



## Workshop Manual Transporter 2020 >

Electrical system

Edition 07.2020



## List of Workshop Manual Repair Groups

### Repair Group

00 - Technical data

27 - Starter, current supply, CCS

90 - Gauges, instruments

92 - Windscreen wash/wipe system

94 - Lights, bulbs, switches - exterior

96 - Lights, bulbs, switches - interior

97 - Wiring

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 – Technical data

### 1 Safety information

(VRL014478; Edition 07.2020)

#### WARNING

If the vehicle has been converted by ABT e-Line, it is possible that the repair instructions provided below are no longer valid.

In this case, please always refer to the repair instructions from ABT e-Line, available in ElsaPro under the tab "Superstructures and modifications".

⇒ ["1.1 Safety measures when working on vehicles with a start/stop system", page 1](#)

⇒ ["1.2 Safety precautions when using testers and measuring instruments during a road test", page 1](#)

⇒ ["1.3 Application notes and safety information for LED headlights", page 1](#)

⇒ ["1.4 Safety precautions – electrical system", page 2](#)

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

##### Risk of injury from unexpected engine/motor start

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

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

#### 1.2 Safety precautions when using testers and measuring instruments during a road test

##### Risk of injury from unsecured testing and measuring instruments

When the front passenger airbag is triggered in an accident, insufficiently secured testing and measuring instruments become dangerous projectiles.

- Secure testing and measuring instruments on the rear seat.
- or
- Have a second person operate the test and measuring equipment on the rear seat.

#### 1.3 Application notes and safety information for LED headlights

##### Risk of injury due to ultraviolet radiation and dazzling.

- When working, switch off ignition and any electrical equipment, and store ignition somewhere outside the vehicle.
- Do not use the headlight flasher.
- LED headlights may only be dismantled as described in the repair manual.



## 1.4 Safety precautions – electrical system

- ◆ The 110/230 V system must never be connected to an external power supply source when making repairs.
- ◆ Repairs to the 110/230 V system may only be carried out by a qualified electrician or under the supervision of a qualified electrician.
- ◆ Observe relevant country-specific regulations.

### DANGER

- ◆ **Incorrectly performed repairs to the 110/230 V system can seriously injure the user.**
- ◆ **An electric shock can cause serious or fatal injuries.**
- ◆ **On completion of repairs to the 110/230 V system the qualified electrician is obligated to perform tests to ensure the safety of the system.**



## 2 Repair instructions



### WARNING

If the vehicle has been converted by ABT e-Line, it is possible that the repair instructions provided below are no longer valid.

In this case, please always refer to the repair instructions from ABT e-Line, available in ElsaPro under the tab "Superstructures and modifications".

⇒ ["2.1 Rules for cleanliness", page 3](#)

⇒ ["2.2 General information", page 3](#)

⇒ ["2.3 Contact corrosion", page 3](#)

⇒ ["2.4 ESD workplace", page 4](#)

⇒ ["2.5 Routing and attachment of lines", page 4](#)

### 2.1 Rules for cleanliness

Even slight soiling can cause faults. The following rules regarding cleanliness must therefore be observed when work is being carried out:

- ◆ Thoroughly clean connections and service apertures and their surrounds before disconnecting or opening.
- ◆ Seal open pipes and connections immediately with clean plugs for example from the engine bung set - VAS 6122- .
- ◆ Place removed parts on a clean surface. Cover with lint-free cloths only.
- ◆ If repair work cannot be performed immediately, carefully cover or seal components.
- ◆ Install only clean parts. Do not remove spare parts from their packaging until immediately before their use. Do not use parts that have been stored outside their packaging (e.g. in tool boxes).
- ◆ If system is open, do not work with compressed air.
- ◆ Protect disconnected electrical connectors from dirt and water, and reconnect them only when dry.

### 2.2 General information

- ◆ For current flow diagrams, see ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

### 2.3 Contact corrosion

Contact corrosion can occur if unsuitable fasteners (bolts, nuts, washers, etc.) are used.

For this reason, only connecting elements with a special surface coating have been fitted.

In addition, rubber, plastic and adhesives are made of non-conductive materials.

If there is any doubt about the suitability of parts, a general rule is to use new parts ⇒ Electronic parts catalogue .

#### Please note:

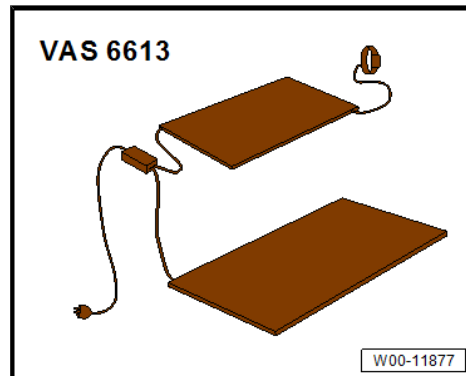
- ◆ Only use genuine replacement parts which are tested and compatible with aluminium.



- ◆ Only use Volkswagen Genuine Accessories.
- ◆ Damage resulting from contact corrosion is not covered by the warranty.

## 2.4 ESD workplace

- ◆ Cleanliness requirement: It must be ensured that no particles, in particular metallic or other conductive particles, enter the open housing of the headlight or LED light unit.
- ◆ When handling the open housing, make sure that no oils, greases, silicones or other media get on parts of the open headlight or LED light unit that can evaporate and cause deposits to form.
- ◆ Avoid touching the electronics boards by hand as this can lead to migration.
- ◆ ESD protection: requirements according to DIN EN 613-40-5-1 must always be guaranteed during handling.
- ◆ Components/assemblies/electronics which fell down must not be reused.



## 2.5 Routing and attachment of lines

- ◆ Mark lines prior to removal to prevent them from being interchanged and to ensure that they are fitted in their original positions. This applies for fuel, hydraulic and vacuum lines as well as lines for activated charcoal filter system and electrical wiring. Make sketches or take photographs if necessary.
- ◆ To avoid damaging pipes and wires, ensure adequate clearance from all moving or hot components in the engine compartment on account of the confined space.
- ◆ Any wiring fasteners which have been released during removal must be of the same type and must be attached at the same locations when installing to prevent any rattling or damage.



## 3 Battery

### WARNING

If the vehicle has been converted by ABT e-Line, it is possible that the repair instructions provided below are no longer valid.

In this case, please always refer to the repair instructions from ABT e-Line, available in ElsaPro under the tab "Superstructures and modifications".

⇒ ["3.1 Battery - general notes", page 5](#)

⇒ ["3.2 Types of battery", page 5](#)

### 3.1 Battery - general notes

All instructions and information about this chapter: ⇒ Electrical system; General information; Rep. gr. 27 ; Battery

### 3.2 Types of battery

All instructions and information about this chapter: ⇒ Electrical system; General information; Rep. gr. 27 ; Battery; Battery types



## 4 Hazard classification for high-voltage system

### DANGER

The vehicle's high-voltage system and the high-voltage battery are dangerous and can cause burns or other injuries and even lead to a fatal electric shock.

- Any work on the high-voltage system, or on systems which could be indirectly affected by it, may only be carried out by properly trained and qualified expert personnel.
- In the event of queries or uncertainties regarding the terms "high-voltage technician" or "high-voltage expert", or those concerning the high-voltage system, the responsible importer must be contacted prior to any work being undertaken.
- Any repair work must be performed in accordance with applicable laws and regulations, the recognised engineering practices, any relevant accident prevention regulations (in Germany, including but not limited to the Information of the German Social Accident Insurance (DGUV) 200-005 – Qualification training for work on vehicles with high-voltage systems), as well as this workshop manual.

#### Procedure for vehicles electrified by ABT e-Line

Please observe the Workshop Manuals available in ElsaPro, tab "Superstructures and modifications".

If there is no access to ElsaPro, the relevant manuals can be obtained from ABT e-Line.



## 27 – Starter, current supply, CCS

### 1 Battery

- ⇒ [“1.1 Assembly overview - battery”, page 7](#)
- ⇒ [“1.2 Checking battery”, page 8](#)
- ⇒ [“1.3 Charging battery”, page 8](#)
- ⇒ [“1.4 Disconnecting and connecting battery”, page 8](#)
- ⇒ [“1.5 Removing and installing battery”, page 11](#)
- ⇒ [“1.6 Removing and installing battery partition”, page 15](#)
- ⇒ [“1.7 Removing and installing battery tray”, page 16](#)
- ⇒ [“1.8 Removing and installing battery isolator”, page 17](#)
- ⇒ [“1.9 Removing and installing earth wire with battery monitor control unit J367”, page 17](#)
- ⇒ [“1.10 Adapting battery monitor control unit J367”, page 19](#)

#### 1.1 Assembly overview - battery

##### 1 - Battery

- Disconnecting and re-connecting battery  
⇒ [page 9](#)
- Charge battery  
⇒ [page 8](#).
- After replacing battery, adapt battery monitor control unit - J367-  
⇒ [page 19](#)
- Removing and installing  
⇒ [page 11](#)

##### 2 - Nut

- Earth wire to weld stud
- 20 Nm

##### 3 - Nut

- 6 Nm

##### 4 - Earth wire battery terminal clamp

- With integrated battery monitor control unit - J367-
- Disconnecting and re-connecting battery  
⇒ [page 9](#)

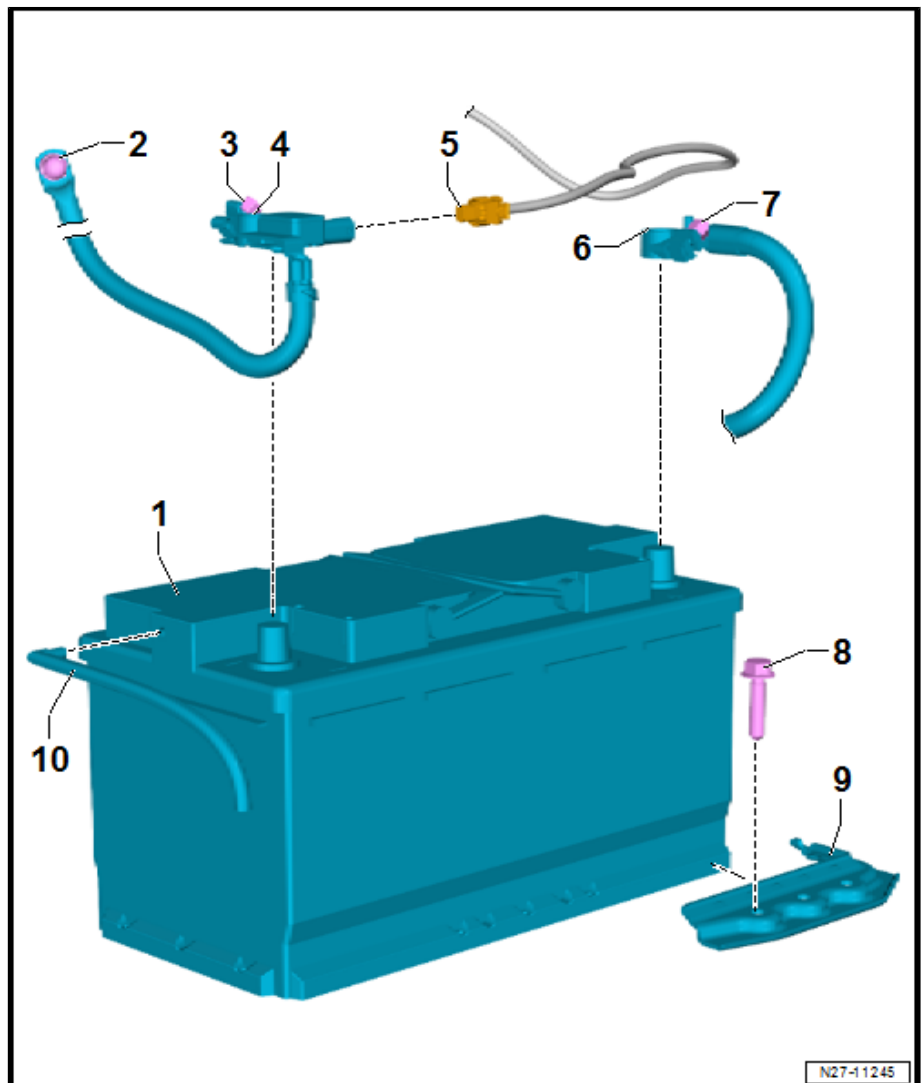
##### 5 - Electrical connector

##### 6 - Positive wire battery terminal clamp

- Disconnecting and re-connecting battery  
⇒ [page 9](#)

##### 7 - Nut

- 6 Nm



N27-11245



## 8 - Bolt

- 23 Nm

## 9 - Clamping rail

## 10 - Hose for central gas venting system

- Must be fitted on battery
- Must not be pinched when installing as battery will otherwise not be able to vent freely

## 1.2 Checking battery

Check battery ⇒ Electrical system, General information; Rep. gr. 27 ; Checking battery .

## 1.3 Charging battery

**Battery recharging or jump start on vehicles with start/stop system:**

When recharging or jump starting vehicles with start/stop system, note the following: first connect charging cable to battery positive terminal then body earth. This ensures that the battery monitor control unit - J367- is not bridged. Charging the battery directly on the negative terminal causes the battery monitoring control unit to be bridged. The battery data is not collected by the battery monitoring control unit during the charging process. Then, the values concerning the battery state and saved in the data bus diagnostic interface would not correspond to the values of the charged battery.

Information on charging batteries is summarised in the Workshop Manual "Electrical system, General information".

## 1.4 Disconnecting and connecting battery

⇒ ["1.4.1 Disconnecting and connecting battery, earth wire on negative battery terminal", page 8](#)

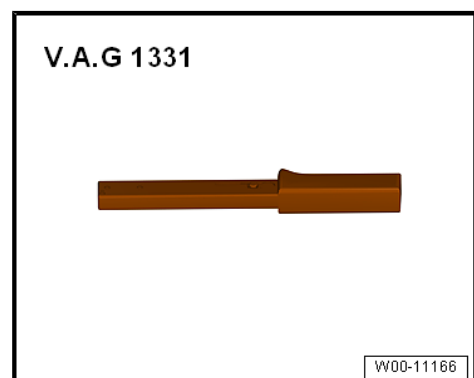
⇒ ["1.4.2 Disconnecting and connecting battery, battery A in engine compartment", page 9](#)

⇒ ["1.4.3 Connecting and disconnecting second battery A1 beneath front left seat", page 10](#)

### 1.4.1 Disconnecting and connecting battery, earth wire on negative battery terminal

**Special tools and workshop equipment required**

- ◆ Torque wrench - V.A.G 1331-



### Disconnecting

- If fitted, disconnect negative battery terminal of second battery - A1- .



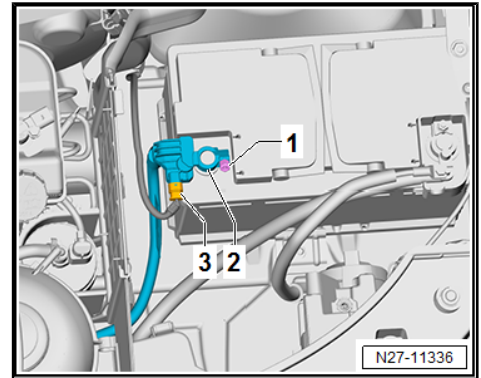


- Loosen nut -1-.
- Detach negative battery clamp -2-.
- Disconnect connector -3-.

### Connecting

Connect in reverse order of removal, observing the following:

- Perform initialisation (activation) of window regulator ⇒ Maintenance ; Booklet 10.3 .
- Check time and adjust, if necessary.
- Read event memory ⇒ Maintenance ; Booklet 10.3 .
- Perform zero compensation of steering angle sender ⇒ Vehicle diagnostic tester.



### Specified torques

- ◆ ⇒ ["1.1 Assembly overview - battery", page 7](#)

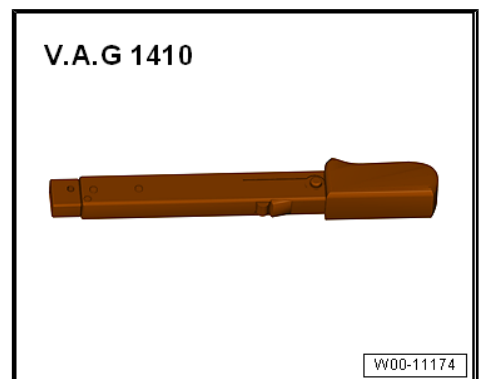
## 1.4.2 Disconnecting and connecting battery, battery - A- in engine compartment

### WARNING

Pay strict attention to the warning notices and safety regulations when working on the battery.

### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-

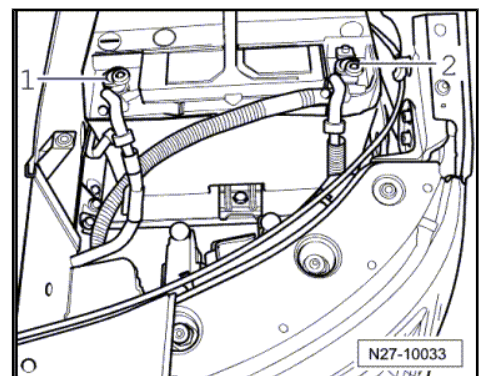


### Disconnecting

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Loosen nut of battery clamp -1- several turns and disconnect earth wire from battery terminal.
- Loosen nut of battery clamp -2- several turns and pull off positive cable from battery terminal.

### Connecting

Observe the following when connecting the battery - A- :





- Separate electrical connector -2- on battery monitor control unit - J367- -3-.
- Fit battery terminal clamp of earth cable to negative battery terminal by hand.



#### Note

*To prevent noises, push the positive terminal cable against the battery body when tightening the terminal clamp.*

- Tighten nut -1-.
- Reattach electrical connector -2- to battery monitor control unit - J367- -3-.
- Connect battery terminal clamp of positive wire to battery positive terminal and tighten nut.
- Switch on ignition.
- Check time and adjust, if necessary.
- Completely open windows, and then completely close them.
- Check convenience mode of the window regulators.
- Read event memory ⇒ Vehicle diagnostic tester.
- Steering angle sender - perform zero compensation ⇒ Vehicle diagnostic tester.

#### Specified torques

- ◆ ⇒ ["1.1 Assembly overview - battery", page 7](#)

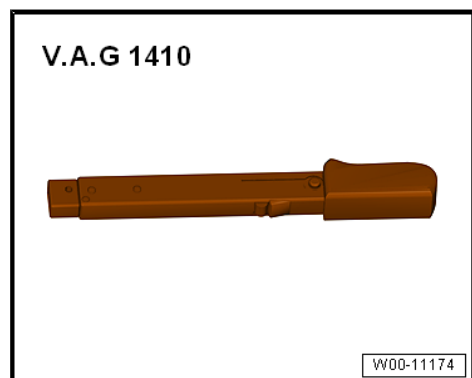
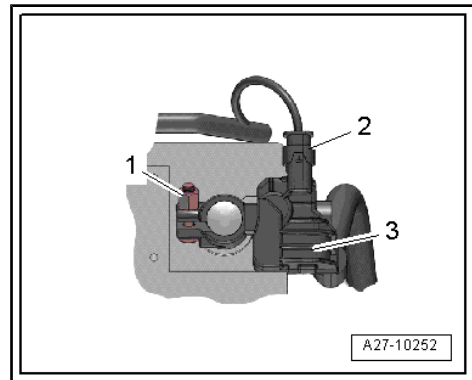
### 1.4.3 Connecting and disconnecting second battery - A1- beneath front left seat

#### WARNING

**Pay strict attention to the warning notices and safety regulations when working on the battery.**

#### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-



#### Disconnecting

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Move front left seat all the way forwards.



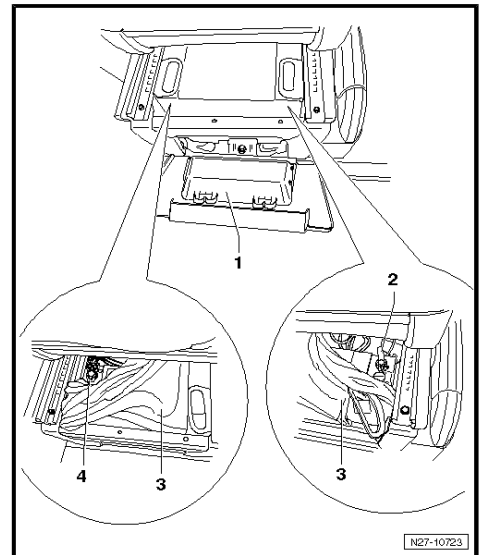
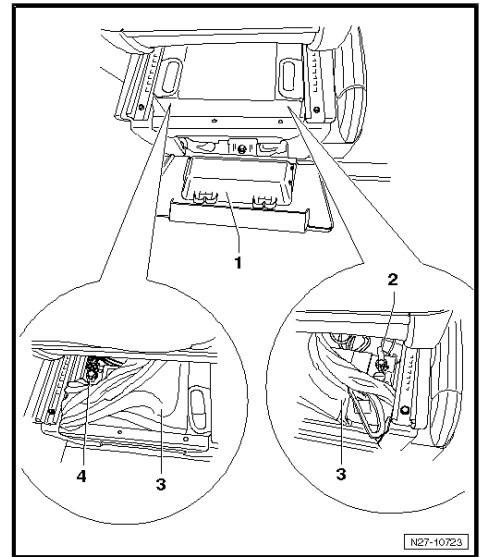
- Disconnect negative battery terminal of battery - A- in engine compartment ⇒ [page 9](#) .
- Pull trim -1- off seat box.
- Remove battery cover -3- from second battery - A1- .
- Loosen nut of battery clamp -2- several turns and disconnect earth wire from battery terminal.
- Loosen nut of battery clamp -4- several turns and pull off positive cable from battery terminal.

### Connecting

- Connect positive battery terminal clamp -4- to positive terminal and tighten nut.
- Connect negative battery terminal clamp -2- to negative terminal and tighten nut.
- Install battery cover -3- and trim -1-.
- Connect negative battery terminal of battery - A- in engine compartment ⇒ [page 9](#) .

### Specified torques

- ◆ ⇒ [“1.1 Assembly overview - battery”, page 7](#)



## 1.5 Removing and installing battery

⇒ [“1.5.1 Removing and installing battery A in engine compartment”, page 11](#)

⇒ [“1.5.2 Removing and installing second battery A1 beneath front left seat”, page 14](#)

### 1.5.1 Removing and installing battery - A- in engine compartment

#### WARNING

Pay strict attention to the warning notices and safety regulations when working on the battery.



## Renewing battery on vehicles with start/stop system

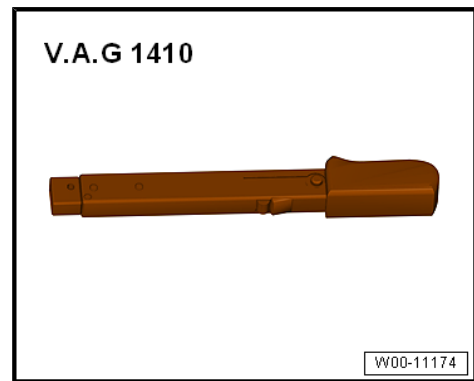


### Note

- ◆ Due to higher demands on the deep-cycle resistance, a special battery is used in vehicles equipped with a start/stop system.
- ◆ When renewing the battery, note the correct part designation ⇒ ETKA .
- ◆ Batteries intended for use in vehicles with a start/stop system are marked "AGM" (Absorbent Glass Mat) or "EFB" (Enhanced Flooded Battery).

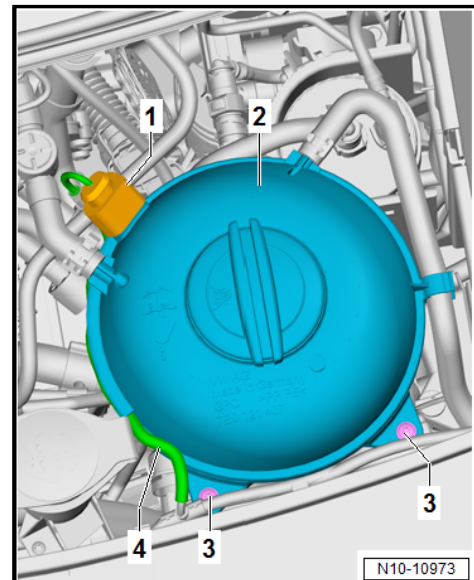
### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-



### Removing

- Disconnect battery - A- ⇒ [page 8](#) .
- Remove fuse holder A - SA- ⇒ [page 229](#) .
- Disconnect connector -1-.
- Free off wiring harness -4-.
- Loosen bolts -3- on coolant expansion tank -2-.
- Move coolant expansion tank -2- aside slightly with coolant hoses still attached.
- Remove battery partition ⇒ [page 15](#) .
- If fitted, pull hose for central venting off battery - A- .





- Unscrew bolt -arrow- and remove together with clamp plate.

**i** Note

- ◆ Do not allow the loosened clamp plate with bolt to fall into the body aperture in front of the battery.
- ◆ To retrieve a clamp plate that has fallen into the body, the headlight must be removed.

- Open heat guard.

- Fold up battery handles -arrows-.
- Grab battery - A- by handles and lift it out upwards.
- Remove heat insulation sleeve from battery - A- .

**Installing**

**i** Note

- ◆ A loosely installed battery creates the following dangers:
- ◆ Shortened service life caused by vibration damage (danger of explosion)
- ◆ The plates in the battery cells will be damaged if the battery is not secured correctly.
- ◆ Damage to battery casing by clamping bracket (possible leakage of acid with high consequential costs).
- ◆ Poor crash safety.
- ◆ Ensure that hose for central gas venting (if fitted at all) is attached to the battery and is not pinched. Only then can the battery vent freely.

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

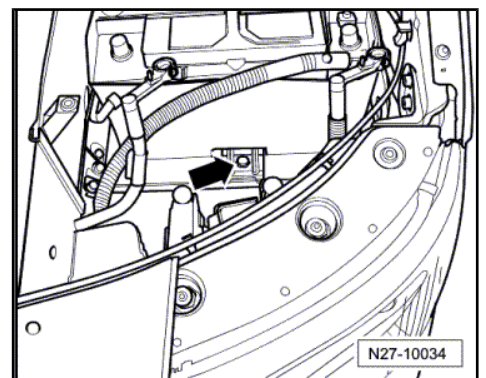
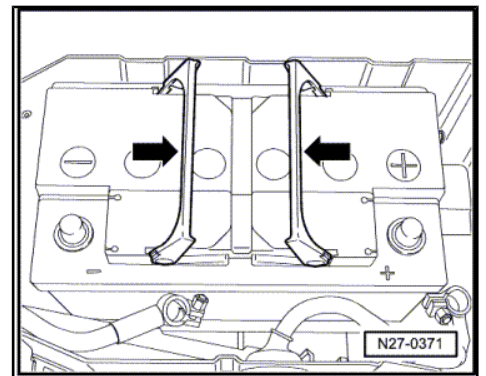
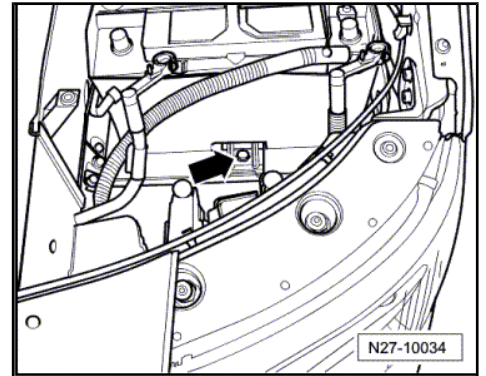
- Bring clamp plate into position and tighten bolt -arrow-.
- After installing battery - A- , check to make sure it is firmly seated.
- Connect battery - A- => [page 8](#) .

After installation of a new battery - A- or a new battery monitor control unit - J367- , the battery monitor control unit - J367- must be adapted => [page 19](#) .

**Specified torques**

Component	Specified torque
Bolts on coolant expansion tank	3.5 Nm

- ◆ => ["1.1 Assembly overview - battery", page 7](#)





## 1.5.2 Removing and installing second battery - A1- beneath front left seat

### WARNING

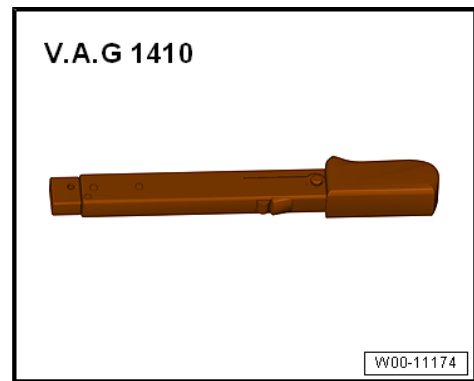
Pay strict attention to the warning notices and safety regulations when working on the battery.

An absorbent glass mat battery is also installed beneath the front left seat on some vehicles, depending on the equipment level. The electrolyte of the AGM battery is solidified and therefore leak-proof, cycle resistant and absolutely maintenance-free.

Absorbent glass mat batteries are less affected by weather influences and more resistant to vibration. Furthermore, absorbent glass mat batteries do not develop leaks or become damaged by swivelling or tipping.

### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-

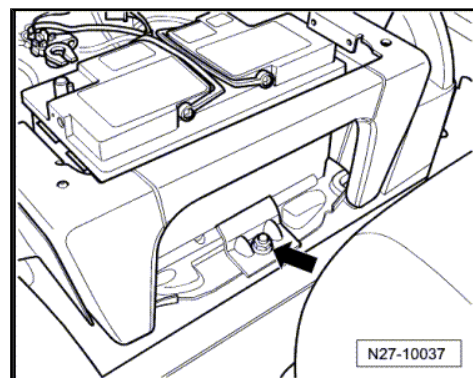


### WARNING

Pay strict attention to the warning notices and safety regulations when working on the battery.

### Removing

- Remove left front seat ⇒ General body repairs, interior; Rep. gr. 72 ; Front seats; Removing and installing front seat .
- Disconnect battery - A- on left in engine compartment ⇒ [page 8](#) .
- Disconnect second battery - A1- beneath front left seat ⇒ [page 10](#) .
- If fitted, pull hose for central venting off second battery - A1- .
- Unscrew bolt -arrow- and remove clamp plate.



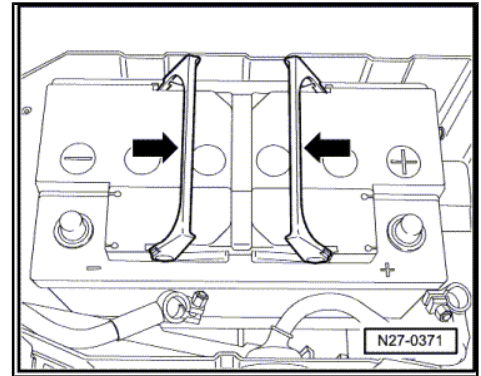


- Fold up battery handles -arrows-.
- Hold second battery - A1- by handles and lift it out from bracket under seat.

### Installing

#### Note

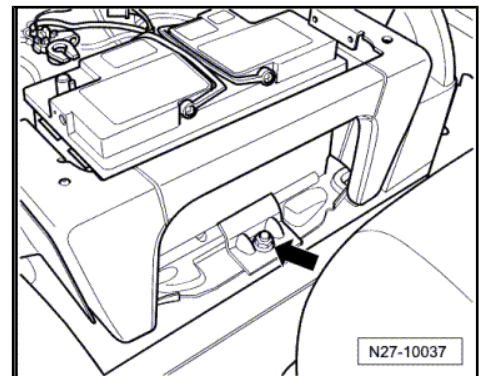
- ◆ *A loosely installed battery creates the following dangers:*
- ◆ *Shortened service life caused by vibration damage (danger of explosion)*
- ◆ *The plates in the battery cells will be damaged if the battery is not secured correctly.*
- ◆ *Damage to battery casing by clamping bracket (possible leakage of acid with high consequential costs).*
- ◆ *Poor crash safety.*
- ◆ *Ensure that hose for central gas venting (if fitted at all) is attached to the battery and is not pinched. Only then can the battery vent freely.*



- Bring clamp plate into position and tighten bolt -arrow-.
- After installing second battery - A1- , ensure it is firmly seated.
- Connecting second battery - A1- beneath front left seat => [page 10](#) .
- Install front seat => General body repairs, interior; Rep. gr. 72 ; Front seats; Removing and installing front seat .
- Disconnect battery - A- in engine compartment => [page 8](#) .

### Specified torques

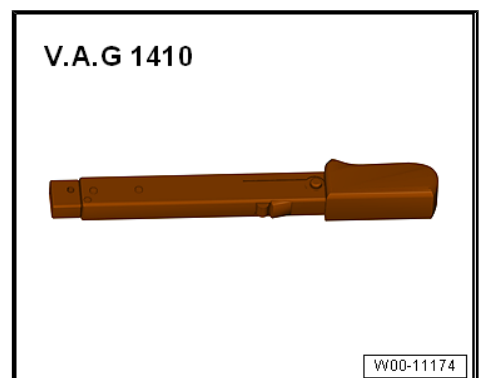
- ◆ => ["1.1 Assembly overview - battery", page 7](#)



## 1.6 Removing and installing battery partition

### Special tools and workshop equipment required

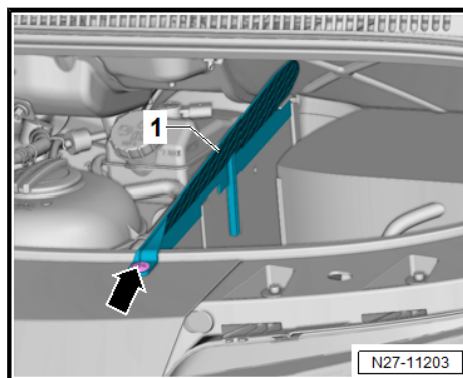
- ◆ Torque wrench - V.A.G 1410-



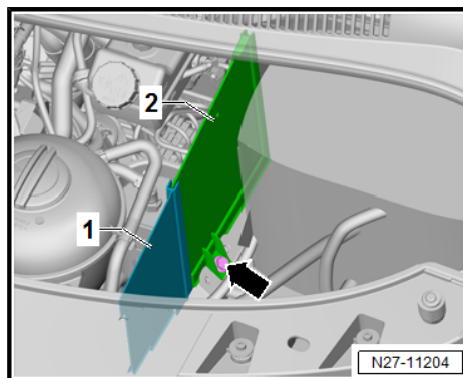


## Removing

- Unscrew bolt -arrow- and remove upper part -1-.



- Pull out battery partition -1- upwards.
- Unscrew bolt -arrow- and remove battery partition -2- upwards.
- If rear part of battery partition needs to be removed as well, remove battery ⇒ [page 11](#) .
- Unscrew bolt then detach battery partition from battery tray and remove.



## Installing

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

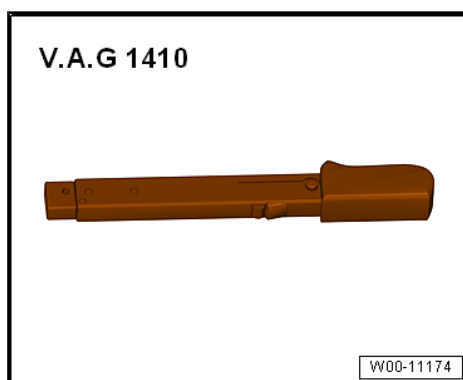
### Specified torques

Component	Specified torque
Bolt securing middle battery partition to battery tray	20 Nm
Bolt securing upper battery partition to radiator grille cover	1.5 Nm

## 1.7 Removing and installing battery tray

### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-



## Removing

- Remove battery - A- in engine compartment ⇒ [page 11](#) .
- Remove battery partition ⇒ [page 15](#) .





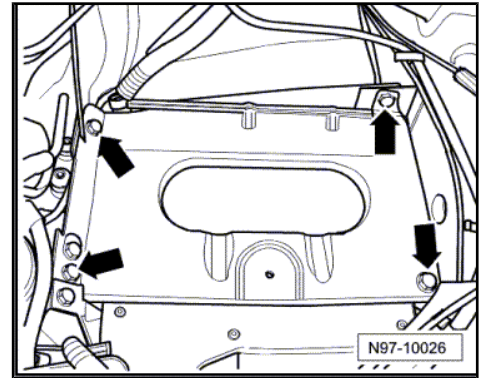
- Unscrew bolts -arrows- and remove battery tray.

### Installing

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

### Specified torques

Component	Specified torque
Battery tray bolts	8 Nm



## 1.8 Removing and installing battery isolator

⇒ [“1.8.1 Checking battery isolation relay J7”, page 17](#)

⇒ [“1.8.2 Removing and installing battery isolation relay J7”, page 17](#)

### 1.8.1 Checking battery isolation relay - J7-

- Check battery isolation relay - J7- ⇒ Vehicle diagnostic tester.

### 1.8.2 Removing and installing battery isolation relay - J7-

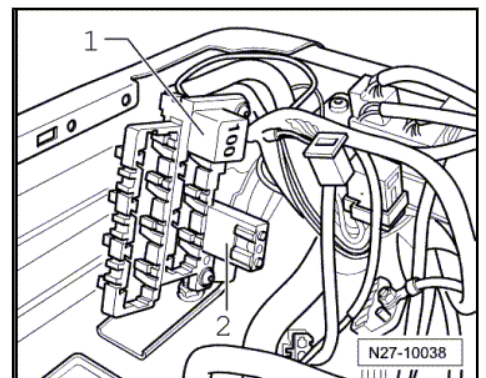
Battery isolation relay - J7- and associated battery isolation relay fuse - S171- can be found on relay carrier in seat box under front left seat ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

#### Removing

- Disconnect battery - A- in engine compartment ⇒ [page 9](#) .
- Disconnect second battery - A1- beneath front left seat ⇒ [page 10](#) .
- Pull battery isolation relay - J7- -1- or battery isolation relay fuse - S171- -2- out of relay carrier.

#### Installing

- Insert battery isolation relay - J7- -1- and battery isolation relay fuse - S171- -2- into intended location.
- Connecting second battery - A1- beneath front left seat ⇒ [page 10](#) .
- Disconnect battery - A- in engine compartment ⇒ [page 9](#) .

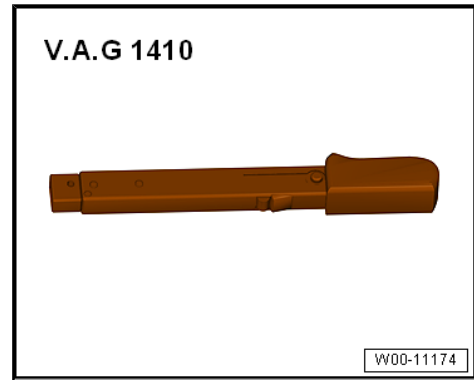


## 1.9 Removing and installing earth wire with battery monitor control unit - J367-

Special tools and workshop equipment required

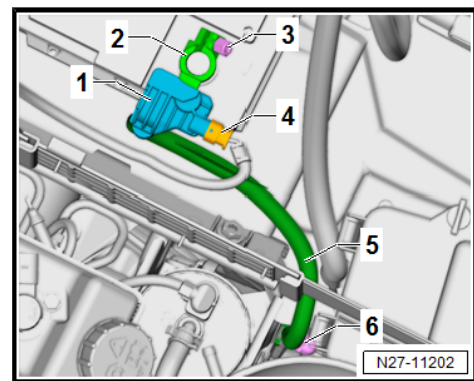


- ◆ Torque wrench - V.A.G 1410-

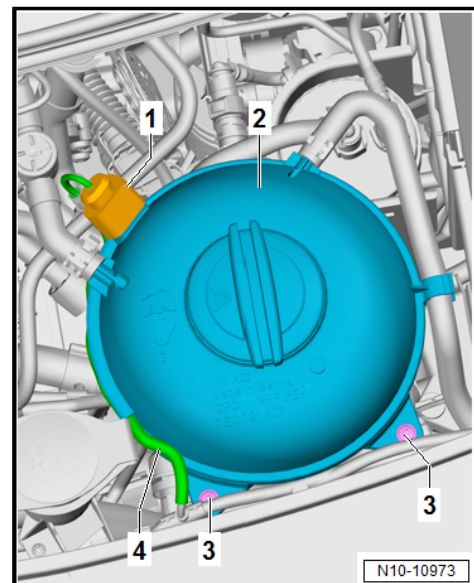


### Removing

- Separate electrical connector -4- on battery monitor control unit - J367- -1-.
- Loosen nut -3- a few turns.
- Pull battery clamp of earth wire -2- off battery terminal.



- Disconnect connector -1-.
- Free off wiring harness -4-.
- Unscrew bolts -3-.
- Move coolant expansion tank -2- aside slightly with coolant hoses still attached.



- Unscrew nut -6- from weld stud.
- Remove earth wire -5- with battery monitor control unit - J367- -1-.

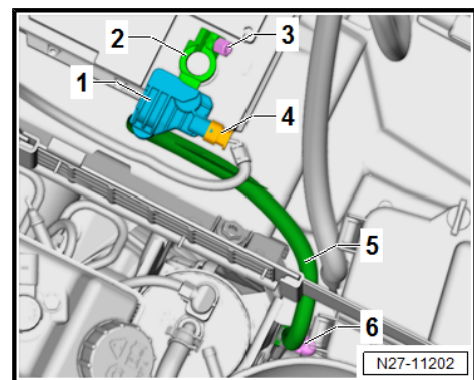
### Installing

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

#### Specified torques

- ◆ ⇒ ["1.1 Assembly overview - battery", page 7](#)

Component	Specified torque
Bolts on coolant expansion tank	3.5 Nm





## 1.10 Adapting battery monitor control unit - J367-

- After installing a new battery or a new battery monitor control unit - J367- , the battery monitor control unit - J367- must be adapted.
- Adapt battery monitor control unit - J367- ⇒ Vehicle diagnostic tester.



## 2 Alternator

⇒ [“2.1 Assembly overview - alternator”, page 20](#)

⇒ [“2.2 Removing and installing alternator”, page 21](#)

⇒ [“2.3 Checking alternator”, page 24](#)

⇒ [“2.4 Checking poly V-belt”, page 24](#)

⇒ [“2.5 Removing and installing poly V-belt pulley”, page 25](#)

⇒ [“2.6 Removing and installing voltage regulator”, page 30](#)

### 2.1 Assembly overview - alternator

⇒ [“2.1.1 Assembly overview - alternator without sliding bushes”, page 20](#)

⇒ [“2.1.2 Assembly overview - alternator with sliding bushes”, page 21](#)

#### 2.1.1 Assembly overview - alternator without sliding bushes

##### 1 - Alternator - C-

- Removing and installing  
⇒ [page 21](#)
- Checking ⇒ [page 24](#)
- Removing and installing  
poly V-belt pulley  
⇒ [page 25](#)
- Removing and installing  
voltage regulator - C1-  
⇒ [page 30](#)

##### 2 - Electrical connector

- Terminal 61

##### 3 - Battery positive wire

- Terminal 30/B+

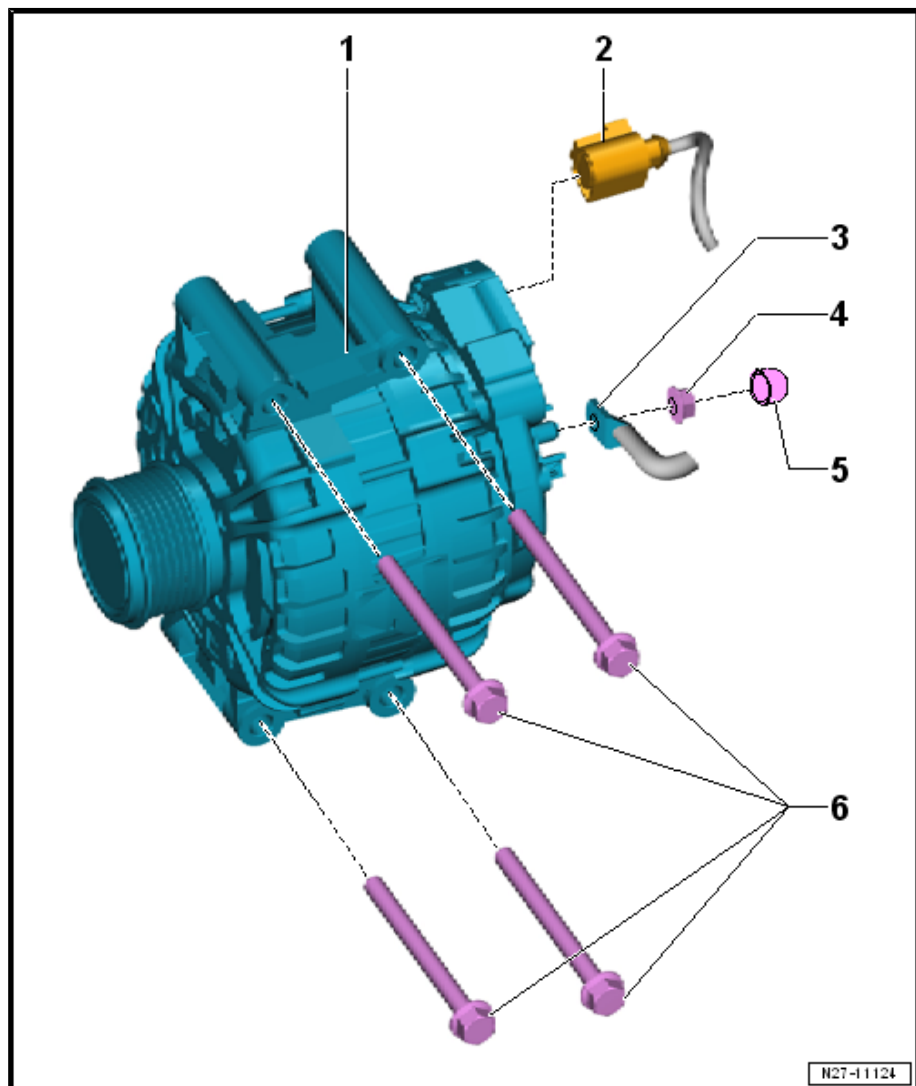
##### 4 - Nut

- Battery positive cable to  
alternator
- 15 Nm

##### 5 - Cover

##### 6 - Alternator bolts

- Insert upper bolts in al-  
ternator before bringing  
alternator into position  
on cylinder block.
- 23 Nm



N27-11124



## 2.1.2 Assembly overview - alternator with sliding bushes

### 1 - Alternator - C-

- Removing and installing  
⇒ [page 21](#)
- Checking ⇒ [page 24](#)
- Removing and installing  
poly V-belt pulley  
⇒ [page 25](#)
- Removing and installing  
voltage regulator - C1-  
⇒ [page 30](#)

### 2 - Bolt

- Qty. 2
- 20 Nm

### 3 - Sliding bush

- Qty. 2
- If a bush is stiff, its  
clamping force will be in-  
sufficient even though it  
has been tightened to the  
correct torque. Free off  
sliding bushes if nec-  
essary.

### 4 - Electrical connector

- DF cable

### 5 - Cover

### 6 - Nut

- 20 Nm

### 7 - Terminal 30/B+

### 8 - Nut

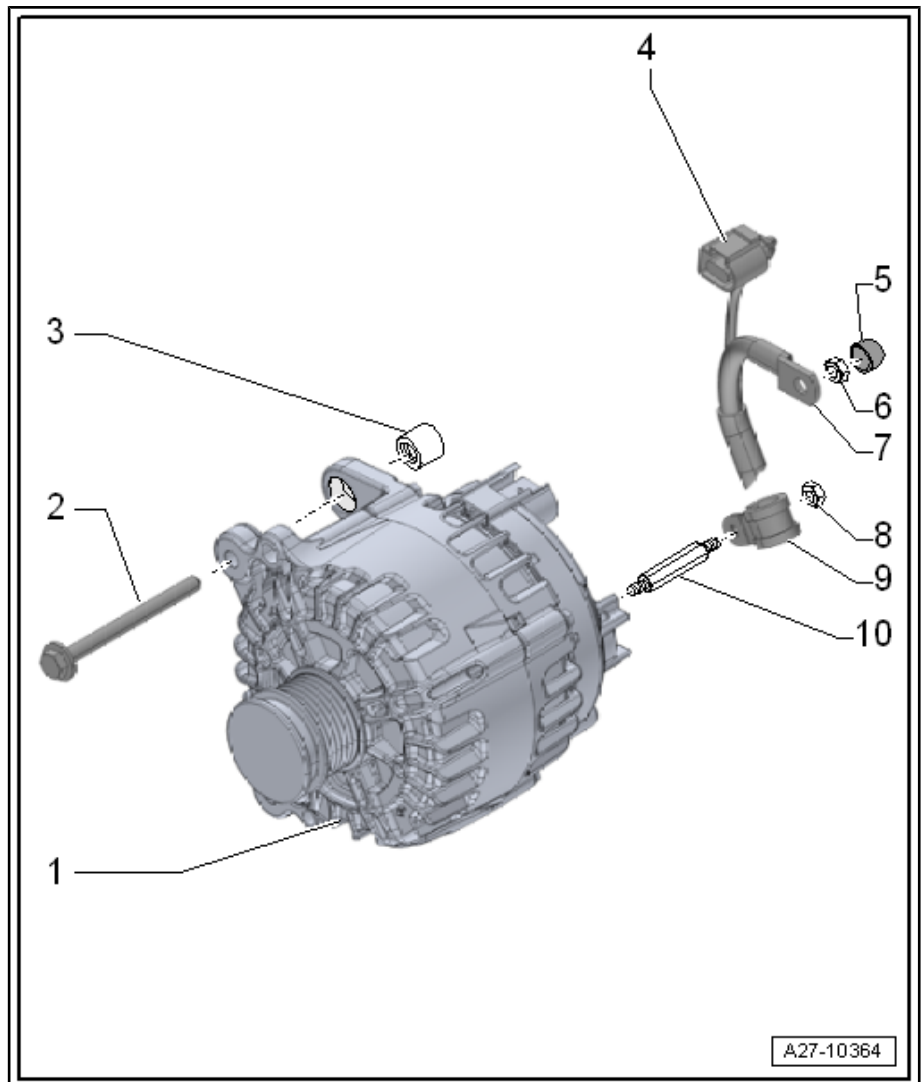
- Depending on equip-  
ment
- 3.2 Nm

### 9 - Clamp

- Depending on equipment

### 10 - Threaded pin

- Depending on equipment
- 3.2 Nm



## 2.2 Removing and installing alternator

⇒ ["2.2.1 Removing and installing alternator, vehicles with TDI engine", page 21](#)

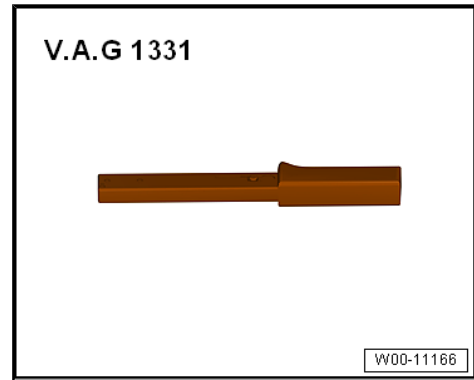
⇒ ["2.2.2 Removing and installing alternator, vehicles with TSI engine", page 23](#)

### 2.2.1 Removing and installing alternator, vehicles with TDI engine

Special tools and workshop equipment required

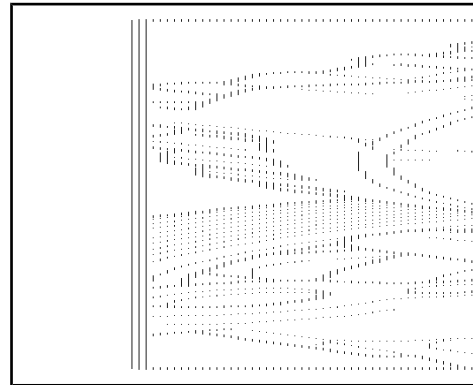


◆ Torque wrench - V.A.G 1331-



### Removing

- Disconnect batteries ⇒ [page 8](#) .
- Move lock carrier to service position ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Moving to service position .
- Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block, pulley end; Removing and installing poly V-belt .
- Disconnect connector -1-.
- Lever off deflector cap -2-.
- Unscrew nut and detach B+ wire under it from connecting thread of alternator.

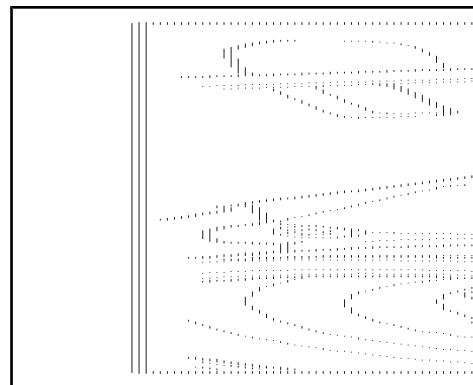


- Unscrew bolts -arrows-.



#### Note

- ◆ *If the alternator is stuck in its bracket, screw in the bolts -arrows- again except for the last two turns.*
- ◆ *Carefully hit bolt heads with a rubber-headed hammer to release sliding bushes of alternator mounting.*
- Remove alternator by taking it upwards out of the vehicle.



### Installing

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



#### Note

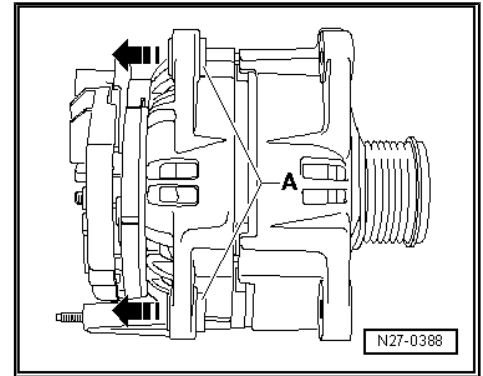
*If a bush is stiff, its clamping force will be insufficient even though it has been tightened to the correct torque. Free off sliding bushes if necessary.*



- To facilitate positioning of alternator - C- , drive back bushes -A- of alternator mounting.
- Start engine, and check that belt runs properly.

#### Specified torques

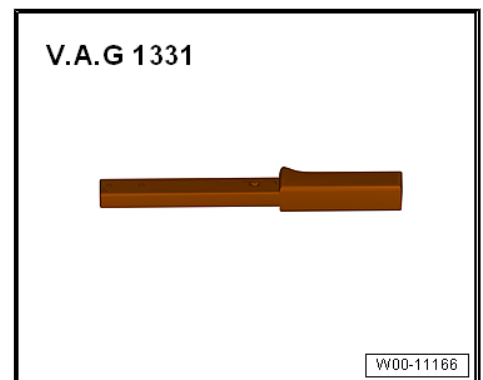
- ◆ ⇒ ["2.1.2 Assembly overview - alternator with sliding bushes", page 21](#)



## 2.2.2 Removing and installing alternator, vehicles with TSI engine

### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



### Removing

- Disconnect batteries ⇒ [page 8](#) .
- Remove poly V-belt ⇒ Rep. gr. 13 ; Cylinder block, pulley end; Removing and installing poly V-belt .
- Remove oil pressure switch ⇒ Rep. gr. 17 ; Oil filter/oil pressure switch; Removing and installing oil pressure switch F22 .
- Detach connecting hose from pressure pipe ⇒ Rep. gr. 21 ; Charge air system; Assembly overview - charge air system .
- Remove air filter housing ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing

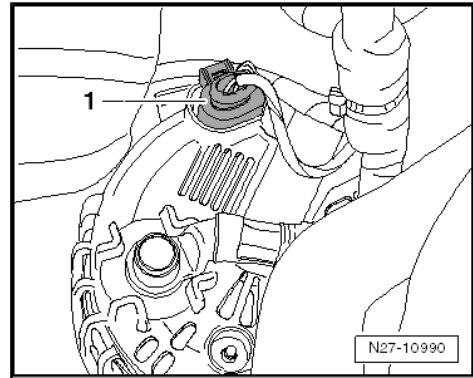


#### Note

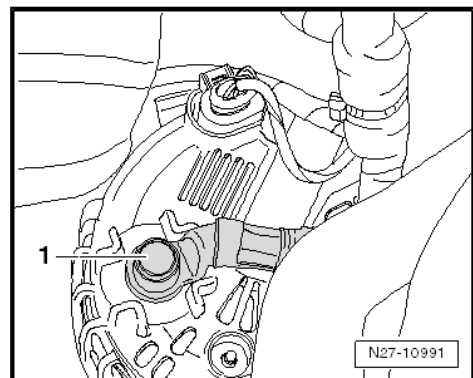
- ◆ *The hoses attached to power steering vane pump do not have to be detached.*
- ◆ *The hoses on the vane pump must not be kinked or stretched.*



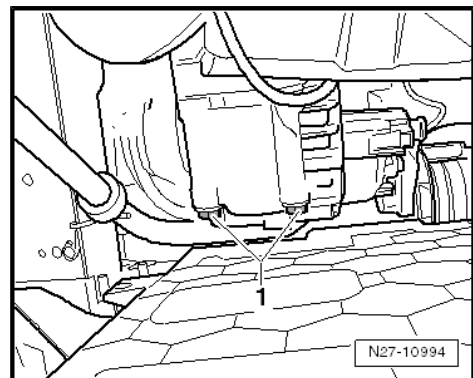
- Disconnect connector -1-.



- Remove protective cap -1-.
- Unscrew nut and remove electrical wire.



- Unscrew bolts -1-.



- Unscrew bolts -1-.
- Remove alternator upwards.

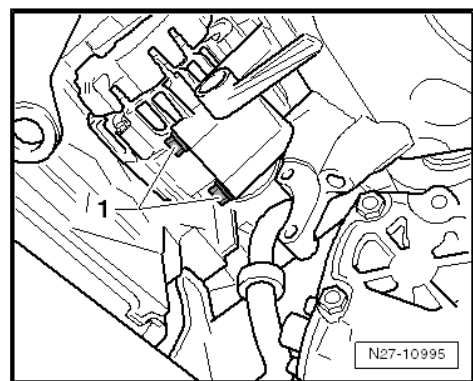
### Installing

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

- Start engine, and check that belt runs properly.
- Check engine oil level ⇒ Maintenance ; Booklet 20.1 .

### Specified torques

- ◆ ⇒ [“2.1.1 Assembly overview - alternator without sliding bushes”, page 20](#)



## 2.3 Checking alternator

- Check alternator - C- ⇒ Vehicle diagnostic tester.

## 2.4 Checking poly V-belt

- Use socket spanner to turn engine on vibration damper/pulley.
- Check poly V-belt for:





- ◆ Sub-surface cracks (cracks, core ruptures, cross sectional breaks)
- ◆ Layer separation (top layer, cord strands)
- ◆ Eruptions on bottom cover
- ◆ Fraying of carcass
- ◆ Flank wear (material wear, frayed flanks, flank brittleness - glassy flanks-, surface cracks)
- ◆ Traces of oil and grease



**Note**

*In order to avoid failures and malfunctions, the poly V-belt must be replaced if it is damaged.*

## 2.5 Removing and installing poly V-belt pulley

⇒ [“2.5.1 Removing and installing poly V-belt pulley without free-wheel”, page 25](#)

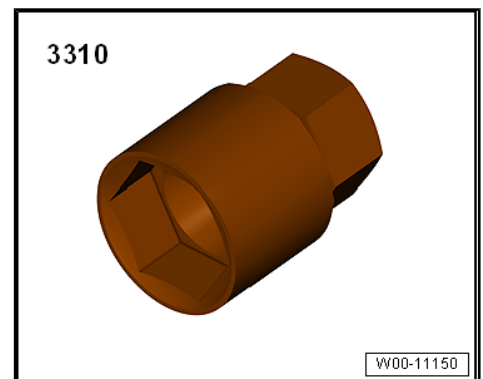
⇒ [“2.5.2 Removing and installing poly V-belt pulley with free-wheel, manufacturer: Bosch”, page 26](#)

⇒ [“2.5.3 Removing and installing poly V-belt pulley with free-wheel, manufacturer: Valeo”, page 28](#)

### 2.5.1 Removing and installing poly V-belt pulley without freewheel

Special tools and workshop equipment required

- ◆ Socket insert - 3310-



- ◆ Tool replaced by V.A.G 1332A - V.A.G 1332-



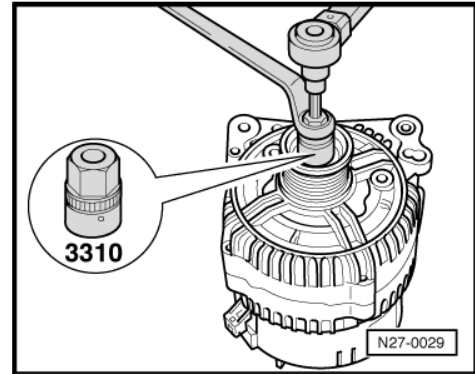


### Removing

- Remove alternator - C- ➔ [page 21](#) .
- Clamp alternator - C- in vice at mounting points.
- If fitted, lever off cap of poly V-belt pulley.
- Unscrew nut of poly V-belt pulley with socket - 3310- .
- Remove poly V-belt pulley from alternator shaft.

### Installing

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



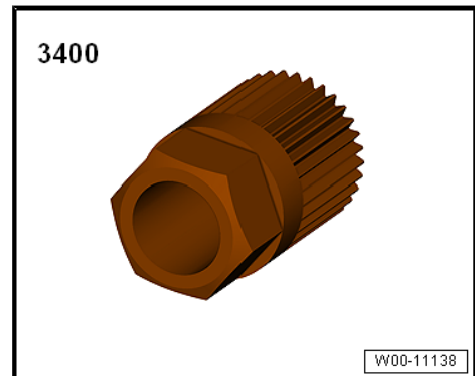
### Specified torques

Component	Specified torque
Nut of poly V-belt pulley	65 Nm

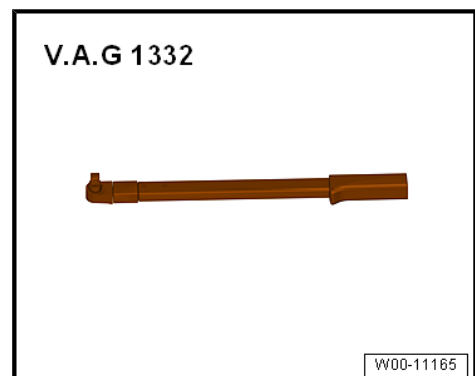
## 2.5.2 Removing and installing poly V-belt pulley with freewheel, manufacturer: Bosch

### Special tools and workshop equipment required

- ◆ Multipoint adapter - 3400-



- ◆ Tool replaced by V.A.G 1332A - V.A.G 1332-



### Removing

- Remove alternator - C- ➔ [page 21](#) .



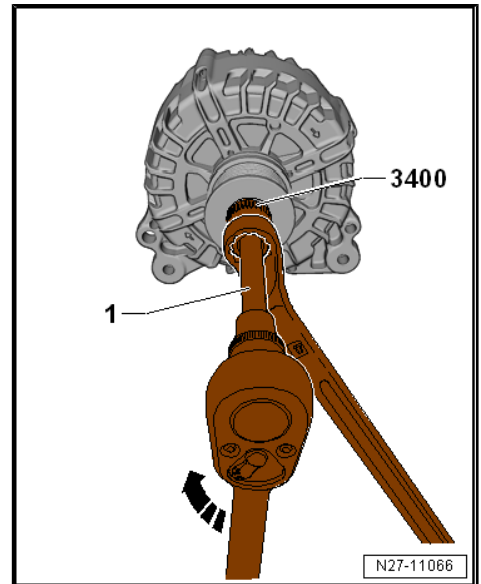
- Clamp alternator - C- in vice at mounting points.
- Lever off cap of poly V-belt pulley.
- Insert adapter - 3400- into poly V-belt pulley using 17 mm ring spanner.
- Insert M10 multipoint bit -1- into alternator shaft.
- Counterhold alternator shaft whilst releasing poly V-belt pulley by turning it anti-clockwise with ring spanner.

**Installing**

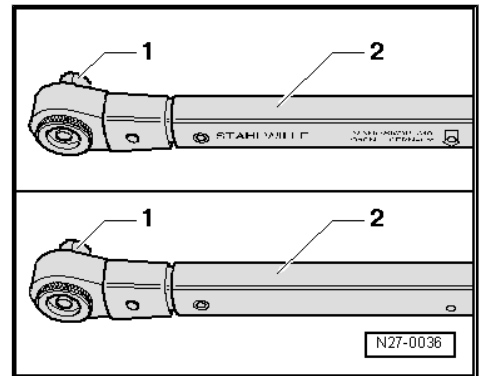
Install in the reverse order of removal, observing the following:

- Screw poly V-belt pulley by hand onto alternator shaft as far as stop.

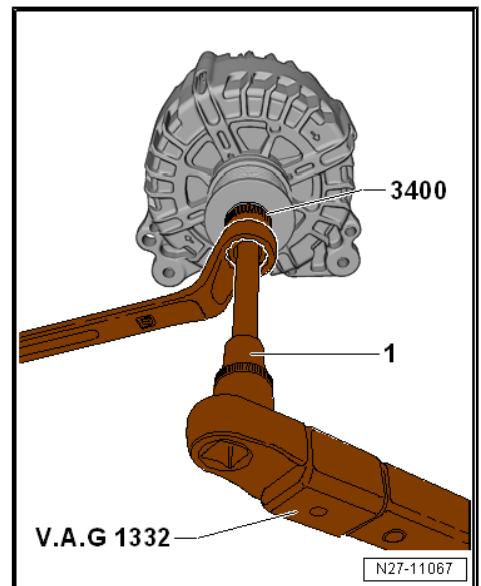
For installation of poly V-belt pulley, tool replaced by V.A.G 1332A - V.A.G 1332- must be set up as follows:



- Release socket drive -1- and pull off grip -2-.
- Turn grip -2- 180° and reinsert socket -1-.
- Set direction of rotation of tool replaced by V.A.G 1332A - V.A.G 1332- to left on socket.



- Insert M10 multipoint bit -1- into alternator shaft.
- Counterhold adapter - 3400- using 17 mm ring spanner.
- Replace poly V-belt pulley by turning alternator shaft anti-clockwise with tool replaced by V.A.G 1332A - V.A.G 1332- .



**Specified torques**

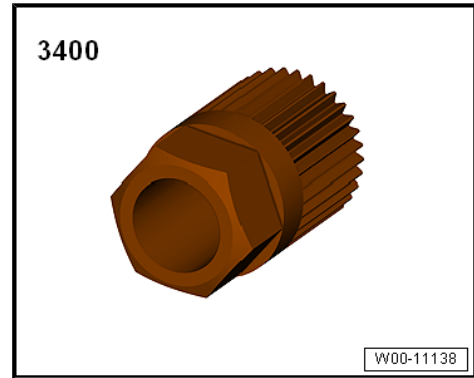
Component	Specified torque
Nut of poly V-belt pulley	80 Nm



### 2.5.3 Removing and installing poly V-belt pulley with freewheel, manufacturer: Valeo

#### Special tools and workshop equipment required

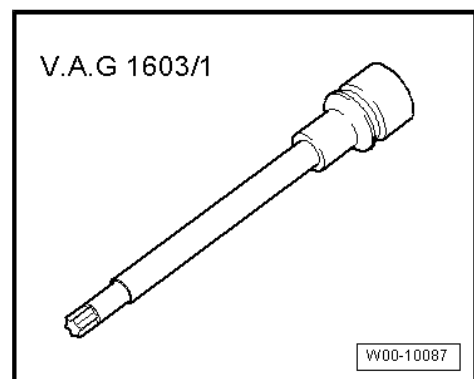
- ◆ Multipoint adapter - 3400-



- ◆ Tool replaced by V.A.G 1332A - V.A.G 1332-



- ◆ TORX driver bit - V.A.G 1603/1-



#### Removing

- Remove alternator - C- ⇒ [page 21](#) .
- Clamp alternator - C- in vice at mounting points.
- Lever off cap of poly V-belt pulley.



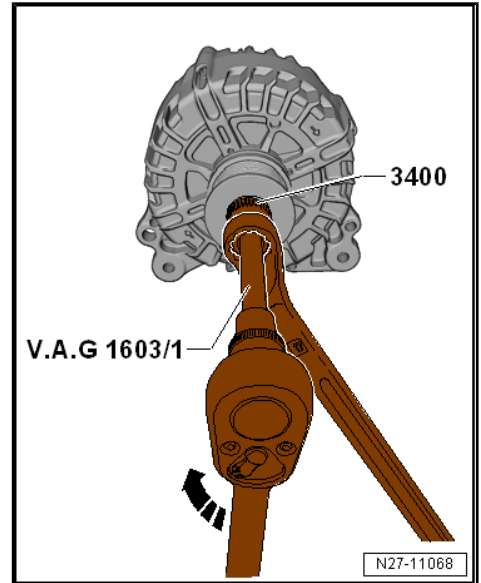
- Insert adapter - 3400- into poly V-belt pulley using 17 mm ring spanner.
- Insert TORX key - V.A.G 1603/1- into alternator shaft.
- Counterhold alternator shaft whilst releasing poly V-belt pulley by turning it anti-clockwise with ring spanner.

**Installing**

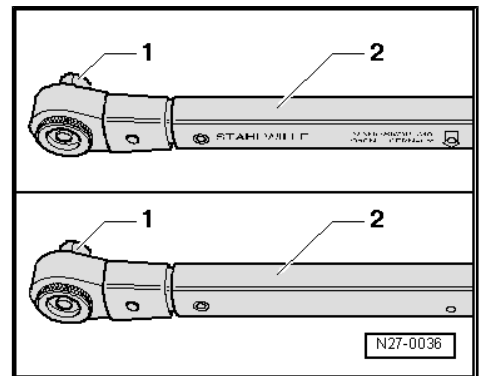
Install in the reverse order of removal, observing the following:

- Screw poly V-belt pulley by hand onto alternator shaft as far as stop.

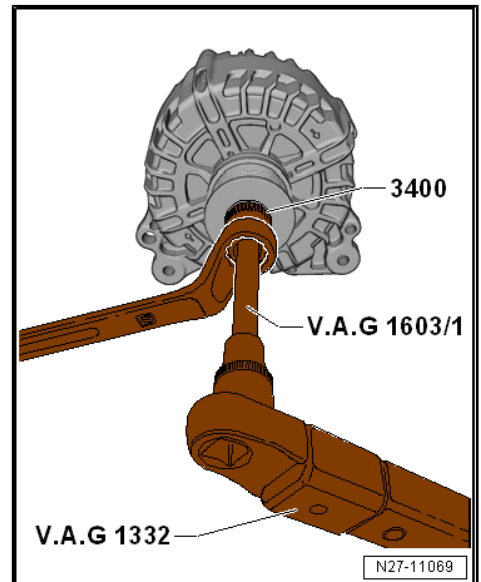
For installation of poly V-belt pulley, tool replaced by V.A.G 1332A - V.A.G 1332- must be set up as follows:



- Release socket drive -1- and pull off grip -2-.
- Turn grip -2- 180° and reinsert socket -1-.
- Set direction of rotation of tool replaced by V.A.G 1332A - V.A.G 1332- to left on socket.



- Insert TORX key - V.A.G 1603/1- into alternator shaft.
- Counterhold adapter - 3400- using 17 mm ring spanner.
- Replace poly V-belt pulley by turning alternator shaft anti-clockwise with tool replaced by V.A.G 1332A - V.A.G 1332- .



**Specified torques**

Component	Specified torque
Nut of poly V-belt pulley	80 Nm



## 2.6 Removing and installing voltage regulator

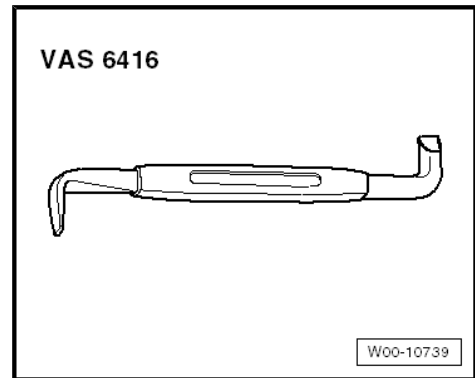
⇒ ["2.6.1 Removing and installing voltage regulator C1 , manufacturer: Bosch", page 30](#)

⇒ ["2.6.2 Removing and installing voltage regulator C1 , Valeo", page 31](#)

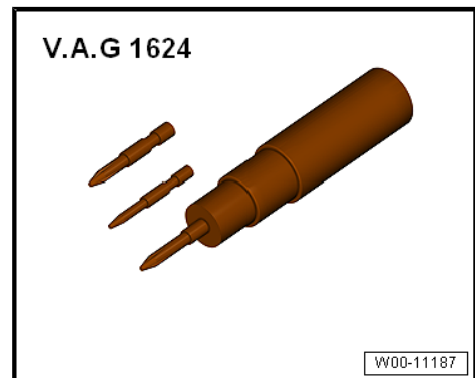
### 2.6.1 Removing and installing voltage regulator - C1- , manufacturer: Bosch

Special tools and workshop equipment required

◆ Offset screwdriver for slotted screws - VAS 6416-

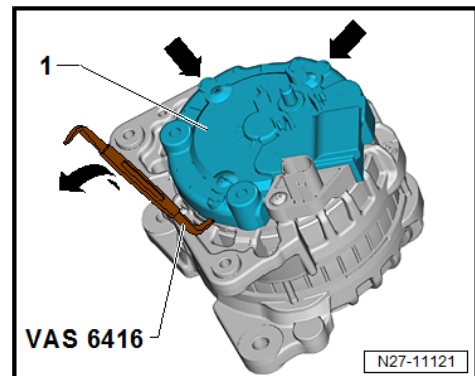


◆ Torque screwdriver - V.A.G 1624-



#### Removing

- Remove alternator - C- ⇒ [page 21](#) .
- Using angle driver for cross-head screws - VAS 6416- , carefully lever off protective cap -1- at fasteners -arrows-.

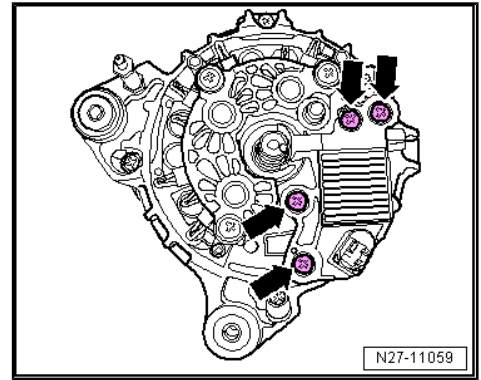




- Unscrew bolts -arrows-.
- Remove voltage regulator - C1- .

**Installing**

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



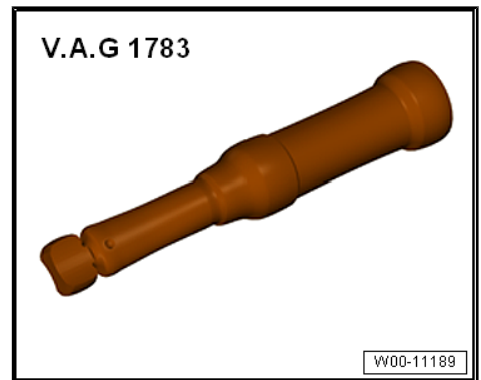
**Specified torques**

Component	Specified torque
Bolts for voltage regulator - C1-	2 Nm

**2.6.2 Removing and installing voltage regulator - C1- , Valeo**

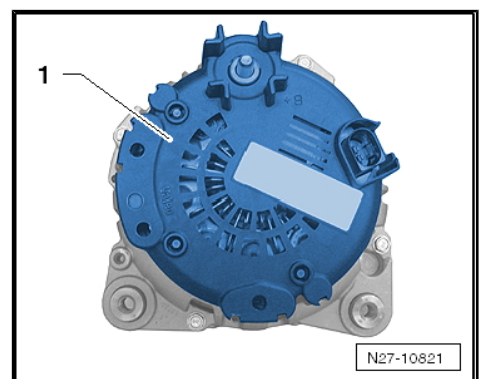
**Special tools and workshop equipment required**

- ◆ Torque wrench - V.A.G 1783-



**Removing**

- Remove alternator - C- ⇒ [page 21](#) .
- Carefully lever off protective cap -1-.



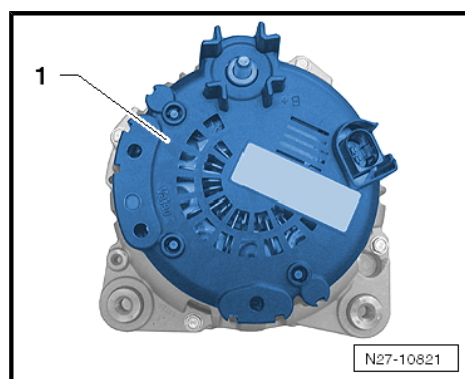
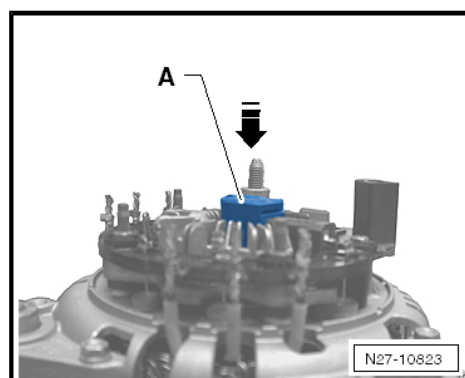
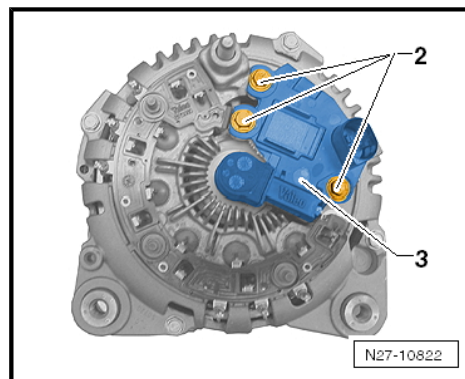


- Unscrew bolts -2-.
- Remove voltage regulator - C1- -3- from alternator - C- .

### Installing

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

- Install voltage regulator - C1- .
- Press down protective cap for carbon brushes -A- -arrow- until protective cap is flush with voltage regulator housing.
- Fit new protective cap -1-.



### Specified torques

Component	Specified torque
Bolts for voltage regulator - C1-	4 Nm





### 3 Starter motor

⇒ [“3.1 Assembly overview – starter”, page 33](#)

⇒ [“3.2 Checking starter”, page 34](#)

⇒ [“3.3 Removing and installing starter”, page 34](#)

#### 3.1 Assembly overview – starter

⇒ [“3.1.1 Assembly overview - starter, vehicles with manual gearbox MQ250, MQ500”, page 33](#)

⇒ [“3.1.2 Assembly overview - starter, vehicles with dual clutch gearbox DQ500”, page 34](#)

##### 3.1.1 Assembly overview - starter, vehicles with manual gearbox MQ250, MQ500

###### 1 - Starter motor - B-

- Removing and installing  
⇒ [page 34](#)

###### 2 - Centre hex stud

- 80 Nm

###### 3 - Earth cable

- Depending on equipment

###### 4 - Nut

- Depending on equipment
- 20 Nm

###### 5 - Electrical connector

- Terminal 50

###### 6 - Nut

- 20 Nm

###### 7 - Cover

###### 8 - Terminal 30/B+

###### 9 - Nut

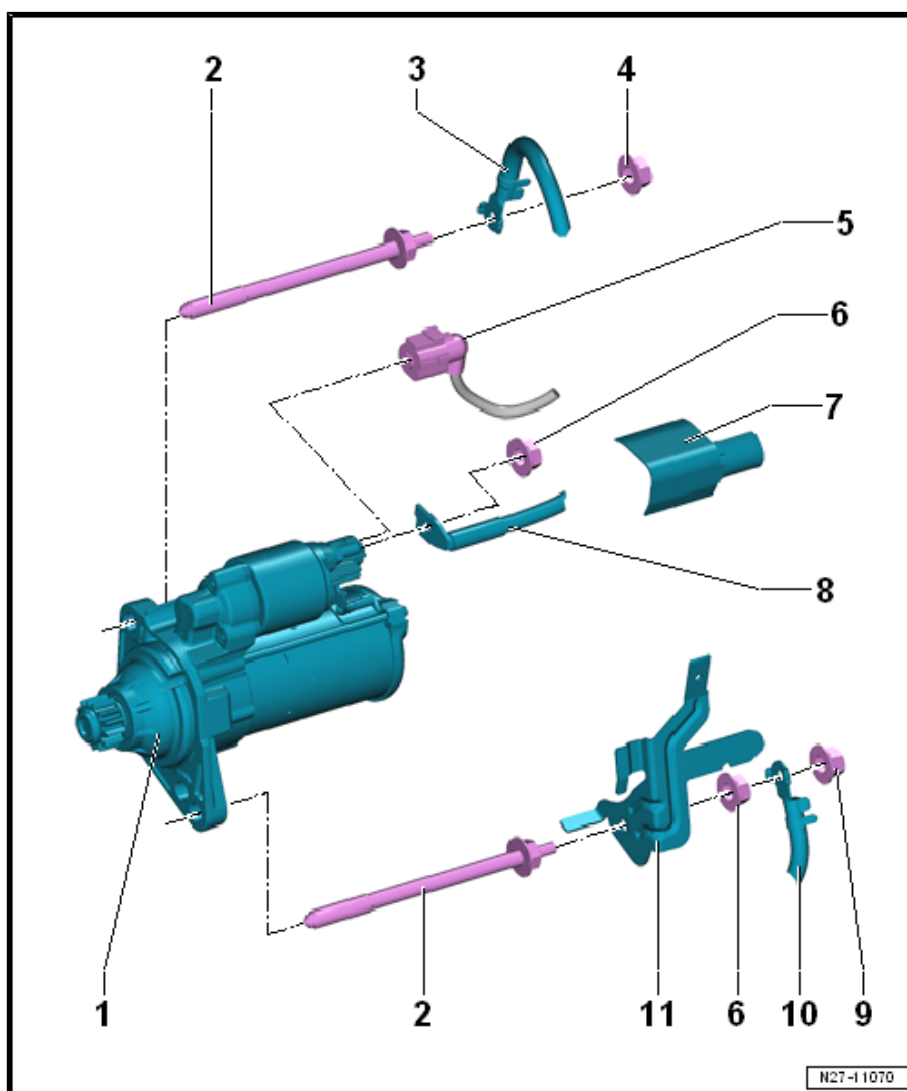
- Depending on equipment
- 20 Nm

###### 10 - Earth cable

- Depending on equipment

###### 11 - Bracket

- For wiring harness
- Depending on equipment





### 3.1.2 Assembly overview - starter, vehicles with dual clutch gearbox DQ500

#### 1 - Starter motor - B-

- Removing and installing  
⇒ [page 36](#)

#### 2 - Bolt

- 40 Nm

#### 3 - Earth cable

- Depending on equip-  
ment

#### 4 - Nut

- Depending on equip-  
ment
- 20 Nm

#### 5 - Electrical connector

- Terminal 50

#### 6 - Nut

- 20 Nm

#### 7 - Cover

#### 8 - Line for terminal 30/B+

#### 9 - Nut

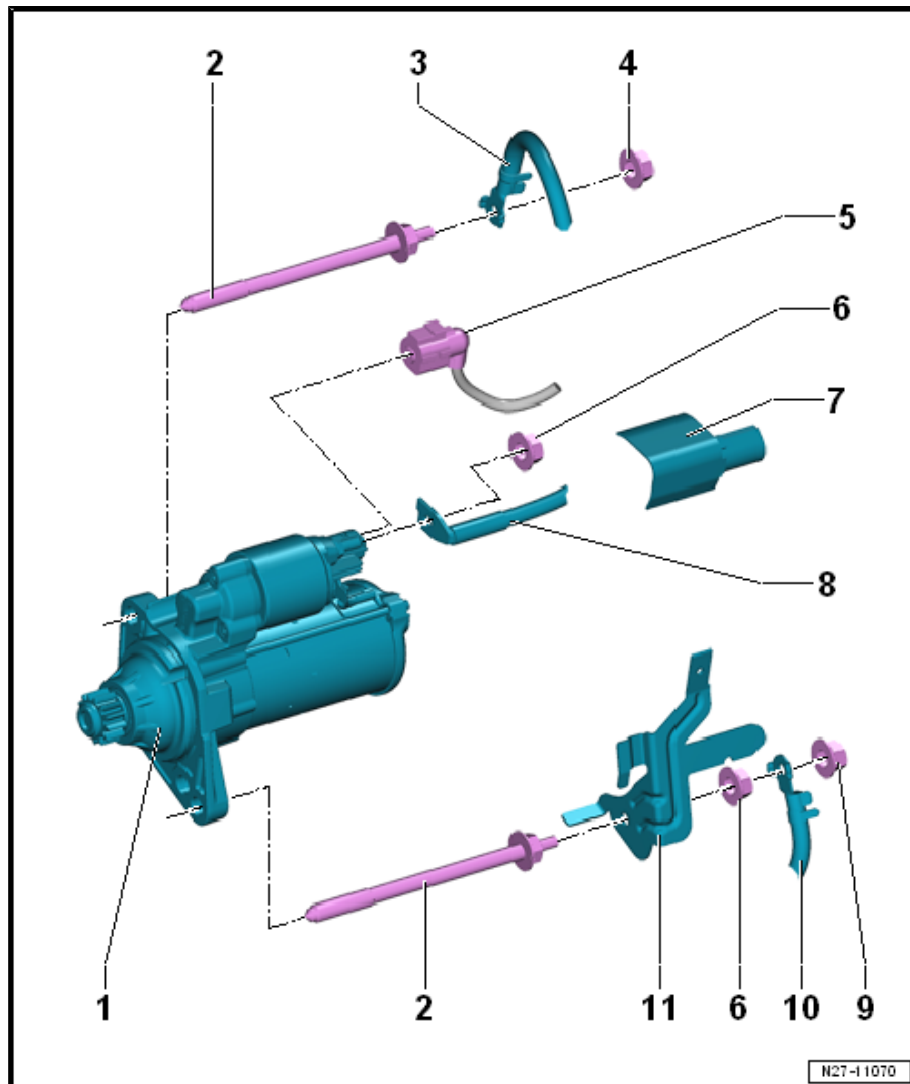
- Depending on equip-  
ment
- 20 Nm

#### 10 - Earth cable

- Depending on equip-  
ment

#### 11 - Bracket

- For wiring harness
- Depending on equip-  
ment



### 3.2 Checking starter

Check starter - B- ⇒ Vehicle diagnostic tester.

### 3.3 Removing and installing starter

⇒ [“3.3.1 Removing and installing starter, vehicles with manual gearbox MQ250, MQ500”, page 34](#)

⇒ [“3.3.2 Removing and installing starter, vehicles with 4-cyl. injection engine and dual clutch gearbox DQ500”, page 36](#)

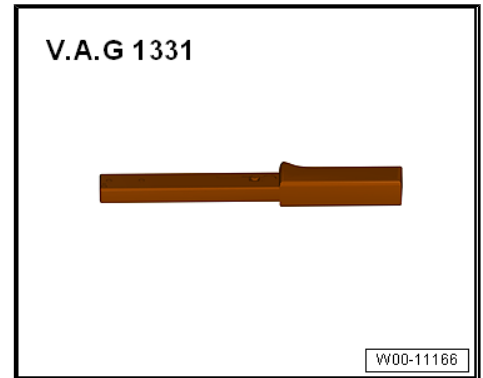
⇒ [“3.3.3 Removing and installing starter, vehicles with 4-cyl. diesel engine and dual clutch gearbox DQ500”, page 38](#)

#### 3.3.1 Removing and installing starter, vehicles with manual gearbox MQ250, MQ500

Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1331-

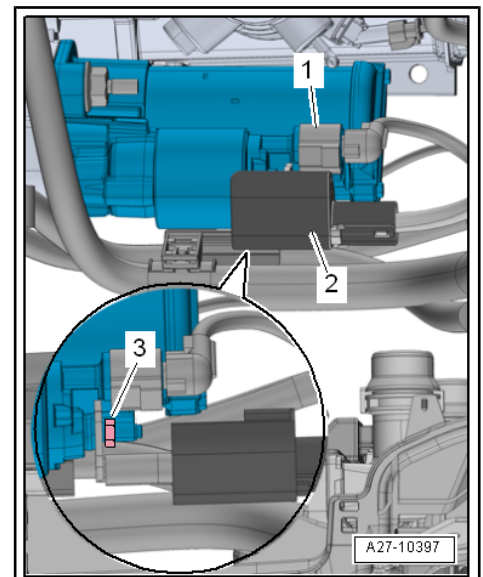


- ◆ Tool replaced by V.A.G 1332A - V.A.G 1332-



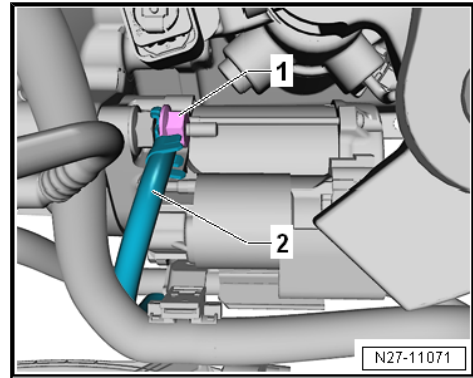
### Removing

- Disconnect batteries ⇒ [page 8](#) .
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview - noise insulation .
- Disconnect connector -1-.
- Press off cap -2-.
- Unscrew nut -3-, and remove terminal 30/B+.

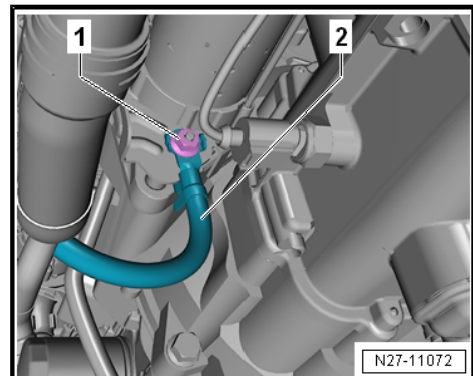




- If fitted, unscrew nut -1-.
- If fitted, remove earth cable -2-.



- If fitted, unscrew nut -1-.
- If fitted, remove earth cable -2-.



- Unscrew nut -4- and remove retainer -1- with wiring harness attached.
- Remove bolts -2- and -5- from starter - B- -3-.
- Remove starter - B- -3- downwards.

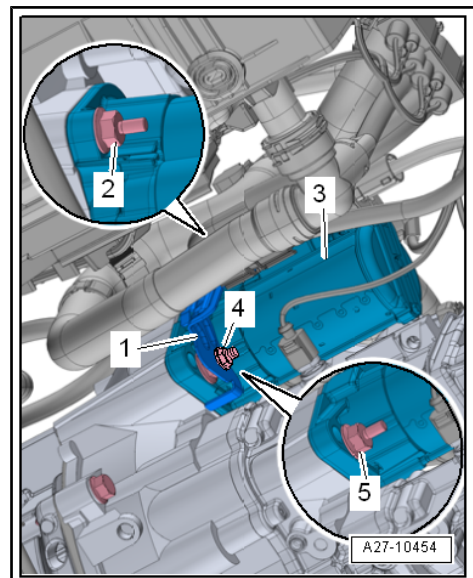
#### Installing

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

- Connect batteries ⇒ [page 8](#) .

#### Specified torques

- ◆ ⇒ [“3.1.1 Assembly overview - starter, vehicles with manual gearbox MQ250, MQ500”, page 33](#)

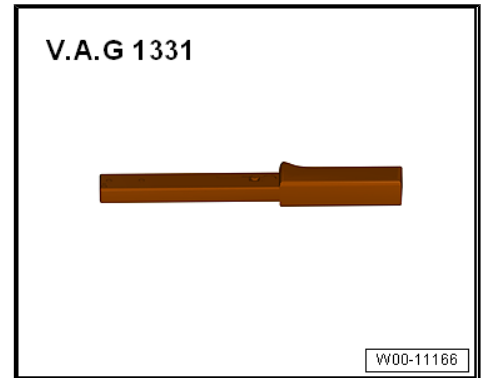


### 3.3.2 Removing and installing starter, vehicles with 4-cyl. injection engine and dual clutch gearbox DQ500

Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1331-



- ◆ Tool replaced by V.A.G 1332A - V.A.G 1332-



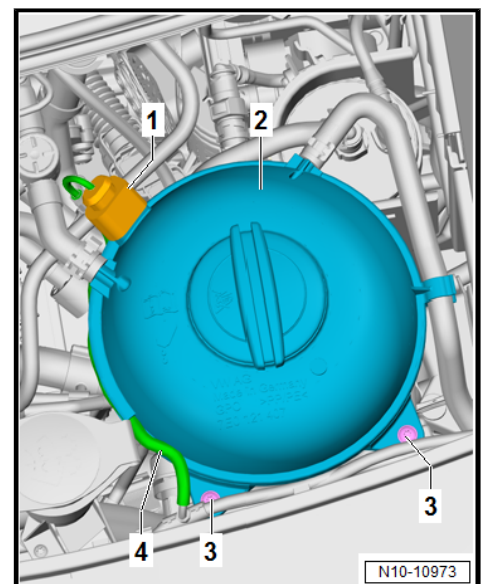
### Removing

- Disconnect battery ⇒ [page 8](#) .
- Disconnect connector -1-.
- Free off wiring harness -4-.
- Remove screws -3-.
- Move coolant expansion tank -2- aside slightly with coolant hoses still attached.



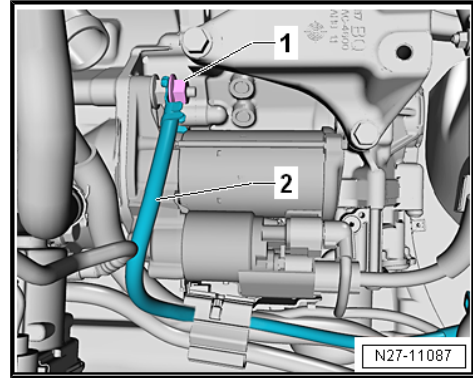
### Note

- ◆ *To gain better access to the starter, unclip the gearbox breather hose and remove the retainer for the charge pressure sender.*
- ◆ *Remove battery tray ⇒ [page 16](#) and retainer for charge pressure sender.*

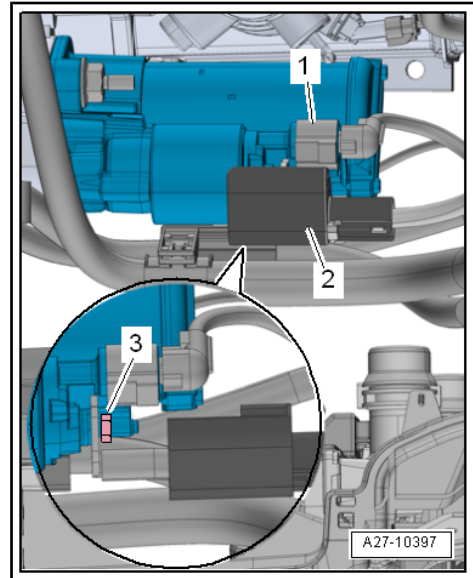




- If fitted, unscrew nut -1- and remove earth wire -2-.



- Disconnect connector -1-.
- Press off cap -2-.
- Unscrew nut -3- and remove line for terminal 30/B+.



- Unscrew nut -4- and remove retainer -1- with wiring harness attached.
- Unscrew bolts -2- and -5-.
- Remove starter - B- -3- upwards.

### Installing

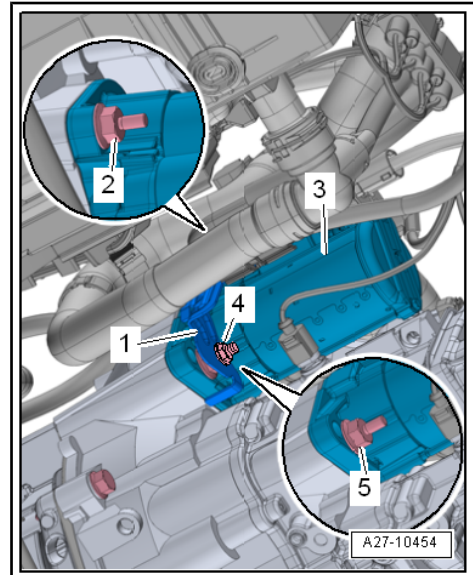
Install in the reverse order of removal, observing the following:

- Connect batteries ⇒ [page 8](#) .

### Specified torques

- ◆ ⇒ [“3.1.2 Assembly overview - starter, vehicles with dual clutch gearbox DQ500”, page 34](#)

Component	Specified torque
Bolts for coolant expansion tank	3.5 Nm

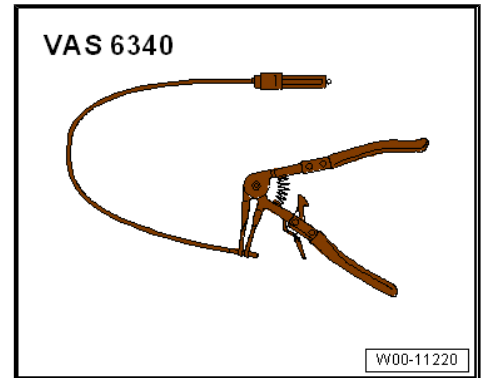


## 3.3.3 Removing and installing starter, vehicles with 4-cyl. diesel engine and dual clutch gearbox DQ500

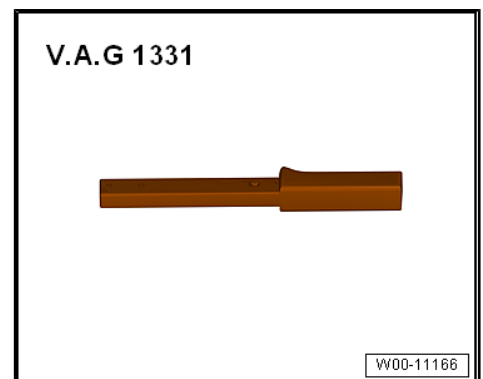
Special tools and workshop equipment required



- ◆ Hose clamp pliers - VAS 6340-

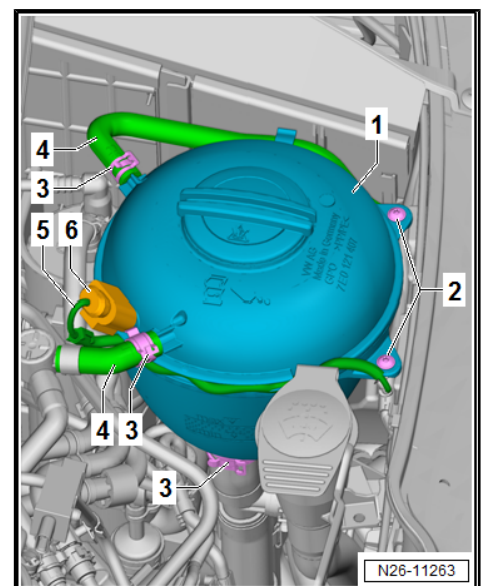


- ◆ Torque wrench - V.A.G 1331-



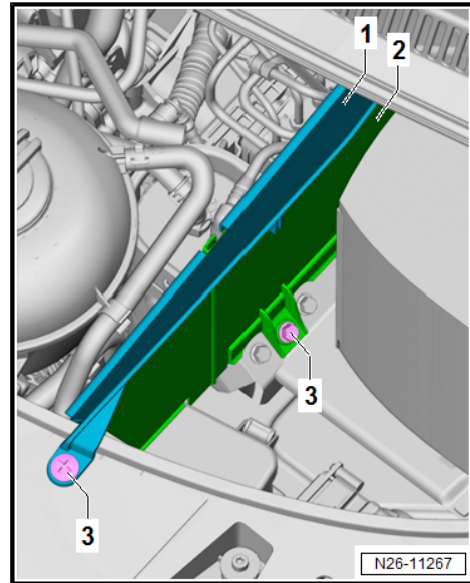
### Removing

- Disconnect batteries ⇒ [page 8](#) .
- If fitted, remove engine cover panel ⇒ Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Drain coolant ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling coolant .
- Unscrew bolts -2-.
- Disconnect connector -6-.
- Unclip wiring harness -5-.
- Release clips -3-.
- Pull off coolant hoses -4-.
- Remove coolant expansion tank -1-.





- Unscrew bolts -3-.



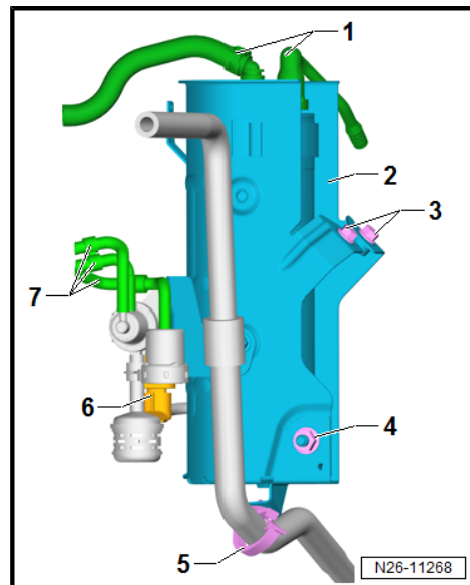
- Remove cover -1- and -2-.
- Detach coolant hose from retainer -5-.
- Pull off vacuum hoses -7- and place to one side.
- Disconnect connector -6-.

**CAUTION**

The fuel system is pressurised.  
Danger of injury from fuel spray.

- Wear safety goggles.
- Wear protective gloves.
- To release pressure, wrap a clean cloth around the connection and carefully loosen the connection.

- Release fuel hoses -1-.
- Unscrew nuts -4-.
- Unscrew bolts -3-.
- Remove fuel filter bracket -2- with fuel filter.

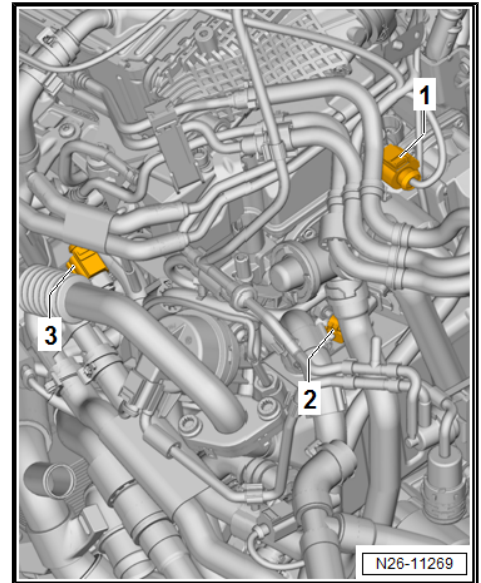




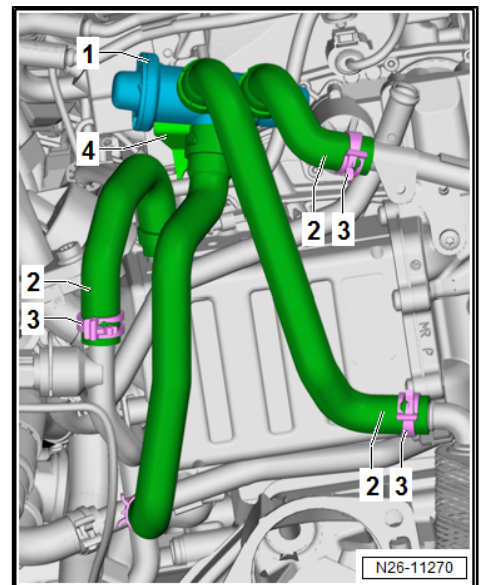


- Disconnect connectors -1-, -2- and -3-.
- Free off wiring harnesses.

**Vehicles with bi-turbo**

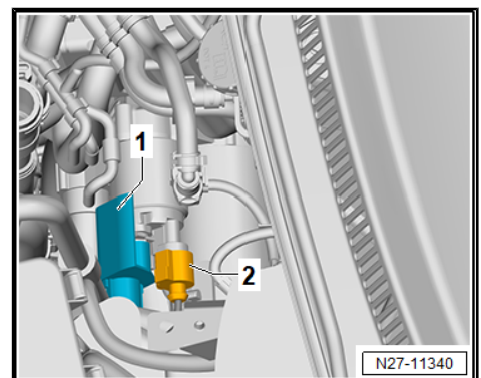


- Release clips -3-.
- Pull off coolant hoses -2-.
- Release valve -1- in bracket -4-.
- Move valve -1- with coolant hoses aside slightly.



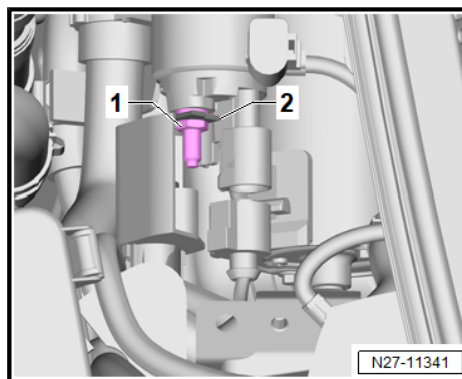
**Continued for all vehicles**

- Pull off cap -1-.
- Disconnect connector -2-.

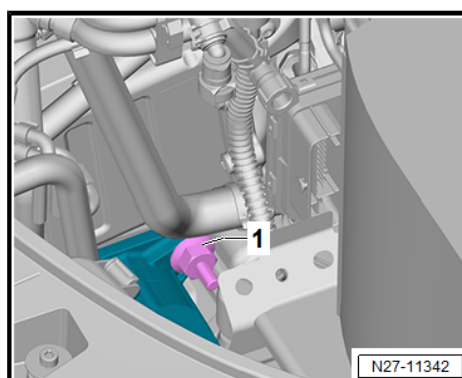




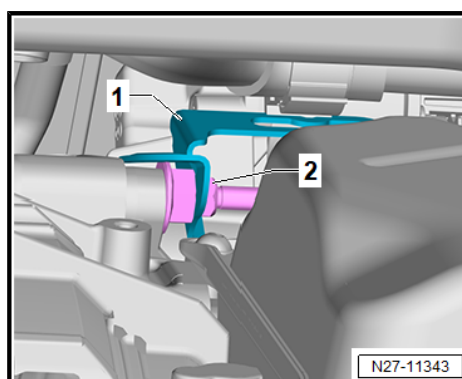
- Unscrew nuts -1-.
- Detach electrical wiring connection -2-.



- Unscrew bolt -1-.



- Unscrew nuts -2-.
- Nut is only accessible from above.
- Remove bracket -1-.



- Unscrew bolt -2-.
- Bolt is only accessible from above.
- Remove starter - B- -1- upwards.

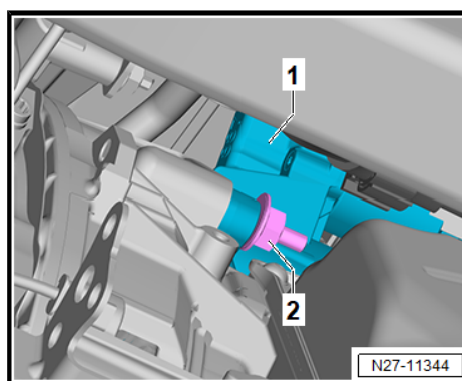
### Installing

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

- Connect batteries ⇒ [page 8](#) .

### Specified torques

- ◆ ⇒ [“3.1.2 Assembly overview - starter, vehicles with dual clutch gearbox DQ500”](#), [page 34](#)



Component	Specified torque
Bolts for coolant expansion tank	3.5 Nm



## 4 Cruise control system (CCS)

All instructions and notes regarding this chapter are available under → Electrical system, General information; Rep. gr. 27 ; Cruise control system (CCS)



## 5 Start/stop system

⇒ [“5.1 General description - start/stop system”, page 44](#)

⇒ [“5.2 Overview of fitting locations - start/stop system”, page 44](#)

### 5.1 General description - start/stop system

The start/stop system is used for reducing fuel consumption by automatically switching off the engine when the vehicle is stationary and automatically starting it when the driver wants the vehicle to move on. The start/stop mode is automatically activated when, after moving on, the vehicle is driven for about 4 seconds at a minimum speed of 3 km/h.

#### Battery recharging or jump start on vehicles with start/stop system:

When recharging or jump starting vehicles with start/stop system, note the following: first connect charging cable to battery positive terminal then body earth. This ensures that the battery monitor control unit - J367- is not bridged. Charging the battery directly on the negative terminal causes the battery monitoring control unit to be bridged. The battery data is not collected by the battery monitoring control unit during the charging process. Then, the values concerning the battery state and saved in the data bus diagnostic interface would not correspond to the values of the charged battery.

#### Renewing battery on vehicles with start/stop system



#### Note

- ◆ *Due to higher demands on the deep-cycle resistance, a special battery is used in vehicles equipped with a start/stop system.*
- ◆ *When renewing the battery, note the correct part designation ⇒ ETKA .*
- ◆ *Batteries intended for use in vehicles with a start/stop system are marked “AGM” (Absorbent Glass Mat) or “EFB” (Enhanced Flooded Battery).*

#### Fault detection and fault display:

Start/stop system function is integrated in engine control unit - J623- software.

Engine control unit - J623- has self-diagnosis to facilitate fault finding.

Use “Guided Fault Finding” to search for faults ⇒ [page 241](#) .

### 5.2 Overview of fitting locations - start/stop system

The illustration shows fitting locations for left-hand drive vehicles. Fitting locations for right-hand drive vehicles are similar.

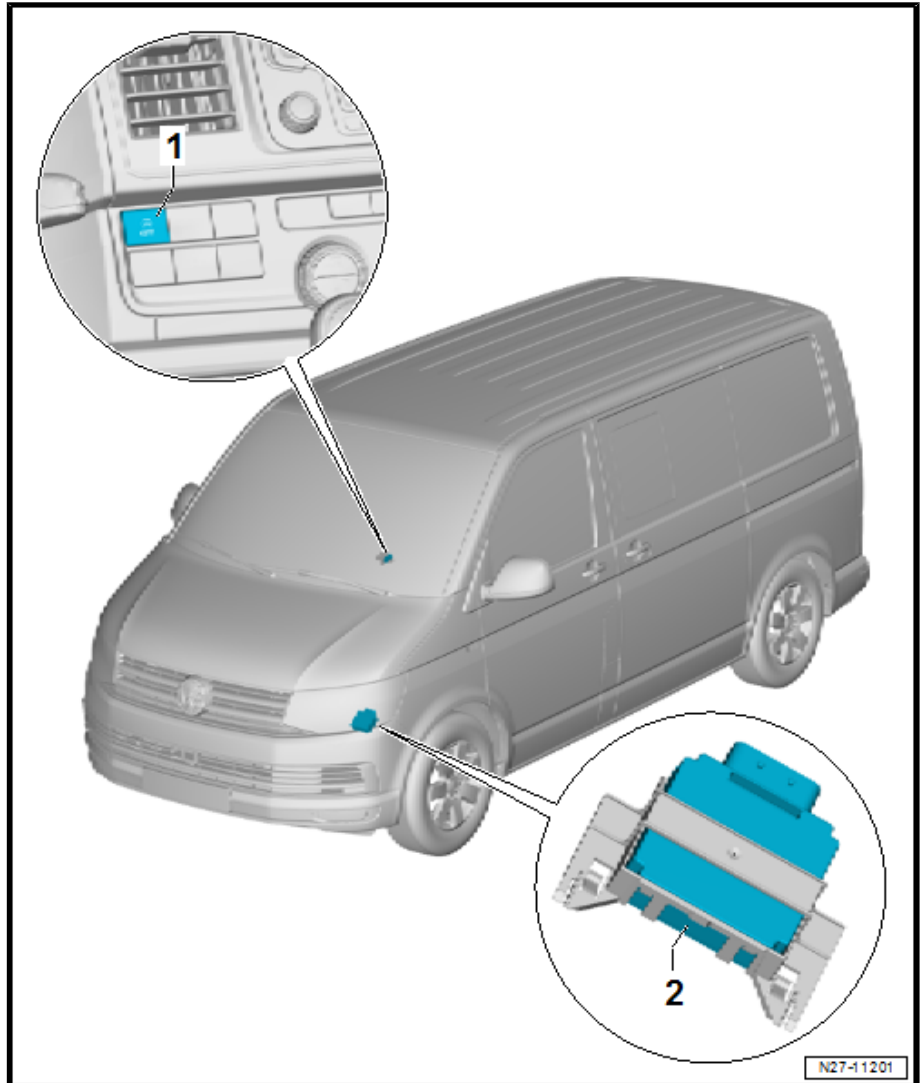


**1 - Start/stop operation switch - E693-**

- ❑ Installed in centre of dash panel.
- ❑ Removing and installing ⇒ [page 195](#)

**2 - Engine control unit - J623-**

- ❑ Installed in electronics box on left in engine compartment
- ❑ Removing and installing ⇒ Power unit; Rep. gr. 24 ; Engine control unit; Removing and installing engine control unit J623





## 6 Adaptive cruise control

All instructions and notes regarding this chapter are available under ⇒ Driver assist systems; Rep. gr. 98 ; Adaptive cruise control



## 90 – Gauges, instruments

### 1 Dash panel insert

⇒ [“1.1 Assembly overview - dash panel insert”, page 47](#)

⇒ [“1.2 Removing and installing dash panel insert KX2 with control unit in dash panel insert J285”, page 47](#)

⇒ [“1.3 Removing and installing ambient temperature sensor”, page 49](#)

#### 1.1 Assembly overview - dash panel insert

##### 1 - Electrical connector

- For dash panel insert

##### 2 - Dash panel insert - KX2-

- With control unit in dash panel insert - J285- .
- Different versions possible; see ⇒ Electronic parts catalogue
- Removing and installing ⇒ [page 47](#)

##### 3 - MOST bus connector

- For fully digital dash panel insert

##### 4 - Dash panel insert trim

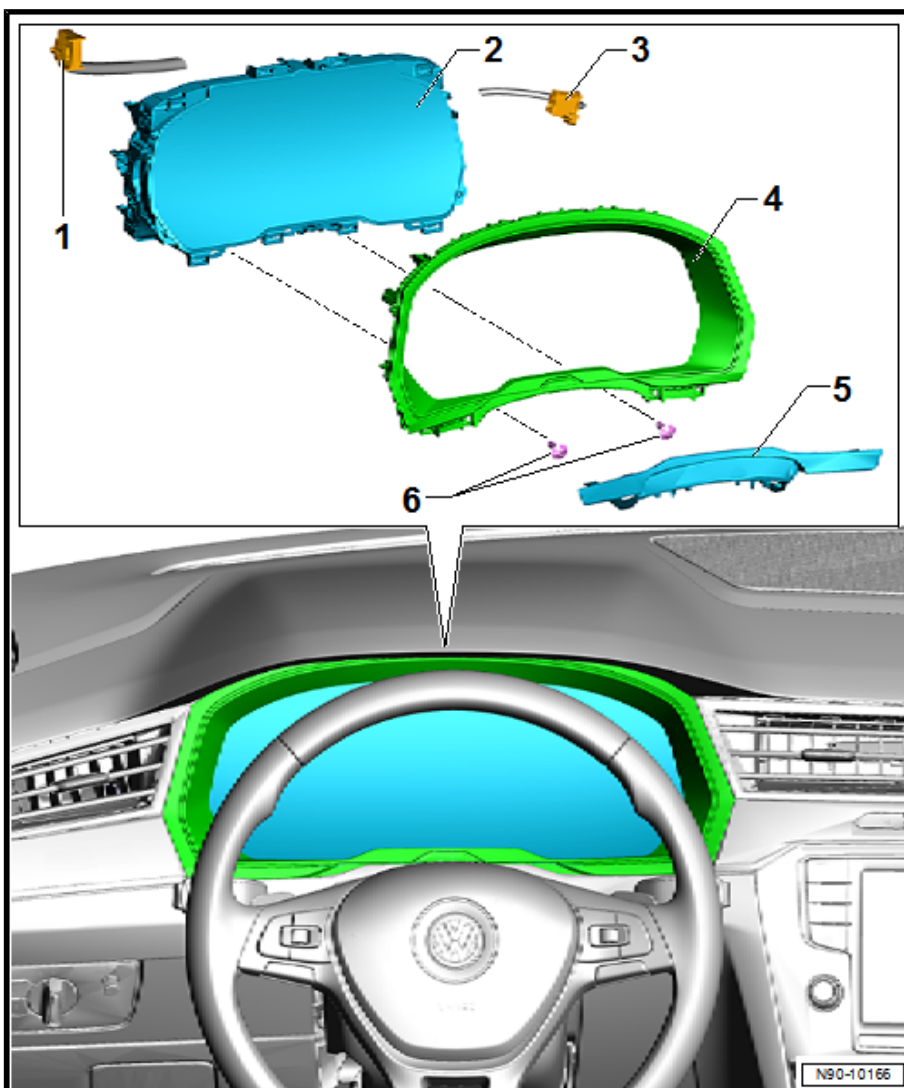
- Removing and installing ⇒ General body repairs, interior; Rep. gr. 70 ; Compartments/covers; Removing and installing dash panel insert trim .

##### 5 - Gap cover

- Part of dash panel insert trim; clipped into steering column trim at top

##### 6 - Securing bolt

- Qty. 2
- 1.5 Nm

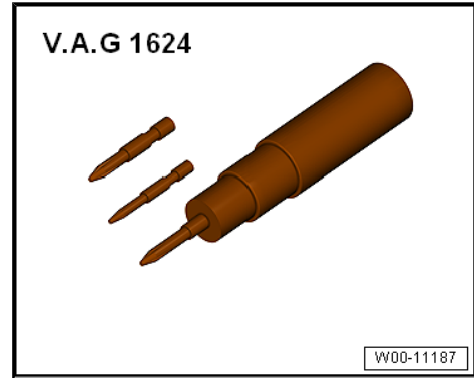


#### 1.2 Removing and installing dash panel insert - KX2- with control unit in dash panel insert - J285-

Special tools and workshop equipment required



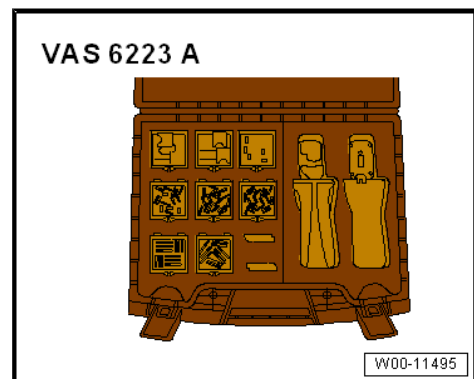
- ◆ Torque screwdriver - V.A.G 1624-



- ◆ Removal wedge set - VAS 895 015-



- ◆ Protective cap for wiring harness connector - VAS 6223/9-



### Note

- ◆ *The dash panel insert - KX2- must not be dismantled.*
- ◆ *It is not necessary to remove the steering wheel prior to removal of the dash panel insert - KX2- .*
- ◆ *If the dash panel insert - KX2- with the control unit in dash panel insert - J285- is to be renewed, start the respective function ⇒ Vehicle diagnostic tester.*

### Removing

- Move steering wheel to rearmost and lowest position. Use the full range of the steering column adjustment for this purpose.
- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.





- Remove dash panel insert trim => General body repairs, interior; Rep. gr. 70 ; Compartments/covers; Removing and installing dash panel insert trim .
- Remove screws -1-

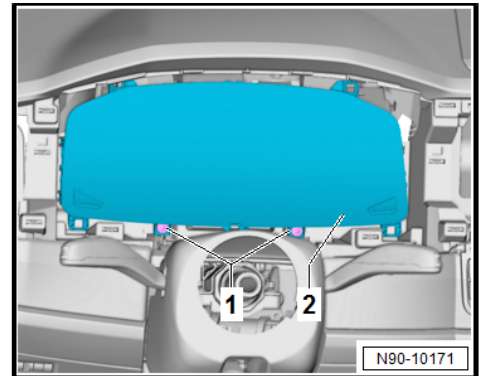
**CAUTION**

Flesh wounds to hands from sharp edges.

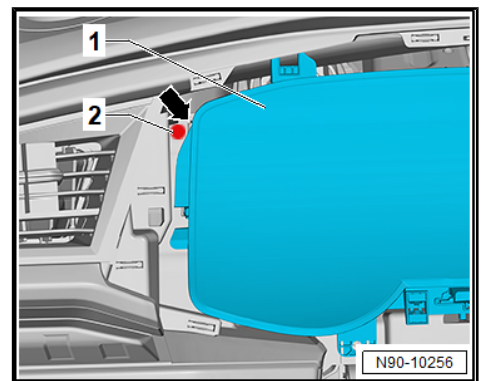
- Wear safety gloves.

**Note**

The dash panel insert - KX2- is engaged in the dash panel. Therefore, a greater force is necessary to remove it.



- Have a second mechanic counterhold dash panel insert - KX2- -1-.
- In area -2-, apply scraper no. 4 from removal wedge set - VAS 895 015- , and detach dash panel from retaining clip -arrow- by »striking«.
- Repeat procedure on right side.
- Release dash panel insert - KX2- -1- from lower retaining clips of dash panel.
- Pull out dash panel insert - KX2- -1- sufficiently to allow access to electrical connector.
- Disconnect electrical connectors.
- Remove dash panel insert - KX2- -1-.



**Installing**

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

- Dash panel insert - KX2- must engage audibly.

**Specified torques**

- ◆ => ["1.1 Assembly overview - dash panel insert", page 47](#)

### 1.3 Removing and installing ambient temperature sensor

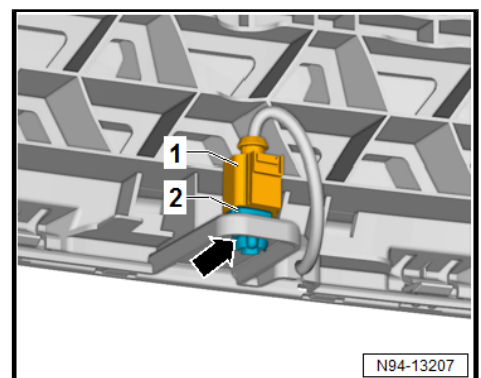
**Removing**

- Remove front bumper cover => General body repairs, exterior; Rep. gr. 63 ; Front bumper; Removing and installing bumper cover .
- Carefully press together retaining clips -arrow- and pull out ambient temperature sensor - G17- -2- from retainer.
- Disconnect connector -1-.

**Installing**

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

On completion of repair work, interrogate event memory and erase any entries "Guided Fault Finding" => Vehicle diagnostic tester.





## 2 Horn

⇒ ["2.1 Assembly overview - horn", page 50](#)

⇒ ["2.2 Removing and installing horn or dual tone horn H1 / bass horn H7", page 50](#)

### 2.1 Assembly overview - horn



Note

*Depending on the level of equipment, a single tone horn may be fitted instead of the dual tone horn.*

#### 1 - Nut

- 9 Nm

#### 2 - Electrical connector

#### 3 - Bass tone horn - H7-

- Removing and installing  
⇒ [page 50](#)

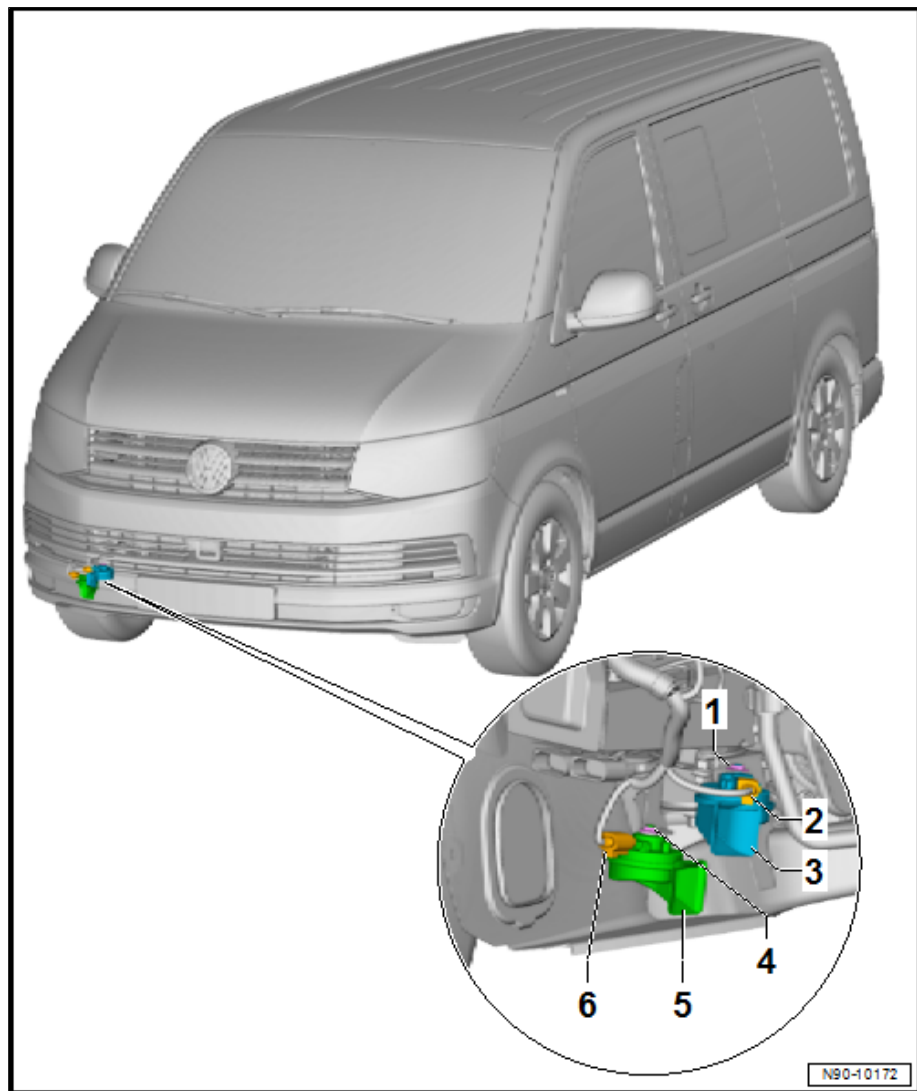
#### 4 - Nut

- 9 Nm

#### 5 - Horn or dual tone horn - H1-

- Removing and installing  
⇒ [page 50](#)

#### 6 - Electrical connector

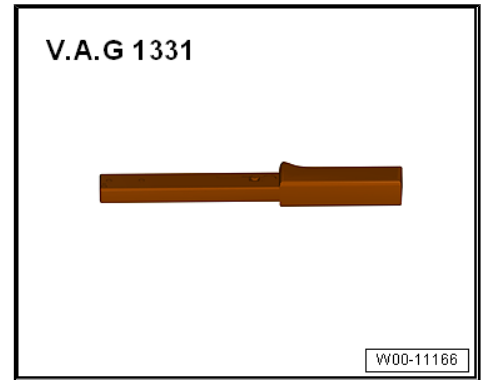


### 2.2 Removing and installing horn or dual tone horn - H1- / bass horn - H7-

Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1331-



**i** Note

*Depending on the level of equipment, a single tone horn may be fitted instead of the dual tone horn.*

**Removing**

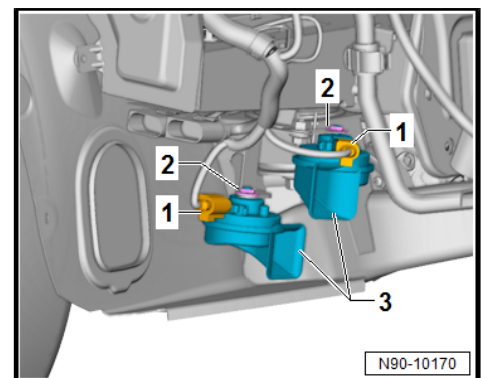
- Remove noise insulation under engine => General body repairs, exterior; Rep. gr. 66 ; Noise insulation .
- Disconnect connector -1-.
- Unscrew nuts -2-.
- Remove horn -3-.

**Installing**

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

**Specified torques**

- ◆ => ["2.1 Assembly overview - horn", page 50](#)





## 3 Tachograph DTCO 4.0

⇒ ["3.1 Removing and installing tachograph G24", page 52](#)

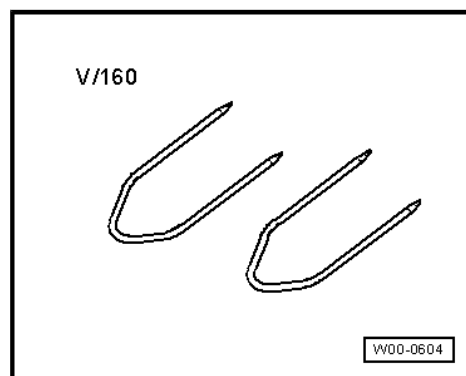
⇒ ["3.2 Removing and installing tachograph sender G75", page 54](#)

⇒ ["3.3 Removing and installing aerial module for tachograph R393", page 60](#)

### 3.1 Removing and installing tachograph - G24-

Special tools and workshop equipment required

- ◆ Release tool - V /160-



#### Removing

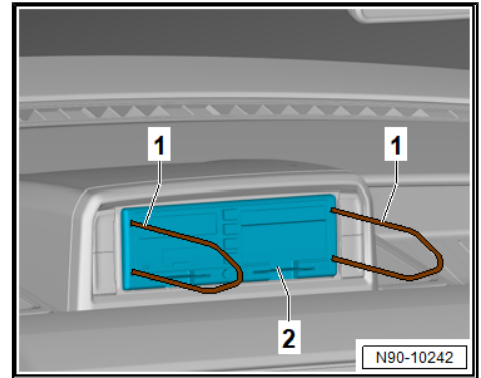


#### Note

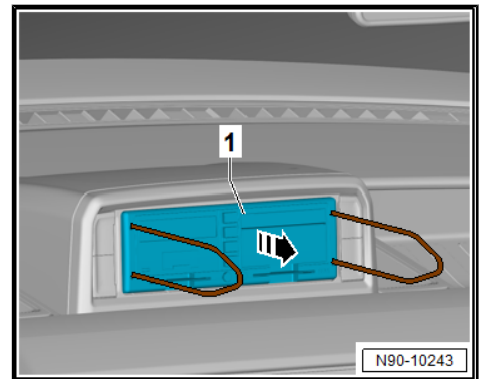
- ◆ *Checks and repairs on the tachograph - G24- may only be carried out by the tachograph manufacturer or by a specialist workshop authorised by this manufacturer.*
  - ◆ *Tamperproofing and activating the tachograph - G24- are measures that may only be carried out by authorised and certified specialist workshops while observing the relevant national statutory provisions.*
  - ◆ *The tachograph data must be downloaded if the tachograph is repaired or renewed.*
  - ◆ *When repairing or exchanging: Authorised workshop can download the tachograph data and hand them over to the respective company/business. If the data cannot be downloaded because of a defect, the workshop must provide the customer with a certificate stating this.*
  - ◆ *Additional information and instructions on tachograph - G24- diagnosis are in the ⇒ operating instructions .*
  - ◆ *When renewing tachograph - G24- , it is also necessary to renew tachograph sender - G75- .*
- Switch off ignition and all electrical consumers.
  - Withdraw ignition key.



- Insert release tool - V160- -1- into openings on tachograph - G24- -2-, and engage them.



- Pull out tachograph - G24- -1- in -direction of arrow-.



- Disconnect electrical connectors -2-.
- Remove tachograph - G24- -1-.
- Renew tachograph sender - G75- .

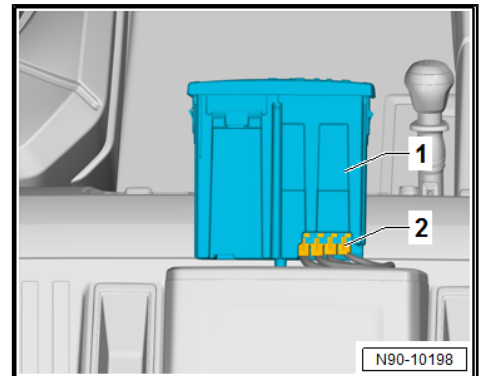
### Installing

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

- Tachograph - G24- must be heard to engage in mounting frame.

### Procedure for renewing tachograph - G24-

- Adapt tachograph - G24- to tachograph sender - G75- ⇒ Operating instructions and ⇒ Technical description of digital tachograph DTCO® 4.0/VDO.





## 3.2 Removing and installing tachograph sender - G75-

⇒ [“3.2.1 Removing and installing tachograph sender G75 , 5-speed manual gearbox”, page 54](#)

⇒ [“3.2.2 Removing and installing tachograph sender G75 , 6-speed manual gearbox”, page 55](#)

⇒ [“3.2.3 Removing and installing tachograph sender G75 , automatic gearbox/dual clutch gearbox”, page 58](#)

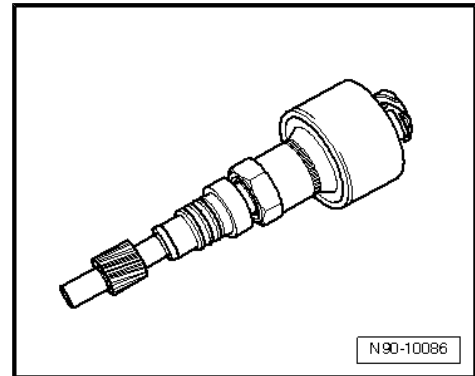
### 3.2.1 Removing and installing tachograph sender - G75- , 5-speed manual gearbox

Tachograph sender for 5-speed manual gearboxes.



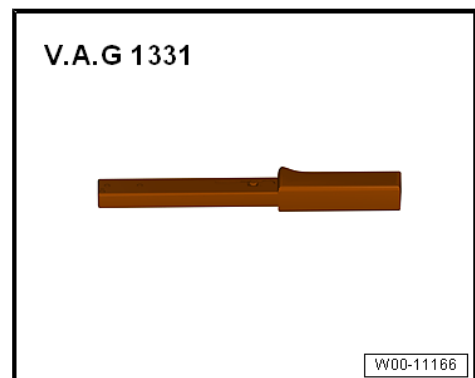
#### Note

- ◆ *Checks and repairs on the tachograph - G24- may only be carried out by the tachograph manufacturer or by a specialist workshop authorised by this manufacturer.*
- ◆ *Tamperproofing and activating the tachograph - G24- are measures that may only be carried out by authorised and certified specialist workshops while observing the relevant national statutory provisions.*
- ◆ *Additional information and instructions on tachograph - G24- diagnosis are in the ⇒ operating instructions .*
- ◆ *Fitting locations of tachograph sender - G75- on various gearbox housings ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*



#### Special tools and workshop equipment required

- ◆ Torque wrench, 6–50 Nm - V.A.G 1331-



#### Removing



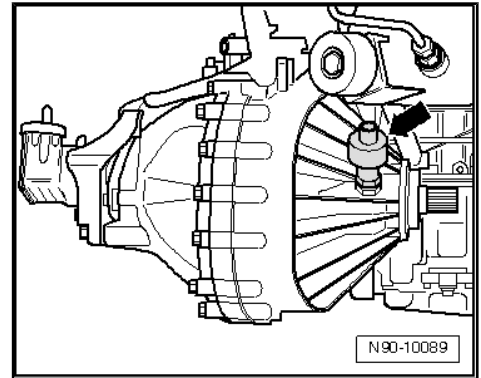
#### Note

*For reasons of clarity, the tachograph sender in the diagram is shown with the gearbox removed.*

- Remove tamperproof seal from tachograph sender - G75- .
- Disconnect electrical connector.

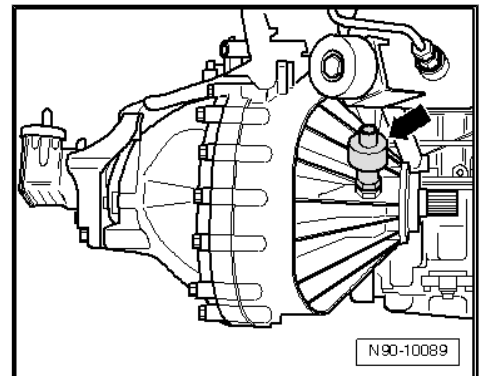


- Remove tachograph sender - G75- -arrow-.



### Installing

- Install tachograph sender - G75- -arrow- and tighten to specified torque.
- Attach electrical connector.
- Fit tamperproof seal on tachograph sender - G75- .
- Stamp workshop number and manufacturer code in vacant area of security seal using seal pliers.
- Check wire and security seal.



### Procedure for renewing tachograph - G24-

- Adapt tachograph - G24- to tachograph sender - G75- => Operating instructions and => Technical description of digital tachograph DTCO® 4.0/VDO.

### Specified torques

Component	Specified torque
Tachograph sender - G75-	35 Nm

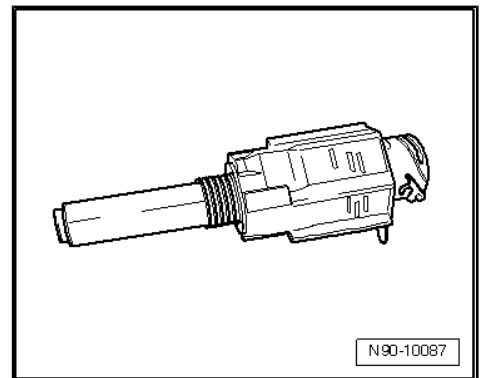
## 3.2.2 Removing and installing tachograph sender - G75- , 6-speed manual gearbox

### Tachograph sender for 6-speed manual gearboxes



#### Note

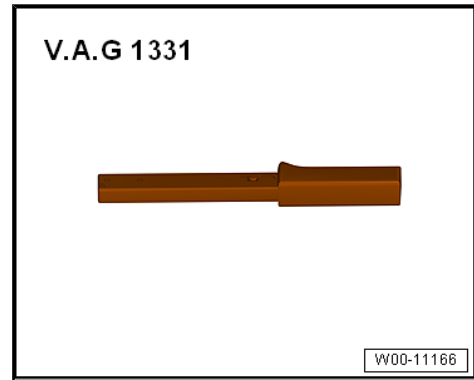
- ◆ *Checks and repairs on the tachograph - G24- may only be carried out by the tachograph manufacturer or by a specialist workshop authorised by this manufacturer.*
- ◆ *Tamperproofing and activating the tachograph - G24- are measures that may only be carried out by authorised and certified specialist workshops while observing the relevant national statutory provisions.*
- ◆ *Additional information and instructions on tachograph - G24- diagnosis are in the => operating instructions .*
- ◆ *Fitting locations of tachograph sender - G75- on various gearbox housings => Current flow diagrams, Electrical fault finding and Fitting locations.*



### Special tools and workshop equipment required

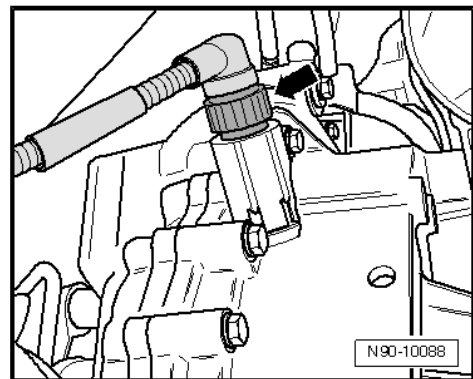


- ◆ Torque wrench, 6–50 Nm - V.A.G 1331-

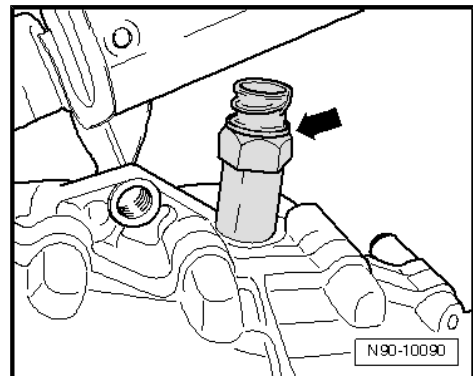


### Removing

- Remove tamperproof seal on tachograph sender - G75- .
- Separate electrical connector -arrow-.
- Destroy plastic cap enclosing tachograph sender - G75- .

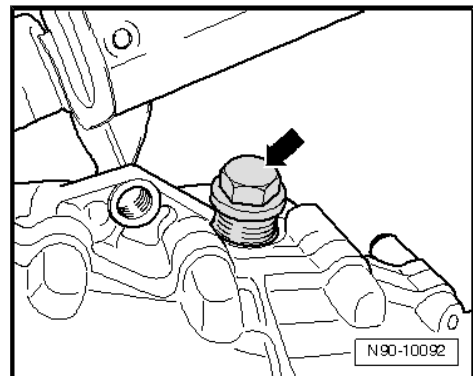


- Remove tachograph sender - G75- -arrow-.



### Installing

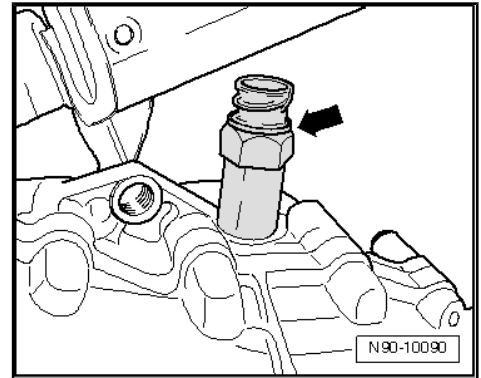
- If tachograph sender - G75- is to be removed and fitted to another gearbox (replacement gearbox or new gearbox), remove M18 bolt with washer -arrow- from new gearbox.



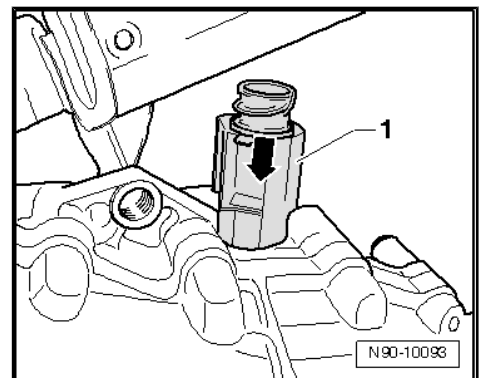




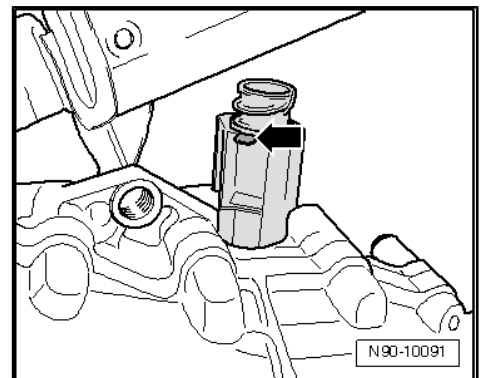
- Install tachograph sender - G75- -arrow- and tighten to specified torque.



- Push new cap -1- in direction of -arrow- onto tachograph sender - G75- until it audibly engages.



- When fitting the cap, align it so that the sealing tab -arrow- on the cap points in the opposite direction to the diesel particulate filter.
- Fit tamperproof seal for tachograph sender - G75- .
- Stamp workshop number and manufacturer code in vacant area of security seal using seal pliers.
- Check wire and security seal.



**Procedure for renewing tachograph - G24-**

- Adapt tachograph - G24- to tachograph sender - G75- ⇒ Operating instructions and ⇒ Technical description of digital tachograph DTCO® 4.0/VDO.

**Specified torques**

Component	Specified torque
Tachograph sender - G75-	35 Nm



### 3.2.3 Removing and installing tachograph sender - G75- , automatic gearbox/dual clutch gearbox

Tachograph sender for automatic gearbox/dual clutch gearbox

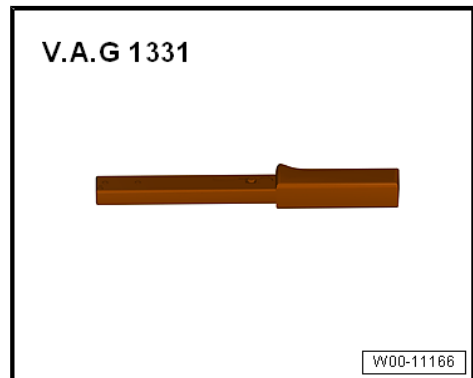
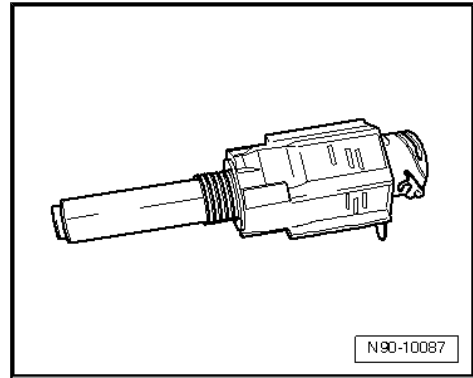


#### Note

- ◆ *Checks and repairs on the tachograph - G24- may only be carried out by the tachograph manufacturer or by a specialist workshop authorised by this manufacturer.*
- ◆ *Tamperproofing and activating the tachograph - G24- are measures that may only be carried out by authorised and certified specialist workshops while observing the relevant national statutory provisions.*
- ◆ *Additional information and instructions on tachograph - G24- diagnosis are in the ⇒ operating instructions .*
- ◆ *Fitting locations of tachograph sender - G75- on various gearbox housings ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*

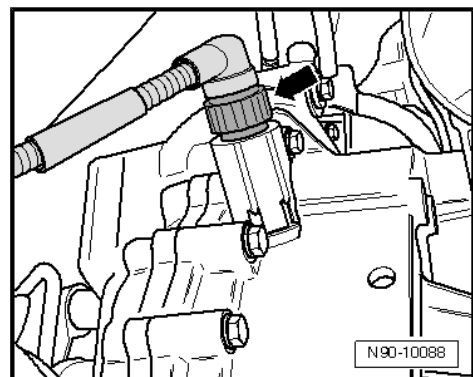
#### Special tools and workshop equipment required

- ◆ Torque wrench, 6–50 Nm - V.A.G 1331-



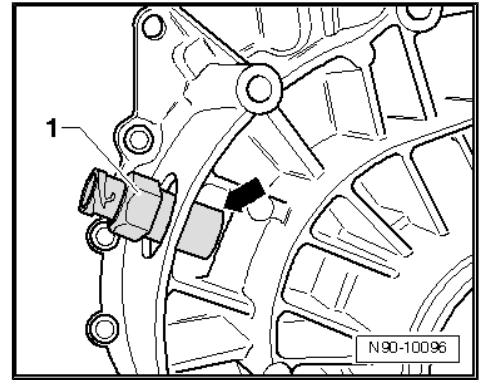
#### Removing

- Remove tamperproof seal from tachograph sender - G75- .
- Separate electrical connector -arrow-.
- Destroy plastic cap enclosing tachograph sender - G75- .



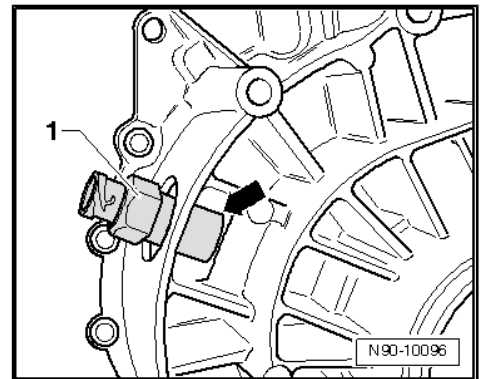


- Remove tachograph sender - G75- -1-.

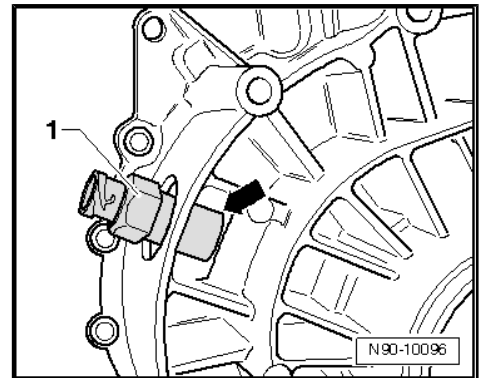


### Installing

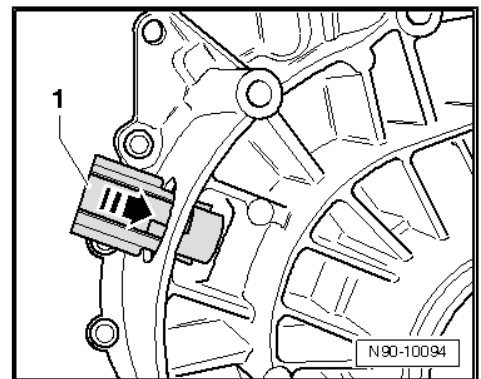
- If tachograph sender - G75- is to be removed and fitted to another gearbox (replacement gearbox or new gearbox), remove M18 bolt with washer -arrow- from new gearbox.



- Install tachograph sender - G75- -1- and tighten to specified torque.



- Push new cap -1- in direction of -arrow- onto tachograph sender - G75- until it audibly engages.





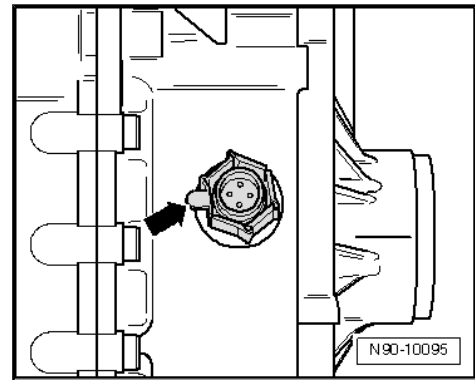
- When fitting the cap, align it so that the sealing tab -arrow- on the cap points in the opposite direction to the diesel particulate filter.
- Fit tamperproof seal for tachograph sender - G75- .
- Stamp workshop number and manufacturer code in vacant area of security seal using seal pliers.
- Check wire and security seal.

#### Procedure for renewing tachograph - G24-

- Adapt tachograph - G24- to tachograph sender - G75- ⇒ Operating instructions and ⇒ Technical description of digital tachograph DTCO® 4.0/VDO.

#### Specified torques

Component	Specified torque
Tachograph sender - G75-	35 Nm



### 3.3 Removing and installing aerial module for tachograph - R393-

- Removing and installing aerial module for tachograph - R393- ⇒ Communication; Rep. gr. 91 ; Aerial systems; Removing and installing aerial module .



## 92 – Windscreen wash/wipe system

### 1 Windscreen wiper system

⇒ [“1.1 Assembly overview - windscreen wiper system”, page 61](#)

⇒ [“1.2 Moving wipers to service position”, page 62](#)

⇒ [“1.3 Removing and installing wiper blade”, page 63](#)

⇒ [“1.4 Removing and installing wiper arms”, page 63](#)

⇒ [“1.5 Adjusting wiper arms”, page 65](#)

⇒ [“1.6 Removing and installing wiper frame with linkage and wiper motor V”, page 66](#)

⇒ [“1.7 Renewing wiper motor”, page 67](#)

⇒ [“1.8 Removing and installing rain and light sensor”, page 71](#)

#### 1.1 Assembly overview - windscreen wiper system



##### Note

*The illustration shows fitting locations for left-hand drive vehicles. Fitting locations for right-hand drive vehicles are similar.*



**1 - Wiper blade on front passenger side**

- Removing and installing ⇒ [page 63](#)

**2 - Wiper blade on driver side**

- Removing and installing ⇒ [page 63](#)

**3 - Wiper arm on driver side**

- Removing and installing ⇒ [page 63](#)
- Adjusting ⇒ [page 65](#)

**4 - Cover**

**5 - Nut**

- 20 Nm

**6 - Securing bolt**

- 5 Nm

**7 - Wiper frame with linkage**

- Removing and installing ⇒ [page 66](#)

**8 - Wiper motor - V-**

- With wiper motor control unit - J400- .
- Renewing ⇒ [page 67](#)

**9 - Support plate**

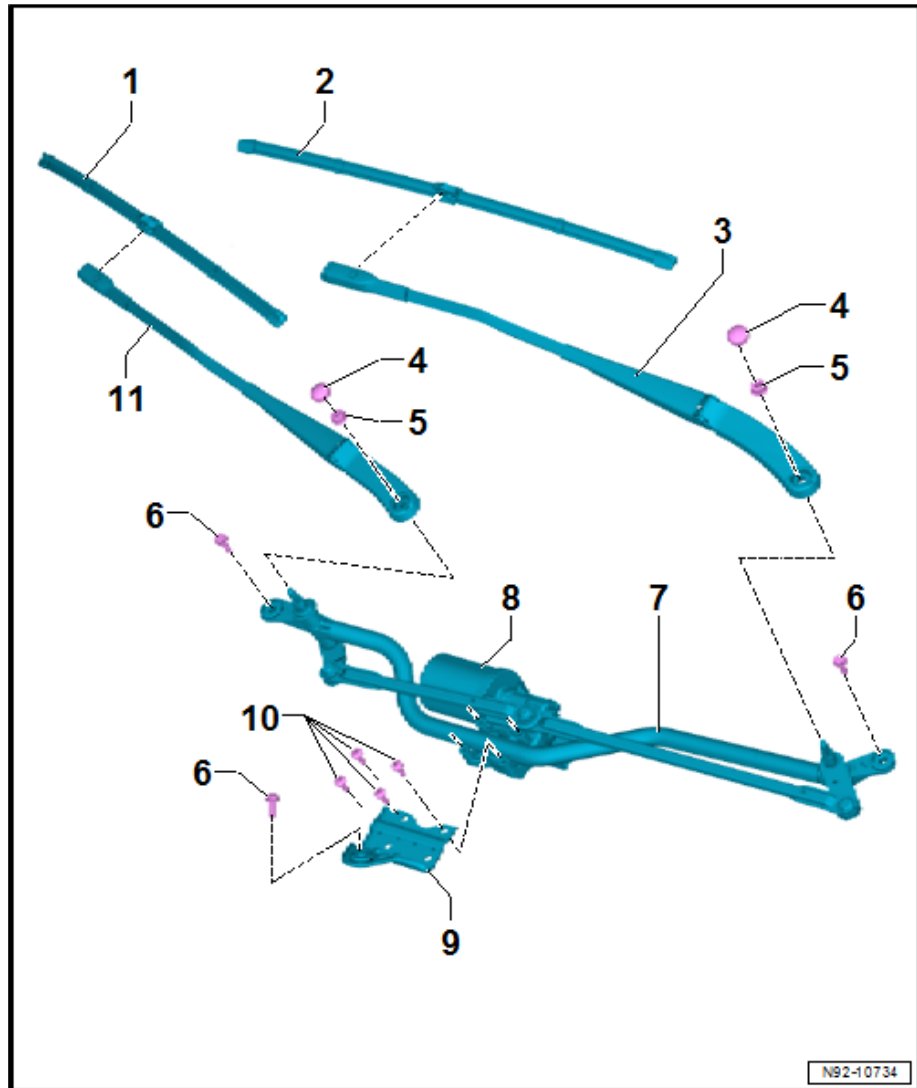
- Means of securing wiper motor - V- on wiper frame

**10 - Bolt**

- Means of securing wiper motor and retaining plate on wiper frame
- Qty. 4
- 8 Nm

**11 - Wiper arm on front passenger side**

- Removing and installing ⇒ [page 63](#)
- Adjusting ⇒ [page 65](#)



## 1.2 Moving wipers to service position

**NOTICE**

Risk of damaging the bonnet when moving wipers back into the park position.

– Never manoeuvre the vehicle with wiper arms folded out.

– In the event of frost, check if wiper blades are frozen.



**Note**

*If it is necessary for the wiper motor to run during the working procedure, the bonnet must be closed completely.*



- Switch on ignition.
- Switch off ignition.
- Move wiper lever to flick wipe position.
- Wipers move to service position.
- Withdraw ignition key.

**i** Note

- ◆ Close the bonnet before switch on the ignition.
- ◆ Refer to the ⇒ Owner's manual for additional information.
- ◆ The wipers automatically move back to the park position when the road speed exceeds 6 km/h or when the windscreen wiper switch is operated.

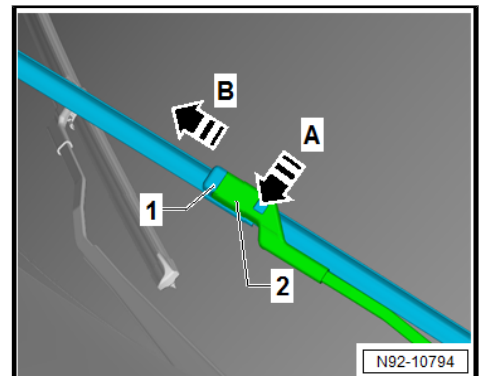
### 1.3 Removing and installing wiper blade

**i** Note

- ◆ Risk of damage to the wiper blade.
- ◆ Joint-free wipers are very flexible. To lift wiper blade off windscreen, touch it only in area in which wiper blade is attached to wiper.

#### Removing

- Move wipers to service position ⇒ [page 62](#) .
- Lift wiper arm off the windscreen.
- Push retaining clip in -direction of arrow A-.
- Push off wiper blade -1- in direction of -arrow B-.
- Remove wiper blade -1-.

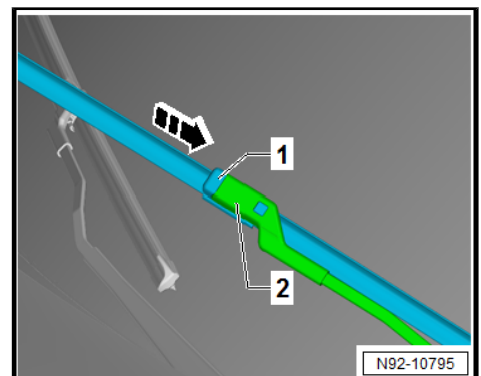


#### Installing

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

- Insert wiper blade -1- in parallel movement in -direction of arrow- into wiper arm -2-. Ensure that wiper blade -1- is pushed into wiper arm -2- until retaining clip is heard to engage.

Activate the “flick wipe” function to leave the “service position”.

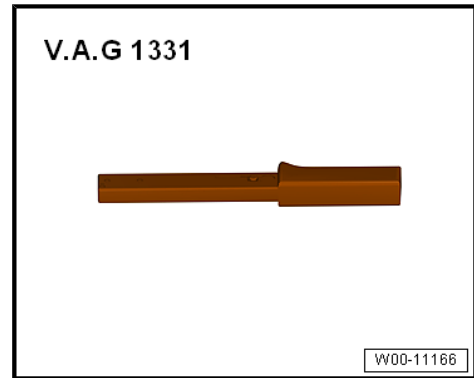


### 1.4 Removing and installing wiper arms

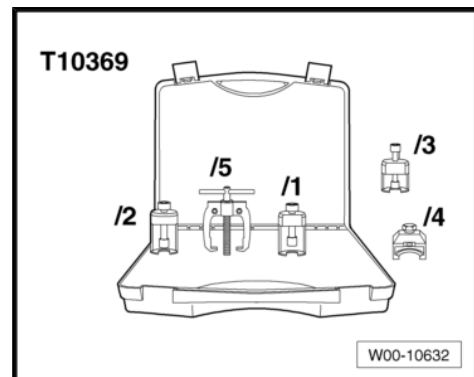
Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1331-



- ◆ Puller - T10369-



## Removing



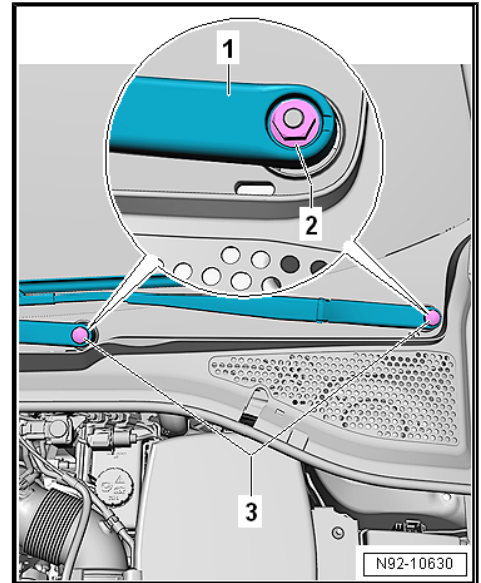
### Note

- ◆ *There is a risk of damage to the wiper shafts when trying to release the wiper arms without using the puller - T10369/1- .*
  - ◆ *Pinch protection: When the ignition is switched back on, the front wiper arms might start moving unintentionally.*
  - ◆ *Risk of damaging the bonnet when moving wipers back into the park position.*
  - ◆ *Do not manoeuvre the vehicle with wiper arms folded out.*
  - ◆ *The wipers automatically move back to the park position when the wiper switch is operated or when road speed exceeds 6 km/h.*
- Move wipers to service position ⇒ [page 62](#) .

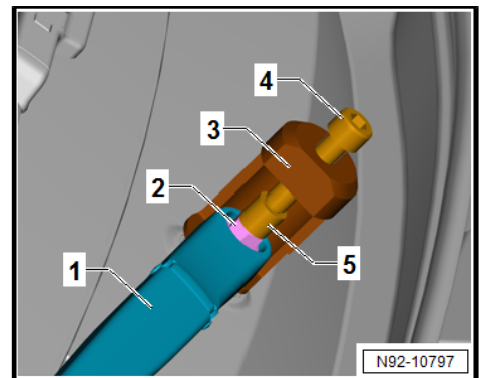




- Lever caps -3- off wiper arms -1-.
- Loosen nuts -2- a few turns.



- Fit puller - T10369/1- -3- on wiper arm -1-.
- Always use thrust piece -5- to loosen wiper arm.
- Fit thrust piece -5- on wiper shaft.
- Turn bolt -4- clockwise until wiper arm -1- is pulled off wiper shaft.
- Unscrew nuts -2-.
- Remove wiper arm -1-.



### Installing

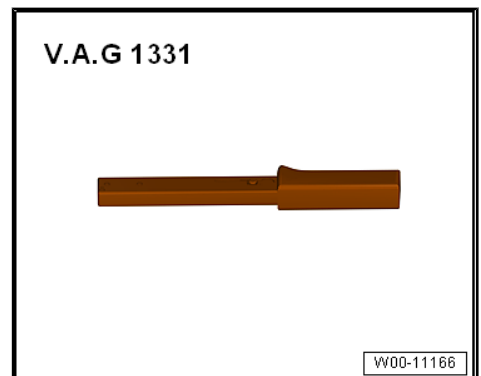
Install in the reverse order of removal, observing the following:

- Activate "flick wipe" function, and allow wiper motor to move to its end position.
- Adjust wiper arms ⇒ [page 65](#) .

## 1.5 Adjusting wiper arms

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-





### Note

- ◆ If it is necessary for the wiper motor to run during the working procedure, the bonnet must be closed, as otherwise the power supply to the wiper motor will be interrupted.
- ◆ Removal and installation are described for left-hand drive vehicles. Removal and installation for right-hand drive vehicles are similar.

### Sequence of operations

- Removing wiper arm ⇒ [page 63](#) .
- Switch on ignition.
- Close bonnet.
- Actuate “flick wipe” function and allow wiper motor to move to its end position.
- Switch off ignition.
- Fit wiper arm together with attached wiper blade onto wiper shaft.
- Align wiper blade as follows on windscreen:



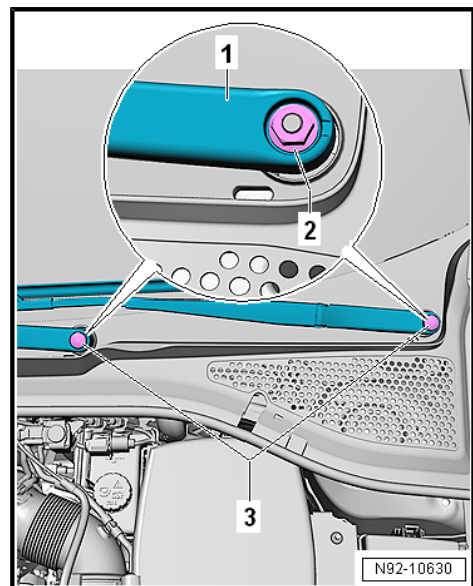
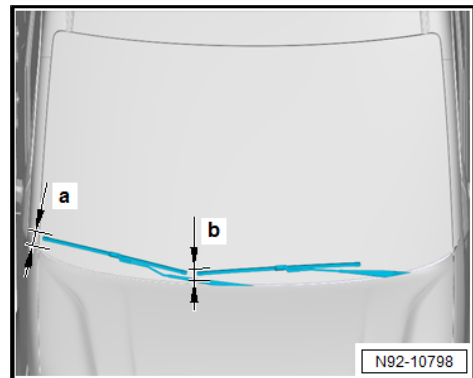
### Note

The dimensions given here indicate the distance between the tip of the wiper blade to the upper edge of the plenum chamber cover.

- ◆ Dimension -a- = 25 mm + 10 mm.
  - ◆ Dimension -b- = 25 mm ± 10 mm.
- Tighten nuts -2-.
  - Switch on ignition.
  - Activate flick wipe function, and allow wiper arms move to their end position.
  - Switch off ignition.
  - Withdraw ignition key.
  - Check wiper arm adjustment again and correct, if necessary.
  - Press on caps -3-.

### Specified torques

- ◆ ⇒ [“1.1 Assembly overview - windscreen wiper system”, page 61](#)

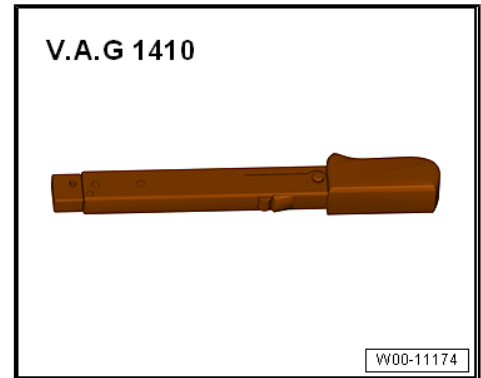


## 1.6 Removing and installing wiper frame with linkage and wiper motor - V-

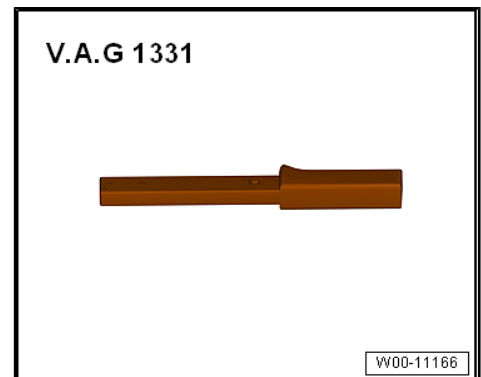
### Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1410-



- ◆ Torque wrench - V.A.G 1331-



## Removing

The removal and installation procedure is described for left-hand drive vehicles. The removal and installation procedure for right-hand drive vehicles follows the same pattern.

- Move windscreen wipers to park position.
- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Plenum chamber cover; Removing and installing plenum chamber cover .
- Unscrew bolts -arrows-.
- Separate electrical connector on wiper motor.
- Remove wiper frame with linkage and wiper motor - V- upwards from plenum chamber.

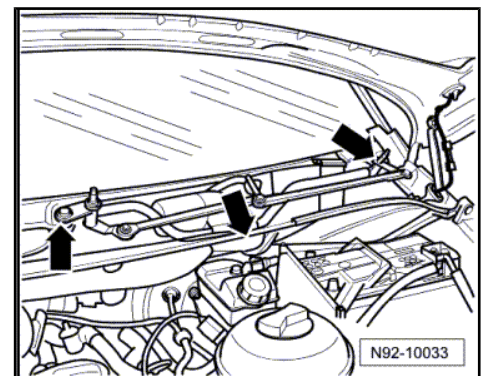
## Installing

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

- Adjust wiper arms ⇒ [page 65](#) .

## Specified torques

- ◆ ⇒ ["1.1 Assembly overview - windscreen wiper system", page 61](#)

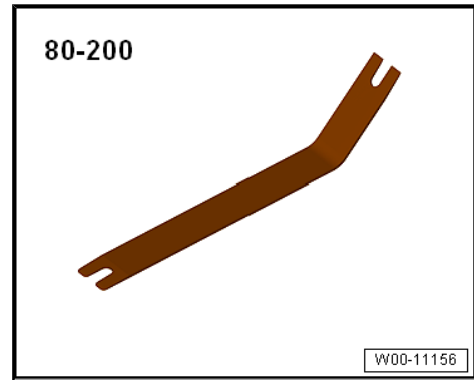


## 1.7 Renewing wiper motor

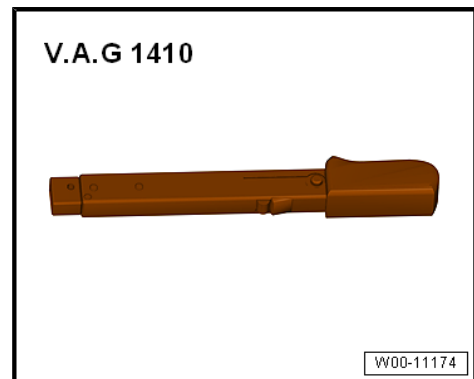
### Special tools and workshop equipment required



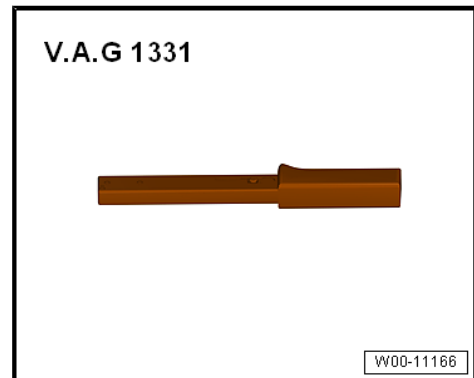
- ◆ Release lever - 80-200-



- ◆ Torque wrench - V.A.G 1410-



- ◆ Torque wrench - V.A.G 1331-



#### Note

- ◆ *Risk of crushing injuries when performing work on uncovered windscreen wiper system.*
- ◆ *The windscreen wiper system may only be operated in situ.*
- ◆ *There is a risk of damage to the bonnet and the wiper arms.*
- ◆ *Before operating the windscreen wiper system with open bonnet, ensure that there is sufficient space for the components to move.*
- ◆ *In order to be able to operate the windscreen wiper system with open bonnet, the bonnet lock must be engaged in position »closed«.*

The removal and installation procedure is described for left-hand drive vehicles. The removal and installation procedure for right-hand drive vehicles follows the same pattern.



## Removing

- Removing wiper arm ⇒ [page 63](#) .
- Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Plenum chamber cover; Removing and installing plenum chamber cover .



### Note

- ◆ *To remove the wiper motor - V- from the wiper frame, none of the four bolts of the wiper motor may be concealed by the motor crank.*
  - ◆ *Before removing the wiper motor, switch on the windscreen wipers and have a second fitter watch the motor crank on the wiper motor - V- . Switch off the ignition when the motor crank reaches the "12 o'clock" position and none of the four bolts securing the wiper motor are concealed.*
- Separate electrical connector on wiper motor.
  - Detach drive rods for wiper arms from wiper motor crank using removal lever - 80-200- or a suitable levering tool.
  - Unscrew bolts -arrows- and remove wiper motor from wiper frame.



### Note

*On vehicles with ATA (anti-theft alarm), it may be necessary to detach the ATA horn.*

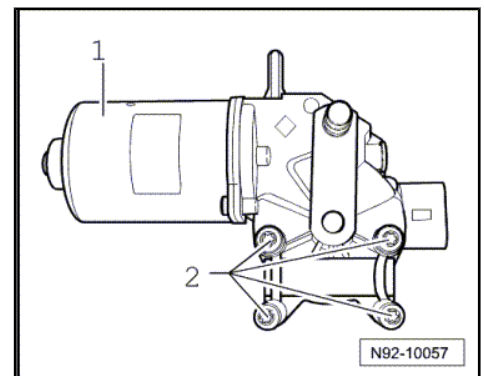
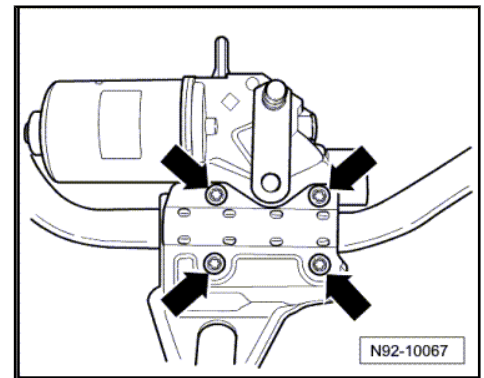
## Installing



### Note

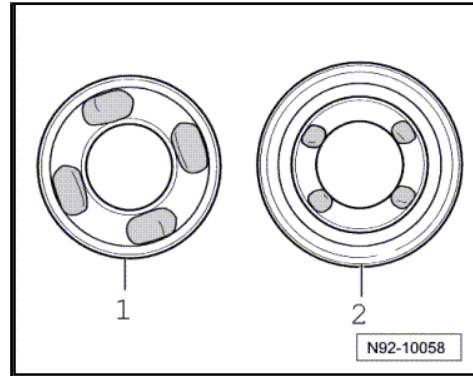
*On new wiper motors, the motor crank is set to the correct installation position. Do not operate the wiper motor electrically until the entire windscreen wiper unit has been installed.*

- On new wiper motor -1- unscrew bolts -2- from pre-tapped holes in bracket.

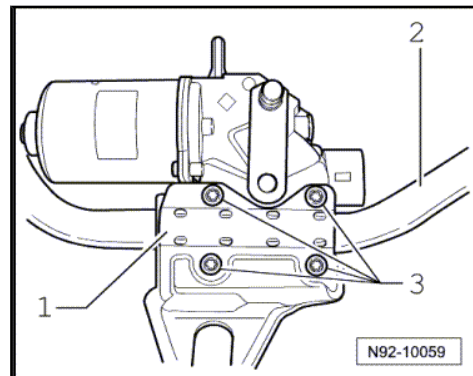




- Lubricate seals -1- (small outer diameter) and -2- (larger outer diameter) using grease from repair kit.



- Insert wiper motor into bracket of wiper frame -2- and align to fasteners accordingly.
- Fit upper part of bracket -1- and start self-tapping bolts -3-. When installing, ensure that bolts are not canted in pre-tapped holes, and ensure that upper part of bracket engages correctly in wiper frame.
- Tighten bolts.

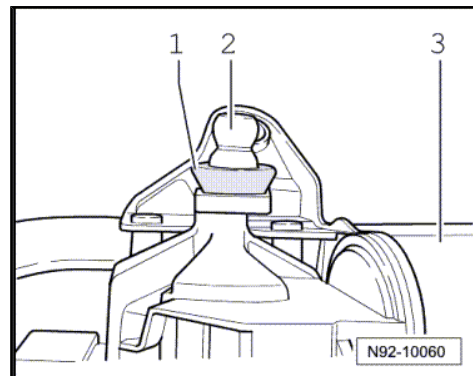


- Press lubricated seal -1- (small outer diameter) over ball head of motor crank -2- for wiper motor -3-.

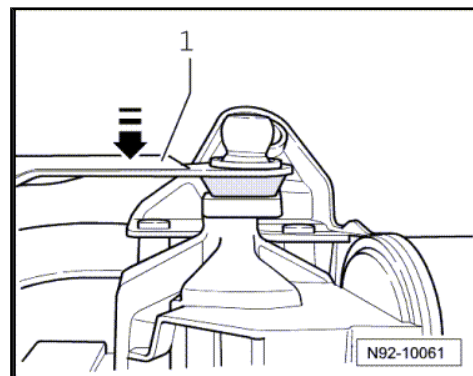


**Note**

*Make sure seal is in correct installation position when installing.*



- Press drive rod -arrow- of right windscreen wiper -1- over ball head of motor crank.

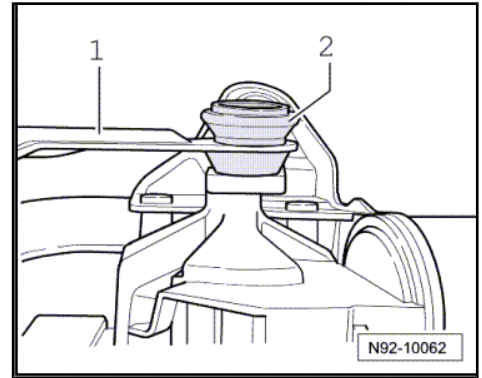




- Press lubricated seal -2- (larger outer diameter) onto drive rod -1-.

**i** Note

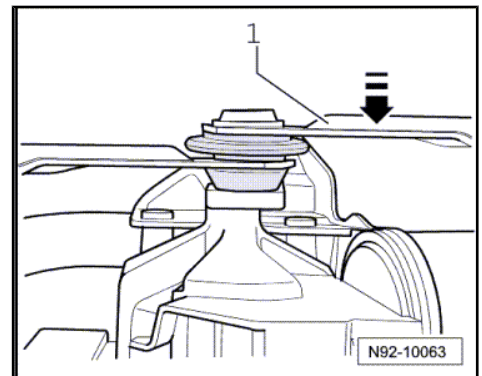
*Make sure seal is in correct installation position when installing.*



- Press drive rod -arrow- of left windscreen wiper -1- onto ball head of motor crank.
- Connect connector to wiper motor and engage it.
- To maintain end position of wiper motor, switch on wiper to stage 1 for approx. 3 seconds.
- Switch off ignition and install plenum chamber cover and wiper arms => [page 63](#) .

**Specified torques**

- ◆ => ["1.1 Assembly overview - windscreen wiper system", page 61](#)



## 1.8 Removing and installing rain and light sensor

**i** Note

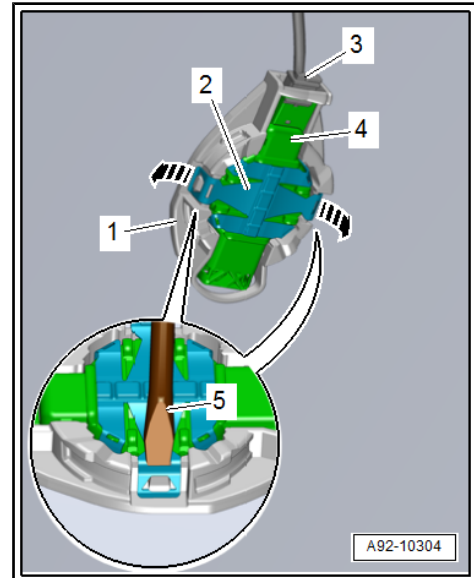
- ◆ *The rain and light sensor - G397- has a silicon layer (coupling pad) which forms the contact surface to the windscreen.*
- ◆ *The rain and light sensors - G397- cannot be renewed in any order. Determine the correct rain and light sensor - G397- using the part number => Electronic parts catalogue .*
- ◆ *If the rain and light sensor - G397- is replaced by a rain and light sensor - G397- with a different part number, start the respective function => Vehicle diagnostic tester.*

**Removing**

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove interior mirror => General body repairs, interior; Rep. gr. 68 ; Interior mirror; Removing and installing interior mirror .



- Disconnect connector -3-.
- Insert screwdriver -5- in hole as shown in illustration, and release catches of retaining spring -2- -arrows-.
- Wait 1 minute until silicone pad has fully expanded so that it can be detached without leaving any residue.
- Detach rain and light sensor - G397- -4- by moving it back and forth.



- Remove rain and light sensor - G397- from receiver -1-.

**NOTICE**

Improper handling may damage the humidity sender.

- Remove and install rain and light sensor with extreme care.
- If the humidity sender is damaged -arrow-, the rain and light sensor must be renewed.
- Completely remove any remains of the coupling pad.

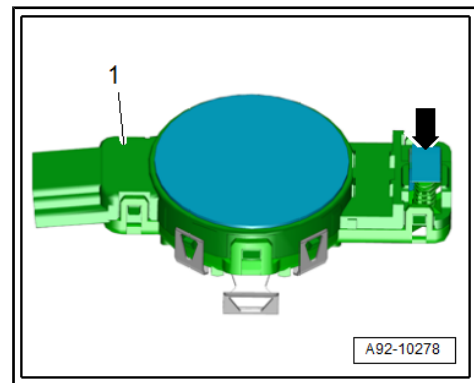
**Installing**

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

- Prior to installation, thoroughly clean the surface of the windscreen in the area of the retaining frame for rain and light sensor - G397- . Make sure to completely remove any remains of the coupling pad adhering to the windscreen.
- Thoroughly clean windscreen within retaining plate using cleaning solution (⇒ Electronic parts catalogue ).

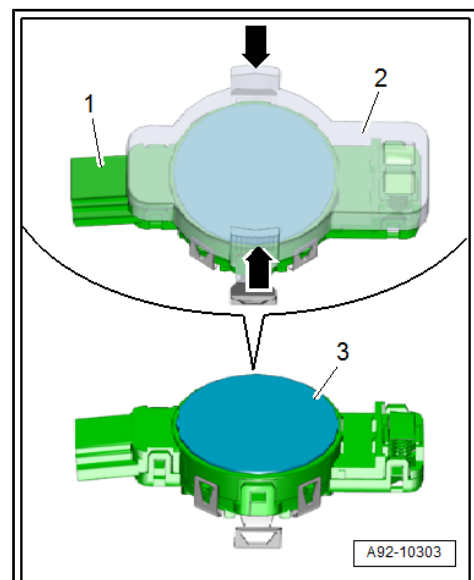
**If installing new rain and light sensor**

- Lightly press grips -arrows- onto protective cap -2- together, and pull cap off sensor -1-.



**Note**

*To prevent the coupling pad from being soiled, only remove the protective cap immediately before installing the sensor.*

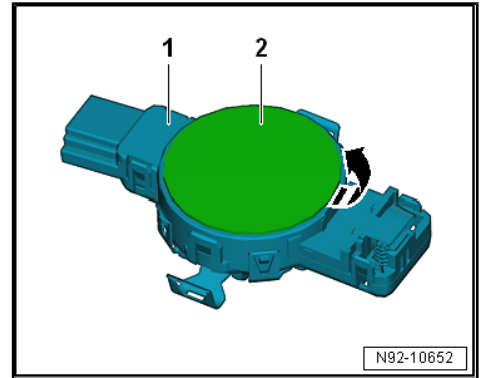




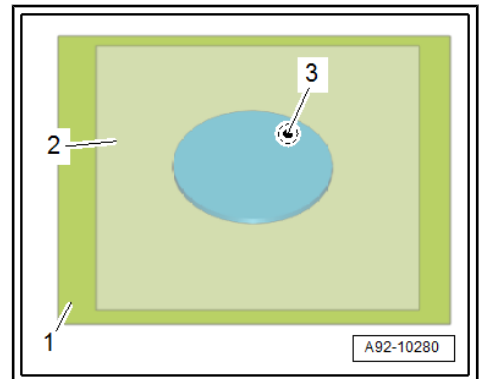


**If installing used rain and light sensor**

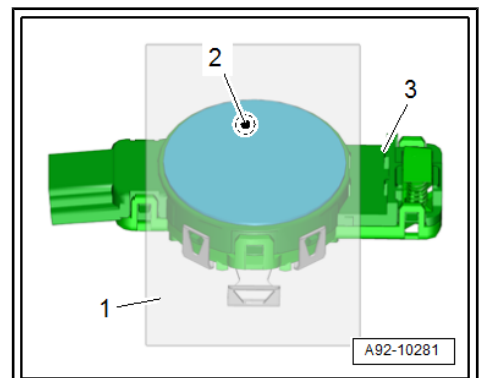
- Remove coupling pad -2- from sensor -3- without leaving any residue.
- Surface of sensor must be completely free of coupling pad residue.
- Clean bonding surface -1- on sensor using lint-free cloth.



- Pull silicone paper -1- off coupling pad -3-.
- Transparent protective film -2- remains on coupling pad as an assembly aid.



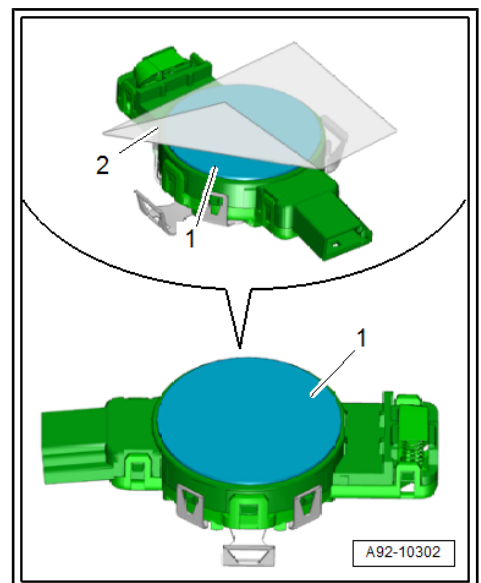
- With the aid of transparent protective film -1-, position coupling pad -2- centrally on rain and light sensor - G397- -3-.
- Press coupling pad -2- via protective film -1- onto rain and light sensor - G397- -3-, avoiding any bubbles.



- Pull protective film -2- off coupling pad -1-.

** Note**

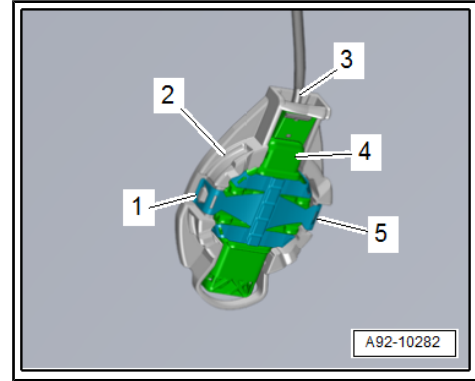
*To prevent the coupling pad from being soiled, only remove the protective film immediately before installing the sensor.*





### Continued for all versions

- Insert rain and light sensor - G397- -4- in mounting -2-.
- To ensure proper operation, rain and light sensor - G397- -4- must rest against windscreen without any inclusions or bubbles.
- Press on retaining clips -1- and -5- until they can be heard to engage.
- Connect electrical connector -3-.
- Read event memory and erase if necessary ⇒ Vehicle diagnostic tester.



### Note

*With the rain and light sensor - G397- disconnected, opening the door, for example, can wake up the CAN bus. Any sporadic event entries in the onboard supply control unit must be deleted following repair work.*

- If the rain and light sensor - G397- was renewed, perform coding ⇒ Vehicle diagnostic tester.



## 2 Windscreen washer system

⇒ [“2.1 Assembly overview - windscreen washer system”, page 75](#)

⇒ [“2.2 Removing and installing filler pipe for washer fluid reservoir”, page 76](#)

⇒ [“2.3 Removing and installing washer fluid reservoir”, page 76](#)

⇒ [“2.4 Removing and installing windscreen washer fluid level sender”, page 79](#)

⇒ [“2.5 Removing and installing windscreen washer pump”, page 79](#)

⇒ [“2.6 Removing and installing spray jets”, page 80](#)

⇒ [“2.7 Adjusting spray jets”, page 81](#)

### 2.1 Assembly overview - windscreen washer system

#### 1 - Spray jets for windscreen washer system

- Removing and installing ⇒ [page 80](#)
- Adjusting ⇒ [page 81](#)

#### 2 - Connection piece

- Connection to spray jet for windscreen washer system
- Overview of hose couplings for washer fluid lines ⇒ [page 98](#)

#### 3 - Y-piece

- Distribution of wash water line to windscreen washer system spray jets

#### 4 - Hose

- Hose repair ⇒ [page 98](#)

#### 5 - Washer fluid reservoir

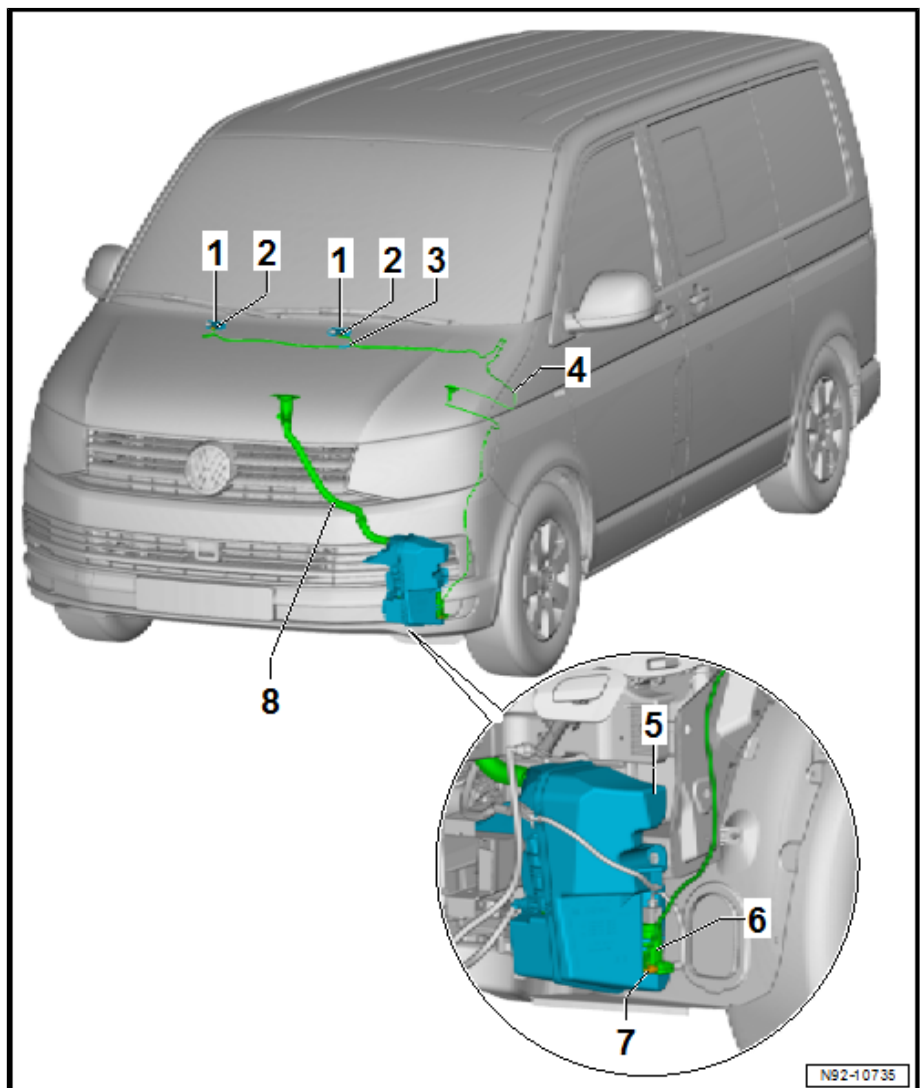
- Removing and installing ⇒ [page 76](#)
- Washer fluid reservoir bolts: 4.5 Nm

#### 6 - Windscreen and rear window washer pump - V59-

- On vehicles without rear window washer system windscreen washer pump - V589-
- Removing and installing ⇒ [page 79](#)
- In event of damage, renew sealing grommet at transition to washer fluid reservoir

#### 7 - Connection piece

- Connection to windscreen and rear window washer pump





- ❑ Colour coding »black«, washer fluid line to windscreen
- ❑ Overview of hose couplings for washer fluid lines ⇒ [page 98](#)

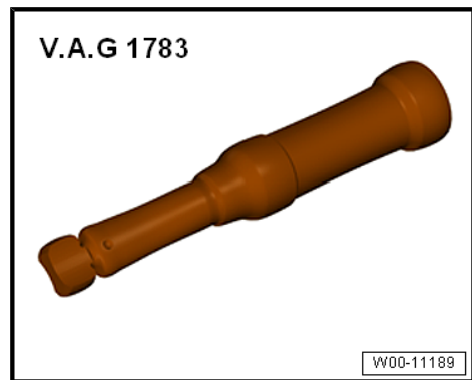
### 8 - Filler pipe for washer fluid reservoir

- ❑ Check seal at base of filler pipe for signs of damage, renew if necessary.
- ❑ Bolt securing filler pipe: 2 Nm
- ❑ Removing and installing ⇒ [page 76](#)

## 2.2 Removing and installing filler pipe for washer fluid reservoir

### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



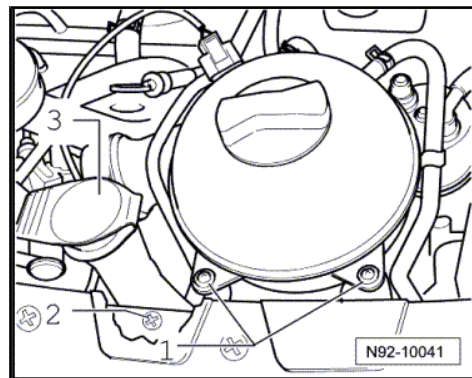
### Removing

- Drain washer fluid reservoir until water level has dropped below opening for filler pipe.
- Unscrew bolts -1- and push reservoir to one side.
- Remove bolt -2-.
- Pull out filler pipe downwards from washer fluid reservoir and remove upwards.

### Installing

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

- Check seal at base of filler pipe for signs of damage, renew if necessary.
- Insert filler pipe in washer fluid reservoir onto stop (use lubrication if necessary). Note position of anti-rotation tab when doing this.
- Screw in and tighten bolt -2- and -1-.



### Specified torques

- ◆ ⇒ [“2.1 Assembly overview - windscreen washer system”, page 75](#)

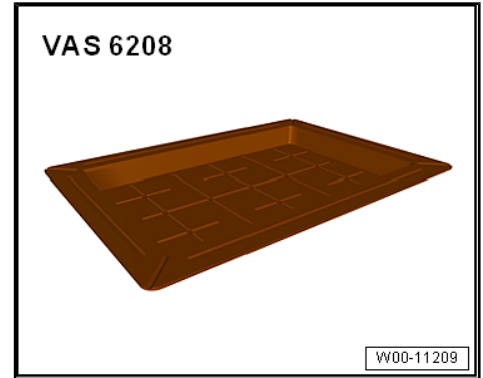
Component	Specified torque
Bolts for coolant expansion tank	3.5 Nm

## 2.3 Removing and installing washer fluid reservoir

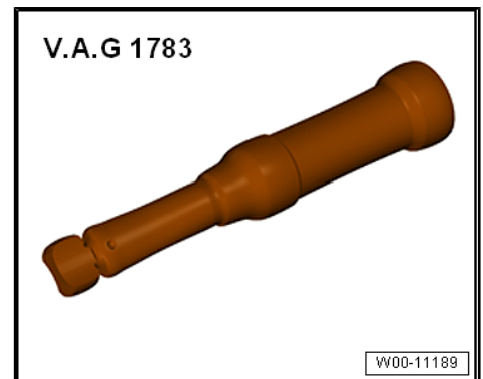
### Special tools and workshop equipment required



- ◆ Drip tray for workshop hoist - VAS 6208-

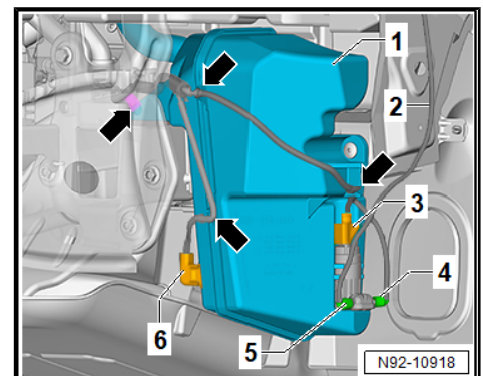


- ◆ Torque wrench - V.A.G 1783-



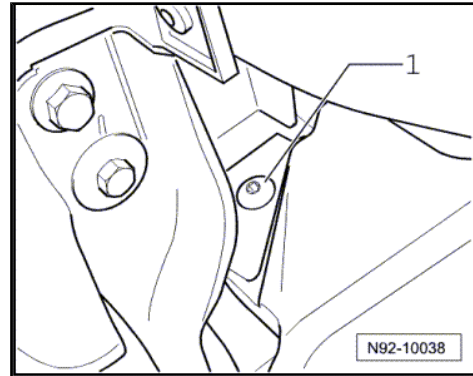
### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove filler pipe for washer fluid reservoir ⇒ [page 76](#) .
- Remove front bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Removing and installing bumper cover .
- Starting at front, detach front left wheel housing liner until washer fluid reservoir is accessible ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Removing and installing front wheel housing liner .
- Disconnect connector -3-.
- Release and pull off hose connecting elements -4- and -5-.
- Disconnect connector -6-.
- Detach lines from fasteners -arrows-.

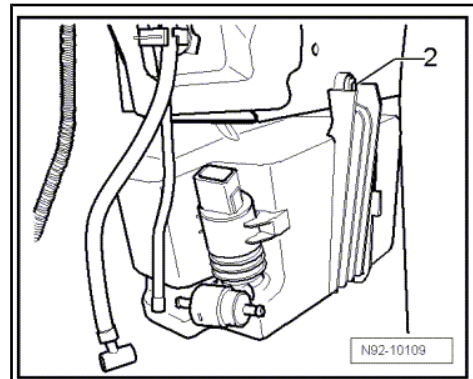




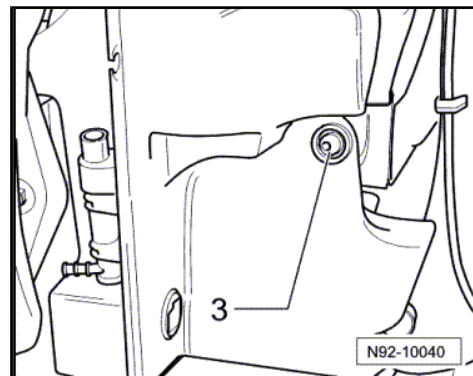
- Unscrew upper right bolt -1- on reservoir on longitudinal member.



- Remove bolt -2-.



- Remove bolt -3-.
- Pull off washer fluid reservoir downwards.



### Installing

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



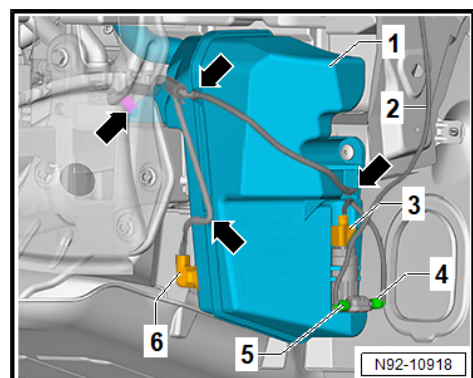
### Note

*The connections to the pump and hose lines are colour-coded in order to prevent the washer fluid lines being incorrectly connected to the front and rear washer fluid pump - V59-. The hose connecting elements must be fitted to the correct colour-coded pump connections during installation.*

- Secure lines as per installation markings on lines -arrows- on reservoir.
- Check seal between washer fluid reservoir and filler pipe for signs of damage; renew if necessary.

### Specified torques

- ◆ => ["2.1 Assembly overview - windscreen washer system", page 75](#)





## 2.4 Removing and installing windscreen washer fluid level sender



### Note

- ◆ *The windscreen washer fluid level sender - G33- is an integral part of the washer fluid reservoir and cannot be replaced individually.*
- ◆ *In the event of damage, renew the washer fluid reservoir => [page 76](#).*

## 2.5 Removing and installing windscreen washer pump

### Special tools and workshop equipment required

- ◆ Drip tray for workshop hoist - VAS 6208-



### Note

- ◆ *The windscreen and rear window washer pump - V59- is mounted on the washer fluid reservoir on the front left in front of the wheel housing.*
- ◆ *On vehicles without a rear window washer system, the windscreen washer pump - V589- is fitted with just one hose connection.*

### Removing

- Open service flap in front left wheel housing liner.



- Disconnect connector -2-.
- Release and pull off black hose connecting element -4- (windscreen) and white hose connecting element -3- (rear window).
- Collect leaking fluid in accordance with regulations.
- Pull pump -5- upwards out of reservoir.

### Installing

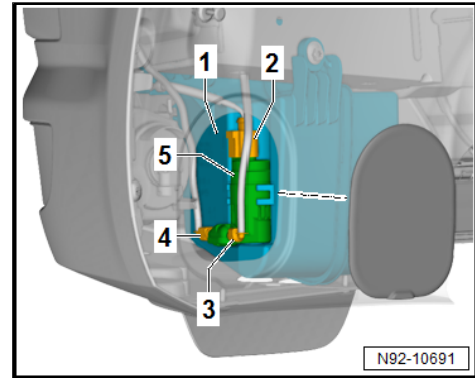
Install in the reverse order of removal, observing the following:

- Check sealing grommet on washer fluid reservoir for damage and correct seating.



### Note

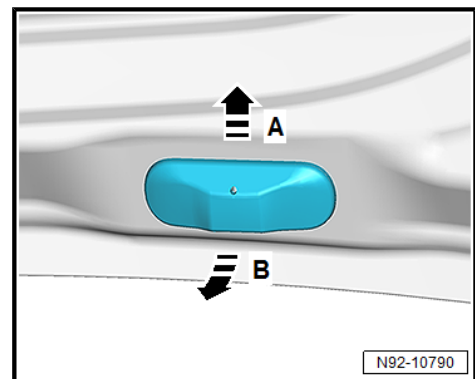
*The connections to the pump and hose lines are colour-coded in order to prevent the washer fluid lines being incorrectly connected to the front and rear washer fluid pump - V59- . The hose connecting elements must be fitted to the correct colour-coded pump connections during installation.*



## 2.6 Removing and installing spray jets

### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Open bonnet.
- Push spray jet upwards -arrow A-, and swing it out downwards out of bonnet -arrow B-.







- Release hose clip -1- in direction of -arrow-.
- Pull washer fluid line -2- off spray jet -3-.
- If fitted, disconnect electrical connector -4-.
- Remove spray jet -3-.

### Installing

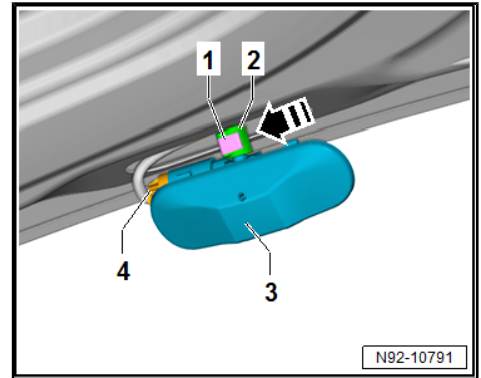
Install in the reverse order of removal, observing the following:



### Note

*When connecting the washer fluid line, ensure that the securing clip engages audibly in the connection.*

- Starting at the top, push spray jet into mounting hole until it engages audibly.
- Adjusting spray jets => [page 81](#) .



## 2.7 Adjusting spray jets

- If spray pattern still does not match specifications, clean soiled spray jet.

### Cleaning spray jet:



**Risk of damage to spray jets caused by improper handling.**

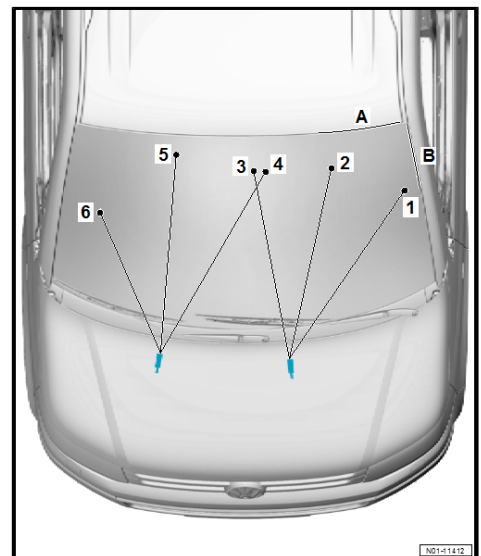
- Do not use any objects for cleaning spray jets.
- Remove spray jet => [page 80](#) .
- Rinse spray jet with clear water opposite to spraying direction.
- To remove any remaining soiling the spray jet must be blown through using compressed air only opposite to the spraying direction.
- If spray pattern still does not match specifications, renew spray jet.

### 3-jet nozzle

- Adjust 3-jet nozzle according to the following table:

Item	Dimension -A- in cm measured from upper edge of windscreen	Dimension -B- in cm measured from driver side edge of windscreen
1	51	24
2	47	48
3	52	86
4	52	76
5	48	109
6	59	132

Adjusting windscreen washer system spray jets => Maintenance ; Booklet 20.1 ; Descriptions of work





### 3 Rear window wiper system

⇒ [“3.1 Assembly overview - rear window wiper system”, page 82](#)

⇒ [“3.2 Removing and installing wiper blade”, page 84](#)

⇒ [“3.3 Removing and installing wiper arm”, page 85](#)

⇒ [“3.4 Adjusting wiper arm”, page 87](#)

⇒ [“3.5 Removing and installing rear window wiper motor V12”, page 89](#)

#### 3.1 Assembly overview - rear window wiper system

⇒ [“3.1.1 Assembly overview - rear window wiper system, vehicles with rear lid”, page 82](#)

⇒ [“3.1.2 Assembly overview - rear window wiper system, vehicles with rear wing doors”, page 83](#)

##### 3.1.1 Assembly overview - rear window wiper system, vehicles with rear lid

###### 1 - Rubber seal

- ❑ Install with marking facing upwards (tolerance -a- =  $\pm 10^\circ$ ).

###### 2 - Rear lid

###### 3 - Nut

- ❑ Qty. 3
- ❑ 8 Nm

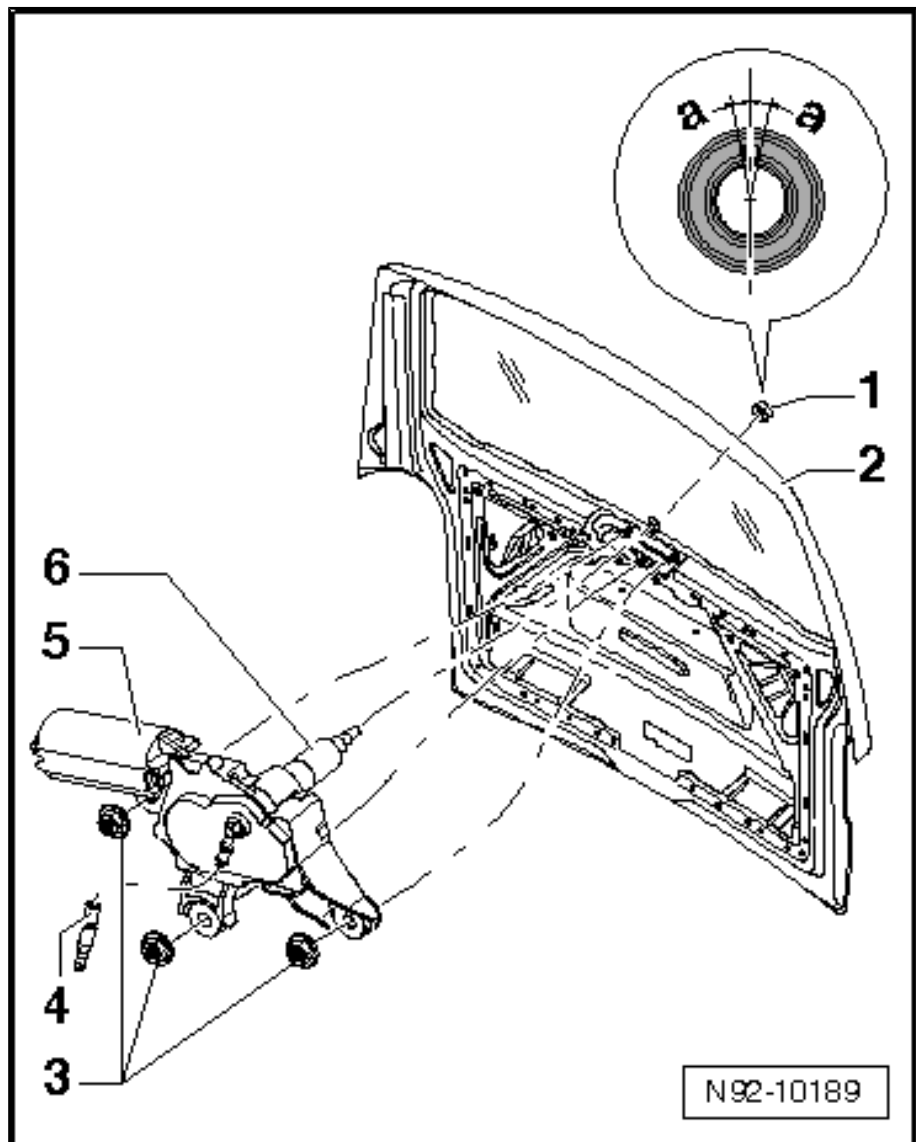
###### 4 - Hose connection for rear window washer system

###### 5 - Rear window wiper motor - V12-

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

###### 6 - Wiper arm shaft

- ❑ Moisten with lubricant polyethylene glycol when installing.
- ❑ Nut securing wiper arm: 12 Nm





### 3.1.2 Assembly overview - rear window wiper system, vehicles with rear wing doors

#### 1 - Rubber seal

- ❑ Install with marking facing upwards (tolerance  $-a = \pm 10^\circ$ ).

#### 2 - Left rear wing door

#### 3 - Rear window wiper motor, left rear wing door - V92-

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

#### 4 - Bolts

- ❑ 8 Nm

#### 5 - Hose connection for rear window washer system

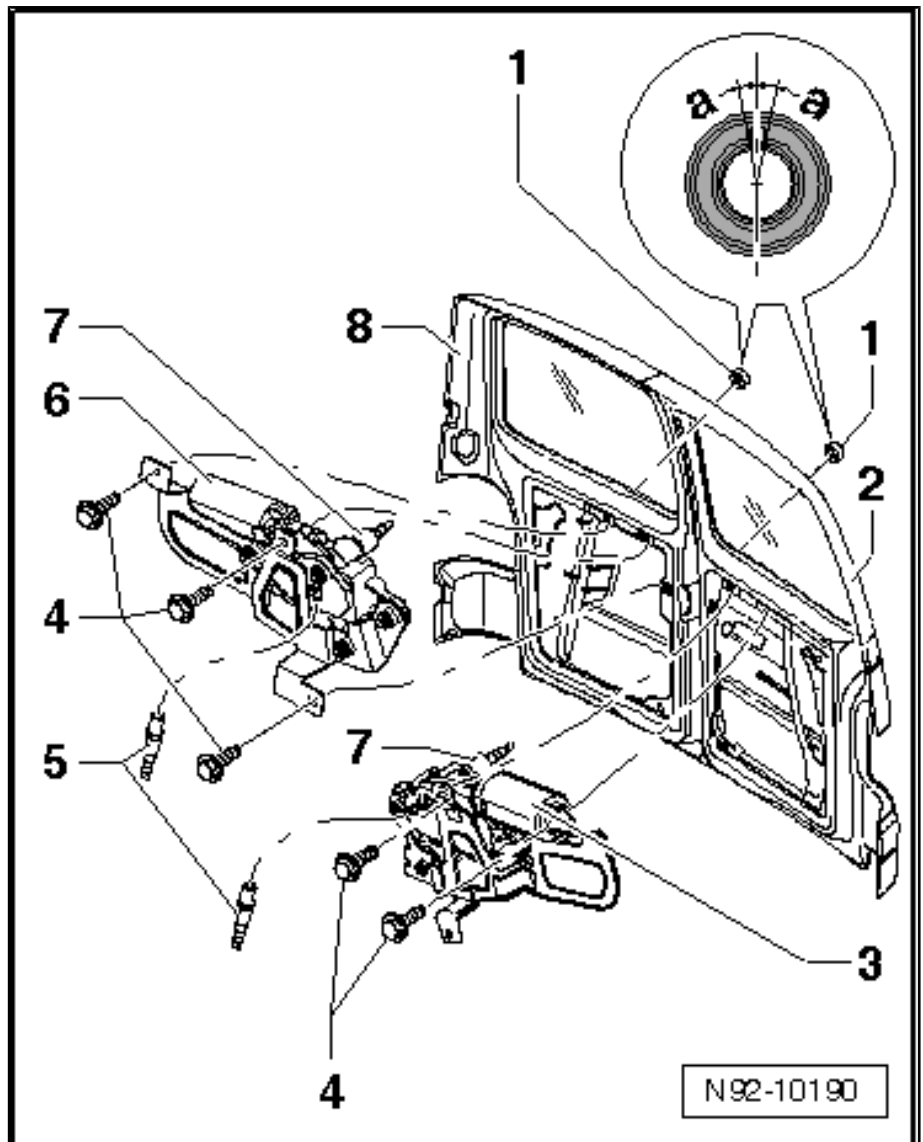
#### 6 - Rear window wiper motor, right rear wing door - V93-

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

#### 7 - Rear window wiper arm shafts

- ❑ Moisten with lubricant polyethylene glycol when installing.
- ❑ Nut securing wiper arm: 12 Nm

#### 8 - Right rear wing door





## 3.2 Removing and installing wiper blade

⇒ [“3.2.1 Removing and installing wiper blade, vehicles with rear lid”, page 84](#)

⇒ [“3.2.2 Removing and installing wiper blade, vehicles with rear wing doors”, page 84](#)

### 3.2.1 Removing and installing wiper blade, vehicles with rear lid



#### Note

- ◆ *Joint-free wipers are very flexible. To lift the rear window wiper blades off the rear window, touch them only in the area in which the rear window wiper blades are attached to the rear window wipers.*
- ◆ *Avoid bending wiper arm and blade.*
- ◆ *Prevent rear window wiper arm from springing back unintentionally and damaging the glass.*

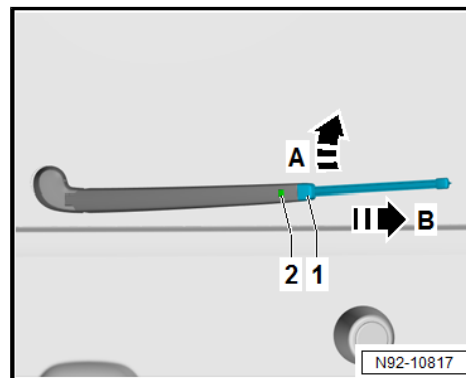
#### Removing

- Lift wiper arm off the rear window.
- Swing wiper blade in -direction of arrow A- out of wiper arm.
- Press release button -2-.
- Push out wiper blade -1- in direction of -arrow B-.

#### Installing

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

- The wiper blade must be heard to engage in the wiper arm.
- Check rear window wiper blade parking position and adjust if necessary ⇒ [page 87](#) .



### 3.2.2 Removing and installing wiper blade, vehicles with rear wing doors



#### Note

- ◆ *Joint-free wipers are very flexible. To lift the rear window wiper blades off the rear window, touch them only in the area in which the rear window wiper blades are attached to the rear window wipers.*
- ◆ *Avoid bending wiper arm and blade.*
- ◆ *Prevent rear window wiper arm from springing back unintentionally and damaging the glass.*

#### Removing

- Allow rear window wiper to adopt park position.
- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.

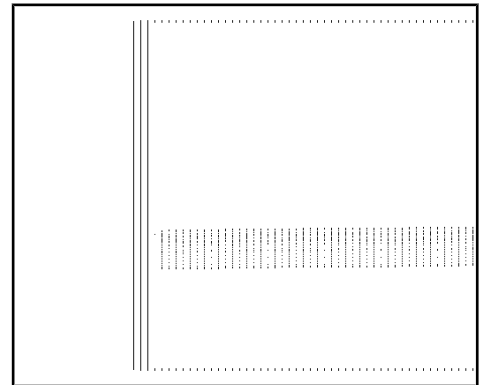
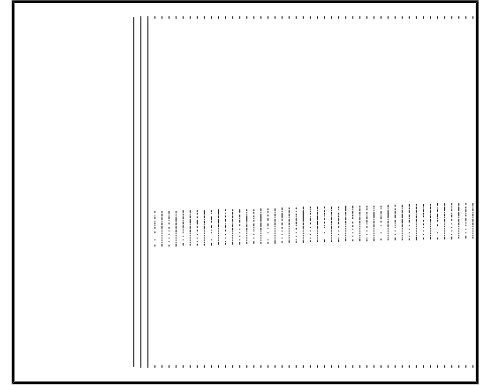


- Fold rear window wiper arm -1- away from rear window.
- Fold rear window wiper blade -2- 90° towards rear window wiper arm -1- and back again.
- Pull plastic cap off rear window wiper arm -arrow 1-.
- Remove rear window wiper blade -2- in direction of -arrow 2- from rear window wiper arm axis -1-.

### Installing

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

- Push rear window wiper blade -2- in -direction of arrow 1- onto rear window wiper arm axis -1-.
- Fit plastic cap -arrow 2- to secure rear window wiper blade in position.
- Fold back rear window wiper arm.
- Check rear window wiper blade parking position and adjust if necessary ⇒ [page 87](#) .



## 3.3 Removing and installing wiper arm

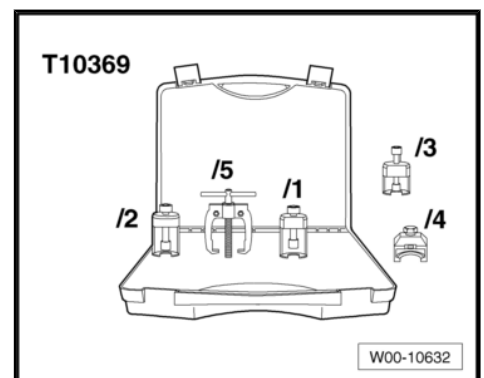
⇒ [“3.3.1 Removing and installing wiper arm, vehicles with rear lid”, page 85](#)

⇒ [“3.3.2 Removing and installing wiper arm, vehicles with rear wing doors”, page 86](#)

### 3.3.1 Removing and installing wiper arm, vehicles with rear lid

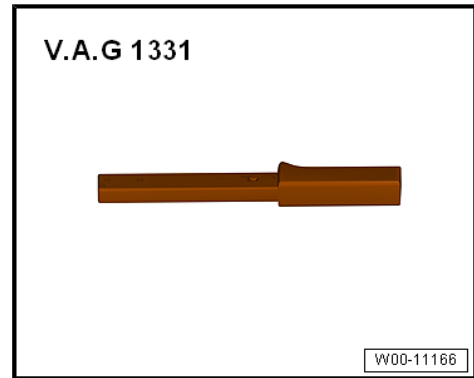
Special tools and workshop equipment required

- ◆ Puller - T10369-



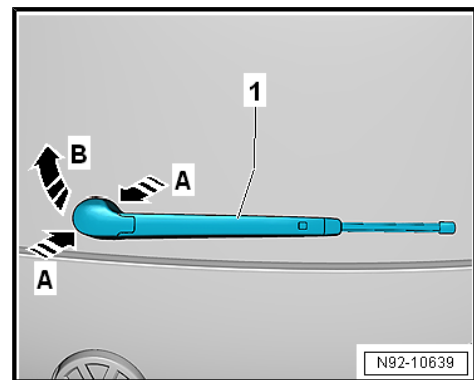


- ◆ Torque wrench - V.A.G 1331-

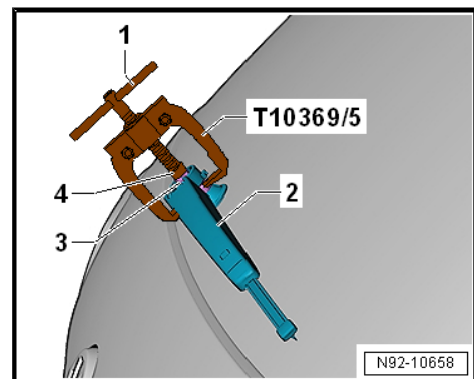


### Removing

- Switch on ignition.
- Actuate "rear window wipe" function and allow wiper arm to move to its end position.
- Switch off ignition and remove ignition key.
- Press together cap of rear window wiper -1- in direction of -arrow A-.
- Fold up cap in direction of -arrow B- and unclip.
- Remove spray jet ⇒ [page 95](#) .
- Loosen nut of wiper arm by one turn.
- Place M6 nut on nut of wiper arm.



- Fit puller - T10369/5- to wiper arm -2-.
- Fit thrust piece -3- to wiper arm shaft.
- Screw in bolt -1- until wiper arm has been pulled off the wiper shaft.
- Unscrew nut -4- completely and remove wiper arm.



### Installing

- Fit rear window wiper arm and screw nut loosely onto wiper arm shaft.
- Adjust rear window wiper park position ⇒ [page 87](#) .

## 3.3.2 Removing and installing wiper arm, vehicles with rear wing doors



### Note

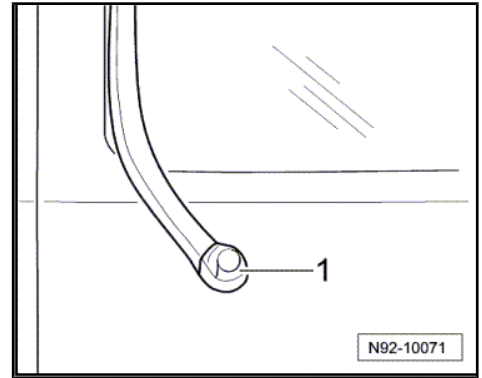
- ◆ *The following section is a description of how to remove and install the rear window wiper arm on the right rear wing door.*
- ◆ *Removal and installation of the rear window wiper arm on the left rear wing door are carried out in the same way.*

### Removing

- Move rear window wiper to park position.



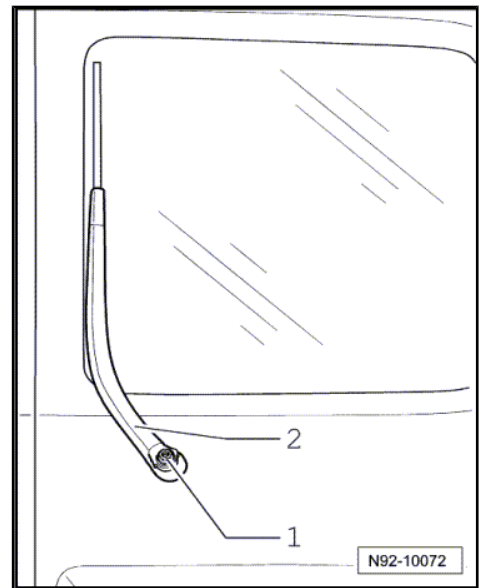
- Unclip cap -1- outwards.



- Unscrew hexagon nut -1-.
- Fold rear wiper arm -2- away from window.
- Release rear window wiper arm -2- from rear window wiper motor shaft by rocking arm back and forth sideways.

#### Installing

- Fit rear window wiper arm and screw hexagon nut loosely onto rear window wiper arm shaft.
- Adjust rear window wiper park position ⇒ [page 88](#) .



### 3.4 Adjusting wiper arm

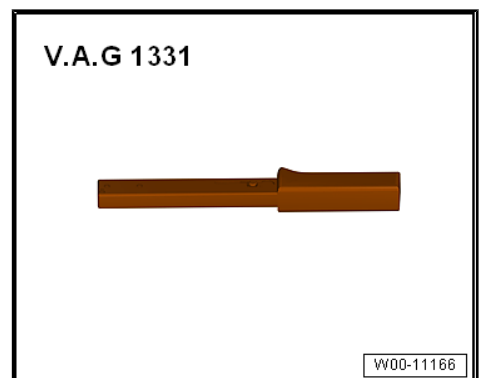
⇒ [“3.4.1 Adjusting rear window wiper park position, vehicles with rear lid”, page 87](#)

⇒ [“3.4.2 Adjusting rear window wiper park position, vehicles with rear wing doors”, page 88](#)

#### 3.4.1 Adjusting rear window wiper park position, vehicles with rear lid

##### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



- Move rear window wiper to park position.

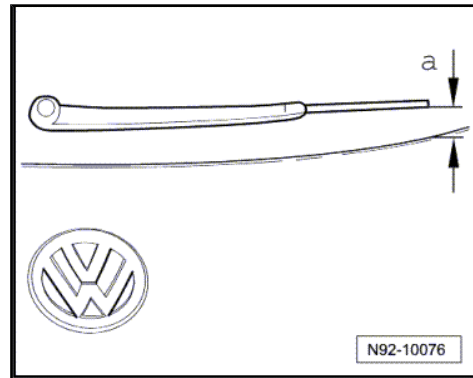


Distance -a- between wiper rubber and lower edge of window must be  $25 \pm 5$  mm.

- Adjust park position by moving rear window wiper arm if necessary.
- Tighten nut for rear wiper arm.

#### Specified torques

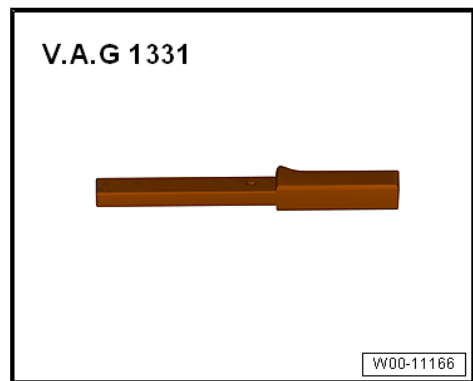
- ◆ ⇒ [“3.1.1 Assembly overview - rear window wiper system, vehicles with rear lid”](#), page 82



### 3.4.2 Adjusting rear window wiper park position, vehicles with rear wing doors

#### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



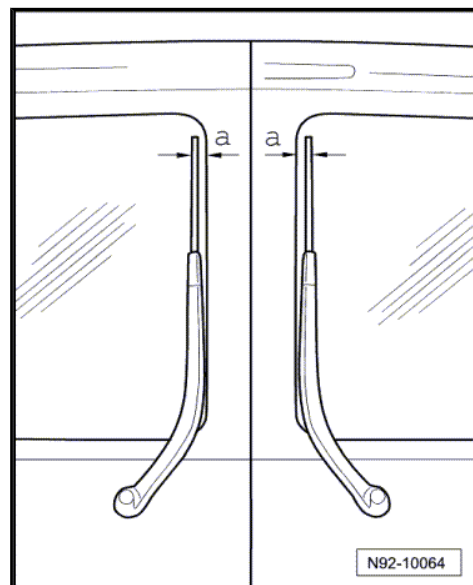
- Move rear window wiper to park position.

Distance -a- between wiper rubber and side edge of window must be  $25 \pm 5$  mm.

- Adjust park position by moving rear window wiper arm if necessary.
- Tighten nut for rear wiper arm.

#### Specified torques

- ◆ ⇒ [“3.1.2 Assembly overview - rear window wiper system, vehicles with rear wing doors”](#), page 83







### 3.5 Removing and installing rear window wiper motor - V12-

⇒ [“3.5.1 Removing and installing rear window wiper motor V12 , vehicles with rear lid”, page 89](#)

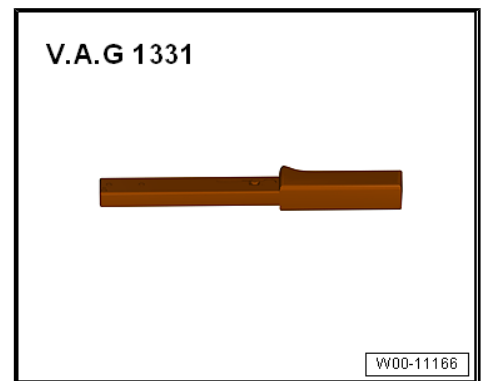
⇒ [“3.5.2 Removing and installing right rear wing door window wiper motor V93 , vehicles with rear wing doors”, page 90](#)

⇒ [“3.5.3 Removing and installing left rear wing door window wiper motor V92 , vehicles with rear wing doors”, page 91](#)

#### 3.5.1 Removing and installing rear window wiper motor - V12- , vehicles with rear lid

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



#### Removing

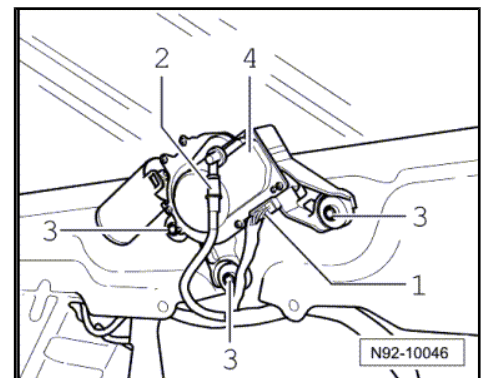
- Remove rear window wiper arm ⇒ [page 85](#) .
- Remove rear lid lower trim ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trims; Removing and installing rear lid lower trim .
- Disconnect connector -1-.
- Pull off hose connecting element -2-.
- Unscrew nuts -3-.
- Carefully pull rear window wiper motor - V12- -4- inwards off rear lid.

#### Installing

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



*Check seal is seated correctly in opening of rear window.*





- Mark -1- on seal must align with mark -2- on rear window.



#### Note

*Before inserting, lubricate wiper shaft with polyethylene glycol.*

- Install rear lid lower trim ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trims; Removing and installing rear lid lower trim .
- Install rear window wiper arm ⇒ [page 85](#) .

#### Specified torques

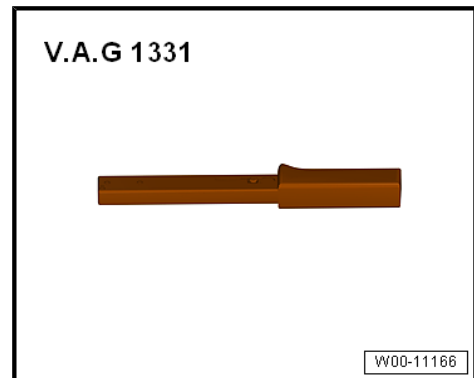
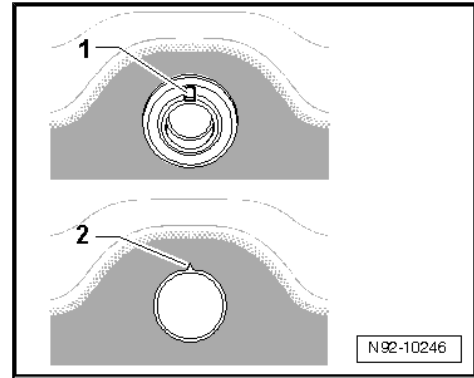
- ◆ ⇒ [“3.1.1 Assembly overview - rear window wiper system, vehicles with rear lid”](#), [page 82](#)

### 3.5.2 Removing and installing right rear wing door window wiper motor - V93- , vehicles with rear wing doors

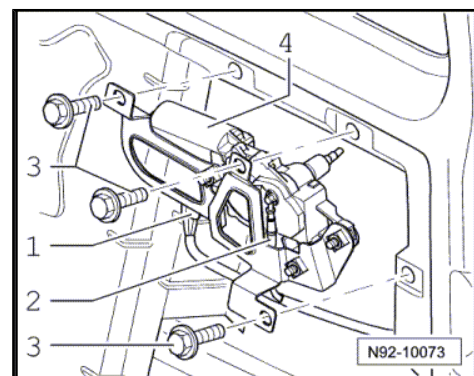
#### Removing

#### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



- Remove rear window wiper arm ⇒ [page 86](#) .
- Remove lower rear wing door trim ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trims; Removing and installing lower rear lid trim .
- Disconnect connector -1-.
- Pull off hose connecting element -2-.
- Remove screws -3-.
- Remove rear right wing door window wiper motor - V93- -4-.

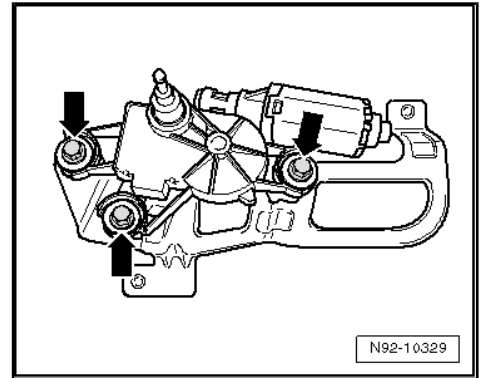




- If necessary, unscrew rear right wing door window wiper motor - V93- from bracket -arrows-.

### Installing

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



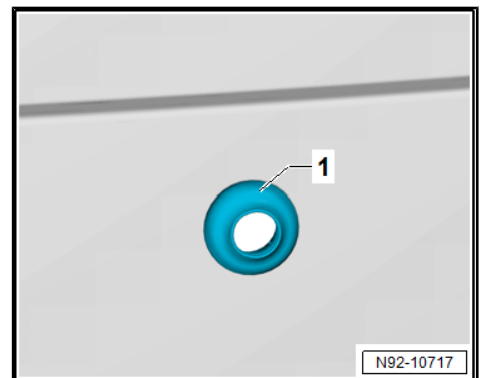
- Make sure that seal -1- is properly seated in installation aperture of wing door.



### Note

*Before inserting rear right wing door window wiper motor - V93-, moisten rear window wiper arm shaft with lubricant polyethylene glycol.*

- Install lower rear wing door trim ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trims; Removing and installing lower rear lid trim .
- Install rear window wiper arm ⇒ [page 86](#) .



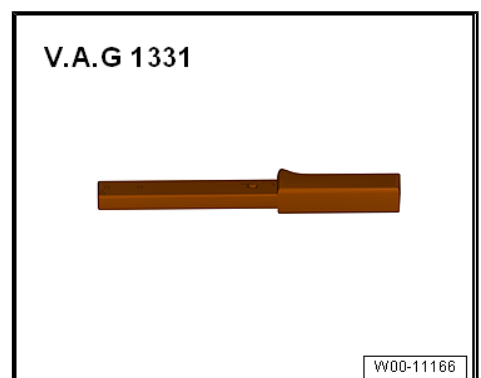
### Specified torques

- ◆ ⇒ [“3.1.2 Assembly overview - rear window wiper system, vehicles with rear wing doors”](#), [page 83](#)

## 3.5.3 Removing and installing left rear wing door window wiper motor - V92- , vehicles with rear wing doors

### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-

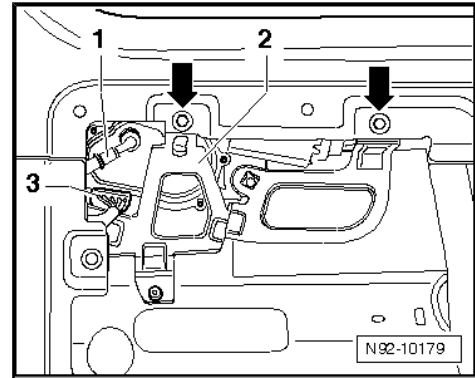


### Removing

- Remove rear window wiper arm ⇒ [page 86](#) .
- Remove lower rear wing door trim ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trims; Removing and installing lower rear lid trim .



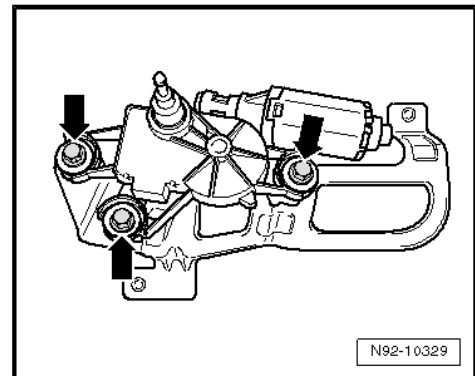
- Pull off hose -1-.
- Disconnect connector -3-.
- Detach clips of wiring harness on holder.
- Unscrew bolts -arrows-.
- Remove rear left wing door window wiper motor - V92- -2-.



- If necessary, unscrew rear left wing door window wiper motor - V92- from bracket -arrows-.

### Installing

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



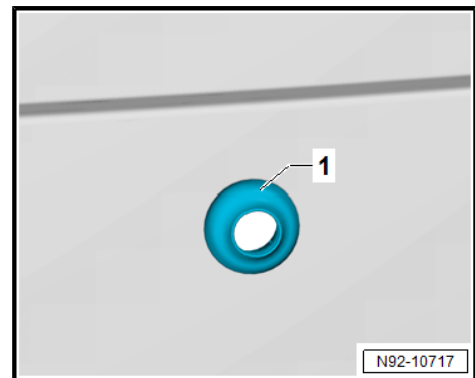
- Make sure that seal -1- is properly seated in installation aperture of wing door.



### Note

*Before inserting, lubricate wiper shaft with polyethylene glycol.*

- Install assembly carrier ⇒ General body repairs, exterior; Rep. gr. 58 ; Door components; Removing and installing assembly carrier .
- Install lower rear wing door trim ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trims; Removing and installing lower rear lid trim .
- Install rear window wiper arms ⇒ [page 86](#) .



### Specified torques

- ◆ ⇒ [“3.1.2 Assembly overview - rear window wiper system, vehicles with rear wing doors”](#), [page 83](#)



## 4 Rear window washer system

⇒ [“4.1 Assembly overview - rear window washer system”, page 93](#)

⇒ [“4.2 Removing and installing washer fluid reservoir”, page 95](#)

⇒ [“4.3 Removing and installing rear window washer pump”, page 95](#)

⇒ [“4.4 Removing and installing spray jet”, page 95](#)

⇒ [“4.5 Adjusting spray jet”, page 97](#)

### 4.1 Assembly overview - rear window washer system

⇒ [“4.1.1 Assembly overview - rear window washer system, vehicles with rear lid”, page 93](#)

⇒ [“4.1.2 Assembly overview - rear window washer system, vehicles with rear wing doors”, page 94](#)

#### 4.1.1 Assembly overview - rear window washer system, vehicles with rear lid

##### 1 - Spray jet for rear window washer system

- Integrated in drive shaft of rear wiper motor
- Removing and installing ⇒ [page 95](#)
- Adjusting ⇒ [page 97](#)

##### 2 - Connection piece

- Connection to rear window spray jet
- Overview of hose couplings for washer fluid lines ⇒ [page 98](#)

##### 3 - Connection piece

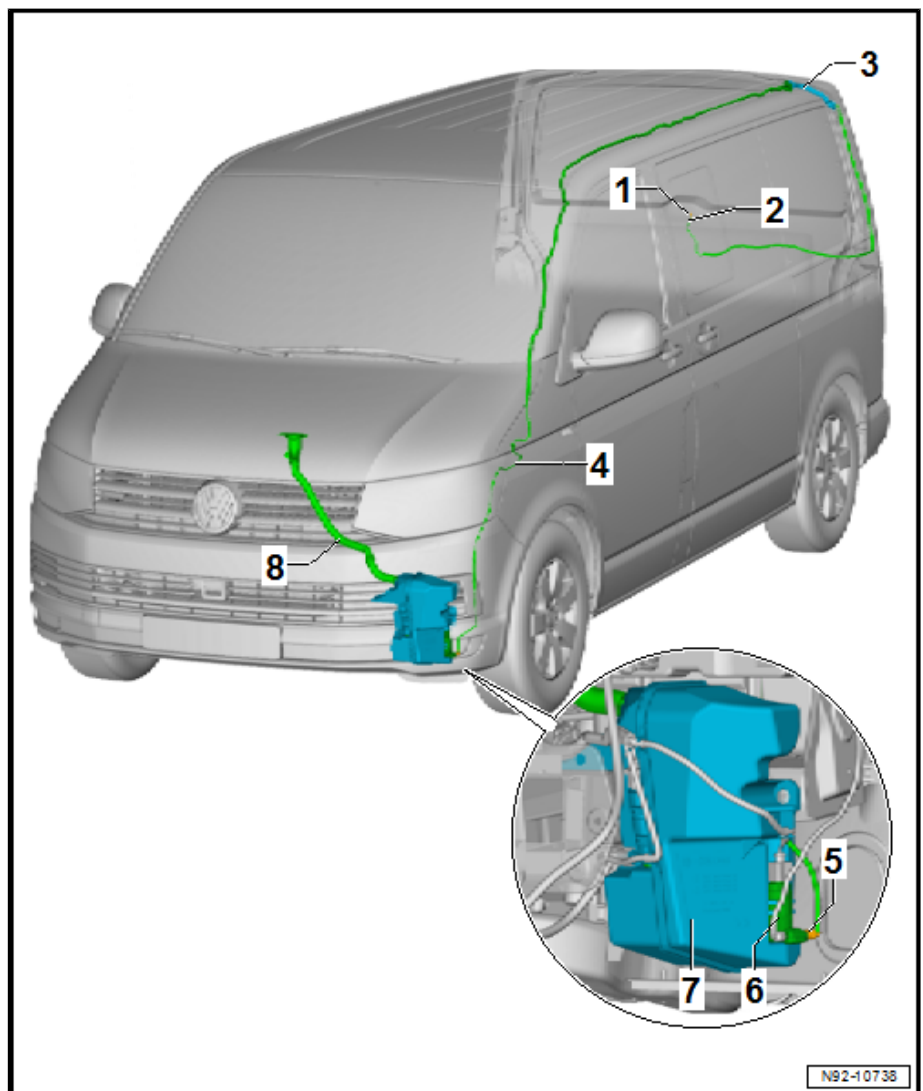
- Coupling point between roof wiring harness and rear lid wiring harness
- Overview of hose couplings for washer fluid lines ⇒ [page 98](#)

##### 4 - Hose

- Hose repair ⇒ [page 98](#)

##### 5 - Angled piece

- Connection to windscreen and rear window washer pump
- Colour of connection to windscreen washer system spray jets is black
- Colour of connection to rear window spray jet - white
- Overview of hose couplings for washer fluid lines ⇒ [page 98](#)





## 6 - Windscreen and rear window washer pump - V59-

- ❑ Removing and installing ⇒ [page 79](#)

## 7 - Washer fluid reservoir

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

## 8 - Filler pipe for washer fluid reservoir

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

## 4.1.2 Assembly overview - rear window washer system, vehicles with rear wing doors

### 1 - Spray jet for rear window washer system

- ❑ Right rear wing door
- ❑ Removing and installing ⇒ [page 95](#)
- ❑ Adjusting ⇒ [page 97](#)

### 2 - Spray jet for rear window washer system

- ❑ Left rear wing door
- ❑ Removing and installing ⇒ [page 95](#)
- ❑ Adjusting ⇒ [page 97](#)

### 3 - T-piece

- ❑ In roof cross member wiring harness
- ❑ Distribution of washer fluid line to rear window spray jets

### 4 - Connection piece

- ❑ Coupling point between body wiring harness and left door wiring harness.
- ❑ Overview of hose couplings for washer fluid lines ⇒ [page 98](#)

### 5 - Kink protection

- ❑ For wiring harness in area between body and door

### 6 - Connection piece

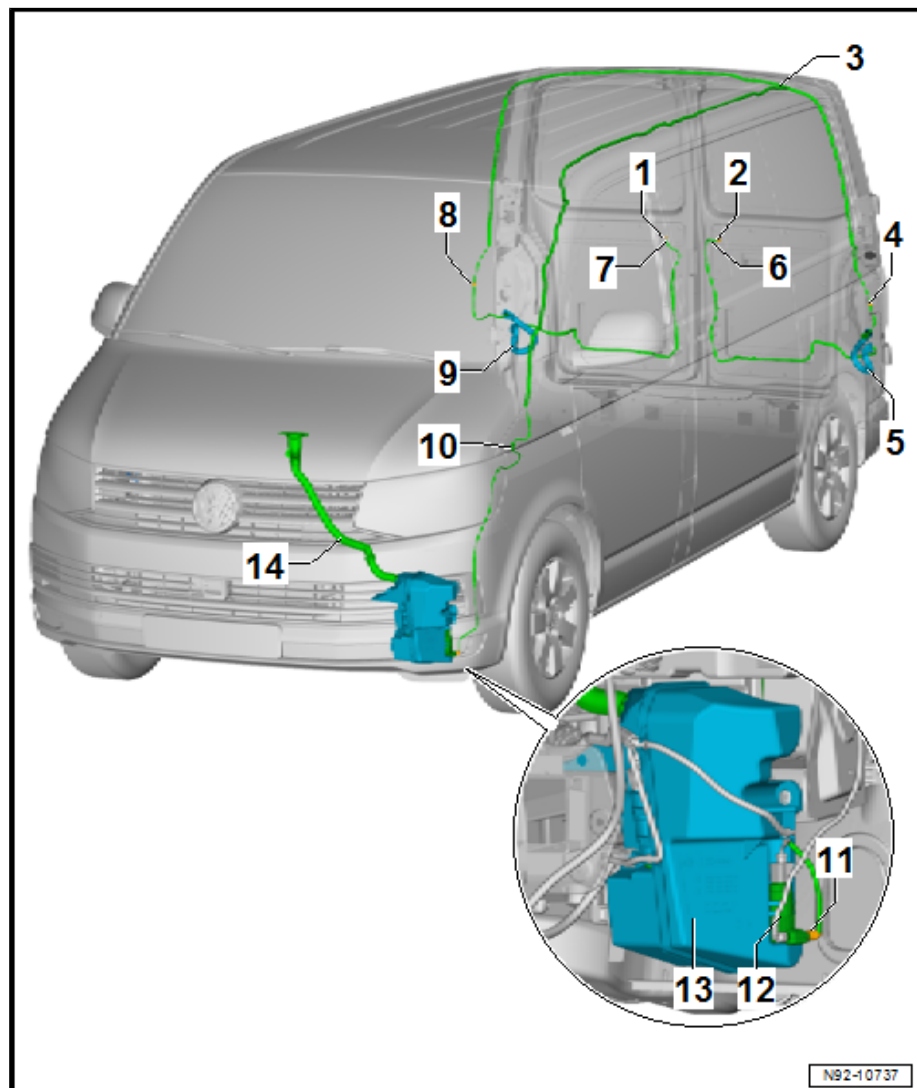
- ❑ Connection to left-hand rear window spray jet
- ❑ Overview of hose couplings for washer fluid lines ⇒ [page 98](#)

### 7 - Connection piece

- ❑ Connection to right-hand rear window spray jet
- ❑ Overview of hose couplings for washer fluid lines ⇒ [page 98](#)

### 8 - Connection piece

- ❑ Coupling point between body wiring harness and right door wiring harness.
- ❑ Overview of hose couplings for washer fluid lines ⇒ [page 98](#)





## 9 - Kink protection

- For wiring harness in area between body and door

## 10 - Hose

- Hose repair ⇒ [page 98](#)

## 11 - Angled piece

- Connection to windscreen and rear window washer pump
- Colour of connection to windscreen washer system spray jets is black
- Colour of connection to rear window spray jets - white
- Overview of hose couplings for washer fluid lines ⇒ [page 98](#)

## 12 - Windscreen and rear window washer pump - V59-

- Removing and installing ⇒ [page 79](#)

## 13 - Washer fluid reservoir

- Removing and installing ⇒ [page 76](#)

## 14 - Filler pipe for washer fluid reservoir

- Removing and installing ⇒ [page 76](#)

## 4.2 Removing and installing washer fluid reservoir



### Note

*The washer fluid reservoir (which is the same for the windscreen and the rear window washer systems) is located in front of the front left wheel housing.*

- Removing and installing washer fluid reservoir ⇒ [page 76](#) .

## 4.3 Removing and installing rear window washer pump



### Note

*The rear window washer pump supplies both the windscreen and the rear window washer systems. It is located in the washer fluid reservoir in front of the front left wheel housing.*

- Removing and installing windscreen and rear window washer pump - V59- ⇒ [page 79](#) .

## 4.4 Removing and installing spray jet

⇒ [“4.4.1 Removing and installing rear window spray jet, vehicles with rear lid”, page 95](#)

⇒ [“4.4.2 Removing and installing rear window spray jet, vehicles with rear wing doors”, page 96](#)

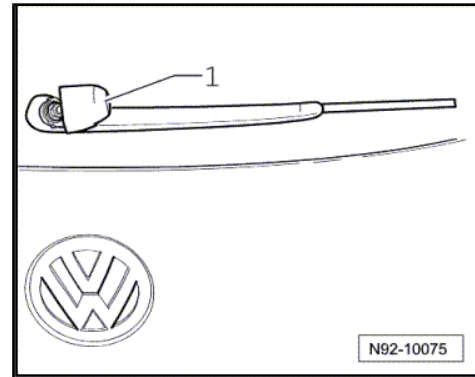
### 4.4.1 Removing and installing rear window spray jet, vehicles with rear lid

#### Removing

- Allow rear window wiper to adopt park position.
- Switch off ignition and all electrical consumers.



- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Unclip cap -1- outwards.

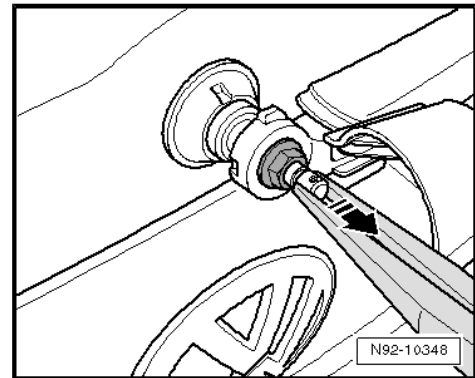


- Using suitable long-nose pliers, carefully pull out washer spray jet in -direction of arrow-.

#### Installing

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

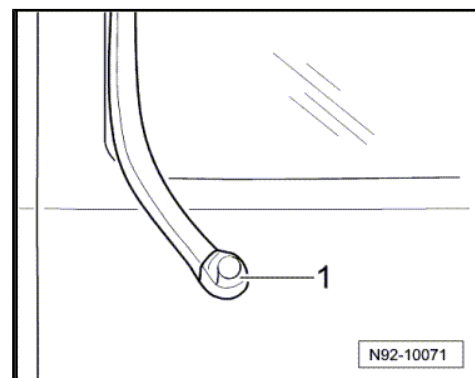
- On completion of work, adjust washer jet ⇒ [page 97](#) .



### 4.4.2 Removing and installing rear window spray jet, vehicles with rear wing doors

#### Removing

- Allow rear window wiper to adopt park position.
- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Unclip cap -1- outwards.





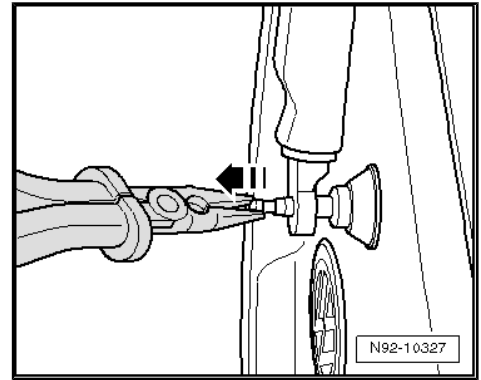


- Using suitable long-nose pliers, carefully pull out washer spray jet.

### Installing

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

- On completion of work, adjust washer jet ⇒ [page 97](#) .



## 4.5 Adjusting spray jet

- Adjusting rear window washer system spray jets ⇒ Maintenance ; Booklet 20.1 ; Descriptions of work .



## 5 Washer fluid lines

⇒ ["5.1 Washer fluid line hose couplings", page 98](#)

⇒ ["5.2 Repairing washer fluid lines", page 98](#)

### 5.1 Washer fluid line hose couplings

⇒ Electrical system, General information; Rep. gr. 92 ; Washer fluid lines

### 5.2 Repairing washer fluid lines

⇒ Electrical system, General information; Rep. gr. 92 ; Washer fluid lines



## 94 – Lights, bulbs, switches - exterior

### 1 Headlights

⇒ [“1.1 Assembly overview - headlight”, page 99](#)

⇒ [“1.2 Removing and installing headlight”, page 103](#)

⇒ [“1.3 Adjusting headlights”, page 106](#)

⇒ [“1.4 Adjusting headlight installation position”, page 106](#)

⇒ [“1.5 Removing and installing front turn signal bulb M5 / M7 ”, page 107](#)

⇒ [“1.6 Converting headlights from driving on right to driving on left”, page 108](#)

⇒ [“1.7 Converting headlights from driving on left to driving on right”, page 109](#)

⇒ [“1.8 Removing and installing headlight range control motor V48 / V49 ”, page 109](#)

⇒ [“1.9 Removing and installing headlight dipped beam bulb M29 / M31 ”, page 114](#)

⇒ [“1.10 Removing and installing headlight main beam bulb M30 / M32 ”, page 117](#)

⇒ [“1.11 Removing and installing side light bulb M1 / M3 ”, page 119](#)

⇒ [“1.12 Removing and installing daytime running light bulb L174 / L175 ”, page 120](#)

⇒ [“1.13 Removing and installing LED modules for daytime running light and side light L176 / L177 ”, page 120](#)

⇒ [“1.14 Removing and installing output module 1 for LED headlights A27 / A31 ”, page 121](#)

⇒ [“1.15 Removing and installing LED headlight fan”, page 123](#)

⇒ [“1.16 Fine adjustment of LED modules - LED headlights”, page 124](#)

#### 1.1 Assembly overview - headlight

⇒ [“1.1.1 Assembly overview - headlight, dual halogen headlight”, page 99](#)

⇒ [“1.1.2 Assembly overview - headlight, LED headlight”, page 101](#)

##### 1.1.1 Assembly overview - headlight, dual halogen headlight



### 1 - Headlight main beam bulb

- Left headlight main beam bulb - M30-
- Right headlight main beam bulb - M32-
- With integrated side light and daytime running light
- Removing and installing ⇒ [page 117](#)
- 12V, H15 55W/15W

### 2 - Housing cover

- For main beam headlight

### 3 - Housing cover

- For headlight range control motor.

### 4 - Retaining clip

- For housing cover

### 5 - Housing cover

- For dipped beam

### 6 - Headlight range control motor

- Left headlight range control motor - V48-
- Right headlight range control motor - V49-
- Removing and installing ⇒ [page 109](#)

### 7 - Bolt

- 1 Nm

### 8 - Adjustment element

- For height adjustment screw
- Part of repair set for adjustment element ⇒ Electronic parts catalogue

### 9 - Height adjustment screw

- With seal
- Part of repair set for adjustment element ⇒ Electronic parts catalogue

### 10 - Headlight dipped beam bulb

- Left headlight dipped beam bulb - M29-
- Right headlight dipped beam bulb - M31-
- Removing and installing ⇒ [page 114](#)
- 12V, H7 55W

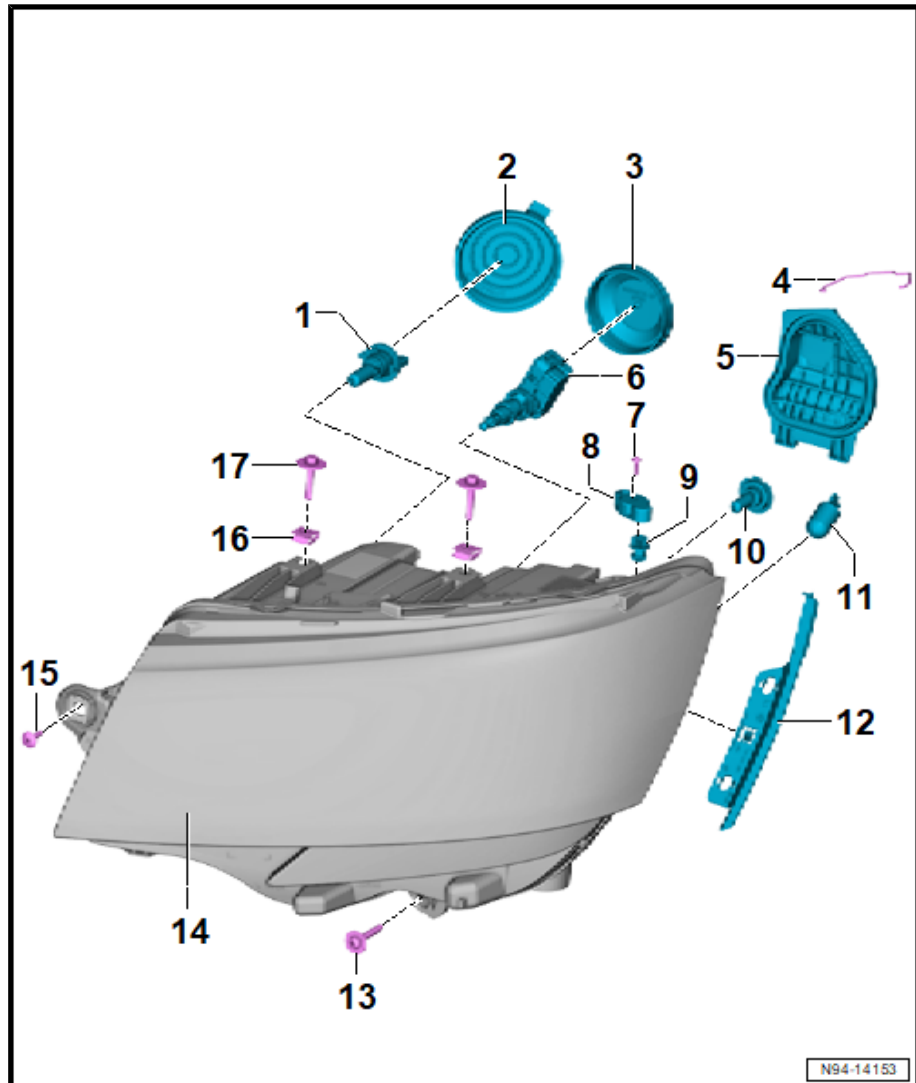
### 11 - Front turn signal bulb

- Front left turn signal bulb - M5-
- Front right turn signal bulb - M7-
- Removing and installing ⇒ [page 107](#)
- 12V, PWY24W

### 12 - Guide

### 13 - Bolt

- Means of securing headlight on lock carrier





- 4.5 Nm

#### 14 - Headlights

- Front left headlight - MX1-
- Front right headlight - MX2-
- Removing and installing ⇒ [page 103](#)
- Correcting installation position of headlight ⇒ [page 106](#)
- Adjusting ⇒ [page 106](#)

#### 15 - Bolt

- Means of securing headlight on lock carrier
- 2.2 Nm

#### 16 - Speed nut

- Qty. 2

#### 17 - Bolt

- Qty. 2
- Means of securing headlight on lock carrier
- 4.5 Nm

### 1.1.2 Assembly overview - headlight, LED headlight

#### 1 - Main beam LED module

- Left headlight main beam bulb - M30-
- Right headlight main beam bulb - M32-
- Removing and installing ⇒ [page 117](#)
- Fine adjustment of LED modules ⇒ [page 124](#)

#### 2 - Bolt

- Qty. 3
- Means of securing main beam LED module in headlight
- 1 Nm

#### 3 - Housing cover

#### 4 - Bolt

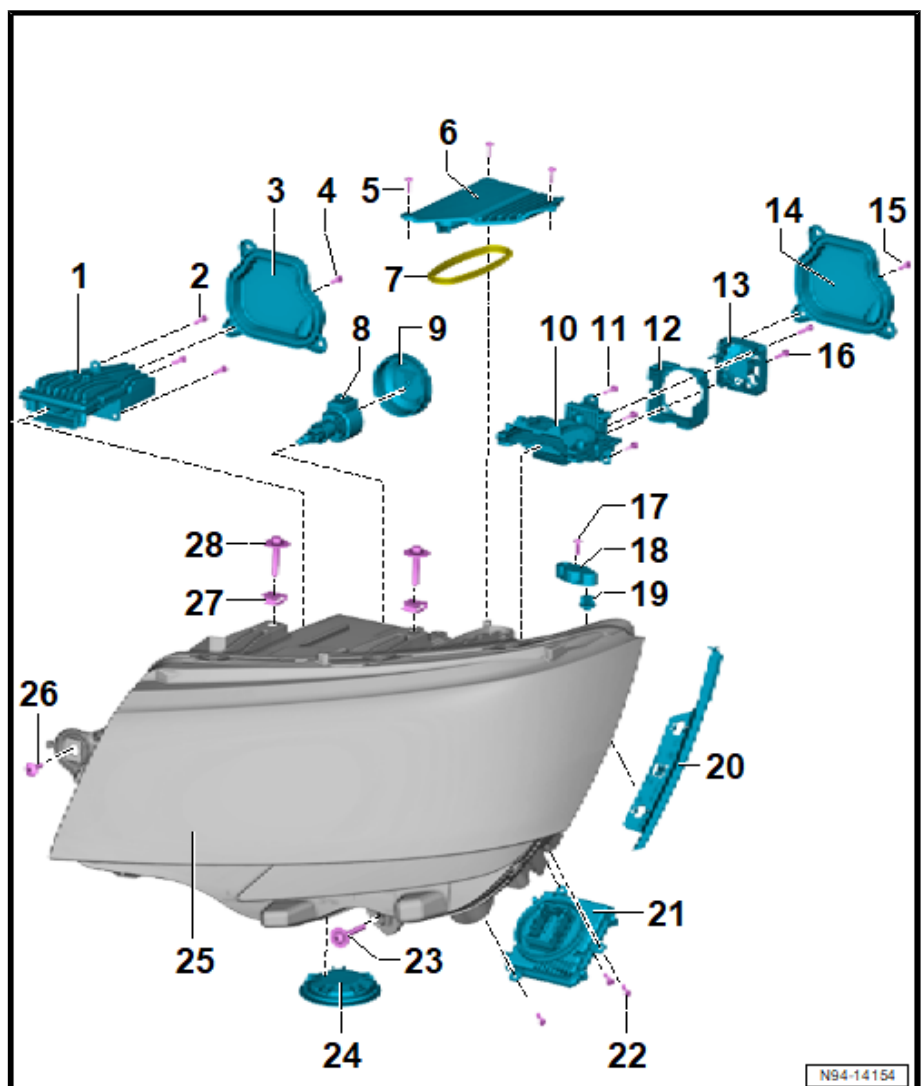
- For repair cover ⇒ [Item 3 \(page 101\)](#)
- Qty. 3
- 1.6 Nm

#### 5 - Bolt

- Qty. 3
- For securing LED module for daytime running light and side light
- 1 Nm

#### 6 - LED module for daytime running light and side light

- Left LED module for daytime running light





and side light - L176-

- Right LED module for daytime running light and side light - L177-
- Removing and installing ⇒ [page 120](#)

#### 7 - Seal

- Part of repair set for LED module for daytime running light and side light ⇒ Electronic parts catalogue

#### 8 - Headlight range control motor

- Left headlight range control motor - V48-
- Right headlight range control motor - V49-
- Removing and installing ⇒ [page 111](#)

#### 9 - Housing cover

- For headlight range control motor.

#### 10 - Dipped beam LED module

- Left headlight dipped beam bulb - M29-
- Right headlight dipped beam bulb - M31-
- Removing and installing ⇒ [page 115](#)
- Fine adjustment of LED modules ⇒ [page 124](#)

#### 11 - Bolt

- Qty. 3
- For securing dipped beam LED module in headlight
- 1 Nm

#### 12 - Cap

- Part of repair set for LED headlight fan ⇒ Electronic parts catalogue

#### 13 - LED headlight fan

- Behind dipped beam LED module
- Removing and installing ⇒ [page 123](#)

#### 14 - Housing cover

#### 15 - Bolt

- For repair cover ⇒ [Item 14 \(page 102\)](#)
- Qty. 3
- 1.6 Nm

#### 16 - Bolt

- Qty. 2
- Means of securing fan for LED headlight on dipped beam LED module
- 2.5 Nm

#### 17 - Bolt

- Part of repair set for adjustment element ⇒ Electronic parts catalogue
- 1 Nm

#### 18 - Adjustment element

- For height adjustment screw
- Part of repair set for adjustment element ⇒ Electronic parts catalogue

#### 19 - Height adjustment screw

- With seal
- Part of repair set for adjustment element ⇒ Electronic parts catalogue

#### 20 - Guide

#### 21 - Output module 1 for LED headlights

- Output module 1 for right LED headlight - A27-



- Output module 1 for left LED headlight - A31-
- Removing and installing ⇒ [page 121](#)

#### 22 - Bolt

- Qty. 3
- Means of securing output module 1 for LED headlight to headlight housing
- 1 Nm

#### 23 - Bolt

- Means of securing headlight on lock carrier
- 4.5 Nm

#### 24 - Cover

#### 25 - Headlights

- Front left headlight - MX1-
- Front right headlight - MX2-
- Removing and installing ⇒ [page 103](#)
- Correcting installation position of headlight ⇒ [page 106](#)
- Adjusting ⇒ [page 106](#)

#### 26 - Bolt

- Means of securing headlight on lock carrier
- 2.2 Nm

#### 27 - Speed nut

- Qty. 2

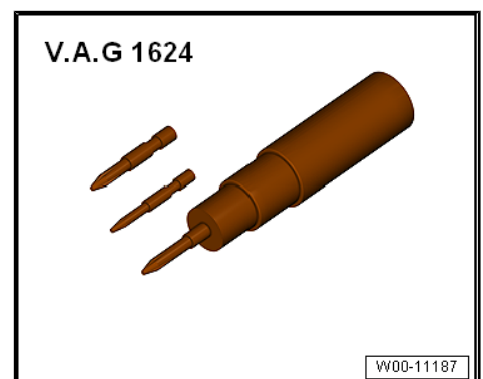
#### 28 - Bolt

- Qty. 2
- Means of securing headlight on lock carrier
- 4.5 Nm

## 1.2 Removing and installing headlight

### Special tools and workshop equipment required

- ◆ Torque screwdriver - V.A.G 1624-

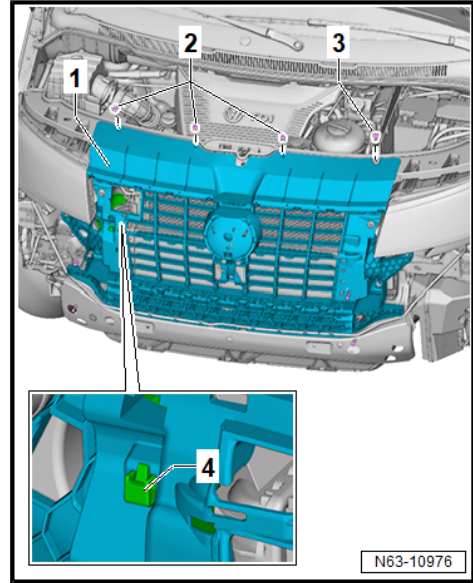


### Removing

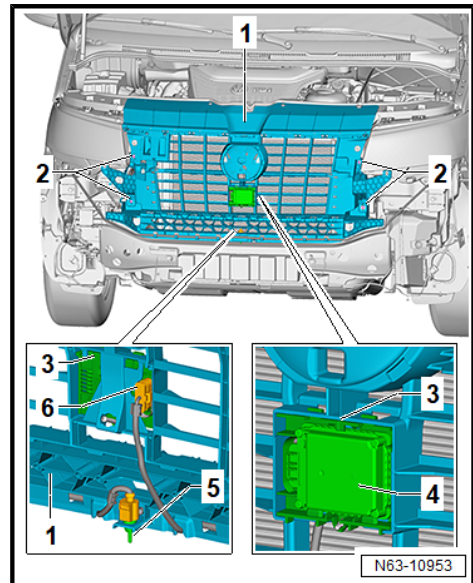
- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Removing and installing bumper cover .



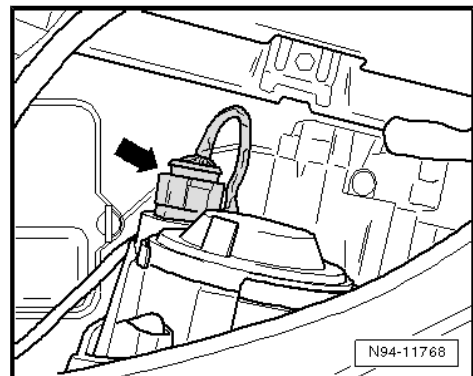
- Lever clips -2- out of support -1-.
- Unscrew bolt -3-.
- Release locking lug -4- on corresponding side.



- Unscrew bolts -2- on corresponding side.



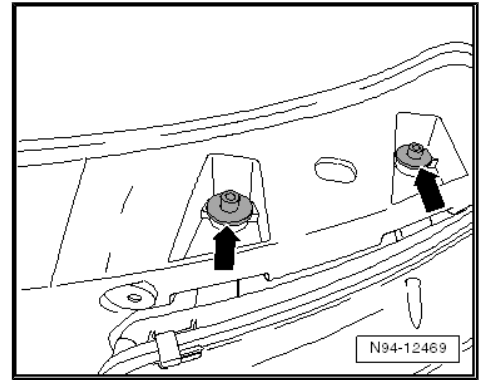
- Separate electrical connector -arrow-.



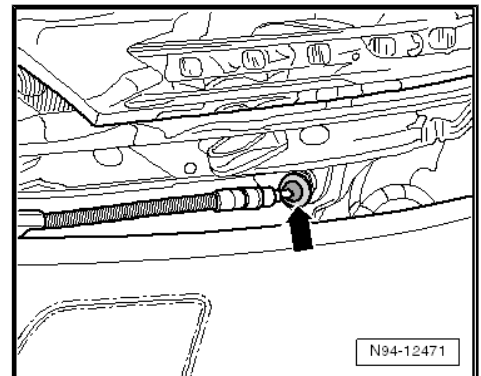




- Unscrew bolts -arrows-.



- Unscrew bolt -arrow-.
- If necessary, unclip radiator fan air guide to gain access to inner headlight bolt => Power unit; Rep. gr. 19 ; Radiator/radiator fan; Assembly overview - radiator/radiator fan .

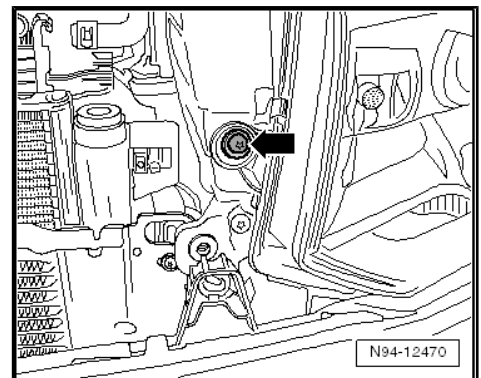


- Unscrew inner bolt on headlight -arrow-.
- Release reinforcement on corresponding side.
- Remove headlight from body aperture.

### Installing

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

- Insert headlight between support and holder. When doing this, ensure that lateral guide is seated correctly on wing.
- Check and, if necessary, adjust installation position of headlight to body => [page 106](#) .
- Tighten all bolts in sequence: top, bottom, inner.
- Perform functional check.
- Secure support and install bumper => General body repairs, exterior; Rep. gr. 63 ; Front bumper; Assembly overview - bumper cover .
- Check headlight setting and adjust headlight if necessary => Maintenance ; Booklet 20.1 ; Descriptions of work



### Specified torques

- ◆ => ["1.1.1 Assembly overview - headlight, dual halogen headlight", page 99](#)
- ◆ => ["1.1.2 Assembly overview - headlight, LED headlight", page 101](#)



## 1.3 Adjusting headlights



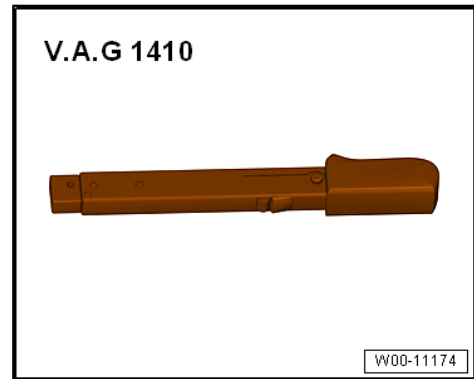
### Note

*Check headlight settings and adjust headlights if necessary  
⇒ Maintenance ; Booklet 20.1 ; Descriptions of work .*

## 1.4 Adjusting headlight installation position

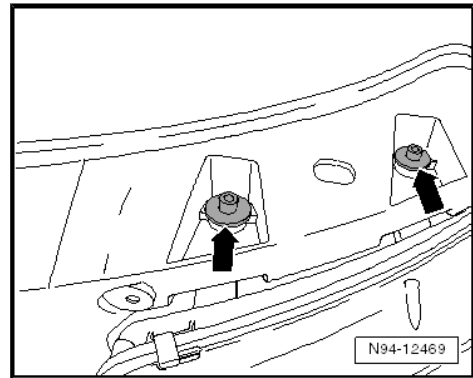
### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-

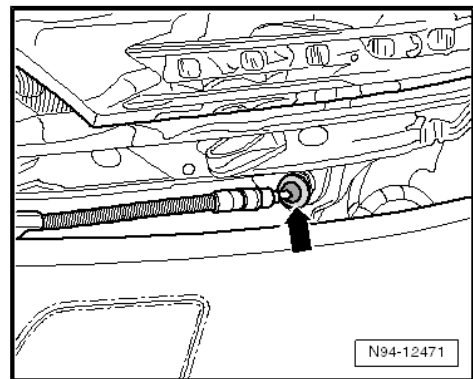


### Sequence of operations

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

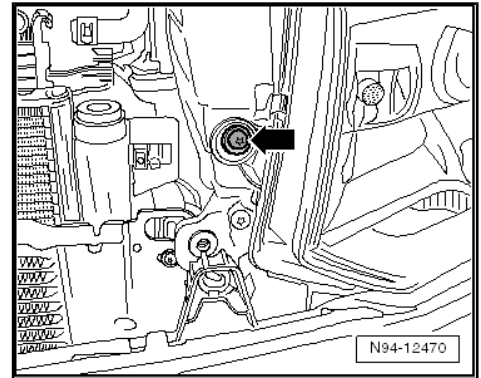


- Loosen bolt -arrow-.





- Loosen inner bolt on headlight -arrow-.

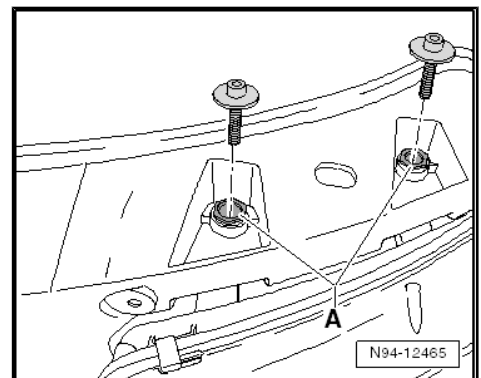


- Using upper adjustment bushes -A- and lower bolt, adjust position of headlight in relation to body, while ensuring that gaps are even.
- Tighten all bolts in sequence: top, bottom, inner.
- Close bonnet.
- Check position of headlight in relation to body.

### Installing

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

- Perform functional check.
- Check headlight setting and adjust headlight if necessary  
⇒ Maintenance ; Booklet 20.1 ; Descriptions of work



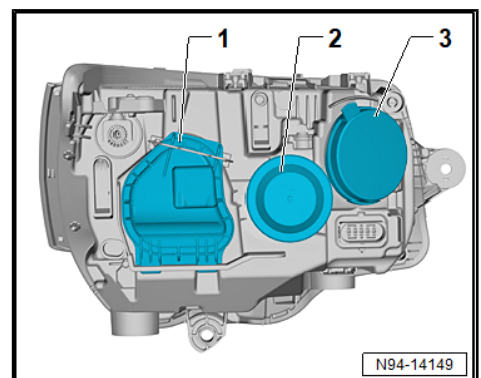
### Specified torques

- ◆ ⇒ ["1.1.1 Assembly overview - headlight, dual halogen headlight", page 99](#)
- ◆ ⇒ ["1.1.2 Assembly overview - headlight, LED headlight", page 101](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Assembly overview - bumper cover

## 1.5 Removing and installing front turn signal bulb -M5- / -M7-

### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Release wire clamp and remove housing cover -1-.





- Pull out grip element with bulb holder -2-.
- Pull bulb -1- in straight line out of grip element with bulb holder -2-.

### Installing

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

- Perform functional check.



### Note

- ◆ *When installing, make sure the cover is correctly seated. The ingress of water will destroy the headlight.*
- ◆ *Do not touch bulb glass when installing a bulb. Fingers leave traces of grease on the glass, which evaporate when the bulb is switched on and cause the glass to cloud over.*

- Check functions of headlight.

## 1.6 Converting headlights from driving on right to driving on left

⇒ ["1.6.1 Converting headlights from driving on right to driving on left, H7 headlights", page 108](#)

⇒ ["1.6.2 Converting headlights from driving on right to driving on left, LED headlights", page 108](#)

### 1.6.1 Converting headlights from driving on right to driving on left, H7 headlights

If a right-hand drive vehicle is driven in a country with left-hand traffic, or vice versa, the headlights do not need to be adapted in any way.

### 1.6.2 Converting headlights from driving on right to driving on left, LED headlights

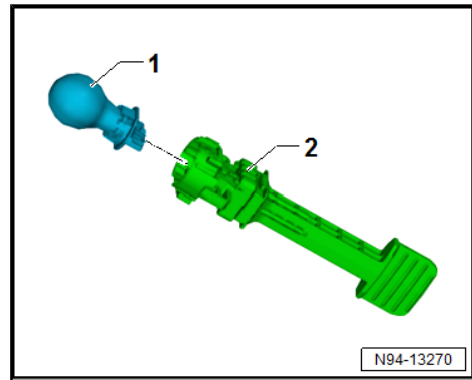
If a right-hand drive vehicle is driven in a left-hand drive country, or vice versa, the headlights must be converted. This is necessary in order to avoid dazzling oncoming traffic with the asymmetric low beam headlights.



### Note

- ◆ *The adjustment for driving on the left to driving on the right or vice versa (travel mode) is carried out in the dash panel insert using the menu.*
- ◆ *It is only permissible to make use of the headlight converter for a short period of time. When permanently driving in the respective country during a longer period of time, suitable headlights need to be installed according to valid specifications.*

- Call up main menu in dash panel insert ⇒ Operating instructions .
- Call up "Settings" menu.
- Call up "Light & visibility" sub-menu option.
- Activate or deactivate "Travel mode" menu item to switch travel mode on or off.





## 1.7 Converting headlights from driving on left to driving on right

⇒ [“1.7.1 Converting headlights from driving on left to driving on right, H7 headlights”, page 109](#)

⇒ [“1.7.2 Converting headlights from driving on left to driving on right, LED headlights”, page 109](#)

### 1.7.1 Converting headlights from driving on left to driving on right, H7 headlights

If a right-hand drive vehicle is driven in a country with left-hand traffic, or vice versa, the headlights do not need to be adapted in any way.

### 1.7.2 Converting headlights from driving on left to driving on right, LED headlights

If a right-hand drive vehicle is driven in a left-hand drive country, or vice versa, the headlights must be converted. This is necessary in order to avoid dazzling oncoming traffic with the asymmetric low beam headlights.



#### Note

- ◆ *The adjustment for driving on the left to driving on the right or vice versa (travel mode) is carried out in the dash panel insert using the menu.*
- ◆ *It is only permissible to make use of the headlight converter for a short period of time. When permanently driving in the respective country during a longer period of time, suitable headlights need to be installed according to valid specifications.*
- Call up main menu in dash panel insert ⇒ Operating instructions .
- Call up “Settings” menu.
- Call up “Light & visibility” sub-menu option.
- Activate or deactivate “Travel mode” menu item to switch travel mode on or off.

## 1.8 Removing and installing headlight range control motor -V48- / -V49-

⇒ [“1.8.1 Removing and installing headlight range control motor V48 / V49 , H7 headlights”, page 109](#)

⇒ [“1.8.2 Removing and installing headlight range control motor V48 / V49 , LED headlights”, page 111](#)

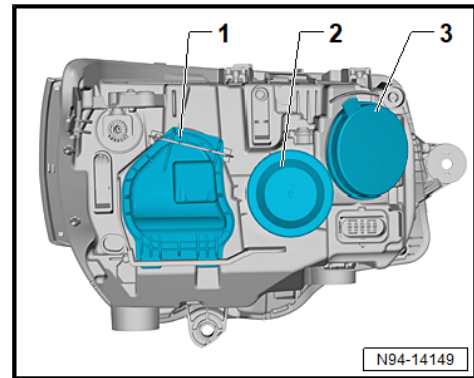
### 1.8.1 Removing and installing headlight range control motor -V48- / -V49- , H7 headlights

#### Removing

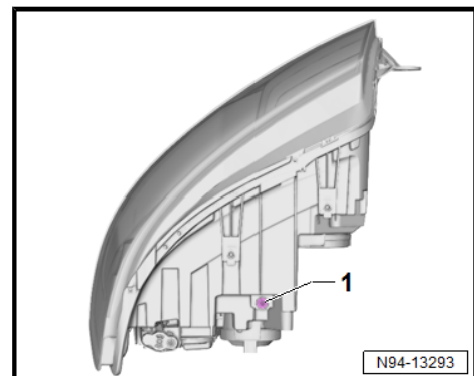
- Remove headlight ⇒ [page 103](#) .



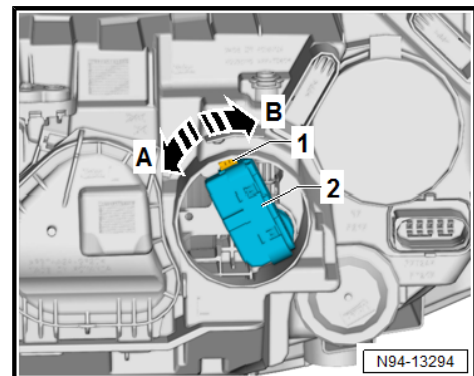
- Remove housing cover -2-.



- Pull out vertical adjuster -1- upwards.



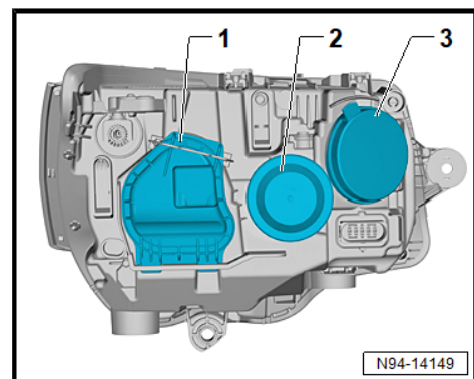
- Turn headlight range control motor -2- to stop in direction of -arrow A-.
- Pull headlight range control motor -2- out of headlight, far enough to gain access to electrical connector -1-.
- Disconnect connector -1-.
- Pull out ball head on headlight range control motor -1- from mounting on reflector.



### Installing

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

- While pressing in headlight range control motor, fit electrical connector.
- Release wire clasp and remove housing cover -1- from headlight.
- Reach through opening of housing cover -1- then pull back reflector and hold.
- Press headlight range control motor into mounting on reflector until it can be heard to engage.

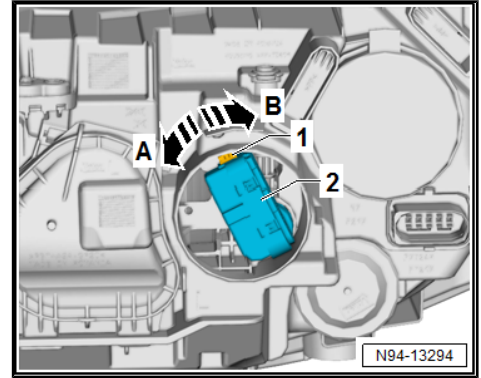




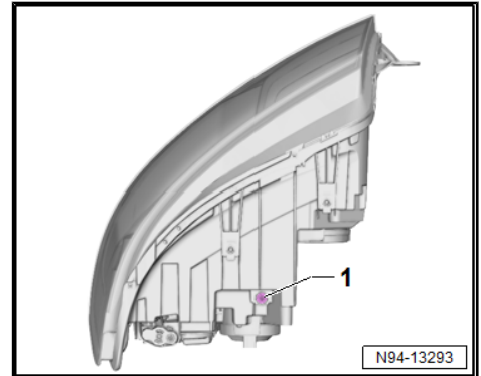
- Turn headlight range control motor -2- to stop in direction of -arrow B-.
- Install housing cover.

**i** Note

*When installing, make sure that covers are correctly seated. The ingress of water will destroy the headlight.*



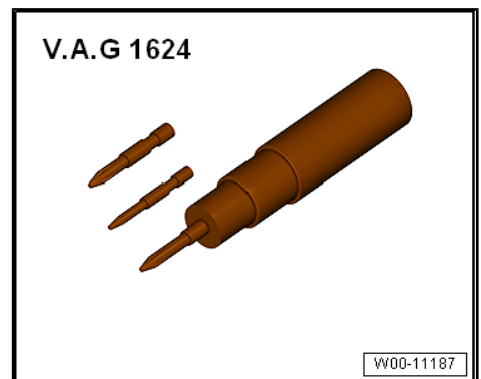
- Install vertical adjuster -1-.
- Perform functional check.
- Check headlight settings, and adjust headlights if necessary  
=> Maintenance ; Booklet 20.1 ; Descriptions of work .



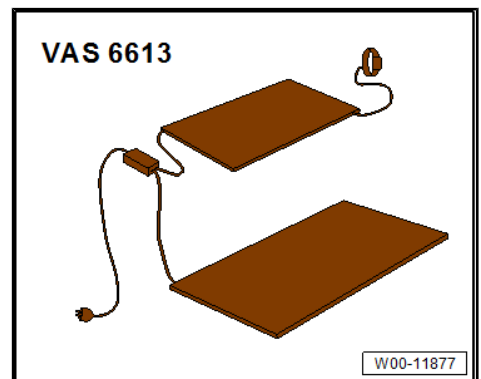
## 1.8.2 Removing and installing headlight range control motor -V48- / -V49- , LED headlights

### Special tools and workshop equipment required

- ◆ Torque screwdriver - V.A.G 1624-



- ◆ ESD workplace - VAS 6613-





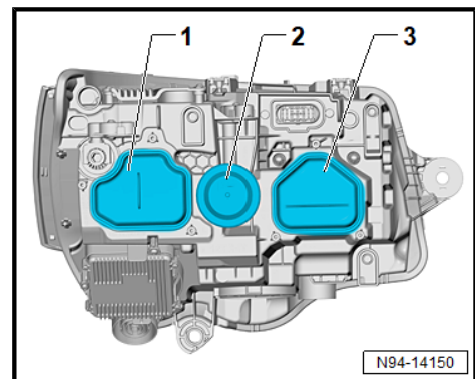
**!** NOTICE

Risk of destroying headlight due to electrostatic charge of the human body.

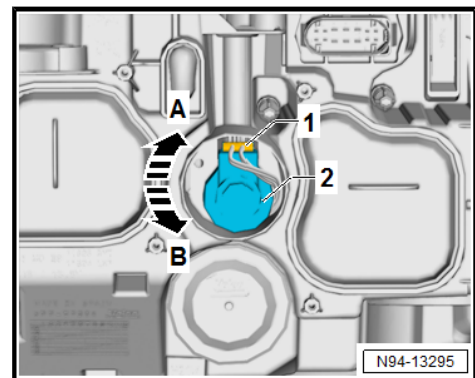
- Work on the headlight range control motor must be performed only at designated ESD workplaces.

**Removing**

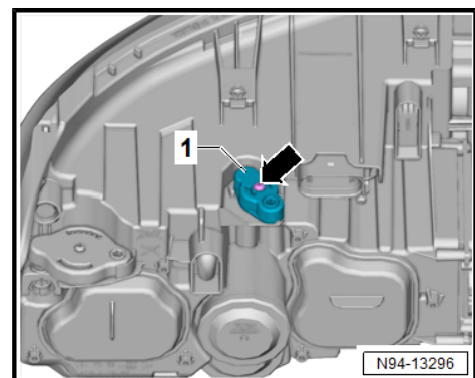
- Remove headlight => [page 103](#) .
- Remove cover -2-.
- Remove housing cover -3- to gain access to ball head of control motor => [page 117](#) .



- Disconnect electrical connector -1-.
- Turn control motor -2- as far as stop in direction of -arrow B-.



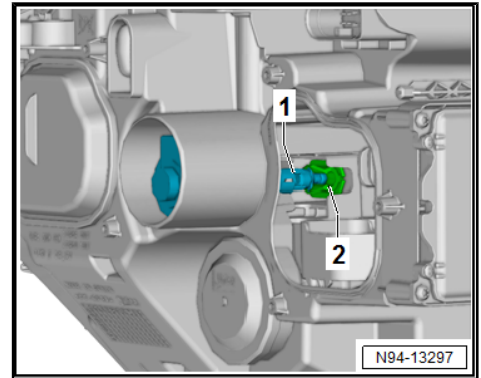
- Unscrew bolt -arrow-.
- Remove adjuster -1- with shaft.







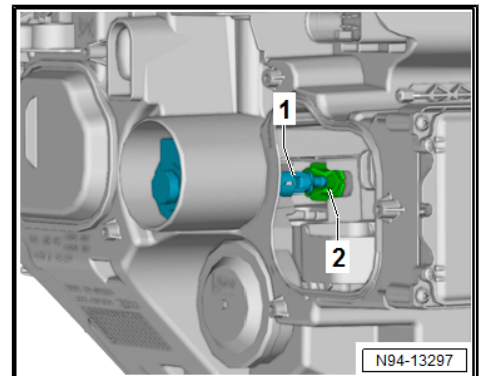
- Push ball head on control motor -1- upwards as far as it will go.
- Tilt control motor, and pull it sideways out of ball head mounting -2-.



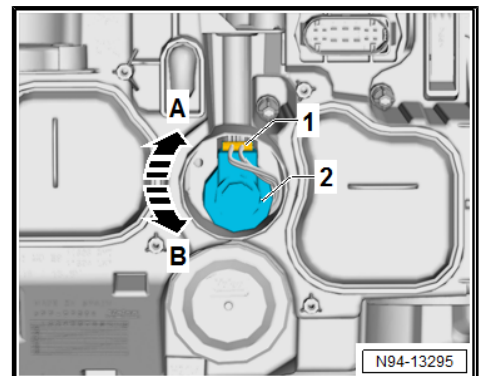
### Installing

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

- Push control motor -1- into guide -2-.



- Turn control motor -2- as far as stop in direction of -arrow A-.
- Attach electrical connector -1-.



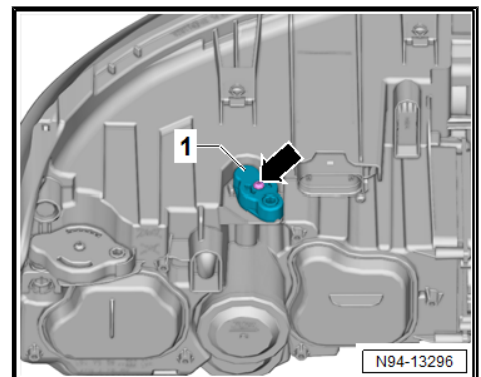
- Install adjuster -1- with shaft.
- Tighten bolt -arrow-.
- Install headlight housing cover.



### Note

*When installing, make sure the cover is correctly seated. The ingress of water will destroy the headlight.*

- Install new housing cover on main beam LED module  
⇒ [page 117](#) .
- Check headlight setting and adjust headlight if necessary  
⇒ Maintenance ; Booklet 20.1 ; Descriptions of work



### Specified torques

- ◆ ⇒ ["1.1.2 Assembly overview - headlight, LED headlight", page 101](#)



## 1.9 Removing and installing headlight dipped beam bulb -M29- / -M31-

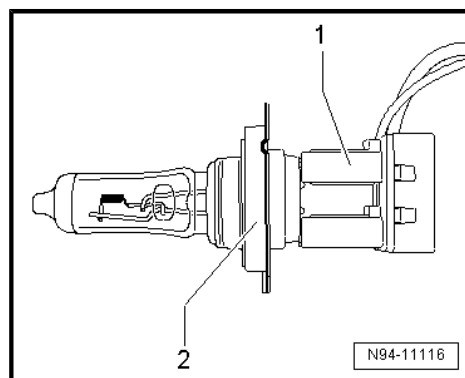
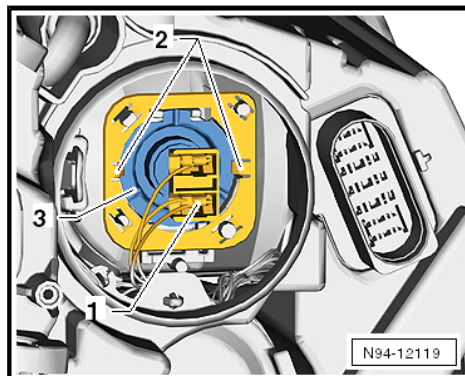
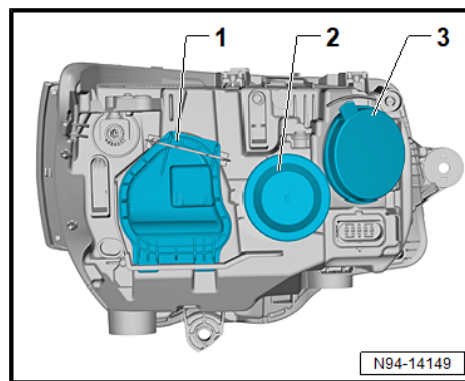
⇒ ["1.9.1 Removing and installing headlight dipped beam bulb M29 / M31 , H7 headlight", page 114](#)

⇒ ["1.9.2 Removing and installing headlight dipped beam bulb M29 / M31 , LED headlights", page 115](#)

### 1.9.1 Removing and installing headlight dipped beam bulb -M29- / -M31- , H7 headlight

#### Removing

- Switch off ignition and all electrical consumers.
- Withdraw ignition key.
- Release wire clasp.
- Remove housing cover -1-.
- Turn electrical connector -1- to left together with left headlight dipped beam bulb -3-.
- Pull right headlight dipped beam bulb -3- at connector -1- towards rear and out of headlight.
- Pull right headlight dipped beam bulb -2- in a straight line off electrical connector -1-.





## Installing

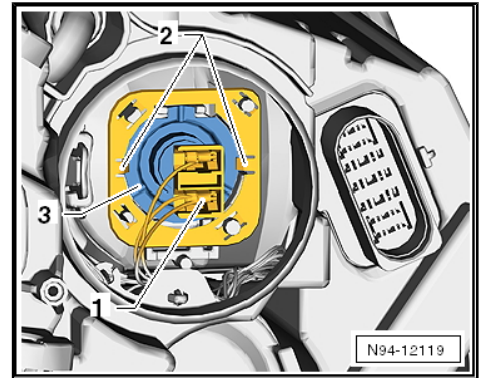
Install in the reverse order of removal, observing the following:

- Insert new headlight dipped beam bulb -3- in bulb carrier.
- Do not touch bulb glass when installing a bulb. Fingers leave traces of grease on the glass, which evaporate when the bulb is switched on and cause the glass to cloud over.
- Catches -2- must be heard to engage.

### NOTICE

**Risk of destroying headlight due to ingress of water.**

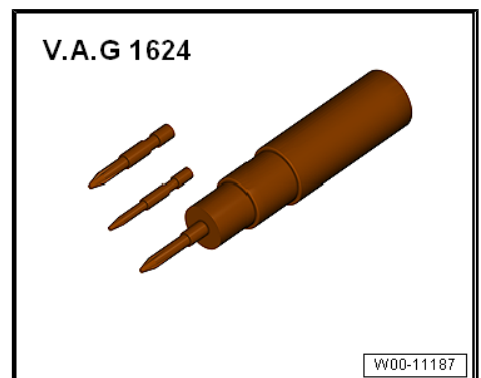
- **Make sure that seal is correctly seated when housing cover is installed.**
- Perform functional check.
- Check headlight setting and adjust headlight if necessary  
⇒ Maintenance ; Booklet 20.1 ; Descriptions of work



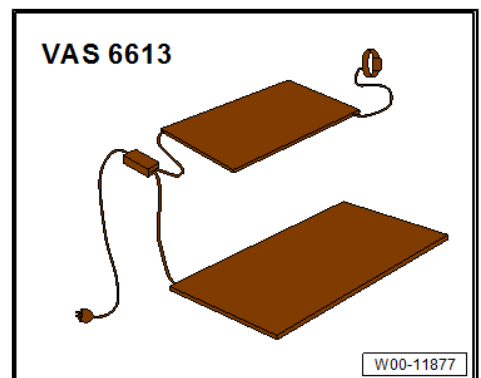
## 1.9.2 Removing and installing headlight dipped beam bulb -M29- / -M31- , LED headlights

Special tools and workshop equipment required

- ◆ Torque screwdriver - V.A.G 1624-



- ◆ ESD workplace - VAS 6613-



### NOTICE

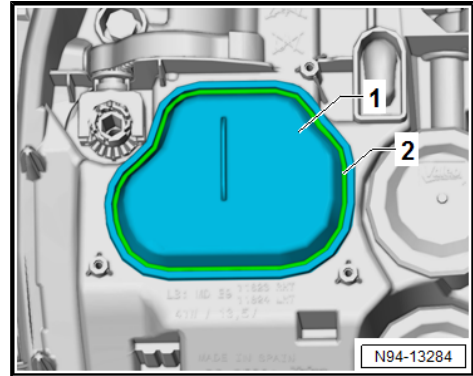
**Risk of destroying headlight due to ingress of water.**

- **Do not damage edge of seal on headlight housing when removing housing cover.**



## Removing

- Remove headlight ⇒ [page 103](#) .
- Using a hammer, carefully detach housing cover -1- around engineered break line -2-. Preferably, strike on the corners of the cover when doing this to prevent it from breaking.
- Remove housing cover -1- from headlight.

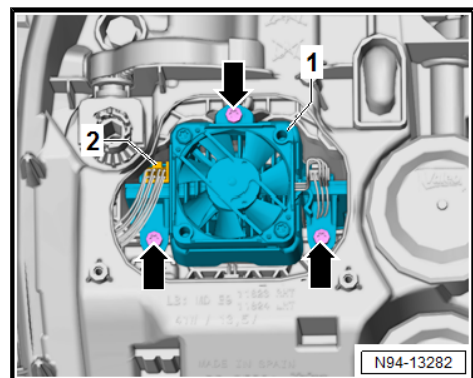


- Disconnect connector -2-.
- Unscrew bolts -arrows-.
- Remove main beam LED module -1- from headlight.

## Installing

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

- Insert LED module.
- Ensure centring pin is positioned correctly in mountings -arrows-.
- Attach electrical connector.

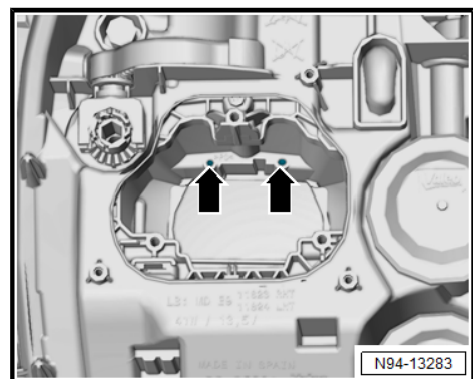


- Ensure centring pin is positioned correctly in mountings -arrows-.
- Attach electrical connector.

### NOTICE

**Risk of destroying headlight due to ingress of water.**

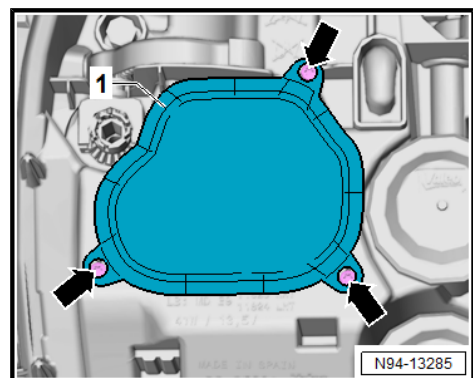
- **Make sure that seal is correctly seated when housing cover is installed.**



- Position new housing cover -1- onto headlight.
- Tighten bolts -arrows-.
- Calibrate LED modules ⇒ [page 124](#) .
- Perform functional check.
- Check headlight setting and adjust headlight if necessary ⇒ Maintenance ; Booklet 20.1 ; Descriptions of work

## Specified torques

- ◆ ⇒ [“1.1.2 Assembly overview - headlight, LED headlight”, page 101](#)





## 1.10 Removing and installing headlight main beam bulb -M30- / -M32-

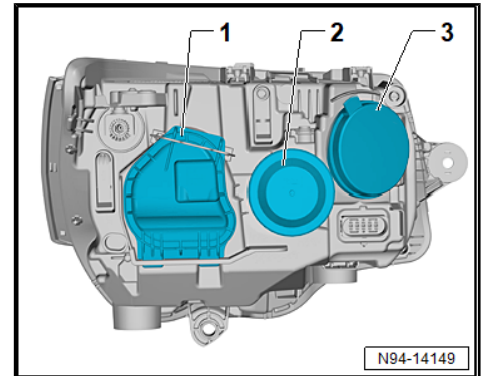
⇒ [“1.10.1 Removing and installing headlight main beam bulb M30 / M32 , H7 headlight”, page 117](#)

⇒ [“1.10.2 Removing and installing headlight main beam bulb M30 / M32 , LED headlights”, page 117](#)

### 1.10.1 Removing and installing headlight main beam bulb -M30- / -M32- , H7 headlight

#### Removing

- Pull off housing cover -3- from headlight.



- Release bulb -1- in direction of -arrow-.
- Remove bulb -1-.

#### Installing

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

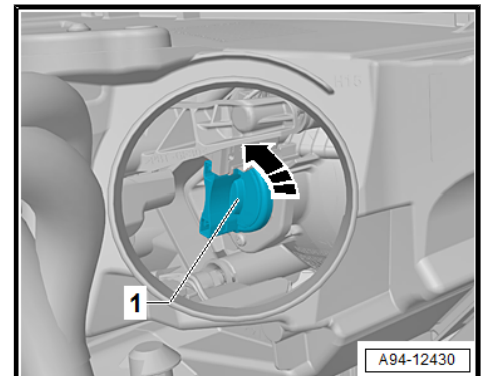
- Insert new headlight main beam bulb -1- in bulb carrier.



#### Note

- ◆ *Do not touch bulb glass when installing a bulb. Fingers leave traces of grease on the glass, which evaporate when the bulb is switched on and cause the glass to cloud over.*
- ◆ *When installing, make sure the cover is correctly seated. The ingress of water will destroy the headlight.*

- Perform functional check.
- Check headlight setting and adjust headlight if necessary  
⇒ Maintenance ; Booklet 20.1 ; Descriptions of work

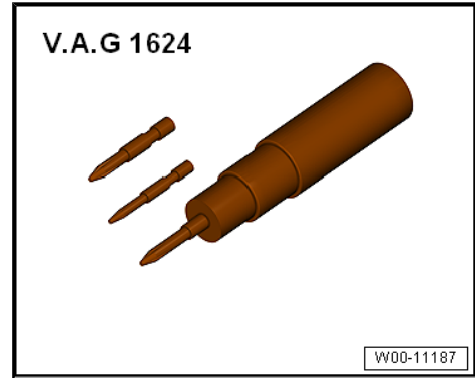


### 1.10.2 Removing and installing headlight main beam bulb -M30- / -M32- , LED headlights

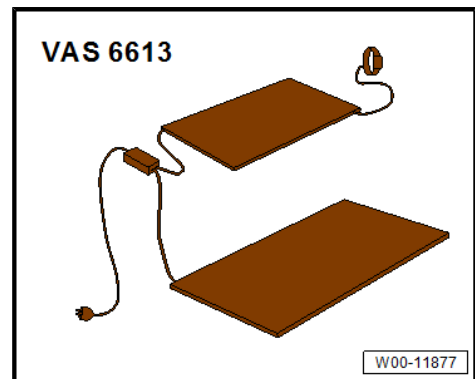
Special tools and workshop equipment required



- ◆ Torque screwdriver - V.A.G 1624-



- ◆ ESD workplace - VAS 6613-



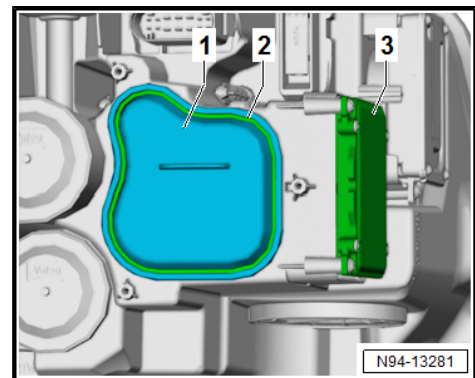
**!** NOTICE

**Risk of destroying headlight due to ingress of water.**

- Do not damage edge of seal on headlight housing when removing housing cover.

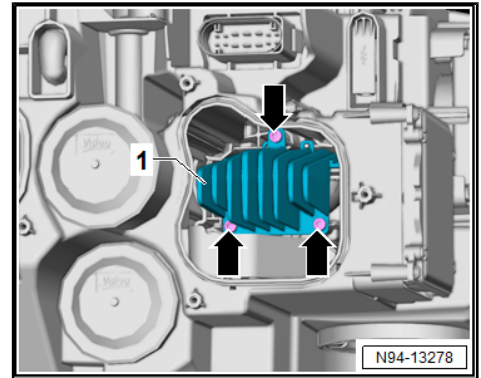
**Removing**

- Remove headlight ⇒ [page 103](#) .
- Using a hammer, carefully detach housing cover -1- around engineered break line -2-. Preferably, strike on the corners of the cover when doing this to prevent it from breaking.
- Remove housing cover -1- from headlight.
- Remove output module for headlight -J667- / -J668- -3- ⇒ [page 120](#) .





- Unscrew bolts -arrows-.
- Remove dipped beam LED module -1-.
- Disconnect electrical connector.



### Installing

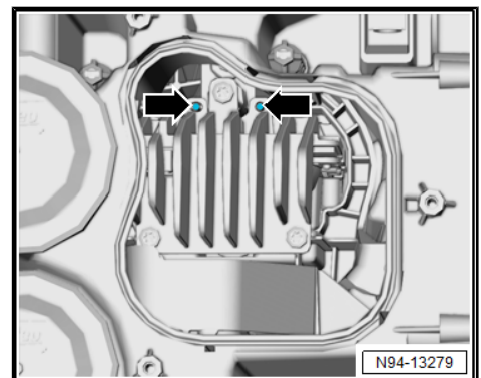
Install in the reverse order of removal, observing the following:

- Insert LED module.
- Ensure that LED module is correctly positioned on centring pins -arrows-.
- Join electrical connector when inserting.
- Install output module for headlight -J667- / -J668-  
=> [page 120](#) .



**Risk of destroying headlight due to ingress of water.**

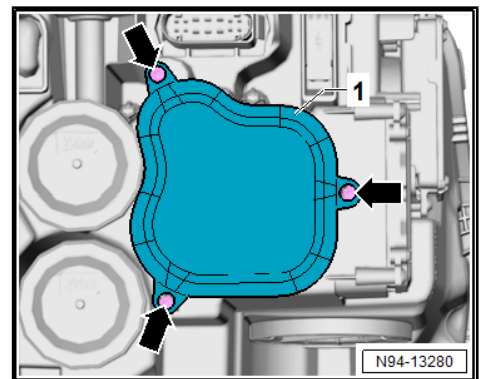
- **Make sure that seal is correctly seated when housing cover is installed.**



- Fit new housing cover -1-.
- Tighten bolts -arrows-.
- Calibrate LED modules => [page 124](#) .
- Perform functional check.
- Check headlight setting and adjust headlight if necessary  
=> Maintenance ; Booklet 20.1 ; Descriptions of work

### Specified torques

- ◆ => ["1.1.2 Assembly overview - headlight, LED headlight", page 101](#)



## 1.11 Removing and installing side light bulb - M1- / -M3-

=> ["1.11.1 Removing and installing side light bulb M1 / M3 , H7 headlight", page 119](#)

=> ["1.11.2 Removing and installing side light bulb M1 / M3 , LED headlights", page 120](#)

### 1.11.1 Removing and installing side light bulb - M1- / -M3- , H7 headlight

Front side light bulb -M1- / -M3- and main beam headlight bulb -M30- / -M32- are one component.

- Remove main beam headlight bulb -M30- / -M32- and renew  
=> [page 117](#) .



### 1.11.2 Removing and installing side light bulb - M1- / -M3- , LED headlights

Front turn signal bulb -M1- / -M3- and LED module for daytime running light and side light -L176- / -L177- are one component.

- Remove LED module for daytime running light and side light -L176- / -L177- and renew ⇒ [page 120](#) .

### 1.12 Removing and installing daytime running light bulb -L174- / -L175-

⇒ ["1.12.1 Removing and installing daytime running light bulb L174 / L175 , H7 headlight"](#), page 120

⇒ ["1.12.2 Removing and installing daytime running light bulb L174 / L175 , LED headlights"](#), page 120

#### 1.12.1 Removing and installing daytime running light bulb -L174- / -L175- , H7 headlight

Front daytime running light bulb -L174- / -L175- and main beam headlight bulb -M30- / -M32- are one component.

- Remove main beam headlight bulb -M30- / -M32- and renew ⇒ [page 117](#) .

#### 1.12.2 Removing and installing daytime running light bulb -L174- / -L175- , LED headlights

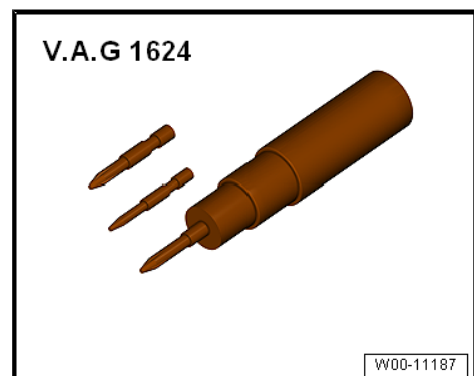
Front turn signal bulb -L174- / -L175- and LED module for daytime running light and side light -L176- / -L177- are one component.

- Remove LED module for daytime running light and side light -L176- / -L177- and renew ⇒ [page 120](#) .

### 1.13 Removing and installing LED modules for daytime running light and side light - L176- / -L177-

Special tools and workshop equipment required

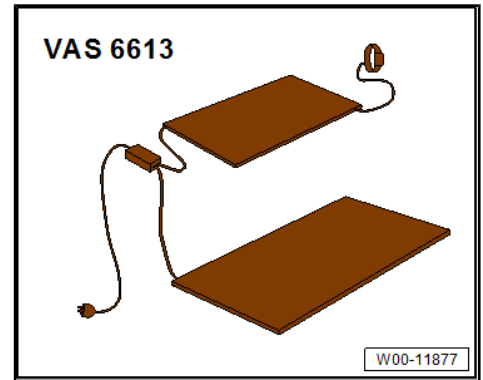
- ◆ Torque screwdriver - V.A.G 1624-







- ◆ ESD workplace - VAS 6613-



**! NOTICE**

Risk of destroying headlight due to electrostatic charge of the human body.

- Work on the LED module must be performed only at an ESD workplace.

**Removing**

- Remove headlight ⇒ [page 103](#) .
- Unscrew bolts -arrow-.
- Detach LED module -1- from headlight housing -2-.
- Disconnect electrical connectors -3-.

**Installing**

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

- Check seal -4- for damage.

**! NOTICE**

Risk of destroying headlight due to ingress of water.

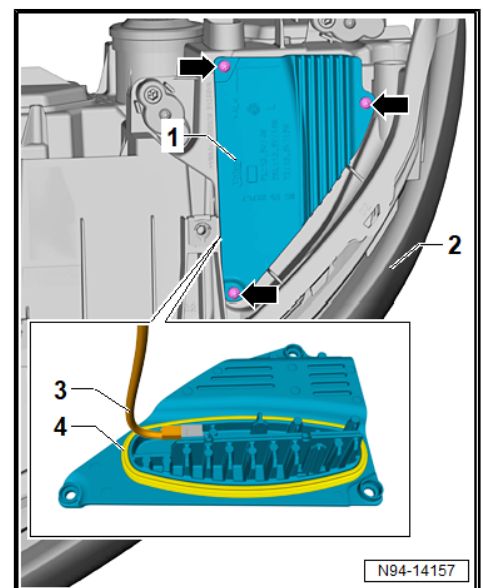
- Make sure that seal is correctly seated when installing LED module for daytime running light and side light.

**Specified torques**

- ◆ ⇒ [“1.1.2 Assembly overview - headlight, LED headlight”, page 101](#)

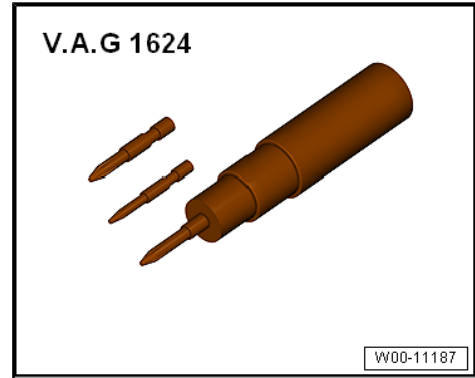
**1.14 Removing and installing output module 1 for LED headlights -A27- / -A31-**

Special tools and workshop equipment required

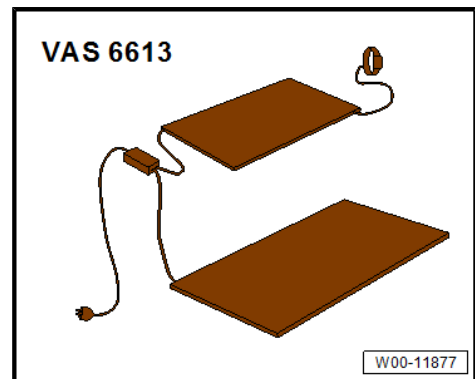




- ◆ Torque screwdriver - V.A.G 1624-



- ◆ ESD workplace - VAS 6613-



**NOTICE**

Risk of destroying headlight due to electrostatic charge of the human body.

- Work on the LED module must be performed only at an ESD workplace.

**Removing**

- Remove headlight ⇒ [page 103](#) .
- Unscrew bolts -arrow-.
- Pull off output module -5-.
- Disconnect connector -3-. To do this, press detent -1-, swing retaining clip -2- upwards, and pull off electrical connector.

**Installing**

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

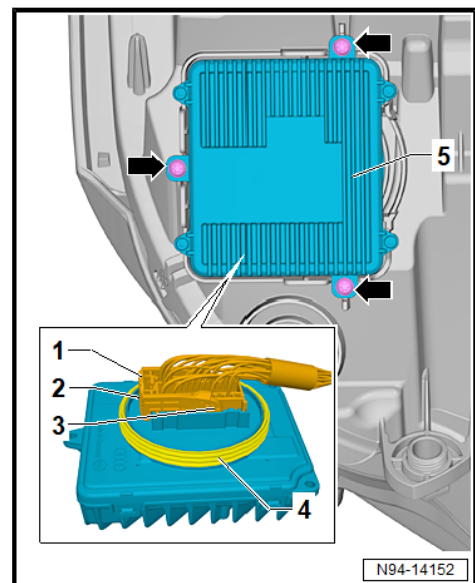
**NOTICE**

Risk of destroying headlight due to ingress of water.

- Make sure that the seal is correctly seated when installing the output module 1 for LED headlight.
- Check seal -4- for damage.

**Specified torques**

- ◆ ⇒ [“1.1.2 Assembly overview - headlight, LED headlight”, page 101](#)

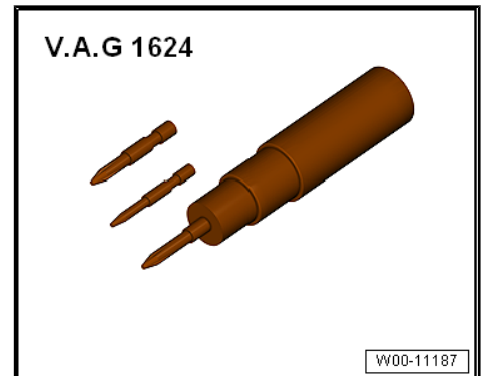




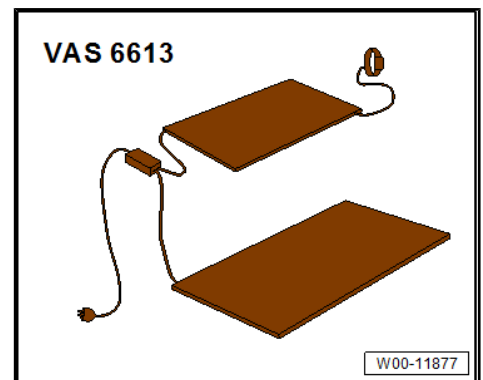
## 1.15 Removing and installing LED headlight fan

### Special tools and workshop equipment required

- ◆ Torque screwdriver - V.A.G 1624-



- ◆ ESD workplace - VAS 6613-



### ! NOTICE

Risk of destroying headlight due to electrostatic charge of the human body.

- Work on the LED headlight fan may only be performed in an ESD workplace.

### Removing

- Remove headlight ⇒ [page 103](#) .
- Remove dipped beam LED module ⇒ [page 115](#) .



- Unscrew bolts -arrow-.
- Disconnect electrical connector -1-.
- Remove fan -2-.

### Installing

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

#### NOTICE

**Risk of destroying headlight due to ingress of water.**

- **Make sure that seal is correctly seated when housing cover is installed.**
- Before installing headlight, carry out fine adjustment of dipped beam LED module ⇒ [page 124](#) .
- Perform functional check.
- Check headlight setting and adjust headlight if necessary  
⇒ Maintenance ; Booklet 20.1 ; Descriptions of work

### Specified torques

- ◆ ⇒ [“1.1.2 Assembly overview - headlight, LED headlight”, page 101](#)

## 1.16 Fine adjustment of LED modules - LED headlights



### Note

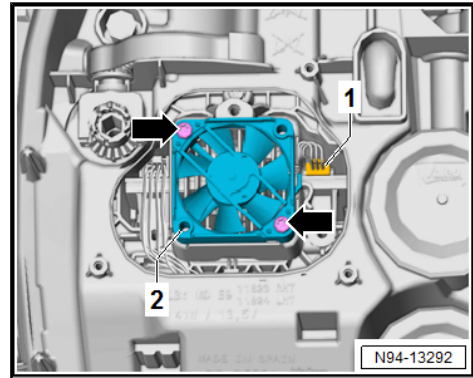
- ◆ *Following removal and installation or renewal of an LED module, the main beam LED modules and dipped beam LED modules must be calibrated.*
- ◆ *The LED modules can be calibrated with the headlight removed using the headlight extension cable ( test cable - VAS 621 003- ) or with the headlight installed.*
- ◆ *For headlight positioning, measure a distance of 10 metres from a wall. A clearer light pattern for adjustment is achieved in this way.*
- ◆ *The objective of the calibration is to align the light pattern of the main beam module with the light pattern of the dipped beam module.*

### Preliminary work for calibration with headlight removed

- Connect electrical connector for headlight in vehicle and electrical connector on removed headlight to headlight extension cable test cable - VAS 621 003- .
- Position removed headlights horizontally at a distance of either 5 or 10 metres in front of a wall.

### Preliminary work for calibration with headlight installed

- Position installed headlight horizontally at a distance of either 5 or 10 metres in front of a wall.





Continued for both calibration set-ups



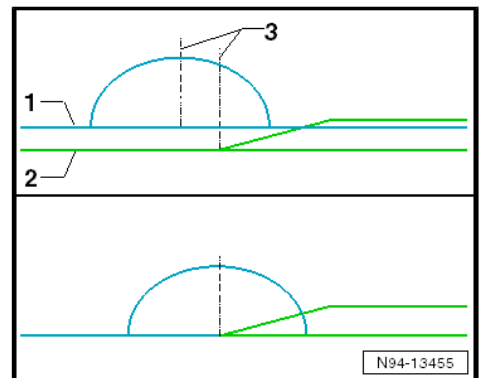
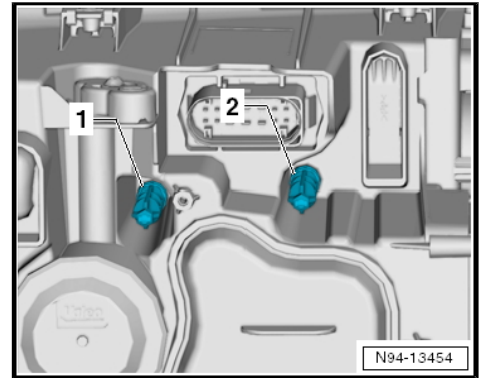
Note

- ◆ Adjust the main beam module in vertical direction by turning the two adjuster screws -1- and -2- on the back of the headlight.
- ◆ Adjust the main beam module in horizontal direction by turning the outer adjuster screw (as seen in direction of travel) -1- on the back of the headlight.

- Switch on main beam.

1. Vertical adjustment

- Turn the »two adjuster screws« to set the bottom edge of the light pattern of the main beam module -1- to the same height as the bottom edge of the light pattern of the dipped beam module -2-.

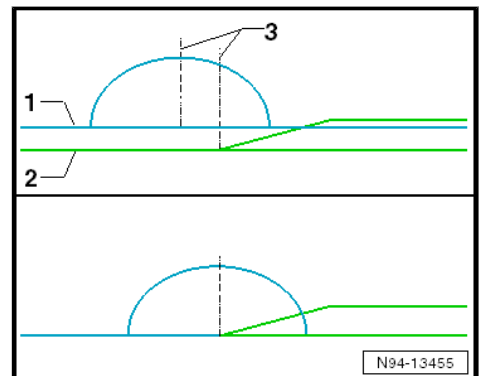


2. Horizontal adjustment

- Turn the »outer adjuster screw (as seen in direction of travel)« until the two imaginary centre lines -3- of both light patterns are on top of each other.

The bottom section of the illustration shows the light pattern for properly calibrated LED modules.

- Install headlight as necessary ⇒ [page 103](#) .
- Adjust headlights ⇒ [page 106](#) .





## 2 Fog lights

⇒ [“2.1 Assembly overview - fog lights”, page 126](#)

⇒ [“2.2 Removing and installing fog light”, page 126](#)

⇒ [“2.3 Removing and installing fog light bulb L22 / L23 ”, page 127](#)

⇒ [“2.4 Adjusting fog lights”, page 128](#)

### 2.1 Assembly overview - fog lights

#### 1 - Fog lights

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

#### 2 - Bolt

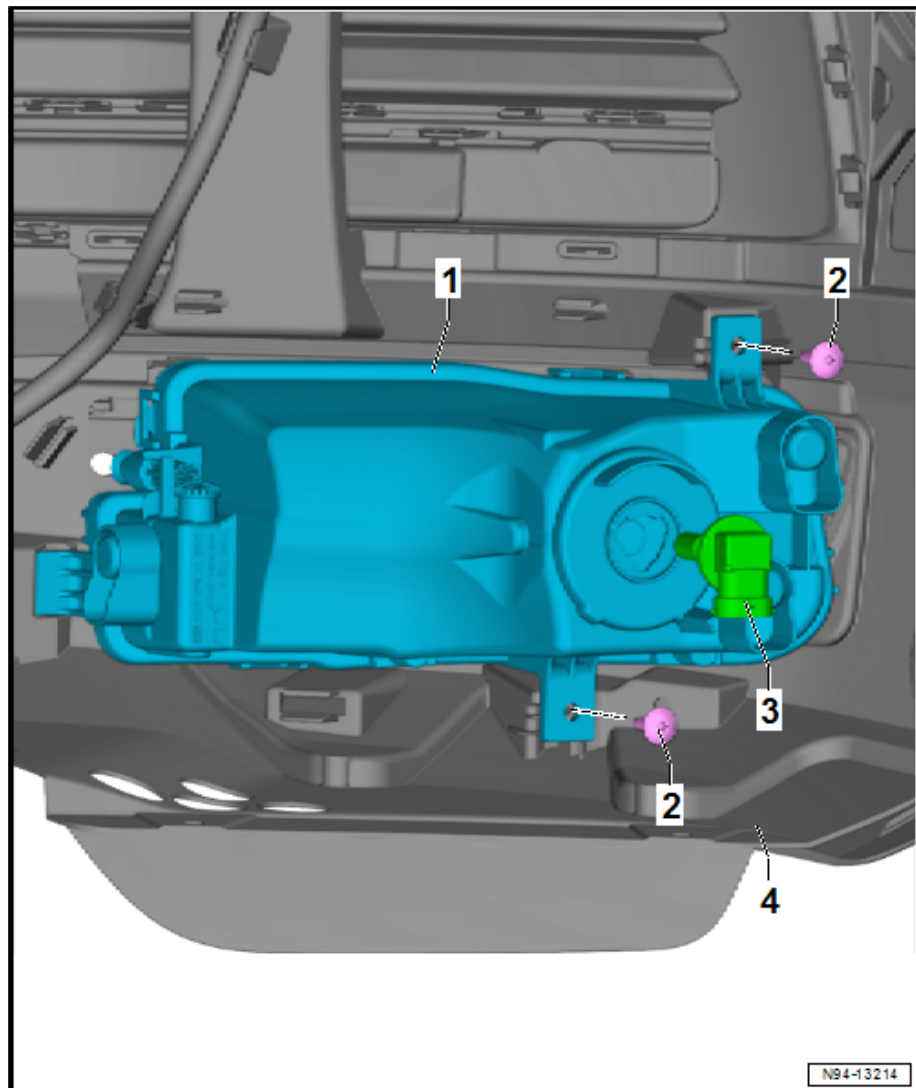
- ❑ Qty. 2
- ❑ 2.2 Nm

#### 3 - Bulb holder with fog light bulb

- ❑ Left fog light bulb - L22-
- ❑ Right fog light bulb - L23-
- ❑ Removing and installing  
⇒ [page 127](#)
- ❑ Also fulfils function of static cornering light - L148- / -L149- depending on equipment

#### 4 - Front bumper cover

- ❑ Removing and installing  
⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Assembly overview – bumper cover

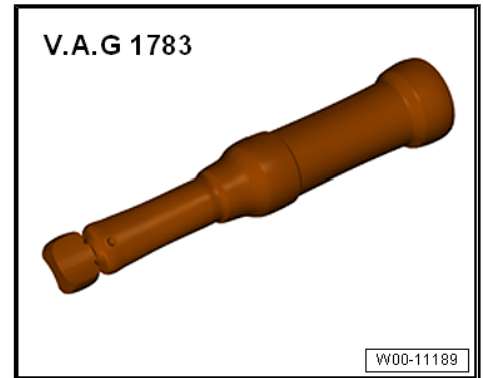


### 2.2 Removing and installing fog light

Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1783-



### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove front bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Removing and installing bumper cover .
- Disconnect electrical connector.
- Remove screws -1-.
- Pull fog light housing -2- sideways out of mounting -3-.

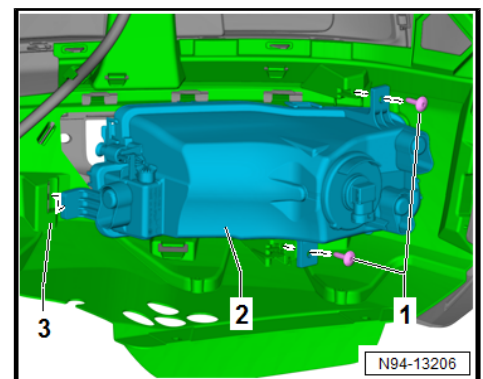
### Installing

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

- Check front fog light settings, and adjust them if necessary ⇒ [page 128](#) .

### Specified torques

- ◆ ⇒ [“2.1 Assembly overview - fog lights”, page 126](#)



## 2.3 Removing and installing fog light bulb - L22- / -L23-



### Note

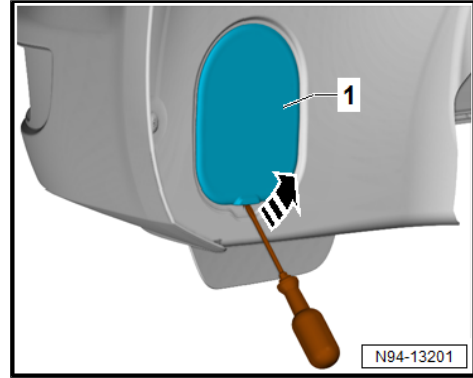
*The left fog light bulb - L22- or right fog light bulb - L23- is permanently fixed in the bulb holder and cannot be renewed individually.*

### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.



- Lever service flap -1- in direction of -arrow- off wheel housing liner.



- Disconnect electrical connector -2-.
- Release bulb holder -1- in direction of -arrow-.
- Remove bulb holder -1-.

### Installing

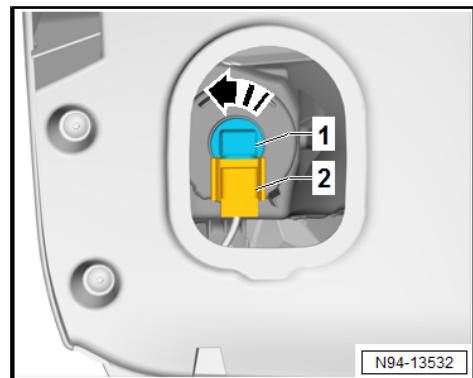
Install in the reverse order of removal, observing the following:



#### Note

*Do not touch bulb glass when installing a bulb. Fingers leave traces of grease on the glass, which evaporate when the bulb is switched on and cause the glass to cloud over.*

- Check functioning of fog light.
- Check fog light settings, and adjust if necessary  
⇒ [page 128](#) .



## 2.4 Adjusting fog lights

Adjusting fog light ⇒ Maintenance ; Booklet 20.1 ; Work descriptions .





### 3 Turn signal repeater

⇒ [“3.1 Removing and installing turn signal repeater”, page 129](#)

⇒ [“3.2 Removing and installing turn signal repeater bulb M18/M19”, page 130](#)

#### 3.1 Removing and installing turn signal repeater

Special tools and workshop equipment required

- ◆ Removal wedge set - VAS 895 015-



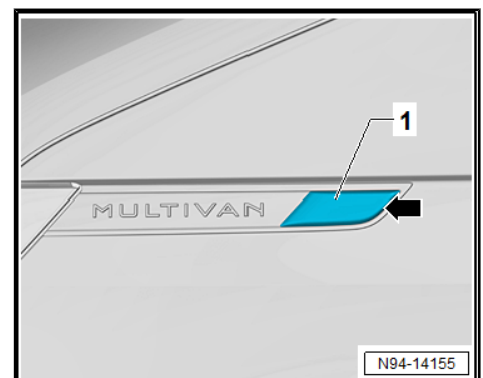
#### NOTICE

Risk of damage to component surfaces by lever tools.

- If a lever tool is used, cover the component in the visible area with commercially available adhesive tape.

#### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Using removal wedge set - VAS 895 015-, lever out turn signal repeater -1- in area indicated by -arrow-.





- Pull out primary locking device -1- in direction of -arrow A-.
- Release primary locking device -1- in direction of -arrow B-.
- Pull off electrical connector -2-.
- Remove turn signal repeater -3-.

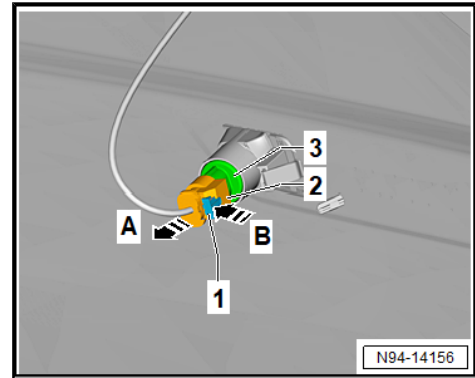
### Installing

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



### Note

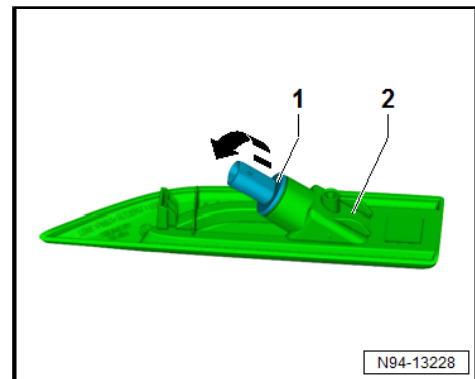
- ◆ *The metallic spring clip in the turn signal repeater can cause damage to the paintwork in the installation opening during removal and installation.*
- ◆ *Check the installation opening for paint damage and, if necessary, undertake corrosion protection measures (wax).*
- Fit electrical connector and engage securely; push in primary locking element.
- Insert turn signal repeater in installation opening at front first with spring clip, and then push it in at rear and engage.



## 3.2 Removing and installing turn signal repeater bulb - M18/M19-

### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove turn signal light => [page 129](#) .
- Release bulb holder -1- in direction of -arrow-.
- Remove bulb holder -1-.

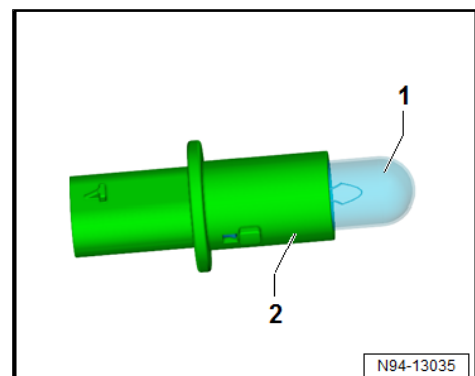


- Pull left turn signal repeater bulb - M18/M19- -1- out of bulb holder -2-.

### Installing

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

- Perform functional check.





## 4 Lights in sill panel moulding

⇒ **“4.1 Removing and installing entry light”, page 131**

### 4.1 Removing and installing entry light

Special tools and workshop equipment required

- ◆ Removal wedge set - VAS 895 015-



#### NOTICE

Risk of damage to component surfaces by lever tools.

- If a lever tool is used, cover the component in the visible area with commercially available adhesive tape.

#### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Lever out entry light using removal wedge set - VAS 895 015- .
- Disconnect electrical connector.

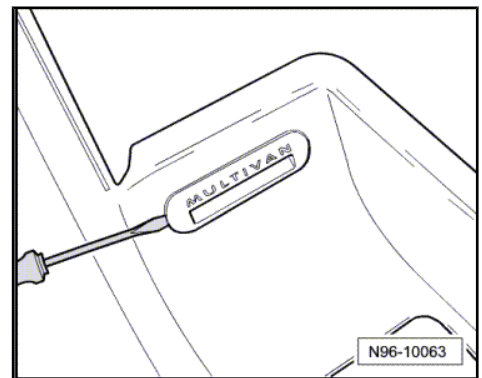
#### Installing

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

- If the event of a defective LED, the entire entry light needs to be renewed.

First fit light on left and then engage spring.

- Perform functional check.





## 5 Tail lights

- ⇒ [“5.1 Assembly overview – tail lights”, page 132](#)
- ⇒ [“5.2 Removing and installing bulb carrier”, page 135](#)
- ⇒ [“5.3 Removing and installing tail light cluster”, page 136](#)
- ⇒ [“5.4 Removing and installing tail light bulb M2 / M4 ”, page 139](#)
- ⇒ [“5.5 Removing and installing rear fog light bulb L46 / L47 ”, page 141](#)
- ⇒ [“5.6 Removing and installing brake light bulb M9 / M10 ”, page 143](#)
- ⇒ [“5.7 Removing and installing reversing light bulb M16 / M17 ”, page 145](#)
- ⇒ [“5.8 Removing and installing turn signal bulb M6 / M8 ”, page 147](#)

### 5.1 Assembly overview – tail lights

- ⇒ [“5.1.1 Assembly overview – tail lights, basic”, page 132](#)
- ⇒ [“5.1.2 Assembly overview – tail lights, LED”, page 134](#)
- ⇒ [“5.1.3 Assembly overview – tail lights, dropside”, page 135](#)

#### 5.1.1 Assembly overview – tail lights, basic



#### Note

- ◆ *The rear fog light bulb is LED and integrated in the tail lights.*
- ◆ *These LEDs cannot be renewed in the course of repair. The entire tail light cluster must be renewed ⇒ [page 136](#) .*



**1 - Ball heads to body**

- Qty. 2
- For securing tail light cluster
- 1.5 Nm

**2 - Electrical connector**

**3 - Expansion nut**

- Qty. 2

**4 - Bolt**

- For bulb carrier on tail light housing
- Qty. 4
- 1 Nm

**5 - Bulb carrier**

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

**6 - Turn signal bulb -M6- / -M8-**

- Removing and installing  
⇒ [page 147](#)

**7 - Reversing light bulb -M16- / -M17-**

- Removing and installing  
⇒ [page 145](#)

**8 - Brake and tail light bulb - M21- / -M22-**

- Removing and installing  
brake light bulb  
⇒ [page 143](#)
- Removing and installing  
tail light bulb  
⇒ [page 139](#)

**9 - Tail light bulb -M2- / -M4-**

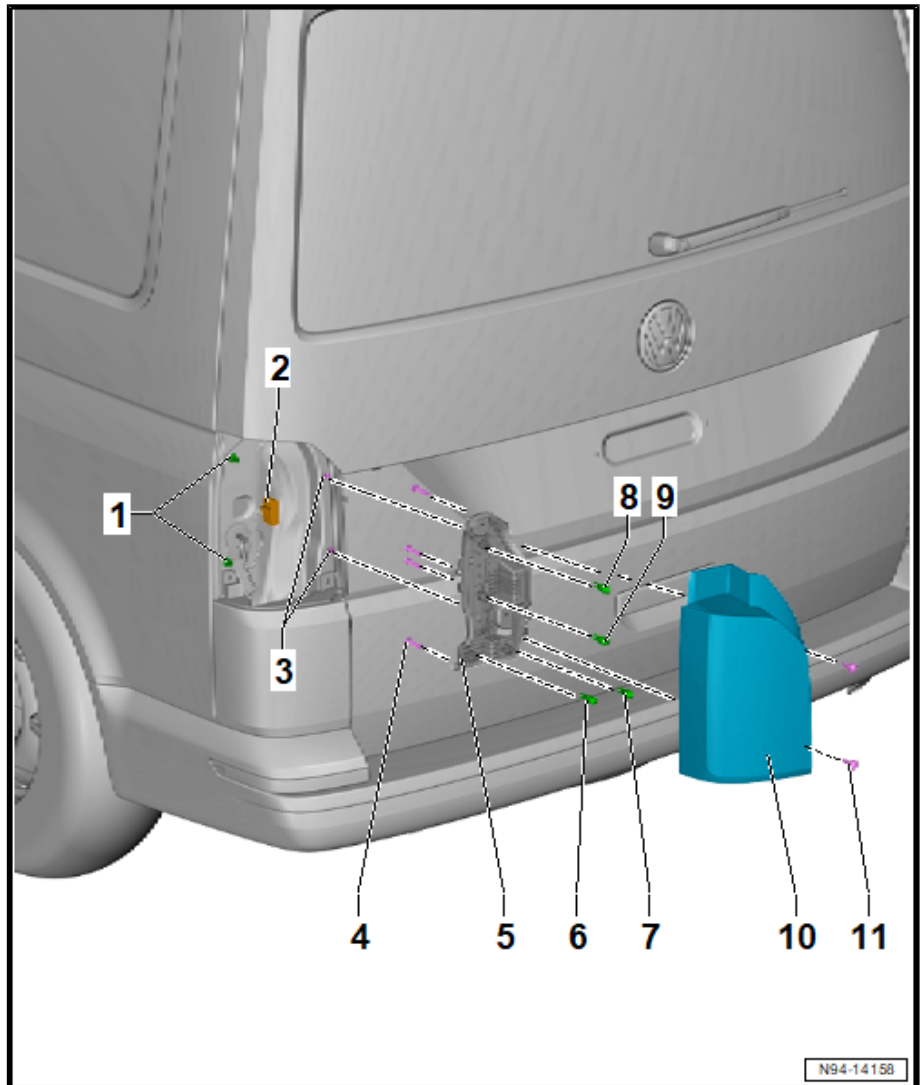
- Removing and installing ⇒ [page 139](#)

**10 - Tail light**

- Left tail light - MX3-
- Right tail light - MX4-
- Removing and installing ⇒ [page 136](#)

**11 - Bolt**

- Qty. 2
- 4 Nm





## 5.1.2 Assembly overview – tail lights, LED

### 1 - Ball heads to body

- Qty. 2
- 1.5 Nm

### 2 - Electrical connector

### 3 - Expansion nut

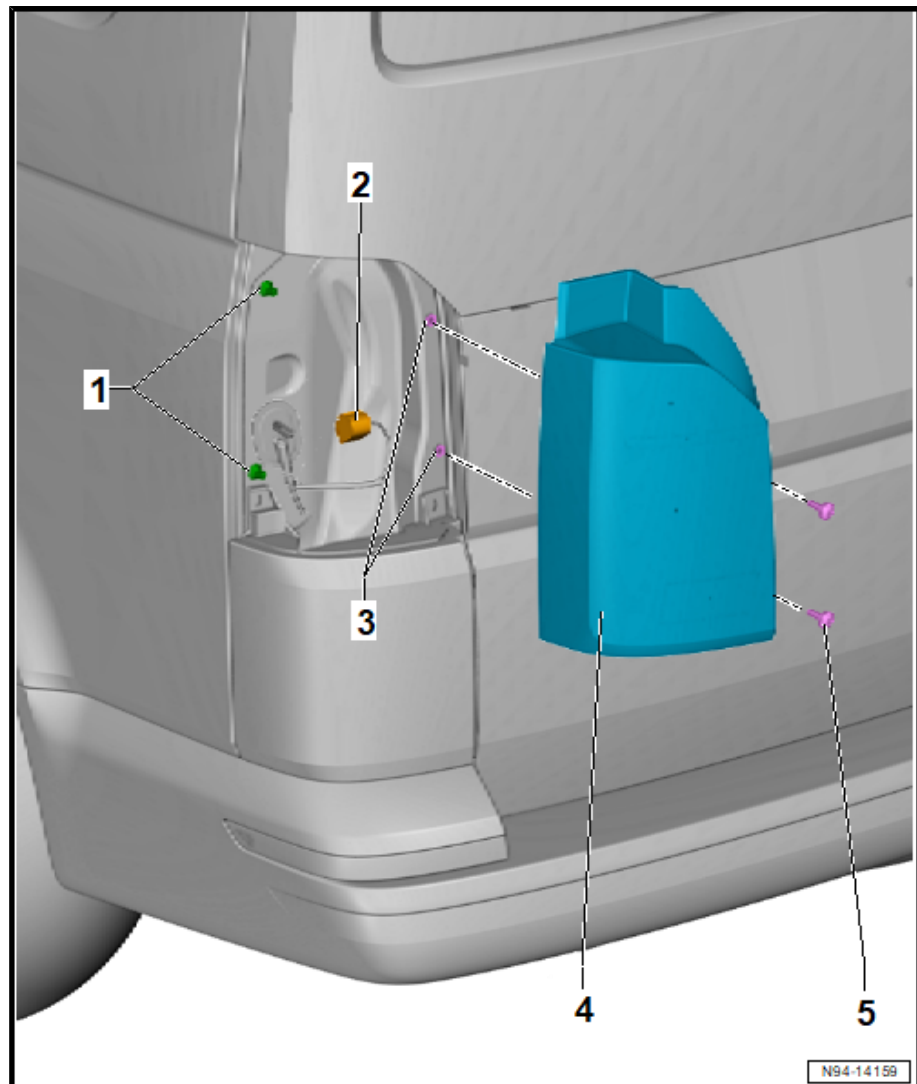
- Qty. 2

### 4 - Tail light

- Left tail light - MX3-
- Right tail light - MX4-
- If the event of a defective LED, the entire tail light cluster must be renewed
- Removing and installing tail light ⇒ [page 136](#)

### 5 - Bolt

- Qty. 2
- 4 Nm





### 5.1.3 Assembly overview – tail lights, dropside

#### 1 - Nut

- Qty. 2
- 5 Nm

#### 2 - Stone deflector

#### 3 - Tail light

- Left tail light - MX3-
- Right tail light - MX4-
- Removing and installing  
⇒ [page 137](#)

#### 4 - Bolt

- Qty. 2

#### 5 - Bulb carrier

#### 6 - Reflector

#### 7 - Rear turn signal bulb -M6- / -M8-

- Removing and installing  
⇒ [page 147](#)

#### 8 - Brake light bulb -M9- / -M10-

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

#### 9 - Tail light bulb -M4- / -M2-

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

#### 10 - Tail light bulb -M4- / -M2-

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

#### 11 - Rear fog light bulb -L46- / -L47-

- Removing and installing  
⇒ [page 141](#)

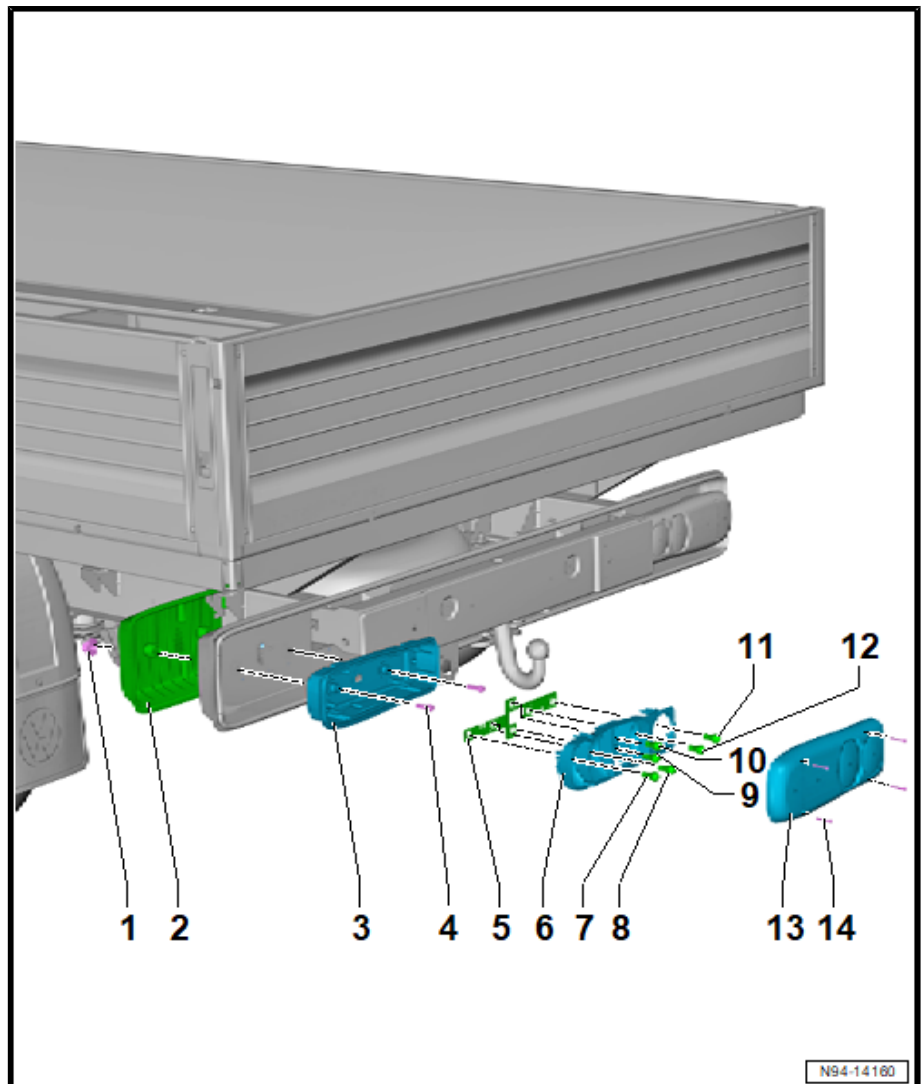
#### 12 - Reversing light bulb -M16- / -M17-

- Removing and installing ⇒ [page 145](#)

#### 13 - Lens

#### 14 - Bolt

- Qty. 4
- 1.5 Nm

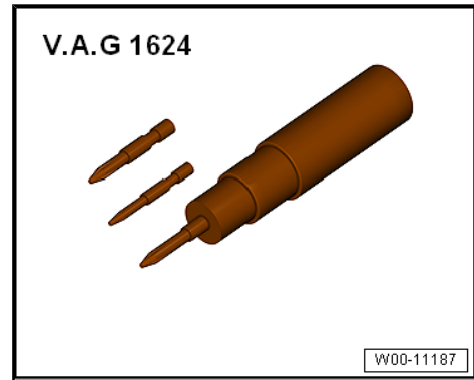


## 5.2 Removing and installing bulb carrier

Special tools and workshop equipment required



- ◆ Torque screwdriver - V.A.G 1624-



### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove tail light ⇒ [page 136](#) .
- Unscrew bolts -arrow-.
- Remove bulb carrier -1- from tail light -2-.

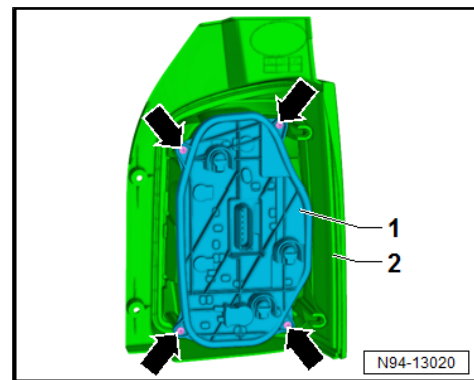
### Installing

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

- Check that seal around bulb carrier is seated correctly and not damaged.

### Specified torques

- ◆ ⇒ [“5.1.1 Assembly overview – tail lights, basic”, page 132](#)



## 5.3 Removing and installing tail light cluster

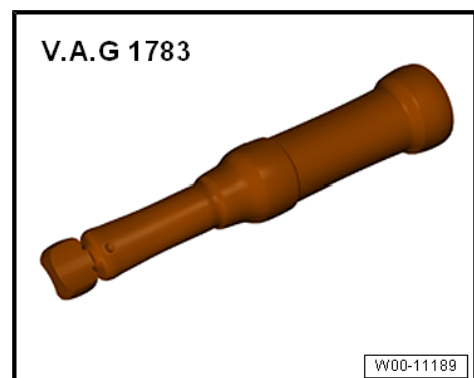
⇒ [“5.3.1 Removing and installing tail light, rear wings doors and rear lid”, page 136](#)

⇒ [“5.3.2 Removing and installing tail light, dropside”, page 137](#)

### 5.3.1 Removing and installing tail light, rear wings doors and rear lid

#### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



### Removing

- Switch off ignition and all electrical consumers.



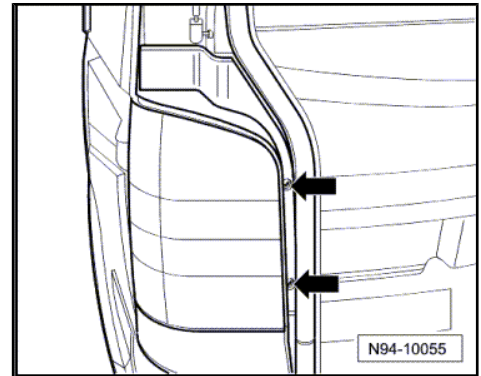


- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.

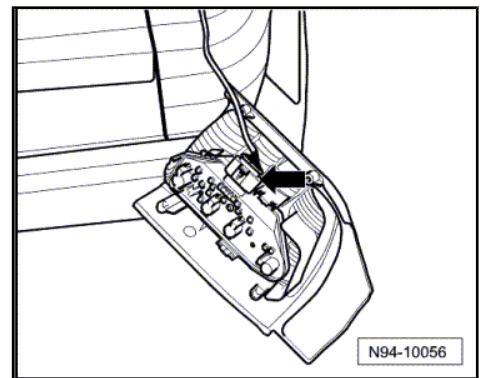
**i** Note

*On vehicles with wing doors, completely open the door on the corresponding side.*

- Unscrew bolts -arrow-.
- Detach tail light cluster outwards from ball studs.



- Disconnect electrical connector -arrow-.



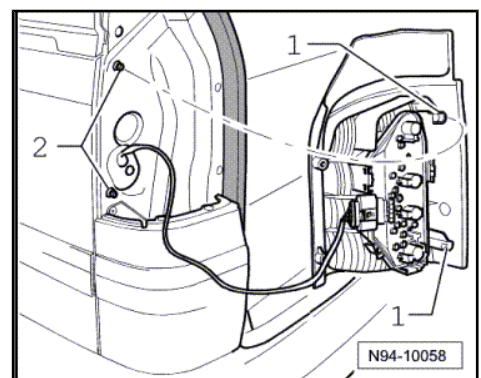
**Installing**

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

- Connect connector and engage it.
- Insert tail light cluster in body aperture.
- Fit mountings -1- on ball heads -2-.
- Swing tail light cluster towards body, align and tighten with bolts.

**Specified torques**

◆ ⇒ ["5.1.1 Assembly overview – tail lights, basic", page 132](#)

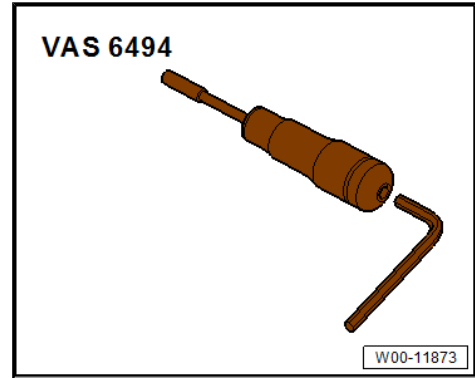


**5.3.2 Removing and installing tail light, drop-side**

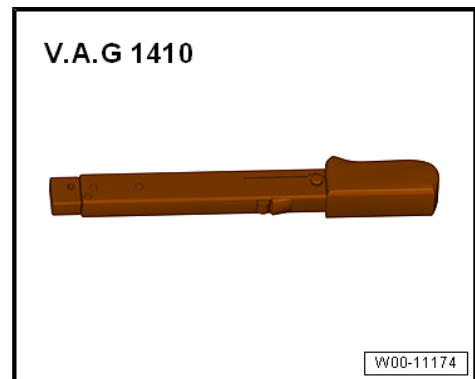
Special tools and workshop equipment required



- ◆ Torque screwdriver - VAS 6494-

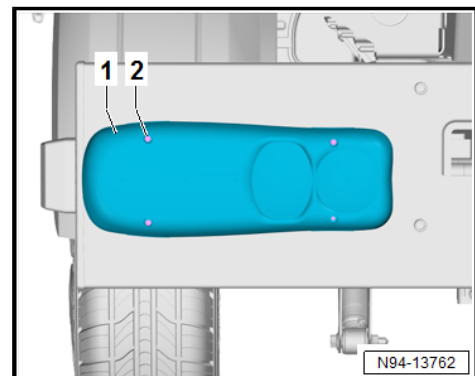


- ◆ Torque wrench - V.A.G 1410-

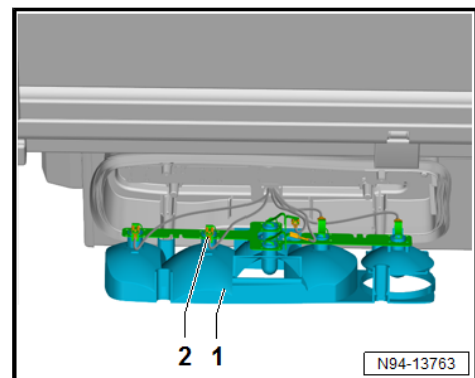


### Removing

- Switch off ignition and all electrical consumers.
- Withdraw ignition key.
- Unscrew bolts -2-.
- Remove lens -1-.

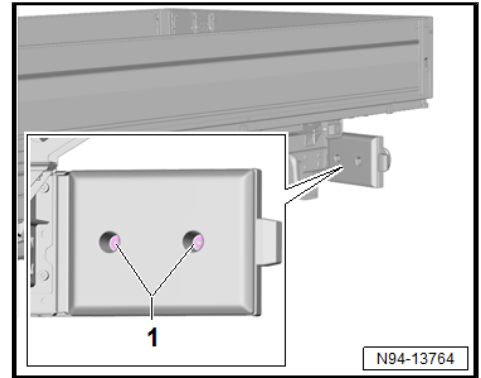


- Pull out reflector with bulb carrier -1-.
- Disconnect electrical connectors -2-.
- Remove reflector with bulb carrier -1-.





- Unscrew nuts -1-.



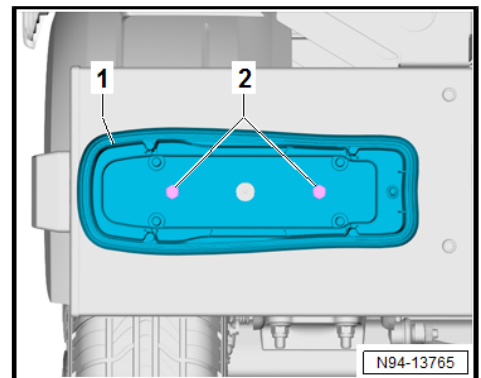
- Remove housing -1- with bolts -2-.

#### Installing

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

#### Specified torques

- ◆ ⇒ ["5.1.3 Assembly overview – tail lights, dropside"](#), page 135 .



## 5.4 Removing and installing tail light bulb - M2- / -M4-

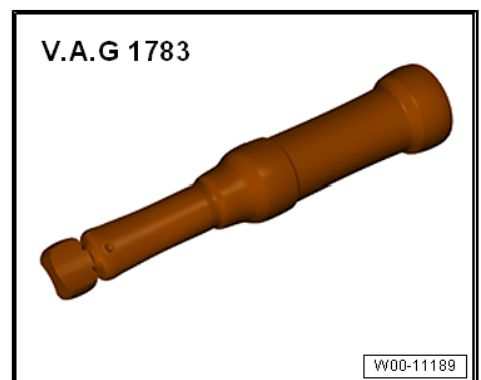
⇒ ["5.4.1 Removing and installing tail light bulb M2 / M4 , basic"](#), page 139

⇒ ["5.4.2 Removing and installing tail light bulb M2 / M4 , dropside"](#), page 140

### 5.4.1 Removing and installing tail light bulb - M2- / -M4- , basic

#### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



#### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove bulb carrier ⇒ [page 135](#) .



- Pull tail light bulb -4- or tail light bulb -1- in a straight line out of bulb carrier -5-.

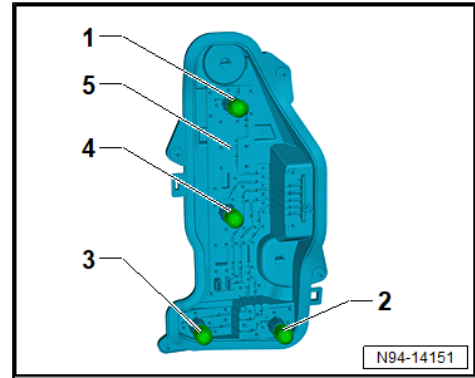
### Installing

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



#### Note

- ◆ *When installing, make sure the bulb carrier is correctly seated. The ingress of water into the tail light will destroy the tail light.*
- ◆ *Do not touch bulb glass when installing a bulb. Fingers leave traces of grease on the glass, which evaporate when the bulb is switched on and cause the glass to cloud over.*



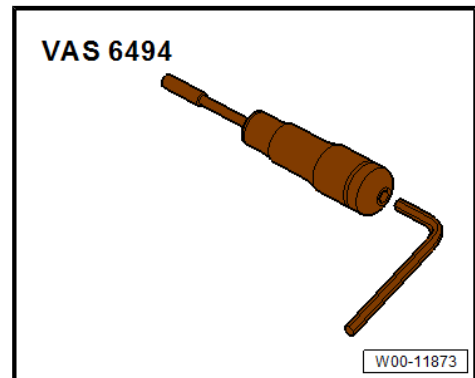
### Specified torques

- ◆ => ["5.1.1 Assembly overview – tail lights, basic", page 132](#) .

## 5.4.2 Removing and installing tail light bulb - M2- / -M4- , dropside

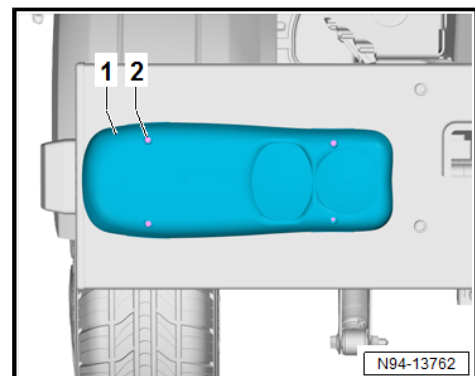
### Special tools and workshop equipment required

- ◆ Torque screwdriver - VAS 6494-



### Removing

- Switch off ignition and all electrical consumers.
- Withdraw ignition key.
- Unscrew bolts -2-.
- Remove lens -1-.





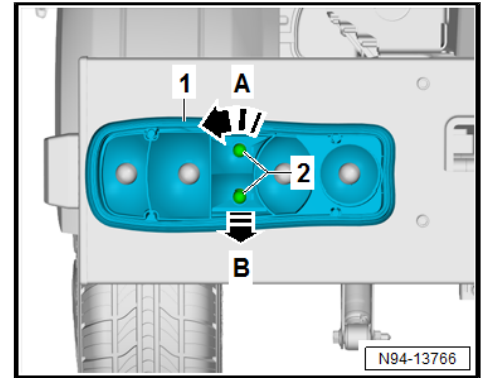
- Release tail light bulb -M2- / -M4- -2- in direction of -arrow A-.
- Detach tail light bulb -M2- / -M4- -2- from bulb carrier -1- in direction of -arrow B-.

### Installing

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

#### Note

- ◆ *When installing, make sure that lens is correctly seated. The ingress of water into the tail light will destroy the tail light.*
  - ◆ *Do not touch bulb glass when installing a bulb. Fingers leave traces of grease on the glass, which evaporate when the bulb is switched on and cause the glass to cloud over.*
- Check function of tail lights.



### Specified torques

- ◆ ⇒ [“5.1.3 Assembly overview – tail lights, dropside”, page 135](#)

## 5.5 Removing and installing rear fog light bulb -L46- / -L47-

⇒ [“5.5.1 Removing and installing rear fog light bulb L46 / L47, basic”, page 141](#)

⇒ [“5.5.2 Removing and installing rear fog light bulb L46 / L47, LED”, page 141](#)

⇒ [“5.5.3 Removing and installing rear fog light bulb L46 / L47, dropside”, page 141](#)

### 5.5.1 Removing and installing rear fog light bulb -L46- / -L47- , basic

#### Note

- ◆ *The rear fog light bulb is LED and integrated in the tail lights.*
- ◆ *These LEDs cannot be renewed in the course of repair. The entire tail light cluster must be renewed ⇒ [page 136](#) .*

### 5.5.2 Removing and installing rear fog light bulb -L46- / -L47- , LED

#### Note

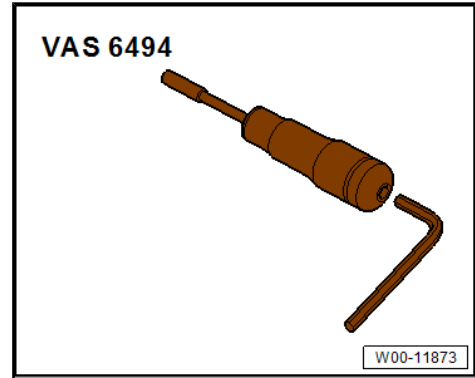
- ◆ *The rear fog light bulb is LED and integrated in the tail lights.*
- ◆ *These LEDs cannot be renewed in the course of repair. The entire tail light cluster must be renewed ⇒ [page 136](#) .*

### 5.5.3 Removing and installing rear fog light bulb -L46- / -L47- , dropside

Special tools and workshop equipment required

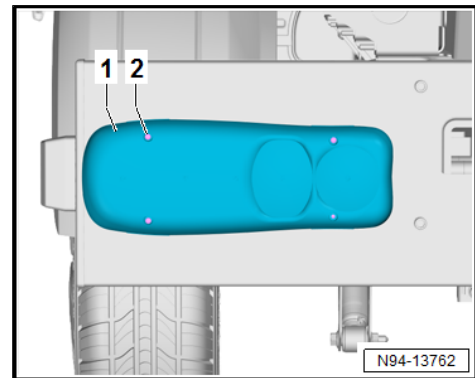


- ◆ Torque screwdriver - VAS 6494-



### Removing

- Switch off ignition and all electrical consumers.
- Withdraw ignition key.
- Unscrew bolts -2-.
- Remove lens -1-.



- Release rear fog light bulb -L46- / -L47- -2- in direction of -arrow A-.
- Detach rear fog light bulb -L46- / -L47- -2- from bulb carrier -1- in direction of -arrow B-.

### Installing

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



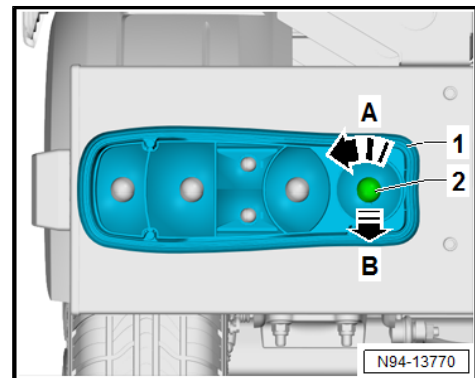
#### Note

- ◆ *When installing, make sure that lens is correctly seated. The ingress of water into the tail light will destroy the tail light.*
- ◆ *Do not touch bulb glass when installing a bulb. Fingers leave traces of grease on the glass, which evaporate when the bulb is switched on and cause the glass to cloud over.*

- Check function of tail lights.

### Specified torques

- ◆ ⇒ ["5.1.3 Assembly overview – tail lights, dropside", page 135](#)





## 5.6 Removing and installing brake light bulb -M9- / -M10-

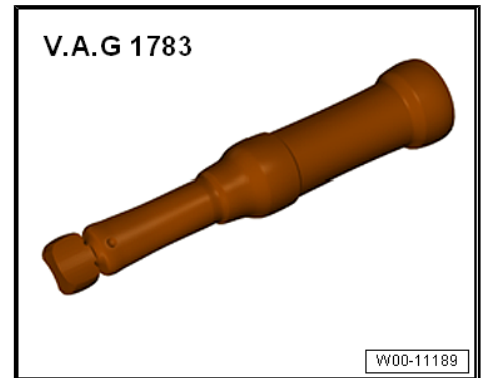
⇒ [“5.6.1 Removing and installing brake light bulb M9 / M10 , basic”, page 143](#)

⇒ [“5.6.2 Removing and installing brake light bulb M9 / M10 , drop-side”, page 144](#)

### 5.6.1 Removing and installing brake light bulb -M9- / -M10- , basic

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



#### Note

*Brake light bulb -M9- / -M10- and side light bulb -M2- / -M4- are one component.*

#### Removing

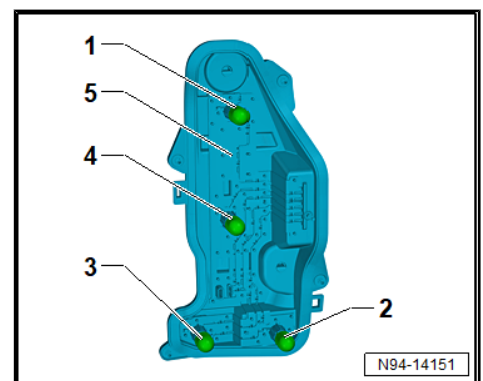
- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove bulb carrier ⇒ [page 135](#) .
- Pull out brake light bulb -1- in a straight line out of bulb carrier -5-.

#### Installing

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

#### Note

- ◆ *When installing, make sure the bulb carrier is correctly seated. The ingress of water into the tail light will destroy the tail light.*
- ◆ *Do not touch bulb glass when installing a bulb. Fingers leave traces of grease on the glass, which evaporate when the bulb is switched on and cause the glass to cloud over.*



#### Specified torques

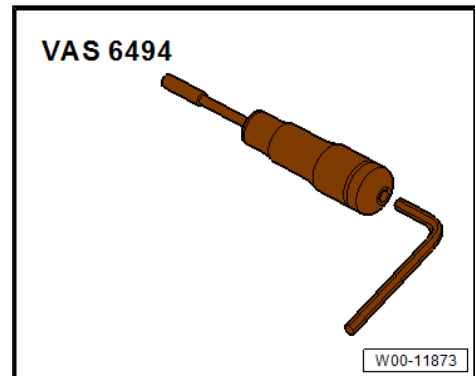
- ◆ ⇒ [“5.1.1 Assembly overview – tail lights, basic”, page 132](#)



## 5.6.2 Removing and installing brake light bulb -M9- / -M10- , dropside

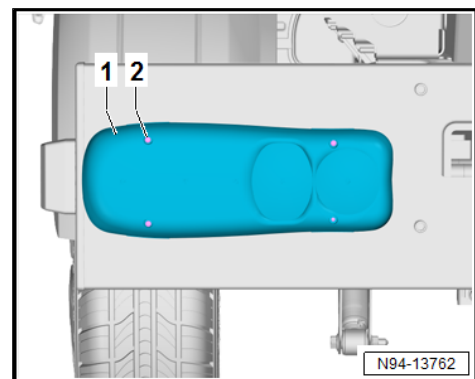
### Special tools and workshop equipment required

- ◆ Torque screwdriver - VAS 6494-

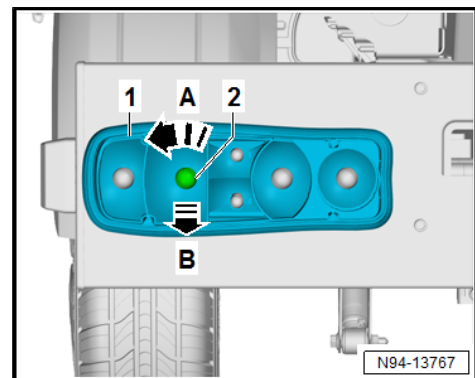


### Removing

- Switch off ignition and all electrical consumers.
- Withdraw ignition key.
- Unscrew bolts -2-.
- Remove lens -1-.



- Release brake light bulb -M9- / -M10- -2- in direction of -arrow A-.
- Detach brake light bulb -M9- / -M10- -2- from bulb carrier -1- in direction of -arrow B-.



### Installing

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



#### Note

- ◆ *When installing, make sure that lens is correctly seated. The ingress of water into the tail light will destroy the tail light.*
- ◆ *Do not touch bulb glass when installing a bulb. Fingers leave traces of grease on the glass, which evaporate when the bulb is switched on and cause the glass to cloud over.*
- Check function of tail lights.

### Specified torques

- ◆ => ["5.1.3 Assembly overview – tail lights, dropside", page 135](#).





## 5.7 Removing and installing reversing light bulb -M16- / -M17-

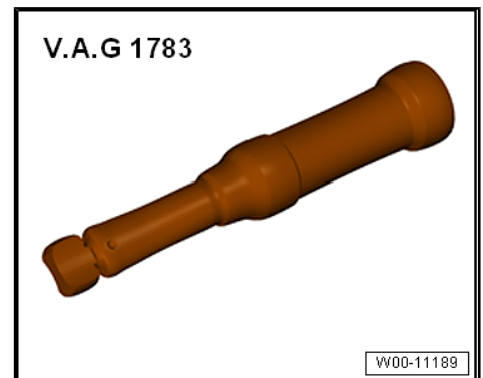
⇒ [“5.7.1 Removing and installing reversing light bulb M16 / M17 , basic”, page 145](#)

⇒ [“5.7.2 Removing and installing reversing light bulb M16 / M17 , dropside”, page 145](#)

### 5.7.1 Removing and installing reversing light bulb -M16- / -M17- , basic

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



#### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove bulb carrier on front passenger side ⇒ [page 135](#) .
- Pull out reversing light bulb -2- in a straight line out of bulb carrier -5-.

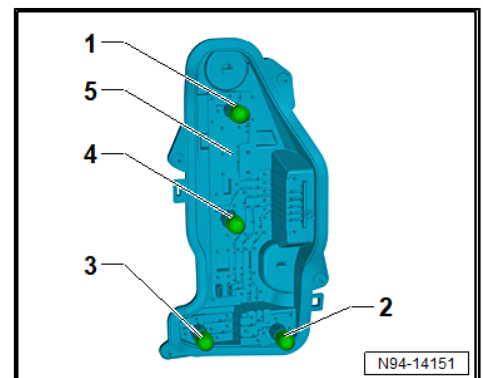
#### Installing

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



#### Note

- ◆ *When installing, make sure the bulb carrier is correctly seated. The ingress of water into the tail light will destroy the tail light.*
- ◆ *Do not touch bulb glass when installing a bulb. Fingers leave traces of grease on the glass, which evaporate when the bulb is switched on and cause the glass to cloud over.*



#### Specified torques

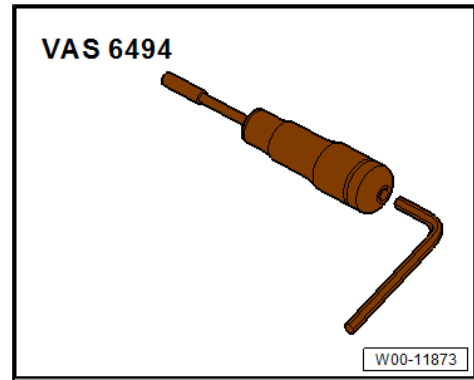
- ◆ ⇒ [“5.1.1 Assembly overview – tail lights, basic”, page 132](#) .

### 5.7.2 Removing and installing reversing light bulb -M16- / -M17- , dropside

Special tools and workshop equipment required

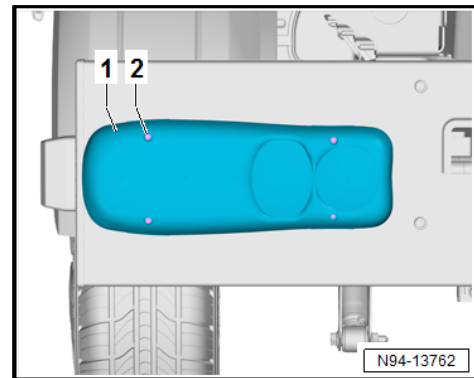


- ◆ Torque screwdriver - VAS 6494-



### Removing

- Switch off ignition and all electrical consumers.
- Withdraw ignition key.
- Unscrew bolts -2-.
- Remove lens -1-.



- Release reversing light bulb -M16- / -M17- -2- in direction of -arrow A-.
- Detach reversing light bulb -M16- / -M17- -2- from bulb carrier -1- in direction of -arrow B-.

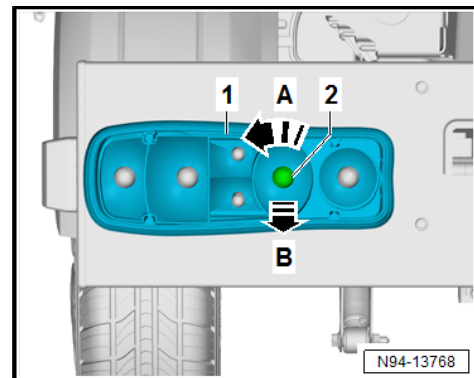
### Installing

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



#### Note

- ◆ *When installing, make sure that lens is correctly seated. The ingress of water into the tail light will destroy the tail light.*
- ◆ *Do not touch bulb glass when installing a bulb. Fingers leave traces of grease on the glass, which evaporate when the bulb is switched on and cause the glass to cloud over.*
- Check function of tail lights.



### Specified torques

- ◆ ⇒ [“5.1.3 Assembly overview – tail lights, dropside”](#), page 135 .



## 5.8 Removing and installing turn signal bulb -M6- / -M8-

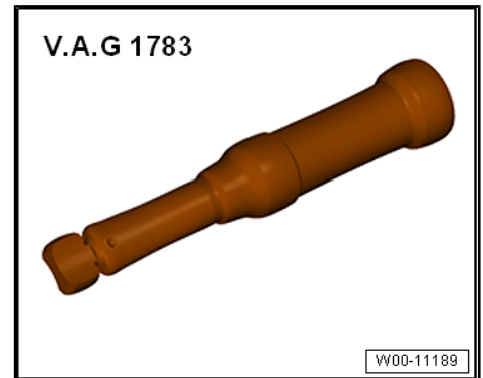
⇒ [“5.8.1 Removing and installing turn signal bulb M6 / M8 , basic”, page 147](#)

⇒ [“5.8.2 Removing and installing turn signal bulb M6 / M8 , drop-side”, page 147](#)

### 5.8.1 Removing and installing turn signal bulb -M6- / -M8- , basic

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



#### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove bulb carrier ⇒ [page 135](#) .
- Pull out turn signal bulb -3- in a straight line out of bulb carrier -5-.

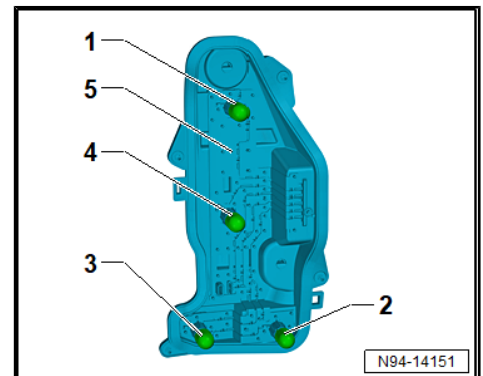
#### Installing

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



#### Note

- ◆ *When installing, make sure the bulb carrier is correctly seated. The ingress of water into the tail light will destroy the tail light.*
- ◆ *Do not touch bulb glass when installing a bulb. Fingers leave traces of grease on the glass, which evaporate when the bulb is switched on and cause the glass to cloud over.*



#### Specified torques

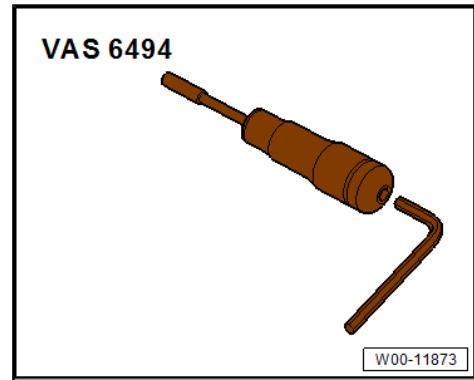
- ◆ ⇒ [“5.1.1 Assembly overview – tail lights, basic”, page 132](#) .

### 5.8.2 Removing and installing turn signal bulb -M6- / -M8- , drop-side

Special tools and workshop equipment required

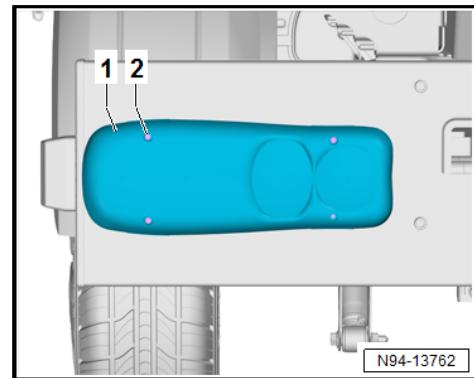


- ◆ Torque screwdriver - VAS 6494-



### Removing

- Switch off ignition and all electrical consumers.
- Withdraw ignition key.
- Unscrew bolts -2-.
- Remove lens -1-.



- Release turn signal bulb -M6- / -M8- -2- in direction of -arrow A-.
- Detach turn signal bulb -M6- / -M8- -2- from bulb carrier -1- in direction of -arrow B-.

### Installing

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



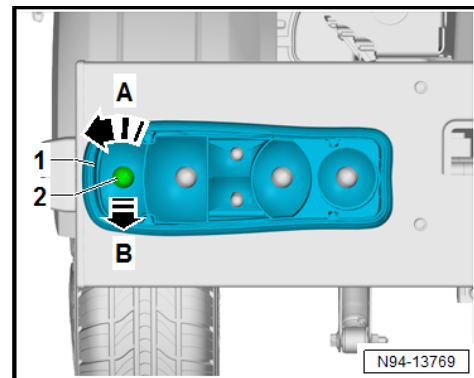
#### Note

- ◆ *When installing, make sure that lens is correctly seated. The ingress of water into the tail light will destroy the tail light.*
- ◆ *Do not touch bulb glass when installing a bulb. Fingers leave traces of grease on the glass, which evaporate when the bulb is switched on and cause the glass to cloud over.*

- Check function of tail lights.

### Specified torques

- ◆ => ["5.1.3 Assembly overview – tail lights, dropside"](#), page 135 .





## 6 High-level brake light

⇒ [“6.1 Removing and installing high-level brake light”, page 149](#)

### 6.1 Removing and installing high-level brake light

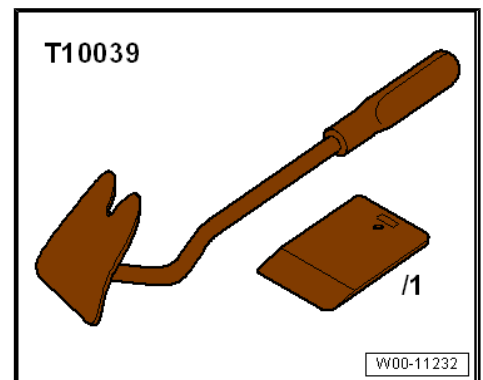
⇒ [“6.1.1 Removing and installing high-level brake light, vehicles with rear lid”, page 149](#)

⇒ [“6.1.2 Removing and installing high-level brake light, vehicles with rear wing doors”, page 150](#)

#### 6.1.1 Removing and installing high-level brake light, vehicles with rear lid

Special tools and workshop equipment required

- ◆ Plastic wedge - T10039/1-



#### NOTICE

Risk of damage to component surfaces by lever tools.

- If a lever tool is used, cover the component in the visible area with commercially available adhesive tape.

#### Note

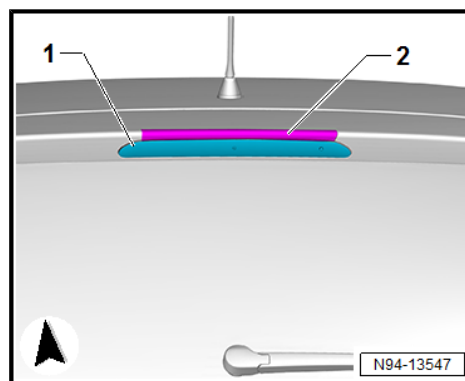
*The high-level brake light cannot be removed intact. The high-level brake light must be renewed if removed ⇒ Electronic parts catalogue .*

#### Removing

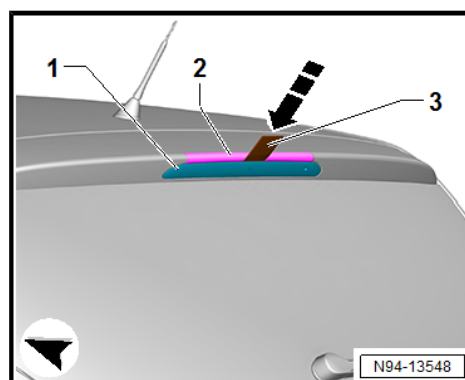
- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.



- Attach a strip of adhesive tape -2- to rear lid area above high-level brake light -1-.



- Insert wedge - T10039/1- -3- at top between high-level brake light -1- and rear lid.
- Release catch of high-level brake light bulb - M25- by pushing assembly wedge in direction of travel.
- Remove high-level brake light bulb - M25- from rear lid, while taking into account the length of connected wires.



- Disconnect electrical connector -1- and remove high-level brake light bulb - M25- -2-.

### Installing

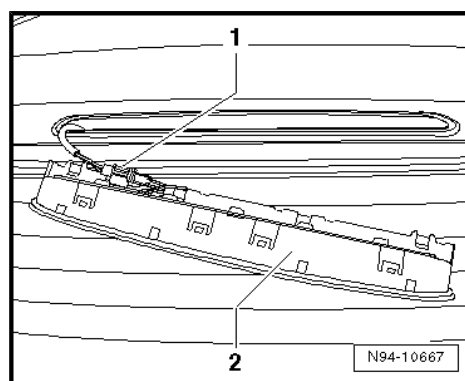
Install in the reverse order of removal, observing the following:



#### Note

- ◆ *If the event of a defective LED, the entire high-level brake light needs to be renewed.*
- ◆ *When installing high-level brake light, make sure seal is correctly seated. The seal must not form loops or be damaged.*

- Push on connector.
- Guide high-level brake light into rear lid.
- Engage locking devices at top.
- Engage retaining springs at bottom.
- Check function of high-level brake light bulb - M25- .



## 6.1.2 Removing and installing high-level brake light, vehicles with rear wing doors



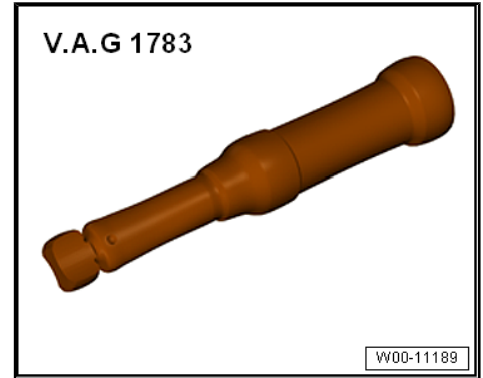
#### Note

*The high-level brake light bulb - M25- is divided for vehicles with wing doors. Pay attention to correct side of vehicle when ordering replacement part → Electronic parts catalogue .*

Special tools and workshop equipment required

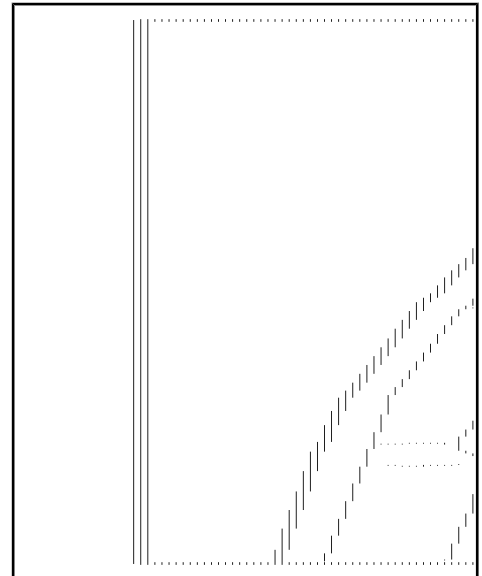


- ◆ Torque wrench - V.A.G 1783-



### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove screws -2-.
- Remove high-level brake light -1-.



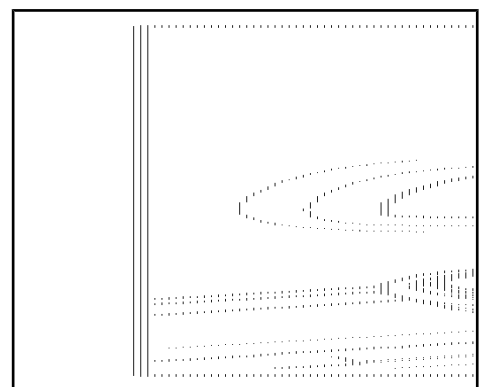
- Release connector and pull it off in -direction of arrow-.
- Remove high-level brake light - M25- .

### Installing

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

#### Specified torques

Component	Specified torque
High-level brake light bulb - M25- to body	1.5 Nm





## 7 Number plate light

⇒ [“7.1 Removing and installing number plate light X4 / X5”, page 152](#)

⇒ [“7.2 Removing and installing bulb for number plate light X4 / X5”, page 154](#)

### 7.1 Removing and installing number plate light -X4- / -X5-

⇒ [“7.1.1 Removing and installing number plate light, rear lid or rear wing door”, page 152](#)

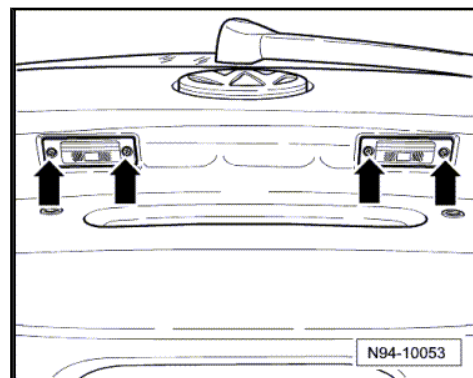
⇒ [“7.1.2 Removing and installing number plate light, rear lid or rear wing door \(LED\)”, page 152](#)

⇒ [“7.1.3 Removing and installing number plate light, dropside vehicles”, page 153](#)

#### 7.1.1 Removing and installing number plate light, rear lid or rear wing door

##### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Unscrew bolts -arrow-.
- Remove number plate light - X- .
- Disconnect electrical connector.



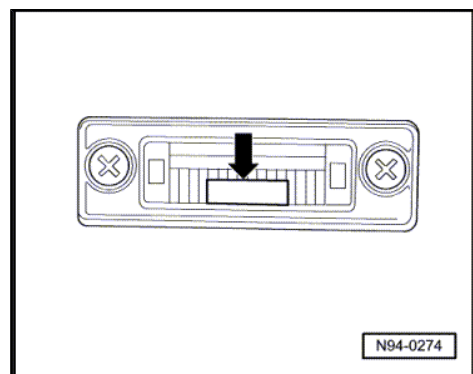
##### Installing

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



##### Note

*A small silver-coloured anti-dazzle strip is attached to the lens of the number plate light - X- -arrow-. When the lens is installed, it must always point towards the bumper.*



#### 7.1.2 Removing and installing number plate light, rear lid or rear wing door (LED)

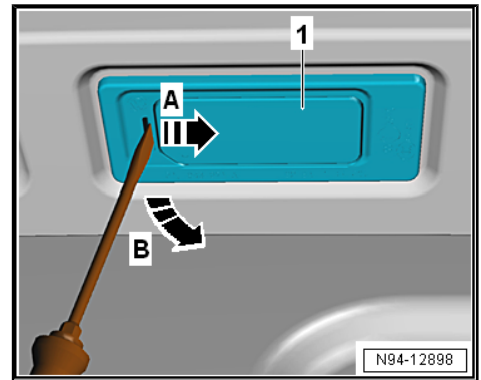
##### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.





- Release right number plate light - X5- -1- in direction of -arrow A-
- Swing out right number plate light - X5- -1- in direction of -arrow B-



- Disconnect connector -1-.
- Remove right number plate light - X5- -2-.

### Installing

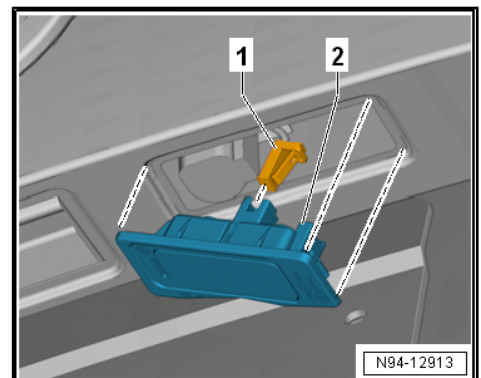
Install in the reverse order of removal, observing the following:



### Note

*Insert number plate light into rear lid so that retaining clip points to right-hand side of vehicle.*

- Perform functional check.



## 7.1.3 Removing and installing number plate light, dropside vehicles

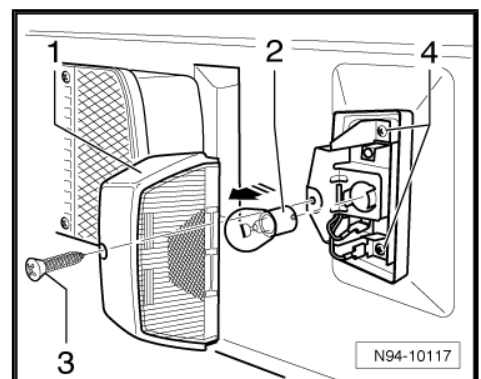
### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove bolt -3-.
- Detach cap -1-.
- Pull off connectors.
- Unscrew bolts -4-.
- Detach lower section of housing.

### Installing

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

- Perform functional check.





## 7.2 Removing and installing bulb for number plate light - X4- / -X5-

⇒ [“7.2.1 Removing and installing bulb for number plate light, rear lid or rear wing door”, page 154](#)

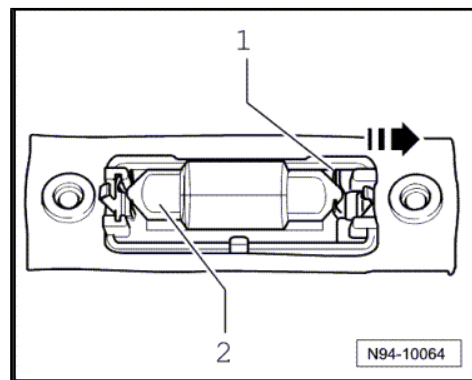
⇒ [“7.2.2 Removing and installing bulb for number plate light, rear lid or rear wing door \(LED\)”, page 154](#)

⇒ [“7.2.3 Removing and installing bulb for number plate light, dropside vehicles”, page 155](#)

### 7.2.1 Removing and installing bulb for number plate light, rear lid or rear wing door

#### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove number plate light ⇒ [page 152](#) .
- Push contact plate -1- in direction of -arrow-.
- Remove bulb -2- from holder.



#### Installing

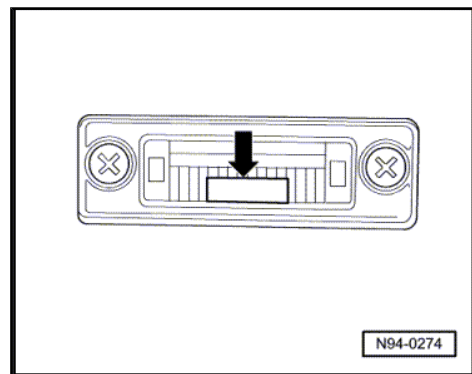
Install in the reverse order of removal, observing the following:



#### Note

- ◆ Do not touch bulb glass when installing a bulb. Fingers leave traces of grease on the glass, which evaporate when the bulb is switched on and cause the glass to cloud over.
- ◆ A small silver-coloured anti-dazzle strip is attached to the lens of the number plate light - X- -arrow-. When the lens is installed, it must always point towards the bumper.

- Perform functional check.



### 7.2.2 Removing and installing bulb for number plate light, rear lid or rear wing door (LED)



#### Note

The number plate light - X- comprises an LED which cannot be renewed individually. In the event of damage, the entire number plate light must be renewed ⇒ [page 152](#) .



### 7.2.3 Removing and installing bulb for number plate light, dropside vehicles

#### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove bolt -3-.
- Detach cap -1-.
- Push bulb -2- in bulb holder, and release in anti-clockwise direction.
- Remove bulb -2- in direction of -arrow-.

#### Installing

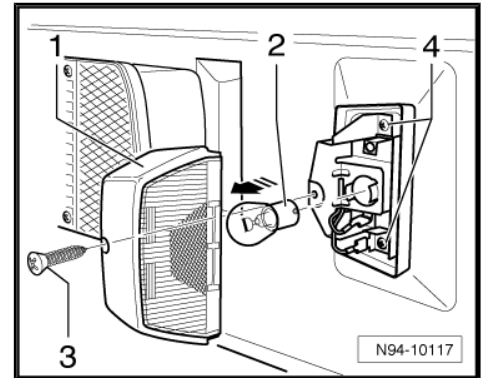
Install in the reverse order of removal, observing the following:



#### Note

*Do not touch bulb glass when installing a bulb. Fingers leave traces of grease on the glass, which evaporate when the bulb is switched on and cause the glass to cloud over.*

- Perform functional check.





## 8 Steering column switch module

⇒ [“8.1 Assembly overview - steering column switch module”, page 156](#)

⇒ [“8.2 Removing and installing steering column switch module”, page 157](#)

⇒ [“8.3 Removing and installing steering column electronics control unit J527”, page 159](#)

⇒ [“8.4 Removing and installing base for steering column combination switch”, page 160](#)

⇒ [“8.5 Removing and installing turn signal switch E2”, page 161](#)

⇒ [“8.6 Removing and installing cruise control system switch E45”, page 162](#)

⇒ [“8.7 Removing and installing intermittent wiper switch E22”, page 162](#)

⇒ [“8.8 Removing and installing ignition/starter switch”, page 162](#)

⇒ [“8.9 Removing and installing lock cylinder”, page 163](#)

⇒ [“8.11 Removing and installing ignition key withdrawal lock solenoid N376”, page 167](#)

⇒ [“8.10 Removing and installing steering lock housing”, page 165](#)

### 8.1 Assembly overview - steering column switch module



**1 - Shear bolt**

- For steering lock housing
- Qty. 2

**2 - Ignition key withdrawal lock solenoid - N376-**

- Only vehicles with dual clutch gearbox
- Removing and installing ⇒ [page 167](#)

**3 - Ignition key**

**4 - Lock cylinder**

- With immobiliser reader coil - D2-
- The immobiliser reader coil - D2- is joined to the lock cylinder and cannot be renewed individually.
- Removing and installing lock cylinder ⇒ [page 163](#)

**5 - Steering column combination switch - E595-**

- With turn signal switch - E2- / intermittent wiper switch - E22-
- Vehicles with cruise control system: with cruise control system switch - E45- .
- Removing and installing ⇒ [page 161](#)

**6 - Steering column electronics control unit - J527-**

- With airbag coil connector and return ring with slip ring - F138-
- Removing and installing ⇒ [page 159](#)

**7 - Bolt**

- Qty. 3
- 1.1 Nm

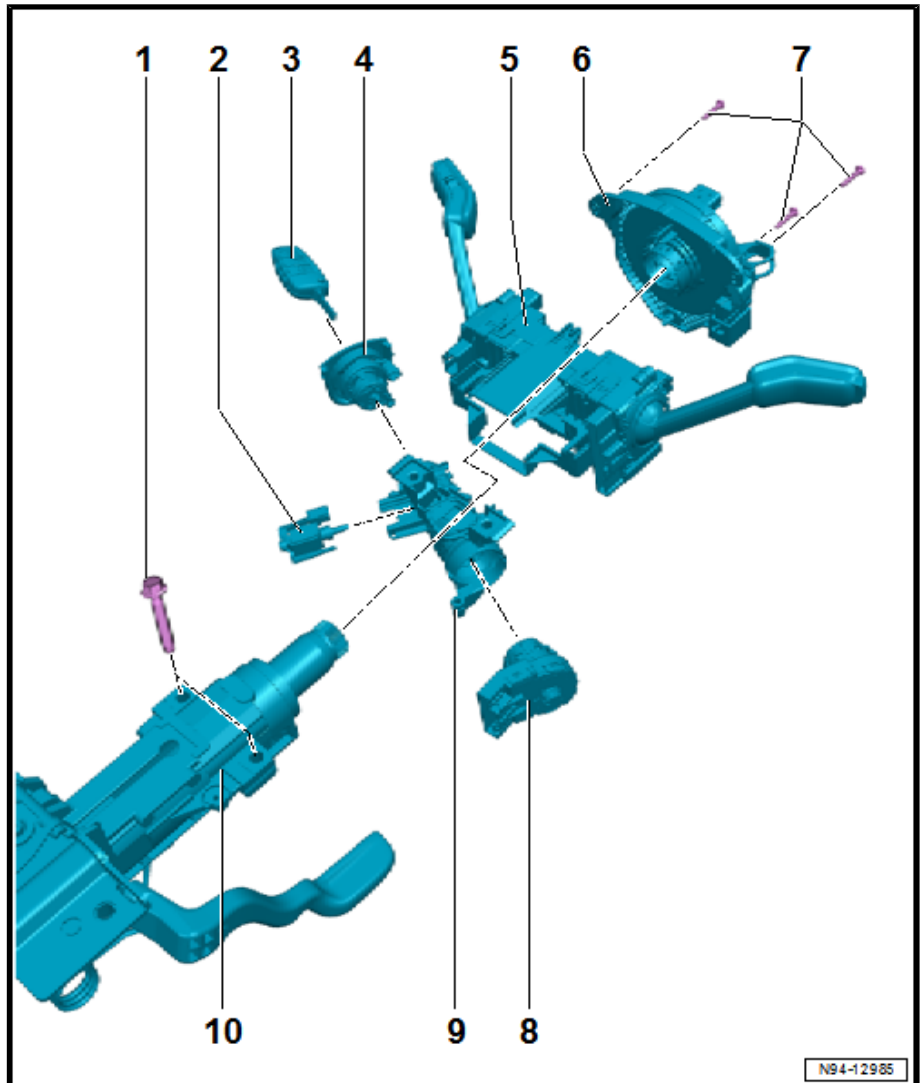
**8 - Ignition/starter switch - D-**

- Removing and installing ⇒ [page 162](#)

**9 - Steering lock housing**

- Removing and installing ⇒ [page 165](#)

**10 - Steering column**

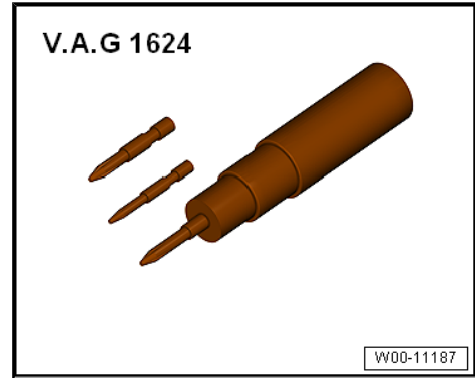


**8.2 Removing and installing steering column switch module**

Special tools and workshop equipment required



- ◆ Torque screwdriver - V.A.G 1624-



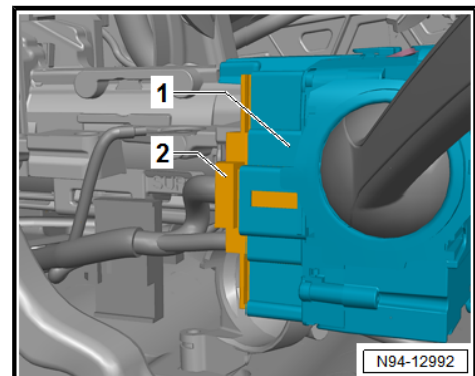
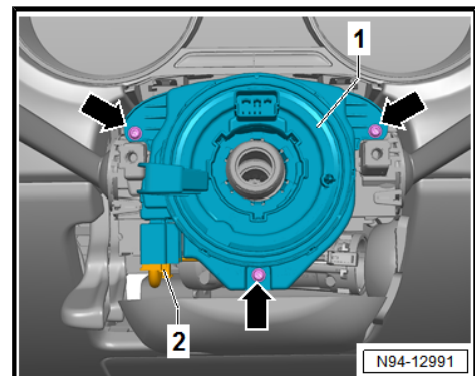
### Removing

- Set steering wheel to centre position with wheels pointing straight ahead.
- Move steering wheel to rearmost and lowest position. Use the full range of the steering column adjustment for this purpose.
- Remove steering wheel ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering wheel; Removing and installing steering wheel .
- Remove lower steering column trim ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments and covers; Removing and installing lower steering column trim .

### NOTICE

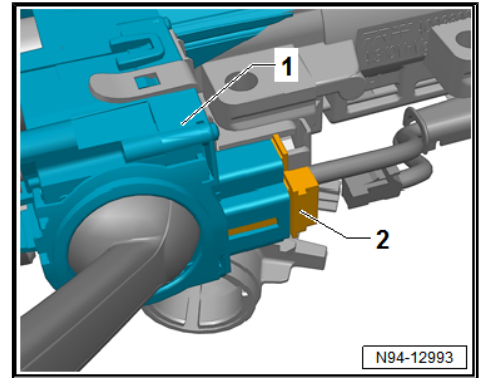
#### Risk of damage to return ring by turning.

- Do not turn airbag coil connector and return ring with slip ring - F138- out of their position.
- Disconnect connector -2- from steering column electronics control unit - J527- -1-.
- Disconnect left connector -2- from steering column combination switch - E595- -1-.

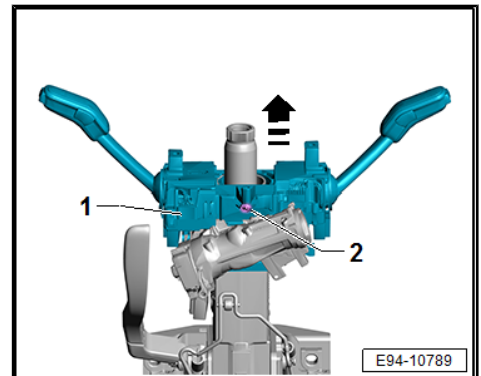




- Disconnect right connector -2- from steering column combination switch - E595- -1-.



- Remove lower bolt -2-.
- Remove steering column combination switch - E595- -1- in -direction of arrow- from steering column.



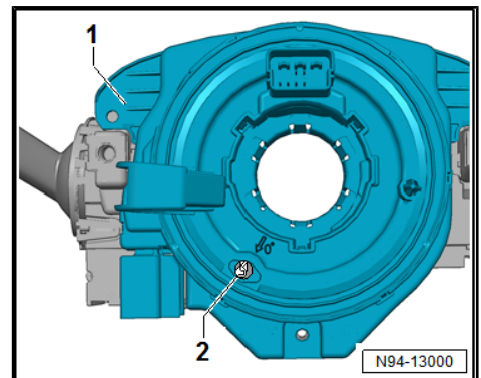
**Installing**

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

- The following must be checked before installing the steering column switch module -1-:
  - The airbag coil connector and return ring -2- must be visible through the aperture.

**Specified torques**

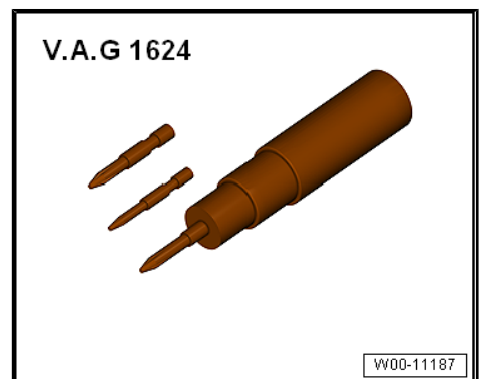
Component	Specified torque
Steering column combination switch - E595- to base	1.1 Nm



**8.3 Removing and installing steering column electronics control unit - J527-**

**Special tools and workshop equipment required**

- ◆ Torque screwdriver - V.A.G 1624-





### Note

If the steering column electronics control unit - J527- is renewed, start the respective function ⇒ Vehicle diagnostic tester.

### Removing

- Set steering wheel to centre position with wheels pointing straight ahead.
- Move steering wheel to rearmost and lowest position. Use the full range of the steering column adjustment for this purpose.
- Remove steering wheel ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering wheel; Removing and installing steering wheel .
- Remove lower steering column trim ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments and covers; Removing and installing lower steering column trim .



### NOTICE

Risk of damage to return ring by turning.

- Do not turn airbag coil connector and return ring with slip ring - F138- out of their position.
- Disconnect connector -2-.
- Unscrew bolts -arrows-.
- Remove steering column electronics control unit - J527- -1- from steering column combination switch - E595- .

### Installing

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

- The following must be checked before installing the steering column electronics control unit - J527- -1-:
  - The airbag coil connector and return ring -2- must be visible through the aperture.
- If a new steering column electronics control unit - J527- is installed, transport protection must not be removed until steering wheel is mounted.
- All connectors must be engaged securely.

### Specified torques

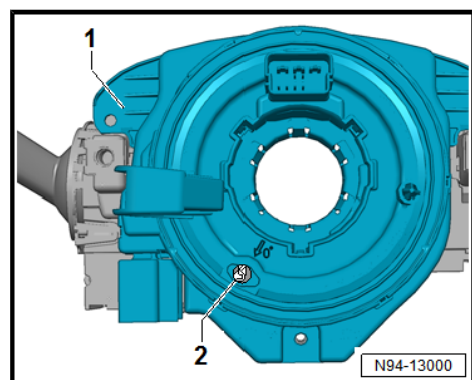
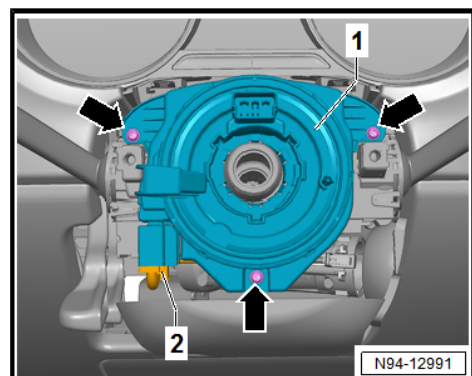
- ◆ ⇒ ["8.1 Assembly overview - steering column switch module", page 156](#)

## 8.4 Removing and installing base for steering column combination switch



### Note

The base for steering column combination switch is removed and installed together with the steering lock housing.





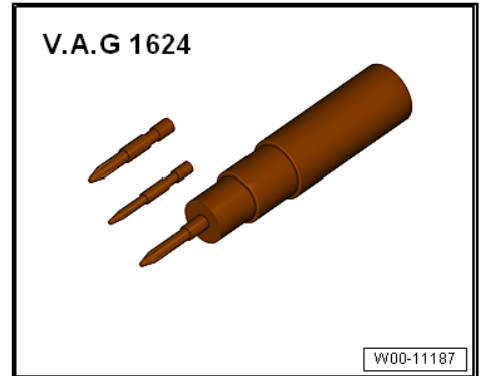


- Removing and installing steering lock housing => [page 165](#) .

## 8.5 Removing and installing turn signal switch - E2-

### Special tools and workshop equipment required

- ◆ Torque screwdriver - V.A.G 1624-

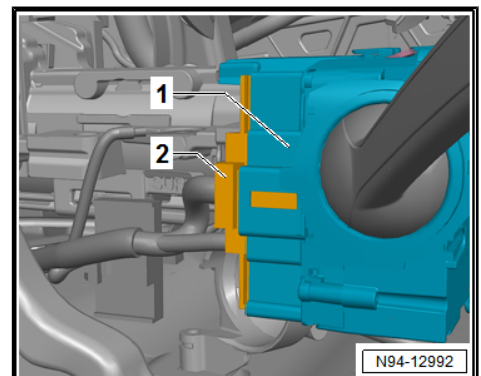


### Note

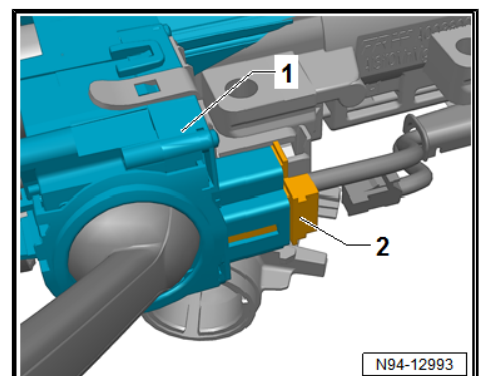
- ◆ *The turn signal switch - E2- , cruise control system switch - E45- and intermittent wiper switch - E22- are combined to form the steering column combination switch - E595- .*
- ◆ *Switches cannot be separated.*
- ◆ *If one of the switches is defective, the steering column combination switch - E595- must be renewed as a complete unit.*

### Removing

- Remove steering column electronics control unit - J527- => [page 159](#) .
- Release and disconnect left connector -2- from steering column combination switch - E595- -1-.



- Release and disconnect right connector -2- from steering column combination switch - E595- -1-.





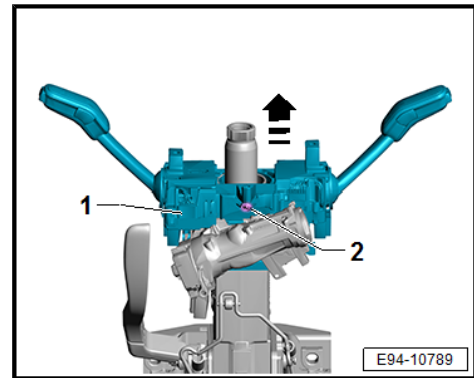
- Unscrew lower bolt -2- on steering column combination switch - E595- -1-.
- Remove steering column combination switch - E595- -1- in -direction of arrow- from steering column.

### Installing

Install in reverse order of removal.

### Specified torques

Component	Specified torque
Steering column combination switch - E595- to base	1.1 Nm



## 8.6 Removing and installing cruise control system switch - E45-



### Note

- ◆ *The turn signal switch - E2- , cruise control system switch - E45- and intermittent wiper switch - E22- are combined to form the steering column combination switch - E595- .*
  - ◆ *Switches cannot be separated.*
  - ◆ *If one of the switches is defective, the steering column combination switch - E595- must be renewed as a complete unit.*
- Removing and installing turn signal switch - E2- ⇒ [page 161](#) .

## 8.7 Removing and installing intermittent wiper switch - E22-



### Note

- ◆ *The turn signal switch - E2- , cruise control system switch - E45- and intermittent wiper switch - E22- are combined to form the steering column combination switch - E595- .*
  - ◆ *Switches cannot be separated.*
  - ◆ *If one of the switches is defective, the steering column combination switch - E595- must be renewed as a complete unit.*
- Removing and installing turn signal switch - E2- ⇒ [page 161](#) .

## 8.8 Removing and installing ignition/starter switch

### Removing

- With ignition switched off, disconnect earth cable from battery ⇒ [page 8](#) .
- Remove lower steering column trim ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments and covers; Removing and installing lower steering column trim .



Make an auxiliary tool consisting of two wire hooks as described below.

- Bend one end of welding wire (1 mm in diameter) to form a loop.
- Cut to length -a-.
- Dimension -a- = approx. 50 mm.
- File off the wire at the tip of the loop to form a pointed hook.
- Dimension -b- = 5 mm.
- Turn ignition key to "Ignition ON" position.
- Remove sticker from ignition/starter switch - D- -3-.
- Release and disconnect electrical connector -1-.
- Insert auxiliary tool into recesses -arrows A-, and release retaining clips -arrows B-.
- Pull ignition/starter switch - D- -3- out of steering lock housing -2- .
- Auxiliary tool must remain inserted.

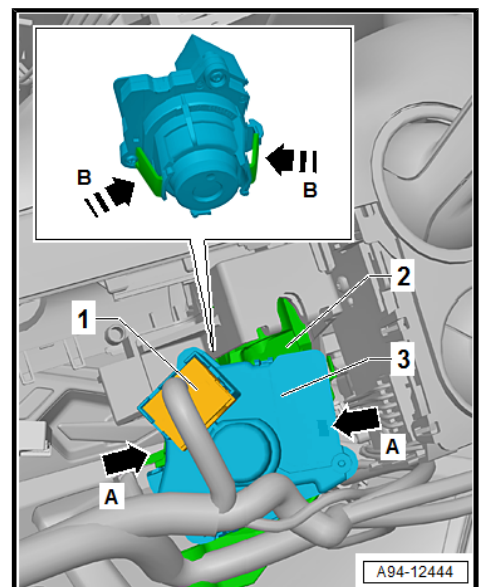
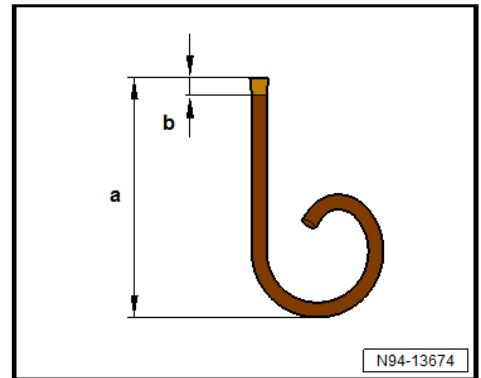
### Installing

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



The ignition/starter switch - D- will be damaged, if it is set to another position than the "On" position.

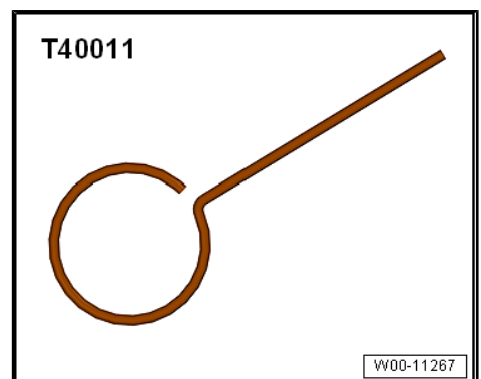
- Never set the ignition/starter switch - D- to another position than the "On" position.
- Make sure that ignition/starter switch - D- is set to "On" position, and insert it in steering lock housing until it can be heard to engage.
- Connect battery => [page 8](#) .



## 8.9 Removing and installing lock cylinder

### Special tools and workshop equipment required

- ◆ Locking pin - T40011- or suitable welding wire



### Removing

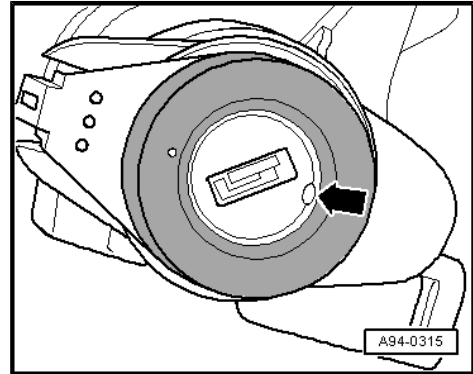
- Remove lower steering column trim => General body repairs, interior; Rep. gr. 68 ; Compartments and covers; Removing and installing lower steering column trim .



### Note

For reasons of clarity, the ignition lock is illustrated in the correct position without the ignition key.

- Turn ignition key to "Ignition ON" position. This will align the recess in trim -arrow- with hole in ignition lock.



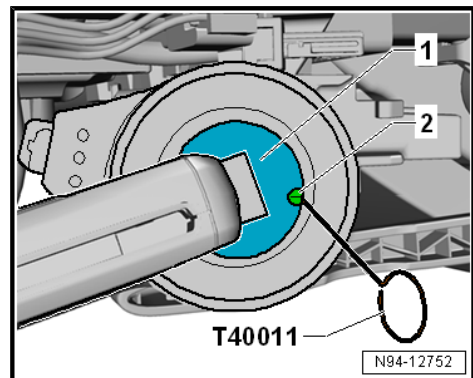
- Fold ignition key.
- Insert locking pin - T40011- or suitable welding wire as far as stop into hole -2-.
- Pull lock cylinder -1- out of steering lock housing.



### NOTICE

**Steering lock blocked when actuated without lock cylinder.**

- Do not operate steering lock without lock cylinder.



### Note

- ◆ A seized steering lock must be renewed.
- ◆ The reader coil is integrated in the lock cylinder and cannot be renewed individually.
- ◆ If the reader coil is defective, the entire lock cylinder must be renewed.
- ◆ A new lock cylinder can be ordered from the responsible distribution centre or the importer. When ordering, the vehicle-specific locking number according to the VIN must be provided.

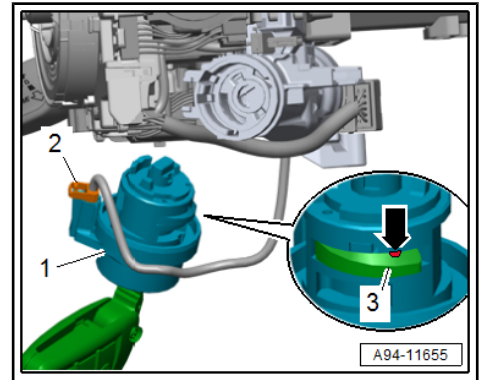
- Disconnect connector on reader coil.

### Installing

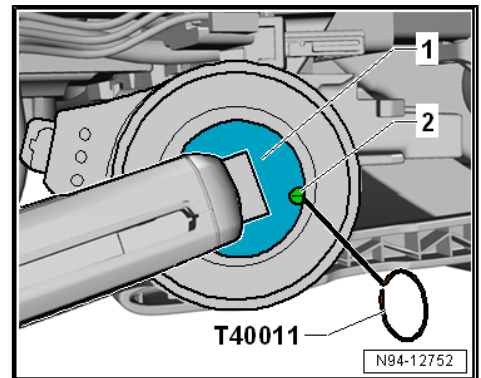
Install in the reverse order of removal, observing the following:



- Insert ignition key into lock cylinder -1-, and turn it to "Ignition ON" position.
- Insert locking pin - T40011- or suitable welding wire as far as stop into hole on front. When doing this, press securing lever -3- towards lock cylinder.
- Welding wire must protrude out of hole -arrow- in securing lever.
- Connect electrical connector -2- to immobiliser reader coil.



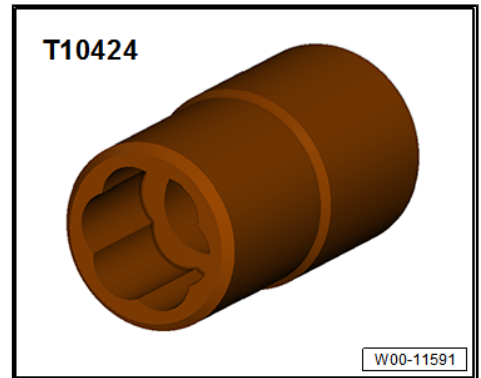
- Push lock cylinder -1- together with reader coil into steering lock housing.
- Remove locking pin - T40011- from hole -2-.
- Press in lock cylinder tightly until locking mechanism can be heard to engage.



## 8.10 Removing and installing steering lock housing

### Special tools and workshop equipment required

- ◆ Socket - T10424-



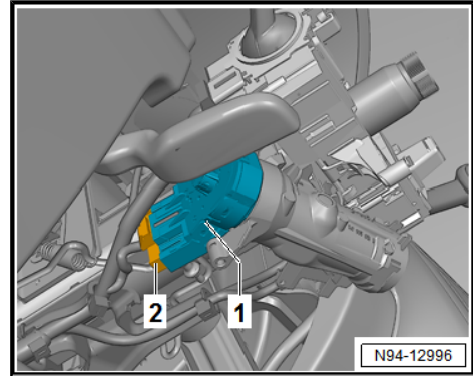
- ◆ Hand drill
- ◆ Drill bit, 8.5 mm in diameter
- ◆ Safety goggles

### Removing

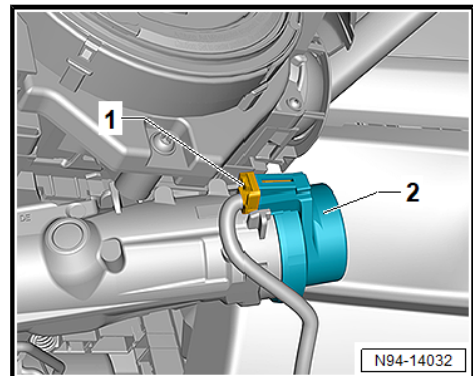
- Remove steering column switch module ⇒ [page 157](#) .



- Release and disconnect electrical connector -2- on ignition/ starter switch - D- -1-.



- Release and disconnect connector -1- on immobiliser reader coil - D2- -2-.



#### Vehicles with dual clutch gearbox

- Disconnect connector -2-.

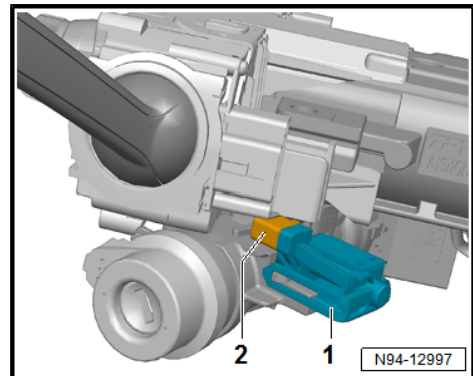
#### Continued for all vehicles

If shear bolts cannot be removed using socket - T10424- , drill out shear bolts using an angle drill and 8.5 mm drill bit.

#### **CAUTION**

Risk of injury from swarf being flung into air.  
Irritation and injury to skin and eyes possible.

- Wear safety goggles.
- Wear protective gloves.



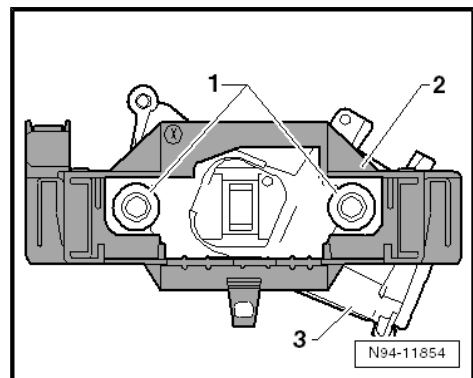
- Using socket - T10424- , unscrew shear bolts -1- .
- Remove steering lock housing -3- together with base for steering column switch -2-.

The following components must be removed to renew the steering lock housing:

- ◆ Ignition/starter switch - D- ⇒ [page 162](#)
- ◆ Lock cylinder ⇒ [page 163](#)
- ◆ If fitted, remove ignition key withdrawal lock solenoid - N376- ⇒ [page 167](#)

#### Installing

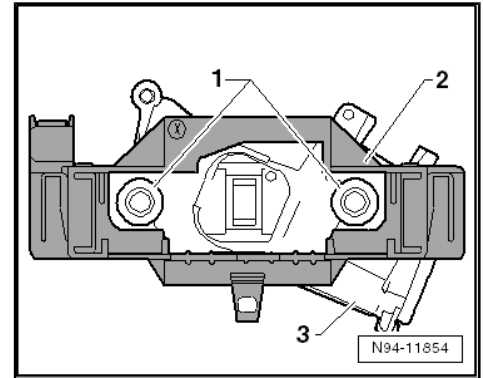
- Ignition/starter switch - D- installed ⇒ [page 162](#)
- Lock cylinder installed ⇒ [page 163](#)
- If fitted, ignition key withdrawal lock solenoid - N376- installed ⇒ [page 167](#)





- Insert steering lock housing -3- into base for steering column combination switch -2-.
- Install steering column switch module to base for steering column switch module.
- Push preassembled unit in straight line as far as it will go onto the steering column and align with threaded holes.
- Secure steering lock housing -3- to steering column using new shear bolts -1-.
- Tighten new shear bolts -1- until bolt heads shear off.

Further assembly is carried out in the reverse order.



## 8.11 Removing and installing ignition key withdrawal lock solenoid - N376-

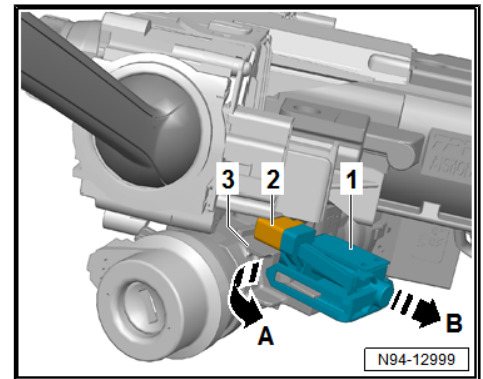
### Removing

- Remove lower steering column trim ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments and covers; Removing and installing lower steering column trim .
- Disconnect connector -2-.
- Press release in direction of -arrow A- and pull off ignition key withdrawal lock solenoid - N376- -1- on steering lock housing -3- in direction of -arrow B-.

### Installing

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

- Perform functional check.





## 9 Automatic headlight range control

⇒ [“9.1 Assembly overview – automatic headlight range control”, page 168](#)

⇒ [“9.2 Removing and installing headlight range control unit”, page 168](#)

### 9.1 Assembly overview – automatic headlight range control

#### 1 - Headlight range control unit

- ❑ Removing and installing  
⇒ [page 168](#)

#### 2 - Right headlight range control motor - V49-

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

#### 3 - Front right vehicle level sender - G289-

- ❑ Assembly overview ⇒  
Running gear, axles,  
steering; Rep. gr. 43 ;  
Vehicle level senders;  
Assembly overview -  
front vehicle level senders

#### 4 - Left headlight range control motor - V48-

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

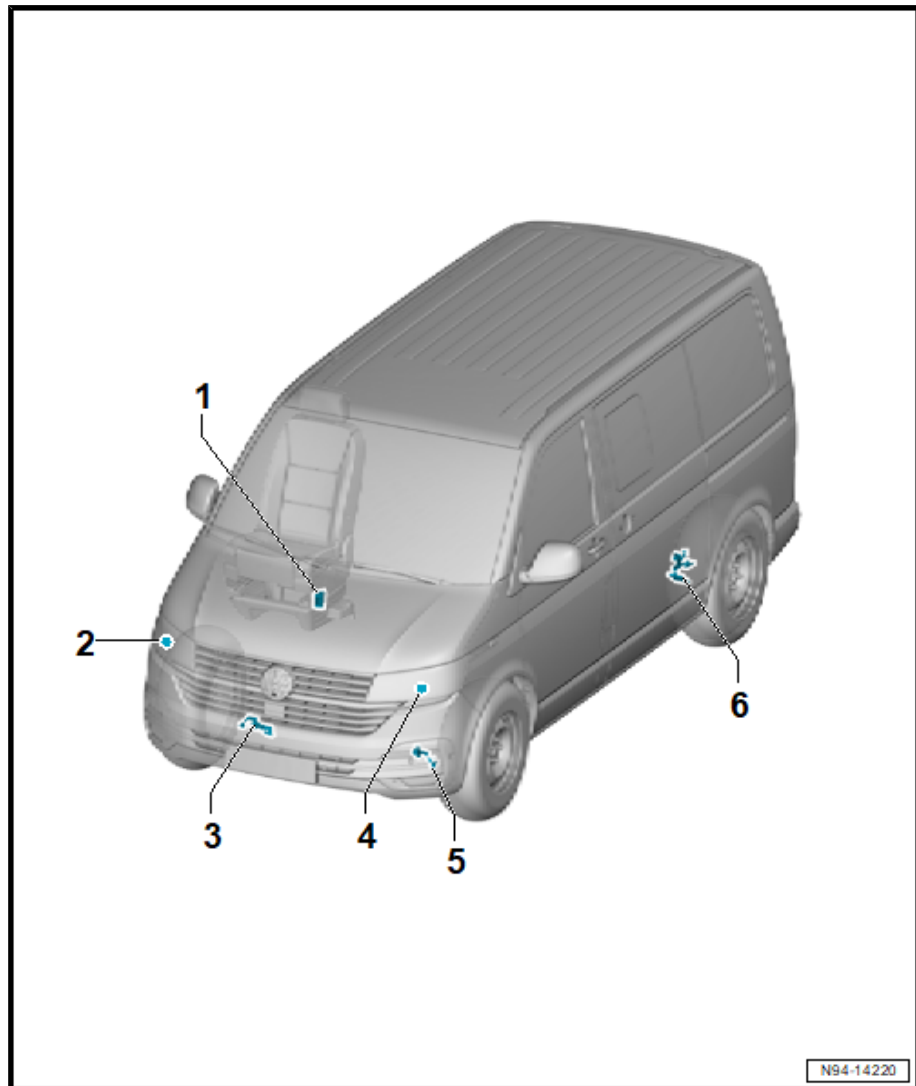
#### 5 - Front left vehicle level sender - G78-

- ❑ Assembly overview ⇒  
Running gear, axles,  
steering; Rep. gr. 43 ;  
Vehicle level senders;  
Assembly overview -  
front vehicle level senders

#### 6 - Rear left vehicle level sender - G76-

- ❑ Assembly overview ⇒  
Running gear, axles,  
steering; Rep. gr. 43 ;  
Vehicle level senders;  
Assembly overview -  
rear vehicle level senders .

- ❑ Depending on vehicle equipment, with rear left vehicle level sender - G76- or rear right vehicle level sender - G77-



### 9.2 Removing and installing headlight range control unit



#### Note

*If the headlight range control unit is renewed, start the respective function ⇒ Vehicle diagnostic tester.*





### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.

### LHD vehicles

- Move front passenger seat to topmost and rearmost position. Use the full adjustment range of the front passenger seat for this purpose.

### RHD vehicles

- Move driver seat to topmost and rearmost position. Use the full adjustment range of the front passenger seat for this purpose.

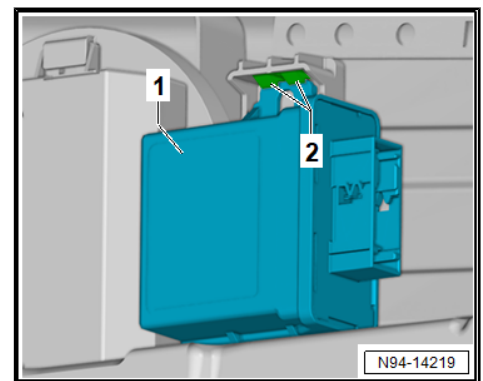
### Continued for all vehicles

- Release locking lugs -2-.
- Swing out headlight range control unit -1- just far enough to gain access to electrical connector.
- Disconnect electrical connector.
- Remove headlight range control unit -1-.

### Installing

Install in the reverse order of removal observing the following:

- Check functions of headlight.
- Check headlight adjustment, and adjust headlight if necessary  
⇒ Maintenance ; Booklet ; Descriptions of work .





## 10 Towing bracket

⇒ ["10.1 Assembly overview - towing bracket socket", page 170](#)

⇒ ["10.2 Removing and installing trailer socket", page 170](#)

⇒ ["10.3 Removing and installing trailer detector control unit J345", page 172](#)

### 10.1 Assembly overview - towing bracket socket

#### 1 - Trailer detector control unit - J345-

- ❑ Removing and installing  
⇒ [page 172](#)

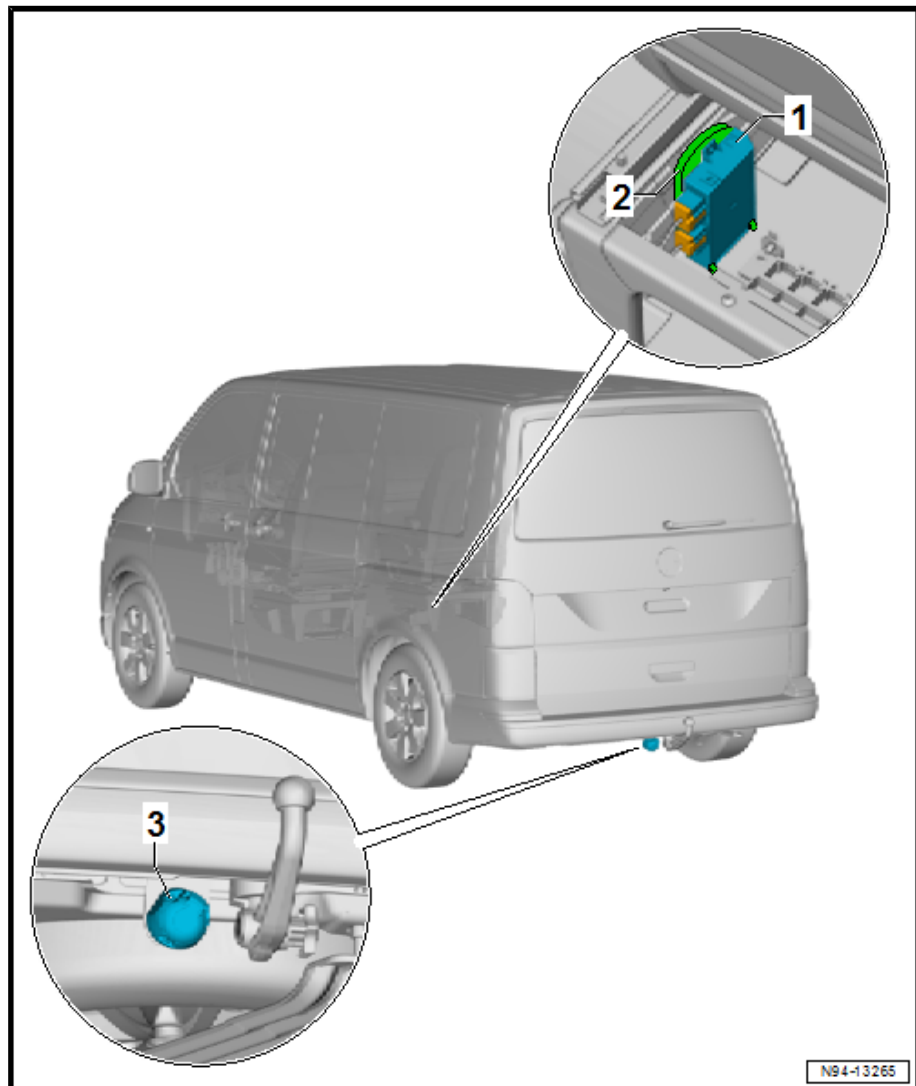
#### 2 - Retaining frame

- ❑ For trailer detector control unit - J345-

#### 3 - Trailer socket - U10-

- ❑ Removing and installing  
⇒ [page 170](#)

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



### 10.2 Removing and installing trailer socket



#### Note

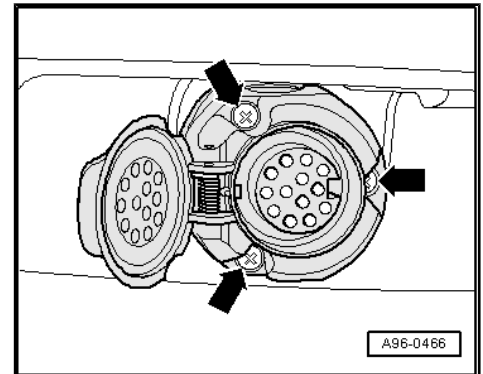
*Owing to the fact that part numbers vary, check whether the installed trailer socket is original equipment or a retrofitted accessory before ordering the replacement part.*

#### Removing

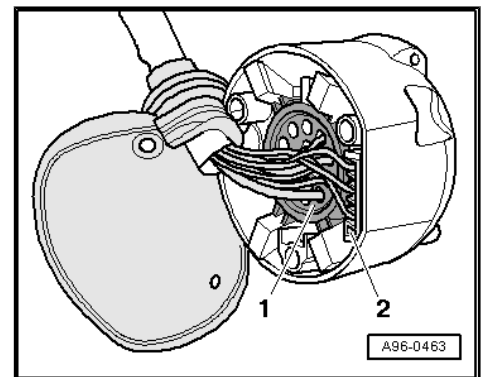
- Switch off ignition and all electrical consumers.



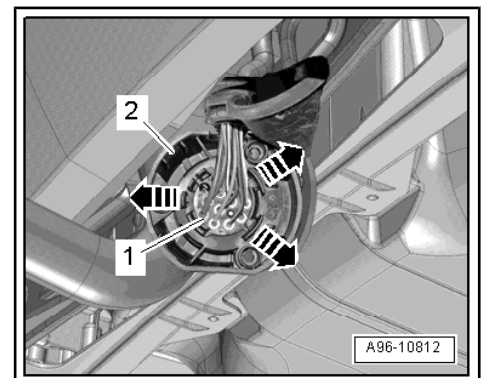
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Unscrew bolts -arrow-.
- Remove trailer socket - U10- from retaining plate.
- Pull rubber cover off trailer socket.



- Disconnect electrical connector -2-.



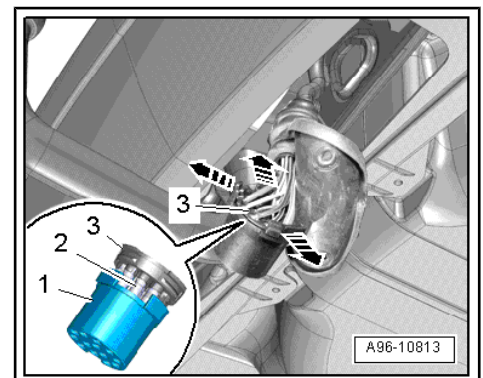
- Release retaining clips in direction of -arrow-.
- Push multi-pin connector -1- backwards out of socket housing -2-.



- Release retaining clips in direction of -arrow-.
- Detach retaining cage -1- from multi-pin connector -3-.

**i** Note

*Proceed with care when pulling off retaining cage -1- in order to prevent the contacts -2- from being disconnected from the wiring harness.*





## Installing

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



### Note

- ◆ *The retaining cage -1- can only be pushed onto the multi-pin connector -3- and engaged in one specific position.*
  - ◆ *The guide pins -4- on the retaining cage -1- only fit into the multi-pin connector -3- in one specific position.*
  - ◆ *To insert the guide pins into the multi-pin connector all contacts -2- must be properly inserted in the retaining cage at the correct positions.*
- Insert contacts -2- in retaining cage -1- until audible engagement in multi-pin connector -3-.
  - Slide multi-pin connector in correct installation position from behind into socket housing and engage it.
  - Fit rubber cover onto socket housing and fit trailer socket to retaining plate.
  - Screw in 3 bolts and tighten.

### Specified torques

Component	Specified torque
Bolts securing socket to retaining plate	2 Nm

## 10.3 Removing and installing trailer detector control unit - J345-



### Note

*The trailer detector control unit - J345- is installed in the seat box beneath the front passenger seat.*

### Removing

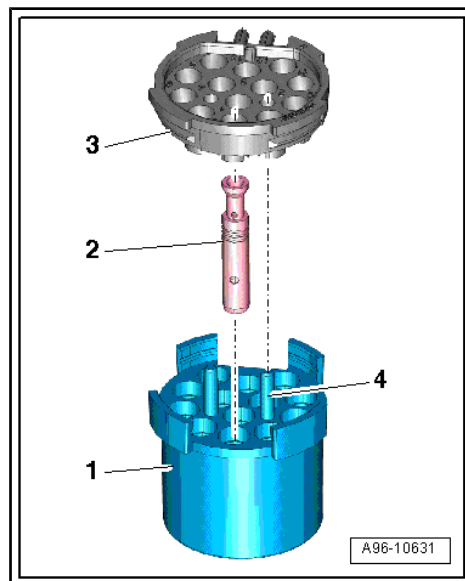
- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.

#### Vehicles with double bench seat

- Fold bench seat upwards.
- Remove storage box.

#### Vehicles with individual seat

- Move front passenger seat to topmost and frontmost position.
- Remove rear trim from lower seat pan frame.



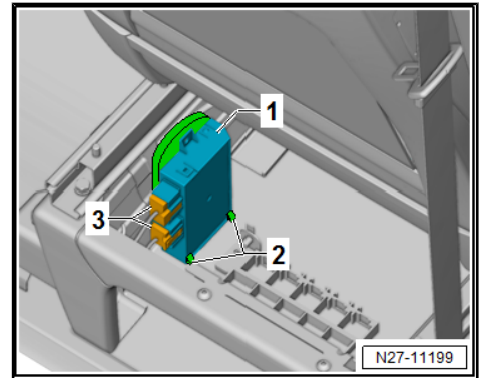


**Continued for all vehicles**

- Release fasteners -2-.
- Swing trailer detector control unit - J345- -1- at bottom out of holder.
- Disconnect electrical connectors -3-.
- Remove trailer detector control unit - J345- -1-.

**Installing**

Install in reverse order of removal.





## 96 – Lights, bulbs, switches - interior

### 1 Lights

- ⇒ [“1.1 Overview of fitting locations - lights in dash panel”, page 174](#)
- ⇒ [“1.2 Overview of fitting locations - lights in luggage compartment”, page 176](#)
- ⇒ [“1.3 Overview of fitting locations - lights in roof trim”, page 176](#)
- ⇒ [“1.4 Removing and installing glove compartment light W6 ”, page 177](#)
- ⇒ [“1.5 Removing and installing front left footwell light K268 / front right footwell light K269 ”, page 178](#)
- ⇒ [“1.6 Removing and installing luggage compartment light W3 ”, page 179](#)
- ⇒ [“1.7 Removing and installing driver side illuminated vanity mirror W20 / front passenger side illuminated vanity mirror W14 ”, page 180](#)
- ⇒ [“1.8 Removing and installing front interior light W1 ”, page 181](#)
- ⇒ [“1.9 Removing and installing rear interior light/reading light”, page 183](#)

#### 1.1 Overview of fitting locations - lights in dash panel



**1 - Glove compartment light - W6-**

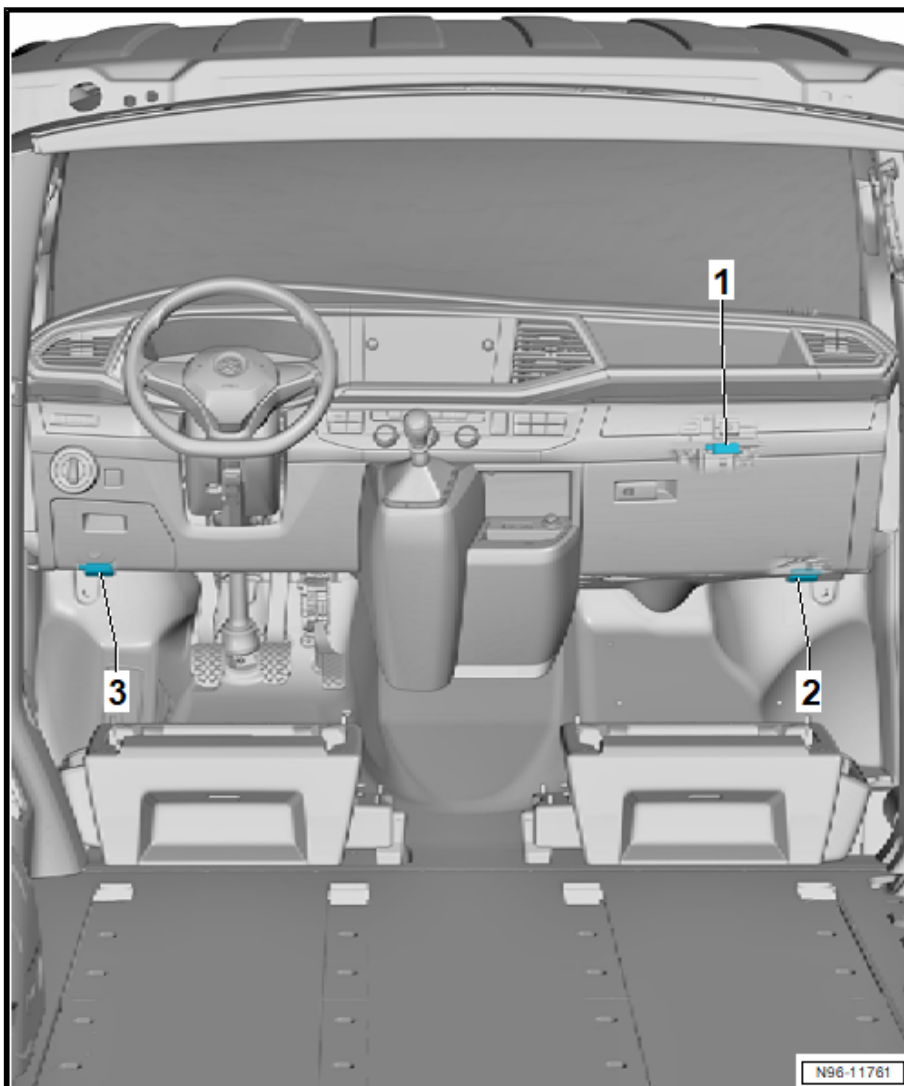
- ❑ Removing and installing  
⇒ [page 177](#)

**2 - Front right footwell light - K269-**

- ❑ Removing and installing  
⇒ [page 178](#)

**3 - Front left footwell light - K268-**

- ❑ Removing and installing  
⇒ [page 178](#)

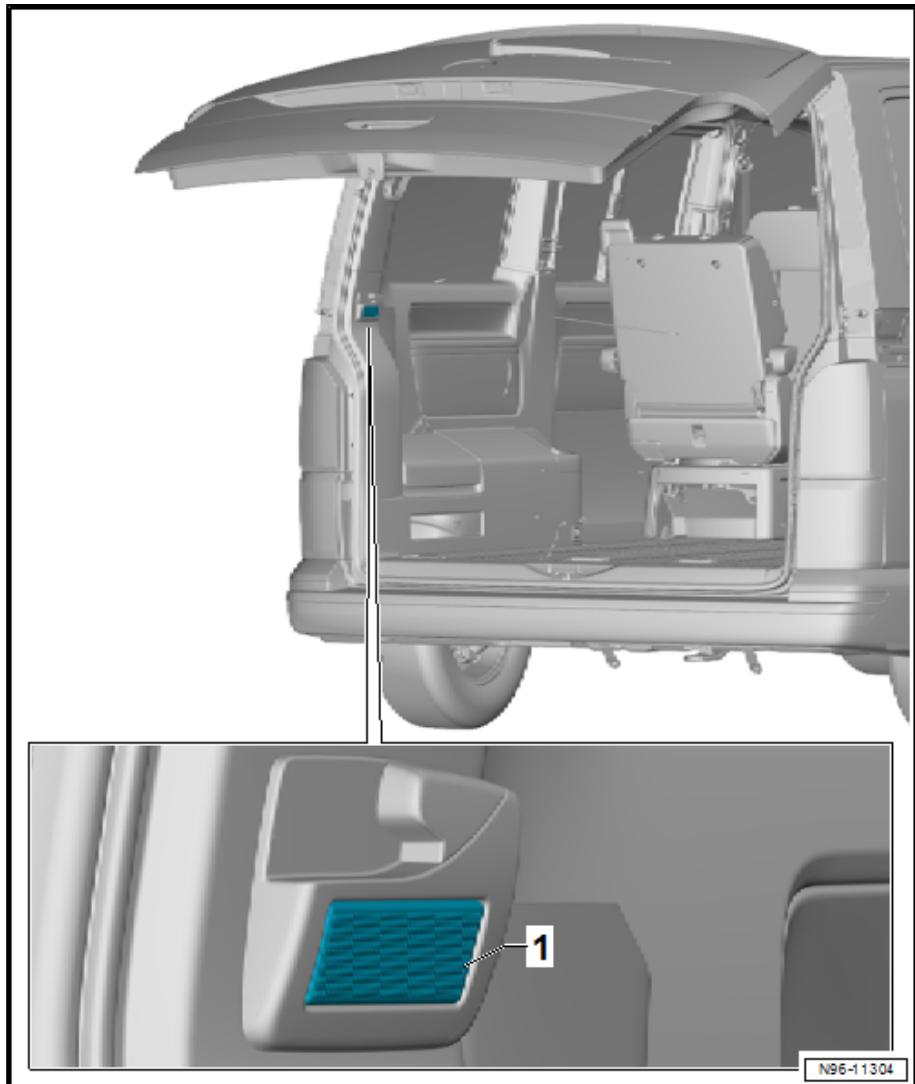




## 1.2 Overview of fitting locations - lights in luggage compartment

### 1 - Luggage compartment light - W3-

- ❑ Removing and installing  
⇒ [page 179](#)



## 1.3 Overview of fitting locations - lights in roof trim



### Note

*For the lights in the roof trim, deviations in the equipment may have to be taken account of depending on the model version.*





**1 - Driver side illuminated vanity mirror**

- ❑ Removing and installing  
⇒ [page 180](#)

**2 - Rear interior light/reading light**

- ❑ Version
- ❑ Removing and installing  
⇒ [page 183](#)

**3 - Front passenger side airbag deactivated warning lamp - K145-**

- ❑ Removing and installing  
⇒ [page 196](#)

**4 - Front passenger side illuminated vanity mirror**

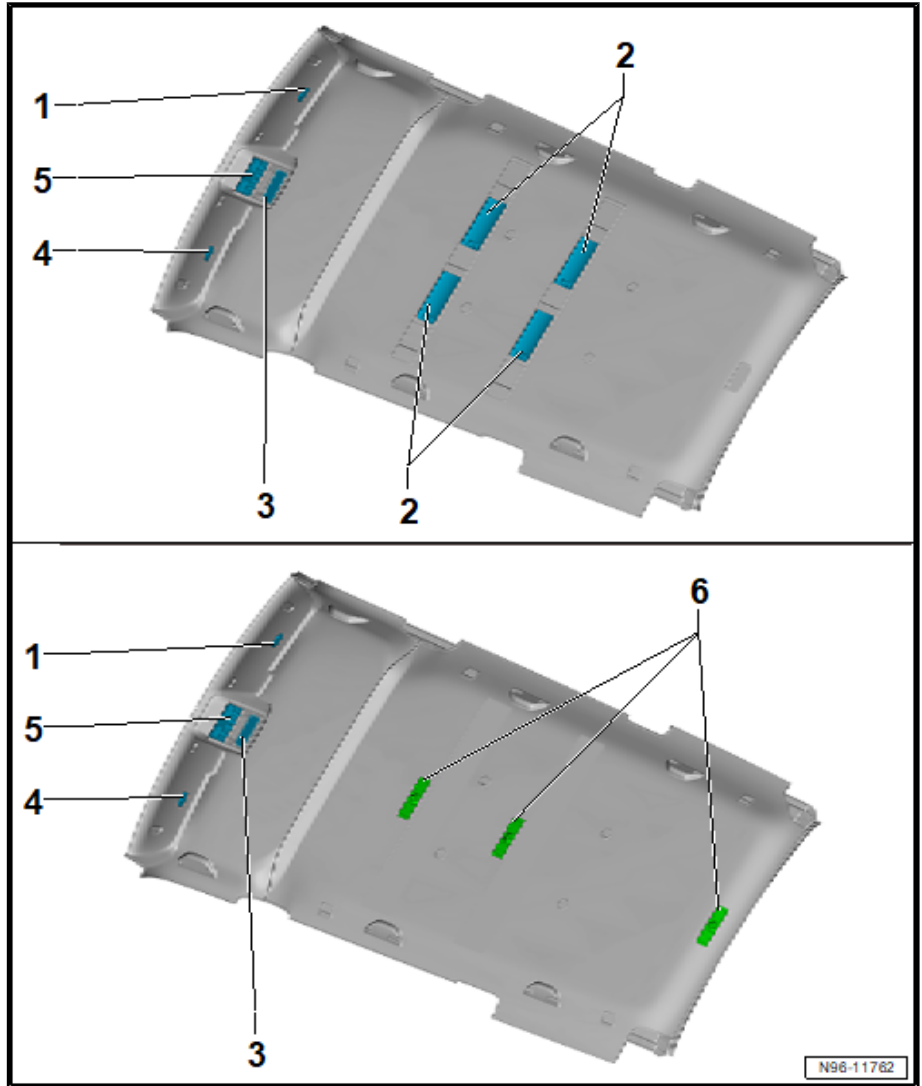
- ❑ Removing and installing  
⇒ [page 180](#)

**5 - Front courtesy light/reading light**

- ❑ Removing and installing  
⇒ [page 181](#)

**6 - Rear interior light/reading light**

- ❑ Version
- ❑ Removing and installing  
⇒ [page 183](#)



**1.4 Removing and installing glove compartment light - W6-**

Special tools and workshop equipment required

- ◆ Removal wedge set - VAS 895 015-





### Note

The glove compartment light - W6- comprises an LED which cannot be renewed individually. If damaged, entire number plate light must be renewed.



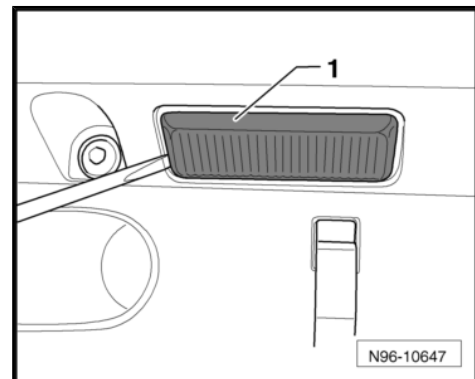
### NOTICE

**Risk of damage to component surfaces.**

- Before using a lever, always mask off the components installed in visible areas using commercially available adhesive tape.

### Removing

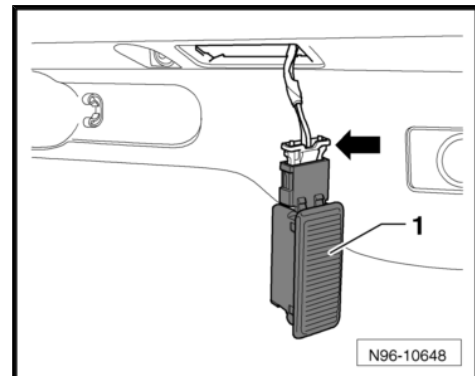
- Turn light switch to “0” position.
- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Lever out glove compartment light - W6- -1- using removal wedge set - VAS 895 015- .



- Disconnect electrical connector -arrow-.
- Remove glove compartment light - W6- -1-.

### Installing

Install in reverse order of removal.



## 1.5 Removing and installing front left footwell light - K268- / front right footwell light - K269-

Special tools and workshop equipment required



- ◆ Removal wedge set - VAS 895 015-



**i** Note

*The front left footwell light - K268- / front right footwell light - K269- comprise LEDs that cannot be renewed individually. If damaged, the entire footwell light must be renewed.*

**!** NOTICE

**Risk of damage to component surfaces.**

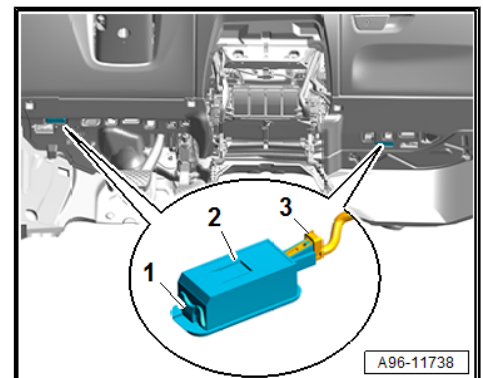
- Before using a lever, always mask off the components installed in visible areas using commercially available adhesive tape.

**Removing**

- Release locking lug -1- using removal wedge set - VAS 895 015- .
- Lever out footwell light -2- far enough to gain access to electrical connector.
- Disconnect electrical connector -3-.

**Installing**

Install in reverse order of removal.



## 1.6 Removing and installing luggage compartment light - W3-

**Special tools and workshop equipment required**

- ◆ Removal wedge set - VAS 895 015-





### Note

*The glove compartment light - W6- comprises an LED which cannot be renewed individually. If damaged, entire number plate light must be renewed.*



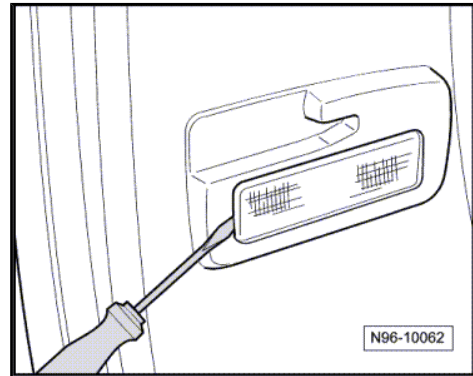
### NOTICE

**Risk of damage to component surfaces by lever tools.**

- If a lever tool is used, cover the component in the visible area with commercially available adhesive tape.

### Removing

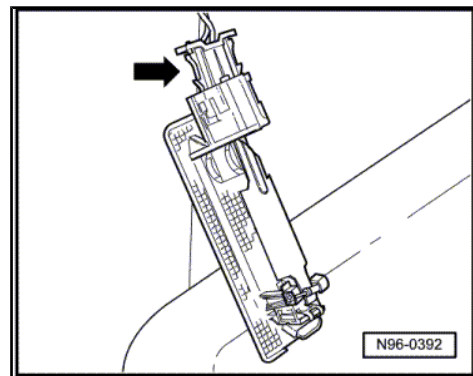
- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Lever out luggage compartment light - W3- using removal wedge set - VAS 895 015- .



- Disconnect electrical connector -arrow-.
- Remove luggage compartment light - W3- .

### Installing

Install in reverse order of removal.



## 1.7 Removing and installing driver side illuminated vanity mirror - W20- / front passenger side illuminated vanity mirror - W14-

Special tools and workshop equipment required



- ◆ Removal wedge set - VAS 895 015-



**i** Note

*The illuminated vanity mirrors on driver - W20- and front passenger sides - W14- comprise LEDs that cannot be renewed individually. If damaged, entire number plate light must be renewed.*

**!** NOTICE

**Risk of damage to component surfaces by lever tools.**

- If a lever tool is used, cover the component in the visible area with commercially available adhesive tape.

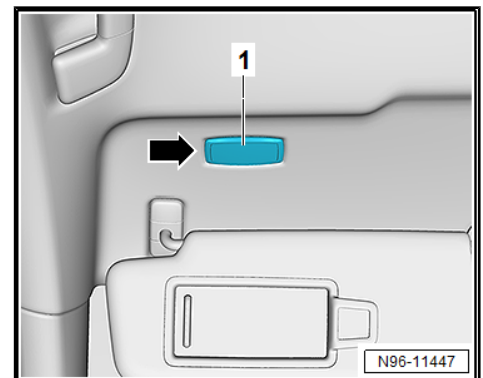
**Removing**

- Swing sun visor towards front.
- Lever off driver side illuminated vanity mirror - W20- / front passenger side illuminated vanity mirror - W14- -1- in area indicated by -arrow-using removal wedge set - VAS 895 015- .
- Disconnect electrical connector.
- Detach driver side illuminated vanity mirror - W20- / front passenger side illuminated vanity mirror - W14- -1-.

**Installing**

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

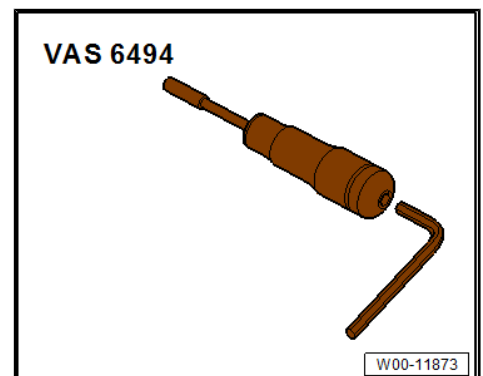
- Perform functional check.



## 1.8 Removing and installing front interior light - W1-

**Special tools and workshop equipment required**

- ◆ Torque screwdriver - VAS 6494-





◆ Removal wedge set - VAS 895 015-



 Note

- ◆ *The front reading light button and door opening light button are an integral part of the front interior light - W1- .*
- ◆ *The front interior light - W1- comprises an LED which cannot be renewed individually. If damaged, entire number plate light must be renewed.*

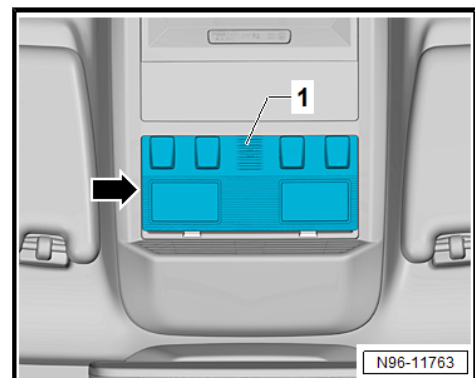
 NOTICE

**Risk of damage to component surfaces by lever tools.**

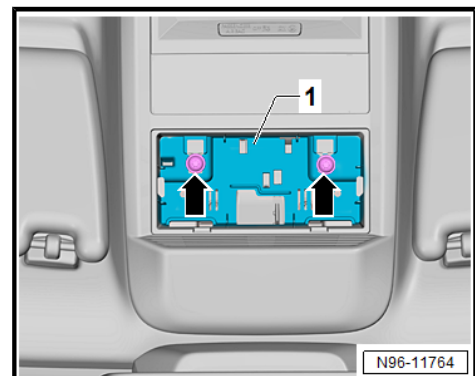
- If a lever tool is used, cover the component in the visible area with commercially available adhesive tape.

**Removing**

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Lever out lens of front interior light - W1- -1- in area indicated by -arrow- using removal wedge set - VAS 895 015- .



- Unscrew bolts -arrows-.
- Remove front interior light - W1- -1- just far enough to gain access to electrical connector.

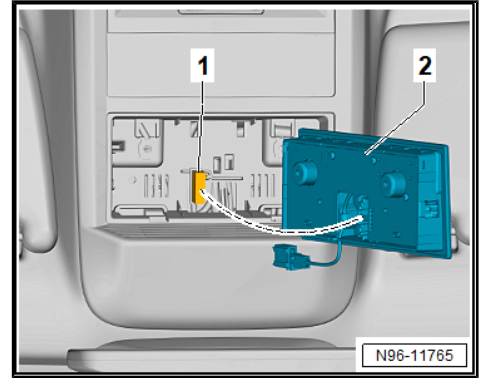




- Disconnect connector -1-.
- Remove front interior light - W1- -2-.

**Installing**

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



**Specified torques**

Component	Specified torque
Bolts for front interior light - W1-	1.5 Nm

**1.9 Removing and installing rear interior light/reading light**

⇒ [“1.9.1 Removing and installing rear interior and reading light, Multivan”, page 183](#)

⇒ [“1.9.2 Removing and installing centre interior light and front interior light in high roof”, page 184](#)

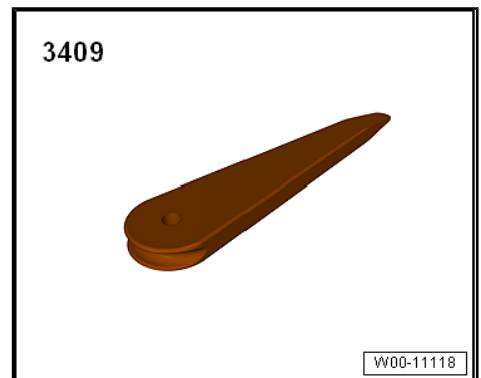
⇒ [“1.9.3 Removing and installing rear interior light with rotary pushbutton”, page 185](#)

⇒ [“1.9.4 Removing and installing rear interior light with rocker switch”, page 185](#)

**1.9.1 Removing and installing rear interior and reading light, Multivan**

**Special tools and workshop equipment required**

- ◆ Removal wedge - 3409-



**Note**

*The lighting elements of the interior light and reading lamp have LEDs and cannot be renewed individually. If damaged, the entire interior light and reading light must be renewed.*



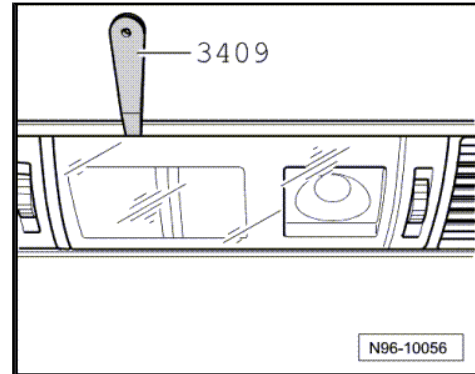
**!** NOTICE

Risk of damage to component surfaces by lever tools.

- If a lever tool is used, cover the component in the visible area with commercially available adhesive tape.

**Removing**

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Lever out interior light and reading light using removal wedge - 3409- .

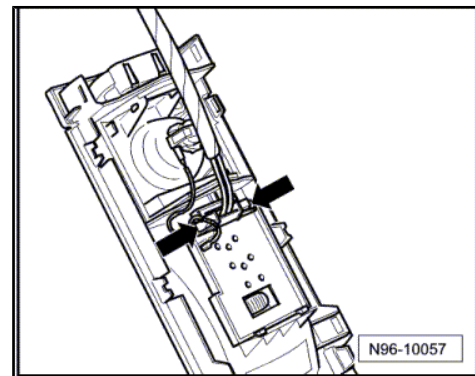


- Disconnect electrical connector -arrows-.

**Installing**

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

- Perform functional check.



### 1.9.2 Removing and installing centre interior light and front interior light in high roof

Special tools and workshop equipment required

- ◆ Removal wedge set - VAS 895 015-







**i** Note

*The centre interior light and the front interior light in high roof comprise LEDs that cannot be renewed individually. If damaged, the entire light must be renewed.*

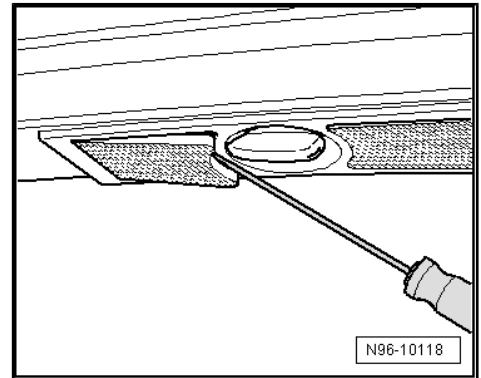
**!** NOTICE

**Risk of damage to component surfaces by lever tools.**

- If a lever tool is used, cover the component in the visible area with commercially available adhesive tape.

**Removing**

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Lever out both lenses using removal wedge set - VAS 895 015- .

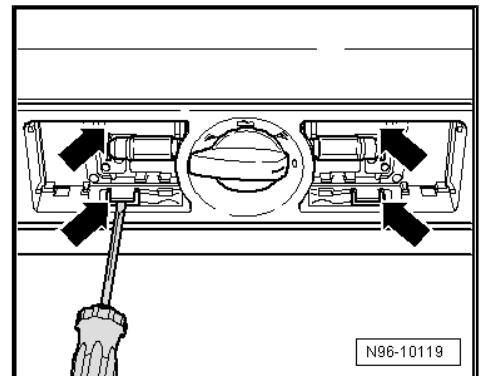


- Release locking lugs -arrows-.
- Pull out interior light.
- Disconnect electrical connector.

**Installing**

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

- Perform functional check.



**1.9.3 Removing and installing rear interior light with rotary pushbutton**

The procedure for removal and installation is carried out in the same way as that for the centre interior light and front interior light for high roof models ⇒ [page 184](#) .

**1.9.4 Removing and installing rear interior light with rocker switch**

**Special tools and workshop equipment required**



◆ Removal wedge set - VAS 895 015-



Note

*The lighting element of the interior light is LED, which cannot be renewed individually. In the event of damage, the entire interior light must be renewed.*



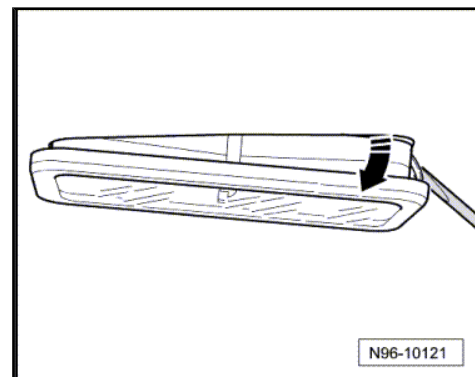
NOTICE

Risk of damage to component surfaces by lever tools.

- If a lever tool is used, cover the component in the visible area with commercially available adhesive tape.

Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Lever out interior light using removal wedge set - VAS 895 015- .

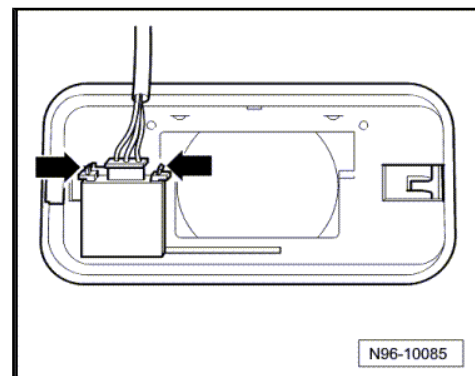


- Disconnect electrical connector -arrows-.

Installing

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

- Perform functional check.





## 2 Controls

### WARNING

If the vehicle has been converted by ABT e-Line, it is possible that the repair instructions provided below are no longer valid.

In this case, please always refer to the repair instructions from ABT e-Line, available in ElsaPro under the tab "Superstructures and modifications".



- ⇒ ["2.1 Overview of fitting locations - controls in dash panel", page 189](#)
- ⇒ ["2.2 Overview of fitting locations - controls in front doors", page 191](#)
- ⇒ ["2.3 Overview of fitting locations - controls in luggage compartment", page 192](#)
- ⇒ ["2.4 Overview of fitting locations - controls in roof trim", page 193](#)
- ⇒ ["2.5 Removing and installing rotary light switch EX1 ", page 194](#)
- ⇒ ["2.6 Removing and installing regulator for switch and instrument illumination E20 ", page 195](#)
- ⇒ ["2.7 Removing and installing headlight range control regulator E102 ", page 195](#)
- ⇒ ["2.8 Removing and installing Start/Stop operation button E693 ", page 195](#)
- ⇒ ["2.9 Removing and installing TCS and ESP button E256 ", page 196](#)
- ⇒ ["2.10 Removing and installing parking aid button E266 ", page 196](#)
- ⇒ ["2.11 Removing and installing park assist steering button E581 ", page 196](#)
- ⇒ ["2.12 Removing and installing front passenger side airbag deactivated warning lamp K145 ", page 196](#)
- ⇒ ["2.13 Removing and installing tyre pressure monitor display button E492 ", page 197](#)
- ⇒ ["2.14 Removing and installing wireless data transfer button E928 ", page 197](#)
- ⇒ ["2.15 Removing and installing heated windscreen button E627 ", page 198](#)
- ⇒ ["2.16 Removing and installing rear differential lock switch E121 ", page 198](#)
- ⇒ ["2.17 Removing and installing hill descent control button E618 ", page 198](#)
- ⇒ ["2.18 Removing and installing sliding door button E442 ", page 198](#)
- ⇒ ["2.19 Removing and installing button to deactivate sliding door E443 ", page 198](#)
- ⇒ ["2.20 Removing and installing interior light switch \(taxi\) E115 ", page 199](#)
- ⇒ ["2.21 Removing and installing taxi sign switch E138 ", page 199](#)
- ⇒ ["2.22 Removing and installing buttons in dash panel", page 199](#)
- ⇒ ["2.23 Removing and installing hazard warning light switch EX3 ", page 200](#)
- ⇒ ["2.24 Removing and installing buttons for seat heating E653 / E654 ", page 200](#)
- ⇒ ["2.25 Removing and installing glove compartment light switch E26 ", page 200](#)
- ⇒ ["2.26 Removing and installing exterior mirror adjuster EX11 ", page 201](#)



⇒ [“2.27 Removing and installing operating unit for window regulator in driver door E512 ”, page 202](#)

⇒ [“2.28 Removing and installing window regulator switch in front passenger door E107 ”, page 202](#)

⇒ [“2.29 Removing and installing driver side interior locking button for central locking system E308 ”, page 202](#)

⇒ [“2.31 Removing and installing door contact switch F2 / F3 ”, page 203](#)

⇒ [“2.32 Removing and installing rear door contact switches F10 / F11 ”, page 203](#)

⇒ [“2.33 Removing and installing release button for rear lid lock cylinder F248 ”, page 204](#)

⇒ [“2.36 Removing and installing rear lid contact switch”, page 205](#)

⇒ [“2.37 Removing and installing vanity mirror contact switch F147 / F148 ”, page 206](#)

⇒ [“2.38 Removing and installing button for front reading light button / door opening light”, page 206](#)

⇒ [“2.39 Removing and installing button for rear interior light and reading light”, page 206](#)

⇒ [“2.40 Removing and installing Telematics button module E734 ”, page 206](#)

## 2.1 Overview of fitting locations - controls in dash panel



### Note

*For the controls in the dash panel, deviations in the equipment may have to be taken account of depending on the model version.*



### 1 - Switch module in left of dash panel

- Depending on vehicle equipment, with:
- ◆ TCS and ESP button - E256-
- ◆ Hill descent control button - E618-
- ◆ Rear differential lock switch - E121-
- ◆ Removing and installing ⇒ [page 199](#)

### 2 - Switch module in centre of dash panel, top left

- Depending on vehicle equipment, with:
- ◆ Button for wireless remote data transmission - E928-
- ◆ Heated windscreen button - E627-
- Removing and installing ⇒ [page 199](#)

### 3 - Switch module in centre of dash panel, top right

- Depending on vehicle equipment, with:
- ◆ Start/stop operation switch - E693-
- ◆ Parking aid button - E266-
- ◆ Park assist steering button - E581-
- Removing and installing ⇒ [page 199](#)

### 4 - Key operated switch to deactivate front passenger side airbag - E224-

- Assembly overview ⇒ General body repairs, interior; Rep. gr. 69 ; Airbag (front passenger side); Assembly overview - airbag (front passenger side)

### 5 - Glove compartment light switch - E26-

- Removing and installing ⇒ [page 200](#)

### 6 - Tyre pressure monitor display button - E492-

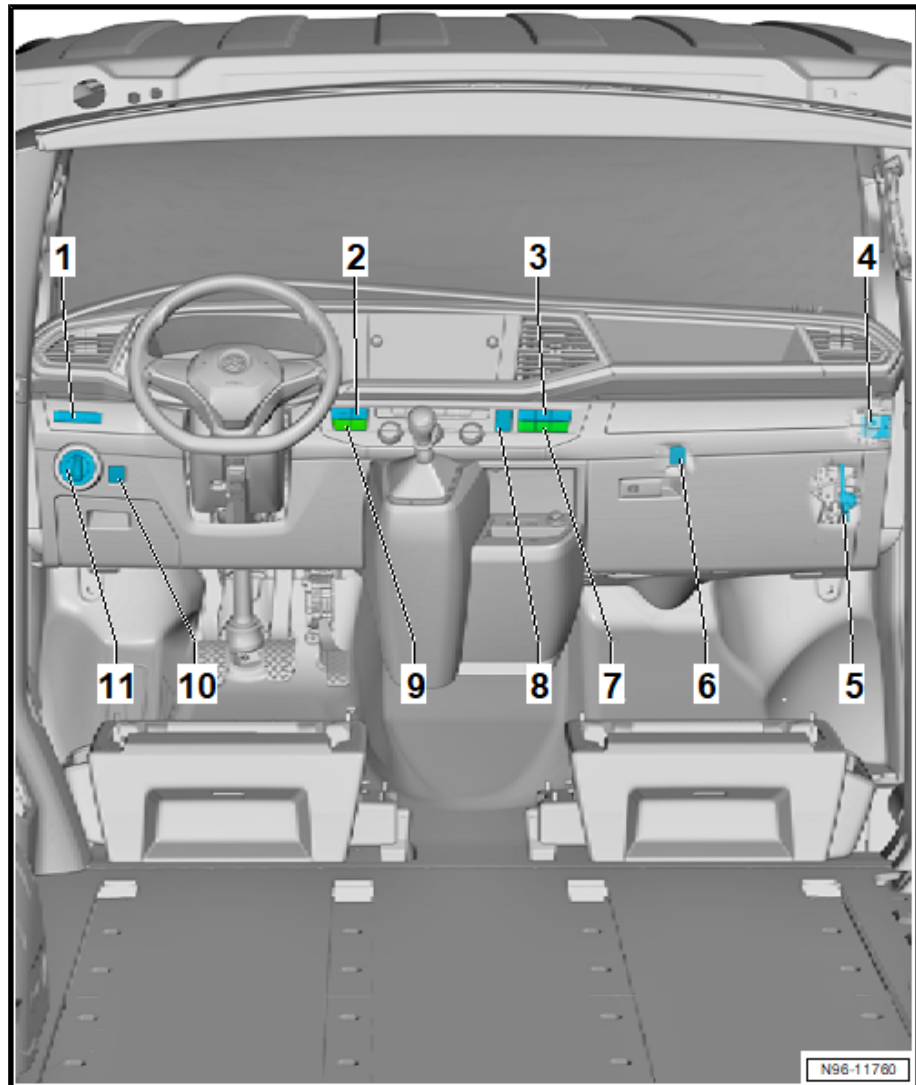
- Only in vehicles with »Low Line« dash panel insert
- Removing and installing ⇒ [page 197](#)

### 7 - Switch module in centre of dash panel, bottom right

- Depending on vehicle equipment, with
- ◆ Left sliding door button - E442-
- ◆ Deactivation of sliding door button - E443-
- ◆ Right sliding door button - E442-
- ◆ Removing and installing ⇒ [page 199](#)

### 8 - Hazard warning light switch - EX3-

- Removing and installing ⇒ [page 200](#)





### 9 - Switch module in centre of dash panel, bottom left

- Depending on vehicle equipment, with
- ◆ Button for stationary regeneration  on
- ◆ Button for stationary regeneration  off
- ◆ Removing and installing ⇒ [page 199](#)

### 10 - Headlight range control regulator - E102-

- Removing and installing ⇒ [page 195](#)

### 11 - Rotary light switch - EX1-

- Removing and installing ⇒ [page 194](#)

## 2.2 Overview of fitting locations - controls in front doors



### Note

*For the controls in the front doors, deviations in the equipment may have to be taken account of depending on the model version.*

#### 1 - Rear lid remote release button - E233-

- Removing and installing ⇒ [page 203](#)

#### 2 - Operating unit for window regulator in driver door - E512-

- With:
- ◆ Front driver side window regulator button - E710-
- ◆ Front passenger side window regulator button - E716-

- Removing and installing ⇒ [page 202](#)

#### 3 - Mirror adjustment switch - E43-

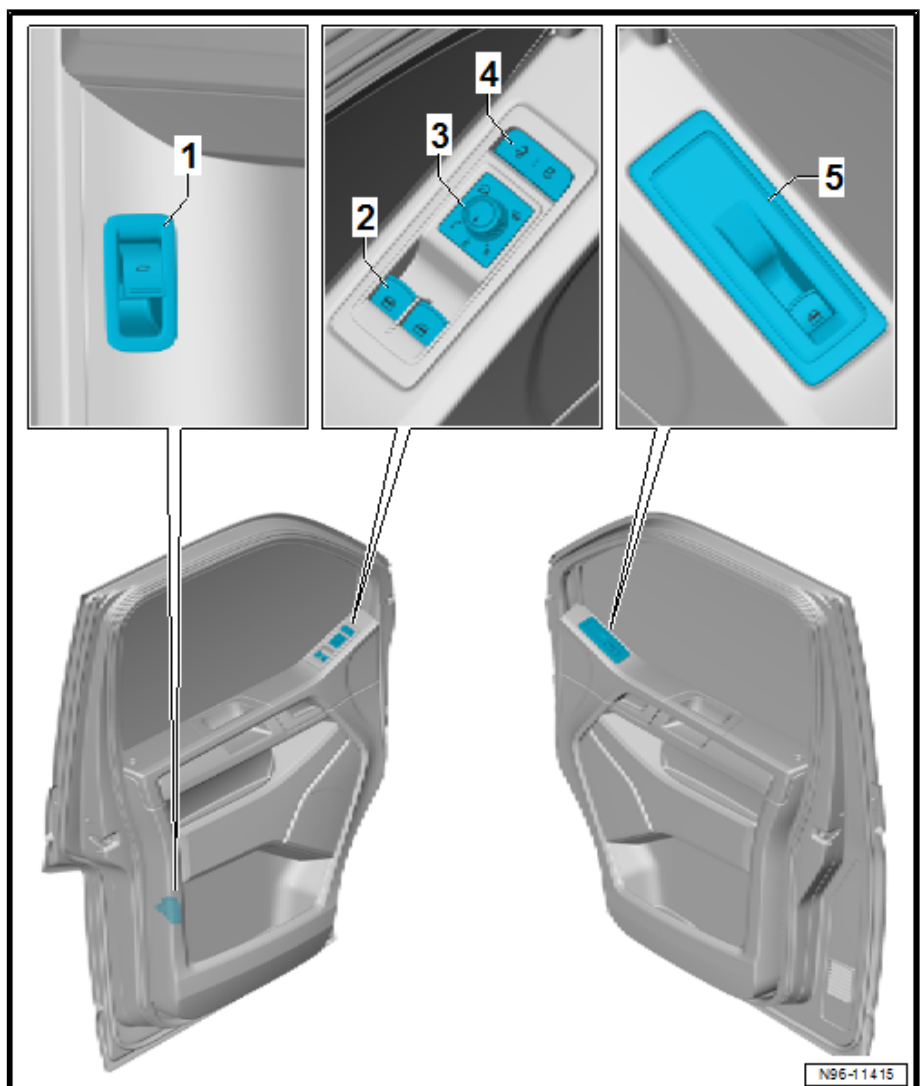
- Removing and installing ⇒ [page 201](#)

#### 4 - Driver side interior locking button for central locking system - E308-

- Depending on equipment
- Removing and installing ⇒ [page 202](#)

#### 5 - Front passenger side window regulator button - E716-

- Removing and installing ⇒ [page 202](#)





## 2.3 Overview of fitting locations - controls in luggage compartment



### Note

For the controls in the luggage compartment, deviations in the equipment may have to be taken account of depending on the model version.

#### 1 - Rear lid warning buzzer - H32-

- ❑ Removing and installing  
⇒ [page 205](#)

#### 2 - Release button for rear lid lock cylinder - F248-

- ❑ Removing and installing  
⇒ [page 204](#)

#### 3 - Rear door contact switch - F10- / -F11-

- ❑ Removing and installing  
⇒ [page 203](#)

#### 4 - Door lock

- ❑ Removing and installing  
⇒ General body repairs, exterior; Rep. gr. 58 ; Door components; Removing and installing door lock .

#### 5 - Rear lid contact switch

- ❑ With:

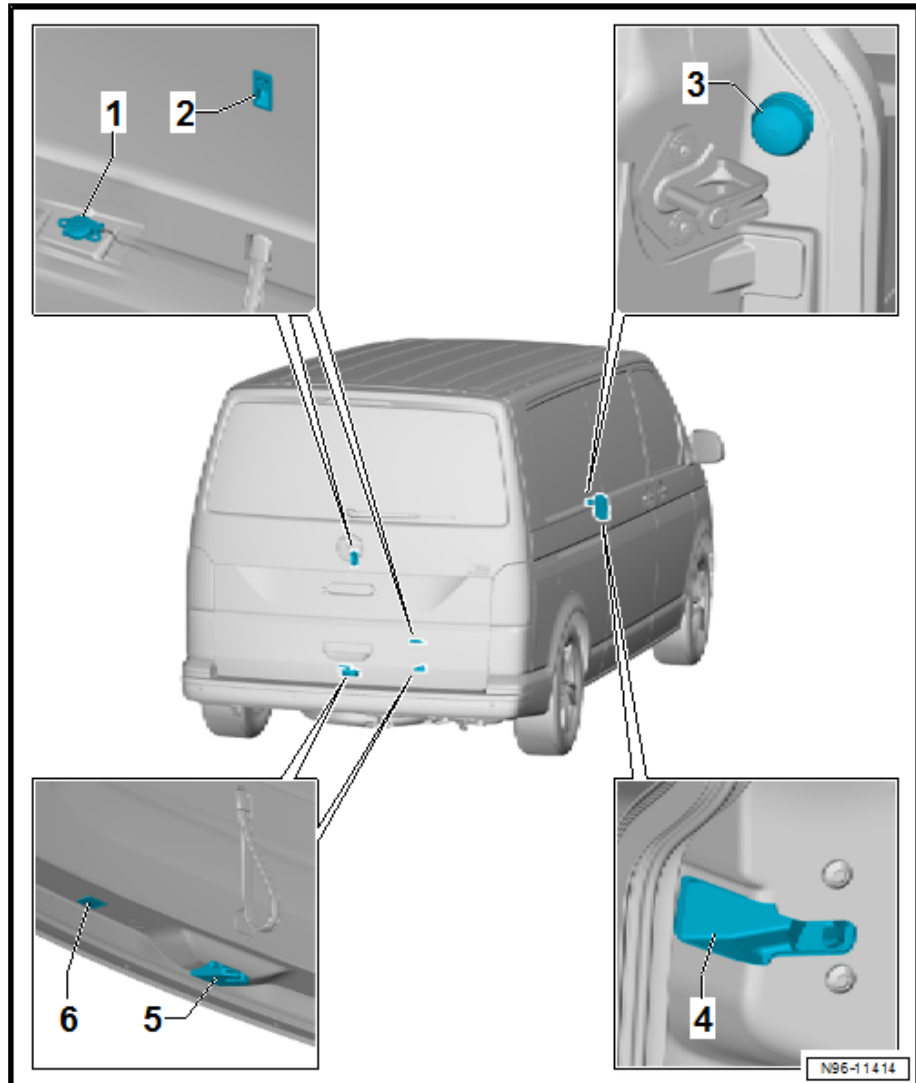
#### ◆ Rear lid contact switch - F111-

#### ◆ Luggage compartment light switch - F5-

- ❑ Removing and installing  
⇒ [page 205](#)

#### 6 - Rear lid closure button - E574-

- ❑ Removing and installing  
⇒ [page 205](#)







## 2.4 Overview of fitting locations - controls in roof trim

### Note

*For the controls in the roof trim, deviations in the equipment may have to be taken account of depending on the model version.*

#### 1 - Buttons for rear interior light and reading light

- Depending on equipment
- Integrated in interior lights
- Light must be renewed if defective.
- Removing and installing ⇒ [page 183](#)

#### 2 - Rear Climatronic operating and display unit - E265-

- Depending on equipment
- Removing and installing ⇒ Heating, air conditioning; Rep. gr. 87 ; Operating and display unit; Removing and installing operating and display unit

#### 3 - Auxiliary heater operating and display unit - E407- / roof display unit - J702-

- Depending on equipment
- Removing and installing ⇒ Heating, air conditioning; Rep. gr. 87 ; Operating and display unit; Removing and installing operating and display unit

#### 4 - Front passenger vanity mirror contact switch - F148-

- Removing and installing ⇒ [page 206](#)

#### 5 - Buttons for reading light/front door opening light

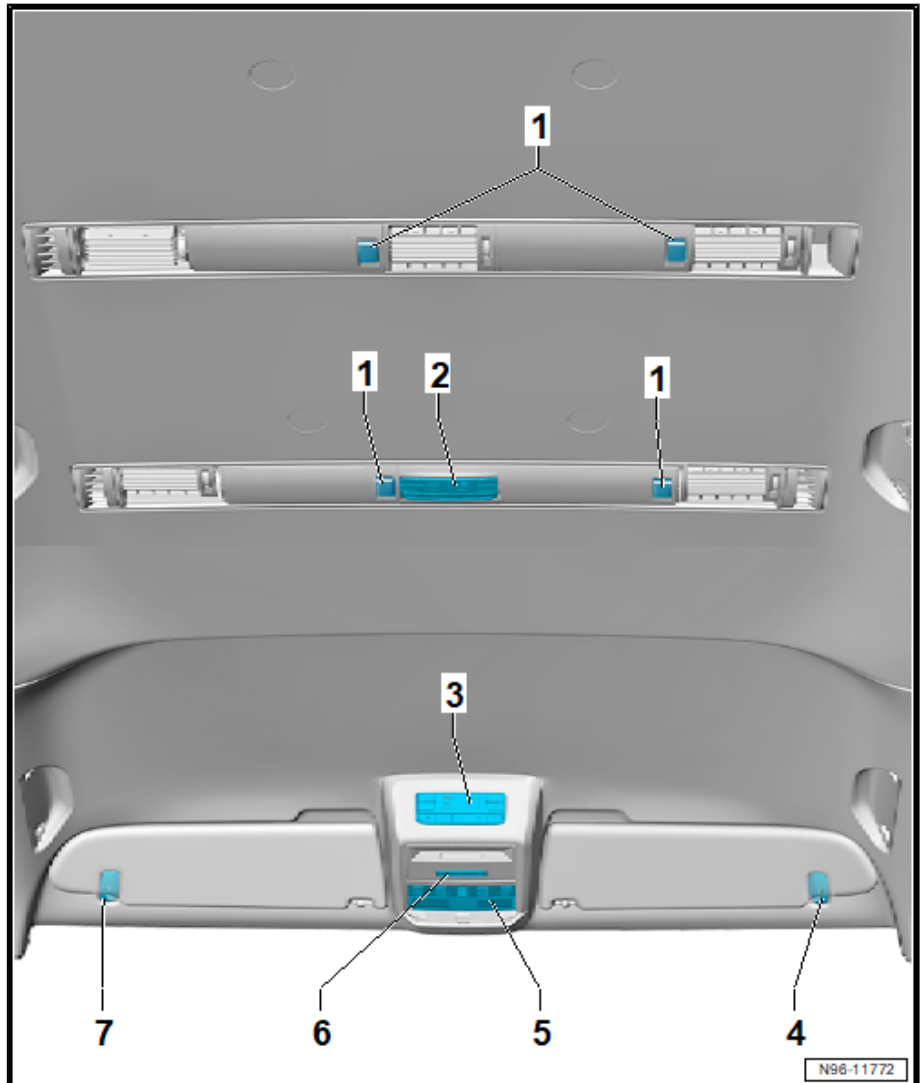
- Depending on equipment
- Integrated in front interior light - W1-
- If defective, the front interior light - W1- must be renewed
- Removing and installing ⇒ [page 206](#)

#### 6 - Telematics button module - E734-

- With emergency assistance call button - E276-
- Removing and installing ⇒ [page 206](#)

#### 7 - Driver vanity mirror contact switch - F147-


- Removing and installing ⇒ [page 206](#)

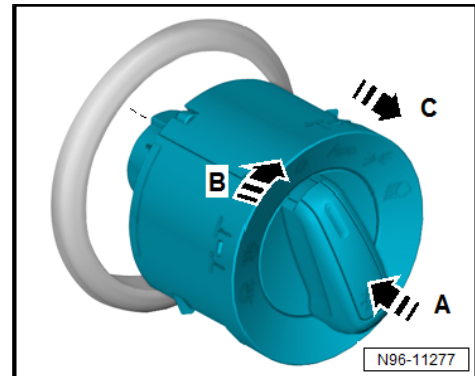




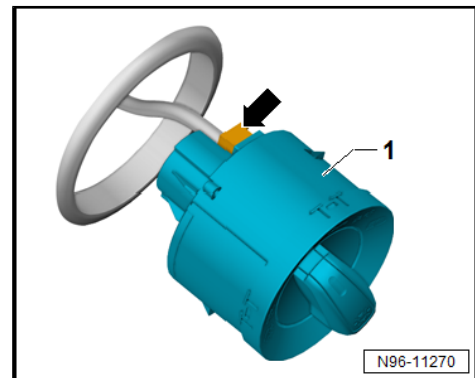
## 2.5 Removing and installing rotary light switch - EX1-

### Removing


- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Turn knob of rotary light switch - EX1- to position .
- Push rotary knob on rotary light switch - EX1- in direction of -arrow A-.
- Turn rotary knob to stop in direction of -arrow B-.
- Hold knob in this position while pulling rotary light switch - EX1- out in direction of -arrow C-.

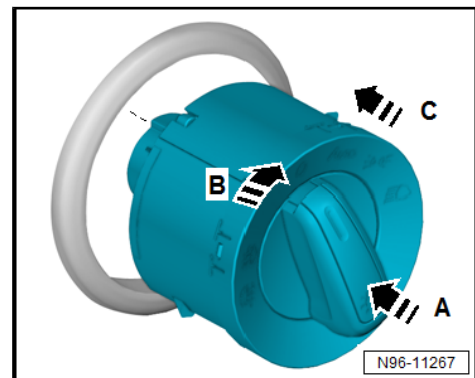


- Disconnect electrical connector -arrow-.



### Installing

- Connect connector and engage it.
- Push rotary knob on rotary light switch - EX1- in direction of -arrow A-.
- Turn rotary knob to stop in direction of -arrow B-.
- Hold knob in this position while inserting rotary light switch - EX1- in direction of -arrow C-.
- Turn grip to position , release and engage rotary light switch - EX1- in installation position.





## 2.6 Removing and installing regulator for switch and instrument illumination - E20-

### Note

- ◆ *The switch and instrument illumination regulator - E20- is part of the headlight range control regulator - E102- .*
- ◆ *Removing and installing headlight range control regulator - E102- => [page 195](#) .*

## 2.7 Removing and installing headlight range control regulator - E102-

### Note

*The switch and instrument illumination regulator - E20- is part of the headlight range control regulator - E102- .*

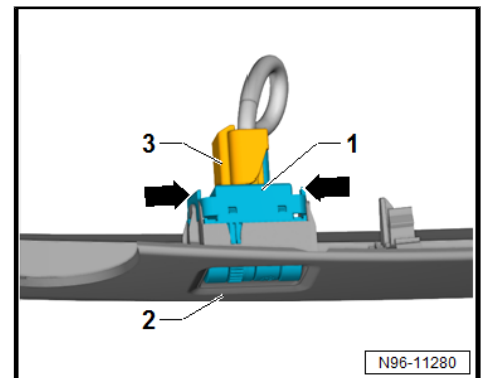
### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove dash panel trim on driver side => General body repairs, interior; Rep. gr. 70 ; Dash panel; Assembly overview - dash panel .
- Disconnect electrical connector -3-.
- Release locking lugs -arrows-.
- Remove headlight range control regulator - E102- -1- from trim -2-.

### Installing

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

- The headlight range control regulator - E102- must engage audibly.



## 2.8 Removing and installing Start/Stop operation button - E693-

### Note

- ◆ *Start/Stop operation button - E693- is installed in switch module in centre of dash panel, top right.*
- ◆ *Removing and installing switch module in centre of dash panel, top right => [page 199](#) .*



## 2.9 Removing and installing TCS and ESP button - E256-



### Note

- ◆ Button for TCS and ESP - E256- is integrated in switch module in left of dash panel.
- ◆ Removing and installing switch module in left of dash panel ⇒ [page 199](#).

## 2.10 Removing and installing parking aid button - E266-



### Note

- ◆ Parking aid button - E266- is installed in switch module in centre of dash panel, top right.
- ◆ Removing and installing switch module in centre of dash panel, top right ⇒ [page 199](#).

## 2.11 Removing and installing park assist steering button - E581-



### Note

- ◆ Park assist steering button - E581- is installed in switch module in centre of dash panel, top right.
- ◆ Removing and installing switch module in centre of dash panel, top right ⇒ [page 199](#).

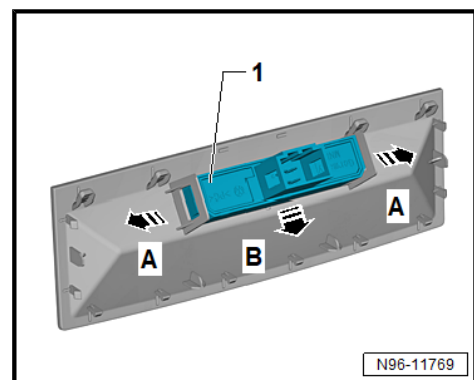
## 2.12 Removing and installing front passenger side airbag deactivated warning lamp - K145-

### Removing

- Remove airbag warning lamp trim ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments and covers; Removing and installing headliner storage compartment .
- Release fasteners on trim in direction of -arrows A-.
- Remove front passenger airbag warning lamp - K145- -1- in direction of -arrow B-.

### Installing

Install in reverse order of removal.





## 2.13 Removing and installing tyre pressure monitor display button - E492-

Special tools and workshop equipment required

- ◆ Removal wedge set - VAS 895 015-



### ! NOTICE

Risk of damage to component surfaces.

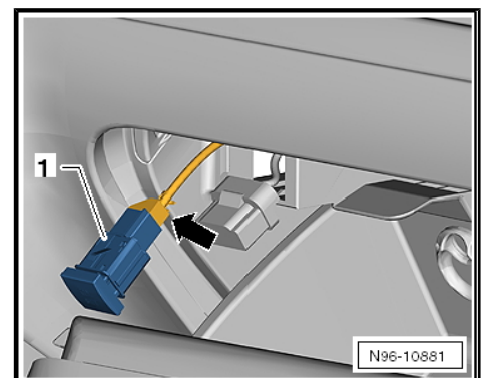
- Before using a lever, always mask off the components installed in visible areas using commercially available adhesive tape.

### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove glove compartment far enough to gain access to rear of Tyre Pressure Loss Indicator button - E492- ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing glove compartment .
- Release fasteners on Tyre Pressure Loss Indicator button - E492- -1-.
- Push Tyre Pressure Loss Indicator button - E492- -1- from behind out of mounting hole in glove compartment.
- Separate electrical connector -arrow-.

### Installing

Install in reverse order of removal.



## 2.14 Removing and installing wireless data transfer button - E928-



Note

- ◆ *Wireless data transfer button - E928- is installed in switch module in centre of dash panel, top left.*
- ◆ *Removing and installing switch module in centre of dash panel, top left ⇒ [page 199](#) .*



## 2.15 Removing and installing heated wind- screen button - E627-



### Note

- ◆ Heated windscreen button - E627- is installed in switch module in centre of dash panel, top left.
- ◆ Removing and installing switch module in centre of dash panel, top left ⇒ [page 199](#).

## 2.16 Removing and installing rear differential lock switch - E121-



### Note

- ◆ Rear differential lock switch - E121- is integrated in switch module in left of dash panel.
- ◆ Removing and installing switch module in left of dash panel ⇒ [page 199](#).

## 2.17 Removing and installing hill descent control button - E618-



### Note

- ◆ Hill descent control button - E618- is integrated in switch module in left of dash panel.
- ◆ Removing and installing switch module in left of dash panel ⇒ [page 199](#).

## 2.18 Removing and installing sliding door button - E442-



### Note

- ◆ Left sliding door button - E442- or right sliding door button - E442- is installed in switch module in centre of dash panel, bottom right.
- ◆ Removing and installing switch module in centre of dash panel, bottom right ⇒ [page 199](#).

## 2.19 Removing and installing button to deac- tivate sliding door - E443-



### Note

- ◆ Deactivation of sliding door button - E443- is installed in switch module in centre of dash panel, bottom right.
- ◆ Removing and installing switch module in centre of dash panel, bottom right ⇒ [page 199](#).



## 2.20 Removing and installing interior light switch (taxi) - E115-

### Note

- ◆ Interior light switch (taxi) - E115- is installed in switch module in centre of dash panel, bottom right.
- ◆ Removing and installing switch module in centre of dash panel, bottom right ⇒ [page 199](#).

## 2.21 Removing and installing taxi sign switch - E138-

### Note

- ◆ The taxi sign switch - E138- is installed in the switch unit in the centre of the dash panel.
- ◆ It is removed and installed in the same way as all other buttons in the centre of the dash panel ⇒ [page 199](#).

## 2.22 Removing and installing buttons in dash panel

⇒ [“2.22.1 Removing and installing switch module in dash panel, driver side”, page 199](#)

⇒ [“2.22.2 Removing and installing switch module in centre of dash panel”, page 199](#)

### 2.22.1 Removing and installing switch module in dash panel, driver side

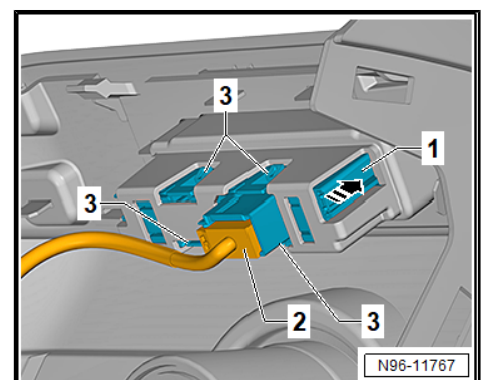
#### Removing

- Switch off ignition and all electrical consumers.
- Remove dash panel trim on driver side ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing dash panel trim on driver side .
- Disconnect connector -2-.
- Release retaining lugs -3-.
- Remove switch module -1-.

#### Installing

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

- Perform functional check.



### 2.22.2 Removing and installing switch module in centre of dash panel

#### Removing

- Switch off ignition and all electrical consumers.

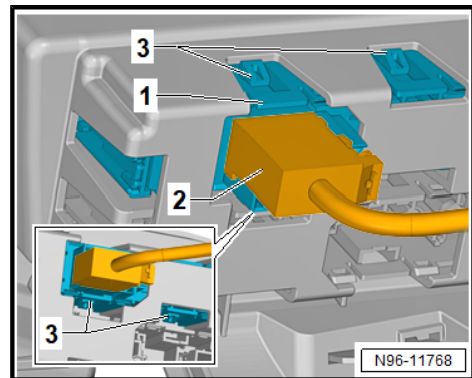


- Remove trim panel of heater and fresh air ventilation system  
⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel;  
Assembly overview – dash panel .
- Disconnect connector -2-.
- Release retaining lugs -3-.
- Remove switch module -1-.

#### Installing

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

- Perform functional check.



## 2.23 Removing and installing hazard warning light switch - EX3-

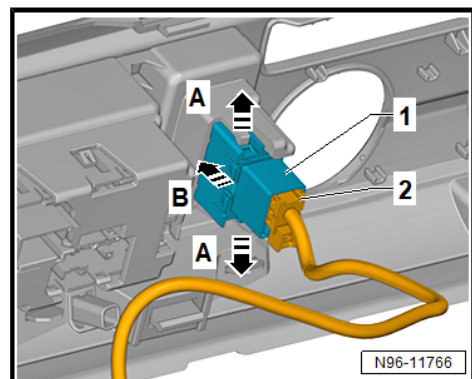
#### Removing

- Switch off ignition and all electrical consumers.
- Remove trim panel of heater and fresh air ventilation system  
⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel;  
Assembly overview – dash panel .
- Disconnect connector -2-.
- Release retaining lugs on trim panel in direction of -arrow A-.
- Remove switch module -1- in direction of -arrow B-.

#### Installing

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

- Perform functional check.



## 2.24 Removing and installing buttons for seat heating -E653- / -E654-

Buttons for seat heating are part of operating and display unit for air conditioning system and Climatronic ⇒ Heating, air conditioning; Rep. gr. 87 ; Operating and display unit; Overview of operating and display unit .

## 2.25 Removing and installing glove compartment light switch - E26-

#### Removing

- Switch off ignition and all electrical consumers.
- Remove glove compartment ⇒ General body repairs, interior;  
Rep. gr. 68 ; Compartments/covers; Removing and installing  
glove compartment .



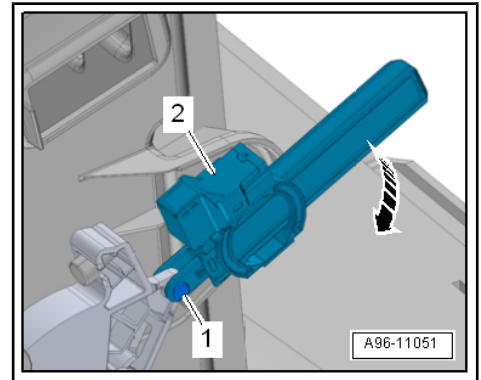


- Disconnect electrical connector on glove compartment light switch - E26- -2-.
- Pull out hinge pin -1-.
- Release glove compartment light switch - E26- -2- in direction of -arrow-.
- Remove glove compartment light switch - E26- -2-.

### Installing

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

- Perform functional check.



## 2.26 Removing and installing exterior mirror adjuster - EX11-

### Special tools and workshop equipment required

- ◆ Removal wedge set - VAS 895 015-



### ! NOTICE

**Risk of damage to component surfaces.**

- Before using a lever, always mask off the components installed in visible areas using commercially available adhesive tape.

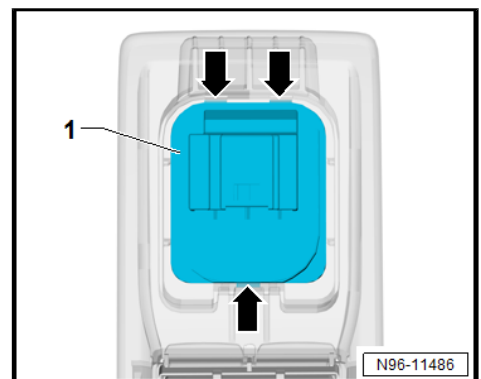
### Removing

- Remove trim for button ⇒ General body repairs, interior; Rep. gr. 70 ; Front door trims; Removing and installing trim for button .
- Release locking lugs -arrows- using removal wedge set - VAS 895 015- .
- Remove exterior mirror adjuster - EX11- -1-.

### Installing

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

- The exterior mirror adjuster - EX11- -1- must be heard to engage in trim.





## 2.27 Removing and installing operating unit for window regulator in driver door - E512-

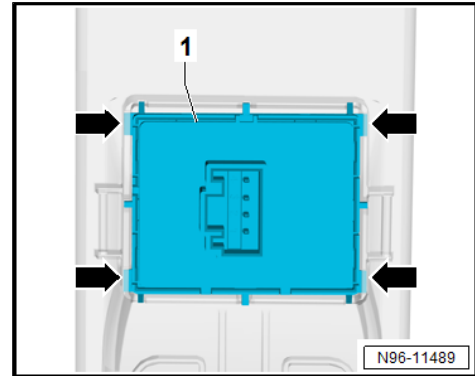
### Removing

- Remove trim for button ⇒ General body repairs, interior; Rep. gr. 70 ; Front door trims; Removing and installing trim for button .
- Release locking lugs -arrow-.
- Remove central switch for window regulators in driver door - E189- -1-.

### Installing

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

- The central switch for window regulators in driver door - E189- -1- must be heard to engage in trim.



## 2.28 Removing and installing window regulator switch in front passenger door - E107-



### Note

- ◆ *The procedure for removal and installation of the window regulator switch in front passenger door - E107- is basically the same for the window regulator switch in driver door - E512- .*
- ◆ *Removing and installing operating unit for window regulator in driver door - E512- ⇒ [page 202](#) .*

## 2.29 Removing and installing driver side interior locking button for central locking system - E308-

### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove trim for button ⇒ General body repairs, interior; Rep. gr. 70 ; Front door trims; Removing and installing trim for button .

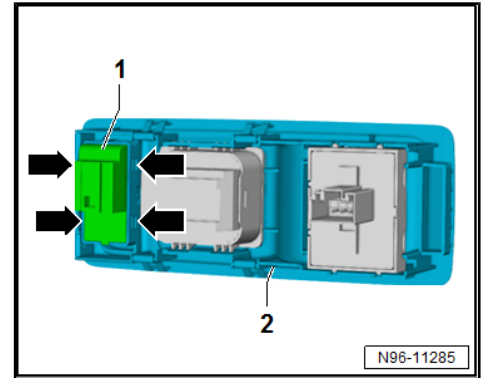


- Release locking lugs -arrows-.
- Remove driver side interior locking button for central locking system - E308- / -E168- -1- from mounting frame -2-.

#### Installing

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

- The driver side interior locking button for central locking system - E308- -1- must engage audibly.



## 2.30 Removing and installing rear lid remote release button - E233-

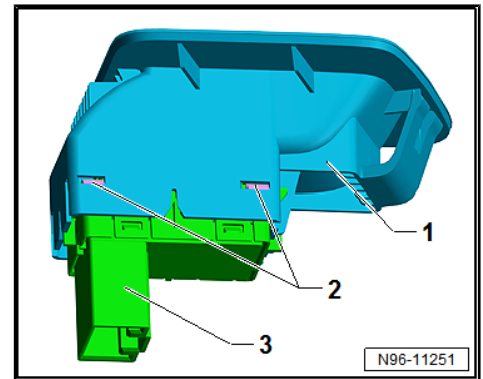
#### Removing

- Remove front door trim panel ⇒ General body repairs, interior; Rep. gr. 70 ; Front door trim panels; Removing and installing front door trim panel .
- Release fasteners -2- on both sides.
- Remove rear lid remote release button - E233- -3- from trim -1-.

#### Installing

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

- Perform functional check.



## 2.31 Removing and installing door contact switch -F2- / -F3-



#### Note

- ◆ *The door contact switches for the front doors are integrated in each of the door locks and cannot be renewed individually.*
- ◆ *If the door contact switch is defective, the entire door lock must be renewed ⇒ General body repairs, exterior; Rep. gr. 57 ; Door components; Removing and installing door lock .*

## 2.32 Removing and installing rear door contact switches -F10- / -F11-



#### Note

- ◆ *On vehicles with electric sliding door, the door contact switch is integrated in the door lock and cannot be renewed individually.*
- ◆ *Renew door lock ⇒ General body repairs, exterior; Rep. gr. 58 ; Sliding door; Assembly overview - sliding door .*

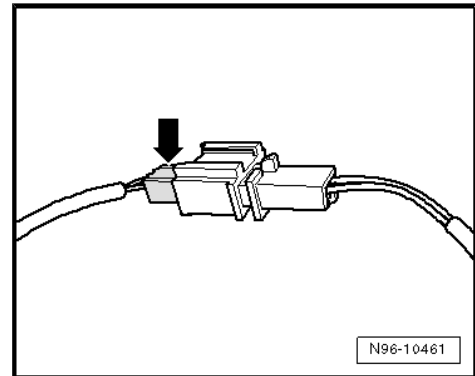


### Note

*Due to double panels in the area of the C-Pillar, the door contact switch can only be removed from the outside. During disassembly, the retaining clips of the door contact switch retaining ring are usually destroyed.*

### Removing

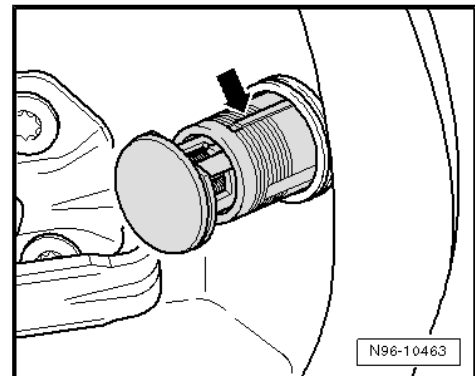
- Remove side panel trim ⇒ General body repairs, interior; Rep. gr. 70 ; Trims, interior; Overview of fitting locations – trims, interior .
- Separate electrical connector -arrow-.
- Pull door contact switch out of body aperture.



### Installing

In a new door contact switch, the retaining ring and the boot are already fitted to the switch.

- Insert door contact switch with its retaining ring into body aperture. Retaining ring fits in body aperture in one position only.
- Switch is adjusted via fine detents -arrow- (shown without bellows).
- Adjust door contact switch using detent setting so that contact switch opens circuit properly when sliding door is closed.



## 2.33 Removing and installing release button for rear lid lock cylinder - F248-

### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove rear lid lower trim ⇒ General body repairs, exterior; Rep. gr. 70 ; Luggage compartment trim; Removing and installing rear lid lower trim .

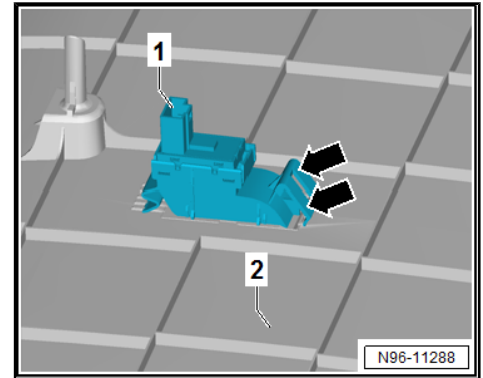


- Release fasteners -arrows-.
- Remove release button for rear lid lock cylinder - F248- -1- from trim -2-.

#### Installing

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

- Perform functional check.



## 2.34 Removing and installing rear lid closure button - E574-

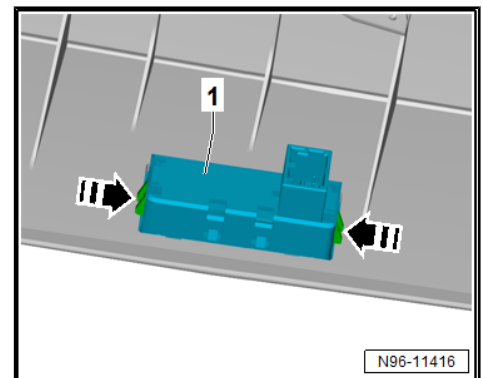
#### Removing

- Remove lower rear lid trim => General body repairs, interior; Rep. gr. 70 ; Luggage compartment trims; Removing and installing lower rear lid trim .
- Release fasteners -arrows-.
- Remove rear lid closure button - E574- -1-.

#### Installing

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

- Perform functional check.



## 2.35 Removing and installing rear lid warning buzzer - H32-

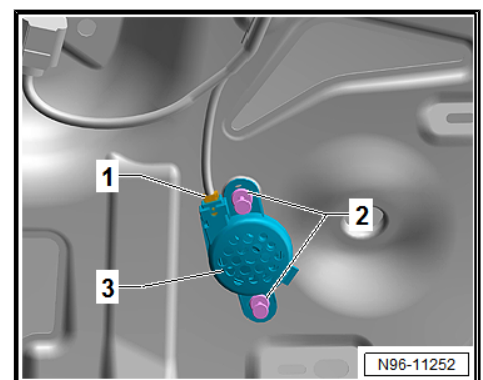
#### Removing

- Remove lower rear lid trim => General body repairs, interior; Rep. gr. 70 ; Luggage compartment trims; Removing and installing lower rear lid trim .
- Disconnect connector -1-.
- Lever off spreader rivets -2-.
- Remove rear lid warning buzzer - H32- -3-.

#### Installing

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

- Perform functional check.



## 2.36 Removing and installing rear lid contact switch

Rear lid contact switch - F111- and luggage compartment light switch - F5- are integrated in rear lid lock and cannot be renewed individually.



- Removing and installing rear lid lock ⇒ General body repairs, exterior; Rep. gr. 55 ; Rear lid; Removing and installing rear lid lock .

### 2.37 Removing and installing vanity mirror contact switch -F147- / -F148-

Vanity mirror contact switches are integrated in the sun visor and cannot be renewed individually.

- Removing and installing sun visor ⇒ General body repairs, interior; Rep. gr. 68 ; Equipment; Removing and installing sun visor .

### 2.38 Removing and installing button for front reading light button / door opening light

The front reading light button and door opening light button are an integral part of the front interior light - W1- and cannot be removed individually.

- Remove front interior light - W1- and renew ⇒ [page 181](#) .

### 2.39 Removing and installing button for rear interior light and reading light

The button for the rear interior light and reading light is part of the interior light and cannot be renewed individually.

- Removing and installing interior light ⇒ [page 183](#) .

### 2.40 Removing and installing Telematics button module - E734-



#### Note

*The emergency assistance call button - E276- is integrated in the Telematics button module - E734- . It cannot be renewed individually.*

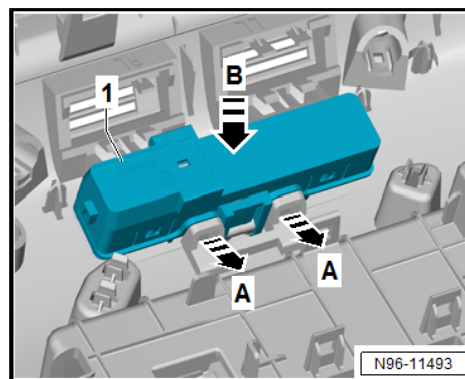
#### Removing

- Remove storage compartment in roof headliner ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments and covers; Removing and installing storage compartment in roof headliner .
- Unclip Telematics button module - E734- -1- in direction of -arrow A-.
- Remove telematics button module - E734- -1- in direction of -arrow B-.

#### Installing

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

- The telematics button module - E734- -1- must engage audibly.





### 3 Anti-theft alarm

⇒ [“3.1 Assembly overview - interior monitor”, page 207](#)

⇒ [“3.2 Removing and installing alarm horn H12”, page 208](#)

⇒ [“3.3 Removing and installing interior monitoring sensor G273”, page 208](#)

⇒ [“3.4 Removing and installing interior monitoring sensor 3 G593”, page 209](#)

#### 3.1 Assembly overview - interior monitor

##### 1 - Interior monitoring sensor - G273-

- With left ultrasonic sensor for anti-theft alarm system - G170-
- With anti-theft alarm ultrasonic sensor - G209-
- With right ultrasonic sensor for anti-theft alarm system - G171-
- Removing and installing  
⇒ [page 208](#)

##### 2 - Interior monitoring sensor 3 - G593-

- With left ultrasonic sensor for rear passenger compartment monitoring system - G981-
- With right ultrasonic sensor for rear passenger compartment monitoring system - G982-
- Removing and installing  
⇒ [page 209](#)

##### 3 - Interior monitoring switch - E183-

- Depending on vehicle variant

##### 4 - Onboard supply control unit - J519-

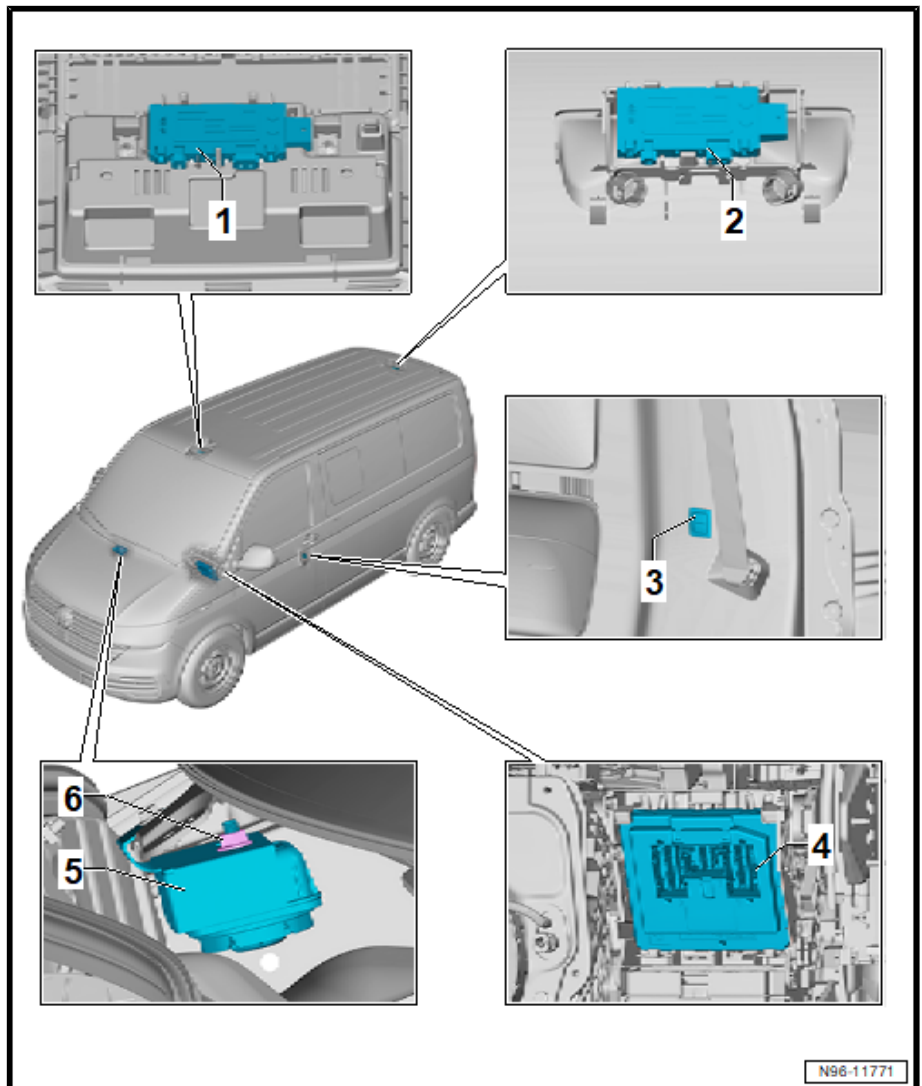
- Removing and installing  
⇒ [page 234](#)

##### 5 - Alarm horn - H12-

- Removing and installing  
⇒ [page 208](#)

##### 6 - Nut

- Renew after removing
- 6 Nm





### 3.2 Removing and installing alarm horn - H12-

Torque wrench - V.A.G 1783-

#### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Plenum chamber cover; Removing and installing plenum chamber cover .

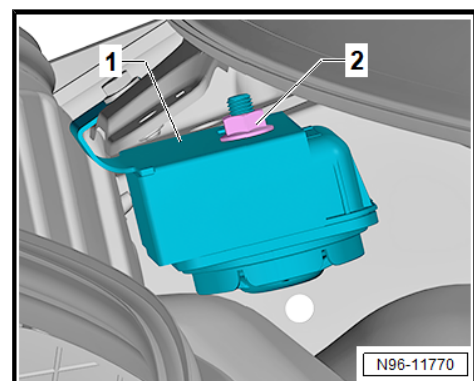
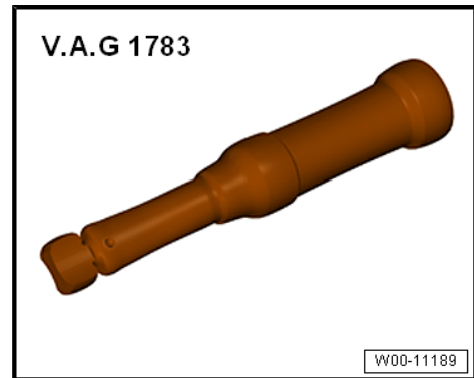
- Unscrew nuts -2-.
- Disconnect electrical connector.
- Remove alarm horn - H12- -1-.

#### Installing

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

#### Specified torques

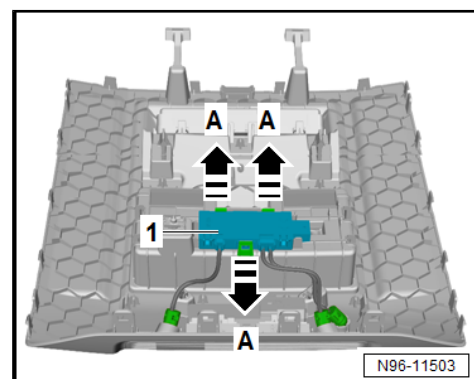
- ◆ ⇒ ["3.1 Assembly overview - interior monitor", page 207](#)



### 3.3 Removing and installing interior monitoring sensor - G273-

#### Removing

- Switch off ignition and all electrical consumers.
- Withdraw ignition key.
- Remove storage compartment in roof headliner ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments and covers; Removing and installing storage compartment in roof headliner .
- Release retaining tabs of interior monitoring sensor - G273- -1- in -direction of arrow A-.
- Detach interior monitoring sensor - G273- -1-.



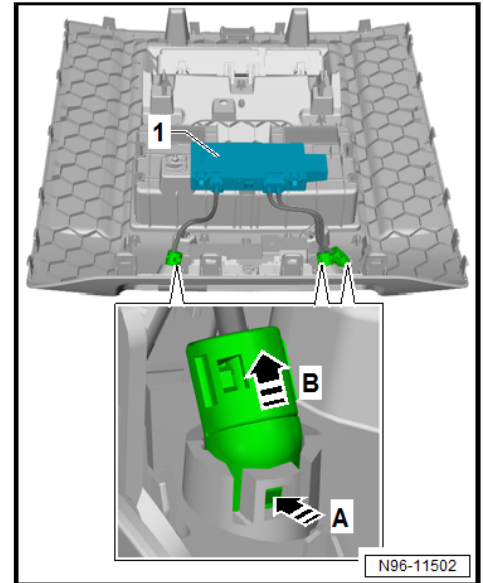




- Release anti-theft alarm ultrasonic sensors -G170- / -G209- / -G171- in direction of -arrow A-.
- Remove anti-theft alarm ultrasonic sensors -G170- / -G209- / -G171- in direction of -arrow B-.
- Remove interior monitoring sensor - G273- -1-.

#### Installing

Install in reverse order of removal.



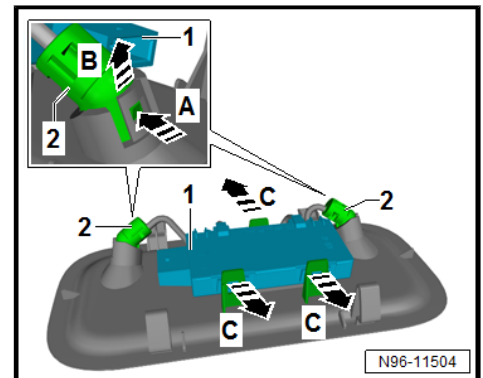
### 3.4 Removing and installing interior monitoring sensor 3 - G593-

#### Removing

- Switch off ignition and all electrical consumers.
- Withdraw ignition key.
- Remove cap => General body repairs, interior; Rep. gr. 70 ; Interior trim; Removing and installing cap .
- Release anti-theft alarm ultrasonic sensors -G981- / -G982- -2- in direction of -arrow A-.
- Remove anti-theft alarm ultrasonic sensors -G981- / -G982- -2- in direction of -arrow B-.
- Release retaining tabs in -direction of arrow C-.
- Detach interior monitoring sensor 3 - G593- -1-.

#### Installing

Install in reverse order of removal.





## 4 Immobiliser

⇒ [“4.1 Removing and installing immobiliser control unit”, page 210](#)

⇒ [“4.2 Removing and installing immobiliser reader coil”, page 210](#)

### 4.1 Removing and installing immobiliser control unit

For a general description and additional information on the immobiliser, refer to ⇒ Electrical system, General information; Rep. gr. 96 ; Lights, bulbs, switches - interior; Immobiliser .

- Removing and installing dash panel insert ⇒ [page 47](#) .

### 4.2 Removing and installing immobiliser reader coil

For a general description and additional information on the immobiliser, refer to ⇒ Electrical system, General information; Rep. gr. 96 ; Lights, bulbs, switches - interior; Immobiliser .

- Removing and installing lock cylinder ⇒ [page 163](#) .



## 5 Cigarette lighter, socket

⇒ [“5.1 Overview of fitting locations - DC/AC converter with socket, 12 V-230 V”, page 211](#)

⇒ [“5.2 Assembly overview – DC/AC converter with socket, 12 V–230 V U13”, page 215](#)

⇒ [“5.3 Assembly overview – sockets”, page 217](#)

⇒ [“5.4 Removing and installing cigarette lighter U1”, page 219](#)

⇒ [“5.5 Removing and installing socket illumination bulb L42”, page 219](#)

⇒ [“5.6 Removing and installing rear cigarette lighter illumination bulb L32”, page 219](#)

⇒ [“5.7 Removing and installing electric socket U”, page 219](#)

⇒ [“5.8 Removing and installing DC/AC converter with socket, 12 V-230 V U13”, page 219](#)

⇒ [“5.9 Removing and installing interior socket 2, 230 V, 110 V U17”, page 223](#)

⇒ [“5.10 Removing and installing trim frame, front section”, page 225](#)

### 5.1 Overview of fitting locations - DC/AC converter with socket, 12 V-230 V

⇒ [“5.1.1 Overview of fitting locations – DC/AC converter with socket, 12 V–230 V U13 , LHD vehicles with second battery”, page 211](#)

⇒ [“5.1.2 Overview of fitting locations – DC/AC converter with socket, 12 V–230 V U13 , LHD vehicles without second battery”, page 213](#)

⇒ [“5.1.3 Overview of fitting locations – DC/AC converter with socket, 12 V–230 V U13 , RHD vehicles”, page 214](#)

#### 5.1.1 Overview of fitting locations – DC/AC converter with socket, 12 V–230 V - U13- , LHD vehicles with second battery

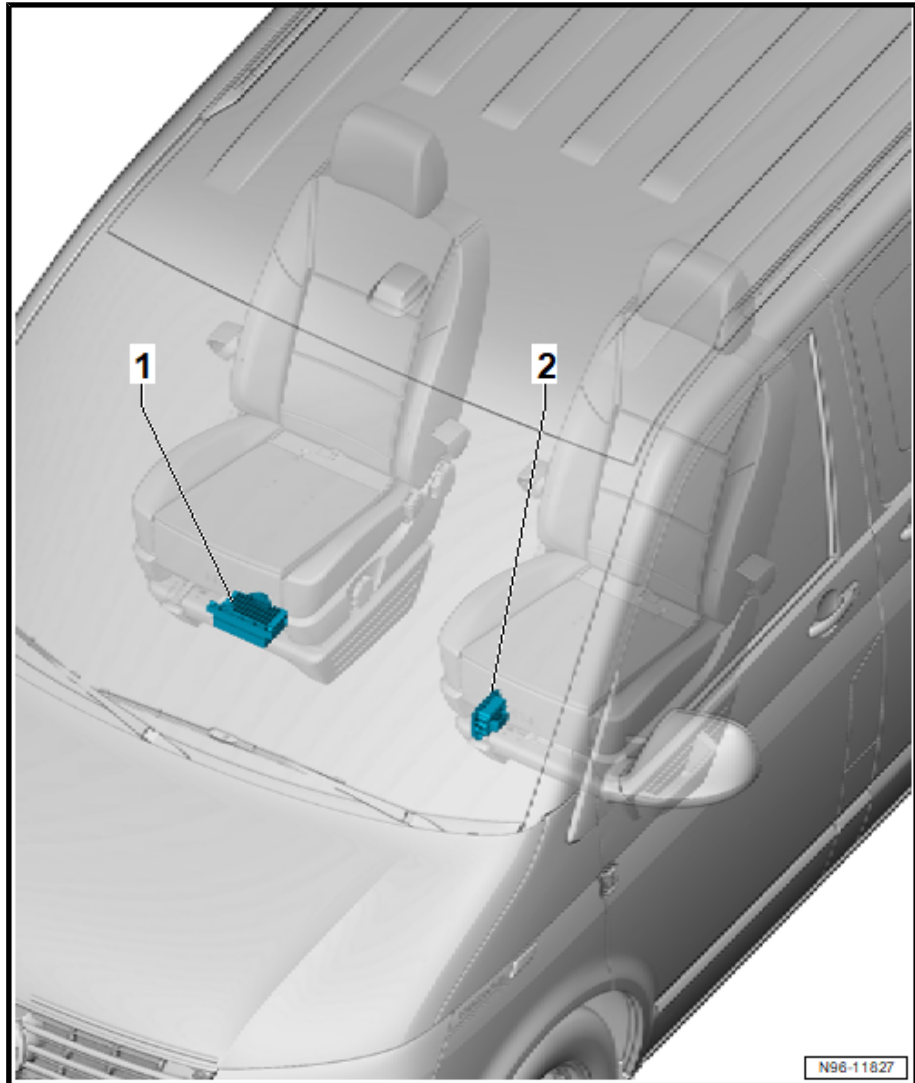


**1 - AC/DC converter with socket, 12 V-230 V - U13-**

- In seat box under front passenger seat
- Removing and installing  
⇒ [page 219](#)

**2 - Interior socket 2, 230 V, 110 V - U17-**

- Removing and installing  
⇒ [page 223](#)





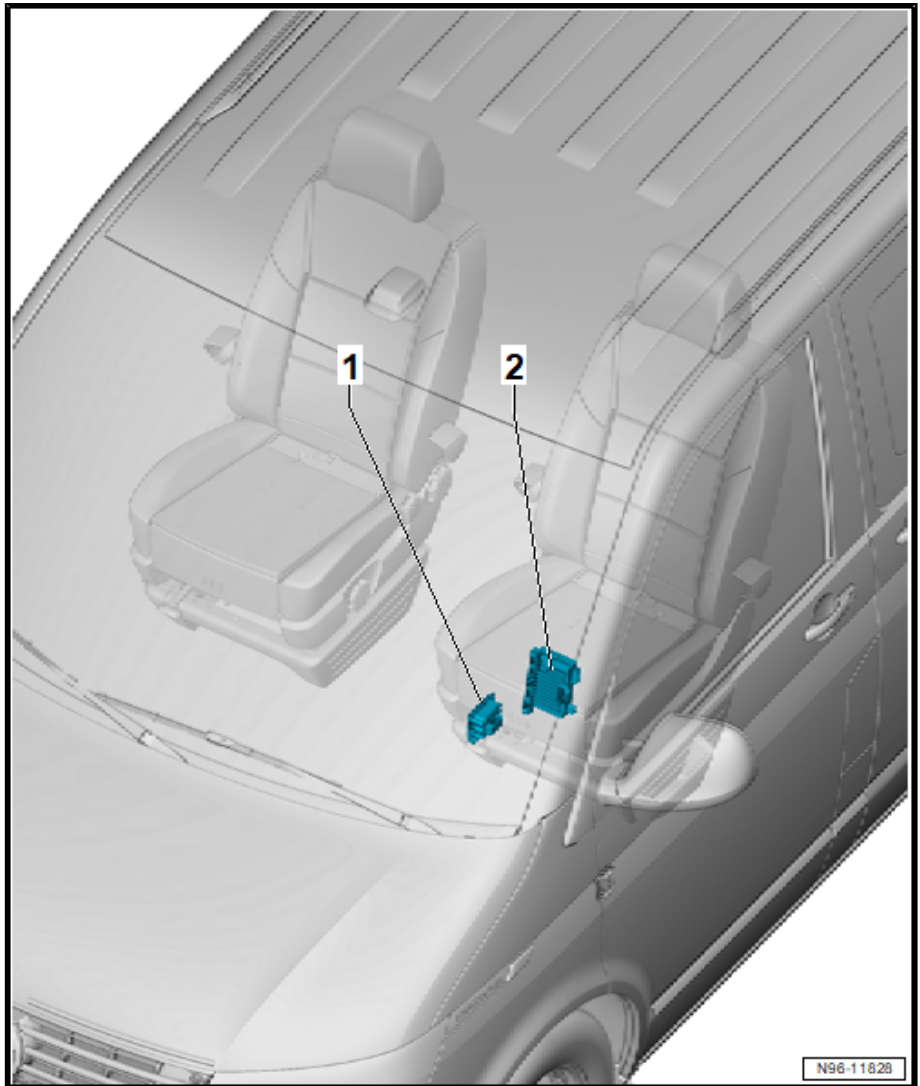
## 5.1.2 Overview of fitting locations – DC/AC converter with socket, 12 V–230 V - U13- , LHD vehicles without second battery

1 - Interior socket 2, 230 V,  
110 V - U17-

- ❑ Removing and installing  
⇒ [page 223](#)

2 - AC/DC converter with sock-  
et, 12 V-230 V - U13-

- ❑ In seat box under driver  
seat
- ❑ Removing and installing  
⇒ [page 219](#)





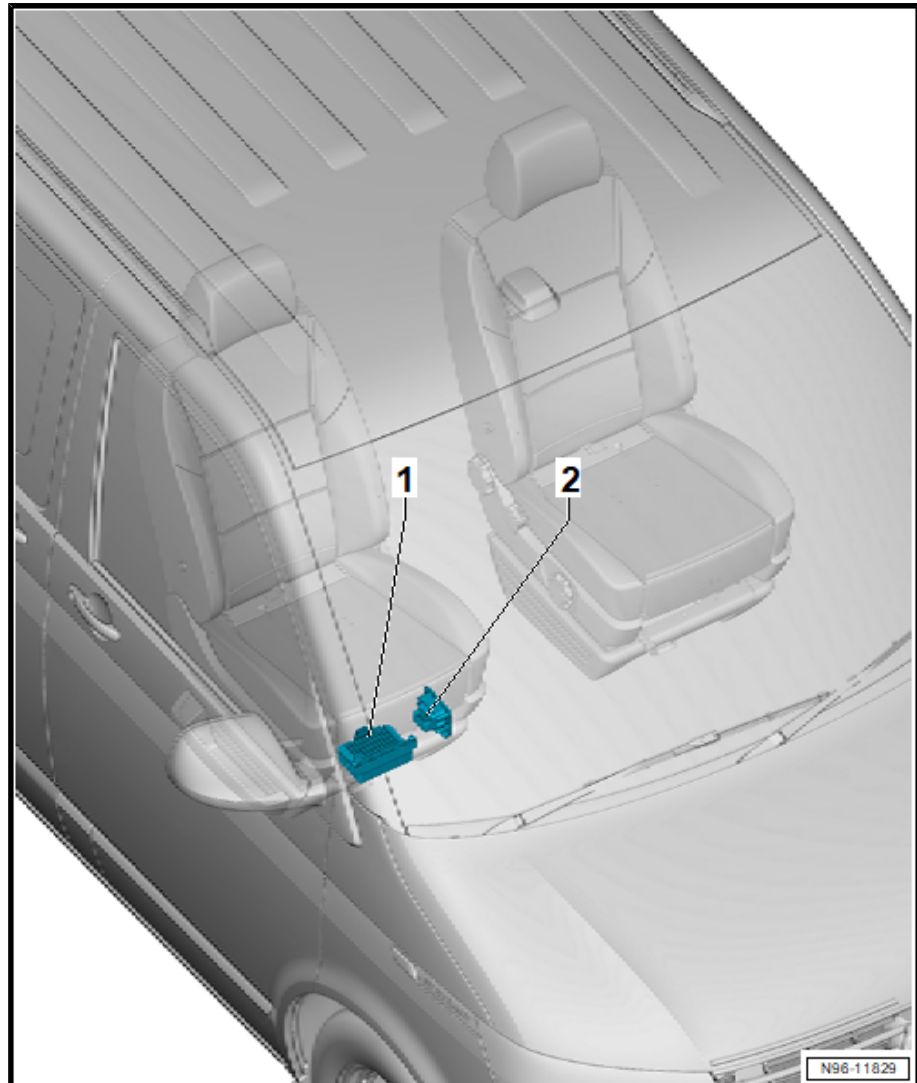
### 5.1.3 Overview of fitting locations – DC/AC converter with socket, 12 V–230 V - U13- , RHD vehicles

#### 1 - AC/DC converter with socket, 12 V-230 V - U13-

- In seat box under driver seat
- Removing and installing  
⇒ [page 219](#)

#### 2 - Interior socket 2, 230 V, 110 V - U17-

- Removing and installing  
⇒ [page 223](#)





## 5.2 Assembly overview – DC/AC converter with socket, 12 V–230 V - U13-

⇒ [“5.2.1 Assembly overview – DC/AC converter with socket, 12 V–230 V U13 , vehicles with second battery”, page 215](#)

⇒ [“5.2.2 Assembly overview – DC/AC converter with socket, 12 V–230 V U13 , vehicles without second battery”, page 216](#)

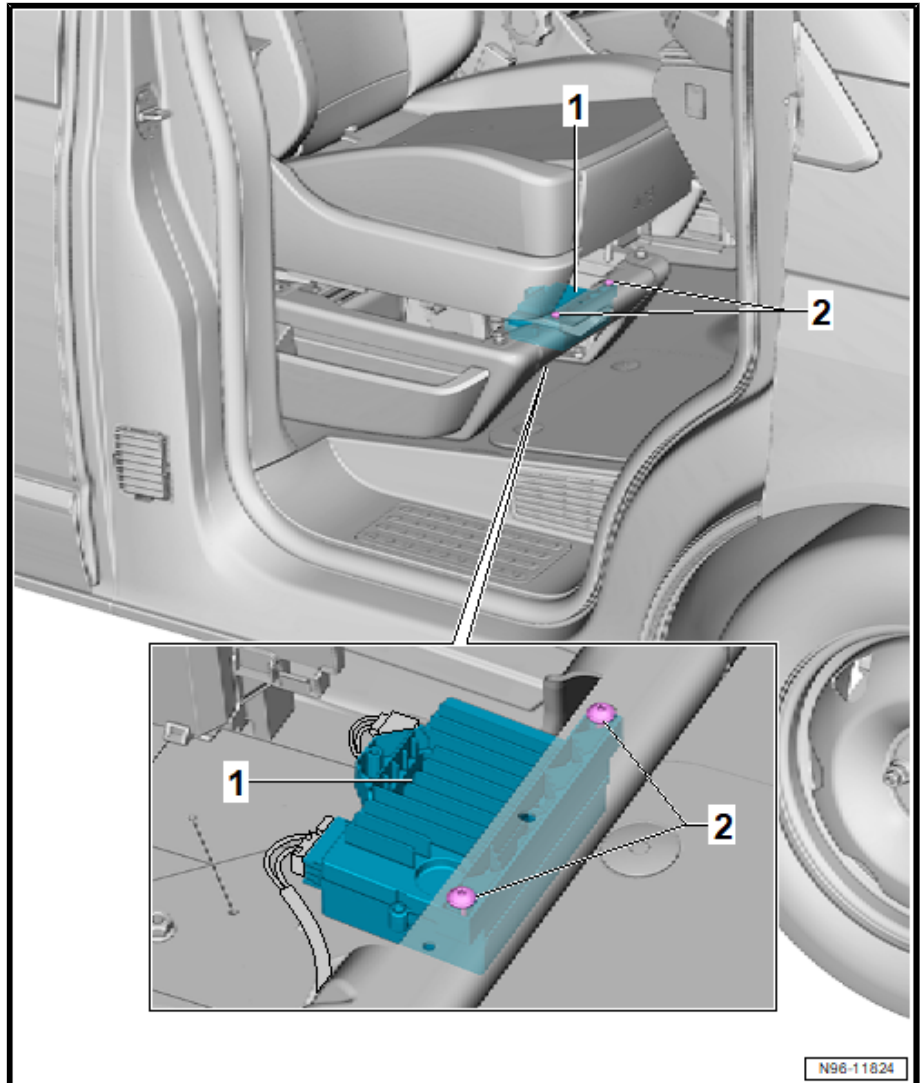
### 5.2.1 Assembly overview – DC/AC converter with socket, 12 V–230 V - U13- , vehicles with second battery

#### 1 - AC/DC converter with socket, 12 V-230 V - U13-

- ❑ Removing and installing  
⇒ [page 219](#)

#### 2 - Bolt

- ❑ Qty. 2
- ❑ 3 Nm





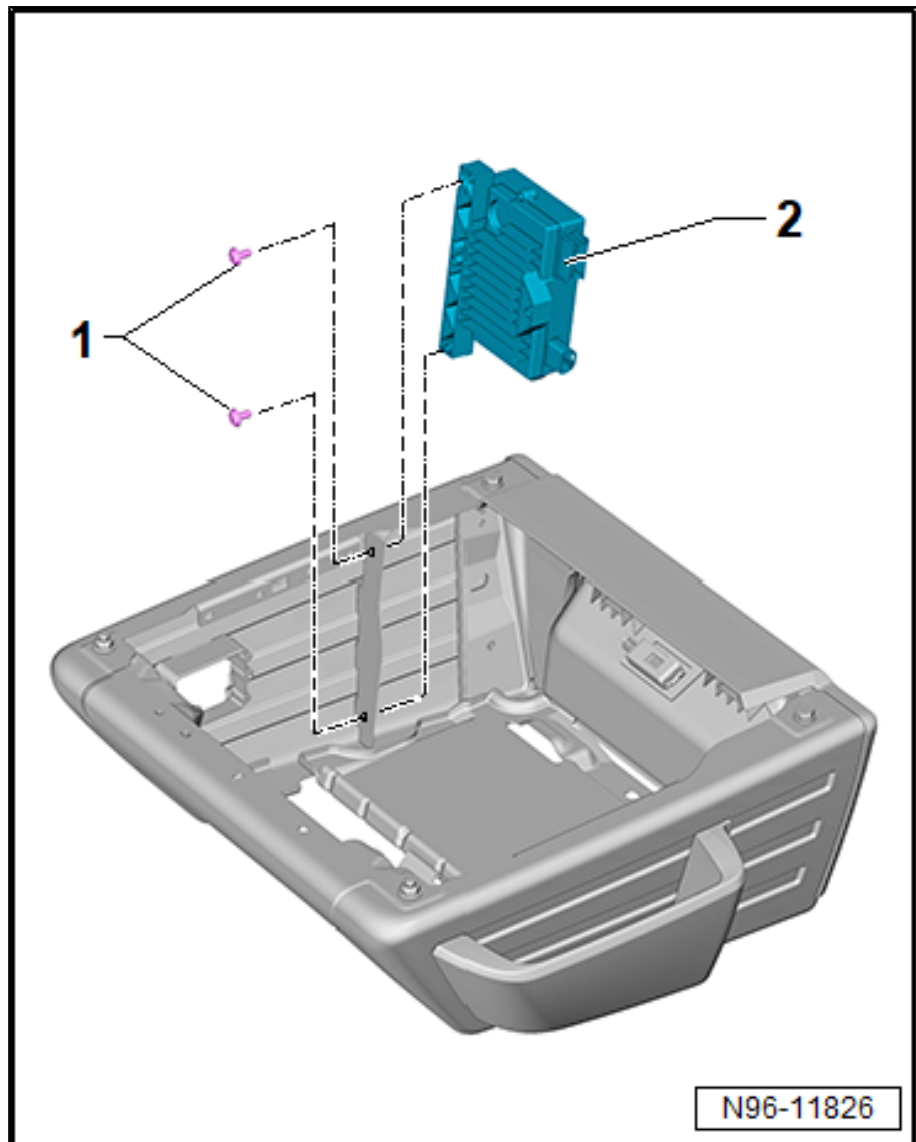
## 5.2.2 Assembly overview – DC/AC converter with socket, 12 V–230 V - U13- , vehicles without second battery

### 1 - Bolts

- Qty. 2
- 3 Nm

### 2 - AC/DC converter with socket, 12 V-230 V - U13-

- Removing and installing  
[⇒ page 219](#)







## 5.3 Assembly overview – sockets

⇒ [“5.3.1 Assembly overview – cigarette lighter, 12 V socket”, page 217](#)

⇒ [“5.3.2 Assembly overview – interior socket 2, 230 V, 110 V U17”, page 218](#)

### 5.3.1 Assembly overview – cigarette lighter, 12 V socket

**1 - Cigarette lighter socket with wiring harness**

**2 - Cigarette lighter**

**3 - Electric socket**

Fitting location (depending on equipment):

- ◆ At top of dash panel
- ◆ In storage compartment of centre console
- ◆ In C-pillar trim
- ◆ In roof trim of pop-up roof
- ◆ On side of kitchen cabinet
- ◆ In centre console of two-seater bench in rear
- ◆ In luggage compartment

**4 - Cigarette lighter socket**

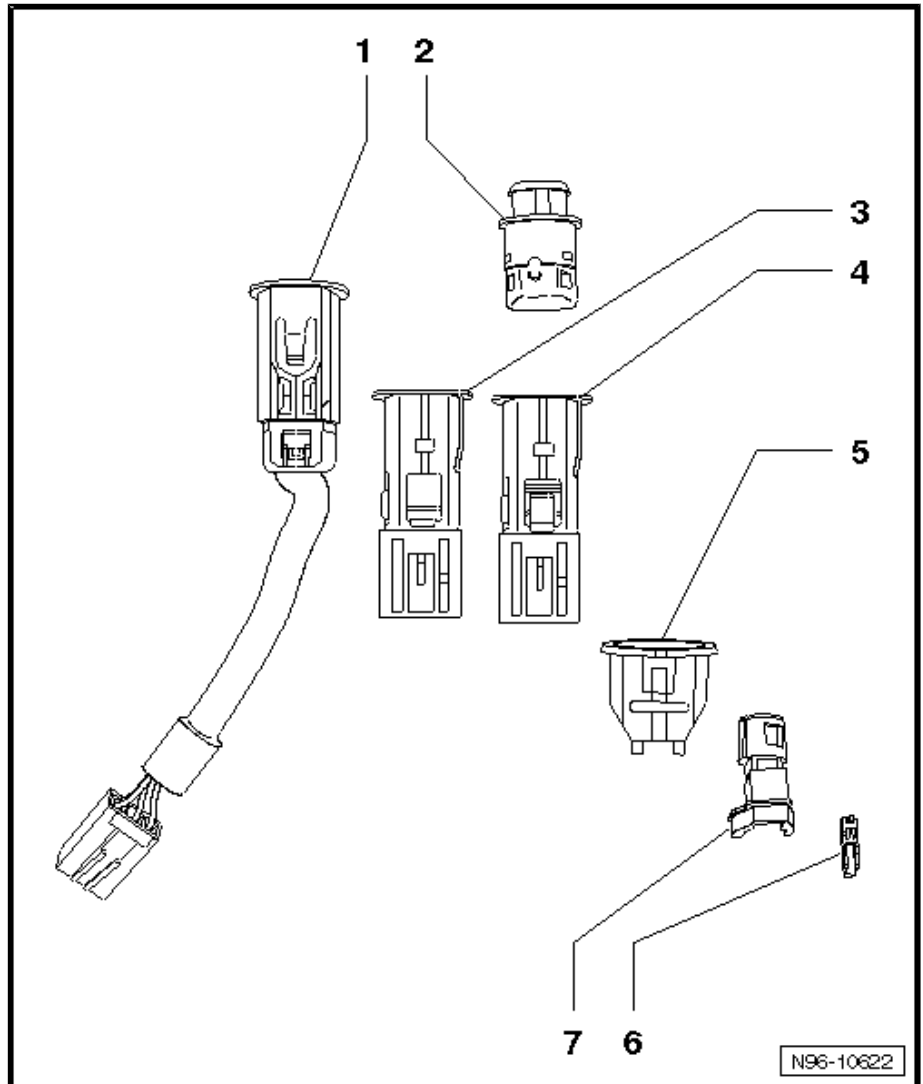
Fitting location (depending on equipment):

- ◆ In storage compartment of centre console
- ◆ In centre console of two-seater bench in rear

**5 - Clamping sleeve**

**6 - Light bulb W 5 12V, 1.2 watts**

**7 - Bulb carrier**





### 5.3.2 Assembly overview – interior socket 2, 230 V, 110 V - U17-

1 - Frame

2 - Trim frame, front section

- ❑ Removing and installing  
⇒ [page 225](#)

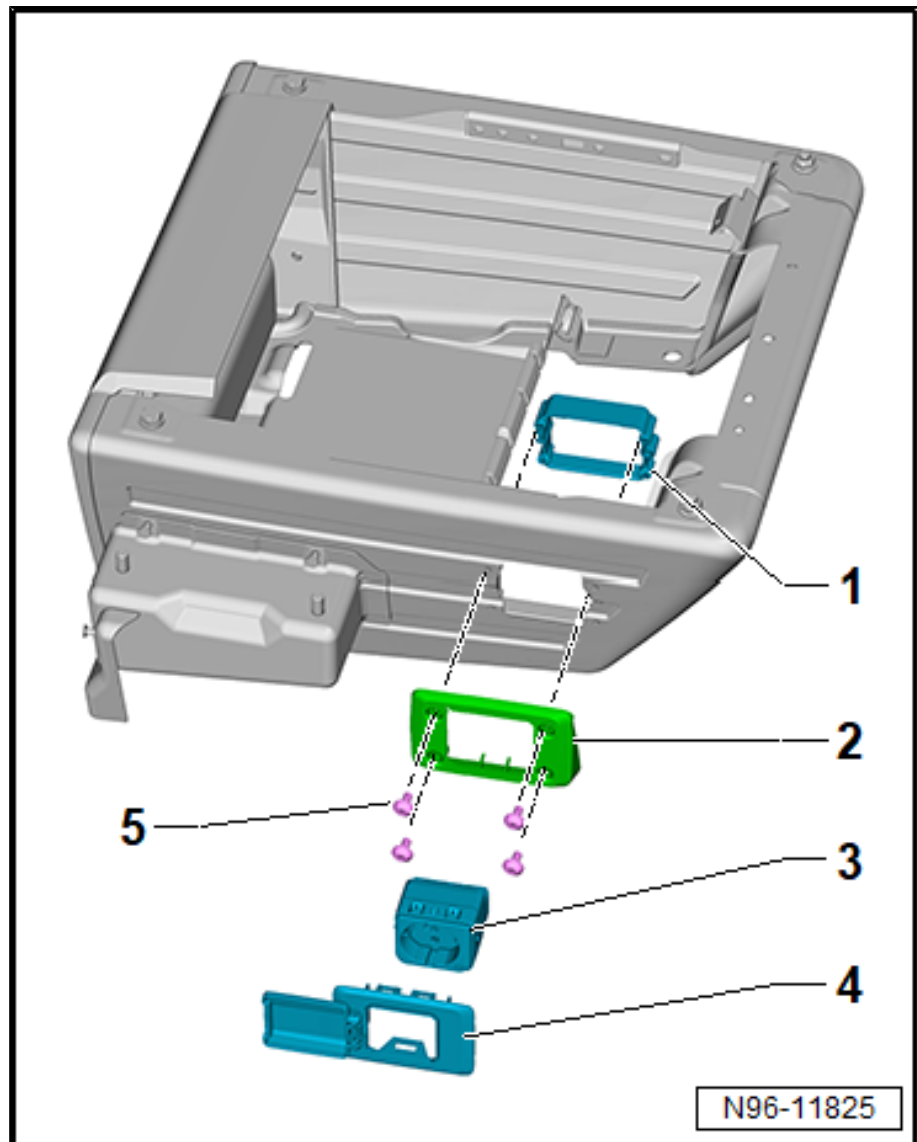
3 - Interior socket 2, 230 V,  
110 V - U17-

- ❑ On driver seat
- ❑ Removing and installing  
⇒ [page 223](#)

4 - Socket trim

5 - Bolts

- ❑ Qty. 4
- ❑ 2 Nm





## 5.4 Removing and installing cigarette lighter - U1-

All instructions and notes regarding this chapter are available under ⇒ Electrical system, General information; Rep. gr. 96 ; Cigarette lighter - U1-

## 5.5 Removing and installing socket illumination bulb - L42-

All instructions and notes regarding this chapter are available under ⇒ Electrical system, General information; Rep. gr. 96 ; 12 V socket

## 5.6 Removing and installing rear cigarette lighter illumination bulb - L32-

All instructions and notes regarding this chapter are available under ⇒ Electrical system, General information; Rep. gr. 96 ; Cigarette lighter - U1-

## 5.7 Removing and installing electric socket - U-

All instructions and notes regarding this chapter are available under ⇒ Electrical system, General information; Rep. gr. 96 ; 12 V socket ; Removing and installing 12 V socket

## 5.8 Removing and installing DC/AC converter with socket, 12 V-230 V - U13-

⇒ ["5.8.1 Removing and installing DC/AC converter with socket, 12 V-230 V U13 , LHD vehicles with second battery", page 219](#)

⇒ ["5.8.2 Removing and installing DC/AC converter with socket, 12 V-230 V U13 , LHD vehicles without second battery", page 221](#)

⇒ ["5.8.3 Removing and installing DC/AC converter with socket, 12 V-230 V U13 , RHD vehicles", page 222](#)

### 5.8.1 Removing and installing DC/AC converter with socket, 12 V-230 V - U13- , LHD vehicles with second battery



#### Note

- ◆ *Repairs to the 110/230 V system may only be carried out by a qualified electrician or under the supervision of a qualified electrician.*
- ◆ *Observe country-specific regulations.*
- ◆ *In the housing of the DC/AC converter with socket, 12 V - 230 V - U13- there are capacitors that may still be charged with a residual voltage.*
- ◆ *Never open the housing of the DC/AC converter with socket, 12 V - 230 V - U13- .*
- ◆ *The connector, wiring and 230 V socket must never be repaired.*
- ◆ *The complete unit must always be renewed if the connector, wiring and 230 V socket or the DC/AC converter are defective.*



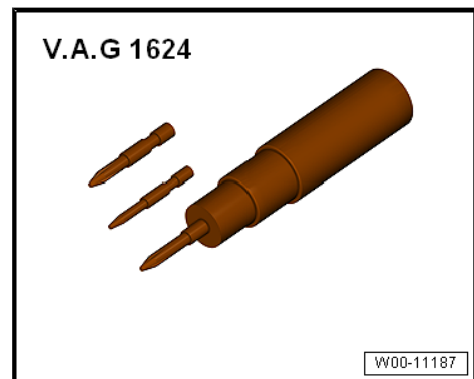
- ◆ *There must be no connector plugged into the socket.*

### DANGER

- ◆ Incorrectly performed repairs to the 110/230 V system can seriously injure the user.
- ◆ An electric shock can cause serious or fatal injuries.
- ◆ On completion of repairs to the 110/230 V system the qualified electrician is obligated to perform tests to ensure the safety of the system.

### Special tools and workshop equipment required

- ◆ Torque screwdriver - V.A.G 1624-



### Removing:



### Note

*Observe safety measures for electrical system ⇒ [page 2](#)*

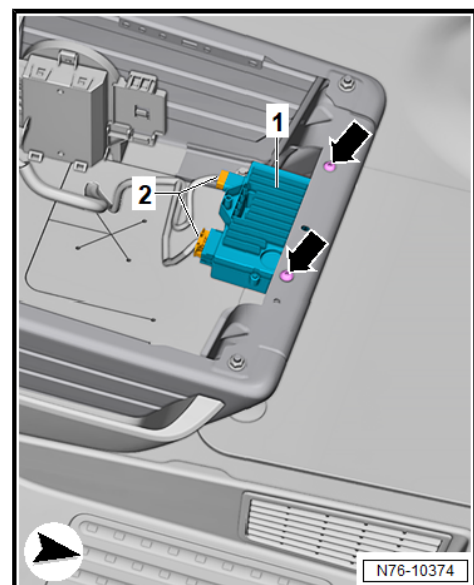
- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove front passenger seat. ⇒ General body repairs, interior; Rep. gr. 72 ; Front seats; Removing and installing front seat
- Disconnect electrical connectors -2-.
- Unscrew bolts -arrows-.
- Remove DC/AC converter -1-.

### Installing

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

### Specified torques

- ◆ ⇒ ["5.2 Assembly overview – DC/AC converter with socket, 12 V–230 V U13", page 215](#)





## 5.8.2 Removing and installing DC/AC converter with socket, 12 V–230 V - U13- , LHD vehicles without second battery



### Note

- ◆ Repairs to the 110/230 V system may only be carried out by a qualified electrician or under the supervision of a qualified electrician.
- ◆ Observe country-specific regulations.
- ◆ In the housing of the DC/AC converter with socket, 12 V - 230 V - U13- there are capacitors that may still be charged with a residual voltage.
- ◆ Never open the housing of the DC/AC converter with socket, 12 V - 230 V - U13- .
- ◆ The connector, wiring and 230 V socket must never be repaired.
- ◆ The complete unit must always be renewed if the connector, wiring and 230 V socket or the DC/AC converter are defective.
- ◆ There must be no connector plugged into the socket.

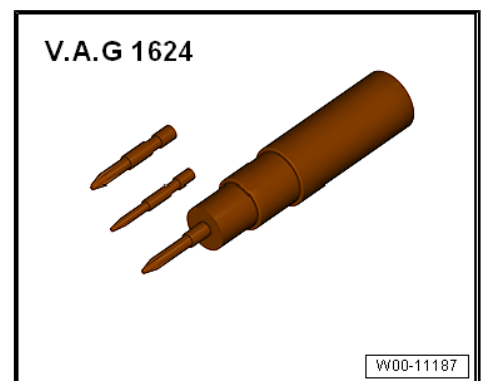


### DANGER

- ◆ Incorrectly performed repairs to the 110/230 V system can seriously injure the user.
- ◆ An electric shock can cause serious or fatal injuries.
- ◆ On completion of repairs to the 110/230 V system the qualified electrician is obligated to perform tests to ensure the safety of the system.

### Special tools and workshop equipment required

- ◆ Torque screwdriver - V.A.G 1624-



### Removing:



### Note

Observe safety measures for electrical system ⇒ [page 2](#)

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.



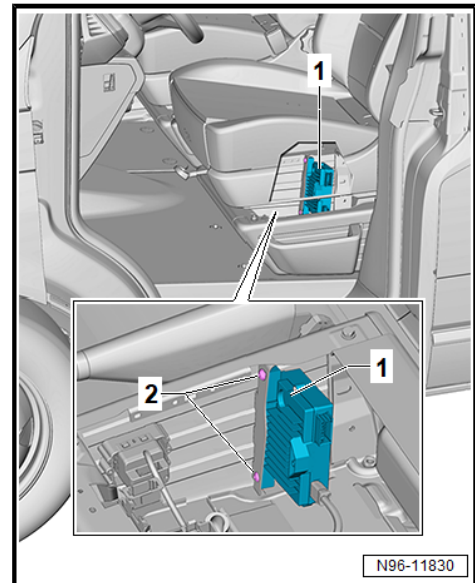
- Remove driver seat. ⇒ General body repairs, interior; Rep. gr. 72 ; Front seats; Removing and installing front seat
- Disconnect electrical connectors.
- Unscrew bolts -2-.
- Remove DC/AC converter -1-.

### Installing

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

### Specified torques

- ◆ ⇒ [“5.2 Assembly overview – DC/AC converter with socket, 12 V-230 V U13”, page 215](#)



## 5.8.3 Removing and installing DC/AC converter with socket, 12 V-230 V - U13- , RHD vehicles



### Note

- ◆ *Repairs to the 110/230 V system may only be carried out by a qualified electrician or under the supervision of a qualified electrician.*
- ◆ *Observe country-specific regulations.*
- ◆ *In the housing of the DC/AC converter with socket, 12 V - 230 V - U13- there are capacitors that may still be charged with a residual voltage.*
- ◆ *Never open the housing of the DC/AC converter with socket, 12 V - 230 V - U13- .*
- ◆ *The connector, wiring and 230 V socket must never be repaired.*
- ◆ *The complete unit must always be renewed if the connector, wiring and 230 V socket or the DC/AC converter are defective.*
- ◆ *There must be no connector plugged into the socket.*

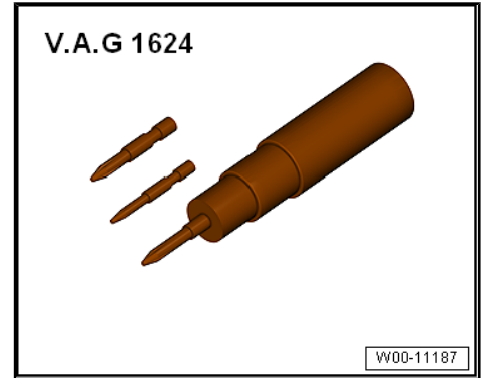
### DANGER

- ◆ **Incorrectly performed repairs to the 110/230 V system can seriously injure the user.**
- ◆ **An electric shock can cause serious or fatal injuries.**
- ◆ **On completion of repairs to the 110/230 V system the qualified electrician is obligated to perform tests to ensure the safety of the system.**

Special tools and workshop equipment required



- ◆ Torque screwdriver - V.A.G 1624-



**Removing:**



*Observe safety measures for electrical system ⇒ [page 2](#)*

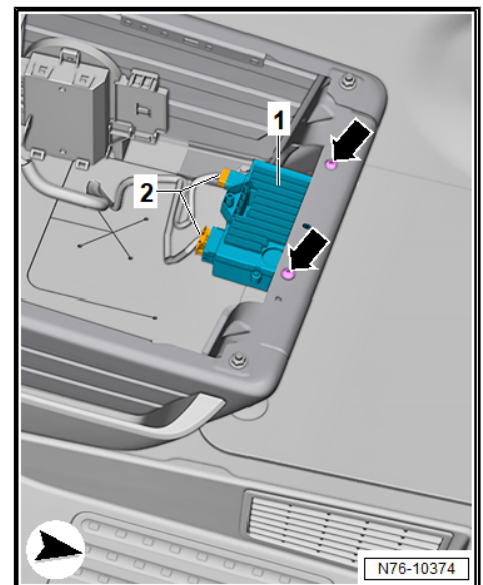
- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove driver seat. ⇒ General body repairs, interior; Rep. gr. 72 ; Front seats; Removing and installing front seat
- Disconnect electrical connectors -2-.
- Unscrew bolts -arrows-.
- Remove DC/AC converter -1-.

**Installing**

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

**Specified torques**

- ◆ ⇒ [“5.2 Assembly overview – DC/AC converter with socket, 12 V-230 V U13”](#), page 215

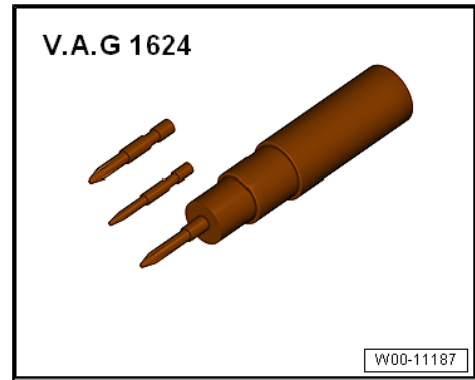


## 5.9 Removing and installing interior socket 2, 230 V, 110 V - U17-

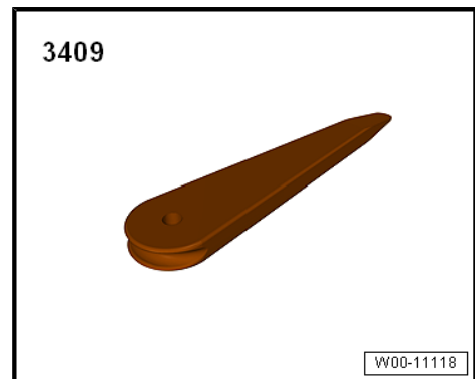
Special tools and workshop equipment required



- ◆ Torque screwdriver - V.A.G 1624-



- ◆ Removal wedge - 3409-



### Removing

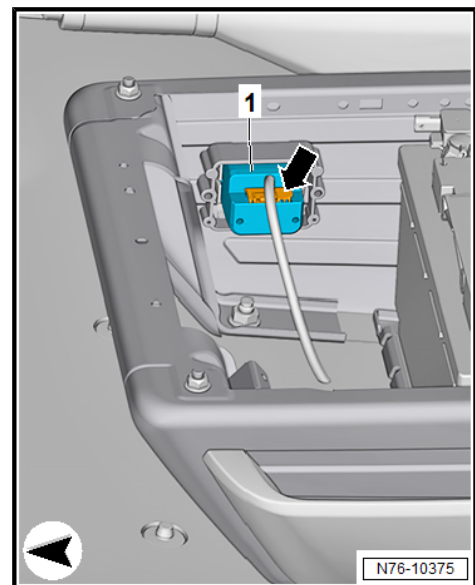
- Disconnect electrical connector from inverter ⇒ [page 219](#) .

### Vehicles with second battery

- Remove driver seat. ⇒ General body repairs, interior; Rep. gr. 72 ; Front seats; Removing and installing front seat

### Continued for all vehicles

- Disconnect electrical connector -arrow- of interior socket 2, 230 V, 110 V - U17- -1-.







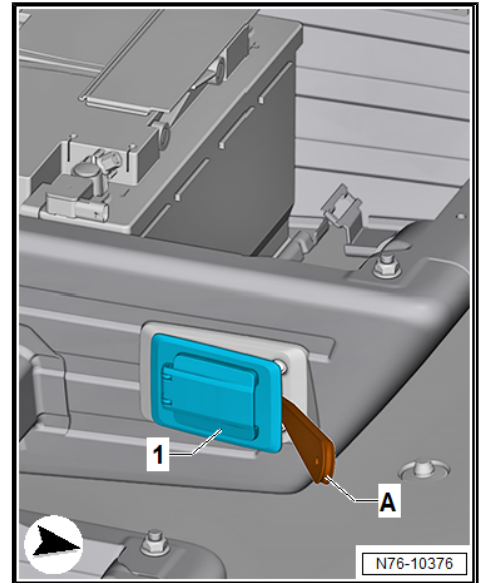
- Detach trim with socket -1- using removal wedge - 3409- -A-.
- Release locking lugs on socket trim -1-.
- Remove interior socket 2, 230 V, 110 V - U17- .

**Installing**

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

**Specified torques**

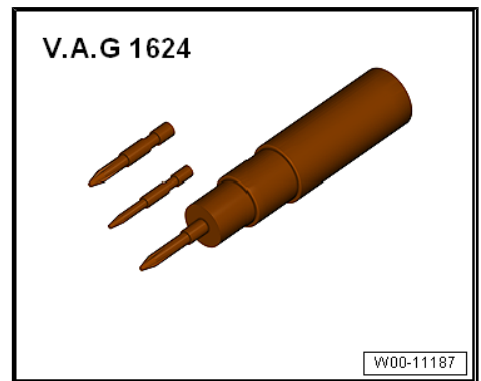
- ◆ ⇒ ["5.3.2 Assembly overview – interior socket 2, 230 V, 110 V U17", page 218](#)



**5.10 Removing and installing trim frame, front section**

**Special tools and workshop equipment required**

- ◆ Torque screwdriver - V.A.G 1624-



**Removing**

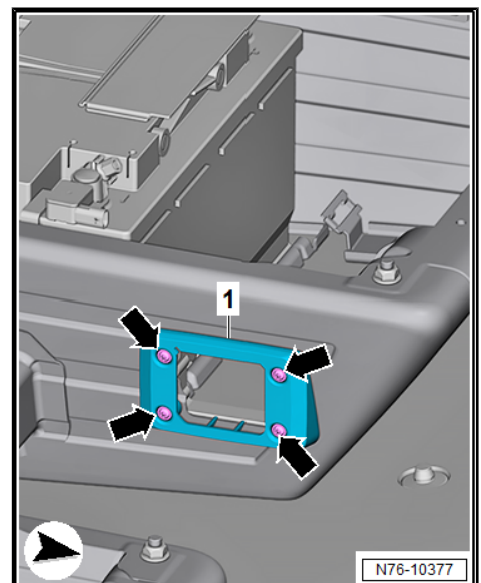
- Remove interior socket 2, 230 V, 110 V - U17- ⇒ [page 223](#) .
- Unscrew bolts -arrow-.
- Remove trim frame, front section -1-.

**Installing**

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

**Specified torques**

- ◆ ⇒ ["5.3 Assembly overview – sockets", page 217](#)





## 97 – Wiring

### 1 Relay carriers, fuse holders, electronics boxes

⇒ [“1.1 Overview of fitting locations - relay carriers, fuse holders, E-boxes”, page 226](#)

⇒ [“1.2 Removing and installing fuse holder D SD”, page 227](#)

⇒ [“1.3 Removing and installing fuse holder A SA”, page 229](#)

⇒ [“1.4 Removing and installing fuse holder K SK”, page 231](#)

⇒ [“1.5 Removing and installing fuse holder H SH”, page 232](#)

⇒ [“1.6 Removing and installing coupling station electronics box”, page 232](#)

⇒ [“1.7 Removing and installing relay carrier and fuse holder in electronics box”, page 232](#)

#### 1.1 Overview of fitting locations - relay carriers, fuse holders, E-boxes

##### 1 - Relay carrier and fuse holder in centre console

- ❑ Installed behind cover in the centre under the dash panel
- ❑ Relay carrier and fuse holder are removed together

##### 2 - Fuse holder C - SC-

- ❑ Installed on driver side under dash panel
- ❑ Dash panel relay carrier on driver side is part of onboard supply control unit bracket and cannot be removed individually

##### 3 - Fuse holder H - SH-

- ❑ Removing and installing ⇒ [page 232](#)

##### 4 - Fuse holder K - SK-

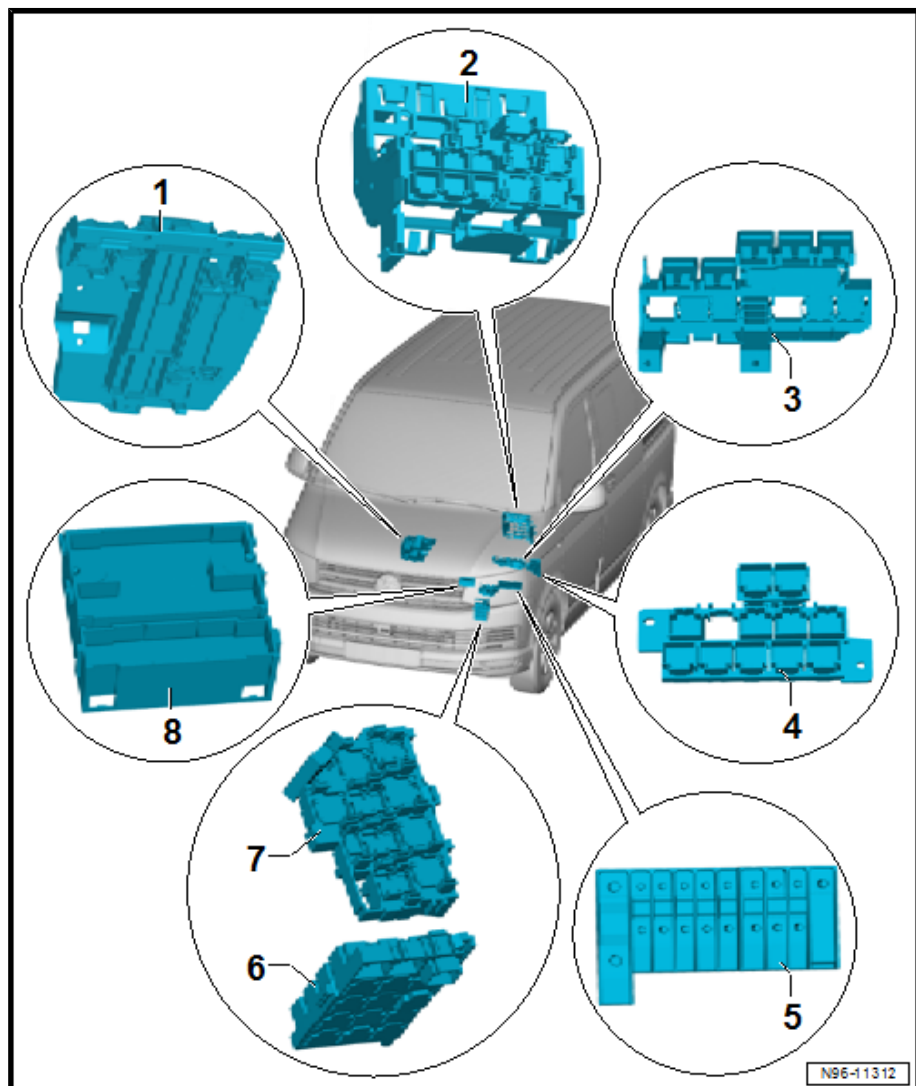
- ❑ Seat box on front passenger side
- ❑ Removing and installing ⇒ [page 231](#)

##### 5 - Fuse holder A - SA-

- ❑ Installed in electronics box on left in engine compartment
- ❑ Access to fuse holder gained by opening electronics box ⇒ [page 229](#)

##### 6 - Relay carriers

- ❑ Installed in electronics box on left in engine compartment





- ❑ Access to relay carrier by opening electronics box ⇒ [page 227](#)

### 7 - Relay carriers

- ❑ Installed in electronics box on left in engine compartment
- ❑ Access to relay carrier by opening electronics box ⇒ [page 227](#)

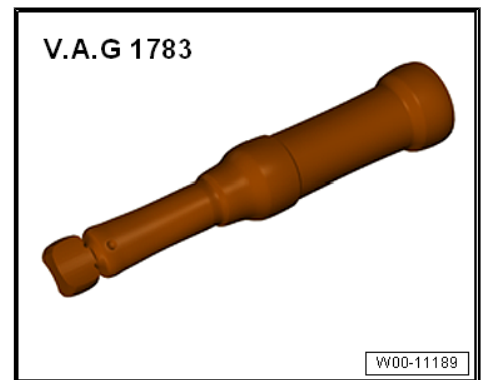
### 8 - Fuse holder D - SD-

- ❑ Installed in electronics box on left in engine compartment
- ❑ Access to fuse holder possible via separate cover without opening electronics box ⇒ [page 227](#) .

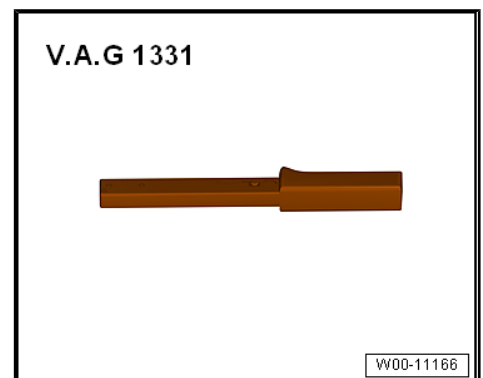
## 1.2 Removing and installing fuse holder D - SD-

### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



- ◆ Torque wrench - V.A.G 1331-



### Note

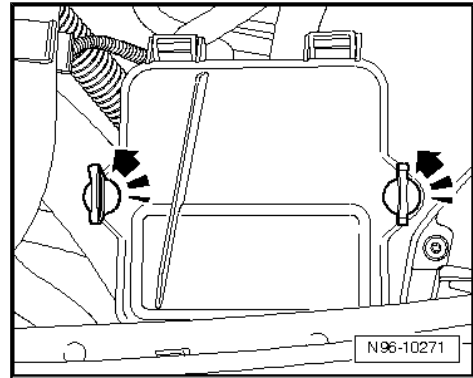
*For reasons of clarity, the area around the electronics box is not shown in the illustration.*

### Removing

- Remove battery - A- in engine compartment ⇒ [page 11](#) .
- Remove left headlight ⇒ [page 103](#) .
- Remove battery partition ⇒ [page 15](#) .
- Remove battery tray ⇒ [page 16](#) .



- Release catches in direction of -arrow-.
- Open fuse cover.

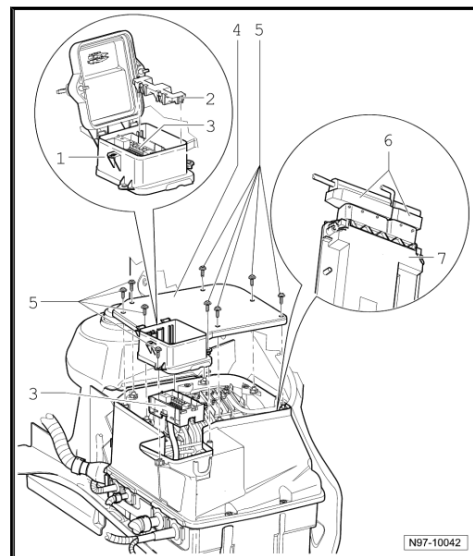


- Push catch on fuse insert -2- in direction of housing.
- Pull out fuse insert upwards from fuse cover -1-.
- Slide fuse carrier -3- sideways out of its position and push downwards.
- Unscrew bolts -5-.
- Remove upper part of electronics box -4-.

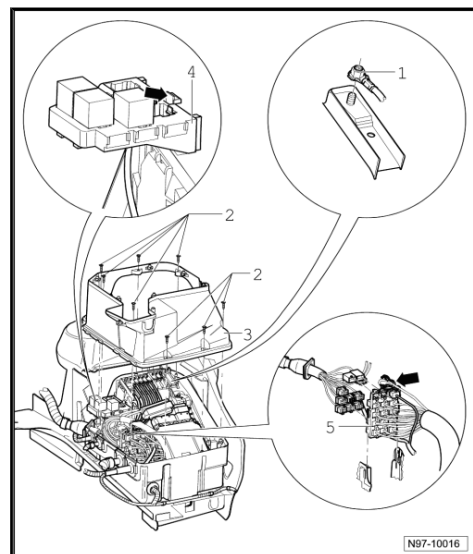


#### Note

- ◆ *The exact pin assignment should be gleaned from the latest current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- ◆ *If necessary, take photographs of the assignment.*



- Unbolt cable (PIN 10) -1- and place aside.
- Unscrew bolts -2-.
- Detach middle section of electronics box -3-.
- Press locking element -arrow- of relay carrier -4- and pull carrier upwards.
- Press locking element -arrow- of coupling station -5- and pull it upwards.
- Disconnect all connectors.



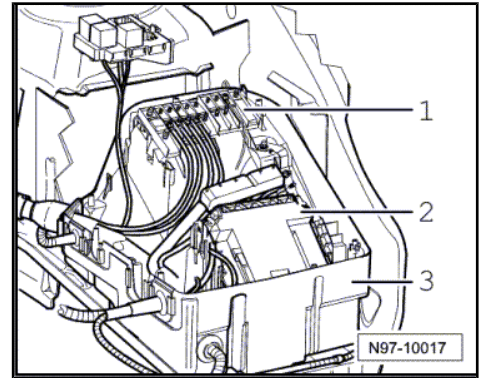


- Unbolt wiring from wiring carrier -1- and place to one side.

**i** Note

*The numbering on the line carrier is identical to the numbers shown on the lines.*

- Disconnect engine control unit connector.
- Pull engine control unit -2- out of runners.
- Remove all wiring with wiring guides out of lower part of electronics box -3- and place to one side.
- Unscrew nuts -1-.
- Detach lower section of electronics box -2-.

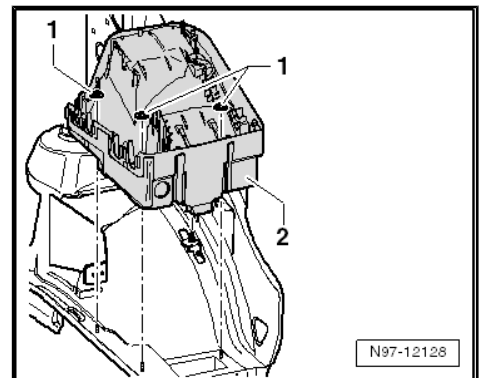


**Installing**

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

**i** Note

- ◆ *The sealing collars of the wires must be inserted in the guides of the electronics box.*
- ◆ *The wires must not be pinched between the upper and lower parts of the electronics box when they are put together.*



**Specified torques**

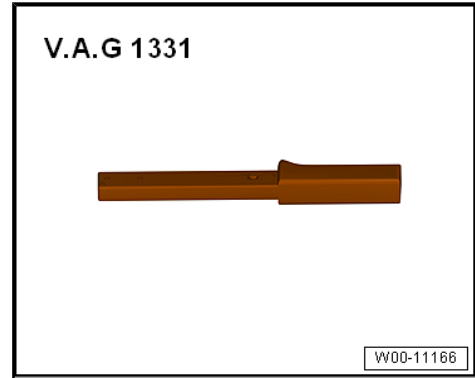
Component	Specified torque
Bolts for upper part of electronics box (qty. 8)	6 Nm
Nut securing cable PIN 10 (B+)	9 Nm
Nut securing cable PIN 1 (alternator)	20 Nm
Bolts for centre part of electronics box (qty. 8)	4 Nm
Nuts securing cables PIN 2-9 to cable holder	4 Nm
Nuts for lower part of electronics box (qty. 3)	6 Nm

### 1.3 Removing and installing fuse holder A - SA-

**Special tools and workshop equipment required**

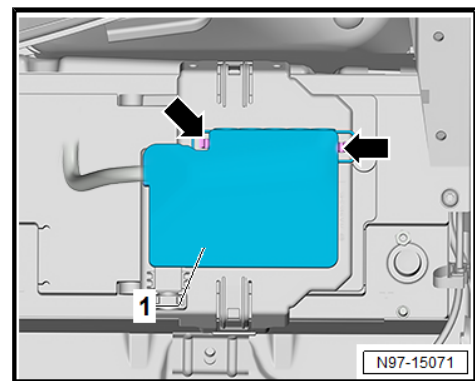


- ◆ Torque wrench - V.A.G 1331-



### Removing

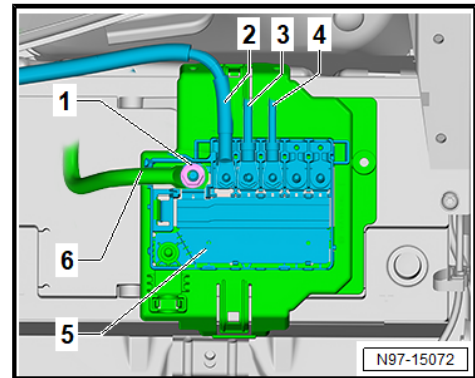
- With ignition switched off, disconnect earth cable from battery ⇒ [page 8](#) .
- Release retaining lugs -arrows-.
- Open cover -1-.



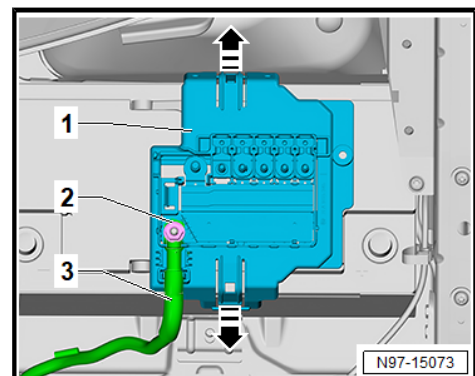
- Mark electrical wires in specified sequence -2 through 4-.

### Note

- ◆ *The exact pin assignment should be gleaned from the latest current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.*
- ◆ *If necessary, take photographs of the assignment.*



- Unscrew nuts of electrical wires -2 to 4-.
- Remove electrical wires -2 through 4- from fuse holder A - SA- -5-.
- Unscrew nuts -1-.
- Remove electrical wire -6- from fuse holder A - SA- -5-.
- Unscrew nuts -2-.
- Remove electrical wire -3- from fuse holder A - SA- -1-.
- Release retaining tabs on fuse holder A - SA- -1- in direction of -arrow-.
- Remove bracket -1- with fuse holder A - SA- upwards from battery.





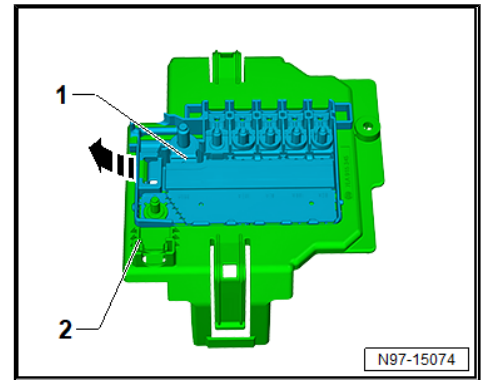
- Release retaining lug on fuse holder A - SA- -1-.
- Remove fuse holder A - SA- -1- in -direction of arrow- from bracket -2-.

### Installing

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

### Specified torques

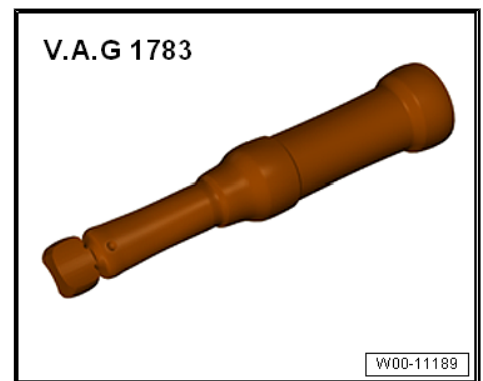
Component	Specified torque
Electrical wires with M6 connection	6 Nm
Electrical wires with M8 connection	12 Nm



## 1.4 Removing and installing fuse holder K - SK-

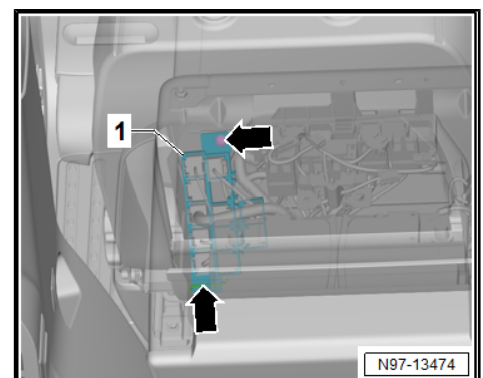
### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



### Removing

- Disconnect batteries ⇒ [page 8](#) .
- Remove the front seat ⇒ General body repairs, interior; Rep. gr. 72 ; Front seats; Removing and installing front seat .
- Unscrew bolt -upper arrow-.
- Pull coupling station -1- at bottom out of bracket -bottom arrow- with wiring connected.





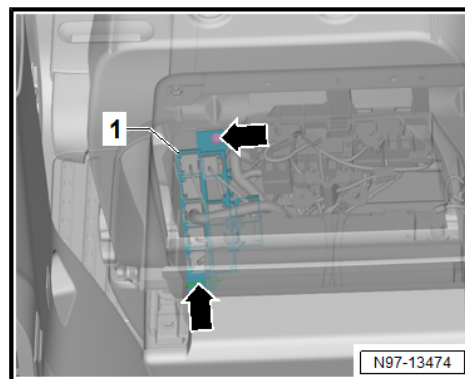
## Installing

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

- Insert coupling station -1- into bracket -bottom arrow-.
- Tighten bolt -upper arrow-.

## Specified torques

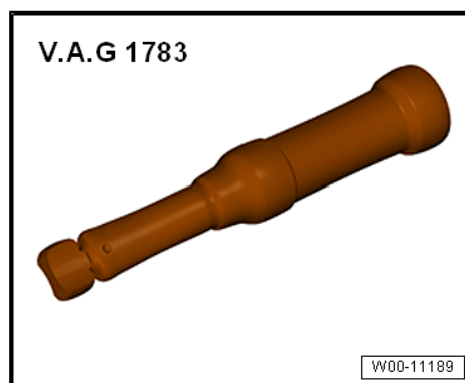
Component	Specified torque
Bolt securing coupling station	2 Nm



## 1.5 Removing and installing fuse holder H - SH-

### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



## Removing

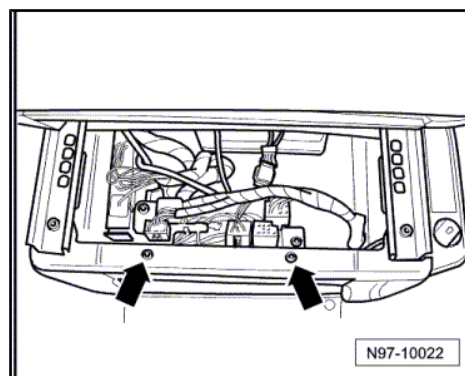
- Disconnect batteries ⇒ [page 8](#) .
- Remove the front seat ⇒ General body repairs, interior; Rep. gr. 72 ; Front seats; Removing and installing front seat .
- Unscrew bolts -arrows-.
- Detach relay carrier and fuse holder with wiring connected.

## Installing

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

## Specified torques

Component	Specified torque
Bolts for relay carrier	6 Nm



## 1.6 Removing and installing coupling station electronics box

The coupling station electronics box is removed in the course of electronics box removal ⇒ [page 227](#) .

## 1.7 Removing and installing relay carrier and fuse holder in electronics box

The relay carrier and fuse holder in the electronics box are removed in the course of electronics box removal ⇒ [page 227](#) .





## 2 Select Control units

⇒ [“2.1 Overview of fitting locations - control units”, page 233](#)

⇒ [“2.2 Removing and installing onboard supply control unit J519”, page 234](#)

⇒ [“2.3 Removing and installing data bus diagnostic interface J533”, page 234](#)

⇒ [“2.4 Removing and installing special vehicle control unit J608”, page 235](#)

⇒ [“2.5 Removing and installing rear lid power opening control unit J938”, page 236](#)

### 2.1 Overview of fitting locations - control units

#### 1 - Rear lid power opening control unit - J938-

- ❑ Removing and installing  
⇒ [page 236](#)

#### 2 - Trailer detector control unit - J345-

- ❑ Installed in seat box on right
- ❑ Removing and installing  
⇒ [page 172](#)

#### 3 - Diagnostics interface for data bus - J533-

- ❑ Removing and installing  
⇒ [page 234](#)

#### 4 - Dash panel insert - KX2-

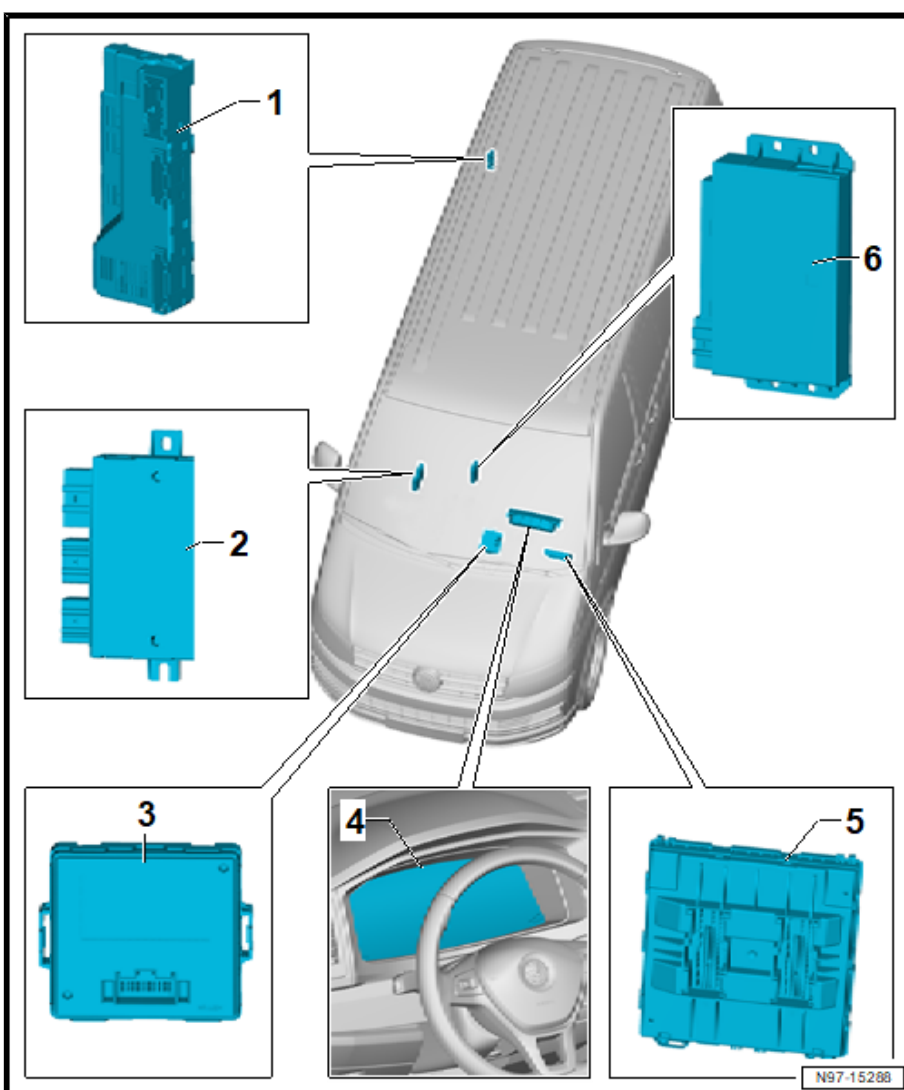
- ❑ With control unit in dash panel insert - J285- .
- ❑ With immobiliser control unit - J362-
- ❑ Removing and installing dash panel insert  
⇒ [page 47](#) .

#### 5 - Onboard supply control unit - J519-

- ❑ Installed in driver footwell behind relay carrier
- ❑ Removing and installing  
⇒ [page 234](#)

#### 6 - Special vehicle control unit - J608-

- ❑ Installed in driver footwell under relay carrier
- ❑ Removing and installing  
⇒ [page 235](#)





## 2.2 Removing and installing onboard supply control unit - J519-



### Note

- ◆ *The onboard supply control unit - J519- is secured in the driver footwell behind the relay carrier.*
- ◆ *If the onboard supply control unit - J519- is renewed, start the respective function ⇒ Vehicle diagnostic tester.*

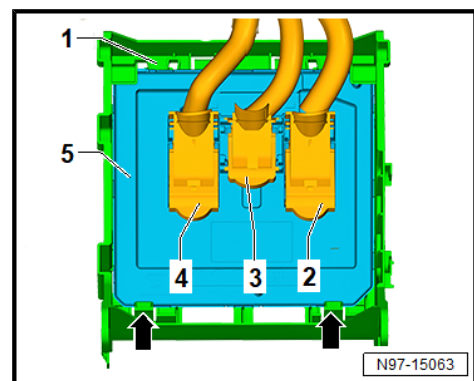
### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove footwell cover on driver side ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Overview of fitting locations - compartments/covers .
- If fitted, remove special vehicle control unit - J608- ⇒ [page 235](#) .
- Disconnect electrical connectors -2-, -3- and -4-.
- Release locking lugs -arrows-.
- Remove onboard supply control unit - J519- -5- downwards from relay carrier -1-.

### Installing

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

- First insert onboard supply control unit - J519- into mountings, and then engage it securely at bottom.



## 2.3 Removing and installing data bus diagnostic interface - J533-



### Note

*If the data bus diagnostic interface - J533- is renewed, start the respective function ⇒ Vehicle diagnostic tester.*

### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove dash panel insert - KX2- ⇒ [“1.2 Removing and installing dash panel insert KX2 with control unit in dash panel insert J285”, page 47](#) .

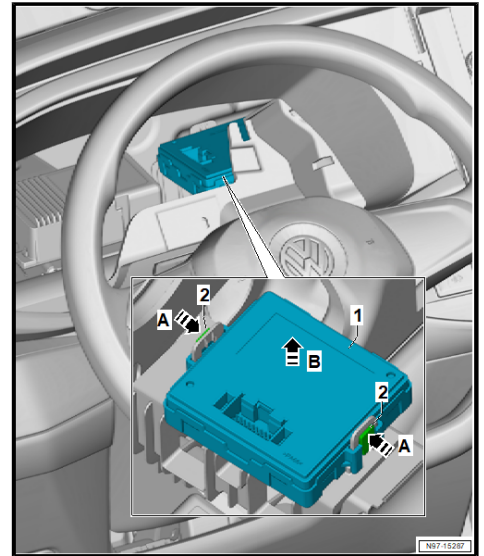


- Release locking lugs -2- in direction of -arrow A-.
- Remove data bus diagnostic interface - J533- -1- in -direction of arrow B-.
- Disconnect electrical connector.

### Installing

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

- The data bus diagnostic interface - J533- must audibly engage.



## 2.4 Removing and installing special vehicle control unit - J608-

Special vehicle control unit - J608- controls special equipment and functions for the following:

- ◆ Taxi
- ◆ Driving school
- ◆ Disabled
- ◆ Driving school for the disabled
- ◆ Special signal vehicle
- ◆ Special armoured vehicle

### Note

*The special vehicle control unit - J608- is equipped with self-diagnosis, which makes fault finding easier.*

### Note

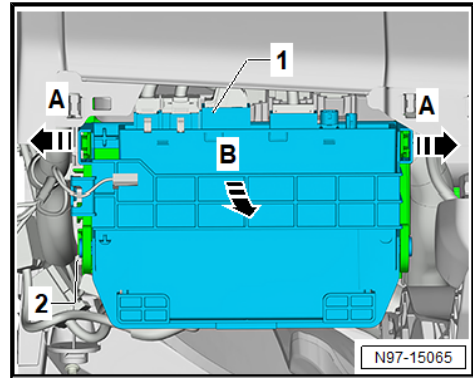
*If the special vehicle control unit - J608- is renewed, start the respective function ⇒ Vehicle diagnostic tester.*

### Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove driver side footwell cover. ⇒ Rep. gr. 68 ; Compartments/covers; Overview of fitting locations - compartments/covers



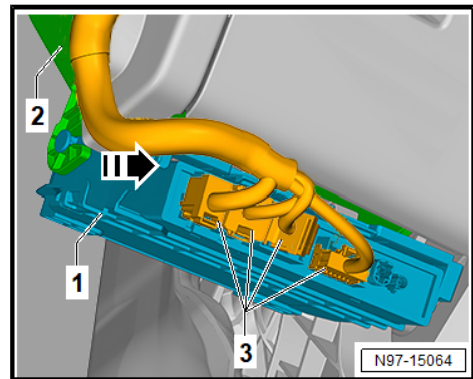
- Release fasteners on holder -2- in -direction of arrow A-.
- Swing special vehicle control unit - J608- -1- in direction of -arrow B-.



- Disconnect electrical connectors -3-.
- Remove special vehicle control unit - J608- -1- from bracket -2- in direction of -arrow-.

### Installing

Install in reverse order of removal.



## 2.5 Removing and installing rear lid power opening control unit - J938-



### Note

*If the rear lid power opening control unit - J938- is renewed, start the respective function ⇒ Vehicle diagnostic tester.*

### Removing

#### Vehicles with heater and air conditioning unit at rear

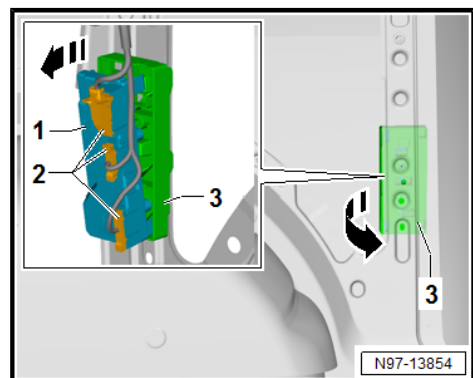
- Remove rear heater and air conditioning unit ⇒ Heating, air conditioning; Rep. gr. 87 ; Rear heater and air conditioning unit; Removing and installing heater and air conditioning unit .

#### Continued for all vehicles

- Remove right side panel trim ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim; Removing and installing luggage compartment side trim .
- Remove rear lid power opening control unit - J938- -1- from bracket -3- in direction of -arrow-.
- Disconnect electrical connectors -2-.

### Installing

Install in reverse order of removal.





## 3 Connectors

⇒ [“3.1 Repairing electrical wiring harnesses and plug-in connections”, page 237](#)

### 3.1 Repairing electrical wiring harnesses and plug-in connections

⇒ [“3.1.1 Repairs to wiring harnesses and connectors”, page 237](#)

⇒ [“3.1.2 Repairing connector housings and electrical connectors”, page 237](#)

#### 3.1.1 Repairs to wiring harnesses and connectors

All instructions and notes regarding this chapter are available under ⇒ Electrical system, General information; Rep. gr. 97 ; Repairs to wiring harnesses and connectors; Repairs to wiring harnesses

#### 3.1.2 Repairing connector housings and electrical connectors

All instructions and notes regarding this chapter are available under ⇒ Electrical system, General information; Rep. gr. 97 ; Repairs to wiring harnesses and connectors; Repairs to connector housings and connectors



## 4 Releasing and dismantling connector housings

All instructions and notes regarding this chapter are available under ⇒ Electrical system, General information; Rep. gr. 97 ; Repairs to wiring harnesses and connectors; Releasing and dismantling connector housings



## 5 Repairing aerial wires

All instructions and notes regarding this chapter are available under ⇒ Electrical system, General information; Rep. gr. 97 ;  
Repairs to wiring harnesses and connectors; Repairs to aerial wires



## 6 Fibre optic cables

All instructions and notes regarding this chapter are available under ⇒ Electrical system, General information; Rep. gr. 97 ; Repairs to wiring harnesses and connectors; Repairs to fibre optic cables





## 7 Vehicle diagnosis, testing and information systems

All instructions and notes regarding this chapter are available under ⇒ Electrical system, General information; Rep. gr. 97 ; Vehicle diagnosis, testing and information systems