belt Pulley Side; Ribbed Belt, Removing and Installing .
- ☐ Mark the rotation direction, install on correct side. Refer to ⇒ Rep. Gr. 13 ; Cylinder Block, Belt Pulley Side; Ribbed Belt, Removing and Installing .

2 - Sub-Assembly Bracket

- ☐ Optional
- ☐ To remove and install. Refer to ⇒ Rep. Gr. 13 ; Cylinder Block, Belt Pulley Side; Auxiliary Components Bracket, Removing and Installing .

3 - Seal

- ☐ Replacing. Refer to the Parts Catalog for the correct version.
- ☐ Coat with refrigerant oil before installing

4 - Screw

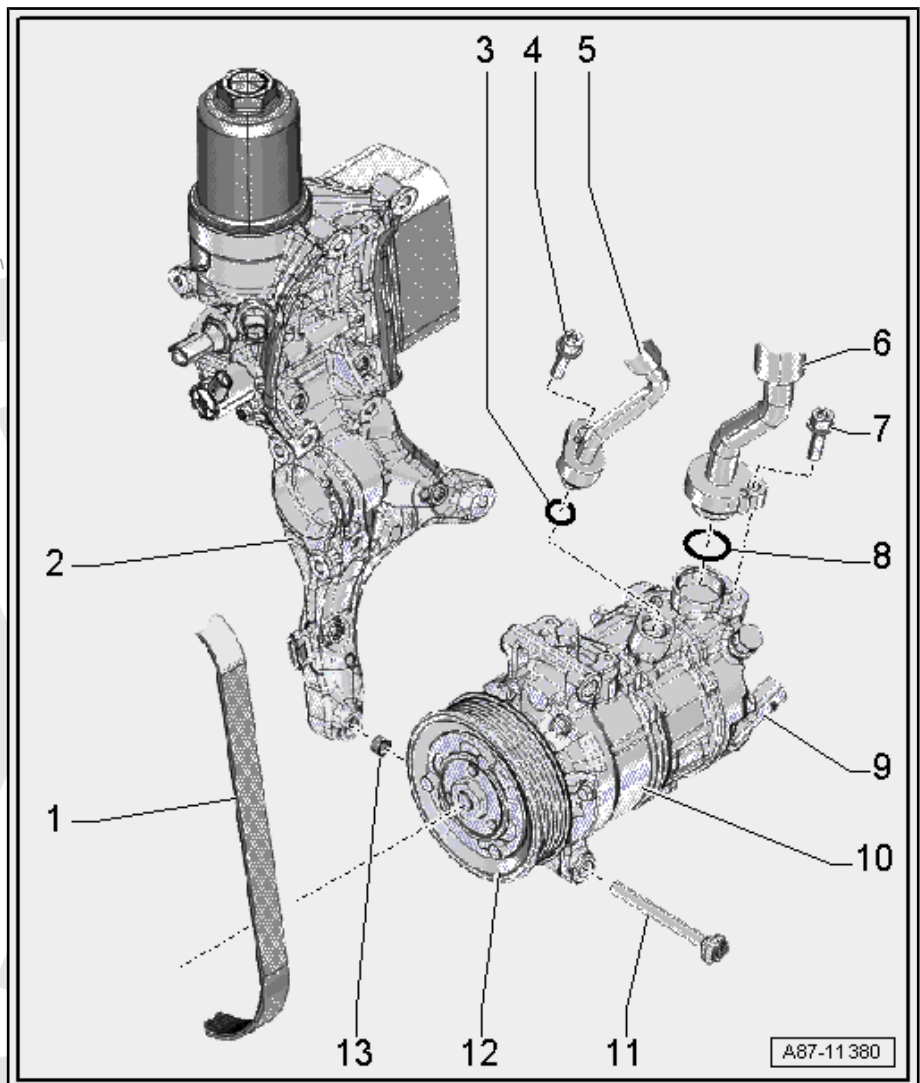
- ☐ 22 Nm

5 - Refrigerant Line

- ☐ High pressure side

6 - Refrigerant Line

- ☐ Low pressure side





7 - Bolt

- ☐ 22 Nm

8 - Seal

- ☐ Replacing. Refer to the Parts Catalog for the correct version.
- ☐ Coat with refrigerant oil before installing

9 - A/C Compressor Regulator Valve - N280-

- ☐ To check, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.

10 - A/C Compressor

- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Removing and installing. Refer to ⇒ ["3.4 A/C Compressor, Removing and Installing", page 63](#) .
- ☐ Removing from and attaching to the bracket. Refer to ⇒ ["3.3 A/C Compressor, Removing and Installing on Bracket", page 61](#) .

11 - Bolt

- ☐ 25 Nm
- ☐ Quantity: 3

12 - Belt Pulley

- ☐ With overload protection
- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Overview. Refer to ⇒ ["3.2 Overview - Belt Pulley", page 59](#) .

13 - Alignment Sleeve

- ☐ Quantity: 2



3.2 Overview - Belt Pulley

⇒ [“3.2.1 Overview - Belt Pulley, Denso A/C Compressor”, page 59](#)

⇒ [“3.2.2 Overview - Belt Pulley, Sanden A/C Compressor”, page 60](#)

3.2.1 Overview - Belt Pulley, Denso A/C Compressor

1 - Screw

- ☐ 4.5 Nm
- ☐ Quantity: 3

2 - Cap

3 - Nut

- ☐ 25 Nm
- Hold the belt pulley securely with a commercially available oil filter band wrench to loosen and tighten the hex nut.

4 - Drive Plate

- ☐ The overload protection takes over when the torque is excessive (for example, if the Air Conditioning (A/C) compressor runs with resistance) and the belt pulley runs freely without driving the A/C compressor.

5 - Circlip

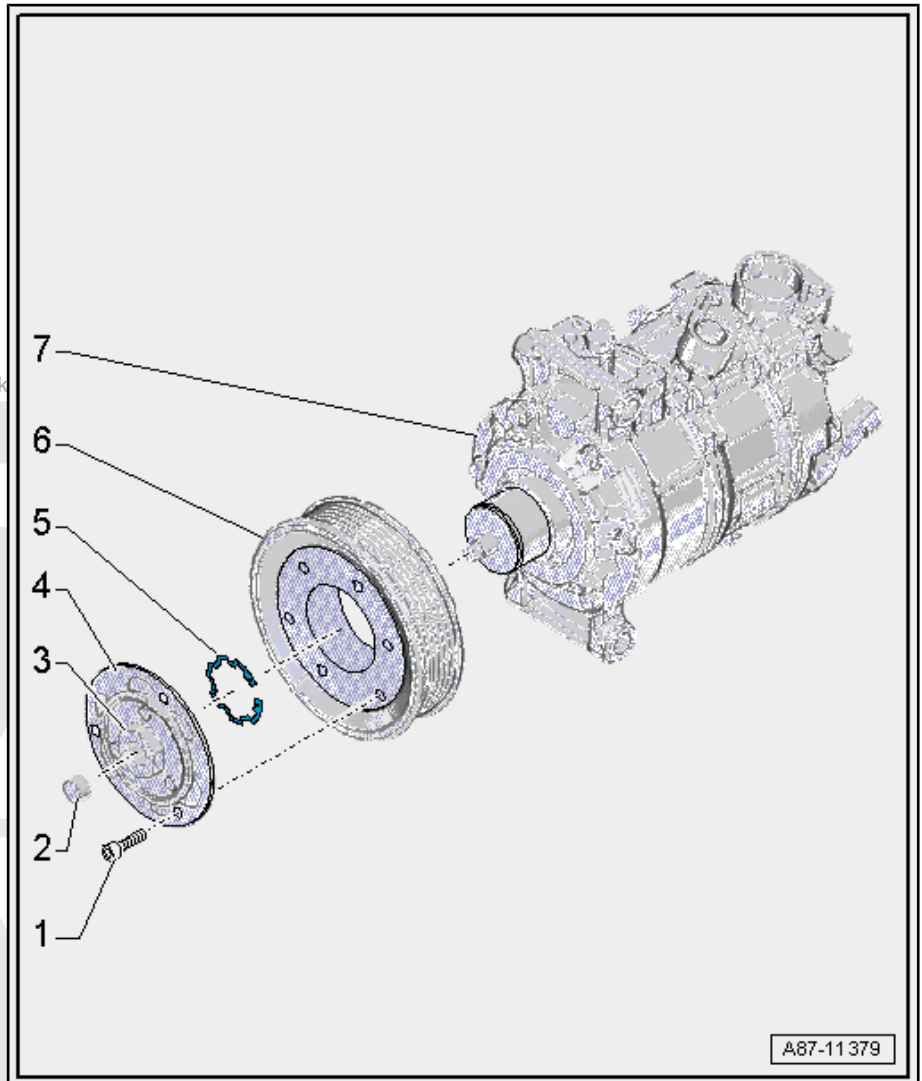
- ☐ Replace after removing.
- ☐ Install on the proper side - the flat side faces A/C compressor

6 - Belt Pulley

- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Is sensitive to impact, be careful when handling
- ☐ Removing and installing. Refer to ⇒ [“3.6 Belt Pulley, Removing and Installing”, page 68](#) .

7 - A/C Compressor

- ☐ Clean the A/C compressor driveshaft before setting the belt pulley on it



3.2.2 Overview - Belt Pulley, Sanden A/C Compressor

1 - Nut

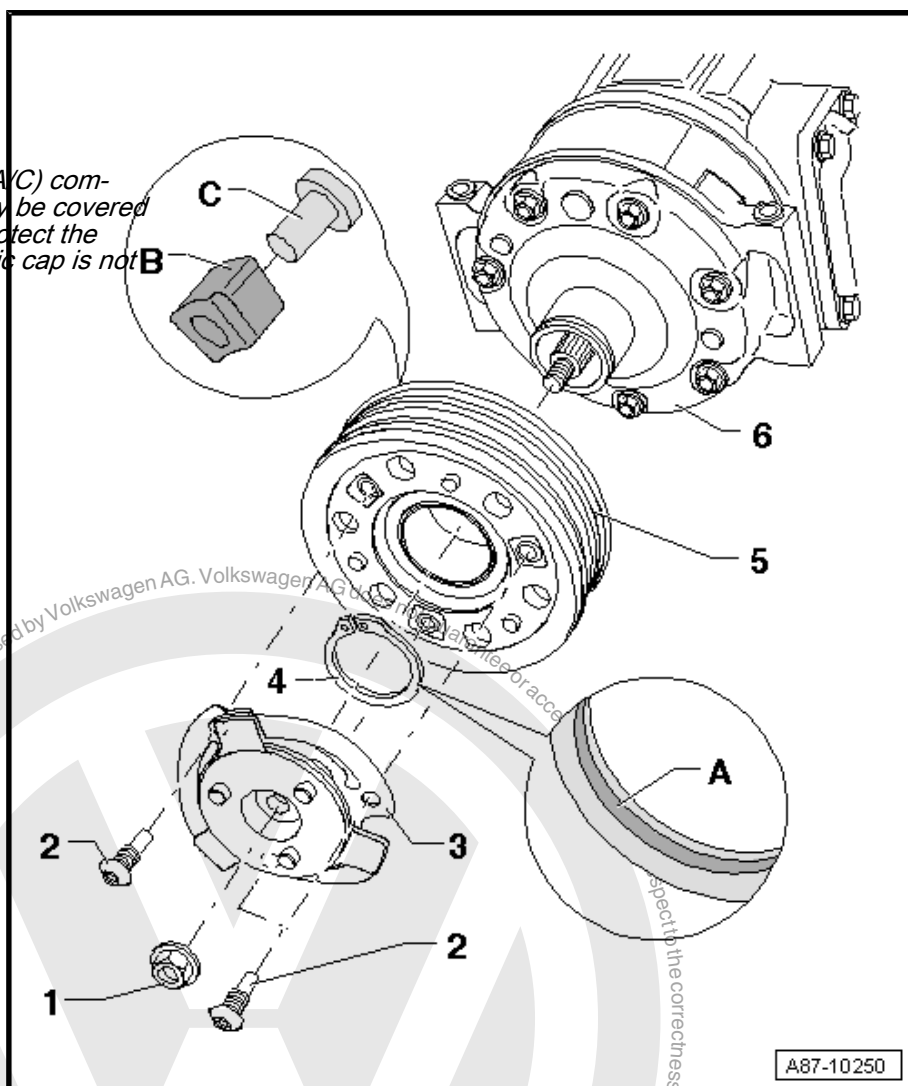
- 25 Nm



Note

The Air Conditioning (A/C) compressor input shaft may be covered with a plastic cap to protect the threads on it (the plastic cap is not illustrated).

- Hold the belt pulley securely with a commercially available oil filter band wrench to loosen and tighten the hex nut.
- The thread of the nut, which was screwed in with locking compound, must be cleaned (for example, using a thread tap). Otherwise, there is a danger that the input shaft breaks off during assembly.
- Clean the thread of the A/C compressor input shaft with a wire brush.
- Insert the nut with locking compound. Refer to the Parts Catalog for the locking compound.



2 - Bolt

- 12 Nm

- Hold the belt pulley securely with a commercially available oil filter band wrench to loosen and tighten the bolts.
- The threaded bolt holes, into which the self-locking bolts or bolts with locking compound are screwed, must be cleaned (for example with a thread tap). Otherwise, there is a danger that the bolts break off during assembly.
- Clean the thread of the bolts, which are screwed in with locking compound, with a wire brush. Then insert the bolts with locking compound. For the locking compound. Refer to the Parts Catalog.

3 - Drive Plate

- ☐ The overload protection (securing spring elements), takes over when the torque is excessive (for example, if the A/C compressor runs with resistance) and the belt pulley runs freely without driving the A/C compressor.
- ☐ Drive plate spring elements dampen vibrations and noise

4 - Circlip

- ☐ Replace after removing.
- ☐ Install on proper side, beveled insertion edge -A- faces away from A/C compressor - install flat side faces the A/C compressor

5 - Belt Pulley

- ❑ With rubber elements -B- and threaded plates -C- for decoupling belt pulley from A/C compressor input shaft, dampens vibrations and noise



Note

- ◆ *The threaded plates can also be connected to each other by a ring, depending on the version.*
- ◆ *For "cold climate" vehicles (for example, central and north Europe), A/C compressors with a smaller stroke may be installed. On these A/C compressors, the belt pulley is slightly different from the one illustrated here (the rubber elements -B- are, for example, not present). Refer to Parts Catalog.*

6 - A/C Compressor

- Clean the A/C compressor driveshaft before setting the belt pulley on it

3.3 A/C Compressor, Removing and Installing on Bracket

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm - VAG1331



Note

Pay attention to the turn off conditions for vehicles with the Start/Stop System. Refer to
⇒ "2.2 Vehicles with Start/Stop System General Information",
page 3 .

ELSA contains all information regarding performing repairs on vehicles with air conditioning and working with refrigerant. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .

ELSA contains all information on tools for repairs in vehicles with climate control system. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; Special Tools .

Removing

- When working on the refrigerant circuit, note the information. Refer to
⇒ "2.1 System Overview - Refrigerant Circuit", page 32 .
- Remove the noise insulation under the engine. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .

Depending on the engine type, remove the right front wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Wheel Housing Liner; Front Wheel Housing Liner, Removing and Installing .

- Remove the ribbed belt. Refer to ⇒ Rep. Gr. 13 ; Cylinder Block, Belt Pulley Side; Ribbed Belt, Removing and Installing .



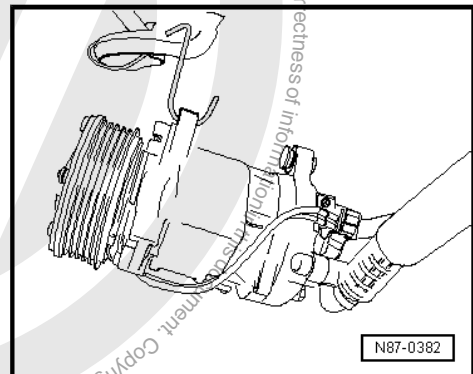
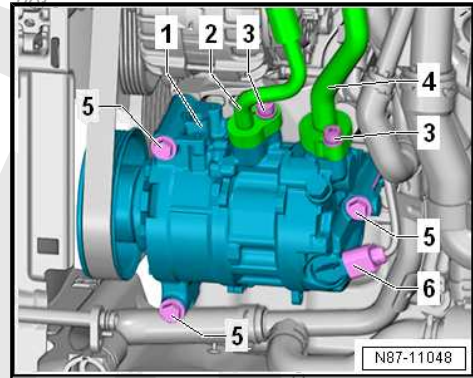
- Disconnect the connector -6- from the Air Conditioning (A/C) compressor -1-.
- Remove the hex bolt -5- and then remove the A/C compressor -1-.



Note

Do not loosen the refrigerant pipes on the A/C compressor if only the auxiliary components bracket is being removed.

- Attach the A/C compressor to the body with something suitable, for example, welding wire.





Installing

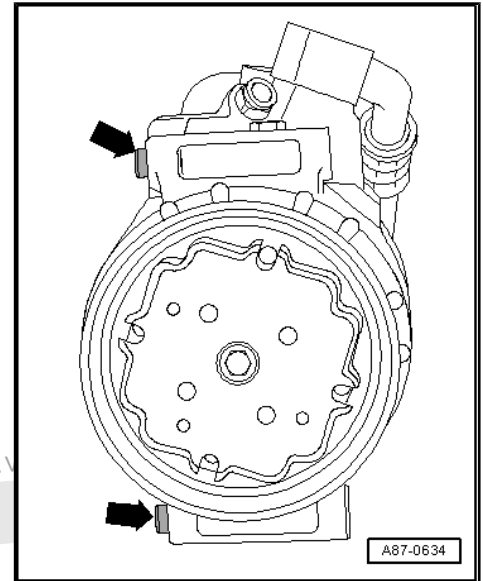
Install in reverse order of removal. Note the following:

- Thoroughly clean the contact surfaces on the A/C compressor and bracket.
- Insert the alignment sleeve -arrows- in the A/C compressor.



Note

Make sure the alignment sleeves are seated correctly and the contact surfaces are clean. Alignment sleeves that are installed incorrectly and dirty or damaged contact surfaces can lead to alignment irregularities between the compressor and engine. Alignment irregularities over operating time cause damage to the A/C compressor.



Caution

Risk of damaging the A/C compressor.

- ◆ **Refrigerant oil may accumulate in the compression chamber of the removed A/C compressor depending on how it was stored.**
- ◆ **Turn the A/C compressor by hand approximately 10 revolutions before installing the ribbed belt after installing a new A/C compressor or adding fresh refrigerant oil in order to avoid damaging the A/C compressor when using it for the first time.**

Tightening Specifications

- ◆ Refer to
⇒ ["3.1 Overview - A/C Compressor Power Unit", page 57](#)

Pay attention to the following when starting the engine for the first time after filling the refrigerant circuit:

- Follow the information on operating the A/C system after installing the A/C compressor. Refer to ➤ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .

3.4 A/C Compressor, Removing and Installing

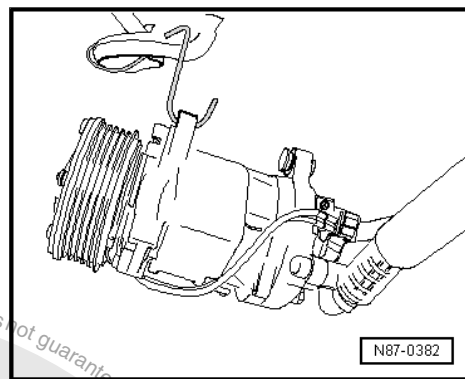
Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm - VAG1331-
- ◆ A/C Service Station - VAS6007A- or succeeding model



Note

- ◆ Perform Guided Fault Finding "A/C compressor first start" whenever a new Air Conditioning (A/C) compressor is installed.
- ◆ Pay attention to the turn off conditions for vehicles with the Start/Stop System. Refer to
⇒ ["2.2 Vehicles with Start/Stop System General Information", page 3](#).
- ◆ If the A/C compressor is sent in for a warranty claim, document the extracted refrigerant quantity and add in the claim.
- ◆ Flush the refrigerant circuit with R134a refrigerant under the following conditions:
- ◆ In the event of dirt or other contamination in the refrigerant circuit.
- ◆ If vacuum reading is not maintained on evacuating a leak-free refrigerant circuit (pressure build-up due to moisture in refrigerant circuit).
- ◆ If the refrigerant circuit has been left open for longer than normal (for example, following an accident).
- ◆ If pressure and temperature measurements in the refrigerant circuit indicate the likelihood of moisture
- ◆ In the event of doubt about the amount of refrigerant oil in the circuit.
- ◆ The A/C compressor must be replaced on account of internal damage (for example, noise or no output).
- ◆ If only the auxiliary component bracket is being removed, it is not necessary to loosen the refrigerant lines on the A/C compressor. Attach the A/C compressor to the body with wire.



ELSA contains the procedure for flushing with refrigerant R134a. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .

ELSA contains all information regarding performing repairs on vehicles with air conditioning and working with refrigerant. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .

ELSA contains all information on tools for repairs in vehicles with climate control system. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; Special Tools .

Removing

- When working on the refrigerant circuit, note the information. Refer to
⇒ ["2.1 System Overview - Refrigerant Circuit", page 32](#) .
- Extract refrigerant, for example, using A/C Service Station - VAS6007A- , only then open the refrigerant circuit.
- Remove the noise insulation under the engine. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Underbody Panel; Overview - Underbody Panels .

Depending on the engine type, remove the right front wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Wheel Housing Liner; Front Wheel Housing Liner, Removing and Installing .

- Remove the ribbed belt. Refer to ⇒ Rep. Gr. 13 ; Cylinder Block, Belt Pulley Side; Ribbed Belt, Removing and Installing .



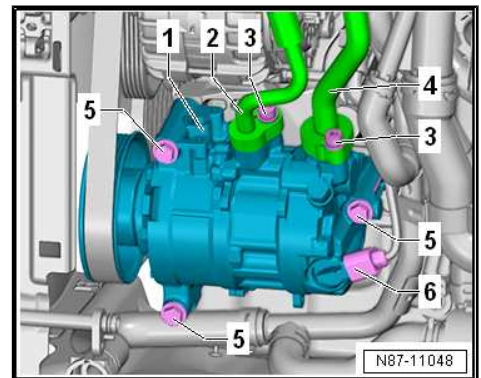
WARNING

Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- ***Extract the refrigerant and immediately open the refrigerant circuit after that.***
- ***If the refrigerant was extracted more than 10 minutes in the past and the refrigerant circuit was not opened, extract the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.***

- Remove the bolts -3- and disconnect the refrigerant lines -2 and 4- from the A/C compressor -1-.
- Disconnect the connector -6- from the A/C compressor -1-.
- Remove the hex bolt -5- and then remove the A/C compressor -1-.





Installing

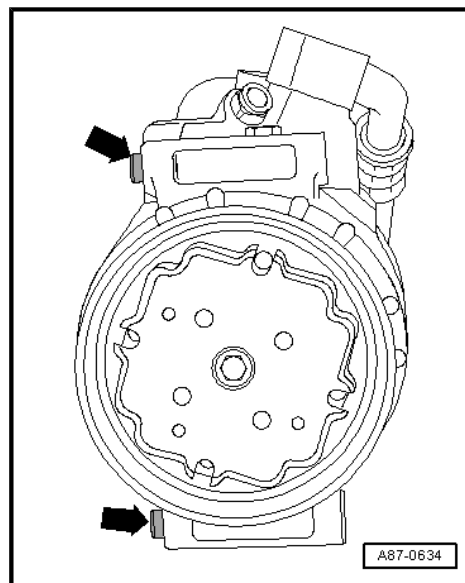
Install in reverse order of removal. Note the following:

- Perform Guided Fault Finding "A/C compressor first start" whenever a new A/C compressor is installed.
- Thoroughly clean the contact surfaces on the A/C compressor and bracket.
- Insert the alignment sleeve -arrows- in the A/C compressor.



Note

- ♦ *Make sure the alignment sleeves are seated correctly and the contact surfaces are clean. Alignment sleeves that are installed incorrectly and dirty or damaged contact surfaces can lead to alignment irregularities between the compressor and engine. Alignment irregularities over operating time cause damage to the A/C compressor.*
- ♦ *If the A/C compressor is replaced due to certain complaints (for example, internal damage), the refrigerant circuit must be cleaned. Refer to ➔ Refrigerant R134a Servicing; Rep. Gr. 00 ; Refrigerant Circuit, Removing Contaminants .*
- ♦ *There is an unspecified amount of refrigerant oil in the removed A/C compressor, so therefore pay attention to the information on replacing the A/C compressor. Refer to ➔ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .*



Caution

Risk of damaging the A/C compressor.

- ♦ *Refrigerant oil may accumulate in the compression chamber of the removed A/C compressor depending on how it was stored.*
- ♦ *Turn the A/C compressor by hand approximately 10 revolutions before installing the ribbed belt after installing a new A/C compressor or adding fresh refrigerant oil in order to avoid damaging the A/C compressor when using it for the first time.*

Tightening Specifications

- ♦ Refer to
⇒ ["3.1 Overview - A/C Compressor Power Unit", page 57](#)

Pay attention to the following when starting the engine for the first time after filling the refrigerant circuit:

- Follow the information on operating the A/C system after installing the A/C compressor. Refer to ➔ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .
- After installing a new A/C compressor or fresh refrigerant oil has been filled into compressor (for example, after blowing through the A/C system), turn ribbed belt pulley of A/C compressor 10 rotations by hand before starting the engine. This prevents damage to the A/C compressor.
- Start the engine with the A/C compressor already turned off (indicator lamp button **A/C** is off) and wait until the idle RPM stabilizes.
- Open the instrument panel vents.



- Select for example the temperature preset “Lo” on the Heater and A/C Controls - EX21- .
- Turn on the A/C compressor (indicator lamp button **AC** is lit) and let the engine idle for at least 5 minutes.



Note

- ◆ *The A/C compressor is always driven by the ribbed belt pulley (no A/C clutch).*
- ◆ *If the A/C compressor is blocked, the compressor shaft overload protection is activated. The blockage is mostly recognized by deformations/bumps on the ribbed belt pulley. In addition, the blockage can be recognized by the abraded rubber in the area of the ribbed belt pulley.*
- ◆ *The A/C compressor is equipped with a protected oil supply, this prevents A/C compressor damage in the event that the system is empty. This means that approximately 40 to 50 cm³ of refrigerant oil remains in the A/C compressor.*
- ◆ *Only start the engine when the refrigerant circuit is filled.*
- ◆ *The engine may only be started when the refrigerant circuit is installed correctly. For example; if the refrigerant lines are not connected to A/C compressor, when the engine is running the A/C compressor may heat up (via internal heat generation) so much that the A/C compressor will be damaged.*
- ◆ *A/C Compressor Regulator Valve - N280- is not activated when the refrigerant circuit is empty and the A/C compressor idles with the engine.*
- ◆ *If it is necessary to start the engine with a discharged refrigerant circuit:*
- ◆ *Refrigerant circuit must be fully assembled.*
- ◆ *At least a quarter of the prescribed refrigerant oil must be in the A/C compressor.*
- ◆ *Do not let the engine RPM go above 2,000.*
- ◆ *The engine should only run as long as is absolutely necessary, maximum 10 minutes.*

3.5 Pressure Relieve Valve on A/C Compressor, Checking

Checking

- ◆ Function: Protects the refrigerant circuit against excessive pressure
- When working on the refrigerant circuit, note the information. Refer to
⇒ [“4.1 Refrigerant Circuit, Specialized Repairs”, page 6](#) .



WARNING

There is a danger of ice-up.

Pressure relief valve will drain refrigerant with engine running and high pressure in refrigerant circuit.

Turn the engine off.



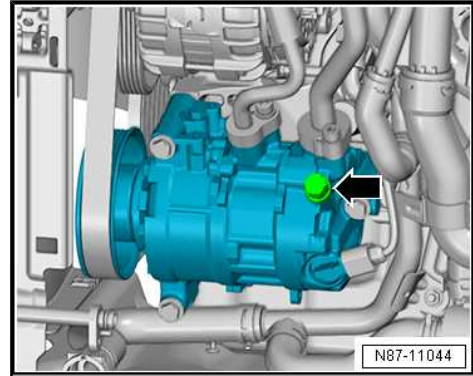
Denso A/C Compressor Relief Valve

- ◆ The pressure relief valve -arrow- has operated when refrigerant oil is found in the close vicinity.
- ◆ In this case, the vehicle must be taken to a specialized A/C repair facility. Refer to
⇒ ["4.1 Refrigerant Circuit, Specialized Repairs", page 6](#) .



Note

For other A/C compressor manufactures the relief valve is located in a similar place.



3.6 Belt Pulley, Removing and Installing

⇒ ["3.6.1 Belt Pulley, Removing and Installing, Denso", page 68](#)

⇒ ["3.6.2 Belt Pulley, Removing and Installing, Sanden", page 70](#)

3.6.1 Belt Pulley, Removing and Installing, Denso

Special tools and workshop equipment required

- ◆ Commercially Available Oil Filter Band Wrench



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Circlip



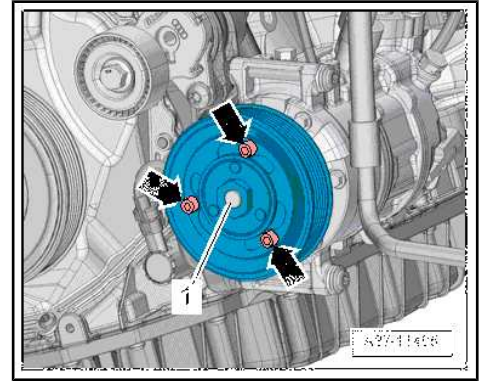
Note

- ◆ *The belt pulley is sensitive to impact, for this reason handle it especially carefully.*
- ◆ *If the overload protection of the belt pulley is tripped, check the Air Conditioning (A/C) compressor for ease of movement, before replacing the belt pulley. Replace an A/C compressor that is not operating smoothly.*
- ◆ *If the drive plate overload protection has activated, the belt pulley can be rotated using the outer part of the drive plate so that the A/C compressor shaft and the hexagon head on the drive plate (inner part of the drive plate) do not rotate.*

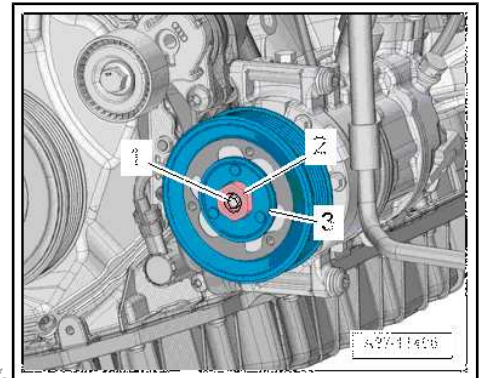


Removing

- Remove the ribbed belt. Refer to ➤ Rep. Gr. 13 ; Cylinder Block, Belt Pulley Side; Ribbed Belt, Removing and Installing .
- Remove the cap -1-.
- Remove the bolts -arrows- by counterholding the belt pulley with an oil filter band wrench.



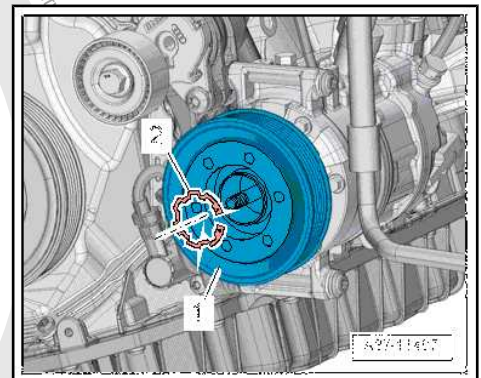
- Remove the nut -2- by counterholding on the input shaft -1- of the A/C compressor.
- Remove the drive plate -3- with the nut.



Note

- ◆ The torque to drive the A/C compressor is transferred to the drive plate via the threaded connection.
- ◆ If, while the A/C compressor is working, the drive plate was attached to the A/C compressor shaft so tight, that it cannot be loosened (the 7 mm wrench cannot transmit the necessary torque) then the A/C compressor must be replaced.

- Remove the circlip -2-.
- Remove the belt pulley -1-.



Installing

Install in reverse order of removal. Note the following:



Note

Replace the circlip.

- Clean the A/C compressor input shaft before setting the belt pulley on it.
- Place the belt pulley onto the A/C compressor input shaft.
 - The fitting must be possible without much force.
- Insert the circlip on the proper side.
 - Flat side faces the A/C compressor
- Clean the input shaft thread for the A/C compressor before removing the drive plate.



Note

The thread of the new drive plate has already been greased with a specific amount of a grease by the manufacturer.

Tightening Specifications

- ◆ Refer to
➤ ["3.2.1 Overview - Belt Pulley, Denso A/C Compressor", page 59](#)



3.6.2 Belt Pulley, Removing and Installing, Sanden



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Circlip



Note

- ◆ *The belt pulley is sensitive to impact, for this reason handle it especially carefully.*
- ◆ *If the overload protection of the belt pulley is tripped, check the Air Conditioning (A/C) compressor for ease of movement, before replacing the belt pulley. Replace an A/C compressor that is not operating smoothly.*
- ◆ *If the drive plate overload protection has activated, the belt pulley can be rotated using the outer part of the drive plate so that the A/C compressor shaft and the hexagon head on the drive plate (inner part of the drive plate) do not rotate.*
- Remove the ribbed belt. Refer to ➤ Rep. Gr. 13 ; Cylinder Block, Belt Pulley Side; Ribbed Belt, Removing and Installing .
- Remove and install the belt pulley. Refer to ➤ [“3.2.2 Overview - Belt Pulley, Sanden A/C Compressor”, page 60](#) .





4 Front Heater and A/C Unit

- ⇒ [“4.1 Overview - Heater and A/C Unit”, page 72](#)
- ⇒ [“4.2 Overview - Attachments for Heater and A/C Unit and Air Intake Housing”, page 77](#)
- ⇒ [“4.3 Overview - Evaporator Housing”, page 79](#)
- ⇒ [“4.4 Overview - Air Distribution Housing Doors and Partitions”, page 81](#)
- ⇒ [“4.5 Heater and A/C Unit, Removing and Installing”, page 83](#)
- ⇒ [“4.6 Heater and A/C Unit, Disassembling and Assembling”, page 87](#)
- ⇒ [“4.7 Air Distribution Housing, Removing and Installing”, page 89](#)
- ⇒ [“4.8 Heater and A/C Unit Bracket, Removing and Installing”, page 89](#)
- ⇒ [“4.9 Evaporator, Removing and Installing”, page 90](#)
- ⇒ [“4.10 Fresh Air Blower Control Module J126 , Removing and Installing”, page 91](#)
- ⇒ [“4.11 Dust and Pollen Filter, Removing and Installing”, page 92](#)
- ⇒ [“4.12 Fresh Air Blower V2 , Removing and Installing”, page 95](#)
- ⇒ [“4.13 Auxiliary Heater Heating Element Z35 with Auxiliary Air Heater Control Module J604 , Checking”, page 96](#)
- ⇒ [“4.14 Auxiliary Heater Heating Element Z35 with Auxiliary Air Heater Control Module J604 , Removing and Installing”, page 97](#)
- ⇒ [“4.15 Heater Core, Removing and Installing”, page 98](#)
- ⇒ [“4.16 Heater Core Coolant Pipes, Removing and Installing”, page 106](#)
- ⇒ [“4.17 Evaporator Temperature Sensor G308 , Removing and Installing”, page 108](#)
- ⇒ [“4.18 Condensation Water Drain, Checking”, page 109](#)
- ⇒ [“4.19 Condensation Water Drain, Removing and Installing”, page 110](#)
- ⇒ [“4.20 Partition, Removing and Installing”, page 112](#)

4.1 Overview - Heater and A/C Unit

- ⇒ [“4.1.1 Overview - Heater and A/C Unit, Climatronic”, page 72](#)

4.1.1 Overview - Heater and A/C Unit, Climatronic



Note

- ◆ *There are different versions and various manufacturers of the heater and Air Conditioning (A/C) units. Individual components of the different heater and A/C units are similar but not the same. Interchanging components from different manufacturers is not permitted. Refer to the Parts Catalog.*



- ◆ A heater and A/C unit manufactured by "Valeo" is shown in the following illustrations. For distinguishing characteristics between manufacturers. Refer to ⇒ ["1 Identification", page 1](#).

Overview - Heater and A/C Unit, Left Side Door Control

1 - Operating Lever

- For operating the defroster and air distribution door

2 - Air Distribution Door Motor

- To check, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.

Heater and Electric-Manual Climate Control System

Air Distribution Door Motor - V428- with Air Distribution Door Motor Position Sensor - G645-

- Removing and installing. Refer to ⇒ ["7.9 Air Distribution Door Motor V428 with Position Sensor Air Distribution Door Motor Position Sensor G645, Removing and Installing", page 144](#).

Climatronic

- Front Air Distribution Door Motor - V426- with Front Air Distribution Door Motor Position Sensor - G642-

- Removing and installing. Refer to

⇒ ["7.8 Front Air Distribution Door Motor V426 with Air Distribution Door Motor Position Sensor G642, Removing and Installing", page 143](#).

3 - Screw

- 1 Nm
- Quantity: 2

4 - Screw

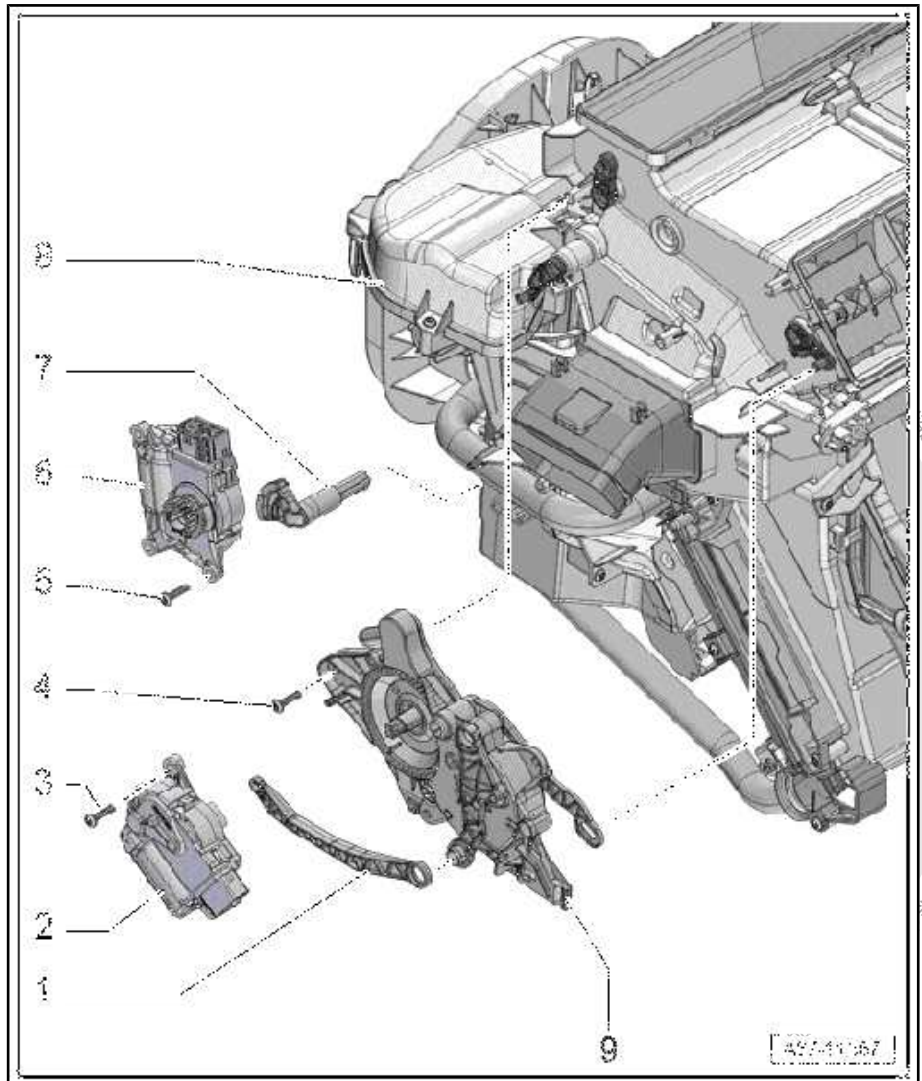
- 1 Nm
- Quantity: 3

5 - Screw

- 1 Nm
- Quantity: 2

6 - Temperature Regulator Door Motor

- To check, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.





Heater and Electric-Manual Climate Control System

- ☐ Temperature Regulator Door Motor - V68- with Temperature Regulator Door Motor Position Sensor - G92-
- ☐ Removing and installing. Refer to [⇒ "7.2 Temperature Regulator Door Motor V68 with Temperature Regulator Door Motor Position Sensor G92 , Removing and Installing", page 131](#) .

Climatronic

- ☐ Left Temperature Door Motor - V158- with Left Temperature Door Potentiometer/Actuator - G220-
- ☐ Removing and installing. Refer to [⇒ "7.5 Left Temperature Door Motor V158 with Left Temperature Door Potentiometer/Actuator G220 , Removing and Installing", page 136](#) .

7 - Operating Lever

- ☐ For warm-air door

8 - Heater and A/C Unit

- ☐ The heater and the heater and A/C unit have many components that are the same
- ☐ There are different versions. Refer to [⇒ "1 Identification", page 1](#) .
- ☐ Interchanging components is not permitted.
- ☐ The following illustrations show the heater manufactured by "Valeo"
- ☐ Removing and installing. Refer to [⇒ "4.5 Heater and A/C Unit, Removing and Installing", page 83](#) .

9 - Defroster- and Air Distribution Door Actuator

- ☐ Only on vehicles with heating or electric-manual climate control system
- ☐ Removing and installing. Refer to [⇒ "7.10 Air Distribution Door Adjuster, Removing and Installing", page 147](#) .

Overview - Heater and A/C Unit, Right Side Door Control



1 - Heater and A/C Unit

- ☐ Removing and installing. Refer to
⇒ ["4.5 Heater and A/C Unit, Removing and Installing", page 83](#).

2 - Operating Lever

- ☐ For defroster door

3 - Screw

- ☐ 1 Nm
- ☐ Quantity: 2

4 - Defroster Door Motor - V107-

- ☐ With the Defroster Door Motor Position Sensor - G135-
- ☐ Only for Climatronic
- ☐ To check, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- ☐ Removing and installing. Refer to
⇒ ["7.3 Defroster Door Motor V107 with Defroster Door Motor Position Sensor G135, Removing and Installing", page 132](#).

5 - Right Temperature Door Motor - V159-

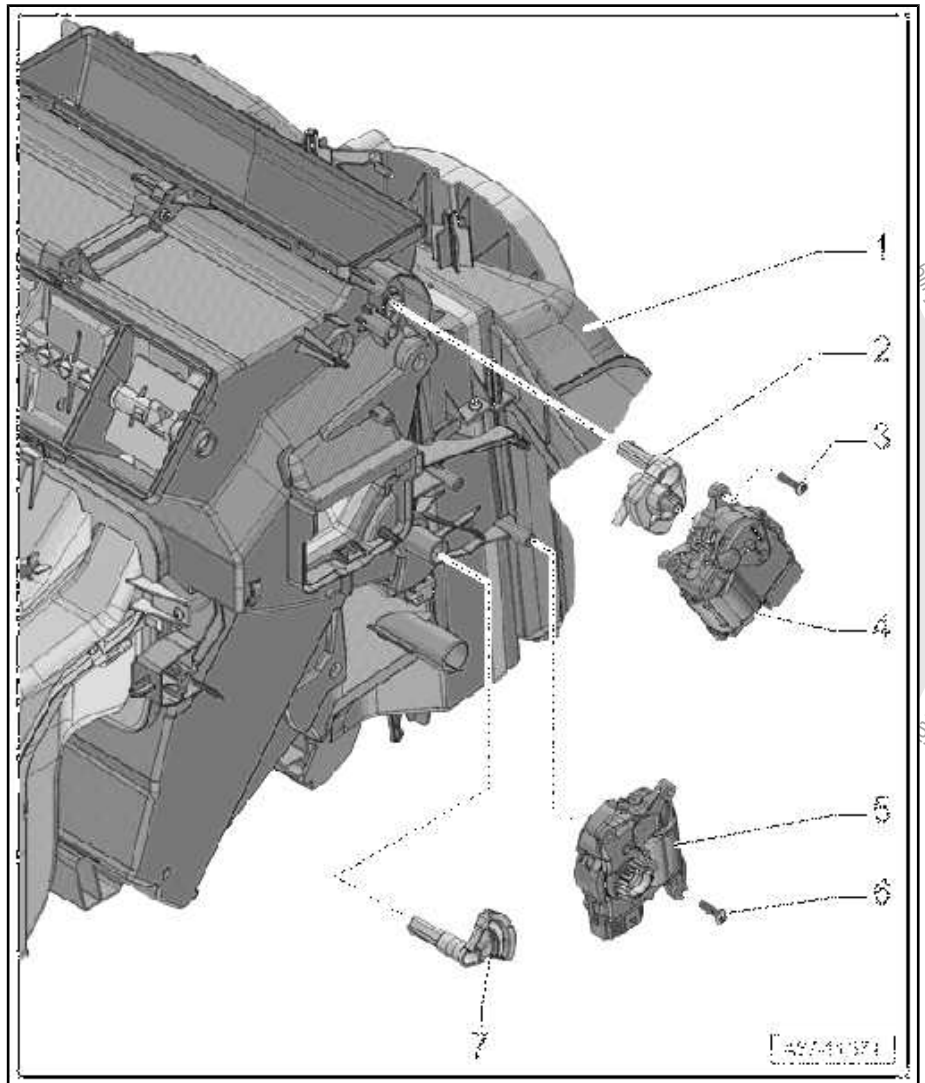
- ☐ With Right Temperature Door Potentiometer/Actuator - G221-
- ☐ Only for Climatronic
- ☐ To check, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- ☐ Removing and installing. Refer to
⇒ ["7.6 Right Temperature Door Motor V159 with Right Temperature Door Potentiometer/Actuator G221, Removing and Installing", page 138](#).

6 - Screw

- ☐ 1 Nm
- ☐ Quantity: 2

7 - Operating Lever

- ☐ For warm-air door



Overview - Heater and A/C Unit, Heater Core, Auxiliary Heater Heating Element

The illustration shows Valeo heater.



1 - Bolt

- ☐ 6 Nm

2 - Coolant Pipe for the Heater Core

- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Coolant supply from engine
- ☐ Removing and installing. Refer to [⇒ "4.15 Heater Core, Removing and Installing", page 98](#).

3 - Clamp

4 - Coolant Pipe for the Heater Core

- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Coolant return to engine
- ☐ Removing and installing. Refer to [⇒ "4.15 Heater Core, Removing and Installing", page 98](#).

5 - Seal

- ☐ Replace after removing.
- ☐ There are different versions. Refer to the Parts Catalog.

6 - Cover

- ☐ For the heater core

7 - Screw

- ☐ 2 Nm

8 - Foam Spacer

- ☐ For sealing/insulating
- ☐ Observe installed position

9 - Bracket

- ☐ For the coolant pipes

10 - Foam Piece

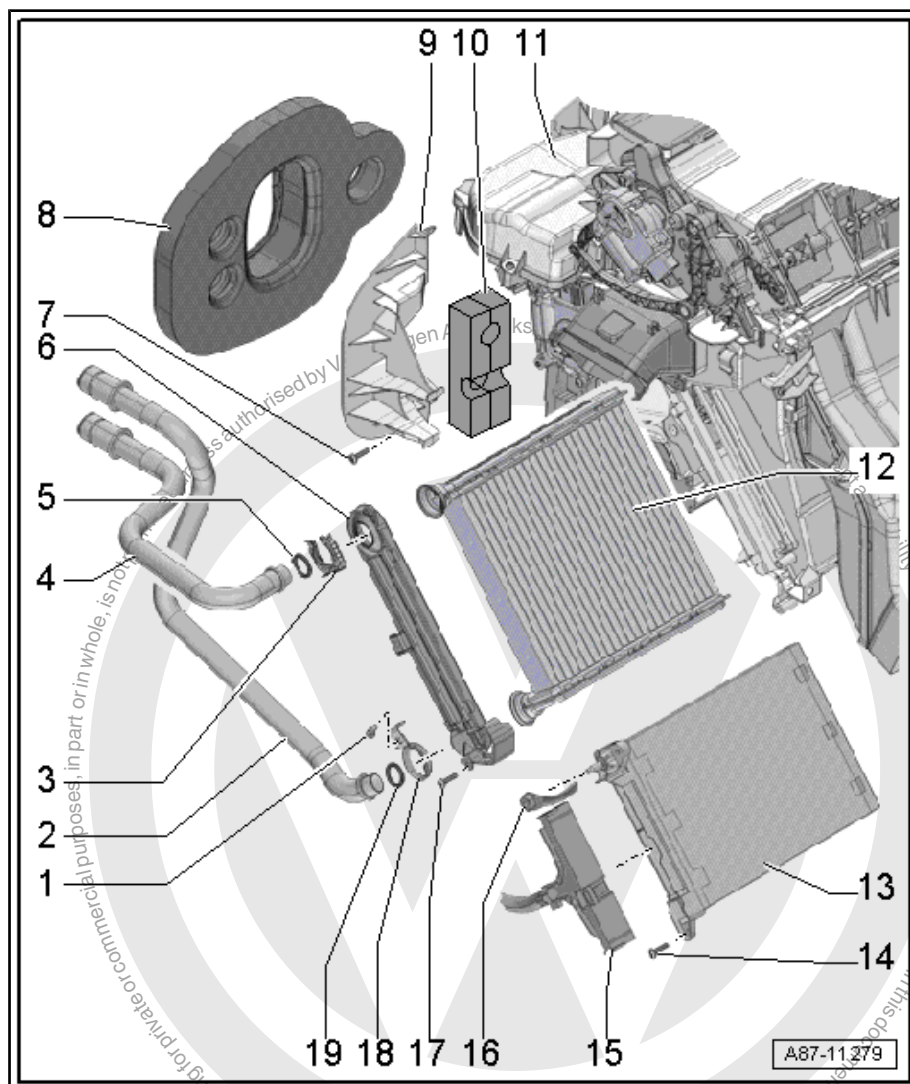
- ☐ For insulating
- ☐ Observe installed position

11 - Heater and A/C Unit

- ☐ For vehicles without an Auxiliary Heater Heating Element - Z35- with Auxiliary Air Heater Control Module - J604- the opening for the Auxiliary Heater Heating Element - Z35- is closed.
- ☐ Removing and installing. Refer to [⇒ "4.5 Heater and A/C Unit, Removing and Installing", page 83](#).
- ☐ Disassembling and assembling. Refer to [⇒ "4.6 Heater and A/C Unit, Disassembling and Assembling", page 87](#).

12 - Heater Core

- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Removing and installing. Refer to [⇒ "4.15 Heater Core, Removing and Installing", page 98](#).





13 - Auxiliary Heater Heating Element - Z35- with Auxiliary Air Heater Control Module - J604-

- ☐ Activation, checking. Refer to
⇒ ["4.13 Auxiliary Heater Heating Element Z35 with Auxiliary Air Heater Control Module J604 , Checking", page 96](#) .
- ☐ Removing and installing. Refer to
⇒ ["4.14 Auxiliary Heater Heating Element Z35 with Auxiliary Air Heater Control Module J604 , Removing and Installing", page 97](#) .

14 - Screw

- ☐ 2 Nm
- ☐ Quantity: 2

15 - Wire

- ☐ For the Auxiliary Heater Heating Element - Z35- with Auxiliary Air Heater Control Module - J604-

16 - Ground (GND) Cable

- ☐ Nut 9 ± 1 Nm
- ☐ For the auxiliary heater

17 - Screw

- ☐ 2 Nm
- ☐ Quantity: 3

18 - Screw Clamp

19 - Seal

- ☐ There are different versions. Refer to the Parts Catalog.

4.2 Overview - Attachments for Heater and A/C Unit and Air Intake Housing



Note

- ◆ *There are different versions and various manufacturers of the heater and Air Conditioning (A/C) units. Individual components of the different heater and A/C units are similar but not the same. Interchanging components from different manufacturers is not permitted. Refer to the Parts Catalog.*
- ◆ *A "Valeo" air intake housing is shown in the following illustration. Refer to ⇒ ["1 Identification", page 1](#) for the different manufacturers' distinguishing characteristics of the heater and A/C units.*



1 - Plastic Screw or Plug (Depending on Version)

- ☐ 0.3 Nm
- ☐ Quantity: 2

2 - Partition

- ☐ Removing and installing. Refer to ➔ ["4.20 Partition, Removing and Installing", page 112](#).

3 - Fresh Air Blower Housing Upper Section

4 - Screw

- ☐ 1 Nm
- ☐ Quantity: 2

5 - Air Intake Duct

- ☐ Do not dismantle
- ☐ With fresh- and air recirculation door
- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Removing and installing. Refer to ➔ ["5.4 Air Intake Duct, Removing and Installing", page 116](#).

6 - Dust, Fresh and Air Recirculation Door Adjuster

- ☐ Only for Climatronic
- ☐ Removing and installing. Refer to ➔ ["7.10 Air Distribution Door Adjuster, Removing and Installing", page 147](#).

7 - Screw

- ☐ 1 Nm
- ☐ Only for Climatronic
- ☐ Quantity: 2

8 - Actuator

- ☐ To check, use the vehicle Vehicle Diagnostic Tester in the "Guided Fault Finding" function. Refer to ➔ Wiring diagrams, Troubleshooting & Component locations.

Heater and Electric-Manual Climate Control System

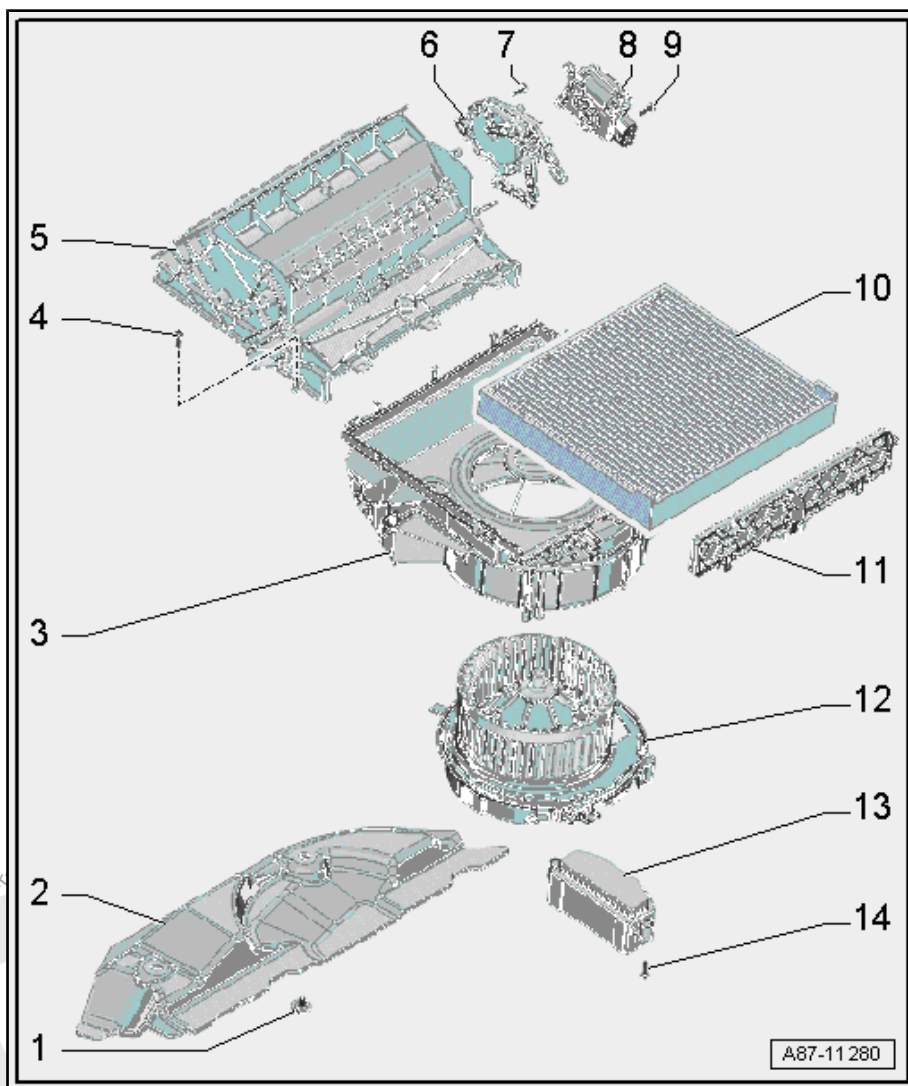
- ☐ Recirculation Door Motor - V113- without position sensor; with end switches in the end stops. Refer to ➔ Wiring diagrams, Troubleshooting & Component locations.
- ☐ Removing and installing. Refer to ➔ ["7.4 Recirculation Door Motor V113, Removing and Installing", page 134](#).

Climatronic

- ☐ Fresh Air/Recirculating Air/Back Pressure Door Motor - V425- with Fresh Air/Recirculating Air/Back Pressure Door Motor Position Sensor - G644-
- ☐ Removing and installing. Refer to ➔ ["7.7 Fresh Air/Recirculating Air/Back Pressure Door Motor V425 with Fresh Air/Recirculating Air/Back Pressure Door Motor Position Sensor G644, Removing and Installing", page 140](#).

9 - Screw

- ☐ 1 Nm





- ☐ Quantity: 2

10 - Dust and Pollen Filter

- ☐ There are different versions. Refer to the Parts Catalog.
- ☐ Replacement interval. Refer to ⇒ Maintenance Tables .
- ☐ Removing and installing. Refer to ⇒ [“4.11 Dust and Pollen Filter, Removing and Installing”, page 92](#) .

11 - Cover

- ☐ For dust and pollen filter

12 - Fresh Air Blower - V2-

- ☐ To check, use the Vehicle Diagnostic Tester in the “Guided Fault Finding” function. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- ☐ Removing and installing. Refer to ⇒ [“4.12 Fresh Air Blower V2 , Removing and Installing”, page 95](#) .

13 - Fresh Air Blower Control Module - J126-

- ☐ To check, use the Vehicle Diagnostic Tester in the “Guided Fault Finding” function. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- ☐ Removing and installing. Refer to
⇒ [“4.10 Fresh Air Blower Control Module J126 , Removing and Installing”, page 91](#) .

14 - Screw

- ☐ 1 Nm
- ☐ Quantity: 2

4.3 Overview - Evaporator Housing



Note

- ◆ *There are different versions and various manufacturers of the heater and Air Conditioning (A/C) units. Individual components of the different heater and A/C units are similar but not the same. Interchanging components from different manufacturers is not permitted. Refer to the Parts Catalog.*
- ◆ *A “Valeo” evaporator housing is shown in the following illustration. Refer to ⇒ [“1 Identification”, page 1](#) for the different manufacturers' distinguishing characteristics of the heater and A/C units.*



1 - Evaporator Housing Lower Section

2 - Evaporator

- ☐ Only with A/C system
- ☐ Check the foam seals for damage and that they are correctly bonded
- ☐ Removing and installing. Refer to
⇒ ["4.9 Evaporator, Removing and Installing", page 90](#).

3 - Seal

- ☐ Only for vehicles with an A/C system.
- ☐ Replacing. Refer to the Parts Catalog for the correct version.
- ☐ Coat with refrigerant oil before installing

4 - Retaining Plate

- ☐ Only with A/C system
- ☐ To secure the refrigerant line and secure the expansion valve

5 - Expansion Valve

- ☐ Only with A/C system
- ☐ Removing and installing. Refer to
⇒ ["2.4 Expansion Valve, Removing and Installing", page 37](#).

6 - Bolt

- ☐ 10 Nm
- ☐ Only with A/C system
- ☐ Quantity: 2

7 - Seal/Insulation

- ☐ Heat insulation for expansion valve
- ☐ The seal for the plenum chamber rear wall does not have an opening for the expansion valve or it is sealed with a foam body on vehicles without an A/C system.

8 - Seal

- ☐ Only for vehicles with an A/C system.
- ☐ Replacing. Refer to the Parts Catalog for the correct version.
- ☐ Coat with refrigerant oil before installing

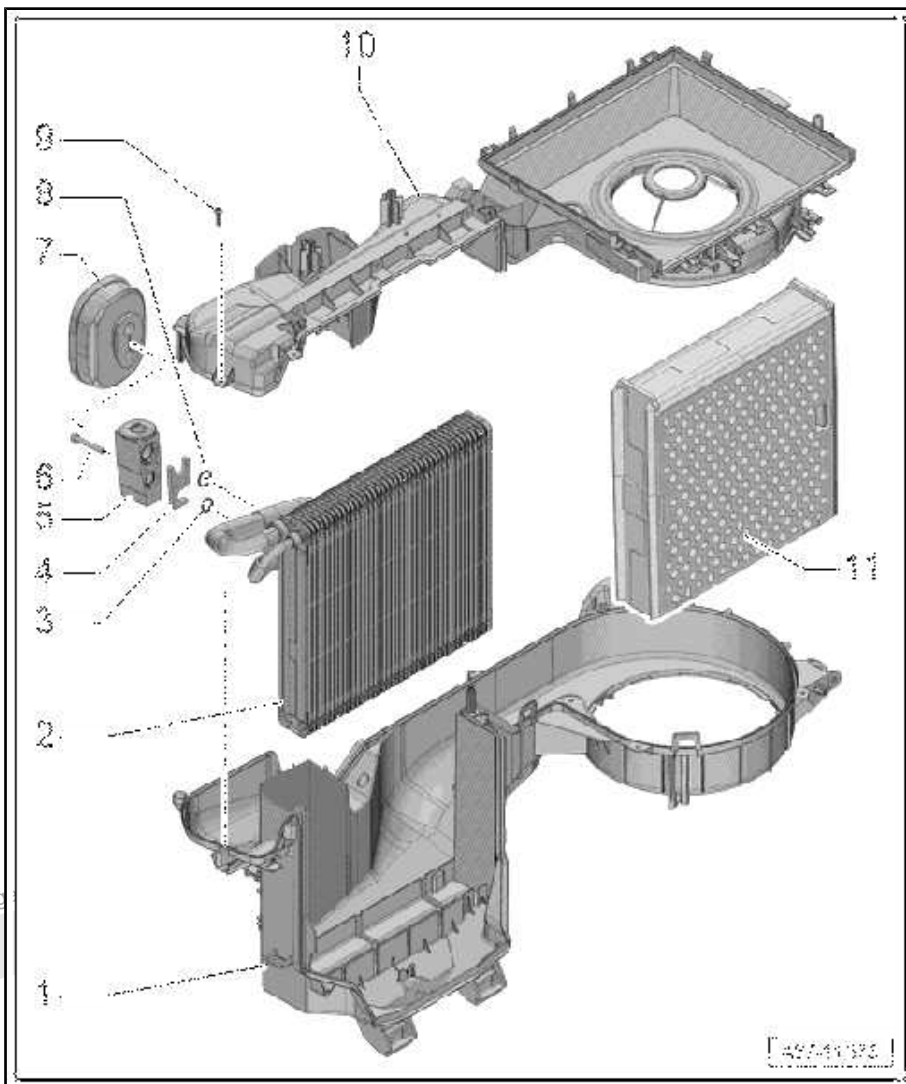
9 - Screw

- ☐ 1.5 Nm
- ☐ Quantity: 8

10 - Evaporator Housing Upper Section

11 - Airflow Regulator

- ☐ Only installed in vehicles without an A/C system.





4.4 Overview - Air Distribution Housing Doors and Partitions

View from the Front



Note

- ◆ -Arrow- indicates direction of travel
- ◆ Refer to ⇒ [“4.1 Overview - Heater and A/C Unit”, page 72](#).

1 - Right Door for Warm Air

- ☐ From the heater core
- ☐ Activated via the right door for cold air

2 - Operating Lever

- ☐ For door control

3 - Right Door for Cold Air

- ☐ From the evaporator
- ☐ Different versions

Heater and Electric-Manual Climate Control System

- ☐ Activated collectively via the left door shaft for cold air and left operating lever by the Temperature Regulator Door Motor - V68-

Climatronic

- ☐ Activated by the Right Temperature Door Motor - V159- via the right operating lever.

4 - Right Operating Lever for Thermostat Door

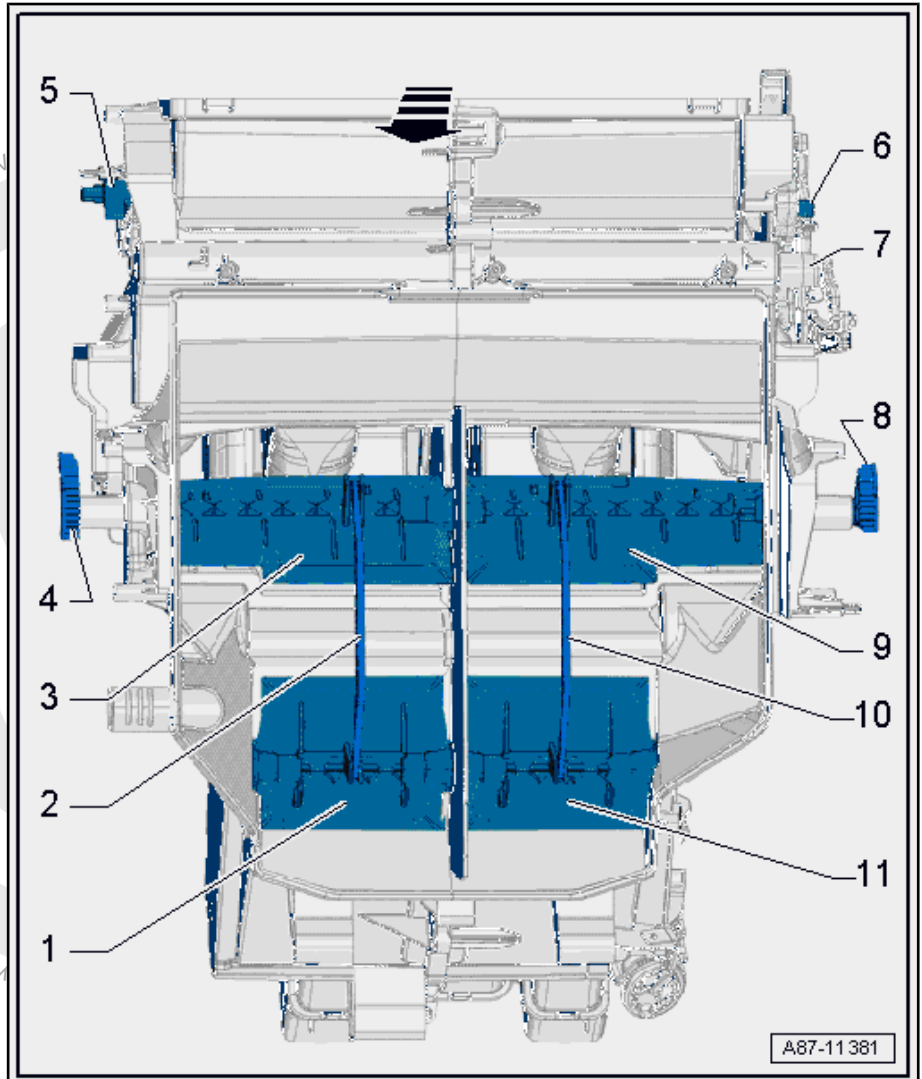
- ☐ Equipment version
- ☐ Only Climatronic
- ☐ Activated by the Right Temperature Door Motor - V159-

5 - “Defrost” Door Operating Lever

- ☐ For the windshield and door windows
- ☐ Equipment version
- ☐ Only Climatronic
- ☐ Activated by the Defroster Door Motor - V107-

6 - “Defrost” Door Operating Lever

- ☐ For the windshield and door windows
- ☐ Equipment version
- ☐ Only heater and electric-manual climate control system
- ☐ Activated by the Air Distribution Door Motor - V428- via the defrost and air distribution adjuster





7 - Air Distribution Door Operating Lever

Heater and Electric-Manual Climate Control System

- ☐ Activated by the Air Distribution Door Motor - V428- via the defrost and air distribution adjuster

Climatronic

- ☐ Activated by the Front Air Distribution Door Motor - V426- via the defrost and air distribution adjuster

8 - Left Operating Lever

Heater and Electric-Manual Climate Control System

- ☐ Activated by the Temperature Regulator Door Motor - V68-

Climatronic

- ☐ Activated by the Left Temperature Door Motor - V158-

9 - Left Door for Cold Air

- ☐ From the evaporator
- ☐ Different versions

Heater and Electric-Manual Climate Control System

- ☐ Activated by the Temperature Regulator Door Motor - V68- via the left operating lever.

Climatronic

- ☐ Activated by the Left Temperature Door Motor - V158- via the left operating lever.

10 - Operating Lever

- ☐ For door control

11 - Left Door for Warm Air

- ☐ From the heater core
- ☐ Activated via the left door for cold air

View from Behind



Note

- ◆ -Arrow- indicates direction of travel
- ◆ Refer to ["4.1 Overview - Heater and A/C Unit", page 72](#).



1 - Rear Air Guide Channel Door

- ☐ Equipment version

Heater and Electric-Manual Climate Control System

- ☐ The air guide channel is sealed with a sealing plug
- ☐ Depending on the manufacturer, not always present with the heater and electric-manual climate control system (not necessary, since the air guide channel is sealed)

Climatronic

- ☐ For the rear vent in the inside the center console

2 - Operating Lever

- ☐ For door control
- ☐ Equipment levels with Climatronic
- ☐ Not always present with the heater and electronic-manually regulated Air Conditioning (A/C) system -1-.

3 - Left Door for the Left Instrument Panel Vent

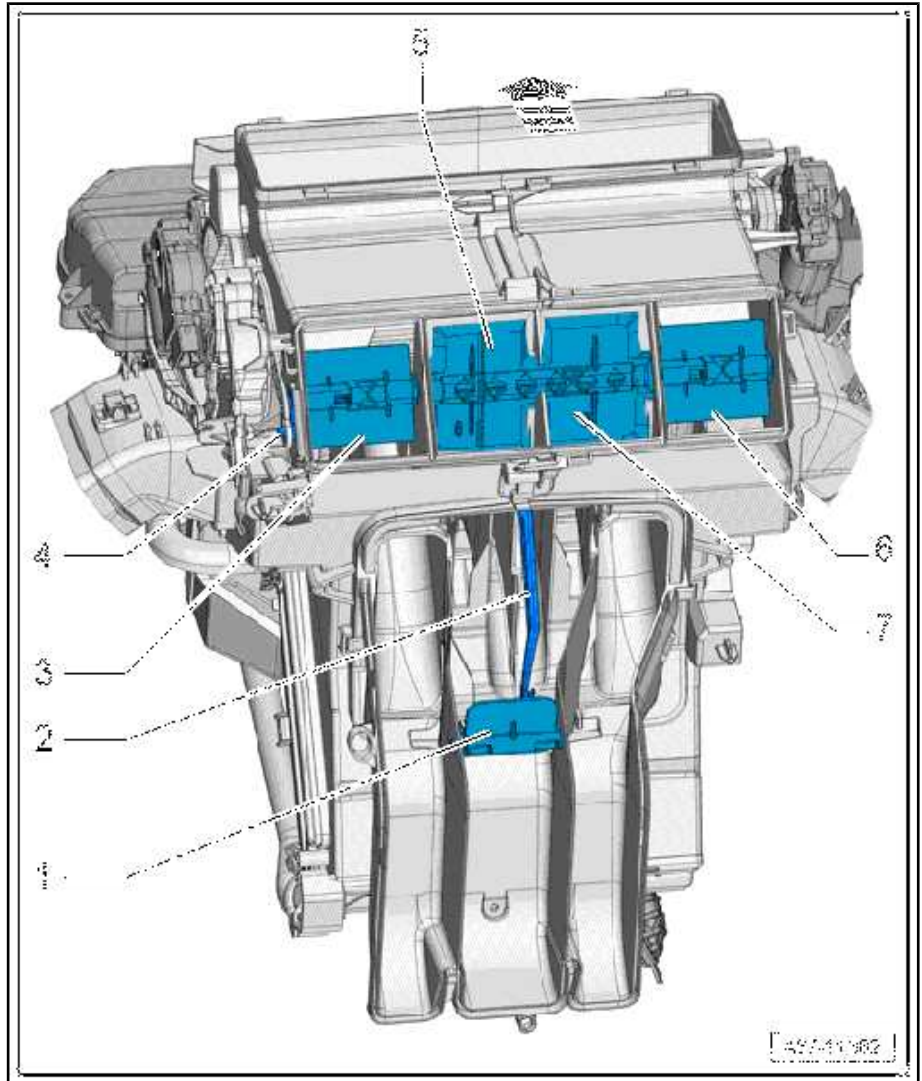
4 - Operating Lever

- ☐ For operating the vent doors
- ☐ Activated via the adjuster - item 9- ➔ [Item 9 \(page 74\)](#)

5 - Left Door for Center Vent

6 - Right Door for the Right Instrument Panel Vent

7 - Right Door for Center Vent



4.5 Heater and A/C Unit, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm - VAG1331-
- ◆ A/C Service Station - VAS6007A- or succeeding model
- ◆ Hose Clamps - Up To 25mm - 3094-
- ◆ Shop Crane - Drip Tray - VAS6208-
- ◆ Engine Bung Set - VAS6122-
- ◆ Commercially Available Compressed-Air Gun



Removing



Note

To improve accessibility, additional components for example engine cover must be removed (depending on engine version). Refer to ➔ Rep. Gr. 10 ; Engine Cover; Engine Cover, Removing and Installing .

- Vehicles with an Air Conditioning (A/C) system: extract refrigerant for example using A/C Service Station - VAS6007A- , only then open the refrigerant circuit. See notes. Refer to ➔ ["2.1 System Overview - Refrigerant Circuit", page 32](#) .
- Vehicles with an A/C system: Remove the refrigerant line with the inner heat exchanger from the expansion valve. Refer to ➔ ["2.7 Refrigerant Lines with Inner Heat Exchanger, Removing and Installing", page 52](#) .
- Place the Shop Crane - Drip Tray - VAS6208- under the engine.



WARNING

Contact with hot engine coolant can cause severe scalding.

Coolant temperature can be above 100 °C (212 °F) with a warm engine. The coolant system is under pressure.

If necessary, reduce pressure and temperature before repairs.

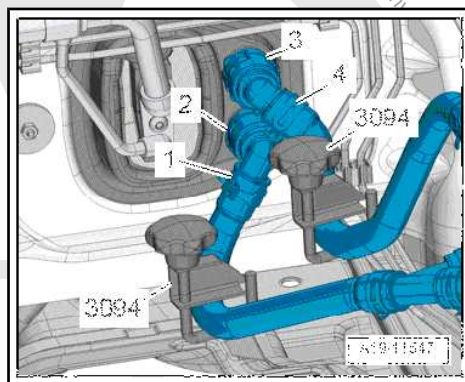
- Mark the coolant hoses -1 and 4-.



Note

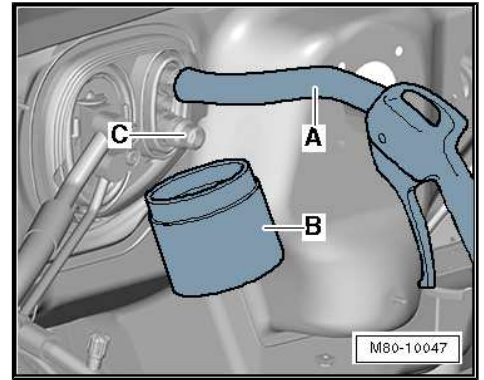
The heater core is designed for a specific coolant flow direction. Therefore, coolant hoses must be connected on the correct sides.

- Clamp off the coolant hoses -1 and 4- using Hose Clamps - Up To 25mm - 3094- .
- Lift the clips -2 and 3-.
- Remove the coolant hoses -1 and 4- from the heater core for the heater.





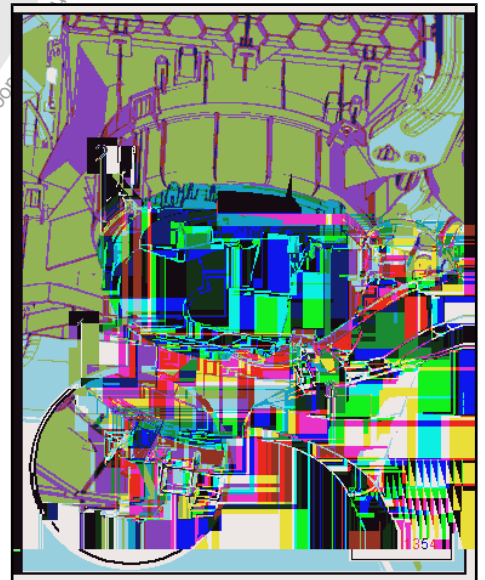
- Connect a suitable hose -A- to the upper connection of the heater core.
- Hold a suitable container -B- under the lower connection of the heater core -C-.
- Carefully blow the remaining coolant above the hose-A- out of the heater core and into the container -B- with a compressed-air gun.
- Seal the open lines and connections with clean plugs from the Engine Bung Set - VAS6122- .



Note

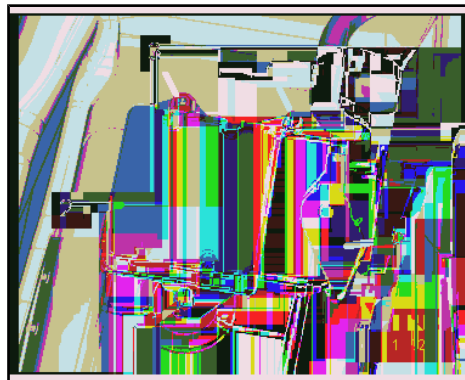
To seal off all open connections on expansion valve, sealing caps from a replacement expansion valve can be used (preventing dirt and moisture from entering the system).

- Remove the instrument panel central tube. Refer to ➤ Body Interior; Rep. Gr. 70 ; Instrument Panel Central Tube; Instrument Panel Central Tube, Removing and Installing .
- Remove the air guide channel to the rear vent (vehicle-specific). Refer to ➤ ["5.8 Rear Center Console Vent Air Guide Channel, Removing and Installing", page 118](#) .
- Lift the rear footwell vent underneath the front seat and pull rearward to facilitate removing the footwell vent from the heater and A/C Unit.
- Remove the rear footwell vent from the heater and A/C unit.
- Disconnect the connector -3- from the Fresh Air Blower Control Module - J126- .
- Remove the connector -5- from the Airbag Control Module - J234- (on the tunnel) -2-.





- Cover the carpet and Airbag Control Module - J234- in the vehicle interior with a waterproof foil and water absorbing paper.



- Remove the condensation water drain hose -2- carefully from the heater and A/C unit -1-.



- Remove the heater and A/C unit -1- from the bracket on the plenum chamber bulkhead.
- Free up the cable channel -3-.
- Free up the wiring harness -2- at the mounts -4- -arrows-.
- Remove the heater and A/C unit to the side.

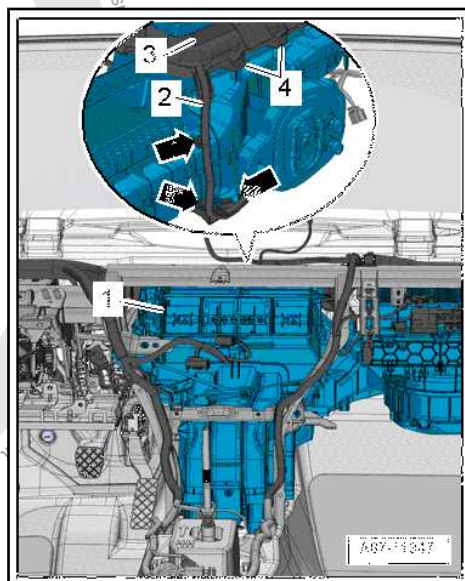
Installing

Install in reverse order of removal. Note the following:



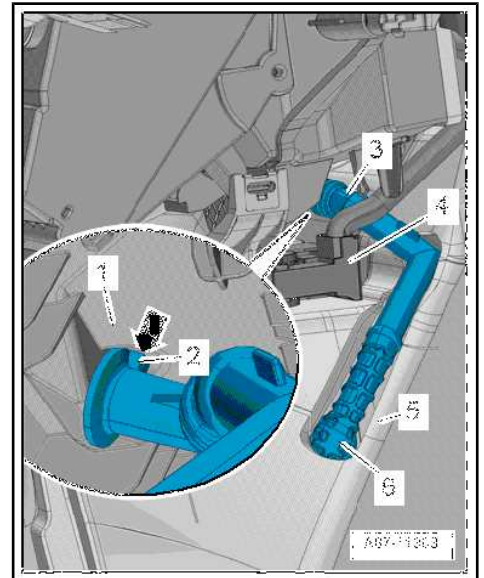
Note

The assistance of a second technician is necessary to install the heater and A/C unit.





- Make sure the condensation water hose -3- is seated correctly.
- The coding -2- and -arrow- must line up with the heater and A/C unit -1-.
- If a commercially available cable tie was used to secure the condensation water drain -3-, replace it.
- The condensation water drain hose must be routed as shown in the illustration from underneath the wiring harness of the Airbag Control Module - J234- -4-.
- Add coolant. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 19 ; Cooling System/Coolant; Coolant, Draining and Filling .
- Fill with R134a refrigerant and refrigerant oil. Refer to ⇒ [“5.1 Refrigerant R134a Capacities”, page 8](#) .
- Check the heater and A/C unit function.



Tightening Specifications

- ◆ Refer to ⇒ [“4.1 Overview - Heater and A/C Unit”, page 72](#)
- ◆ Refer to ⇒ [“2.1 System Overview - Refrigerant Circuit”, page 32](#)
- ◆ Overview - Instrument Panel Central Tube. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel Central Tube; Overview - Instrument Panel Central Tube .
- ◆ Engine cover. Refer to ⇒ Rep. Gr. 10 ; Engine Cover; Engine Cover, Removing and Installing .
- ◆ Air filter housing. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 24 ; Air Filter; Air Filter Housing, Removing and Installing or ⇒ Engine Mechanical, Fuel Injection and Glow Plug; Rep. Gr. 23 ; Air Filter; Overview - Air Filter Housing

4.6 Heater and A/C Unit, Disassembling and Assembling



Note

- ◆ *There are different versions and various manufacturers of the heater and Air Conditioning (A/C) units. Individual components of the different heater and A/C units are similar but not the same. Interchanging components from different manufacturers is not permitted. Refer to the Parts Catalog.*
- ◆ *A heater and A/C unit manufactured by “Valeo” is shown in the following illustrations. For distinguishing characteristics between manufacturers. Refer to ⇒ [“1 Identification”, page 1](#) .*



1 - Air Distribution Housing

- ☐ Different versions
- ☐ Interchanging components is not permitted.
- ☐ The following illustrations show the heater manufactured by "Valeo"
- ☐ Depending on vehicle equipment level with or without the Auxiliary Heater Heating Element - Z35- with Auxiliary Air Heater Control Module - J604-
- ☐ Manufacturer differences. Refer to [⇒ "1 Identification", page 1](#).

2 - Wiring Harness

- ☐ There are different versions. Refer to the Parts Catalog.

3 - Evaporator Housing



Note

For vehicles without an airflow regulator is in place of the evaporator.

4 - Screw

- ☐ 1 Nm
- ☐ Quantity: 3

5 - Left Bracket

- ☐ For heater and A/C unit
- ☐ Removing and installing. Refer to [⇒ "4.8 Heater and A/C Unit Bracket, Removing and Installing", page 89](#).

6 - Nut

- ☐ 4.5 Nm

7 - Nut

- ☐ 4.5 Nm

8 - Right Bracket

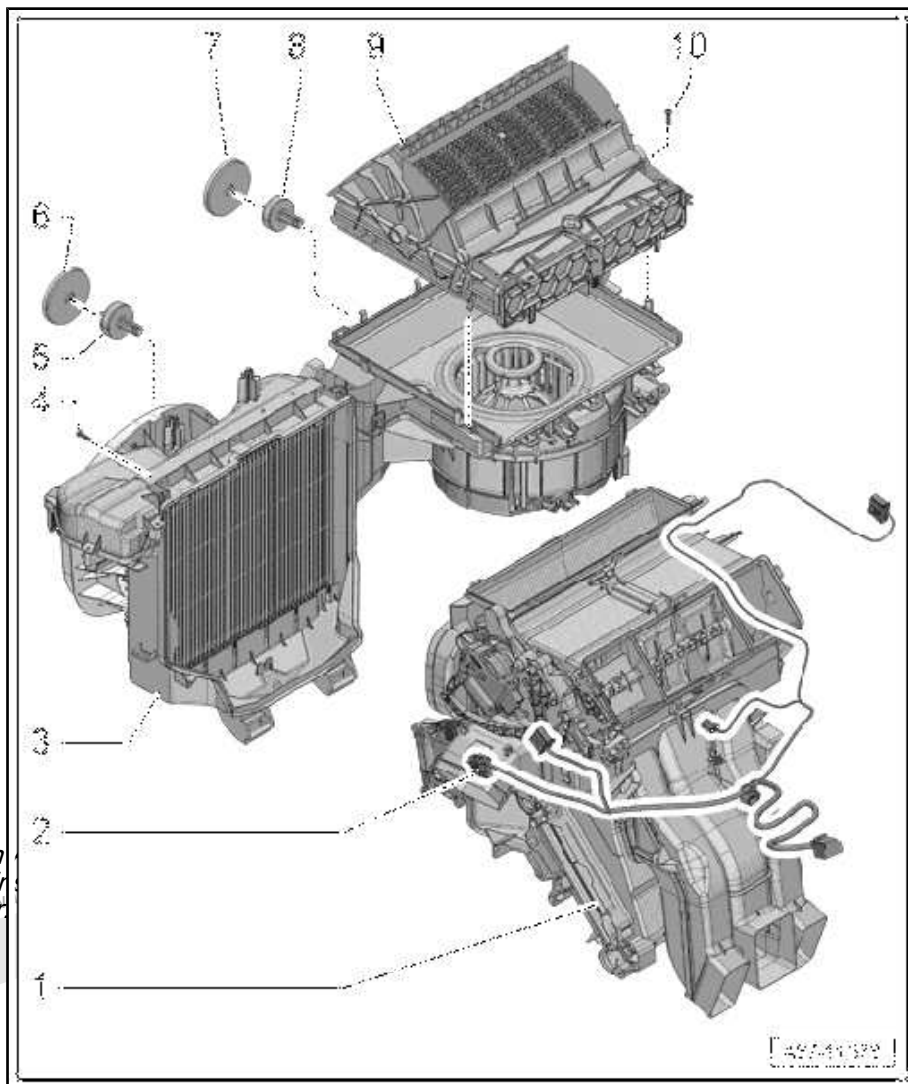
- ☐ For heater and A/C unit
- ☐ Removing and installing. Refer to [⇒ "4.8 Heater and A/C Unit Bracket, Removing and Installing", page 89](#).

9 - Air Intake Housing

- ☐ There are different versions. Refer to the Parts Catalog.

10 - Screw

- ☐ 1 Nm
- ☐ Quantity: 2





4.7 Air Distribution Housing, Removing and Installing

Removing

- Remove the heater and A/C unit. Refer to
⇒ [“4.5 Heater and A/C Unit, Removing and Installing”, page 83](#) .
- Remove the coolant pipes from the heater core. Refer to
⇒ [“4.16 Heater Core Coolant Pipes, Removing and Installing”, page 106](#) .
- Disconnect the connector from the fresh/recirculated air door motor and free up the wiring harness.
- Remove screws -2-.
- Release the mounting tabs -1 and 3-.
- Tilt the air distribution housing -4- toward the rear -arrow- and disengage.

Installing

Install in reverse order of removal. Note the following:

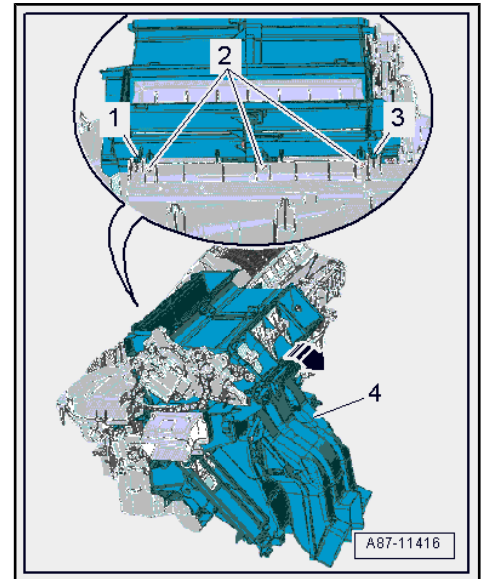
Tightening Specifications

- ◆ Refer to
⇒ [“4.6 Heater and A/C Unit, Disassembling and Assembling”, page 87](#)



Note

The smallest leaks at the tongue and groove joint between the air distribution housing and the evaporator housing can lead to whistling noises due to escaping air. Coat the connecting surfaces lightly with, for example, silicone grease. Refer to the Parts Catalog.



4.8 Heater and A/C Unit Bracket, Removing and Installing

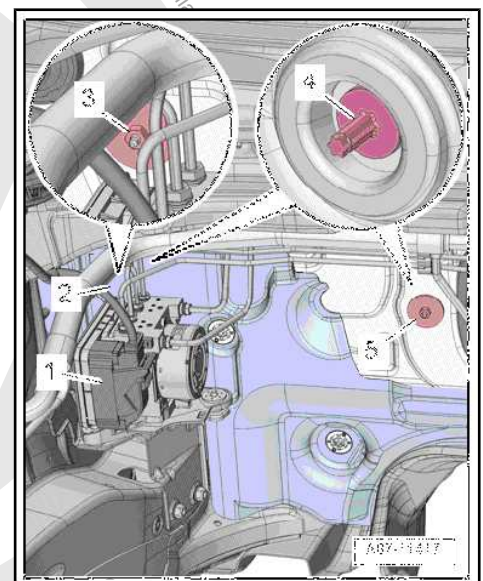
Removing

- Remove the heater and A/C unit. Refer to
⇒ [“4.5 Heater and A/C Unit, Removing and Installing”, page 83](#) .
- Disconnect the connector -1-.
- Fold the heat shield -2- behind the ABS unit to the side.
- Remove the nuts -3 and 5-.
- Remove the bracket -4- in the interior.



Note

*If the nut above the ABS unit is not accessible as described, the refrigerant pipe with the inner heat exchanger must be removed. Refer to
⇒ [“2.7 Refrigerant Lines with Inner Heat Exchanger, Removing and Installing”, page 52](#) .*





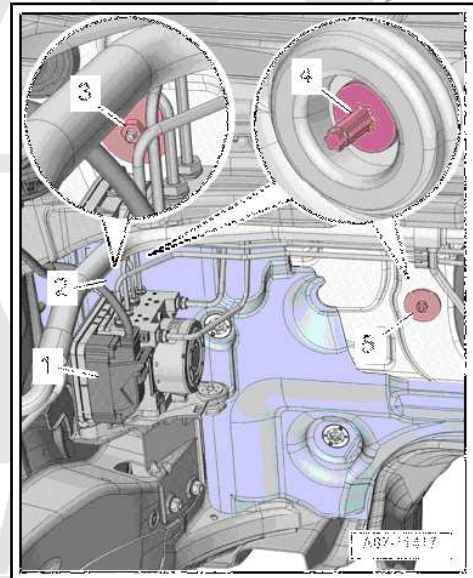
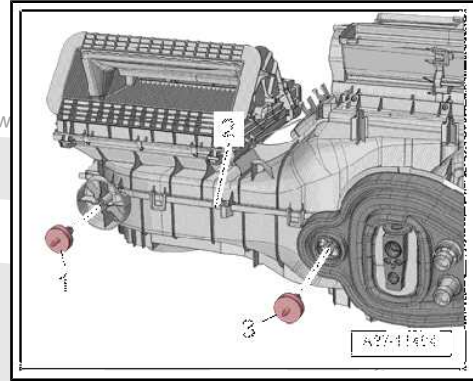
Installing

Install in reverse order of removal. Note the following:

- Insert the bracket -1- and 3- into the mount on the heater and A/C unit -2- and bring the heater and A/C unit into the installation position.
- Install the heater and A/C unit. Refer to ➔ [“4.5 Heater and A/C Unit, Removing and Installing”, page 83](#).
- Tighten the nuts -3- and 5- on the brackets.
- Install the remaining components.
- Check the Diagnostic Trouble Code (DTC) memory and erase any displayed entries using the Vehicle Diagnostic Tester in the “Guided Fault Finding” function.
- Check the heater and A/C unit function.

Tightening Specifications:

Component	Tightening Specifications
Nut	4.5 Nm



4.9 Evaporator, Removing and Installing



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

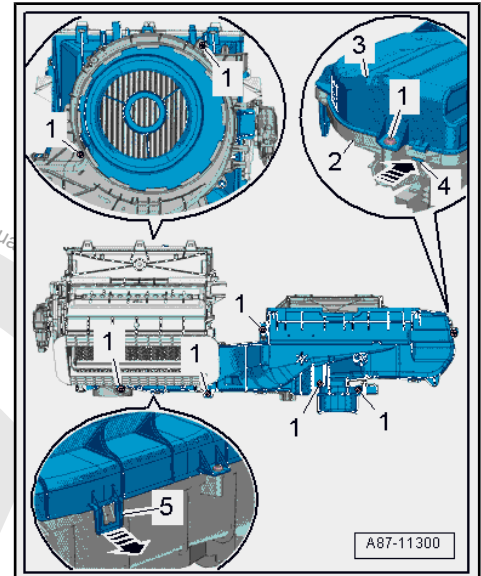
- ◆ Seals

Removing

- When working on the refrigerant circuit, note the information. Refer to ➔ [“4.1 Refrigerant Circuit, Specialized Repairs”, page 6](#).
- Remove the heater and Air Conditioning (A/C) unit. Refer to ➔ [“4.5 Heater and A/C Unit, Removing and Installing”, page 83](#).



- Remove bolts -1-.
- Release the mounting tabs -4 and 5- -arrows-.
- Remove the evaporator housing upper section -3- from the lower section -2-.

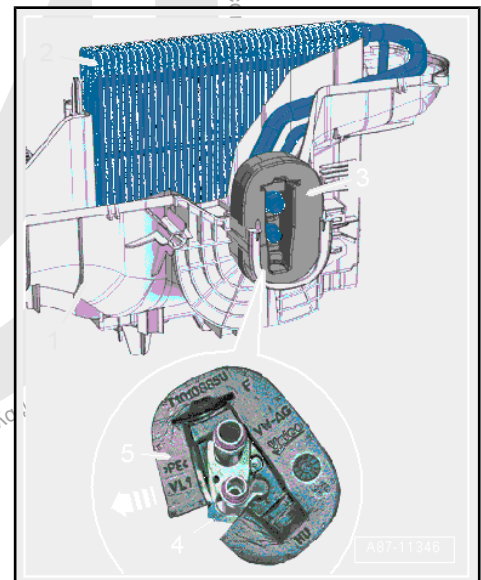


- Remove the evaporator -2- from the evaporator housing lower section -1-.
- Remove the expansion valve. Refer to [⇒ "2.4 Expansion Valve, Removing and Installing", page 37](#).
- Remove the seal/insulation -3- by pulling the moving part -5- to the side -arrow-.
- Remove the retaining plate -4- for the refrigerant lines.

Installing

Install in reverse order of removal. Note the following:

- If a new expansion valve is not installed on the evaporator, transfer it from the old evaporator. Refer to [⇒ "2.4 Expansion Valve, Removing and Installing", page 37](#).
- Replace the seals.



Note

- ◆ *The smallest leaks at the tongue and groove joint between the upper and lower sections of the evaporator housing can lead to whistling noises due to escaping air. Coat the connecting surfaces lightly with, for example, silicone grease. Refer to the Parts Catalog.*
- ◆ *Before inserting the evaporator, check condensation water drain and clean drain if necessary.*
- ◆ *Before inserting evaporator, clean evaporator housing and the evaporator, if necessary.*

Tightening Specifications

- ◆ Refer to [⇒ "4.3 Overview - Evaporator Housing", page 79](#)

4.10 Fresh Air Blower Control Module - J126- , Removing and Installing

Removing

- Remove the partition. Refer to [⇒ "4.20 Partition, Removing and Installing", page 112](#).



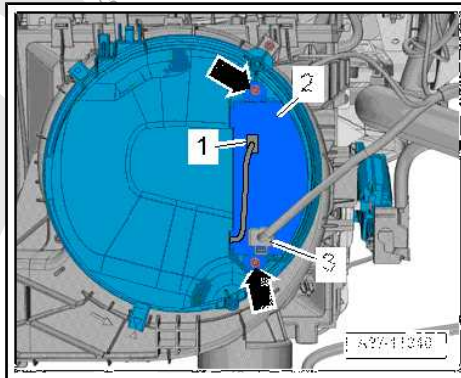
- Disconnect the connectors -1 and 3-.
- Remove the bolts -arrows-.



WARNING

Risk of severe burns.

- ◆ *If the Fresh Air Blower - V2- with the Fresh Air Blower Control Module - J126- was in operation before the removal, it may be hot.*
- ◆ *Do not touch the hot radiating surface of the Fresh Air Blower Control Module - J126- .*



- Remove the control module -2- from the Fresh Air Blower - V2- .

Installing

Install in reverse order of removal. Note the following:

- Check the Fresh Air Blower - V2- function.

Tightening Specifications

- ◆ Refer to
⇒ ["4.2 Overview - Attachments for Heater and A/C Unit and Air Intake Housing", page 77](#)

4.11 Dust and Pollen Filter, Removing and Installing

Special tools and workshop equipment required

- ◆ Trim Removal Wedge - 3409-
- ◆ Blower Motor Cover Plate - T10532-
- ◆ Commercially Available Vacuum Cleaner

Removing

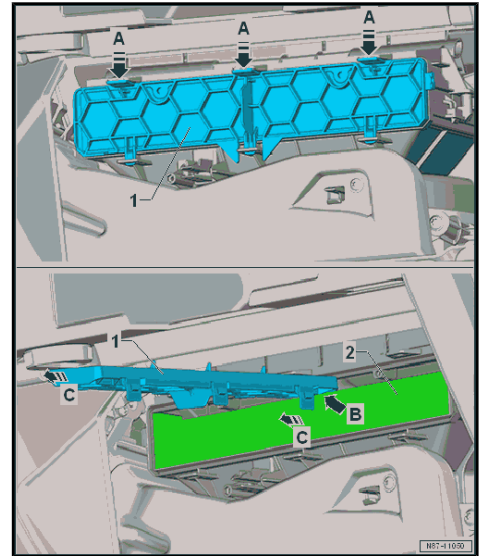


Note

- ◆ *Handle customer property in the glove compartment carefully.*
- ◆ *Store objects from the glove compartment in a sealable plastic bag.*
- Bring the glove compartment lid into the service position. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Glove Compartment Lid Service Position .



- Release the cover -1- in direction of -arrow- and remove.



- Push the Blower Motor Cover Plate - T10532- -2- under the pollen filter -1-.





- Engage the cover -1- in the dust and pollen filter -2- -arrow B-.



Caution

Risk of damaging the Fresh Air Blower - V2- due to dirt falling out of the dust and pollen filter.

- ◆ **Carefully pull the dust and pollen filter out of the installation shaft.**

- Remove the cover -1- in direction of -arrow C-.
- Make sure that the Blower Motor Cover Plate - T10532- is not removed with it.
- Remove dirt and leaves from the Blower Motor Cover Plate - T10532- with a commercially available vacuum cleaner.

Installing

- Install in reverse order of removal. When doing this, note the following:
- Note installation position of the dust and pollen filter during assembly.

Dust and Pollen Filter Information



Note

- ◆ *Different filters are planned for this vehicle depending on the equipment level.*
- ◆ *On vehicles without an A/C system and on vehicles with electronic-manually regulated A/C system (each without the Air Quality Sensor - G238-), a dust and pollen filter without an activated charcoal element from the manufacturer is installed. When servicing, a dust and pollen filter with an activated charcoal element may also be installed in these vehicles. Refer to the Parts Catalog.*
- ◆ *On vehicles with a Climatronic (with Air Quality Sensor - G238-) a dust and pollen filter with an activated charcoal element from the manufacturer is installed. Refer to the Parts Catalog.*

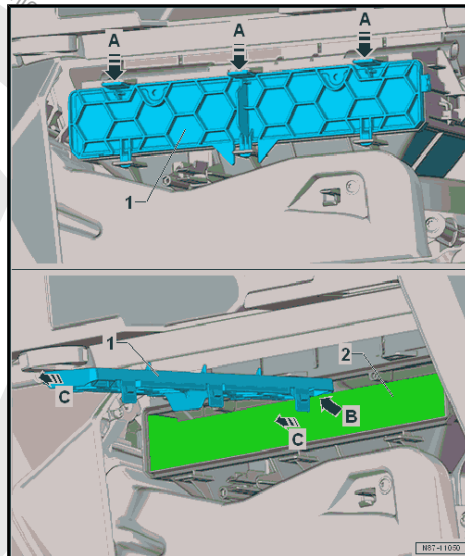
Dust and Pollen Filter with Activated Charcoal Insert

The dust and pollen filter with an activated charcoal insert is only installed on vehicles with Air Quality Sensor - G238- .

The activated charcoal filter continues to function as a dust and pollen filter, however in addition the activated charcoal filter can also filter out gaseous pollutants, for example ozone, benzene, nitrogen dioxide from the air flow. The basic task of the activated charcoal layer in the dust and pollen filter is to keep load peaks out of the passenger compartment.

The activated charcoal also has the task of removing certain gaseous contaminants from the air flowing through. The activated charcoal layer in the dust and pollen filter reacts differently to various pollutants in the air.

- ◆ Certain pollutants bond permanently in the active-carbon layer.
- ◆ Others are converted into noxious bonds like in a catalytic converter.





- ◆ For the rest the activated charcoal works as a condenser (capacitor). With increasing load pollutants are absorbed, until a certain saturation is reached. If the amount of pollutants decreases, the activated charcoal layer continuously releases the absorbed particles.

Under the following operating conditions the dust and pollen filter must be replaced earlier than required, because a certain amount of pollutant particles is permanently bonded to the activated charcoal layer.

- ◆ If the vehicle is driven in areas with heavy air pollution.
- ◆ If vehicle is driven with the “automatic recirculated-air mode” switched off.



Note

- ◆ *The active carbon layer in the dust and pollen filter is saturated after a certain time.*
- ◆ *A saturated filter can no longer absorb pollutants and the pollutants can flow through freely.*

4.12 Fresh Air Blower - V2- , Removing and Installing



Note

If only the Fresh Air Blower - V2- is faulty, Fresh Air Blower Control Module - J126- removing and installing. Refer to ⇒ “4.10 Fresh Air Blower Control Module J126 , Removing and Installing”, page 91 .

Removing

The Fresh Air Blower - V2- is accessible from footwell on front passenger side.

- Remove the partition. Refer to ⇒ “4.20 Partition, Removing and Installing”, page 112 .



- Disconnect the connector -3-.
- Remove the bolt -2-, if equipped.
- Lift the securing tab -4- and turn the fresh air blower -1- clockwise -arrow-.
- Remove the fresh air blower from the evaporator housing lower section.



Caution

Fan wheel imbalance.

- ◆ ***Do not grasp fan wheel of Fresh Air Blower - V2- , force against the fan wheel or shifting the balancing weights fastened to fan wheel may cause imbalance and then problems during operation.***



Installing

Install in reverse order of removal.

- Check the Diagnostic Trouble Code (DTC) memory and erase any displayed entries using the Vehicle Diagnostic Tester in the “Guided Fault Finding” function.
- Then check the Fresh Air Blower - V2- function.

Tightening Specifications

- ◆ Refer to
⇒ [“4.2 Overview - Attachments for Heater and A/C Unit and Air Intake Housing”, page 77](#)

4.13 Auxiliary Heater Heating Element - Z35- with Auxiliary Air Heater Control Module - J604- , Checking

Checking

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester with Vehicle Diagnosis System - Trigger Clamp - 100A - VAS5051B/7-

Test Conditions

- The intake temperature is below 19 °C (66.2 °F)
- The coolant temperature is below 80 °C (176 °F)
- The passenger compartment temperature is approximately 20 °C (68 °F)
- Battery voltage greater than 11 V
- Alternator load not greater than 50% (terminal DF)
- Engine RPM higher than 450
- Turn the interior temperature control to maximum heating. (For vehicles with Climatronic select the high setting).

Test Sequence

- Remove the left footwell center console trim. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console; Overview - Center Console .

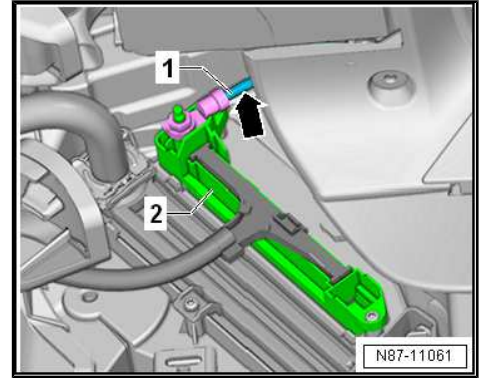


- Using the Vehicle Diagnostic Tester and the Vehicle Diagnosis System - Trigger Clamp - 100A - VAS5051B/7- measure the current draw -arrows- on the Ground (GND) cable -1- from Auxiliary Heater Heating Element - Z35- -2-.

Slight heating output $\approx 30A$

Medium heating output $\approx 60A$

Large heating output $\approx 80A$



4.14 Auxiliary Heater Heating Element - Z35- with Auxiliary Air Heater Control Module - J604- , Removing and Installing

Removing

- Remove the driver side knee airbag. Refer to ➔ Body Interior; Rep. Gr. 69 ; Knee Airbags; Overview - Knee Airbag .
- Remove the left footwell center console trim. Refer to ➔ Body Interior; Rep. Gr. 68 ; Center Console; Overview - Center Console .



Caution

Danger of electrical short circuit.

Disconnect the battery before assembly work. Refer to ➔ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Disconnecting and Connecting .



- Loosen the nut -3- and then remove the Ground (GND) cable -4-.

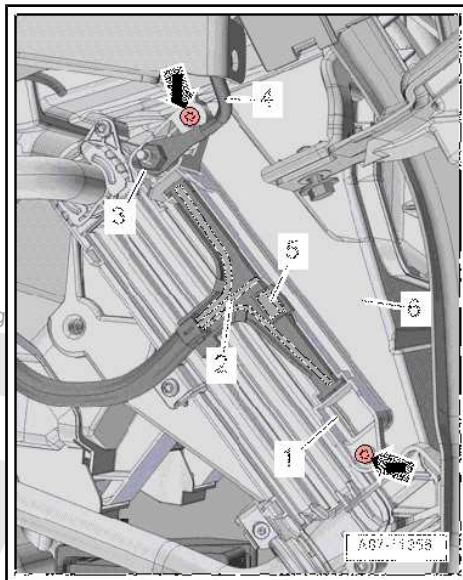


WARNING

Risk of severe burns.

- ◆ *If the Auxiliary Heater Heating Element - Z35- with the Auxiliary Air Heater Control Module - J604- was in operation before the removal, it may be hot.*
- ◆ *Do not touch hot metal surfaces on the Auxiliary Heater Heating Element - Z35- with the Auxiliary Air Heater Control Module - J604-.*

- Disconnect the connector -2- by sliding the retainer -5- upward and pressing the release inward.
- Remove the bolts -arrows-.
- Remove the Auxiliary Heater Heating Element - Z35- with the Auxiliary Air Heater Control Module - J604- -1- left from the heater and A/C unit -6-.



Installing



Note

Pay attention to the correct position and threaded connection of the GND cable.

Install in reverse order of removal.

Tightening Specifications

- ◆ Refer to ➔ [“4.1 Overview - Heater and A/C Unit”, page 72](#)

4.15 Heater Core, Removing and Installing

➔ [“4.15.1 Heater Core, Removing and Installing, Valeo”, page 98](#)

➔ [“4.15.2 Heater Core, Removing and Installing, Denso”, page 102](#)

4.15.1 Heater Core, Removing and Installing, Valeo

Special tools and workshop equipment required

- ◆ Shop Crane - Drip Tray - VAS6208-
- ◆ Hose Clamps - Up To 25mm - 3094-
- ◆ Engine Bung Set - VAS6122-
- ◆ Compressed Air Gun, Commercially Available



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

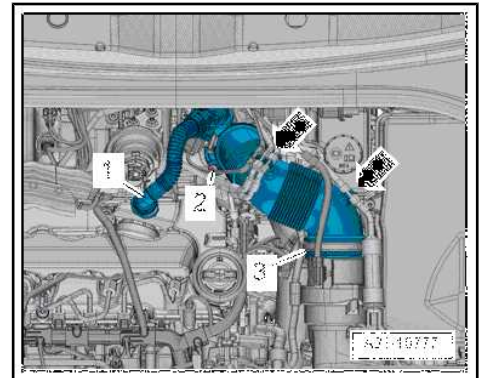
- ◆ Seals



Removing

Vehicles with a TDI Engine

- Press the release buttons on the hose -1- for the crankcase ventilation and remove the hose from the cylinder head cover.
- Free up the vacuum hoses at the air guide pipe -arrows-.
- Loosen the hose clamp -3-.
- Remove the bolt -2- and tilt the air guide pipe with the connection downward and remove it from the turbocharger.



For All Vehicles

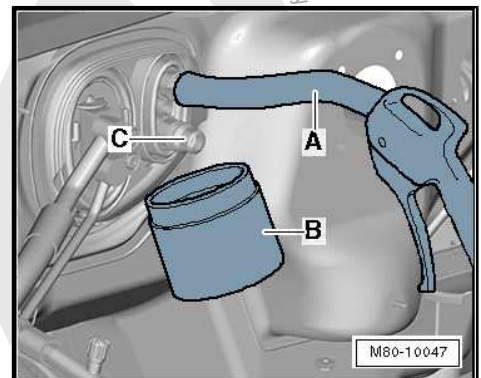
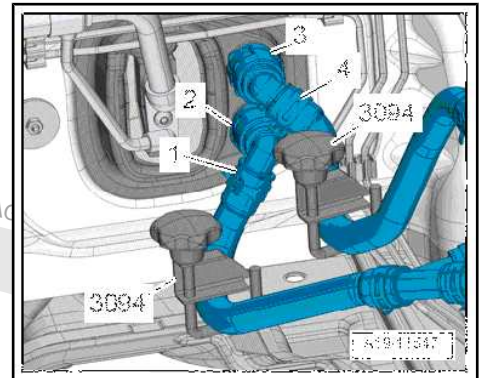
- Mark the installed position of the coolant hoses -1 and 4-.



Note

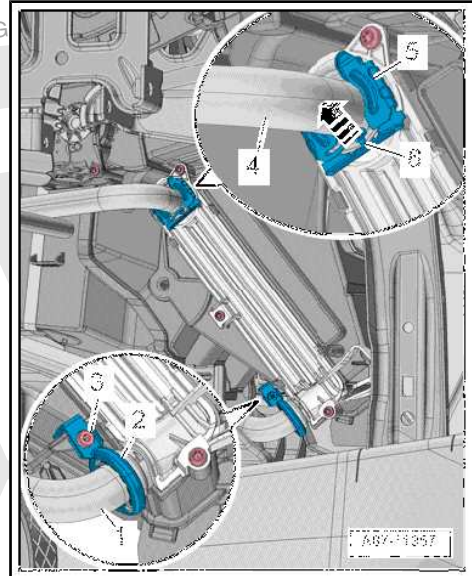
The heater core is designed for a specific coolant flow direction. Therefore, coolant hoses must be connected on the correct sides.

- Clamp off the coolant hoses -1 and 4- using Hose Clamps - Up To 25mm - 3094- .
- Lift the clips -2 and 3-.
- Remove the coolant hoses -1 and 4- from the heater core for the heater.
- Connect a suitable hose -A- to the upper connection of the heater core.
- Hold a suitable container -B- under the lower connection of the heater core -C-.
- Carefully blow the remaining coolant above the hose-A- out of the heater core and into the container -B- with a compressed-air gun.
- Seal the open lines and connections with clean plugs from the Engine Bung Set - VAS6122- .
- Remove the driver side knee airbag. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Knee Airbags; Overview - Knee Airbag .
- Remove the left footwell center console trim. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console; Overview - Center Console .
- Vehicles with an auxiliary air heater: remove the Auxiliary Heater Heating Element - Z35- with the Auxiliary Air Heater Control Module - J604- . Refer to ⇒ ["4.14 Auxiliary Heater Heating Element Z35 with Auxiliary Air Heater Control Module J604 , Removing and Installing", page 97](#) .
- Cover the area beneath the connections for the coolant hoses in the plenum chamber, for example, with waterproof foil and water absorbing paper.

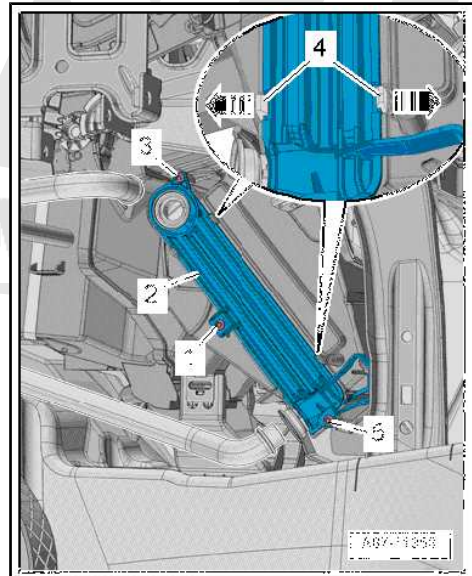




- Lift the retainer -6- and remove the clip -5-. Remove the coolant line -4- from the heater core.
- Remove the bolt -3-.
- Remove the screw clamp -2- and then remove the coolant line -1- from the heater core.
- Seal the open lines and connections with clean plugs from the Engine Bung Set - VAS6122- .



- Remove the bolts -1, 3 and 5-.
- Release the securing tabs -4- -arrows- and remove the cover -2-.



- If the noise insulation cannot be removed easily, open the cover tabs -arrows-.
- Remove the heater core to the left.

Installing

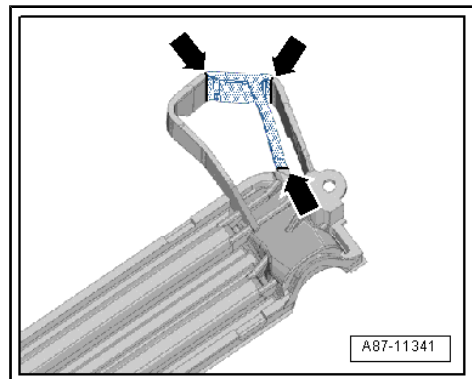
Install in reverse order of removal. Note the following:



Note

Replace the seals.

- With the heater core removed, check the heater shaft for debris.
- If necessary, remove any dirt or coolant residue.
- Vehicles with a TDI engine: Check the removed auxiliary heater heating element shaft for debris and clean if necessary.



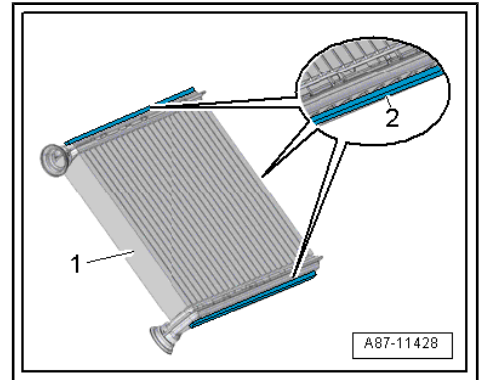


- Check the foam seals -2- attached to the heater core -1- for damage and replace if necessary.



Note

- ◆ *If not bonded correctly, the foam seal may curl up during insertion.*
- ◆ *Cold air may flow past heater core if the foam seal is damaged or not properly installed.*

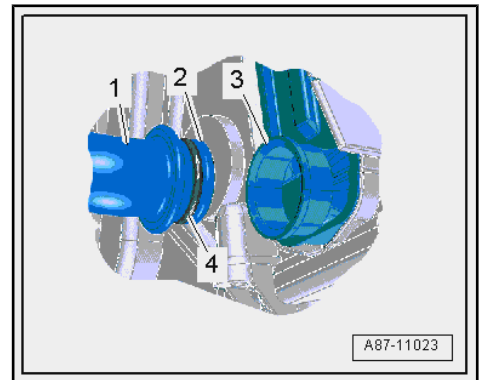


- Check the heater core connection -3- and the connection -2- for the coolant pipes for damage or debris.
- Clean the sealing surface for the seal and glaze it.
- Coat a new seal -4- with coolant (or lightly with silicone grease) and attach it to the coolant pipe -1-.
- Carefully slide the heater core all the way into the heater and A/C unit until stop.



Note

When inserting the heater core, make sure that the connections and the coolant pipes are not damaged.



- Slide the coolant pipes into the heater core until stop.



Caution

Risk of leaks at the heater core.

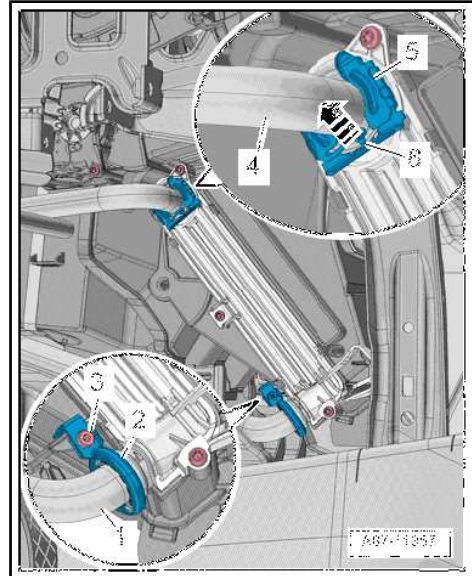
- ◆ ***Crushed seals, or coolant pipes that are tilted or have not been inserted completely may lead to leaks.***



- Position a new clip -5- or screw clamp -2- on the coolant pipe/heater core connection.
- Tighten the bolt -3-. Refer to
⇒ [“4.1 Overview - Heater and A/C Unit”, page 72](#) .
- Check the clamp and screw-type clamp for proper seating on the heater core and the coolant pipe connections. They must not be touching the air distribution housing or any other components.
- Add coolant. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 19 ; Cooling System/Coolant; Coolant, Draining and Filling .
- Check the DTC memory and erase any displayed entries using the Vehicle Diagnostic Tester in the “Guided Fault Finding” function.
- Check the heater and A/C unit function.

Tightening Specifications:

- ◆ Refer to ⇒ [“4.1 Overview - Heater and A/C Unit”, page 72](#)
- ◆ Overview - Turbocharger. Refer to ⇒ Rep. Gr. 21 ; Turbocharger; Overview - Turbocharger
- ◆ Overview - Center Console. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console; Overview - Center Console .
- ◆ Overview - Knee Airbag. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Knee Airbags; Overview - Knee Airbag .



4.15.2 Heater Core, Removing and Installing, Denso

Special tools and workshop equipment required

- ◆ Shop Crane - Drip Tray - VAS6208-
- ◆ Hose Clamps - Up To 25mm - 3094-
- ◆ Engine Bung Set - VAS6122-
- ◆ Compressed Air Gun, Commercially Available



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

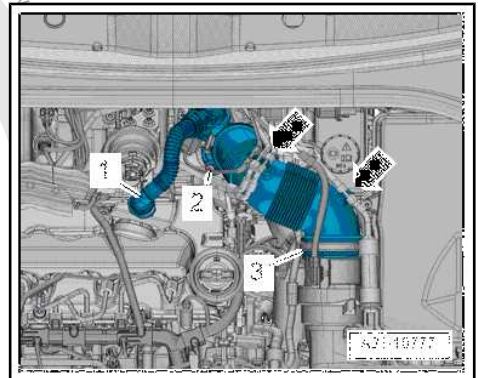
- ◆ Seals



Removing

Vehicles with a TDI Engine

- Press the release buttons on the hose -1- for the crankcase ventilation and remove the hose from the cylinder head cover.
- Free up the vacuum hoses at the air guide pipe -arrows-.
- Loosen the hose clamp -3-.
- Remove the bolt -2- and tilt the air guide pipe with the connection downward and remove it from the turbocharger.



For All Vehicles

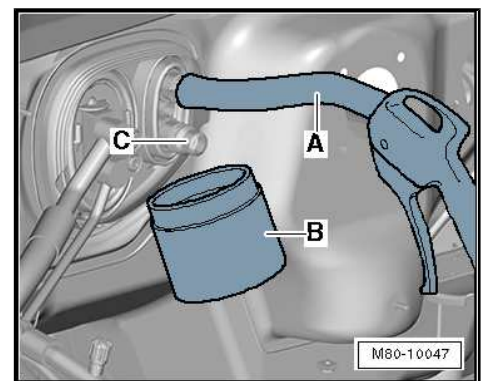
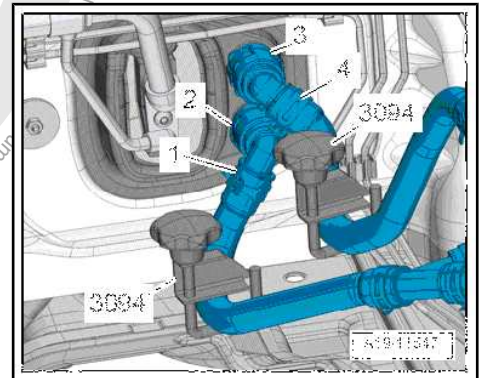
- Mark the installed position of the coolant hoses -1 and 4-.



Note

The heater core is designed for a specific coolant flow direction. Therefore, coolant hoses must be connected on the correct sides.

- Clamp off the coolant hoses -1 and 4- using Hose Clamps - Up To 25mm - 3094- .
- Lift the clips -2 and 3-.
- Remove the coolant hoses -1 and 4- from the heater core for the heater.
- Connect a suitable hose -A- to the upper connection of the heater core.
- Hold a suitable container -B- under the lower connection of the heater core -C-.
- Carefully blow the remaining coolant above the hose -A- out of the heater core and into the container -B- with a compressed-air gun.
- Seal the open lines and connections with clean plugs from the Engine Bung Set - VAS6122- .
- Remove the driver side knee airbag. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Knee Airbags; Overview - Knee Airbag .
- Remove the left footwell center console trim. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console; Overview - Center Console .
- Vehicles with an auxiliary air heater: remove the Auxiliary Heater Heating Element - Z35- with the Auxiliary Air Heater Control Module - J604- . Refer to [⇒ "4.14 Auxiliary Heater Heating Element Z35 with Auxiliary Air Heater Control Module J604 , Removing and Installing", page 97 .](#)
- Cover the area beneath the connections for the coolant hoses in the plenum chamber and Airbag Control Module - J234- for example with a waterproof foil and water absorbing paper.



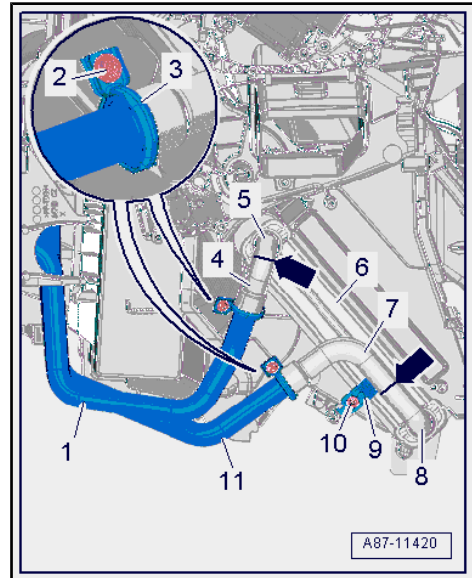


- Remove the bolts -2- and remove the screw clamps -3-.
- Disconnect the coolant pipes.



Note

- ◆ *If the coolant pipes cannot be disconnected due to stuck seals cut through the coolant pipes at the positions marked with -arrows- using the A/C Pipe Pliers - T40147- .*
- ◆ *Remove the severed coolant pipes -4 and 7- of the heater core from the coolant pipes -1 and 11- to the engine.*
- Remove the bolt -10- and then remove the bracket -9- for the heater core.
- Remove the heater core -6- to the left.
- Seal the open lines and connections with clean plugs from the Engine Bung Set - VAS6122- .



Installing

Install in reverse order of removal. Note the following:



Note

Replace the seals.

- With the heater core removed, check the heater shaft for debris.
- If necessary, remove any dirt or coolant residue.

Vehicles with a TDI Engine

- Check the removed auxiliary heater heating element shaft for debris and clean if necessary.

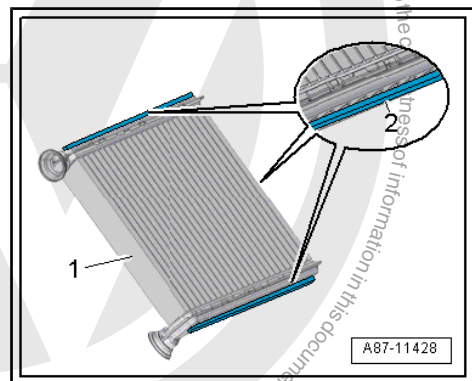
For All Vehicles

- Check the foam seals -2- attached to the heater core -1- for damage and replace if necessary.



Note

- ◆ *If not bonded correctly, the foam seal may curl up during insertion.*
- ◆ *Cold air may flow past heater core if the foam seal is damaged or not properly installed.*
- ◆ *The heater core for a heater and A/C unit manufactured by "Valeo" is illustrated.*



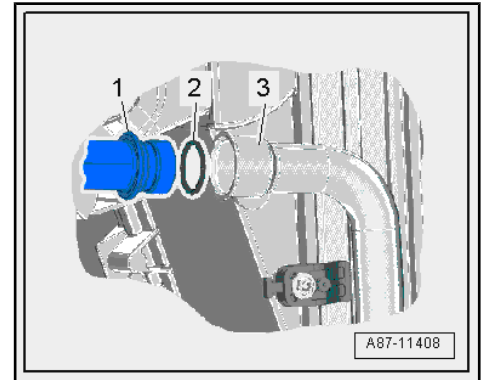


- Check the heater core connection -3- and the coolant pipe connection -1- for damage or debris.
- Clean the sealing surface for the seal and glaze it.
- Coat a new seal -1- with coolant (or lightly with silicone grease) and attach it to the coolant pipe.
- Carefully slide the heater core all the way into the heater and A/C unit until stop.



Note

When inserting the heater core, make sure that the connections and the coolant pipes are not damaged.



- Slide the coolant pipes into the heater core until stop.

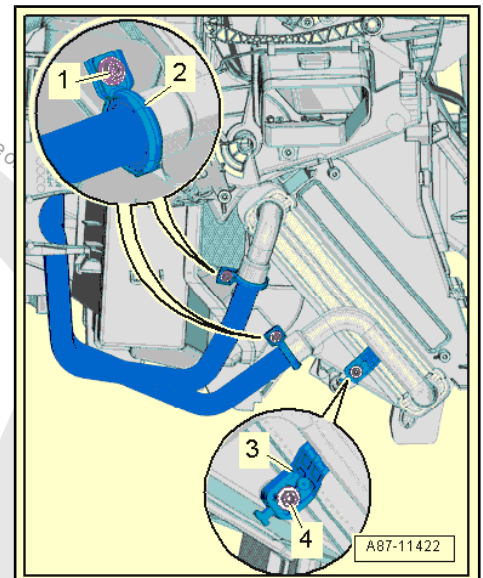


Caution

Risk of leaks at the heater core.

- ◆ **Crushed seals, or coolant pipes that are tilted or have not been inserted completely may lead to leaks.**

- Attach the bracket -3- for the heater core onto the air distribution housing and tighten the screw -4- to specification.
- Attach the new clamp -2- to the coolant pipe/heater core connection.
- Tighten the bolt -1-. Refer to ⇒ ["4.1 Overview - Heater and A/C Unit", page 72](#).
- Check the clamp and screw-type clamp for proper seating on the heater core and the coolant pipe connections. They must not be touching the air distribution housing or any other components.
- Add coolant. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 19 ; Cooling System/Coolant; Coolant, Draining and Filling .
- Check the DTC memory and erase any displayed entries using the Vehicle Diagnostic Tester in the "Guided Fault Finding" function.
- Check the heater and A/C unit function.



Tightening Specifications:

- ◆ ⇒ ["4.1 Overview - Heater and A/C Unit", page 72](#)
- ◆ Overview - Turbocharger. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 21
- ◆ Overview - Center Console. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console; Overview - Center Console .
- ◆ Overview - Knee Airbag. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Knee Airbags; Overview - Knee Airbag .



4.16 Heater Core Coolant Pipes, Removing and Installing

⇒ ["4.16.1 Heater Core Coolant Pipes, Removing and Installing, Valeo", page 106](#)

⇒ ["4.16.2 Heater Core Coolant Pipes, Removing and Installing, Denso", page 107](#)

4.16.1 Heater Core Coolant Pipes, Removing and Installing, Valeo

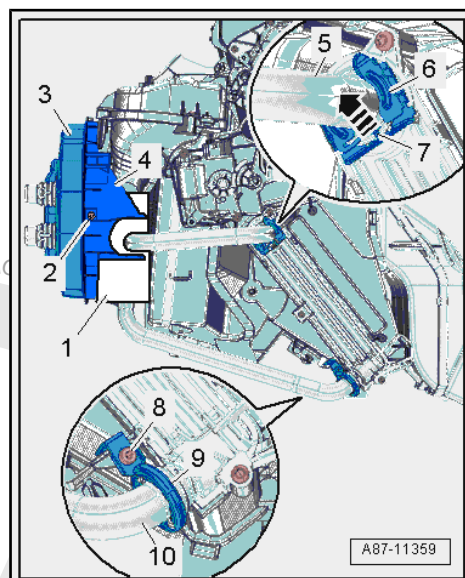


Note

There are different versions and various manufacturers of the heater and Air Conditioning (A/C) units. Individual components of the different heater and A/C units are similar but not the same (for distinguishing characteristics. Refer to ["1.1 Heater and A/C Unit Identification", page 1](#)). Interchanging components from different manufacturers is not permitted. Refer to the Parts Catalog.

Removing

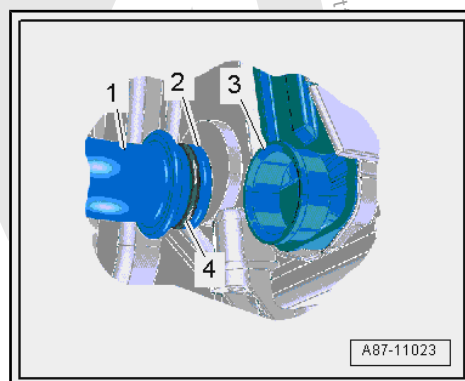
- Remove the heater and A/C unit. Refer to ["4.5 Heater and A/C Unit, Removing and Installing", page 83](#).
- Remove the sealing boot -3- to the plenum chamber bulkhead.
- Remove the bolt -2-.
- Remove the bracket -4- for the coolant pipes to the left.
- Remove the foam piece -1-.
- Lift the catch -7- and remove the clamp -6-.
- Remove the coolant pipe -5- from the heater core.
- Remove the bolt -8-.
- Remove the screw clamp -9- and then remove the coolant pipe -10- from the heater core.
- Remove the coolant pipes.



Installing

Install in reverse order of removal. Note the following:

- Check the heater core connection -3- and the connection -2- for the coolant pipes for damage or debris.
- Clean the sealing surface for the seal and glaze it.
- Coat a new seal -4- with coolant (or lightly with silicone grease) and attach it to the coolant pipe -1-.
- Slide the coolant pipes into the heater core until stop.



Caution

Risk of leaks at the heater core.

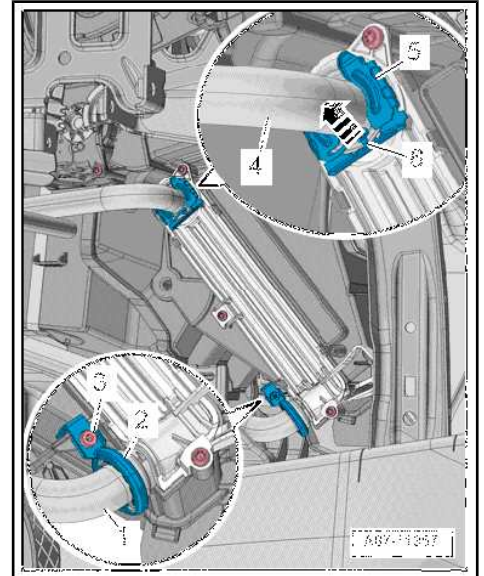
- ◆ **Crushed seals, or coolant pipes that are tilted or have not been inserted completely may lead to leaks.**



- Position a new clip -5- or screw clamp -2- on the coolant pipe/ heater core connection.
- Tighten the bolt -3-.
- Check the clamp and screw-type clamp for proper seating on the heater core and the coolant pipe connections. They must not be touching the air distribution housing or any other components.
- Install the heater and A/C unit. Refer to [⇒ “4.5 Heater and A/C Unit, Removing and Installing”, page 83](#).
- Check the Diagnostic Trouble Code (DTC) memory and erase any displayed entries using the Vehicle Diagnostic Tester in the “Guided Fault Finding” function.
- Check the heater and A/C unit function.

Tightening Specifications

- ◆ Refer to [⇒ “4.1 Overview - Heater and A/C Unit”, page 72](#)



4.16.2 Heater Core Coolant Pipes, Removing and Installing, Denso

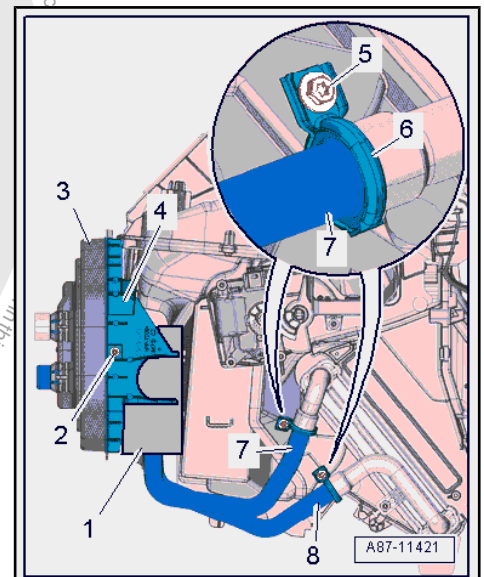


Note

There are different versions and various manufacturers of the heater and Air Conditioning (A/C) units. Individual components of the different heater and A/C units are similar but not the same (for distinguishing characteristics. Refer to [⇒ “4.1 Heater and A/C Unit Identification”, page 1](#)). Interchanging components from different manufacturers is not permitted. Refer to the Parts Catalog.

Removing

- Remove the heater and A/C unit. Refer to [⇒ “4.5 Heater and A/C Unit, Removing and Installing”, page 83](#).
- Remove the sealing boot -3- to the plenum chamber bulkhead.
- Remove the bolt -2-.
- Remove the bracket -4- for the coolant pipes to the left.
- Remove the foam piece -1-.
- Remove the bolts -5- and remove the screw-type clamps -6-.
- Remove the coolant pipes -7 and 8- from the heater core.





Installing

Install in reverse order of removal. Note the following:

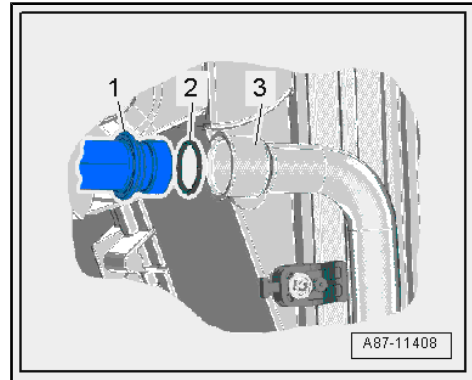
- Check the heater core connection -3- and the coolant pipe connection -1- for damage or debris.
- Clean the sealing surface for the seal and glaze it.
- Coat the new seals -2- with coolant (or lightly with silicone grease) and attach it to the coolant pipe -1-.
- Slide the coolant pipes into the heater core until stop.



Caution

Risk of leaks at the heater core.

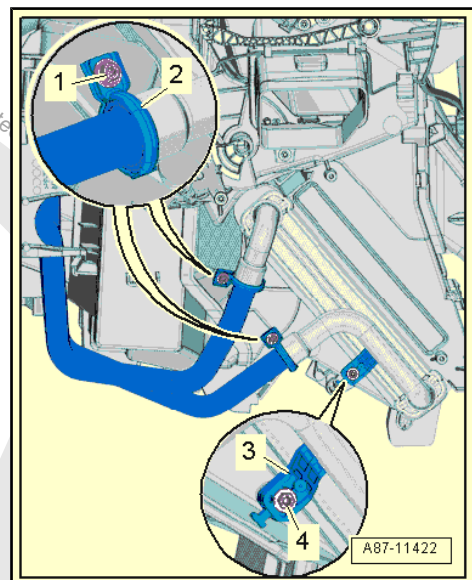
- ◆ **Crushed seals, or coolant pipes that are tilted or have not been inserted completely may lead to leaks.**



- Attach the new screw clamps -2- to the coolant pipe/heater core connection.
- Tighten the bolt -1-.
- Check the screw clamps -2- for proper seating on the heater core and the coolant pipe connections. They must not be touching the air distribution housing or any other components.
- Install the heater and A/C unit. Refer to [⇒ "4.5 Heater and A/C Unit, Removing and Installing", page 83](#).
- Check the Diagnostic Trouble Code (DTC) memory and erase any displayed entries using the Vehicle Diagnostic Tester in the "Guided Fault Finding" function.
- Check the heater and A/C unit function.

Tightening Specifications:

- ◆ Refer to [⇒ "4.1 Overview - Heater and A/C Unit", page 72](#)



4.17 Evaporator Temperature Sensor - G308- , Removing and Installing

Special tools and workshop equipment required

- ◆ Trim Removal Wedge - 3409-



Note

Only with vehicles with an Air Conditioning (A/C) system. The opening in the heater is sealed on vehicles with a heater.

Removing

- Remove the glove compartment. Refer to [⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Glove Compartment, Removing and Installing .](#)



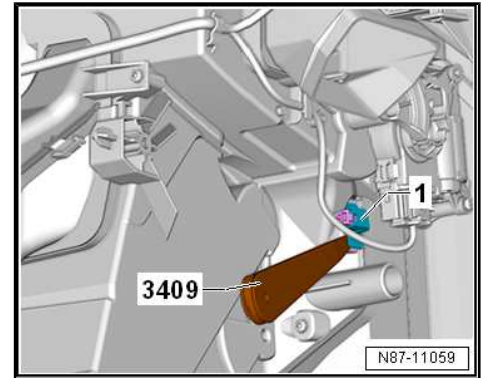
- Release the Evaporator Temperature Sensor - G308- with a Trim Removal Wedge - 3409- .
- Remove the Evaporator Temperature Sensor - G308- -2- from the housing.
- Disconnect the connector -1-.

Installing

Install in reverse order of removal.

Tightening Specifications

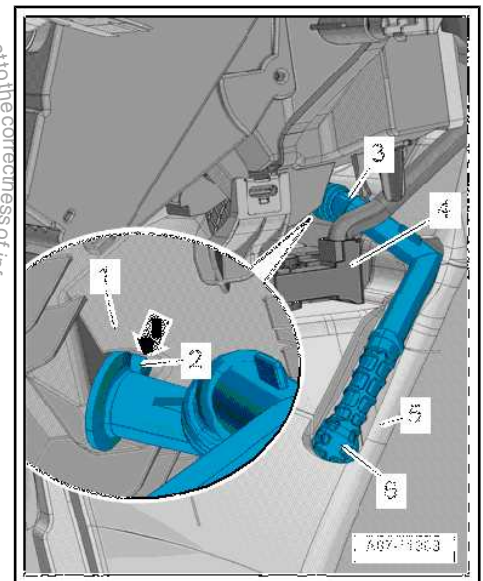
- ◆ Storage Compartments/Covers; Overview - Glove Compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Overview - Glove Compartment .



4.18 Condensation Water Drain, Checking

Checking

- Remove the right footwell center console trim panel. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console; Overview - Center Console .
- Carefully fold back the carpet near the condensation water drain hose far enough so that the condensation water drain hose is visible.
- The tab -arrow- on the connection must engage into the guide -2-.





- Insert the condensation water drain hose -6- into the body opening until it audibly engages.

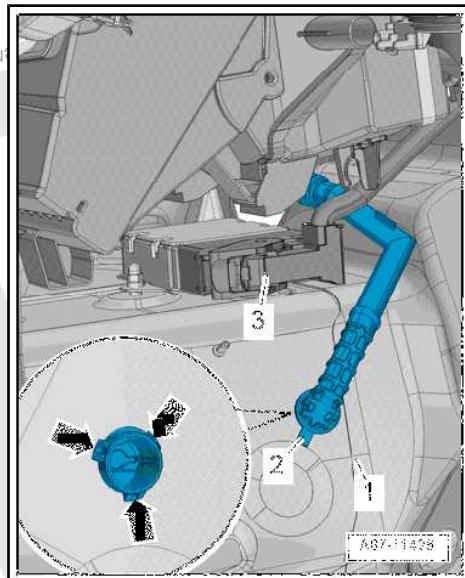


Note

- ◆ *It must be possible to connect the condensation water drain hose -1- to the connection on the heater and A/C unit without having any tension on it.*
- ◆ *The condensation water drain hose must fit securely to the condensation water drain connection on the tunnel.*
- ◆ *The sealing lip -2- must not sit loosely on the body opening.*
- ◆ *The tabs -arrows- must be completely engaged.*

Tightening Specifications

- ◆ Overview - Center Console. Refer to ➔ Body Interior; Rep. Gr. 68 ; Center Console; Overview - Center Console .



4.19 Condensation Water Drain, Removing and Installing

Removing

- Remove the right footwell center console trim panel. Refer to ➔ Body Interior; Rep. Gr. 68 ; Center Console; Overview - Center Console .



WARNING

Danger of the airbag control module malfunctioning caused by corrosion on the connector.

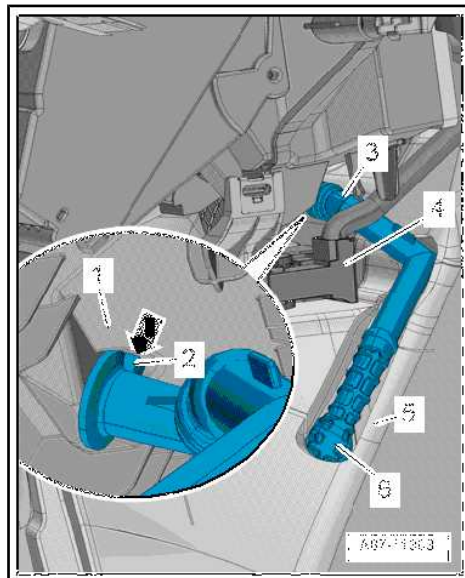
- ◆ ***Seal the electric connector on the airbag control module to protect it from moisture.***

- Remove the connector from the Airbag Control Module - J234-4-.
- Cover the Airbag Control Module - J234- and connector -4- with a waterproof cover.
- Carefully move the carpet aside and cover it in the area under the condensation water hose with waterproof foil and water absorbing paper.
- Remove the condensation water drain hose -3- carefully from the heater and A/C unit -1- and the vehicle body -5-.

Installing

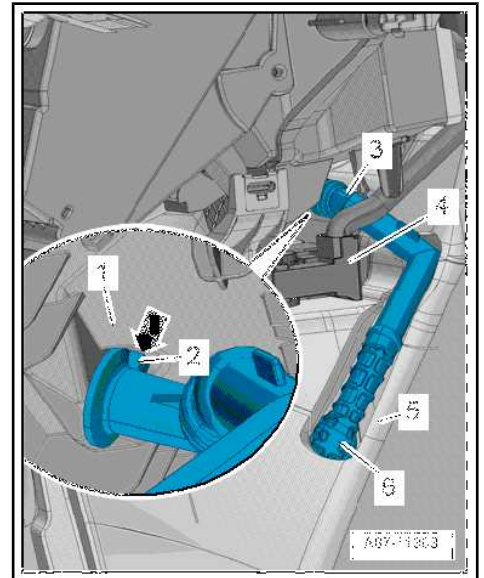
Install in reverse order of removal. Note the following:

- The condensation water drain hose can only be correctly slid onto the heater and A/C unit in one position until stop.





- The tab -arrow- on the connection must engage into the guide -2-.
- If a commercially available cable tie was used to secure the condensation water drain -3-, replace it.
- The condensation water drain hose must be routed as shown in the illustration from underneath the wiring harness of the Airbag Control Module - J234- -4-.
- Insert the condensation water drain hose -6- into the body opening until it audibly engages.

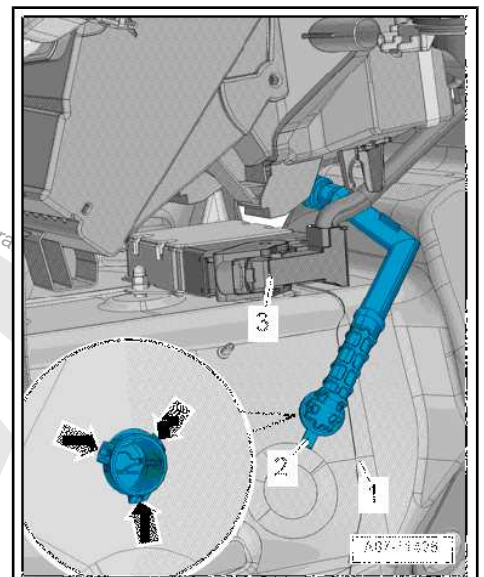


- The bracket -2- on the condensation water drain hose must be completely and with pre-tension clipped into the body opening -1-.
- The sealing lip must not sit loosely on the body opening.
- The tabs -arrows- must be completely engaged.
- If the pre-tensioning is not adequate, seal the area between the body and the bracket, for example with silicone adhesive. Refer to the Parts Catalog.



Note

- ◆ *Install the condensation water drain hose so that it is not twisted or crushed.*
- ◆ *Make sure the carpet does not push up against the condensation water drain hose when installing.*
- ◆ *If the condensation water drain hose sits too loosely on the heater and A/C unit connection secure it from falling with for example a hose clamp. Hose clamps. Refer to the Parts Catalog.*



Tightening Specifications

- ◆ Overview - Center Console. Refer to ➤ Body Interior; Rep. Gr. 68 ; Center Console; Overview - Center Console .



4.20 Partition, Removing and Installing

Removing

- Depending on the version remove the plastic screw or caps -2- and partition -1-.

Installing

- Install in reverse order of removal.

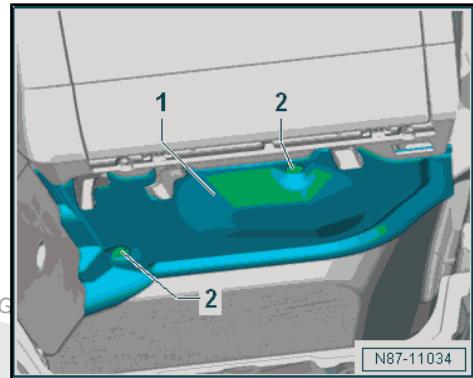


Note

Replace the caps with bolts. Refer to Parts Catalog.

Tightening Specifications:

- ◆ Screws -2- -item 1- ⇒ [Item 1 \(page 78\)](#).





5 Air Routing

⇒ ["5.1 Overview - Air Routing and Air Distribution in Passenger Compartment", page 113](#)

⇒ ["5.2 Fresh Air Intake, Removing and Installing", page 115](#)

⇒ ["5.3 Fresh Air Intake Cover, Removing and Installing", page 115](#)

⇒ ["5.4 Air Intake Duct, Removing and Installing", page 116](#)

⇒ ["5.5 Driver Side Footwell Vent, Removing and Installing", page 117](#)

⇒ ["5.6 Front Passenger Side Footwell Vent, Removing and Installing", page 117](#)

⇒ ["5.7 Rear Footwell Vent, Removing and Installing", page 118](#)

⇒ ["5.8 Rear Center Console Vent Air Guide Channel, Removing and Installing", page 118](#)

⇒ ["5.9 Passenger Compartment Forced Air Extraction, Checking", page 119](#)

⇒ ["5.10 Passenger Compartment Forced Air Extraction, Removing and Installing", page 119](#)

⇒ ["5.11 Air Guide for Defrost Air Vent, Removing and Installing", page 120](#)

⇒ ["5.12 Air Guide for Center Vent, Removing and Installing", page 121](#)

5.1 Overview - Air Routing and Air Distribution in Passenger Compartment



1 - Air Routing

- ☐ For defrost air vent
- ☐ Removing and installing. Refer to
⇒ ["5.11 Air Guide for Defrost Air Vent, Removing and Installing", page 120](#) .

2 - Air Routing

- ☐ For center vent
- ☐ Removing and installing. Refer to
⇒ ["5.12 Air Guide for Center Vent, Removing and Installing", page 121](#) .

3 - Footwell Vent

- ☐ Passenger side
- ☐ Removing and installing. Refer to
⇒ ["5.6 Front Passenger Side Footwell Vent, Removing and Installing", page 117](#) .

4 - Right Rear Vent Air Guide Channel

- ☐ Removing and installing. Refer to
⇒ ["5.7 Rear Footwell Vent, Removing and Installing", page 118](#) .

5 - Air Guide Channel

- ☐ In the rear center console
- ☐ Installed depending on vehicle equipment. For vehicles without a rear center console air guide channel vent a cap is installed on the heater.
- ☐ Removing and installing. Refer to
⇒ ["5.8 Rear Center Console Vent Air Guide Channel, Removing and Installing", page 118](#) .

6 - Air Guide Channel

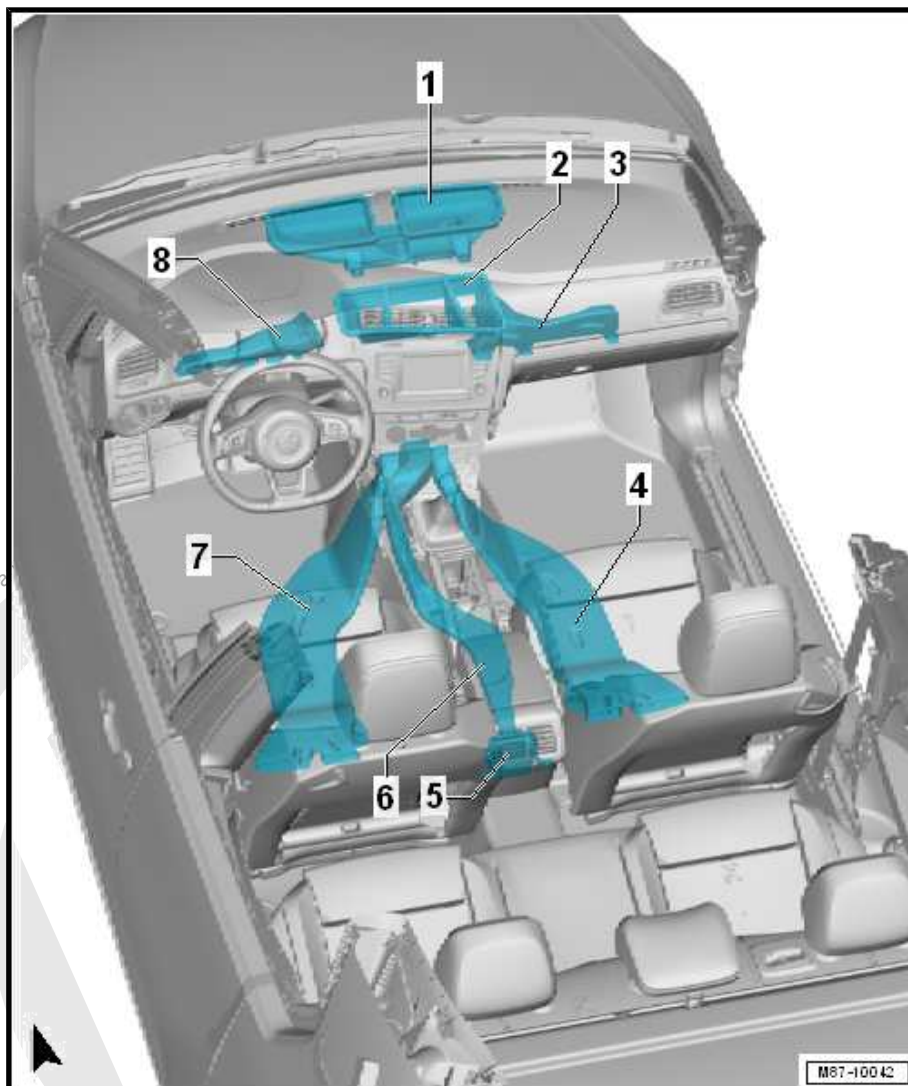
- ☐ Rear center console rear vent
- ☐ Installed depending on vehicle equipment. For vehicles without a rear center console air guide channel vent a cap is installed on the heater.
- ☐ Removing and installing. Refer to
⇒ ["5.8 Rear Center Console Vent Air Guide Channel, Removing and Installing", page 118](#) .

7 - Left Rear Vent Air Guide Channel

- ☐ Removing and installing. Refer to ⇒ ["5.7 Rear Footwell Vent, Removing and Installing", page 118](#) .

8 - Footwell Vent

- ☐ Driver side
- ☐ Removing and installing. Refer to
⇒ ["5.5 Driver Side Footwell Vent, Removing and Installing", page 117](#) .





5.2 Fresh Air Intake, Removing and Installing

Removing

- Remove the plenum chamber cover. Refer to ➤ Body Exterior; Rep. Gr. 50 ; Bulkhead; Plenum Chamber Cover, Removing and Installing .
- Remove the fresh air intake cover. Refer to ➤ **"5.3 Fresh Air Intake Cover, Removing and Installing", page 115** .
- Remove the Air Quality Sensor - G238- (only on vehicles with climatronic). Refer to ➤ **"8.2 Air Quality Sensor G238 , Removing and Installing", page 151** .
- Remove the nuts -arrows-.
- Remove the fresh air intake -1- from the plenum chamber.

Installing

Install in reverse order of removal.

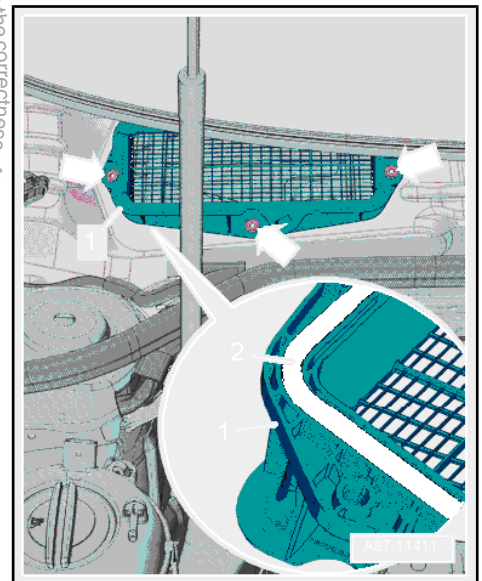
Assembly sequence:

- Align the air grille on the flange.
- Hold the air grille and install the outer nut until the center weld studs.
- Install the nut on the opposite side.
- Install the outer vehicle nut.
- Install the center nut.



Note

- ◆ *The seal -2- must be seated correctly in the air grille.*
- ◆ *If the fresh air intake grille is damaged or installed incorrectly, water can enter the fresh air intake. Complaints due to odor problems coming from the heater/Air Conditioning (A/C) system and/or there is moisture in the passenger compartment may result.*



Tightening Specifications

Component	Tightening Specifications
Nut	3 Nm

5.3 Fresh Air Intake Cover, Removing and Installing

Removing

- Remove the right plenum chamber cover. Refer to ➤ Body Exterior; Rep. Gr. 50 ; Bulkhead; Plenum Chamber Cover, Removing and Installing .



- Disconnect the cable connection for vehicles with heated windshield from the cover for the fresh air intake -1-
- Unhook the fresh air intake cover -1- in direction of -arrow B- and remove in direction of -arrow A-.

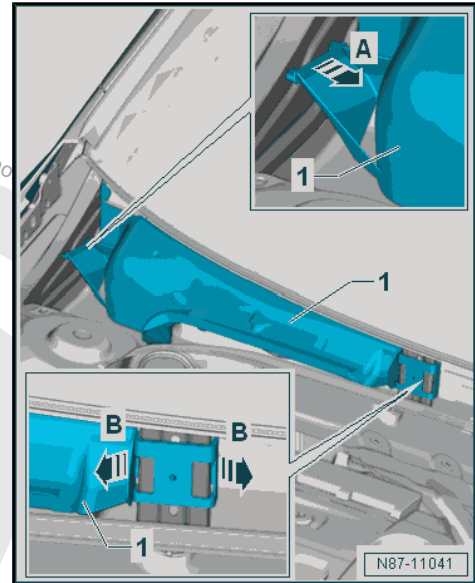


Note

- ♦ If the fresh air intake cover is damaged or installed incorrectly, water can enter the fresh air intake. Complaints due to odor problems coming from the heater/A/C system and/or there is moisture in the passenger compartment may result.
- ♦ If the plenum chamber cover is damaged or incorrectly installed, water can enter the fresh air intake via the fresh air intake.

Installing

Install in reverse order of removal.



5.4 Air Intake Duct, Removing and Installing

Removing

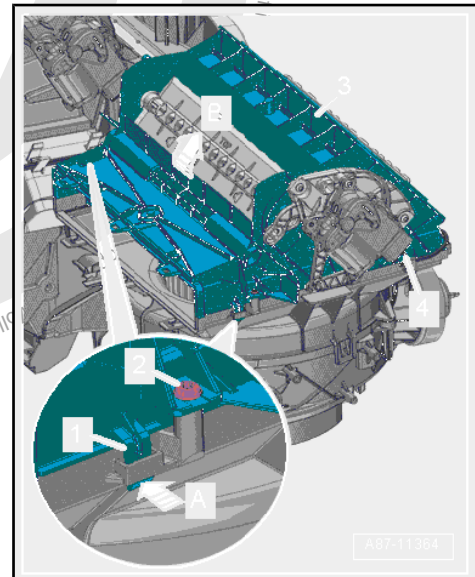
- Remove the instrument panel central tube. Refer to ➤ Body Interior; Rep. Gr. 70 ; Instrument Panel Central Tube; Instrument Panel Central Tube, Removing and Installing .
- Remove the dust and pollen filter. Refer to ➤ ["4.11 Dust and Pollen Filter, Removing and Installing", page 92](#) .
- Disconnect the connector -4- and free up the wiring harness.
- Loosen the heater and A/C unit and pull slightly forward.
- Remove screws -2-.
- Release the mounting tab -1- -arrow A-.
- Tilt the air intake duct -3- upward -arrow B- and disengage.

Installing

Install in reverse order of removal.

Tightening Specifications

- ♦ Refer to ➤ ["4.2 Overview - Attachments for Heater and A/C Unit and Air Intake Housing", page 77](#)





5.5 Driver Side Footwell Vent, Removing and Installing

Removing

- Remove the driver side knee airbag. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Knee Airbags; Overview - Knee Airbag .
- Remove the screw -1-.
- Remove the driver side footwell vent -2-.

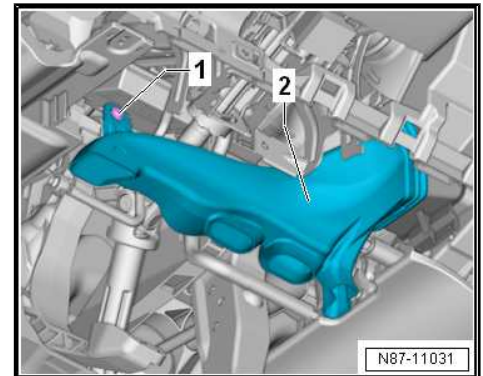
Installing

- Install in reverse order of removal.

Tightening Specifications

Component	Tightening Specifications
4.2 x 16 screw	1.5 Nm

- ♦ Overview - knee airbag. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Knee Airbags; Overview - Knee Airbag .



5.6 Front Passenger Side Footwell Vent, Removing and Installing

Removing

- Remove the glove compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Glove Compartment, Removing and Installing .
- Remove the screw -2- (if installed).
- Remove the screws -3-.
- Push the clip -4- in direction of -arrow- upward and unclip the front passenger side footwell vent.
- Pull the instrument panel slightly forward.
- Remove the front passenger side footwell vent.

Installing

Install in reverse order of removal.



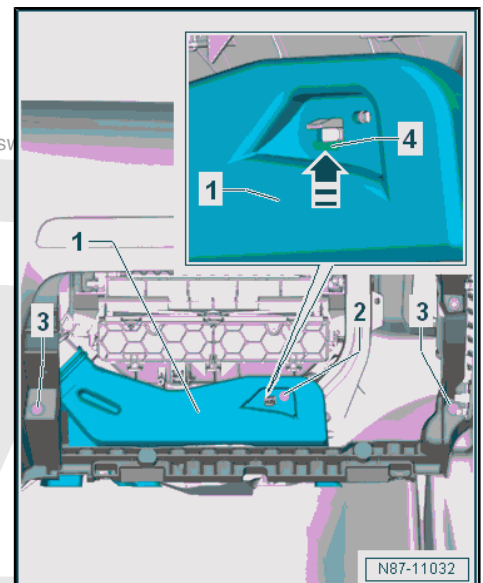
Note

Check the coolant hose to make sure it is secure on vehicles with glove compartment cooling.

Tightening Specifications

Component	Tightening Specifications
4.2 x 16 screw	1.5 Nm

- ♦ Storage Compartments/Covers; Overview - Glove Compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Overview - Glove Compartment .

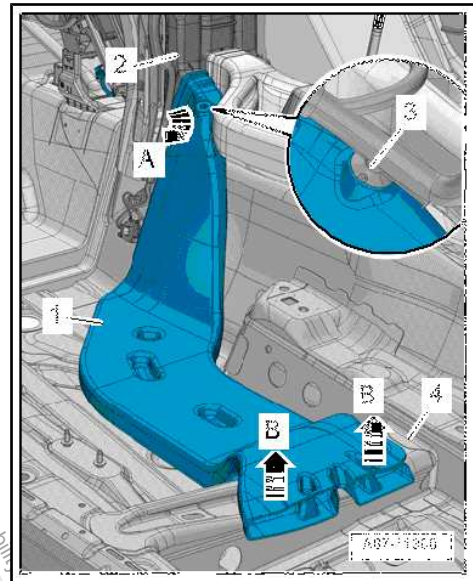




5.7 Rear Footwell Vent, Removing and Installing

Removing

- Remove the sill panel strip. Refer to ➤ Body Interior; Rep. Gr. 70 ; Passenger Compartment Trim; Sill Panel Strip, Removing and Installing .
- Remove the front seat. Refer to ➤ Body Interior; Rep. Gr. 72 ; Front Seats; Front Seat, Removing and Installing .
- Remove the center console. Refer to ➤ Body Interior; Rep. Gr. 68 ; Center Console; Center Console, Removing and Installing .
- Lift the carpet near the vent.
- Pry out the cable clip -3-.
- Lift up the rear footwell vent -1- in direction of -B arrows-, move it off of the heater and A/C unit -2- in direction of -arrow A- and remove it to the side.



Installing

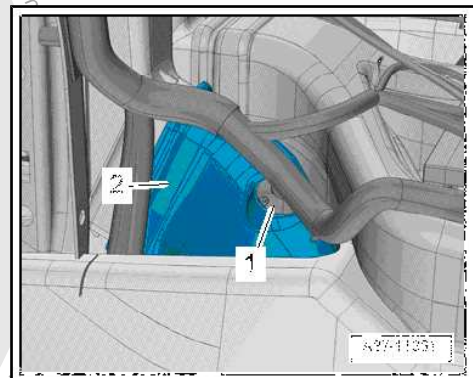
Install in reverse order of removal. Note the following:

- Check the cable clip -1- for damage before pressing onto the footwell vent -2-.



Note

A loose cable clip or a damaged seal can cause flow-generated noise.



5.8 Rear Center Console Vent Air Guide Channel, Removing and Installing

Removing

- Remove the center console. Refer to ➤ Body Interior; Rep. Gr. 68 ; Center Console; Overview - Center Console .



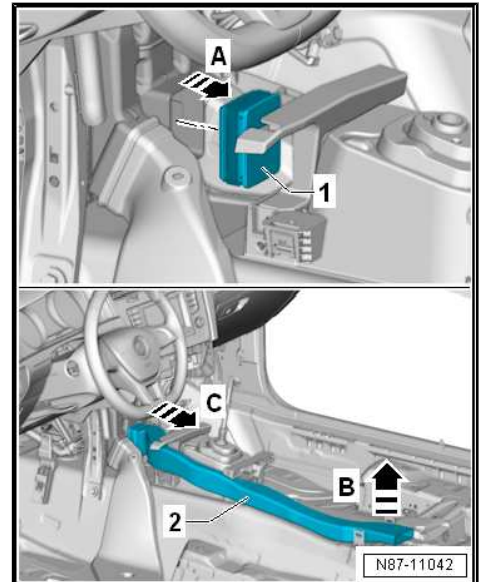
Note

If no rear vent is installed in the vehicle, a there is a cap -1- on the air distribution housing. The cover -1- is remove in direction of -arrow A-.

- Pivot the air guide channel -2- upward in direction of -arrow B-, and release the catch on the air guide channel in direction of -arrow C- and remove.

Installing

Install in reverse order of removal.



5.9 Passenger Compartment Forced Air Extraction, Checking



Note

- ◆ *The stale air escapes through the vent openings in the luggage compartment trim.*
- ◆ *If the ventilation is to function properly, the ventilation openings must not be covered.*
- ◆ *The ventilation frames are located in the rear side panels, behind the bumper.*

The ventilation can be checked through the luggage compartment.

Depending on the vehicle equipment level, it may be necessary to remove additional components.

- Remove the side trim panels inside the luggage compartment. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Luggage Compartment Trim Panels; Overview - Luggage Compartment Side Trim Panel .
- The sealing lips in the vent frame on both sides of the vehicle must move freely and close by themselves.

5.10 Passenger Compartment Forced Air Extraction, Removing and Installing

Special tools and workshop equipment required

- ◆ Trim Removal Wedge - 3409-



Removing

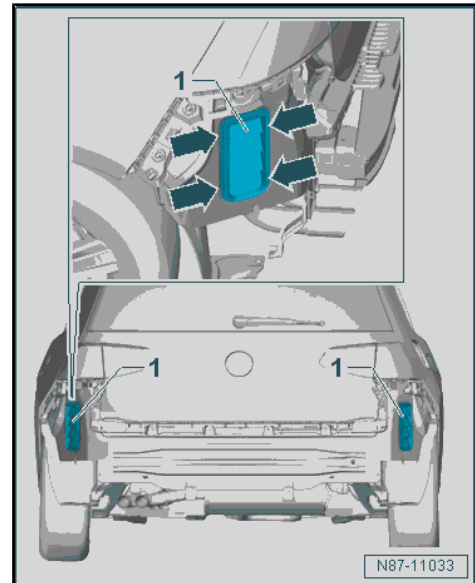
- Remove the rear bumper cover. Refer to ⇒ Body Exterior; Rep. Gr. 63 ; Rear Bumper; Bumper Cover, Removing and Installing .
- Release the tabs -arrows- using the Trim Removal Wedge - 3409- and remove the vent frame -1- from the side panel.

Installing

- Install in reverse order of removal.

Tightening Specifications

- ♦ Overview - rear bumper cover. Refer to ⇒ Body Exterior; Rep. Gr. 63 ; Rear Bumper; Overview - Bumper Cover .



5.11 Air Guide for Defrost Air Vent, Removing and Installing

Removing

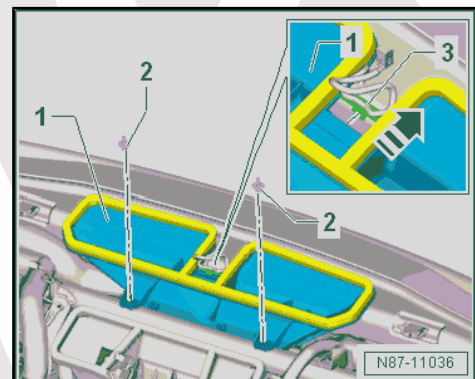
- Remove the instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel; Instrument Panel, Removing and Installing .
- Unclip the wiring harness -3- from the Sunlight Photo Sensor - G107- in direction of -arrow-.
- Remove the clips -2-.
- Remove the air guide for the defrost air vent -1- upward from the heater and A/C unit.

Installing

Install in reverse order of removal.

Tightening Specifications

- ♦ Overview - instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel; Overview - Instrument Panel .





5.12 Air Guide for Center Vent, Removing and Installing

Removing

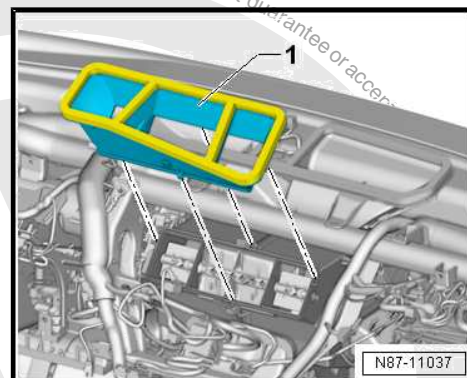
- Remove the instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel; Instrument Panel, Removing and Installing .
- Remove the air guide for the center vent - 1- upward from the heater and A/C unit.

Installing

Install in reverse order of removal.

Tightening Specifications

- ◆ Overview - instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel; Overview - Instrument Panel .





6 Display and Control Head

⇒ [“6.1 Component Location Overview - Display and Control Head”, page 122](#)

⇒ [“6.2 Display and Control Head, Removing and Installing”, page 126](#)

6.1 Component Location Overview - Display and Control Head

⇒ [“6.1.1 Component Location Overview - Display and Control Head, Electric-Manual Climate Control System”, page 122](#)

⇒ [“6.1.2 Component Location Overview - Display and Control Head, Climatronic”, page 124](#)

6.1.1 Component Location Overview - Display and Control Head, Electric-Manual Climate Control System



Note

- ◆ *An indicator lamp inside the controls indicates when the selected function is on.*
- ◆ *If the lamp in the **AC** button does not come after the button is pushed, there may be a fault in the control module. Call up the Diagnostic Trouble Code (DTC) memory using the Vehicle Diagnostic Tester . If the fault stored in the DTC memory “A/C compressor first start not performed” is present, then is it necessary to perform a basic setting and an adaptation “A/C compressor first start” either in Guided Fault Finding or in Guided Functions.*
- ◆ *Pay attention to the turn off conditions for vehicles with the Start/Stop System. Refer to [“2.2 Vehicles with Start/Stop System General Information”, page 3](#) .*
- ◆ *Not all the buttons are used, depending on the vehicle equipment level and may vary in location.*



1 - Left Seat Heating Button - E653-

- ☐ Optional
- ☐ The seat heating has three settings. An Light Emitting Diode (LED) indicates which setting is selected.
- ☐ If no LED is illuminated, the seat heater is switched off.

2 - **A/C** Button

- ☐ The Air Conditioning (A/C) compressor is set to almost 0 delivery when the **A/C** button is off.

3 - Rear Window Defogger Button

- ☐ Rear window defroster remains on for 4 to 20 minutes, depending on exterior temperature.

4 - Recirculating Air Mode Button



Note

The recirculating air mode is active during ignition and return to air mode.

5 - Immediate Heating Button for Parking/Auxiliary Heater ON/OFF or OFF Button for Heating and Air Conditioning ON/OFF

- ☐ Depending on the equipment level
- ☐ **OFF** button is pressed, the A/C does not work. There is no heating or ventilation.

6 - Right Seat Heating Button - E654-

- ☐ Optional
- ☐ The seat heating has three settings. An LED indicates which setting is selected.
- ☐ If no LED is illuminated, the seat heater is switched off.

7 - Air Distribution Control Knob

8 - Air Distribution Display

9 - Blower Speed Control Knob

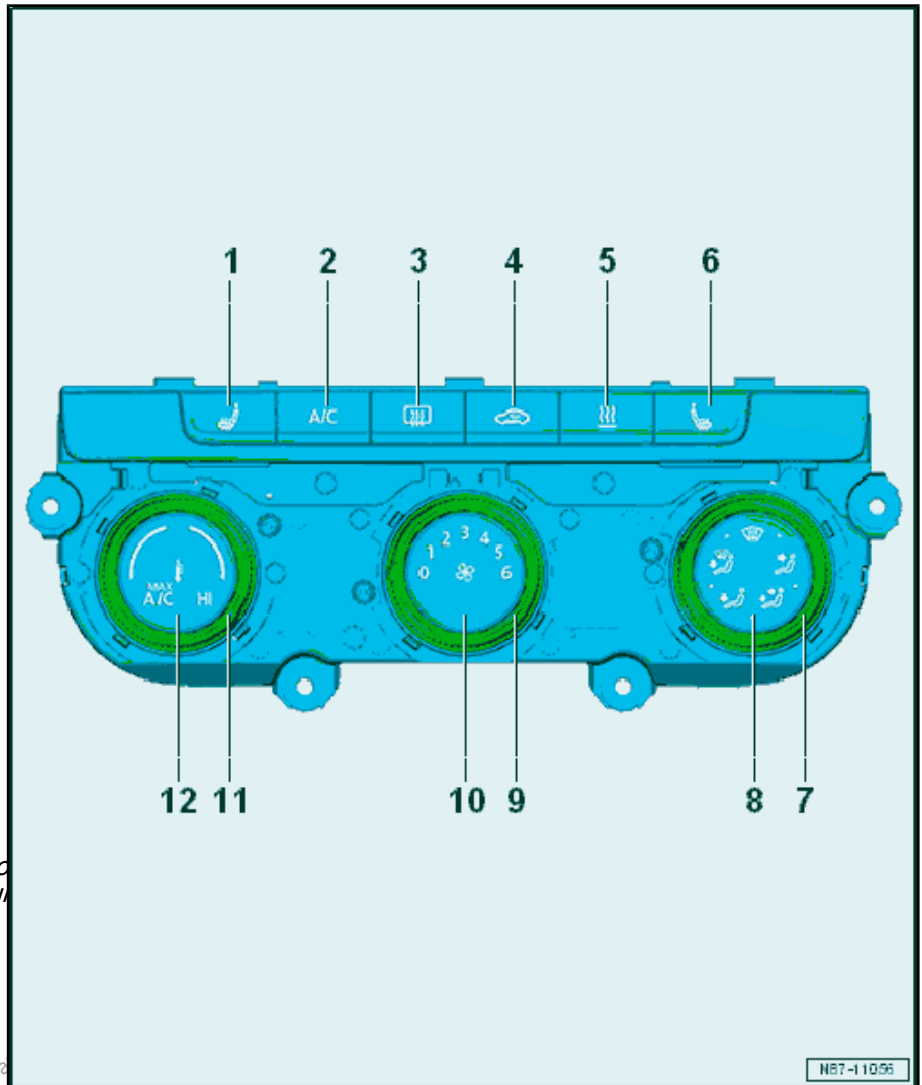
- ☐ To the left: decreases the blower speed
- ☐ To the right: increases the blower speed

10 - Blower Speed Display

11 - Temperature Control Knob

- ☐ To the left: lower the temperature
- ☐ To the right: increases the temperature

12 - Temperature Setting Display





6.1.2 Component Location Overview - Display and Control Head, Climatronic



Note

- ◆ An indicator lamp inside the controls indicates when the selected function is on. In addition to this, whenever a button or a control is selected, the function will briefly appear in the radio or radio/navigation system display.
- ◆ To change from °C and °F in the radio or radio/navigation system display, go to the main menu in the instrument cluster. Call up the main menu with the rocker switch in the windshield wiper lever. Select settings, units and temperature .
- ◆ If a new Heater and A/C Controls - EX21- with Climatronic Control Module - J255- was installed, perform the Guided Fault Finding or Guided Functions, the basic setting and adaptation: "A/C compressor first start".
- ◆ Pay attention to the turn off conditions for vehicles with the Start/Stop System. Refer to ["2.2 Vehicles with Start/Stop System General Information", page 3](#).
- ◆ If the lamp in the **AC** button does not come on after the button is pushed, there may be a fault in the control module. Call up the Diagnostic Trouble Code (DTC) memory using the Vehicle Diagnostic Tester . If the DTC memory entry "A/C compressor first start not performed" is present, then it is necessary to perform a basic setting and an adaptation of "A/C compressor first start" in Guided Fault Finding.
- ◆ Pressing the button **AUTO** will reverse all settings which deviate from the automatic operation.
- ◆ If there are differences from automatic operation, see the corresponding user guide.
- ◆ When the **OFF** button is activated, the Climatronic does not work. There is no heating or ventilation.
- ◆ When the **OFF** button is deactivated, the Climatronic works.
- ◆ The **A/C** button is pressed and the A/C compressor is on. The heating and ventilation operation continues to be controlled electronically.
- ◆ If the **AC** button is off, the A/C compressor is set to almost 0 delivery. The heating and ventilation operation continues to be controlled electronically.
- ◆ Pay attention to the turn off conditions for vehicles with the Start/Stop System. Refer to ["2.2 Vehicles with Start/Stop System General Information", page 3](#).
- ◆ Not all the buttons are used, depending on the vehicle equipment level and may vary in location.



1 - Left Temperature Display

- ☐ Shows the set temperature for the driver side.

2 - Left Seat Heating Button - E653-

- ☐ Optional
- ☐ The seat heating has three settings. An Light Emitting Diode (LED) indicates which setting is selected.
- ☐ If no LED is illuminated, the seat heater is switched off.

3 - Windshield Air Distribution Button

- ☐ The LED turns on when the system is active.

4 - Center Air Distribution Button

- ☐ Air distribution to the upper body via the center vents
- ☐ The LED turns on when the system is active.

5 - Lower Air Distribution Button

- ☐ Air distribution into the footwell.
- ☐ The LED turns on when the system is active.

6 - Air Recirculation Button

- ☐ The LED turns on when the system is active.
- ☐ Manual and automatic recirculating air mode.
- ☐ Press the button for recirculating air function to prevent polluted air from entering interior.

Recirculating air is switched on automatically under the following conditions:

- When the windshield washer system is operated,
- When the Air Quality Sensor - G238- is activated.
- When the reverse gear is engaged (this function is only active for two minutes after the engine is started).
- Blower speed on the Heater and A/C Controls - EX21- off
- Heater and A/C Controls - EX21- "OFF".

7 - Right Seat Heating Button - E654-

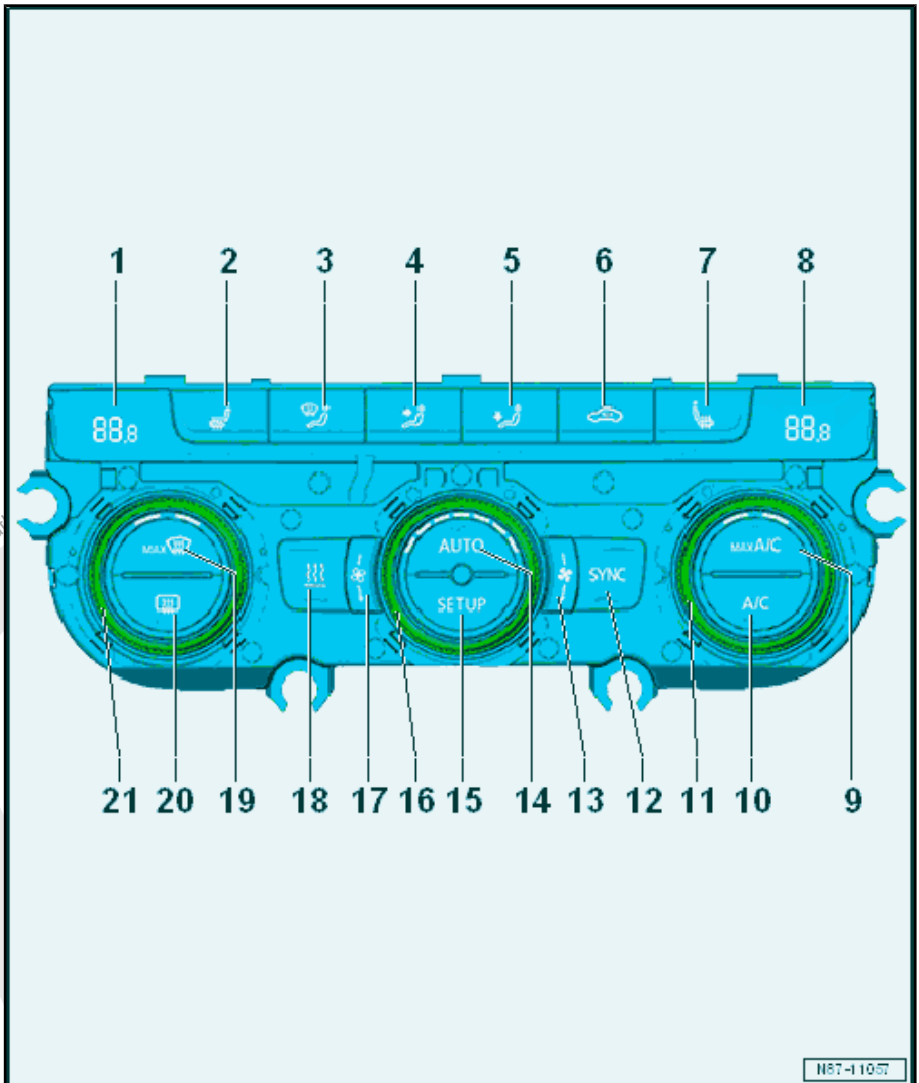
- ☐ Optional
- ☐ The seat heating has three settings. An LED indicates which setting is selected.
- ☐ If no LED is illuminated, the seat heater is switched off.

8 - Right Temperature Display

- ☐ Shows the temperature set for the front passenger side

9 - Max A/C Button

- ☐ The LED turns on when the system is active.
- ☐ Run Air Conditioning (A/C) system with MAX A/C.





10 - **A/C** Button

- ☐ The LED turns on when the system is active.
- ☐ The A/C compressor is set to almost 0 delivery when the **AC** button is off. If the **AUTO** button is activated, the heating and ventilation mode continues to be controlled electronically.

11 - **Right Temperature Control**

- ☐ The selected temperature will be shown in the display.

12 - **Sync** Button

- ☐ The LED turns on when the system is active.
- ☐ Synchronization of the climate zones to the driver value.

13 - **Low Blower Speed**

- ☐ Only for display no function

14 - **AUTO** Button

- ☐ The LED turns on when the system is active.
- ☐ In automatic mode the Climatronic maintains the selected vehicle temperature automatically. The air temperature, the blower speed and the air distribution are adjusted automatically.

15 - **SETUP** Button

- ☐ Pressing the **SETUP** button calls up the climate control menu for adjustment for example of the recirculating air mode, and default functions.

16 - **Blower Control**

- ☐ By turning the knob, the blower speed can be individually adjusted.
- ☐ If the blower speed is manually adjusted, the function **AUTO** is automatically deactivated.

17 - **High Blower Speed**

- ☐ Only for display no function

18 - **Immediate Heating Button** Button for Parking/Auxiliary Heater On/Off or **OFF** Button for the A/C System On/Off

- ☐ Depending on the equipment level
- ☐ When the **OFF** button is activated, the Climatronic does not work. There is no heating or ventilation.

19 - **Max Defrost Button**

- ☐ Air sucked in from the outside is directed to the windshield if installed causing the recirculating air mode to shut off automatically.
- ☐ In order to remove fog from front windshield quickly, the air temperature must be above 1.5 °C (35 °F). The A/C compressor is switched on and the blower is set to the highest.

20 - **Rear Window Defogger Button**

- ☐ The LED turns on when the system is active.
- ☐ It only works when the engine is running and turns off on its own after 10 minutes.

21 - **Left Temperature Control**

- ☐ The selected temperature will be shown in the display.

6.2 Display and Control Head, Removing and Installing

Special tools and workshop equipment required

- ◆ Trim Removal Wedge - 3409-



Note

- ◆ Perform the replace control module function, a basic setting and an adaptation "A/C compressor first start" either in Guided Fault Finding or in Guided Functions when installing a new Climatronic Control Module - J255- or A/C Control Module - J301-.
- ◆ Pay attention to the turn off conditions for vehicles with the Start/Stop System. Refer to
⇒ "2.2 Vehicles with Start/Stop System General Information," page 3.

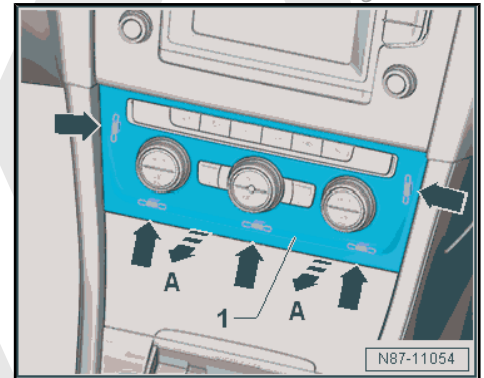
Removing



Note

The illustration shows a vehicle with electric manual climate control system. The removing and installing on a vehicle with Climatronic is identical.

- Unclip the trim -1- from the display and control head at the points indicated -arrows- with the Trim Removal Wedge - 3409- in direction of -arrow A-.



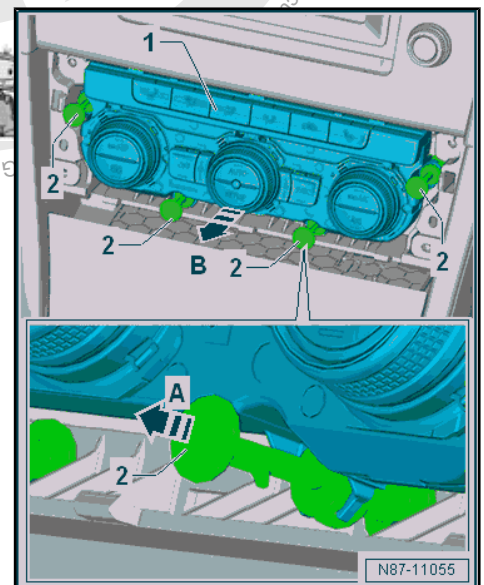
- Remove the expanding rivets -2- in direction of -arrow A-.
- Remove the display and control head -1- in direction of -arrow B-.

Installing



Note

Perform the replace control module function, a basic setting and an adaptation "A/C compressor first start" either in Guided Fault Finding or in Guided Functions when installing a new Climatronic Control Module - J255- or A/C Control Module - J301-.





7 Actuators

- ⇒ "7.1 Component Location Overview - Front Actuators", page 128
- ⇒ "7.2 Temperature Regulator Door Motor V68 with Temperature Regulator Door Motor Position Sensor G92 , Removing and Installing", page 131
- ⇒ "7.3 Defroster Door Motor V107 with Defroster Door Motor Position Sensor G135 , Removing and Installing", page 132
- ⇒ "7.4 Recirculation Door Motor V113 , Removing and Installing", page 134
- ⇒ "7.5 Left Temperature Door Motor V158 with Left Temperature Door Potentiometer/Actuator G220 , Removing and Installing", page 136
- ⇒ "7.6 Right Temperature Door Motor V159 with Right Temperature Door Potentiometer/Actuator G221 , Removing and Installing", page 138
- ⇒ "7.7 Fresh Air/Recirculating Air/Back Pressure Door Motor V425 with Fresh Air/Recirculating Air/Back Pressure Door Motor Position Sensor G644 , Removing and Installing", page 140
- ⇒ "7.8 Front Air Distribution Door Motor V426 with Air Distribution Door Motor Position Sensor G642 , Removing and Installing", page 143
- ⇒ "7.9 Air Distribution Door Motor V428 with Position Sensor Air Distribution Door Motor Position Sensor G645 , Removing and Installing", page 144
- ⇒ "7.10 Air Distribution Door Adjuster, Removing and Installing", page 147

7.1 Component Location Overview - Front Actuators

- ⇒ "7.1.1 Component Location Overview - Front Actuators, Electric-Manual Climate Control System", page 128
- ⇒ "7.1.2 Component Location Overview - Front Actuators, Climatronic", page 129

7.1.1 Component Location Overview - Front Actuators, Electric-Manual Climate Control System

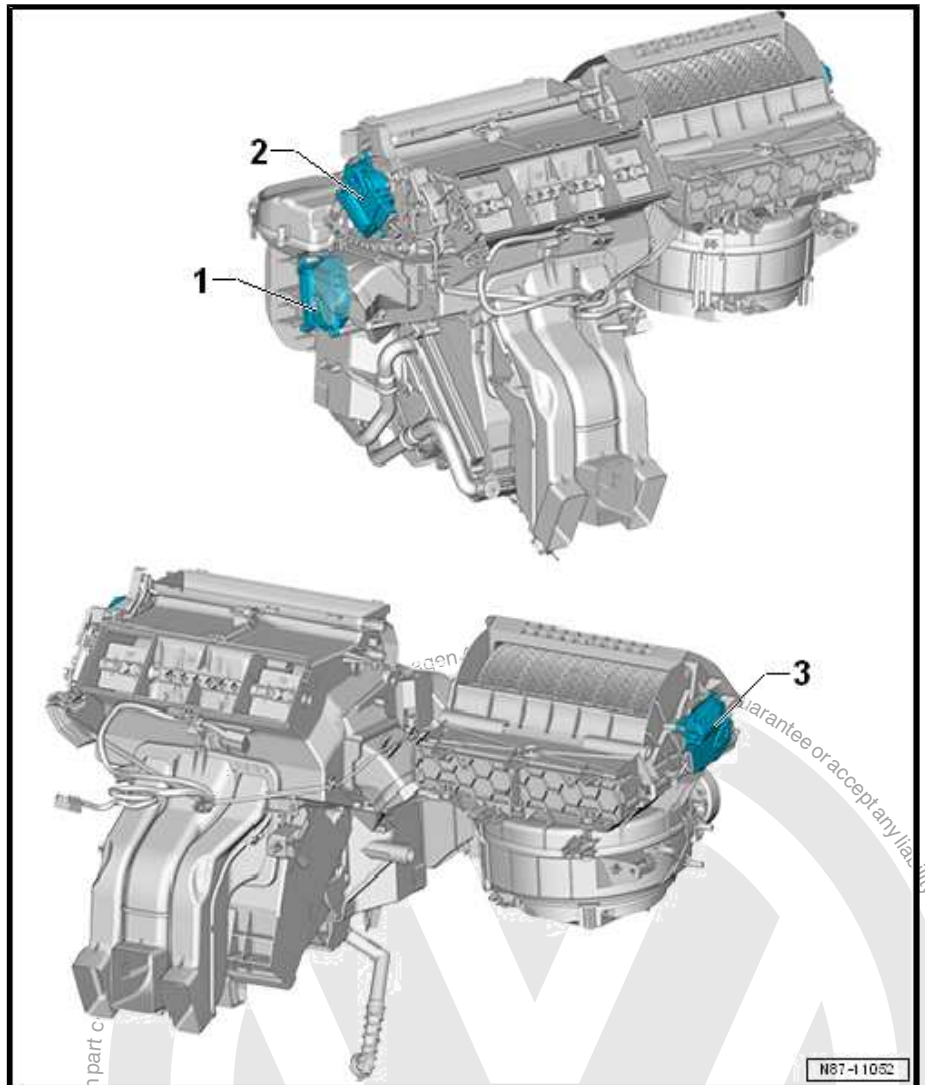


1 - Temperature Regulator Door Motor - V68-

- ☐ With the Temperature Regulator Door Motor Position Sensor - G92-
- ☐ Check using the Vehicle Diagnostic Tester .
- ☐ Removing and installing. Refer to
⇒ ["7.2 Temperature Regulator Door Motor V68 with Temperature Regulator Door Motor Position Sensor G92 , Removing and Installing", page 131](#) .
- ☐ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester

2 - Air Distribution Door Motor - V428-

- ☐ With the Air Distribution Door Motor Position Sensor - G645-
- ☐ Check using the Vehicle Diagnostic Tester .
- ☐ Removing and installing. Refer to
⇒ ["7.9 Air Distribution Door Motor V428 with Position Sensor Air Distribution Door Motor Position Sensor G645 , Removing and Installing", page 144](#) .
- ☐ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester



3 - Recirculation Door Motor - V113-

- ☐ Check using the Vehicle Diagnostic Tester .
- ☐ Removing and installing. Refer to
⇒ ["7.4 Recirculation Door Motor V113 , Removing and Installing", page 134](#) .
- ☐ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester

7.1.2 Component Location Overview - Front Actuators, Climatronic

Pay attention to the turn off conditions for vehicles with the Start/Stop System. Refer to
⇒ ["2.2 Vehicles with Start/Stop System General Information", page 3](#) .

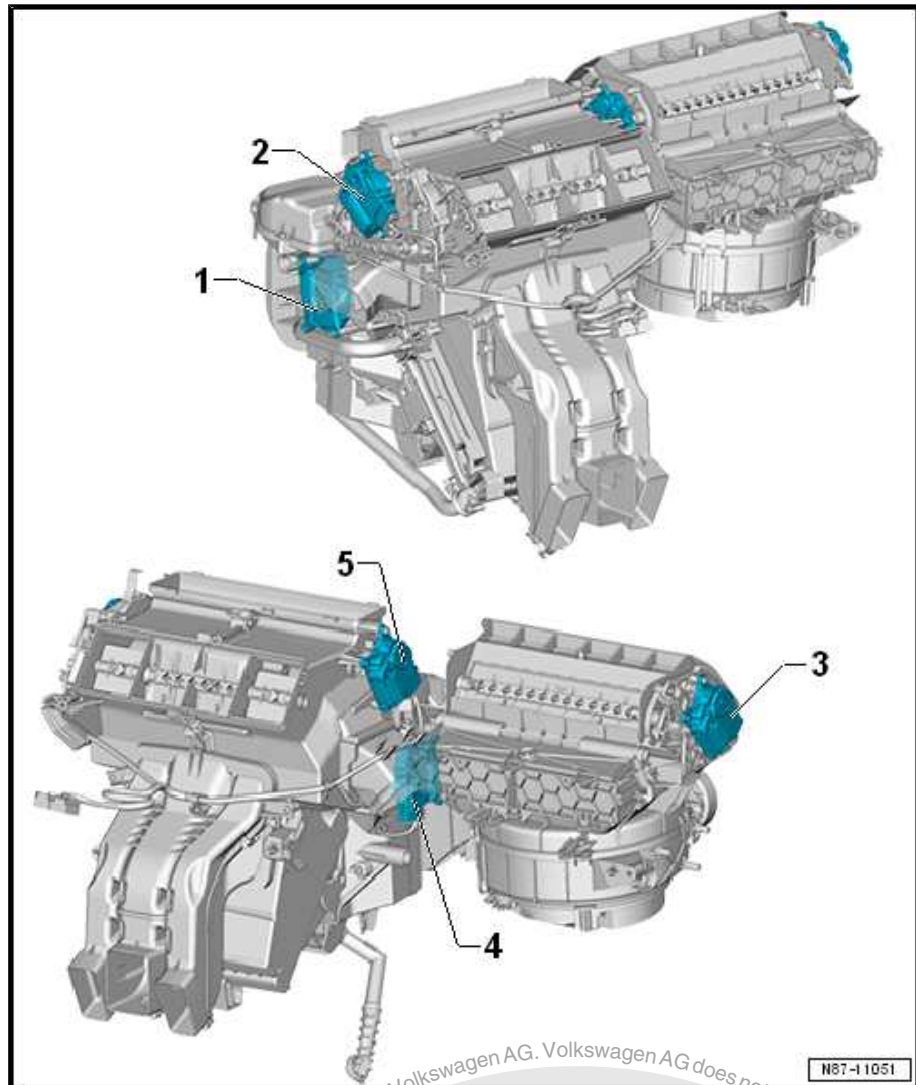


1 - Left Temperature Door Motor - V158-

- ❑ With Left Temperature Door Potentiometer/Actuator - G220-
- ❑ Check using the Vehicle Diagnostic Tester .
- ❑ Removing and installing. Refer to
⇒ ["7.5 Left Temperature Door Motor V158 with Left Temperature Door Potentiometer/Actuator G220 , Removing and Installing", page 136](#) .
- ❑ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester

2 - Front Air Distribution Door Motor - V426- with Front Air Distribution Door Motor Position Sensor - G642-

- ❑ With the Front Air Distribution Door Motor Position Sensor - G642-
- ❑ Check using the Vehicle Diagnostic Tester .
- ❑ Removing and installing. Refer to
⇒ ["7.8 Front Air Distribution Door Motor V426 with Air Distribution Door Motor Position Sensor G642 , Removing and Installing", page 143](#) .



- ❑ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester

3 - Fresh Air/Recirculating Air/Back Pressure Door Motor - V425-

- ❑ With Fresh Air/Recirculating Air/Back Pressure Door Motor Position Sensor - G644-
- ❑ Check using the Vehicle Diagnostic Tester .
- ❑ Removing and installing. Refer to
⇒ ["7.7 Fresh Air/Recirculating Air/Back Pressure Door Motor V425 with Fresh Air/Recirculating Air/Back Pressure Door Motor Position Sensor G644 , Removing and Installing", page 140](#) .
- ❑ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester

4 - Right Temperature Door Motor - V159-

- ❑ With Right Temperature Door Potentiometer/Actuator - G221-
- ❑ Check using the Vehicle Diagnostic Tester .
- ❑ Removing and installing. Refer to
⇒ ["7.6 Right Temperature Door Motor V159 with Right Temperature Door Potentiometer/Actuator G221 , Removing and Installing", page 138](#) .
- ❑ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester

5 - Defroster Door Motor - V107-

- ❑ With the Defroster Door Motor Position Sensor - G135-
- ❑ Check using the Vehicle Diagnostic Tester .
- ❑ Removing and installing. Refer to
⇒ ["7.3 Defroster Door Motor V107 with Defroster Door Motor Position Sensor G135 , Removing and Installing", page 132](#) .



- ❑ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester

7.2 Temperature Regulator Door Motor - V68- with Temperature Regulator Door Motor Position Sensor - G92- , Removing and Installing

Heater and Electric-Manual Climate Control System

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester

Removing

- Turn off the ignition.
- Equipment level with ignition lock: Remove the ignition key.



WARNING

Risk of injury by the knee airbag.

- ◆ ***Before working in the area of pyrotechnic components, the person must "discharge static electricity". Follow the safety precautions when working on the airbag. Refer to ⇒ Body Interior; Rep. Gr. 00 ; Safety Precautions; Pyrotechnic Components Safety Precautions .***

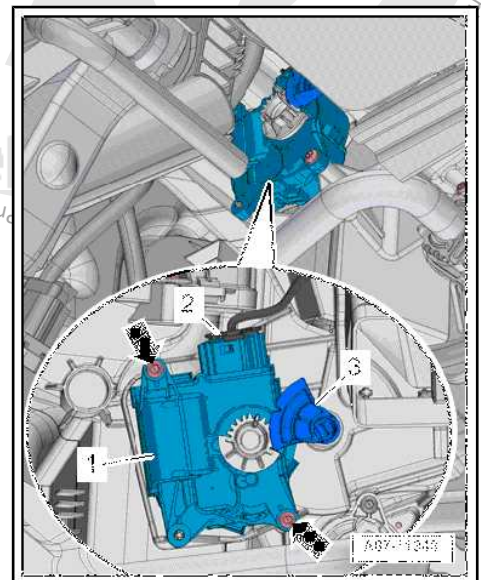
- Remove the driver footwell vent. Refer to [⇒ "5.5 Driver Side Footwell Vent, Removing and Installing", page 117](#) .
- Remove the operating lever -3- from the heater.



Note

The upper bolt is accessible with a commercially available small bit-ratchet.

- Remove the bolts -arrows-.
- Disconnect the connector -2-.
- Remove the Temperature Regulator Door Motor - V68- -1-.





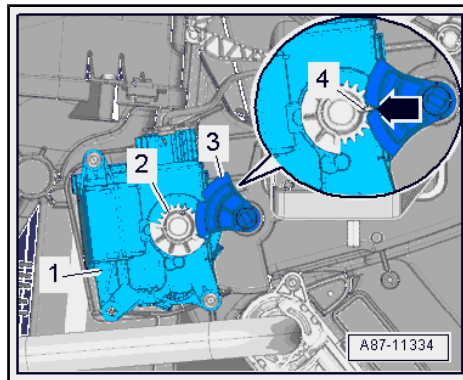
Installing

Install in reverse order of removal. Note the following:



Note

- ◆ Check the function of the doors and linkage before installing.
- ◆ Check if the lever and shafts are seated correctly in the mounts.
- Mount the actuator -1- onto the air distribution housing. When doing this, the toothed gear -2- on the actuator must engage into the toothed gear -3- on the operating lever.
- The long tooth -4- must engage into the recess -arrow- on the operating lever.



Note

- ◆ If the toothed gear on the actuator and the toothed gear on the temperature door lever do not face each other, turn the mount in the actuator.
- ◆ If the bolts cannot be installed, the actuator does not sit completely on the housing.
- Switch on the ignition, connect the affected actuator to the vehicle wiring harness and select the setting for the desired actuator position on the display control head (for example, the center position). Wait until the actuator reaches the desired position and switch the ignition off.
- Install the wiring harness so that it cannot come in contact with any moving parts (for example, the lever on the actuator).
- Check the Diagnostic Trouble Code (DTC) memory and erase any displayed entries, then perform the “basic setting”. Refer to Vehicle Diagnostic Tester in the “Guided Fault Finding” function.
- Check the heater and A/C unit function.

Tightening Specifications

- ◆ Refer to ➤ [“4.1 Overview - Heater and A/C Unit”, page 72](#)

7.3 Defroster Door Motor - V107- with Defroster Door Motor Position Sensor - G135- , Removing and Installing

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester

Perform the following work first:

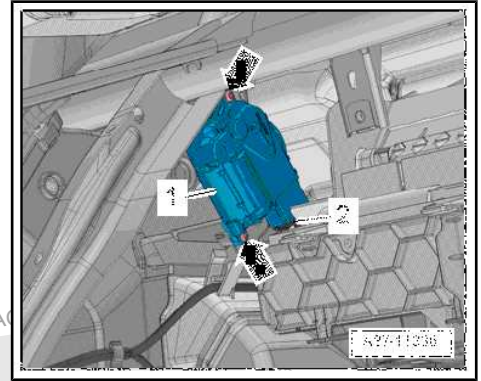
- Turn off all electric consumers.
- Turn off the ignition.
- Remove the key.

Removing

- Remove the glove compartment. Refer to ➤ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Overview - Glove Compartment .



- Remove the bolts -arrows-.
- Remove the Defroster Door Motor - V107- -1-.
- Disconnect the connector -2-.





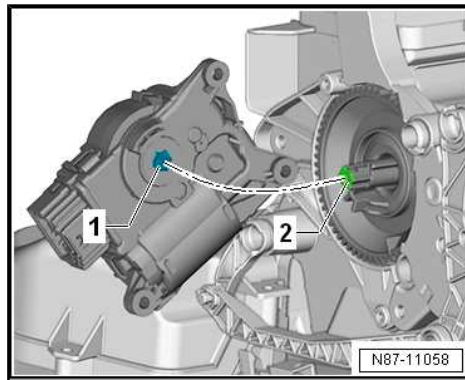
Installing

Install in reverse order of removal. Note the following:



Note

- ◆ Check the function of the doors and linkage before installing.
- ◆ Check if the lever and shafts are seated correctly in the mounts.
- The actuator mount -1- can only be installed in one position on the actuating arm -2-.
- The actuator mount must be opposite the actuating arm as shown in the illustration.



Note

If the mount and the actuating arm are not opposite each other, turn the mount in the actuator.

- Switch on the ignition, connect the affected actuator to the vehicle wiring harness and select the setting for the desired actuator position on the display control head (for example, the center position). Wait until the actuator reaches the desired position and switch the ignition off.
- Mount the actuator on the air distribution housing so that the actuating arm reaches into the mount -1- -arrow-.
- There must not be any play in the connection between the actuator and the actuating arm.



Note

If the bolts cannot be installed, the actuator does not sit completely on the housing.

- Install the wiring harness so that it cannot come in contact with any moving parts (for example, the lever on the actuator).
- Check the Diagnostic Trouble Code (DTC) memory and erase any displayed entries, then perform the “basic setting”. Refer to Vehicle Diagnostic Tester in the “Guided Fault Finding” function.
- Check the heater and A/C unit function.

Tightening Specifications

- ◆ Refer to ➔ [“4.1 Overview - Heater and A/C Unit”, page 72](#)
- ◆ Storage Compartments/Covers; Overview - Glove Compartment. Refer to ➔ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Overview - Glove Compartment .

7.4 Recirculation Door Motor - V113- , Removing and Installing

Heater and electric-manual climate control system

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester



Note

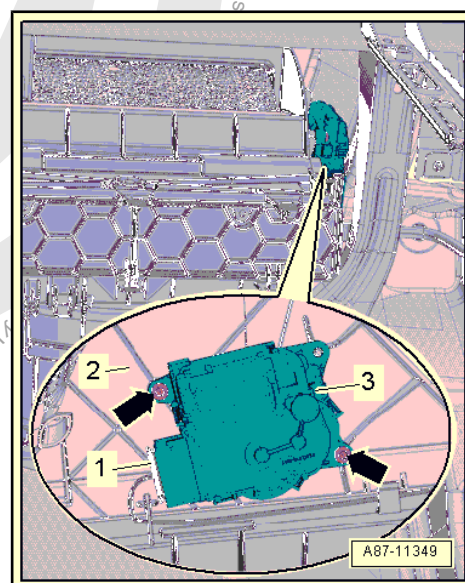
The actuator has end stops with integrated end switches instead of a position sensor.

Perform the Following Work First

- Turn off all electric consumers.
- Turn off the ignition.
- Remove the key.

Removing

- Remove the glove compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Glove Compartment, Removing and Installing .
- Remove the bolts -arrows-.
- Remove the Recirculation Door Motor - V113- -3- from the air intake duct -2-.
- Disconnect the connector -1-.





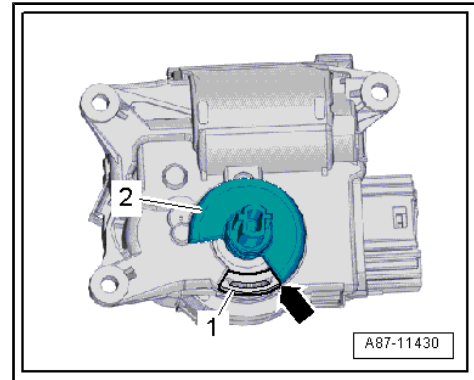
Installing

Install in reverse order of removal. Note the following:



Note

- ◆ Check the function of the doors and linkage before installing.
- ◆ Check if the lever and shafts are seated correctly in the mounts.
- The fresh air door must be in the “open” position so the fresh air comes into the vehicle.
- The actuating shaft -2- must contact the stop -1- -arrow- as illustrated.



Note

If the actuating shaft of the actuator is not set to “fresh-air mode” stop, turn the mount in the actuator.

- Switch on the ignition, connect the affected actuator to the vehicle wiring harness and select the setting for the desired actuator position on the display control head (for example, the center position). Wait until the actuator reaches the desired position and switch the ignition off.
- Mount the actuator to the air intake housing so that the actuating shaft engages into the mount.
- There must not be any play in the connection between the actuating shaft and the mount.



Note

If the bolts cannot be installed, the actuator does not sit completely on the housing.

- Install the wiring harness so that it cannot come in contact with any moving parts (for example, the lever on the actuator).
- Check the Diagnostic Trouble Code (DTC) memory and erase any displayed entries, then perform the “basic setting”. Refer to Vehicle Diagnostic Tester in the “Guided Fault Finding” function.
- Check the heater and Air Conditioning (A/C) unit function.

Tightening Specifications

- ◆ Refer to ⇒ [“4.1 Overview - Heater and A/C Unit”, page 72](#)
- ◆ Storage Compartments/Covers; Overview - Glove Compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Overview - Glove Compartment .

7.5 Left Temperature Door Motor - V158- with Left Temperature Door Potentiometer/Actuator - G220- , Removing and Installing

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester



Perform the following work first:

- Turn off all electric consumers.
- Turn off the ignition.
- Remove the key.

Removing



WARNING

Risk of injury by the knee airbag.

- ◆ **Before working in the area of pyrotechnic components, the person must "discharge static electricity". Follow the safety precautions when working on the airbag. Refer to ⇒ Body Interior; Rep. Gr. 00 ; Safety Precautions; Pyrotechnic Components Safety Precautions .**

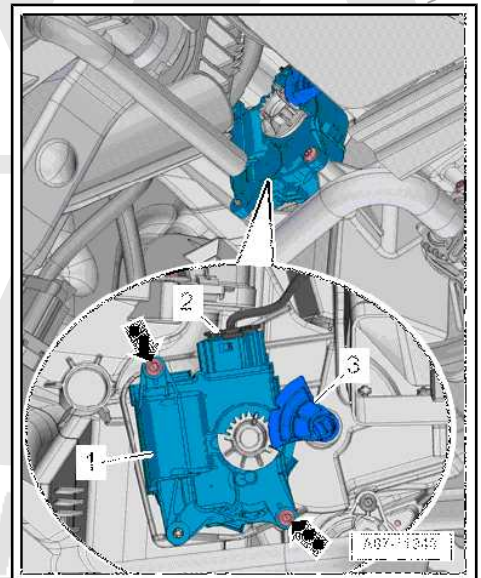
- Remove the driver footwell vent. Refer to ⇒ ["5.5 Driver Side Footwell Vent, Removing and Installing", page 117 .](#)
- Remove the operating lever -3- from the heater.



Note

The upper bolt is accessible with a commercially available small bit-ratchet.

- Remove the bolts -arrows-.
- Disconnect the connector -2-.
- Remove the Left Temperature Door Motor - V158- -1-.





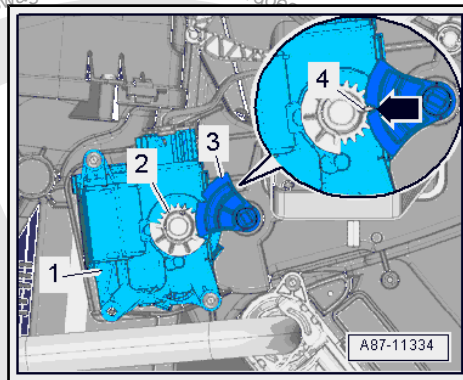
Installing

Install in reverse order of removal. Note the following:



Note

- ◆ *Check the function of the doors and linkage before installing.*
- ◆ *Check if the lever and shafts are seated correctly in the mounts.*
- Mount the actuator -1- onto the air distribution housing. When doing this, the toothed gear -2- on the actuator must engage into the toothed gear -3- on the temperature door lever.
- The long tooth -4- must engage into the recess -arrow- on the operating lever.



Note

- ◆ *If the toothed gear on the actuator and the toothed gear on the temperature door lever do not face each other, turn the mount in the actuator.*
- ◆ *If the bolts cannot be installed, the actuator does not sit completely on the housing.*
- ◆ *Turn the actuator so far until it has reached a favorable position for installation. The direction of rotation can be reversed by switching the positive and negative.*
- Switch on the ignition, connect the affected actuator to the vehicle wiring harness and select the setting for the desired actuator position on the display control head (for example, the center position). Wait until the actuator reaches the desired position and switch the ignition off.
- Install the wiring harness so that it cannot come in contact with any moving parts (for example, the lever on the actuator).
- Check the Diagnostic Trouble Code (DTC) memory and erase any displayed entries, then perform the “basic setting”. Refer to Vehicle Diagnostic Tester in the “Guided Fault Finding” function.
- Check the heater and Air Conditioning (A/C) unit function.

Tightening Specifications

- ◆ Refer to ➤ [“4.1 Overview - Heater and A/C Unit”, page 72](#)

7.6 Right Temperature Door Motor - V159- with Right Temperature Door Potentiometer/Actuator - G221- , Removing and Installing

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester

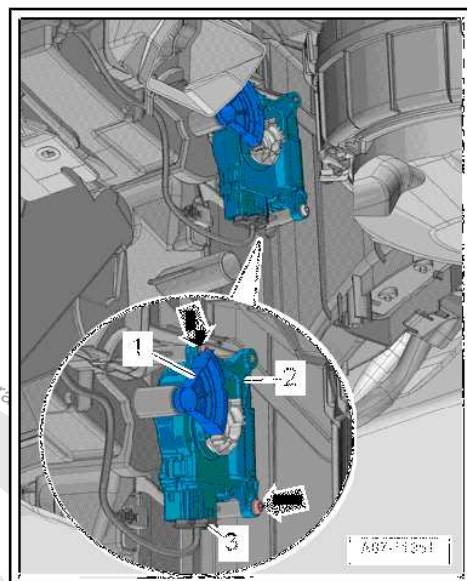
Perform the following work first:

- Turn off all electric consumers.
- Turn off the ignition.
- Remove the key.



Removing

- Remove the partition. Refer to
⇒ [“4.20 Partition, Removing and Installing”, page 112](#) .
- Remove the operating lever -1- for the temperature door.
- Remove the bolts -arrows-.
- Remove the Right Temperature Door Motor - V159- -2-.
- Disconnect the connector -3-.





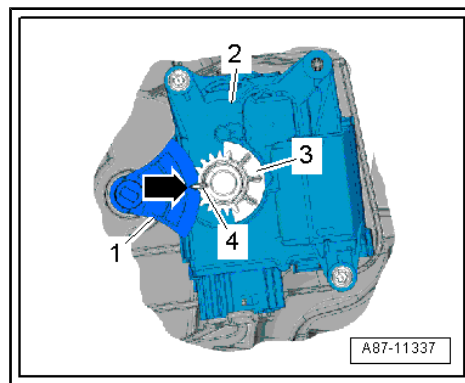
Installing

Install in reverse order of removal. Note the following:



Note

- ◆ Check the function of the doors and linkage before installing.
- ◆ Check if the lever and shafts are seated correctly in the mounts.
- Mount the actuator -2- onto the air distribution housing. When doing this, the toothed gear -3- on the actuator must engage into the toothed gear -1- on the temperature door lever.
- The long tooth -4- must engage into the recess -arrow- on the operating lever.



Note

- ◆ If the toothed gear on the actuator and the toothed gear on the temperature door lever do not face each other, turn the mount in the actuator.
- ◆ If the bolts cannot be installed, the actuator does not sit completely on the housing.
- Switch on the ignition, connect the affected actuator to the vehicle wiring harness and select the setting for the desired actuator position on the display control head (for example, the center position). Wait until the actuator reaches the desired position and switch the ignition off.
- Install the wiring harness so that it cannot come in contact with any moving parts (for example, the lever on the actuator).



Note

Turn the actuator so far until it has reached a favorable position for installation. The direction of rotation can be reversed by switching the positive and negative.

- Check the Diagnostic Trouble Code (DTC) memory and erase any displayed entries, then perform the "basic setting". Refer to Vehicle Diagnostic Tester in the "Guided Fault Finding" function.
- Check the heater and Air Conditioning (A/C) unit function.

Tightening Specifications

- ◆ Refer to ⇒ ["4.1 Overview - Heater and A/C Unit", page 72](#)

7.7 Fresh Air/Recirculating Air/Back Pressure Door Motor - V425- with Fresh Air/Recirculating Air/Back Pressure Door Motor Position Sensor - G644- , Removing and Installing

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester

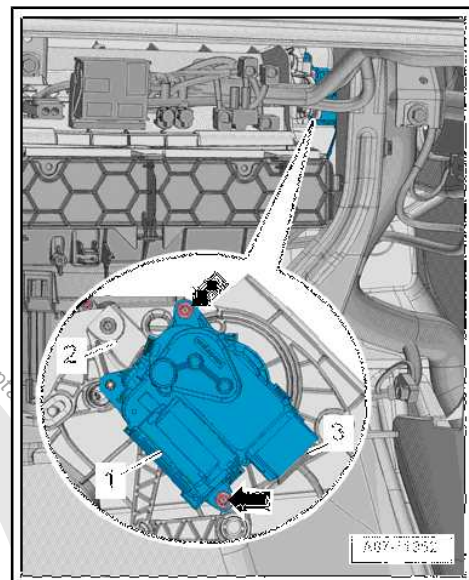
Perform the following work first:



- Turn off all electric consumers.
- Turn off the ignition.
- Remove the key.

Removing

- Remove the glove compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Glove Compartment, Removing and Installing .
- Unclip the wiring harness.
- Remove the bolts -arrows-.
- Remove the Fresh Air/Recirculating Air/Back Pressure Door Motor - V425- -1- from the air intake duct.
- Disconnect the connector -3-.





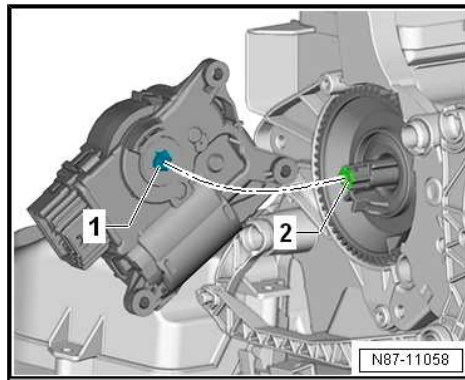
Installing

Install in reverse order of removal. Note the following:



Note

- ◆ Check the function of the doors and linkage before installing.
- ◆ Check if the lever and shafts are seated correctly in the mounts.
- The actuator mount -1- can only be installed in one position on the actuating arm -2-.
- The actuator mount must be opposite the actuating arm as shown in the illustration.



Note

If the mount and the actuating arm are not opposite each other, turn the mount in the actuator.

- Switch on the ignition, connect the affected actuator to the vehicle wiring harness and select the setting for the desired actuator position on the display control head (for example, the center position). Wait until the actuator reaches the desired position and switch the ignition off.
- Mount the actuator on the air distribution housing so that the actuating arm reaches into the mount -1- -arrow-.
- There must not be any play in the connection between the actuator and the actuating arm.



Note

If the bolts cannot be installed, the actuator does not sit completely on the housing.

- Install the wiring harness so that it cannot come in contact with any moving parts (for example, the lever on the actuator).



Note

Turn the actuator so far until it has reached a favorable position for installation. The direction of rotation can be reversed by switching the positive and negative.

- Check the Diagnostic Trouble Code (DTC) memory and erase any displayed entries, then perform the "basic setting". Refer to Vehicle Diagnostic Tester in the "Guided Fault Finding" function.
- Check the heater and Air Conditioning (A/C) unit function.

Tightening Specifications

- ◆ Refer to ⇒ ["4.1 Overview - Heater and A/C Unit", page 72](#)
- ◆ Storage Compartments/Covers; Overview - Glove Compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Overview - Glove Compartment .



7.8 Front Air Distribution Door Motor - V426- with Air Distribution Door Motor Position Sensor - G642- , Removing and Installing

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester

Perform the following work first:

- Turn off all electric consumers.
- Turn off the ignition.
- Remove the key.

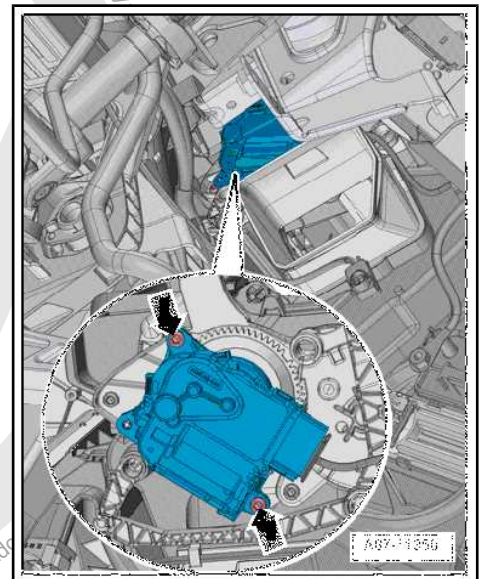
Removing

- Remove the instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel; Instrument Panel, Removing and Installing .
- If installed: Remove the Access/Start Authorization Control Module - J518- . Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Access/Start Authorization; Component Location Overview - Access/Start Authorization System .
- Remove the driver footwell vent. Refer to ⇒ ["5.5 Driver Side Footwell Vent, Removing and Installing", page 117](#).
- Remove the bolts -arrows-.



Note

- ◆ *The bolts are behind the central tube and can be reached from below.*
- ◆ *To remove the bolts use a magnetic screwdriver or have a second technician hold a magnet over the bolts. If a bolt falls, it goes into the tray for the cable duct and cannot be reached. The instrument panel must then be removed to remove the bolt.*
- Remove the Front Air Distribution Door Motor - V426- -4-.
- Disconnect the connector -1-.



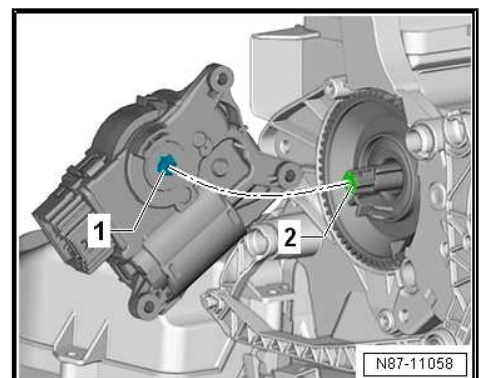
Installing

Install in reverse order of removal. Note the following:



Note

- ◆ *Check the function of the doors and linkage before installing.*
- ◆ *Check if the lever and shafts are seated correctly in the mounts.*





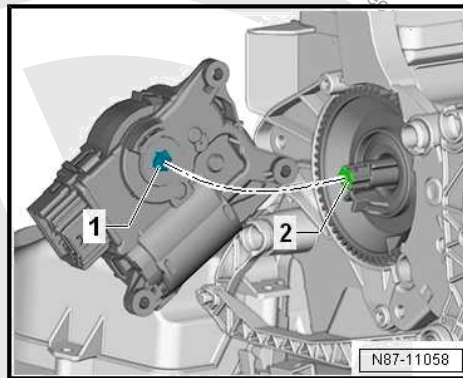
- The actuator mount -1- can only be installed in one position on the actuating arm -2-.
- The actuator mount must be opposite the actuating arm as shown in the illustration.



Note

If the mount and the actuating arm are not opposite each other, turn the mount in the actuator.

- Switch on the ignition, connect the affected actuator to the vehicle wiring harness and select the setting for the desired actuator position on the display control head (for example, the center position). Wait until the actuator reaches the desired position and switch the ignition off.
- Mount the actuator on the air distribution housing so that the actuating arm reaches into the mount -1- -arrow-.
- There must not be any play in the connection between the actuator and the actuating arm.



Note

If the bolts cannot be installed, the actuator does not sit completely on the housing.

- Install the wiring harness so that it cannot come in contact with any moving parts (for example, the lever on the actuator).



Note

Turn the actuator so far until it has reached a favorable position for installation. The direction of rotation can be reversed by switching the positive and negative.

- Check the Diagnostic Trouble Code (DTC) memory and erase any displayed entries, then perform the “basic setting”. Refer to Vehicle Diagnostic Tester in the “Guided Fault Finding” function.
- Check the heater and Air Conditioning (A/C) unit function.

Tightening Specifications

- ♦ Refer to ⇒ [“4.1 Overview - Heater and A/C Unit”, page 72](#)
- ♦ Overview - instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel; Overview - Instrument Panel .

7.9 Air Distribution Door Motor - V428- with Position Sensor Air Distribution Door Motor Position Sensor - G645- , Removing and Installing

Special tools and workshop equipment required

- ♦ Vehicle Diagnostic Tester

Removing

- Remove the instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel; Instrument Panel, Removing and Installing .

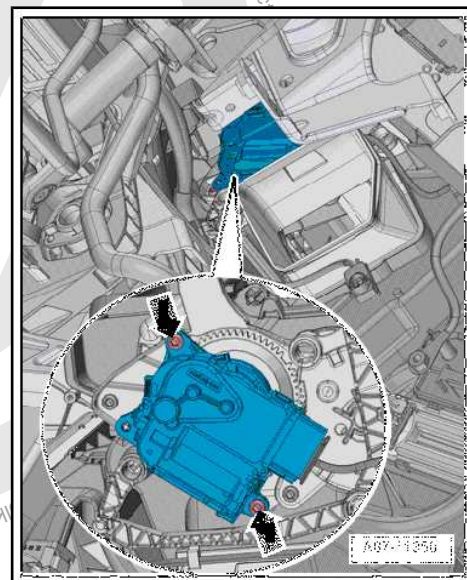


- If installed: Remove the Access/Start Authorization Control Module - J518- . Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Access/Start Authorization; Component Location Overview - Access/Start Authorization System .
- Remove the driver footwell vent. Refer to ⇒ ["5.5 Driver Side Footwell Vent, Removing and Installing", page 117](#) .
- Remove the bolts -arrows-.



Note

- ◆ *The bolts are behind the central tube and can be reached from below.*
- ◆ *To remove the bolts use a magnetic screwdriver or have a second technician hold a magnet over the bolts. If a bolt falls, it goes into the tray for the cable duct and cannot be reached.*
- Remove the Air Distribution Door Motor - V428- -4-.
- Disconnect the connector -1-.





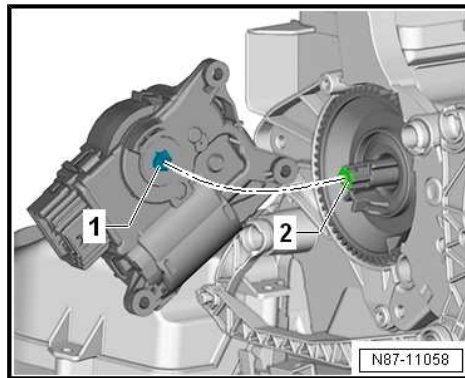
Installing

Install in reverse order of removal. Note the following:



Note

- ◆ Check the function of the doors and linkage before installing.
- ◆ Check if the lever and shafts are seated correctly in the mounts.
- The actuator mount -1- can only be installed in one position on the actuating arm -2-.
- The actuator mount must be opposite the actuating arm as shown in the illustration.



Note

If the mount and the actuating arm are not opposite each other, turn the mount in the actuator.

- Switch on the ignition, connect the affected actuator to the vehicle wiring harness and select the setting for the desired actuator position on the display control head (for example, the center position). Wait until the actuator reaches the desired position and switch the ignition off.
- Attach the adjustment motor to the air distribution housing so that the relay lever -2- reaches into the mount -1-.
- There must not be any play in the connection between the actuator and the actuating arm.



Note

If the bolts cannot be installed, the actuator does not sit completely on the housing.

- Install the wiring harness so that it cannot come in contact with any moving parts (for example, the lever on the actuator).



Note

Turn the actuator so far until it has reached a favorable position for installation. The direction of rotation can be reversed by switching the positive and negative.

- Check the Diagnostic Trouble Code (DTC) memory and erase any displayed entries, then perform the "basic setting". Refer to Vehicle Diagnostic Tester in the "Guided Fault Finding" function.
- Check the heater and Air Conditioning (A/C) unit function.

Tightening Specifications

- ◆ Refer to ⇒ ["4.1 Overview - Heater and A/C Unit", page 72](#)
- ◆ Overview - instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel; Overview - Instrument Panel .



7.10 Air Distribution Door Adjuster, Removing and Installing

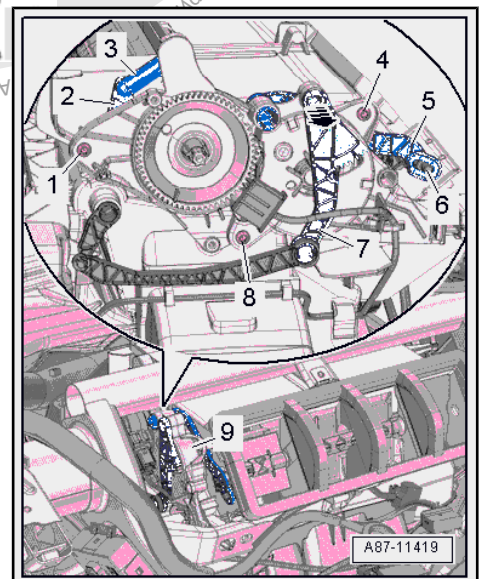
⇒ [“7.10.1 Front Air Distribution Door Adjuster, Removing and Installing, Heater and Electric-Manual Climate Control System”, page 147](#)

⇒ [“7.10.2 Front Air Distribution Door Adjuster, Removing and Installing, Climatronic”, page 148](#)

7.10.1 Front Air Distribution Door Adjuster, Removing and Installing, Heater and Electric-Manual Climate Control System

Removing

- Remove the instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel; Instrument Panel, Removing and Installing .
- Remove the defroster vent air guide. Refer to ⇒ [“5.11 Air Guide for Defrost Air Vent, Removing and Installing”, page 120](#) .
- Remove the air distribution door motor. Refer to ⇒ [“7.9 Air Distribution Door Motor V428 with Position Sensor Air Distribution Door Motor Position Sensor G645 , Removing and Installing”, page 144](#) .
- Carefully remove the operating lever -7- -arrow-.
- Carefully remove the operating lever -3- from the lever for the defroster door -2-.
- Remove the bolts -1, 4 and 8-.
- Remove the adjuster -9- upward.



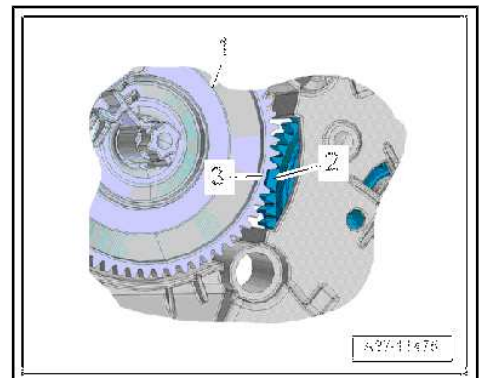
Installing

- Install in reverse order of removal. Note the following:



Note

- ◆ Check the function of the doors and linkage before installing.
- ◆ Check if the lever and shafts are seated correctly in the mounts.
- Check if the gears correlate correctly with one another.
- The square tooth -2- must engage into the gap -3- on the toothed gear -1-.

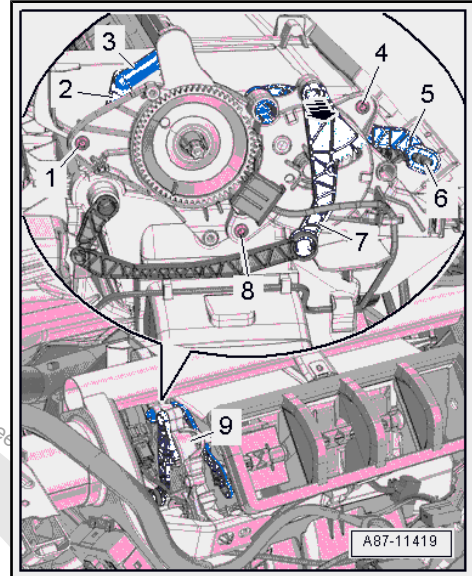




- When mounting the adjuster, the operating lever -5- must engage into the vent door lever -6- in the middle.

Tightening Specifications

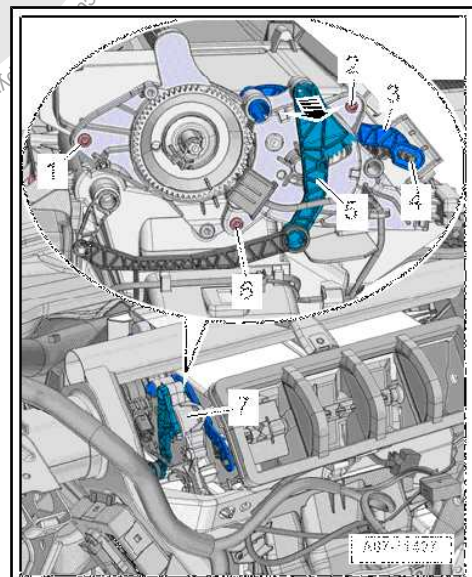
- ◆ Refer to ⇒ [“4.1 Overview - Heater and A/C Unit”, page 72](#)
- ◆ Overview - instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel; Overview - Instrument Panel .



7.10.2 Front Air Distribution Door Adjuster, Removing and Installing, Climatronic

Removing

- Remove the instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel; Instrument Panel, Removing and Installing .
- Remove the defroster vent air guide. Refer to ⇒ [“5.11 Air Guide for Defrost Air Vent, Removing and Installing”, page 120](#) .
- Remove the air distribution door motor. Refer to ⇒ [“7.8 Front Air Distribution Door Motor V426 with Air Distribution Door Motor Position Sensor G642 , Removing and Installing”, page 143](#) .
- Carefully remove the operating lever -5- -arrow-.
- Remove the bolts -1, 2 and 6-.
- Remove the adjuster -7- upward.





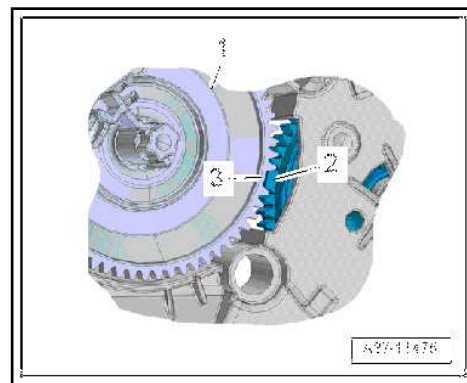
Installing

- Install in reverse order of removal. Note the following:



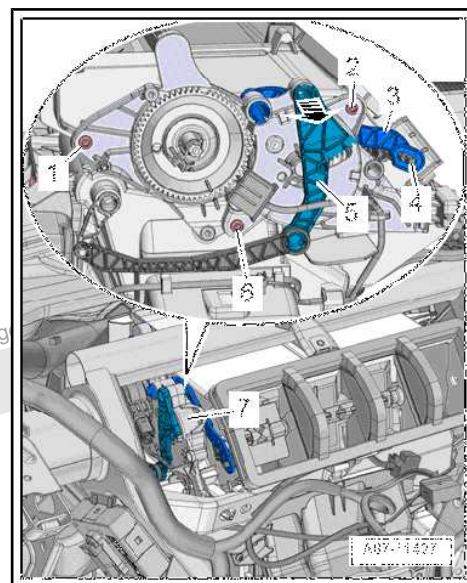
Note

- ◆ Check the function of the doors and linkage before installing.
- ◆ Check if the lever and shafts are seated correctly in the mounts.
- Check if the gears correlate correctly with one another.
- The square tooth -2- must engage into the gap -3- on the toothed gear -1-.
- When mounting the adjuster, the operating lever -3- must engage into the vent door lever -4- in the middle.



Tightening Specifications

- ◆ Refer to ⇒ [“4.1 Overview - Heater and A/C Unit”, page 72](#)
- ◆ Overview - instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel; Overview - Instrument Panel .



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8 Additional Components for Control and Regulation

⇒ ["8.1 Sunlight Photo Sensor G107 , Removing and Installing", page 150](#)

⇒ ["8.2 Air Quality Sensor G238 , Removing and Installing", page 151](#)

⇒ ["8.3 Function of Air Quality Sensor G238 ", page 151](#)

⇒ ["8.4 Outside Air Temperature Sensor G17 , Removing and Installing", page 153](#)

⇒ ["8.5 A/C Humidity Sensor G260 , Removing and Installing", page 153](#)

⇒ ["8.6 Left Vent Temperature Sensor G150 , Removing and Installing", page 153](#)

⇒ ["8.7 Right Vent Temperature Sensor G151 , Removing and Installing", page 154](#)

⇒ ["8.8 Footwell Vent Temperature Sensor G192 , Removing and Installing", page 155](#)

8.1 Sunlight Photo Sensor - G107- , Removing and Installing

Special tools and workshop equipment required

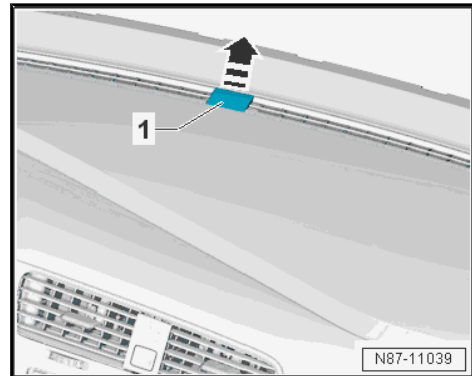
- ◆ Trim Removal Wedge - 3409-

Removing

- Unclip Sunlight Photo Sensor - G107- -1- in the direction of the -arrow- out of the instrument cluster.
- Disconnect the connector.

Installing

- Install in reverse order of removal.





8.2 Air Quality Sensor - G238- , Removing and Installing



Note

- ◆ The Air Quality Sensor - G238- is only installed on vehicles with climatronic.
- ◆ The Air Quality Sensor - G238- is installed at the right front on the intake air grille in the plenum chamber.
- ◆ The Air Quality Sensor - G238- contains a highly sensitive electronic component that can be damaged if it comes in direct contact with solvents, fuels or chemicals.
- ◆ Do not install a sensor that has been kept, for example, in a tool box.
- ◆ Do not store removed sensors in areas where they can come into contact with solvents, fuels and certain chemical compositions (fluids or vapors).

Removing

- Remove the fresh air intake cover. Refer to ➤ ["5.3 Fresh Air Intake Cover, Removing and Installing", page 115](#).
- Release the securing tab -2- downward.
- Pull the Air Quality Sensor - G238- -1- in direction of -arrow-.
- Disconnect the connector.



Note

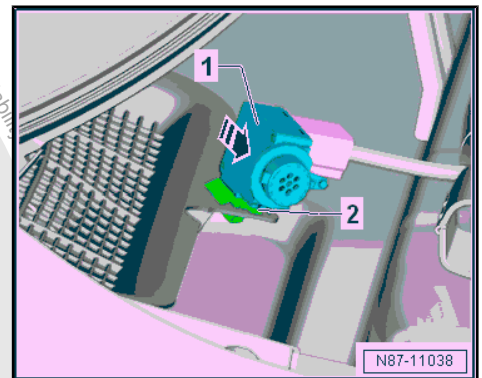
Do not store a removed Air Quality Sensor - G238- in areas where they can come into contact with solvents, fuels, and certain chemical compositions (fluids or vapors).

Installing

- Install in reverse order of removal. Note the following:
- Check the Diagnostic Trouble Code (DTC) memory and erase any displayed entries using the Vehicle Diagnostic Tester in the "Guided Fault Finding" function.

Tightening Specifications

- ◆ Bulkhead; overview - plenum chamber cover. Refer to ➤ Body Exterior; Rep. Gr. 50 ; Bulkhead; Plenum Chamber Cover, Removing and Installing.



8.3 Function of Air Quality Sensor - G238-

- ◆ Sensor for air quality detects pollutants in the ambient air (mostly gasoline and/or diesel fumes).
- ◆ The Climatronic Control Module - J255- evaluates the signal from the Air Quality Sensor - G238- . The Air Conditioning (A/C) system is activated depending on the strength and type of heavily polluted air.

At an outside temperature above approximately 2 °C (35.6 °F) the recirculating air mode is switched on when there is only a slight increase in pollutants in the ambient air.



At an outside temperature between approximately 2 °C (35.6 °F) and approximately -5 °C (23 °F), the change over to recirculating air mode only occurs at a sharp increase of pollutant concentration, during which the compressor is switched on simultaneously.

At an outside temperature less than approximately -5 °C (23 °F), the system still only changes to recirculation mode when there is a strong increase in the level of pollutants. However, it only switches on for approximately 15 seconds and the A/C compressor does not switch on. If the concentration decreases, the A/C system switches to the fresh air mode.

- ◆ “Automatic recirculating air mode” can be switched off at any time. If the function is active, the A/C compressor is switched on with a request for “automatic recirculating air mode” and also when the outside air temperature is below 2 °C (35.6 °F). If the temperature is below -5 °C (23 °F), it is not possible to use the A/C compressor.
- ◆ If the vehicle has “automatic recirculating air mode”, the A/C compressor can also be manually switched on when the temperature is approximately -5 °C (23 °F).
- ◆ To ensure that the A/C system does not operate constantly in the recirculating air mode in areas with a consistently higher pollution, the sensor is self-learning (it adjusts its sensitivity to the environmental conditions).
- ◆ If the pollutant level in the ambient air remains relatively high for a lengthy period, the sensor starts to adapt to the change in ambient conditions by way of an adaptation program, with the result that a recirculated-air request is generally applied for less than 12 minutes given uniform ambient air pollution. If a succession of peaks in the polluted air is detected, the A/C system can operate over a longer period of time in recirculating air mode.
- ◆ A certain amount of time is required for repositioning of the air conditioning system doors. In the event that a sudden increase in pollutants is encountered (for example, when driving through a diesel exhaust cloud) gaseous pollutants can be taken in with the fresh air into the passenger compartment until the door can be closed. For this reason, a dust and pollen filter is installed with a charcoal layer. A filter that is saturated with pollutants is no longer effective and needs to be replaced.
- ◆ In order to avoid frequent shifting of the recirculated air/fresh air door, a slight increase of pollutants in the ambient air will not allow for immediate shifting (the sensor does not send a request to the Climatronic Control Module - J255-). The filtering of the activated charcoal insert in the dust and pollen filter will be sufficient.
- ◆ In order to avoid frequent shifting of the recirculating air/fresh air door, the requirement from the sensor for “automatic recirculating air mode” remains for at least 25 seconds (minimum duration period), even if the pollutant concentration is so far reduced that recirculating air mode is no longer necessary.
- ◆ If the A/C compressor is switched off (the  button is off), then the Climatronic Control Module - J255- limits the “automatic recirculating air mode” to approximately 15 seconds to prevent the windows from fogging up.
- ◆ So that fogged windows are cleared as quickly as possible, the Climatronic Control Module - J255- does not permit recirculated air operation during the “Defrost” operating mode.
- ◆ The Air Quality Sensor - G238- requires approximately 30 seconds to become operational once the ignition has been switched on (warm-up time). During this time there is no requirement from the sensor to Climatronic Control Module - J255- for “automatic recirculating air mode”.



- ◆ The Air Quality Sensor - G238- contains a highly sensitive electronic component which can be damaged if it comes in direct contact with solvents, fuels or chemicals. For this reason, do not install sensors that may have come into contact with these substances.

8.4 Outside Air Temperature Sensor - G17- , Removing and Installing

Removing

- Remove the radiator grille. Refer to ➔ Body Exterior; Rep. Gr. 66 ; Radiator Grille/Front Trim; Radiator Grille, Removing and Installing .
- Unclip the Outside Air Temperature Sensor - G17- -1- from the bracket -arrow-.
- Remove the Outside Air Temperature Sensor - G17- upward.
- Disconnect the connector.

Installing



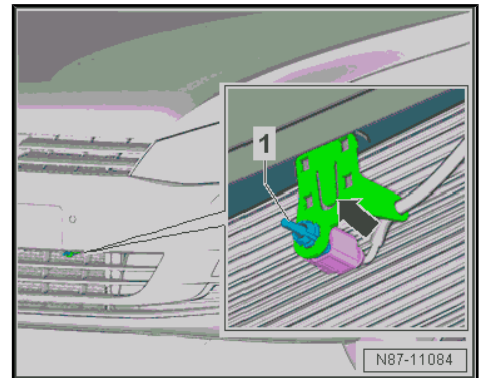
Note

Ensure electrical connector is seated correctly (water entry).

- Install in reverse order of removal.

Tightening Specifications

- ◆ Overview - Radiator Grille. Refer to ➔ Body Exterior; Rep. Gr. 66 ; Radiator Grille/Front Trim; Overview - Radiator Grille .



8.5 A/C Humidity Sensor - G260- , Removing and Installing

The A/C Humidity Sensor - G260- and the Rain/Light Recognition Sensor - G397- are one component and are vehicle-specific.

- Removing and installing. Refer to ➔ Electrical Equipment; Rep. Gr. 92 ; Windshield Wiper System; Rain/Light Recognition Sensor - G397- , Removing and Installing .



Note

The diagnosis occurs via the Vehicle Electrical System Control Module - J519- .

8.6 Left Vent Temperature Sensor - G150- , Removing and Installing

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester

Removing

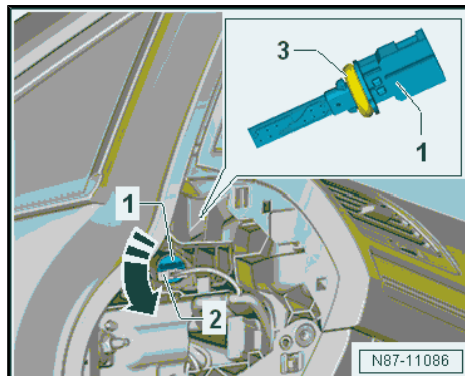


Note

Only for vehicles with Climatronic. For vehicles with heater or electronic-manually regulated Air Conditioning (A/C) system the openings on the air guide channels are closed with plugs.



- Remove the instrument panel side cover. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel; Instrument Panel Side Cover, Removing and Installing .
- Turn the vent temperature sensor -1- in direction of -arrow- and remove it from the mount.
- Disconnect the connector -2-.



Installing

Install in reverse order of removal. Note the following:

- Replace the seal -3- if it is damaged or faulty.



Note

An incorrectly installed vent temperature sensor causes flow-generated noise.

- Check the Diagnostic Trouble Code (DTC) memory and erase any displayed entries using the Vehicle Diagnostic Tester in the “Guided Fault Finding” function.

Tightening Specifications

- ◆ Instrument panel; instrument panel side cover removing and installing. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel; Instrument Panel Side Cover, Removing and Installing .

8.7 Right Vent Temperature Sensor - G151- , Removing and Installing

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester

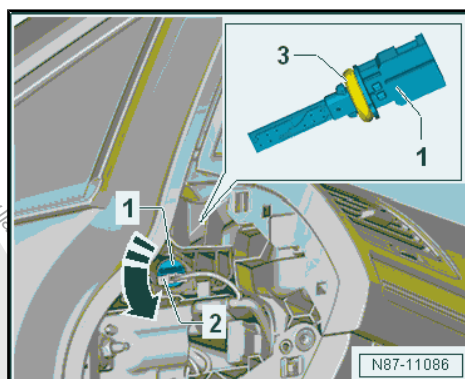
Removing



Note

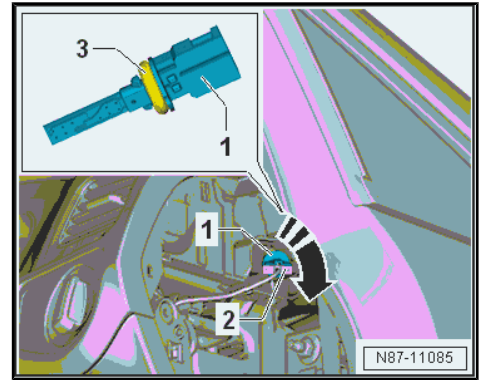
Only for vehicles with Climatronic. For vehicles with heater or electronic-manually regulated Air Conditioning (A/C) system the openings on the air guide channels are closed with plugs.

- Remove the instrument panel side cover. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel; Instrument Panel Side Cover, Removing and Installing .





- Turn the vent temperature sensor -1- in direction of -arrow- and remove it from the mount.
- Disconnect the connector -2-.



Installing

Install in reverse order of removal. Note the following:

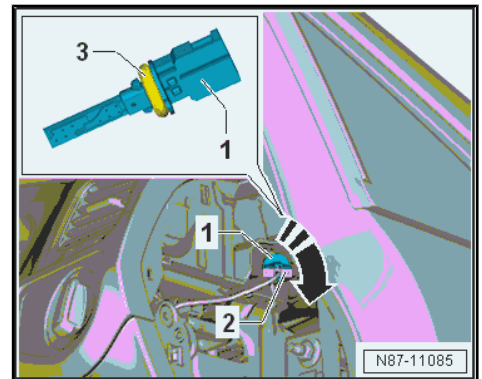
- Replace the seal -3- if it is damaged or faulty.



Note

An incorrectly installed vent temperature sensor causes flow-generated noise.

- Check the Diagnostic Trouble Code (DTC) memory and erase any displayed entries using the Vehicle Diagnostic Tester in the "Guided Fault Finding" function.



Tightening Specifications

- ◆ Instrument panel; instrument panel side cover removing and installing. Refer to ➤ Body Interior; Rep. Gr. 70 ; Instrument Panel; Instrument Panel Side Cover, Removing and Installing .

8.8 Footwell Vent Temperature Sensor - G192- , Removing and Installing

Special tools and workshop equipment required

- ◆ Trim Removal Wedge - 3409-
- ◆ Vehicle Diagnostic Tester

Removing



Note

Only for vehicles with Climatronic. For vehicles with heater or electronic-manually regulated Air Conditioning (A/C) system the openings on the air guide channels are closed with plugs.

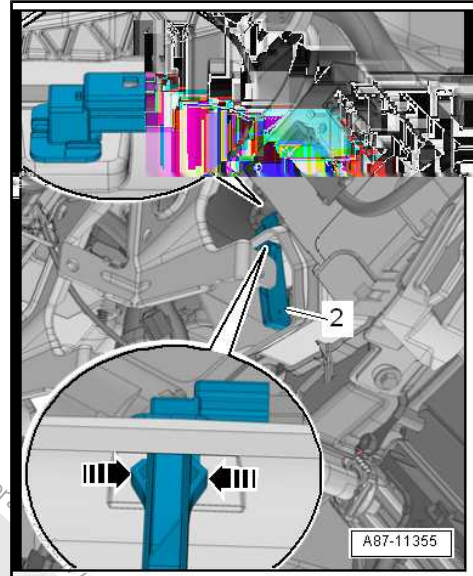
- Remove the driver footwell vent. Refer to ➤ ["5.5 Driver Side Footwell Vent, Removing and Installing", page 117](#) .



- Slightly lift the Footwell Vent Temperature Sensor - G192- -2-.
- Release the catches -arrows- with a Trim Removal Wedge - 3409- .
- Remove the Footwell Vent Temperature Sensor - G192- -2- upward.
- Disconnect the connector -1-.

Installing

- Install in reverse order of removal.

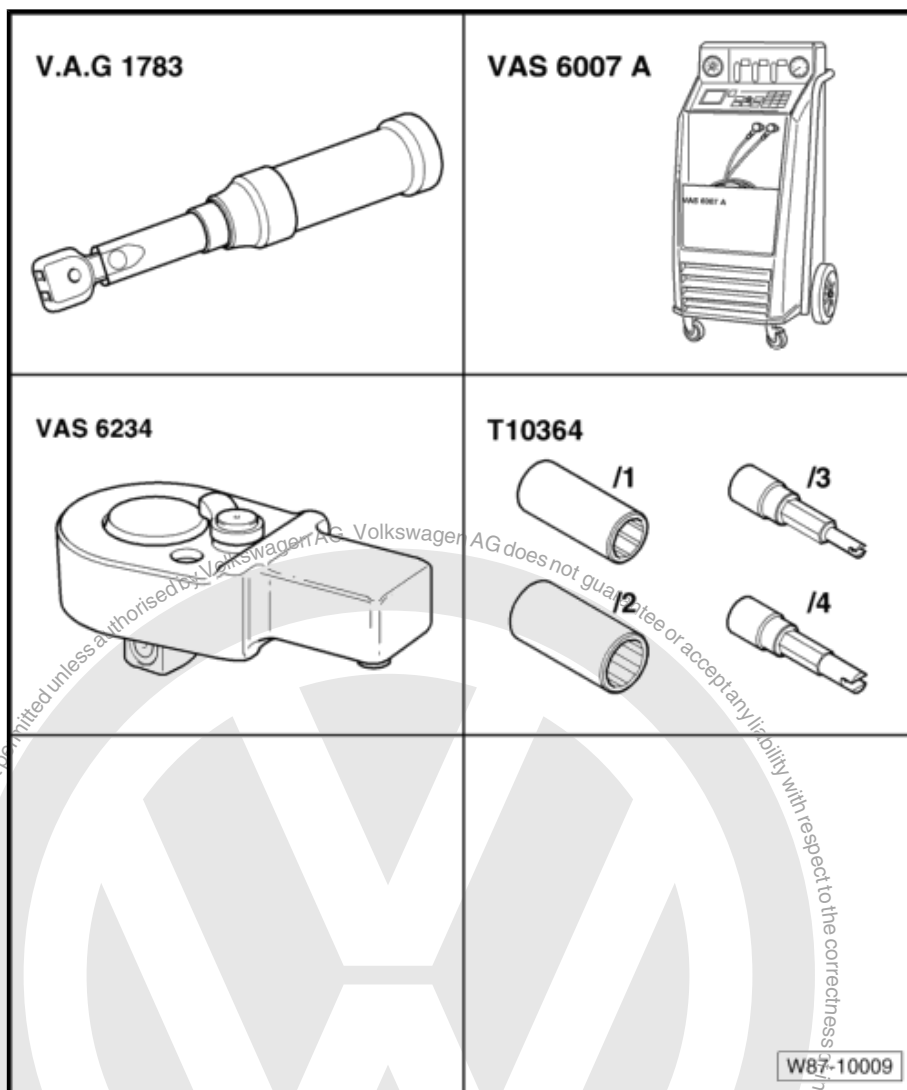




9 Special Tools

Special tools and workshop equipment required

- ◆ Torque Wrench 1783 - 2-10Nm - VAG1783-
- ◆ A/C Service Station - VAS6007A- (or succeeding model)
- ◆ Torque Wrench 1783 - 1/4" Drive Ratchet - VAS6234-
- ◆ Refrigerant Sockets - T10364-

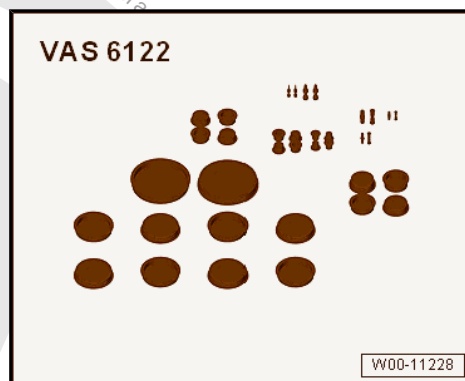


- ◆ Blower Motor Cover Plate - T10532-
- ◆ Torque Wrench 1331 5-50Nm - VAG1331-





◆ Engine Bung Set - VAS6122-



◆ Shop Crane - Drip Tray - VAS6208-



◆ Hose Clamps - Up To 25mm - 3094-



◆ Trim Removal Wedge - 3409-





10 Revision History

DRUCK NUMBER: K00595021

Factory Edition	Edit Edition	Job Type	Feedback	Notes	Quality Checked By
12.2 015	02/18/2016	Local Feedback	1153954	Sentence clarification	Tom Perry
12.2 015	12/07/2015	Factory Update	1130189	Dryer Bag, Removing and Installing update	Tom Perry
12.2 014	07/29/2015	Editing Review			Tom Perry
12.2 014	06/05/2015	Local Feedback	1103087	Fixed all links for RG 00 General Information	Tom Perry
	02/12/2015	Link Checking		Updated ext-rl links	Eric P
	02/03/2015	Local Feedback	1076445		Tom Perry
	01/13/2015	Factory Update			Tom Perry
	11/26/2014	Factory Update			Jim H
	04/30/2014	Factory Update			Joe Y

Cautions & Warnings

Please read these WARNINGS and CAUTIONS before proceeding with maintenance and repair work. You must answer that you have read and you understand these WARNINGS and CAUTIONS before you will be allowed to view this information.

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described in this manual, we suggest you leave such repairs to an authorized Volkswagen retailer or other qualified shop. We especially urge you to consult an authorized Volkswagen retailer before beginning repairs on any vehicle that may still be covered wholly or in part by any of the extensive warranties issued by Volkswagen.
- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.
- Volkswagen is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only. Always check with your authorized Volkswagen retailer parts department for the latest information.
- Any time the battery has been disconnected on an automatic transmission vehicle, it will be necessary to reestablish Transmission Control Module (TCM) basic settings using the VAG 1551 Scan Tool (ST).
- Never work under a lifted vehicle unless it is solidly supported on stands designed for the purpose. Do not support a vehicle on cinder blocks, hollow tiles or other props that may crumble under continuous load. Never work under a vehicle that is supported solely by a jack. Never work under the vehicle while the engine is running.
- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and become inoperable, even if the correct code is used in a later attempt.
- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it.
- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of injury to yourself and others if you are tired, upset or have taken medicine or any other substances that may impair you or keep you from being fully alert.
- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.
- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid. Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.
- Tie long hair behind your head. Do not wear a necktie, a scarf, loose clothing, or a necklace when you work near machine tools or running engines. If your hair, clothing, or jewelry were to get caught in the machinery, severe injury could result.
- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are designed to be used only once and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual - replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.

next

Cautions & Warnings

- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.
- Friction materials such as brake pads and clutch discs may contain asbestos fibers. Do not create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing asbestos fibers and asbestos dust. Breathing asbestos can cause serious diseases such as asbestosis or cancer, and may result in death.
- Finger rings should be removed so that they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.
- Before starting a job, make certain that you have all the necessary tools and parts on hand. Read all the instructions thoroughly; do not attempt shortcuts. Use tools that are appropriate to the work and use only replacement parts meeting Volkswagen specifications. Makeshift tools, parts and procedures will not make good repairs.
- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.
- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten fasteners to the tightening torque listed.
- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.
- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond, or lake. Consult local ordinances that govern the disposal of wastes.
- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.
- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.
- Do not expose any part of the A/C system to high temperatures such as open flame. Excessive heat will increase system pressure and may cause the system to burst.
- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).
- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device. Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal injury. To guard against personal injury or airbag system failure, only trained Volkswagen Service technicians should test, disassemble or service the airbag system.

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Cautions & Warnings

- Do not quick-charge the battery (for boost starting) for longer than one minute, and do not exceed 16.5 volts at the battery with the boosting cables attached. Wait at least one minute before boosting the battery a second time.
- Never use a test light to conduct electrical tests of the airbag system. The system must only be tested by trained Volkswagen Service technicians using the VAG 1551 Scan Tool (ST) or an approved equivalent. The airbag unit must never be electrically tested while it is not installed in the vehicle.
- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.
- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

I have read and I understand these Cautions and Warnings.

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OK