



Workshop Manual e-up! 2014 ➤

Electrical system

Edition 10.2013





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 Notes on safety

(VRL005769; Edition 10.2013)

⇒ [“1.1 Safety precautions when working on the high-voltage system”, page 1](#)

⇒ [“1.2 Safety precautions when working in the vicinity of high-voltage components”, page 2](#)

⇒ [“1.3 Safety precautions when using testing and measuring instruments during a road test”, page 2](#)

⇒ [“1.4 Safety precautions when working on the coolant system”, page 2](#)

1.1 Safety precautions when working on the high-voltage system

Risk of death due to high voltage

The high voltage system carries high voltage. Electrical shocks can cause serious injuries or death.

- People having electronic medical devices for life support or health maintenance in or on their bodies are prohibited from working on the high-voltage system. Life-support and health-maintaining devices include, for example, internal analgesia pumps, implanted defibrillators, pacemakers, insulin pumps and hearing aids.
- Have a qualified technician de-energize the high-voltage system.

Danger of injury due to motor starting unexpectedly

It is difficult to determine whether electric or hybrid vehicles have been activated for driving. It is possible that body parts may be pinched or drawn into moving parts.

- Switch off ignition.
- Deposit the ignition key outside the passenger compartment.

Risk of damage to high-voltage cables

Improper handling can damage the insulation of high-voltage cables or connectors.

- Never support yourself on high-voltage cables or connectors
- Never support yourself on high-voltage cables or connectors.
- Never bend high-voltage cables tightly or kink them.
- When joining high-voltage connectors, observe coding.



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

Risk of death due to high voltage

The high voltage system carries high voltage. Shocks sustained due to damage to high-voltage components or cables can result in severe injury or death.

- Carry out visual inspection of high-voltage components and cables.
- Never use sharp tools or tools which create shavings or are used to shape material.
- Never weld, braise or use hot glue or hot air.

1.3 Safety precautions when using testing and measuring instruments during a road test

Danger of injury by unsecured testing and measuring equipment

If a front passenger airbag is triggered during an accident, unsecured testing and measuring equipment can become dangerous projectiles.

- Secure testing and measuring equipment with seat belts on the rear seat.

Or

- Have a second person operate testing and measuring equipment on the rear seat.

1.4 Safety precautions when working on the coolant system

Danger of scalding by hot coolant

When the engine is warm, the cooling system is pressurised. Danger of scalding by hot steam and hot coolant.

- Wear protective gloves.
- Wear eye protection.
- Release pressure by covering cap of the coolant expansion tank with a cloth and opening it carefully.



2 Repair instructions

⇒ ["2.1 Contact corrosion", page 3](#)

⇒ ["2.2 Routing and securing wiring", page 3](#)

2.1 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 are installed in the vehicle.

In addition, rubber and plastic parts as well as adhesives are made of electrically 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.
- ◆ Use only Volkswagen Genuine Accessories.
- ◆ Damage due to contact corrosion is not covered by warranty.

2.2 Routing and securing wiring

- ◆ 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. Where necessary, make sketches or take photographs.
- ◆ Due to the limited space in the engine compartment, it is important to ensure that there is adequate clearance to any moving or hot components to avoid damage to lines and wiring.



27 – Starter, current supply, CCS

1 Battery

- ⇒ [“1.1 Assembly overview - battery”, page 4](#)
- ⇒ [“1.2 Removing and installing battery”, page 5](#)
- ⇒ [“1.3 Disconnecting and reconnecting battery”, page 6](#)
- ⇒ [“1.4 Removing and installing battery tray”, page 9](#)
- ⇒ [“1.5 Checking battery”, page 10](#)
- ⇒ [“1.6 Charging battery”, page 10](#)
- ⇒ [“1.7 Removing and installing earth wire with battery monitor control unit J367”, page 10](#)
- ⇒ [“1.8 Adapting battery monitor control unit J367”, page 11](#)

1.1 Assembly overview - battery

1 - Battery monitoring control unit - J367-

- Comply with the instructions regarding threaded connections of the battery terminals ⇒ Electrical system, General information; Rep. gr. 27 ; Battery; Battery terminal connection .
- Disconnecting and reconnecting battery ⇒ [page 6](#)
- Removing and installing ⇒ [page 10](#)
- Adaption ⇒ [page 11](#)

2 - Nut

- M6
- 9 Nm

3 - Earth wire cover

4 - Electronics box with holder

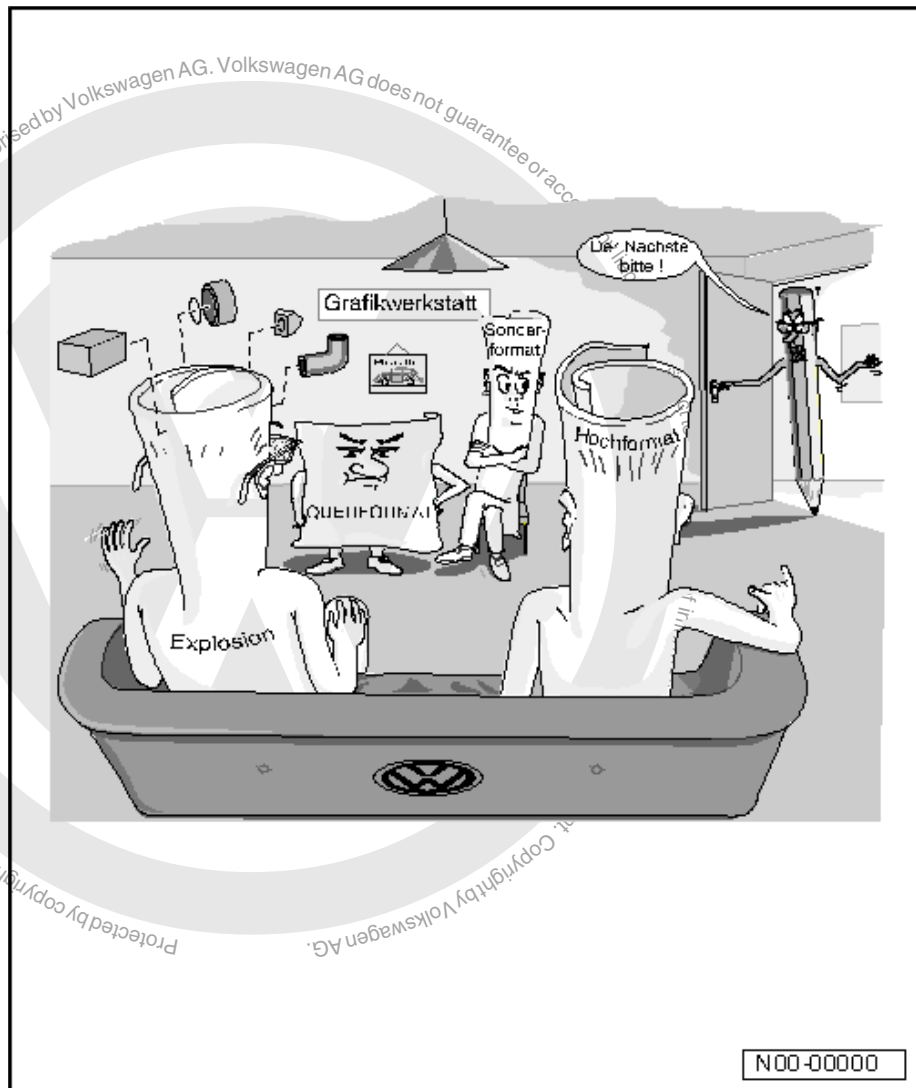
- Removing and installing ⇒ [page 109](#)

5 - Positive wire battery terminal clamp

- Disconnecting and reconnecting battery ⇒ [page 6](#)

6 - Nut

- Comply with the instructions regarding threaded connections of the battery terminals ⇒ Electrical system, General information; Rep. gr. 27 ; Battery; Battery terminal connection .
- M6
- 6 Nm





7 - Battery - A-

- Removing and installing ⇒ [page 5](#)

8 - Bolt

- M8
- 9 Nm

9 - Clamping plate

- Observe assembly note

10 - Nuts

- M6
- 9 Nm
- Qty. 2

11 - Bolts

- M6
- 9 Nm
- Qty. 2

12 - Battery tray

- Removing and installing ⇒ [page 9](#)

1.2 Removing and installing battery



WARNING

Danger of injury! Comply with the warnings and safety regulations ⇒ Electrical system, general information; Rep. gr. 27 ; Battery; Warnings and safety regulations .



Caution

To disconnect and reconnect the battery, the procedure described in the workshop manual should be strictly adhered to ⇒ [page 6](#) .



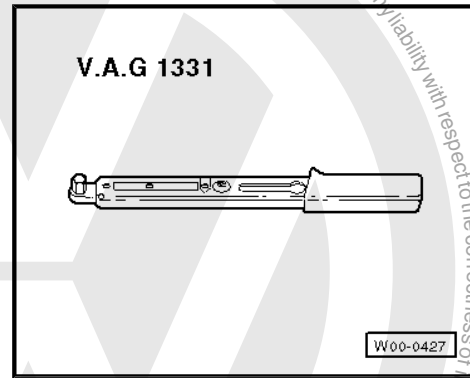
Note

- ◆ *The battery parameterisation must be performed after installing a new starter battery on vehicles with a battery sensor.*
- ◆ *The battery parameterisation sends the technical data of the new battery to the battery monitor.*
- ◆ *Performing battery parameterisation ⇒ [page 11](#) .*

Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1331-



Removing

- Disconnect battery - A- ⇒ [page 6](#)
- Unscrew bolt -1-, and remove clamping plate -2-.
- Remove battery - A- -4-.

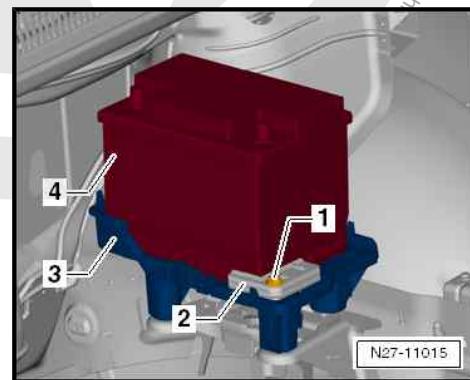
Installing



Caution

A loosely fitted battery creates the following dangers:

- ◆ *Reduced service life due to damage from vibration (danger of explosion)*
- ◆ *Damage to the grid plates of the battery*
- ◆ *Damage to battery housing by securing bracket (possibility of acid leaking, with high consequential costs)*
- ◆ *Poor crash safety*



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

- Check battery is firmly seated after installation.
- Connecting battery ⇒ [page 6](#) .

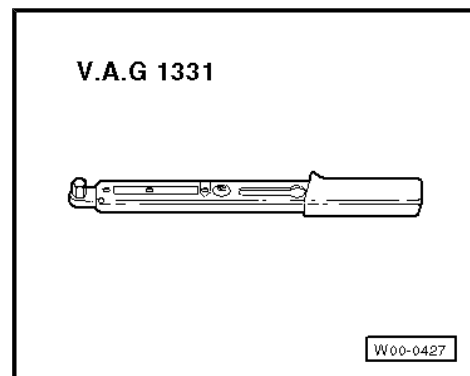
Specified torques

- ◆ ⇒ ["1.1 Assembly overview - battery", page 4](#)

1.3 Disconnecting and reconnecting battery

Special tools and workshop equipment required


- ◆ Torque wrench - V.A.G 1331-





Battery recharging or jump starting on vehicles with battery monitor control unit - J367- :

When recharging or jump starting vehicles with battery monitor control unit - J367- , note the following: first connect charging cable to battery positive terminal, then body earth. This ensures that the battery sensor is not bridged. The direct charging of the battery on the negative terminal clamp means that the battery sensor is shunted and the battery data are not registered by the sensor while charging. The values concerning the battery state saved in the data bus diagnostic interface do not then correspond to the values of the charged battery.



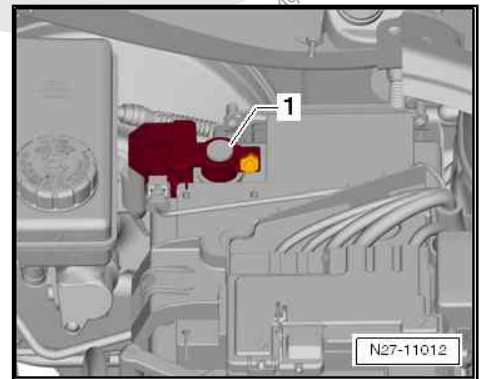
WARNING

Danger of injury! Comply with the warnings and safety regulations => Electrical system, general information; Rep. gr. 27 ; Battery; Warnings and safety regulations .

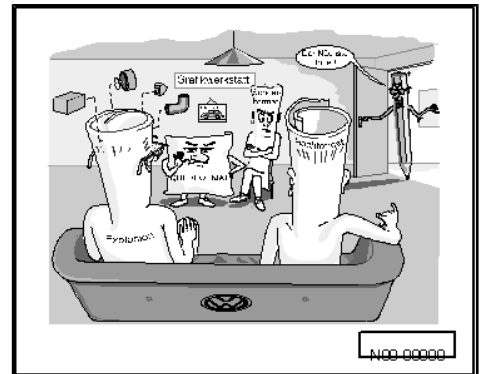
Disconnecting battery - A-

 **Note**

- ◆ *By disconnecting the battery earth wire (open circuit), safety is ensured when carrying out work on the electrical system.*
- ◆ *The battery positive wire need only be disconnected for removal of the battery.*
- Switch off ignition and all electrical loads, and pull out ignition key.
- Fold up cover (if fitted) of earth wire on battery terminal clamp.
- Loosen nut for earth wire battery terminal clamp -1-, and pull battery terminal clamp off battery negative terminal.



- Fold up cover of electronics box -1-, and unscrew nut -2-.
- Release the catches -arrows- on each side of the electronics holder, and remove electronics box together with holder upwards off battery - A- .





- Then, loosen nut for positive wire battery terminal clamp -2-, and pull battery terminal clamp -1- off battery positive terminal.

Connecting battery - A-

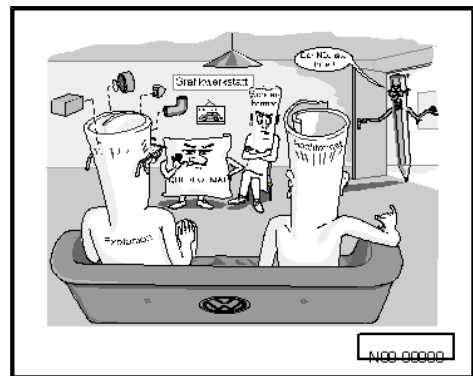
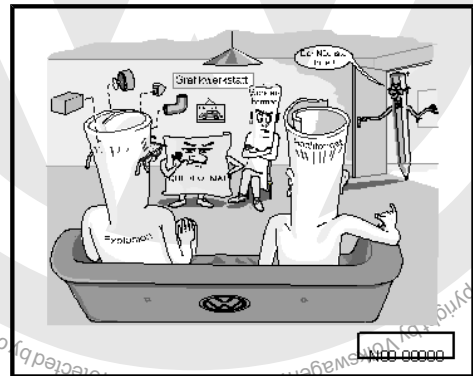
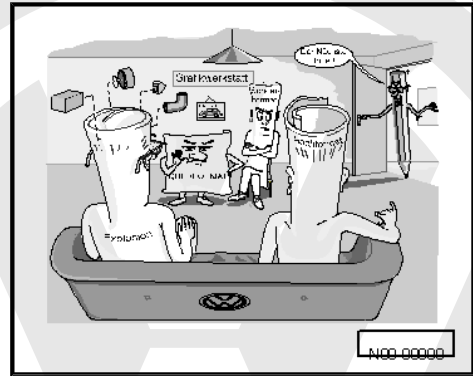


Caution

Comply with the instructions regarding threaded connections of the battery terminals → Electrical system, General information; Rep. gr. 27 ; Battery; Battery terminal connection .

- Fit positive wire battery terminal clamp -1- onto battery - A- positive terminal.
- Tighten nut -2-.

- Fit electronics box together with holder onto battery - A- , and engage it firmly -arrows-.
- Screw on nut -2-, and tighten it.
- Close cover -1- and secure with latch.





- Fit earth wire battery terminal clamp -1- onto battery - A- negative terminal.
- Tighten nut.
- Work through steps listed in table.

Procedures after reconnecting battery:

Procedure	Performed
Switch ignition on and off again using ignition key.	
Read event memory ⇒ Vehicle diagnostic tester.	
Check time on clock, and change it as necessary.	
Open all windows fully and close again.	
Test function of all electrical consumers.	

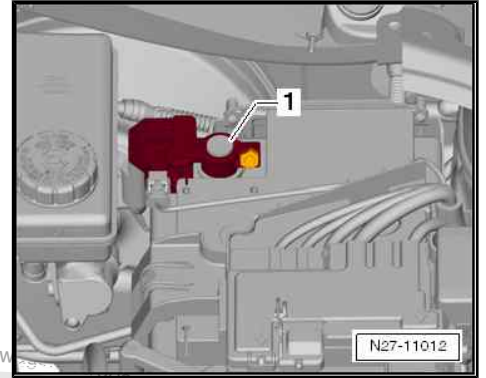


Table can be printed out if necessary.

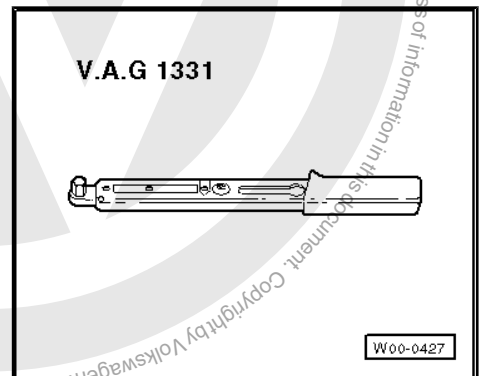
Specified torques

- ◆ ⇒ ["1.1 Assembly overview battery", page 4](#)

1.4 Removing and installing battery tray

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-

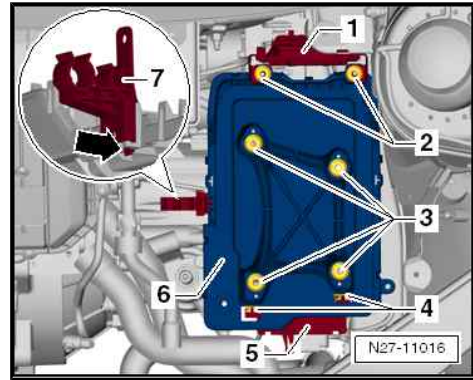


Removing

- Removing battery - A- ⇒ [page 5](#) .



- Unscrew the 2 bolts -2-, and place control unit -1- together with bracket and connected wires to one side.
- Unscrew bolts and nuts -3-.
- Release the two catches -4-, and pull line holder -5- upwards off battery tray.
- Unclip and remove all lines from the refrigerant line holder -7-.
- Release holder -arrow-, and pull it upwards off battery tray.
- Remove battery tray -6- from vehicle.



Installing

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

Specified torques

- ◆ ⇒ ["1.1 Assembly overview - battery", page 4](#)

1.5 Checking battery

All instructions and notes regarding this chapter are available under ⇒ [Electrical system, General information; Rep. gr. 27](#) ; [Battery; Checking battery](#) .

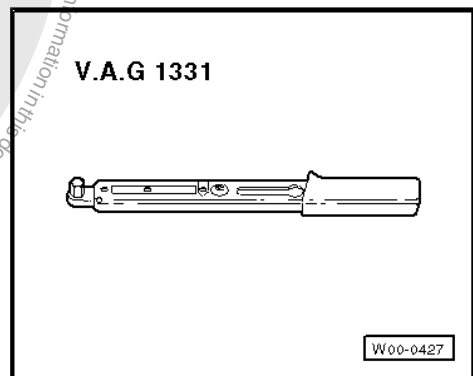
1.6 Charging battery

All instructions and notes regarding this chapter are available under ⇒ [Electrical system, General information; Rep. gr. 27](#) ; [Battery; Charging battery](#) .

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

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-

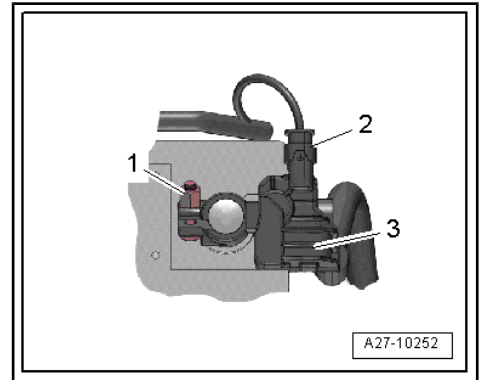


Removing

- Removing battery - A- ⇒ [page 5](#) .



- Disconnect connector -2- on battery monitor control unit - J367- -3-.



- Unscrew nut -1- from earth cable -2-.
- Unscrew nut -3- and disconnect earth cable together with battery monitor control unit - J367- -4-.

Installing

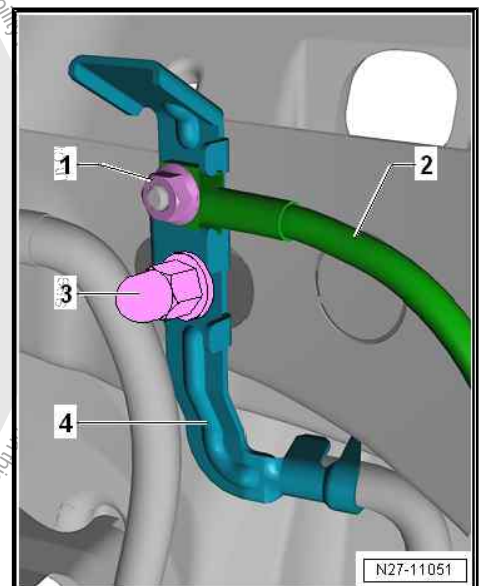
Install in the reverse order of removal, observing the following:

- Adapt battery monitor control unit - J367- => [page 11](#) .

Specified torques

◆ => "1.1 Assembly overview - battery", page 4

Component	Specified torque
Nut -1-	9 Nm
Nut -3-	20 Nm



1.8 Adapting battery monitor control unit - J367-

After a new battery is installed and the battery has been parameterised, the technical data of the new battery are sent to the battery monitoring control unit - J367- .

- Connect vehicle diagnostic tester => Electrical system, General information; Rep. gr. 97 ; Vehicle diagnosis, testing and information systems; Connecting vehicle diagnostic tester .
- Adapt battery monitor control unit - J367- => Vehicle diagnostic tester.



2 Alternator

⇒ ["2.1 Alternator", page 12](#)

2.1 Alternator

The "e-up!" does not have a traditional alternator. The three-phase current drive - VX54- provides an alternator function ⇒ Electric drive; Rep. gr. 93 ; Three-phase current drive .





3 Starter

⇒ [“3.1 Starter”, page 13](#)

3.1 Starter

The “e-up!” does not have a starter.





4 Cruise control system (CCS)

⇒ ["4.1 Cruise control system \(CCS\)", page 14](#)

4.1 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); Activating/deactivating cruise control system (CCS) .





90 – Gauges, instruments

1 Dash panel insert

⇒ [“1.1 General notes”, page 15](#)

⇒ [“1.2 Assembly overview - dash panel insert K”, page 15](#)

⇒ [“1.3 Removing and installing dash panel insert K”, page 18](#)

1.1 General notes

The following components are integrated in the dash panel insert:

- ◆ Control unit with display in dash panel insert - J285
- ◆ Immobiliser control unit - J362-
- ◆ Speedometer
- ◆ Rev. counter
- ◆ Charge level display for high-voltage battery
- ◆ Warning lamps
- ◆ Multifunction display

To provide acoustic support to some of the visual displays, the dash panel features a warning buzzer, which is actuated by the control unit.

All warning lamps are fitted with light-emitting diodes (LEDs). No provision is made for dash panel insert repair. If necessary, the dash panel insert is renewed as a unit.



Note

Before renewing the dash panel insert, the work procedure “Renewing dash panel insert” should be carried out in order that the data stored in the control unit can be read ⇒ [page 18](#).

Fault detection and fault display

The dash panel insert is equipped with self-diagnosis, which makes fault finding easier.

For fault finding ⇒ Vehicle diagnostic tester use “Guided fault finding” mode.

Resetting service interval display

Resetting service interval display “Maintenance manual” ⇒ Maintenance ; Booklet 35.1 ; Descriptions of work .

1.2 Assembly overview - dash panel insert - K-

The control unit in dash panel insert - J285- is located in the dash panel insert - K- .

Warning lamps in dash panel insert



1 - Left turn signal warning lamp

- Switched on

2 - Warning lamp for airbag and belt tensioner

- Airbag and/or belt tensioner are defective.

3 - Reserve mode warning lamp

- In reserve mode, the vehicle is operated with reduced power.

4 - Anti-lock brake system (ABS) warning lamp

- Fault in anti-lock braking system (ABS)

5 - Washer fluid level warning lamp

6 - Rear fog light warning lamp

- Rear fog light is switched on.

7 - Main beam warning lamp

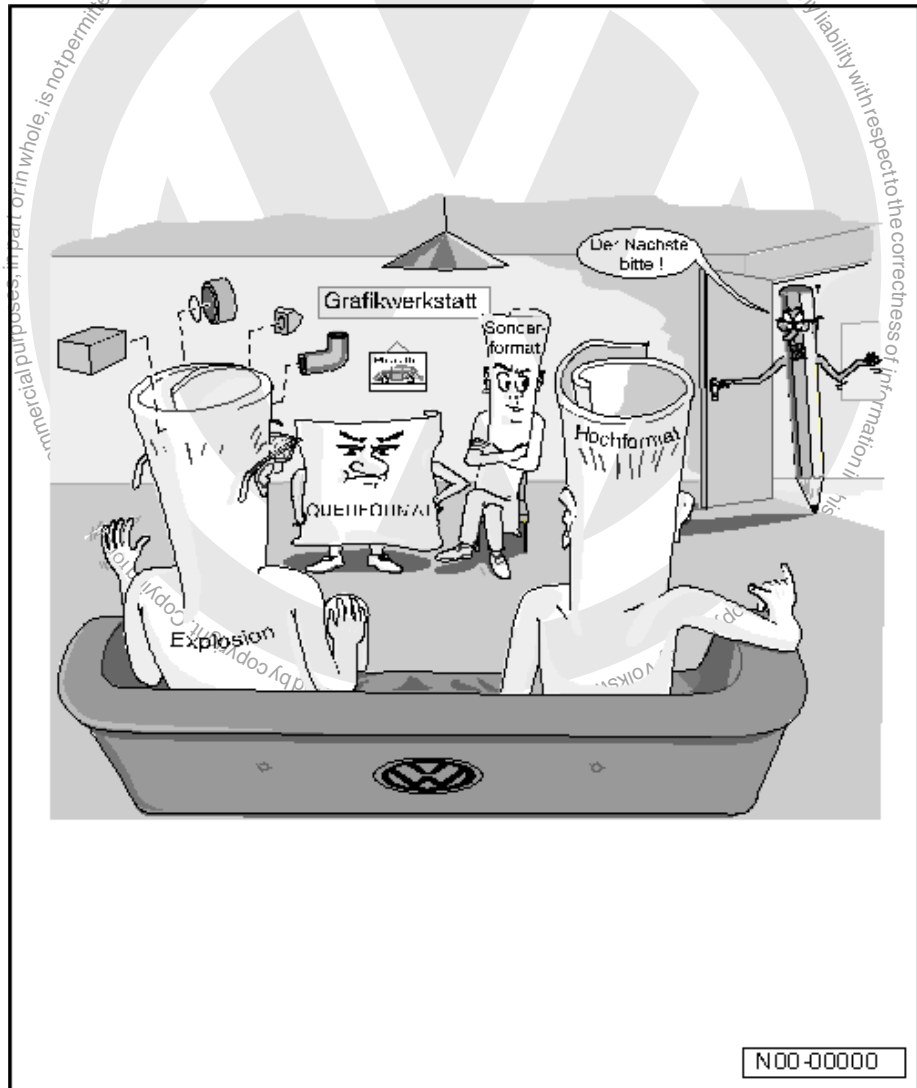
- Main beam headlight is switched on.

8 - Indicator lamp for parking brake

- Parking brake is applied.

9 - Indicator lamp for "Operate foot brake"

- Request from the auto-





- matic manual gearbox.
- Indicator lamp only fitted in vehicles with automatic manual gearbox
- 10 - Cruise control system (CCS) warning lamp**
- CCS regulating
- 11 - Brake pad warning lamp**
- Brake pads worn
- 12 - Brake system warning lamp**
- Lights up: fault in brake system
 - Lights up: brake fluid low - Stop engine, and check brake fluid level.
- 13 - Right turn signal warning lamp**
- Switched on
- 14 - Coolant temperature warning lamp**
- Motor temperature too high.
- 15 - High-voltage battery warning lamp**
- Lights up: charge high-voltage battery as soon as possible.
 - Flashes: high-voltage battery is being charged.
- 16 - Exterior sound warning lamp**
- Lights up: exterior sound is deactivated.
- 17 - Charging socket warning lamp**
- Lights up: charging connector is connected to charging plug in vehicle.
- 18 - Seat belt warning lamp**
- Fasten seat belts!
- 19 - 12 V power supply warning lamp**
- There may be interferences in the electromechanical power steering system and brake system.
- 20 - Electromechanical power steering warning lamp**
- Lights up yellow: reduced electromechanical power steering
 - Lights up red: electromechanical power steering failure
- 21 - Display in dash panel insert**
- 22 - Indicator lamp for engine fault EPC (electric throttle)**
- Fault
- 23 - Indicator lamp for Electric On Board Diagnosis (EOBD)**
- 24 - Charging socket flap warning lamp**
- Lights up: charging socket flap has not been closed.
- 25 - Electric drive system warning lamp**
- Fault in electric drive system.
- 26 - Indicator lamp for tyre pressure monitor**
- Pressure of one particular tyre too low or system fault occurred
- 27 - Electronic stabilisation programme (ESP) warning lamp**
- Lights up: ESP fault or ESP switched off.
- 28 - Electronic stabilisation programme (ESP) warning lamp**
- Flashes: electronic stabilisation programme (ESP) regulating



Description of reverse side of dash panel insert



Note

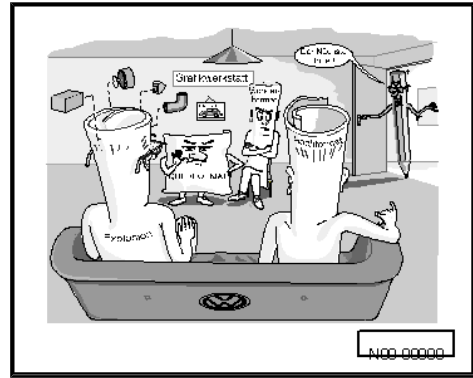
The dash panel insert - K- must not be dismantled. If necessary, the dash panel insert - K- must be renewed as a unit.

- 1 - Connector
- 2 - Warning buzzer



Note

Pin assignment of connector on dash panel insert - K- : ⇒ Current flow diagrams, Electrical fault finding and Fitting locations



1.3 Removing and installing dash panel insert - K-



Note

Before renewing the dash panel insert - K- , the work procedure "Renewing dash panel insert" must always be carried out in order to read the data stored in the control unit.

In the following, the current data (codes, service data, distance travelled) is read out of the dash panel insert.

- Connect vehicle diagnostic tester ⇒ Electrical system, General information; Rep. gr. 97 ; Vehicle diagnosis, testing and information systems; Connecting vehicle diagnostic tester .
- Functions of dash panel insert - K- ⇒ Vehicle diagnostic tester



Note

- ◆ *If a new dash panel insert - K- is installed in the vehicle, the control unit of the dash panel insert must be adjusted to the different equipment features and country settings.*
- ◆ *To adapt the integrated immobiliser to engine control unit - J623- , the data from engine control unit - J623- has to be stored in the replacement dash panel insert - K-.*
- ◆ *If a new dash panel insert - K- is installed, all ignition keys must be adapted.*
- ◆ *Before renewing the dash panel insert - K- , the work procedure "Renewing dash panel insert" must always be carried out in order to read the data stored in the control unit ⇒ [page 18](#) .*

Special tools and workshop equipment required

- ◆ Protective film

Removing

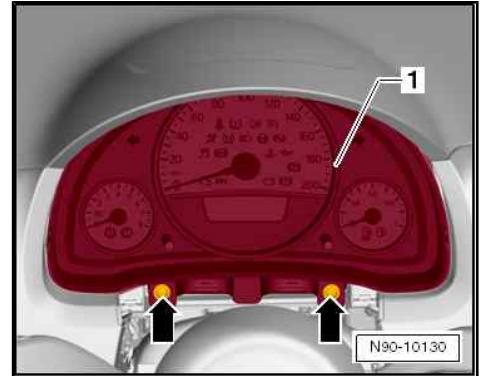
- Switch off ignition and all electrical loads, and pull out ignition key.



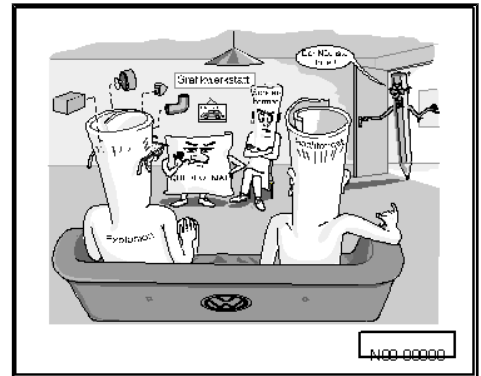
i Note

There is no need to remove the steering wheel.

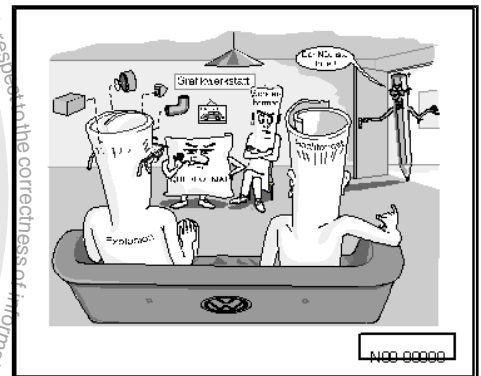
- Lock steering wheel in lowest position.
- Release gap cover of the steering column trim from dash panel
=> General body repairs, interior; Rep. gr. 68 ; Compartments/
covers; Removing and installing gap cover in dash panel insert .
- Unscrew bolts -arrows- from dash panel insert - K- -1-.



- Push protective films -1- on left and right into gap -arrows- between dash panel insert - K- and dash panel. If the protective films are not used, the dash panel will be scratched in the area of the dash panel insert - K- .



- Pull dash panel insert - K- -1- in a straight line towards front out of dash panel, while taking into account the length of connected wires.





- Swing retaining clip -1- in -direction of arrow- and detach connector -2-.
- Remove dash panel - K- insert from vehicle.

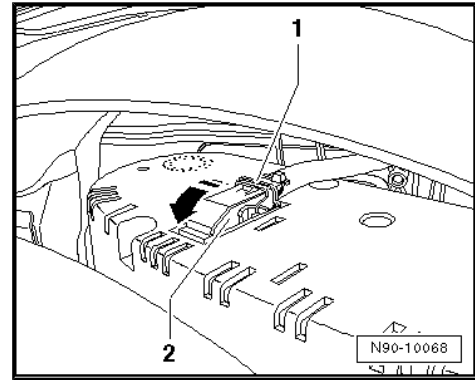
Installing

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

- Use protective films when inserting the dash panel insert - K- in the dash panel in order to prevent the dash panel from being scratched.

Specified torques

Component	Specified torque
Bolts for securing dash panel insert - K- to dash panel	1.5 Nm





2 Horn

⇒ "2.1 Assembly overview - horn", page 21

⇒ "2.2 Removing and installing treble horn H2 / bass horn H7", page 22

2.1 Assembly overview - horn

1 - Bolt

- 20 Nm

2 - Bracket

- For horn.
- Removing and installing

3 - Treble tone horn - H2-

- Removing and installing
⇒ [page 22](#)

4 - Bolt

- 20 Nm

5 - Bracket

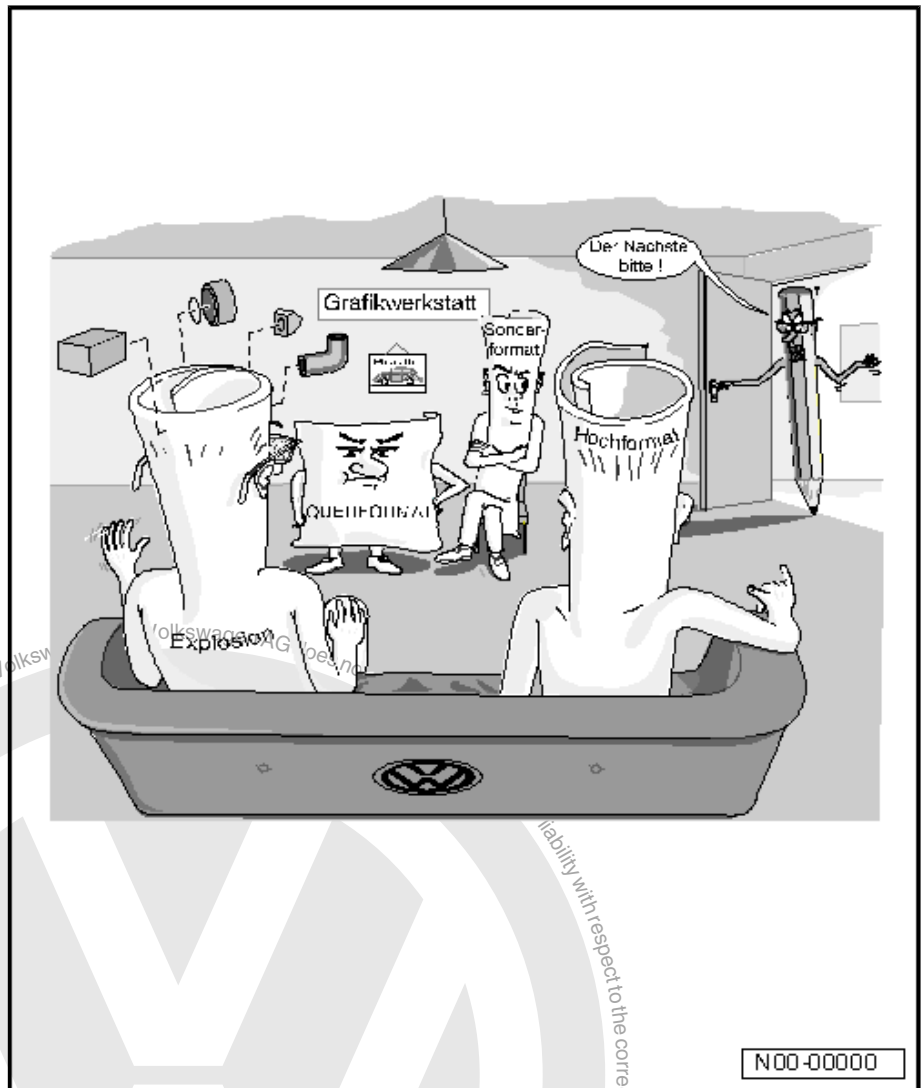
- For horn.
- Removing and installing

6 - Nut

- 9 Nm

7 - Bass tone horn - H7-

- Removing and installing
⇒ [page 22](#)



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2.2 Removing and installing treble horn - H2- / bass horn - H7-

Removing

- Unscrew bolt -1-.
- Remove bracket together with horns -2-.
- Disconnect connector.

Removing horns from bracket

- Remove horns together with bracket ⇒ [page 22](#) .

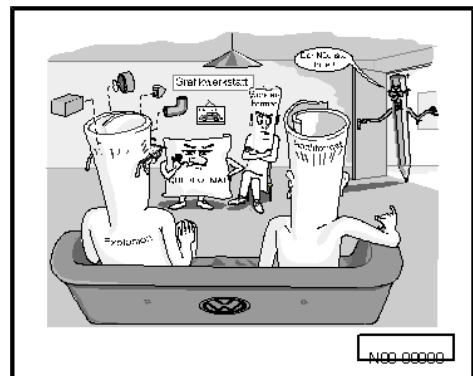
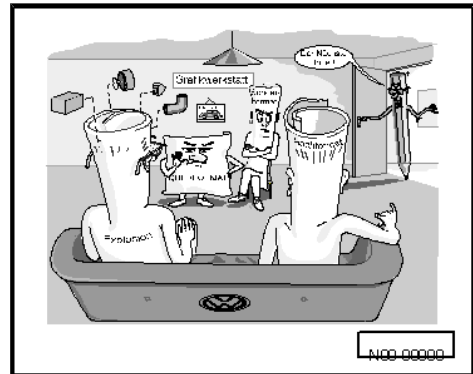
- Remove bolts -1-.
- Remove horns -2-.

Installing

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

Specified torques

- ◆ ⇒ ["2.1 Assembly overview - horn", page 21](#)





92 – Windscreen wash/wipe system

1 Windscreen wiper system

⇒ [“1.1 Assembly overview - windscreen wiper system”, page 23](#)

⇒ [“1.2 Moving wipers to service position”, page 24](#)

⇒ [“1.3 Removing and installing wiper blade”, page 24](#)

⇒ [“1.4 Removing and installing wiper arms”, page 25](#)

⇒ [“1.5 Adjusting wiper arms”, page 27](#)

⇒ [“1.6 Renewing windscreen wiper rubber”, page 28](#)

⇒ [“1.7 Removing and installing wiper motor V”, page 29](#)

⇒ [“1.8 Renewing wiper motor V”, page 31](#)

1.1 Assembly overview - windscreen wiper system

1 - Joint-free wipers

- Removing and installing
⇒ [page 24](#)

2 - Wiper arms

- Removing and installing
⇒ [page 25](#)
- Adjusting ⇒ [page 27](#) .

3 - Nuts

- Qty. 2
- 20 Nm

4 - Cover caps

- Qty. 2

5 - Bolts

- Qty. 3
- 8 Nm

6 - Wiper frame with linkage

- Removing and installing
⇒ [page 29](#)

7 - Bolts

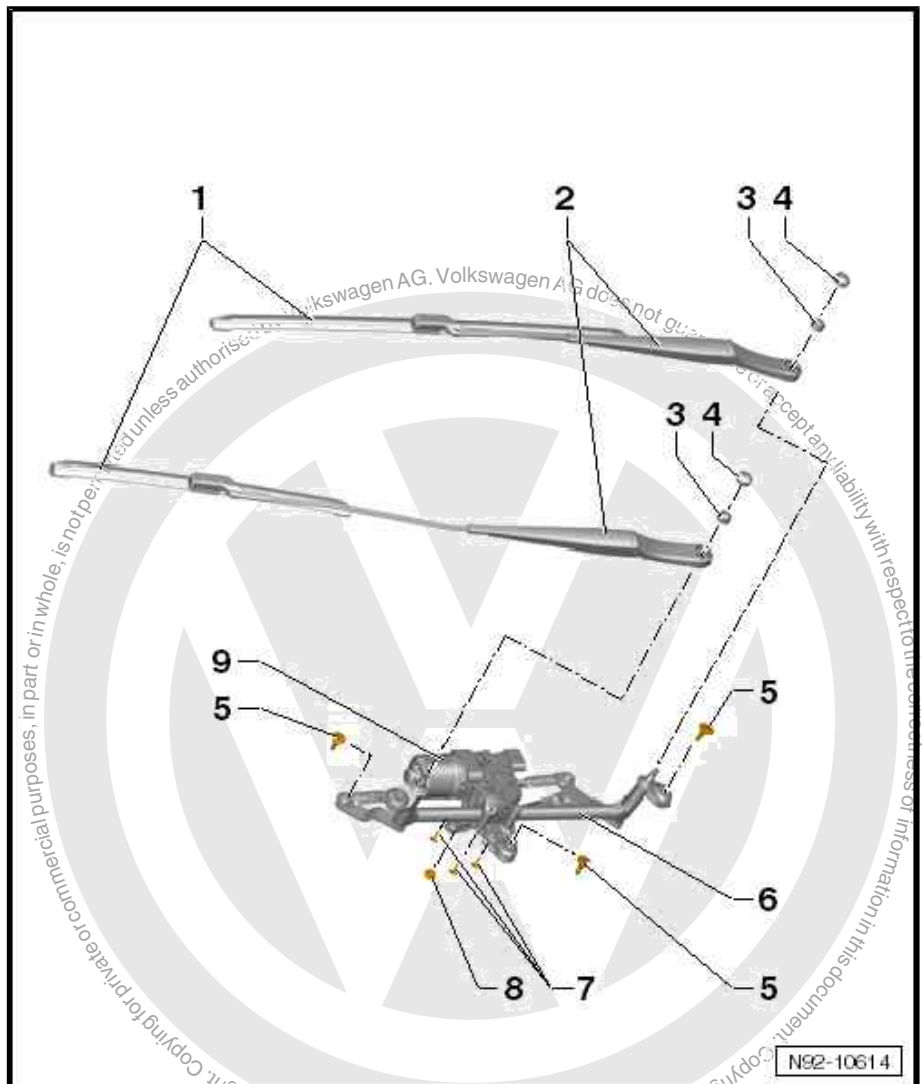
- Qty. 3
- 9 Nm

8 - Nut

- 25 Nm

9 - Wiper motor - V-

- With wiper motor control unit - J400- .
- Removing and installing
⇒ [page 29](#)
- Renewing ⇒ [page 31](#) .



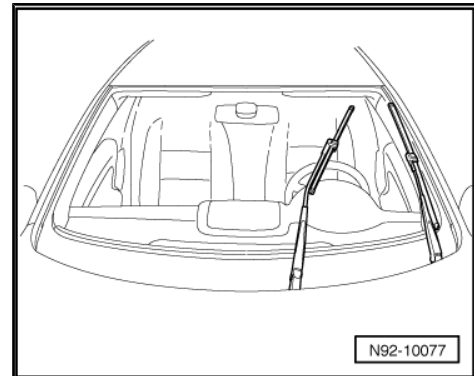


1.2 Moving wipers to service position

To remove the wiper blades, the wiper arms should be placed in the "service/winter position":

- ◆ Close bonnet.
- ◆ Switch on ignition and then switch off again.
- ◆ Briefly press windscreen wiper downwards into "flick wipe" position within 10 seconds after ignition is switched off ⇒ Owner's manual .

Fold wiper arm back onto windscreen again before driving off! The wiper arms move back to their starting position when the wiper lever is operated with the ignition on.



1.3 Removing and installing wiper blade

Removing

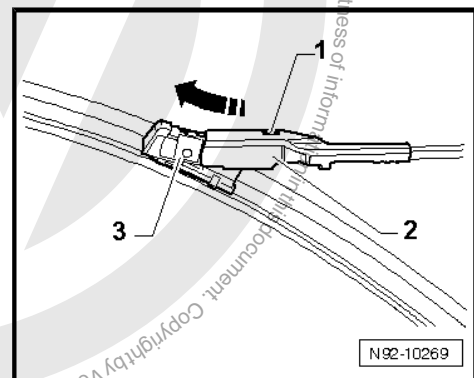


Note

- ◆ *Driver and front passenger wiper blades must not be interchanged when installing.*
 - ◆ *Joint-free wiper blades are very flexible. Only grip wiper blades in area of wiper blade attachment to lift off windscreen.*
 - ◆ *To remove the wiper blades, the wiper arms should be placed in the "service/winter position". The "service/winter position" is activated within 10 seconds after ignition is switched off by pressing the windscreen wiper lever in position "flick wipe".*
- Move wiper arms to "service/winter position" ⇒ [page 24](#) .
 - Lift up wiper arm.
 - Press catch -1-, and pull wiper blade mounting -3- in direction of arrow - out of wiper arm -2-.

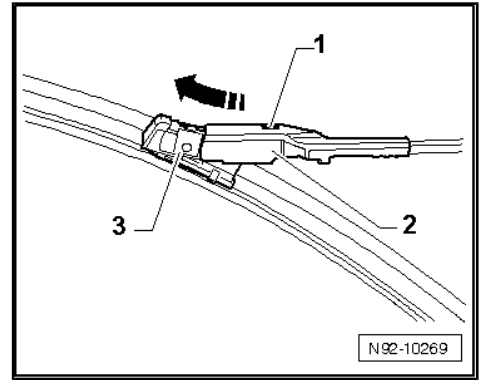
Installing

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





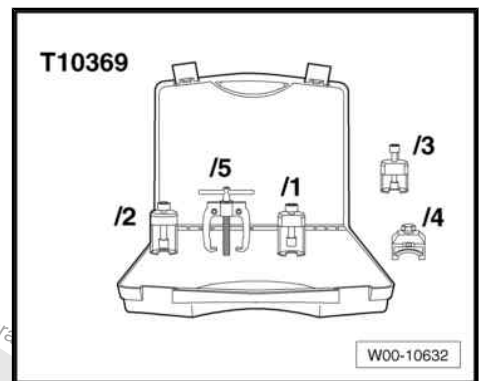
- Push wiper blade mounting -3- onto wiper arm -2- to stop.
- Ensure catch -1- is engaged securely in wiper arm -2-.
- Carefully fold wiper arm back onto front windscreen.



1.4 Removing and installing wiper arms

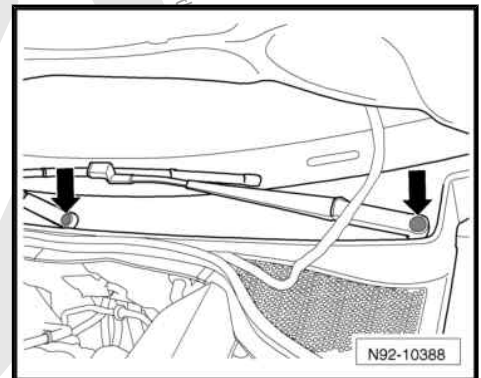
Special tools and workshop equipment required

- ◆ Puller - T10369/1-

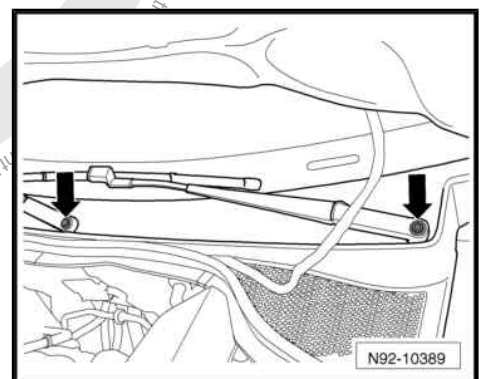


Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Lever off caps -arrows- using screwdriver.



- Remove nuts -arrows-.





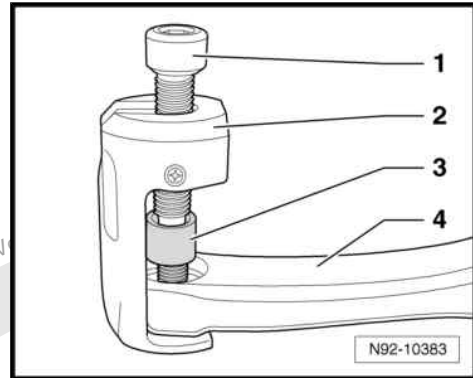
- Slide legs of puller - T10369/1- -2- under wiper arm -4- as shown in the illustration.



Caution

The wiper shaft may be damaged.

Always use thrust piece -3- to loosen wiper arm.



- Turn thrust bolt -1- of puller clockwise until thrust piece -3- comes into contact with wiper shaft. Turn thrust bolt -1- of puller clockwise using a hex socket wrench until wiper arm -4- is released from shaft.
- Remove puller and wiper arm.
- Repeat this process with the second wiper arm.

Installing

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



WARNING

Risk of injury due to automatic engine starting in vehicles with a start-stop system.

- ◆ *In vehicles with an activated start-stop system (indicated by a message in the dash panel insert), the engine may start automatically.*
- ◆ *When work is being done on the vehicle, it must be ensured that the Start/Stop system has been deactivated (switch ignition off or switch off Start/Stop system by pressing the button in the middle of the dash panel).*

- Close bonnet.



Note

To move wiper motor to park position, switch on ignition and press steering column switch down briefly 1x (flick wipe).

- Operate wiper motor briefly until park position is reached.
- When the wiper motor stops, switch ignition off again and remove ignition key.
- Open bonnet.



Note

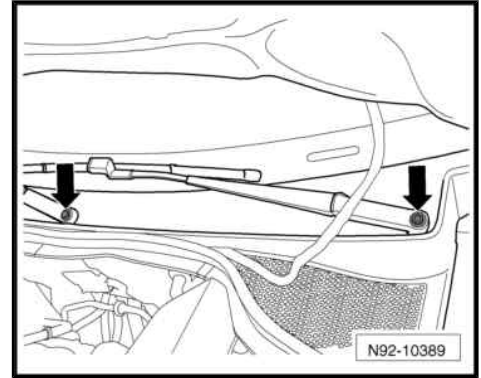
Nuts of wiper arms are not tightened to specified torque until after wiper blade park position has been adjusted.



- Fit wiper arms in approximate park position onto wiper arm shafts, and tighten nuts -arrows- by hand.
- Adjust wiper arms => [page 27](#) .

Specified torques

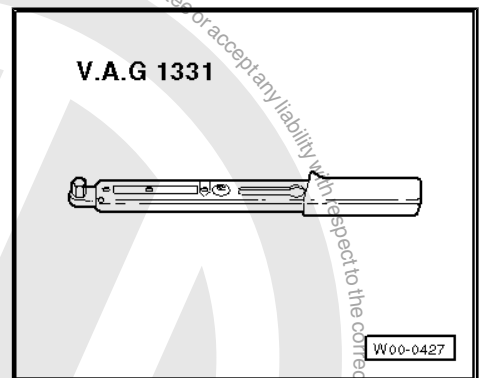
- ◆ => ["1.1 Assembly overview - windscreen wiper system", page 23](#)



1.5 Adjusting wiper arms

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



Note

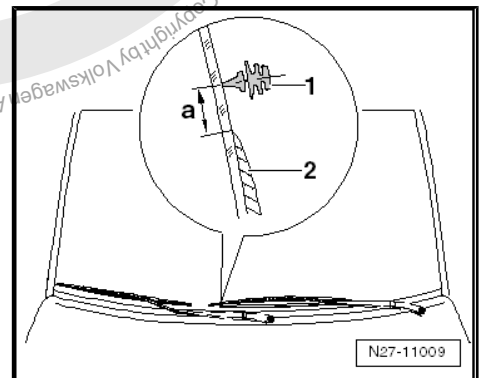
On RHD vehicles, the wiper blades are a mirror image of those on LHD vehicles.

- Move wipers to park position, and then switch off ignition.
- Adjust windscreen wiper park position.



Note

The specified setting position for the wiper blade park position -a- must be measured and adjusted between the middle of the wiper blade tip -1- and the top of the plenum chamber cover -2-.

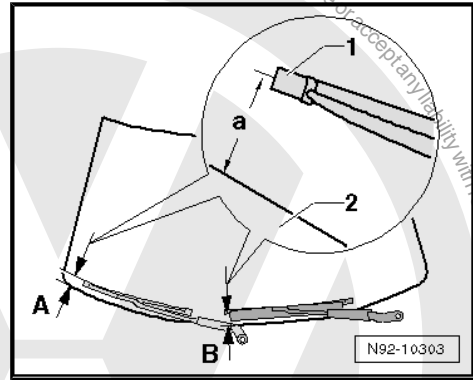




Driver side

Distance -a- between middle of wiper rubber -1- and upper edge of plenum chamber cover -2- on driver side -B- must be 30 mm.

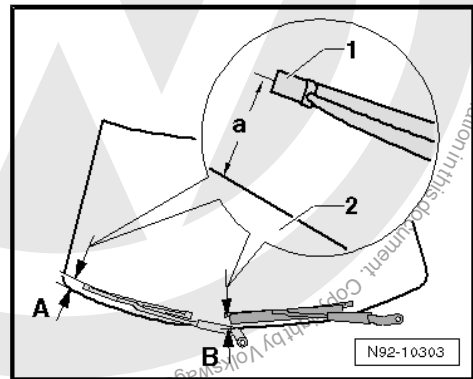
- Adjust wiper blade park position by moving wiper arm if necessary ⇒ [page 25](#) .



Front passenger side

Distance -a- between middle of wiper rubber -1- and upper edge of plenum chamber cover -2- on front passenger side -A- must be 30 mm.

- Adjust wiper blade park position by moving wiper arm if necessary ⇒ [page 25](#) .



Specified torques

- ◆ ⇒ [“1.1 Assembly overview - windscreen wiper system”, page 23](#)

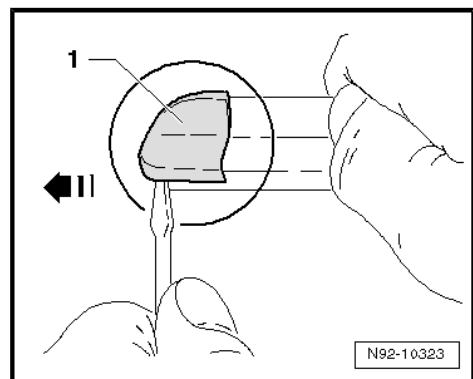
1.6 Renewing windscreen wiper rubber



Note

Refer to chapter »Distinguishing features of joint-free wiper blades« for renewing the wiper rubber. All instructions and notes regarding this chapter are available under ⇒ *Electrical system, General information; Rep. gr. 92 ; Window wiper and washer system; Distinguishing features of joint-free wiper blades* .

- Remove wiper blade ⇒ [page 24](#) .
- Check to see on which side the wiper rubber blade cannot be pushed into the guide.
- On the side that cannot be pushed into the guide, carefully lever off the cap -1-.



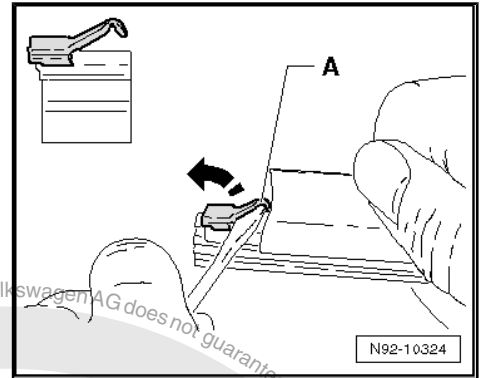


- Using a suitable screwdriver, open the wiper rubber stop -A- by bending up.
- Renew wiper rubber blade.

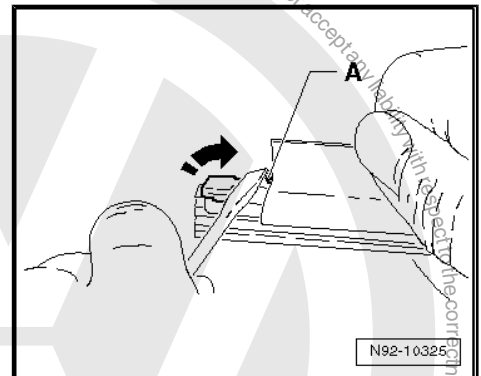


Note

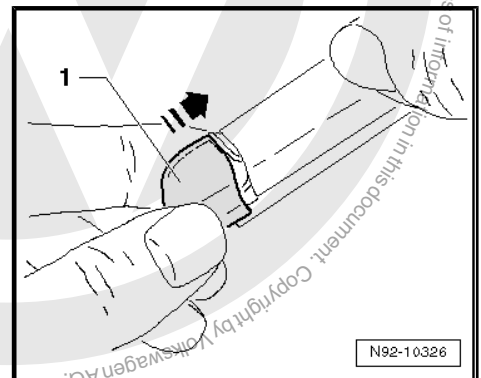
Ensure that wiper rubber blade is seating correctly in wiper rubber blade guides.



- Push wiper blade stop -A- back down using a suitable screwdriver until wiper rubber blade can no longer be moved in the guide.



- Fit new cap -1- and check it is seated securely.
- Fit wiper blade => [page 24](#) .
- Check wiper blade is working correctly.



1.7 Removing and installing wiper motor - V-



Caution

To disconnect and reconnect the battery, the procedure described in the workshop manual should be strictly adhered to => [page 6](#) .

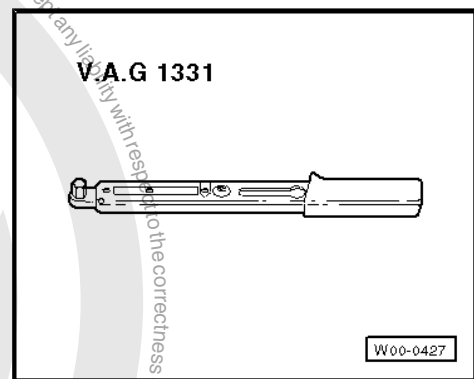


Note

- ◆ The wiper motor control unit - J400- and the wiper motor - V- are combined to form one unit. If the wiper motor control unit - J400- is renewed, the coding must be read out first and the new wiper motor control unit - J400- must be code with this value.
- ◆ The illustrations show removal and installation of the windscreen wiper system in an LHD vehicle.
- ◆ Removal and installation of the windscreen wiper system in an RHD vehicle are analogous.

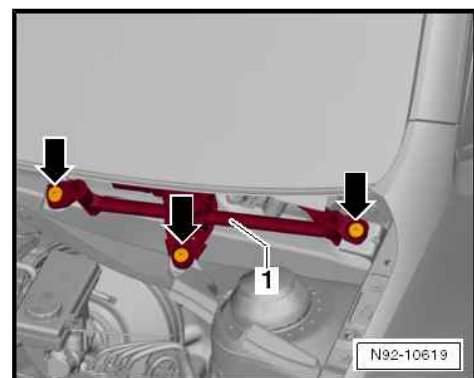
Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



Removing

- Move wiper arms to park position, and then switch off ignition.
- Disconnect battery - A- ⇒ [page 6](#) .
- Remove wiper arms ⇒ [page 25](#) .
- Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Plenum chamber bulkhead; Assembly overview - plenum chamber cover .
- Unscrew bolts -arrows-, and remove wiper motor - V- 1- slightly towards side from plenum chamber, while taking into account the length of connected lines.





- Disconnect connector -1-, and remove wiper motor - V- -2- from vehicle.

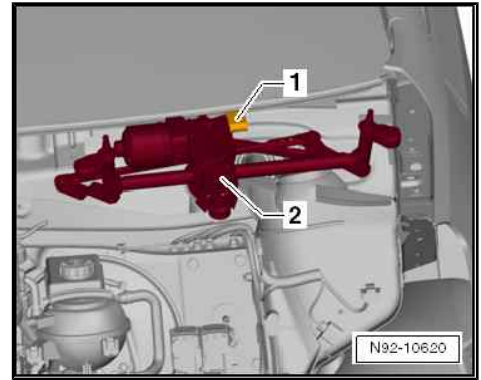
Installing

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

- Connecting battery ⇒ [page 6](#) .

Specified torques

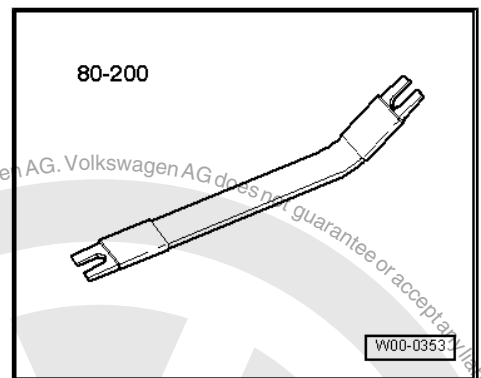
- ◆ ⇒ ["1.1 Assembly overview - windscreen wiper system", page 23](#)



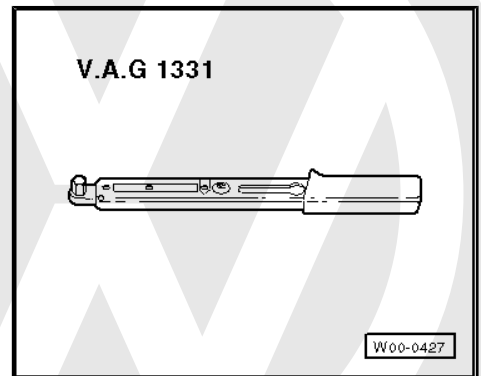
1.8 Renewing wiper motor - V-

Special tools and workshop equipment required

- ◆ Release lever - 80-200-

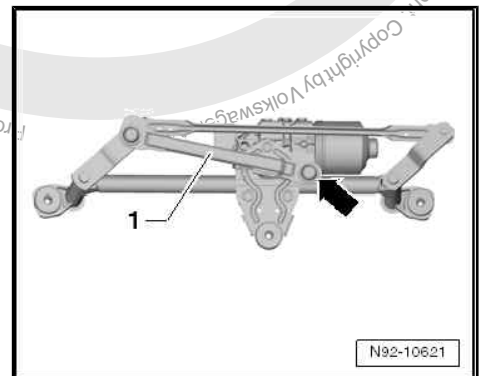


- ◆ Torque wrench - V.A.G 1331-



Removing

- Remove wiper motor - V- ⇒ [page 29](#) .
- Lever linkage -1- off ball head of motor crank -arrow- using removal lever - 80-200- .





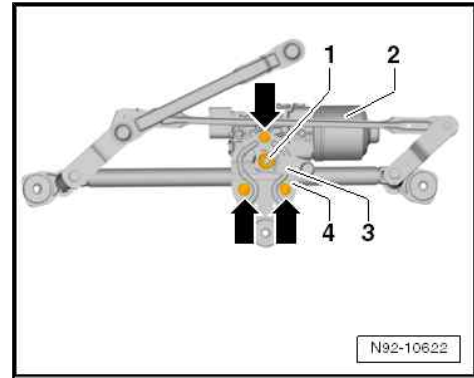
- Unscrew nut -1-, and pull motor crank -3- off wiper motor shaft.
- Unscrew bolts -arrows-, remove retaining plate -4-, and remove wiper motor - V- -2- from wiper frame.

Installing

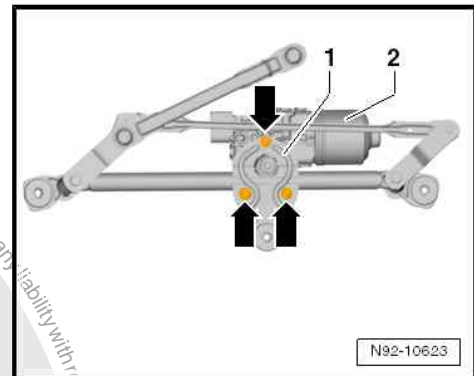


WARNING

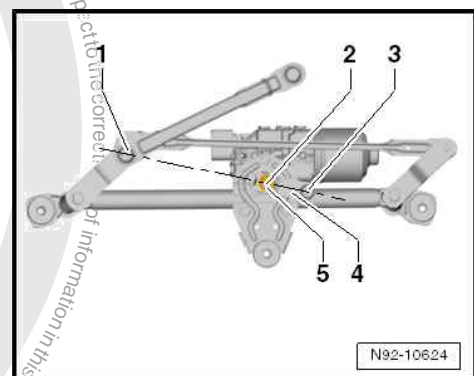
- ◆ **Danger from pinching!**
- ◆ **Danger of becoming caught/pinched in the rotating parts**
- ◆ **Do not hold wiper motor near rotating parts after it has been removed.**



- Operate wiper motor briefly until park position is reached:
 - ◆ Reconnect battery.
 - ◆ Attach connector to wiper motor.
 - ◆ Briefly press the windscreen wiper switch (flick wipe) with the ignition switched on and allow the wiper motor to return to the park position.
 - ◆ Switch off ignition.
 - ◆ Release connector and pull it off the wiper motor.
 - ◆ Disconnect battery.
- Insert wiper motor with control unit -2- in wiper frame, fit retaining plate -1-, and secure it -arrows-.



- Fit motor crank -4- onto shaft of wiper motor - V- -2- so that the three illustrated points -1-, -2- and -3- are in line with each other.
- Screw on nut -5-, and tighten it.

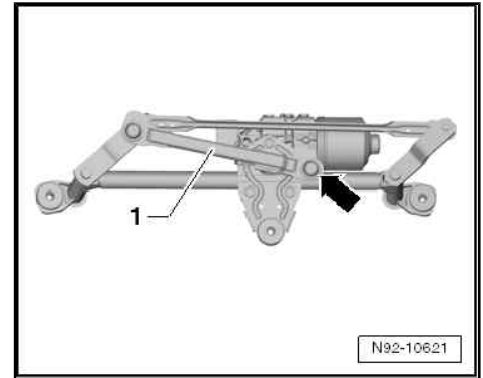




- Press ball head -arrow- of linkage -1- onto motor crank, and engage it.
- Install wiper motor - V- => [page 29](#) .

Specified torques

- ◆ => ["1.1 Assembly overview - windscreen wiper system", page 23](#)





2 Windscreen washer system

⇒ [“2.1 Assembly overview - windscreen washer system”, page 34](#)

⇒ [“2.2 Removing and installing washer fluid reservoir”, page 35](#)

⇒ [“2.3 Removing and installing windscreen and rear window washer pump V59”, page 36](#)

⇒ [“2.4 Removing and installing washer jets”, page 36](#)

⇒ [“2.5 Adjusting spray jets”, page 37](#)

2.1 Assembly overview - windscreen washer system

1 - Angled piece

- Connection to right windscreen washer system spray jet
- Overview of hose couplings for washer fluid lines ⇒ [page 34](#)

2 - Right windscreen washer system spray jet

- Removing and installing ⇒ [page 36](#)
- Adjusting ⇒ [page 37](#)

3 - Angled piece

- Connection to left windscreen washer system spray jet
- Overview of hose couplings for washer fluid lines ⇒ [page 34](#)

4 - Left windscreen washer system spray jet

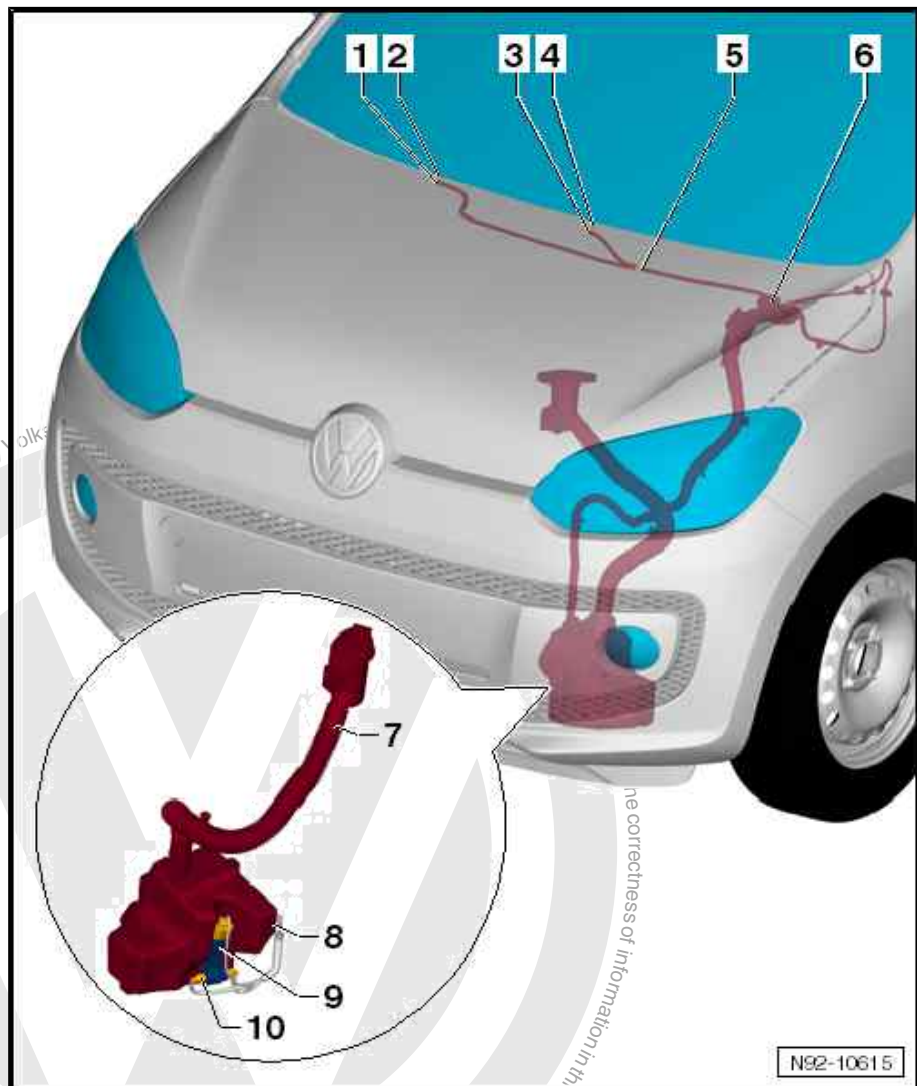
- Removing and installing ⇒ [page 36](#)
- Adjusting ⇒ [page 37](#)

5 - Y-piece

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

6 - Hose

- Repairing washer fluid





lines ⇒ [page 44](#)

7 - Connecting pipe with filler neck to reservoir

- ❑ Removed and installed together with reservoir ⇒ [page 35](#)

8 - Washer fluid reservoir

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

9 - Windscreen and rear window washer pump - V59-

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

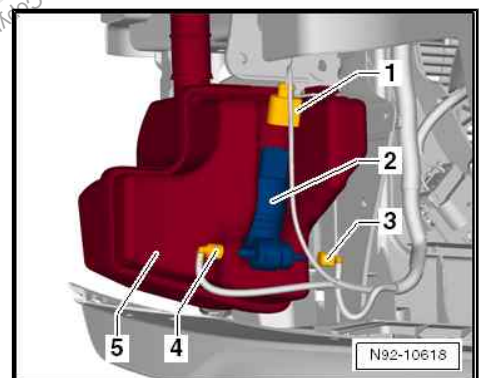
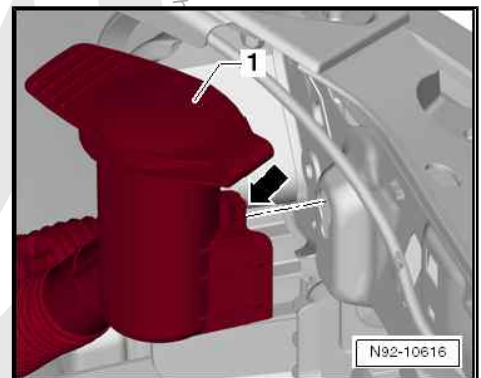
10 - Angled connection piece

- ❑ Connection to windscreen and rear window washer pump - V59-
- ❑ Overview of hose couplings for washer fluid lines ⇒ [page 34](#)

2.2 Removing and installing washer fluid reservoir

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove front bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Assembly overview - front bumper .
- Press locking mechanism -arrow- and pull filler neck -1- upwards out of mounting on lock carrier.
- Pull windscreen and rear window washer pump - V59- -2- together with connected lines upwards out of reservoir -5-.
- Collect any escaping washer fluid in a suitable container.





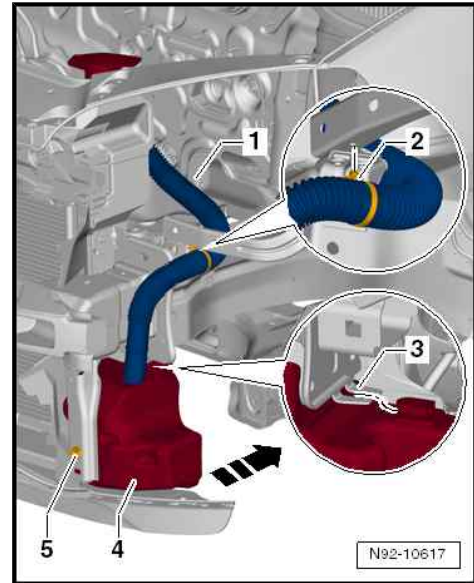
- Release connecting pipe clip together with filler neck -2- from body.
- Unscrew bolt -5-, and pull reservoir -4- in -direction of arrow- towards rear out of guide -3-.
- Remove reservoir -4- together with connecting pipe and filler neck -1- from vehicle.

Installing

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

Specified torques

Component	Specified torque
Bolts securing reservoir to body	8 Nm



2.3 Removing and installing windscreen and rear window washer pump - V59-

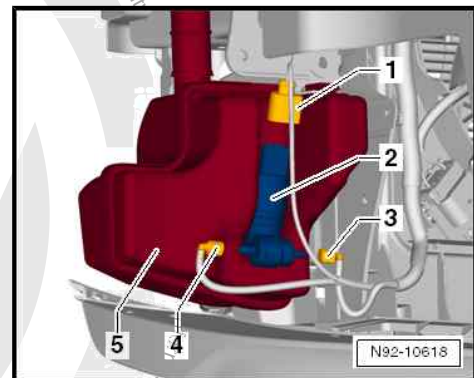
Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Detach front left wheel housing liner in front area ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Removing and installing wheel housing liner .
- To release, twist securing clips on angled connection pieces -3- and -4- and pull connection pieces off windscreen and rear window washer pump - V59- -2-.
- Collect any escaping washer fluid in a suitable container.
- Pull windscreen and rear window washer pump - V59- -2- upwards out of reservoir -5-, and release connector and pull off connector -1-.



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 connections must be connected to the correct colour-coded pump connections during installation.



Installing

Installation is carried out in the reverse sequence.

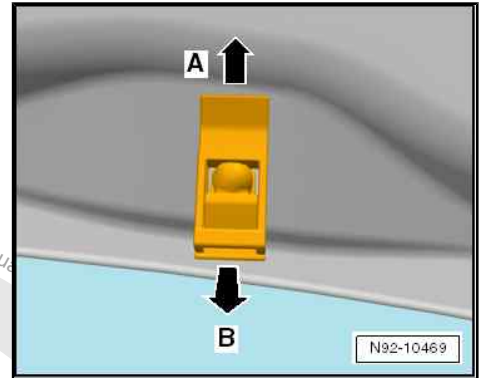
2.4 Removing and installing washer jets

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.



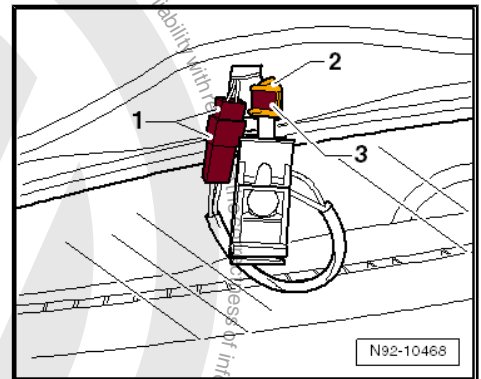
- Push spray jet upwards -arrow A-, and swing it out downwards out of bonnet -arrow B-.



- Release securing clip -3- and pull hose connection -2- off spray jet.
- Disconnect connector -1-, and remove spray jet.

Installing

- Adjusting spray jets => [page 37](#)



2.5 Adjusting spray jets



Note

In case of uneven spray field due to soiling in the spray jet, remove spray jet and rinse it through with water counter to spraying direction. Purging with compressed air against the spraying direction is then permitted. Do not use any objects for cleaning spray jets!

Adjusting spray jets for windscreen washer system: "Maintenance manual" => Maintenance ; Booklet 35.1 ; Descriptions of work .

3 Rear window wiper system

⇒ [“3.1 Assembly overview - rear window wiper system”, page 38](#)

⇒ [“3.2 Removing and installing wiper blade”, page 39](#)

⇒ [“3.3 Removing and installing wiper arm”, page 39](#)

⇒ [“3.4 Adjusting wiper arm”, page 40](#)

⇒ [“3.5 Removing and installing rear window wiper motor V12”, page 40](#)

3.1 Assembly overview - rear window wiper system

1 - Cover cap

2 - Nut

- 12 Nm

3 - Joint-free wiper blade

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

4 - Wiper arm

- Removing and installing
⇒ [page 39](#)
- Adjusting park position
⇒ [page 40](#)

5 - Seal

- In rear window

6 - Rear window wiper motor - V12-

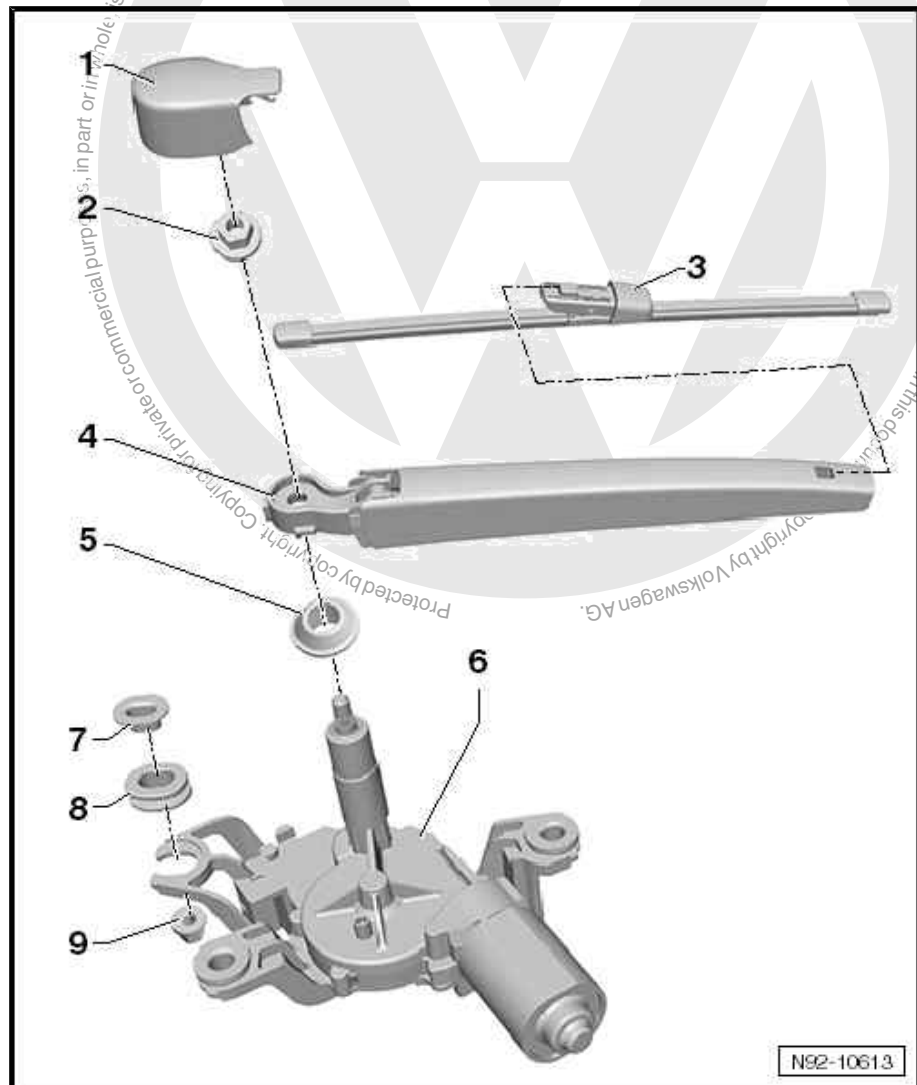
- Removing and installing
⇒ [page 40](#)

7 - Spacer

8 - Rubber ring

9 - Nut with washer

- M6
- 8 Nm



N92-10613



3.2 Removing and installing wiper blade

Removing



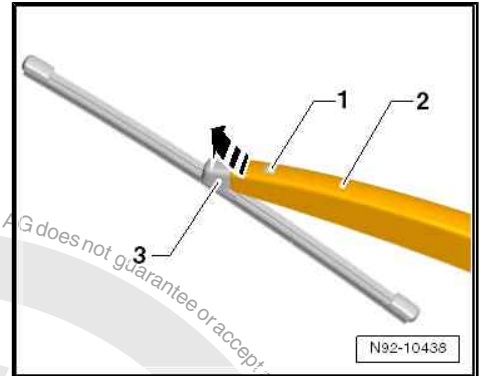
Note

The joint-free wiper blade is very flexible. To lift the wiper blade off the rear window, grasp it only in the area in which the wiper blade is attached to the wiper.

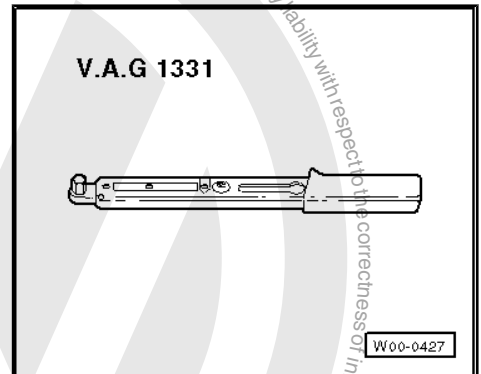
- Fold up wiper arm -2-.
- Press catch -1-, and push wiper blade -3- in -direction of arrow- out of mounting.

Installing

Installation is carried out in the reverse sequence.



3.3 Removing and installing wiper arm



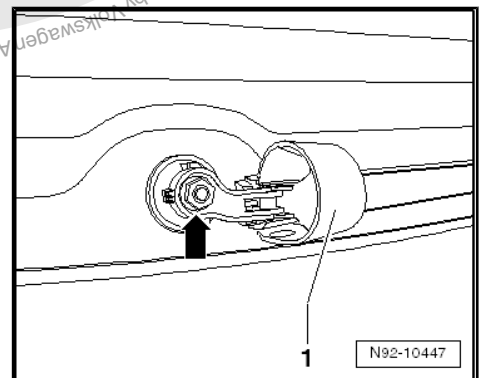
Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-

Removing

- Move wipers to park position.
- To move wiper motor to its rest position, switch windscreen wipers on and off with ignition on.
- Fold cover cap -1- of rear window wiper up and unclip it.
- Loosen but do not completely remove nut -arrow-.
- Fold wiper arm up and release from taper by rocking arm back and forth sideways.
- Unscrew nut -arrow- completely, and remove wiper arm.

Installing





- Fit wiper arm in park position on wiper arm shaft, and tighten nut -arrow- by hand.



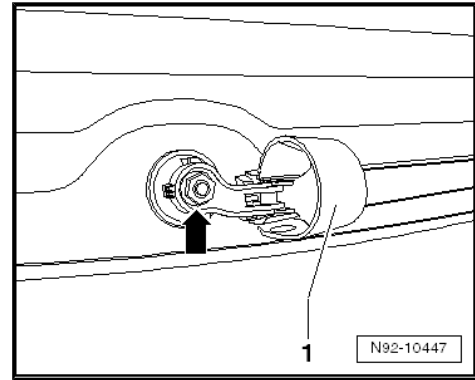
Note

The wiper arm nut -arrow- must not be tightened to specified torque until wiper blade park position has been adjusted.

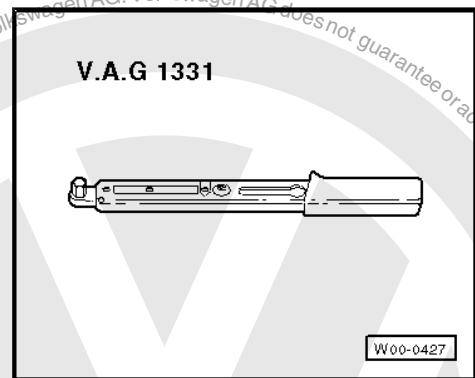
- Adjust rear window wiper park position ⇒ [page 40](#) .

Specified torques

- ◆ ⇒ [“3.1 Assembly overview - rear window wiper system”, page 38](#)



3.4 Adjusting wiper arm



Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-
- To set the parking position, align the wiper blade tip with the lowest heating wire of the heated rear window
- Adjust rear window wiper park position by moving wiper arm if necessary ⇒ [page 39](#) .
- Tighten nut ⇒ [page 38](#) .

Specified torques

- ◆ ⇒ [“3.1 Assembly overview - rear window wiper system”, page 38](#)

3.5 Removing and installing rear window wiper motor - V12-

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-

Removing

- Removing wiper arm ⇒ [page 39](#)
- Remove rear lid trim ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim; Assembly overview - rear lid trim



- Release connector -1- and pull off.
- Remove nuts -arrows-.
- Carefully pull rear window wiper motor - V12- off tailgate

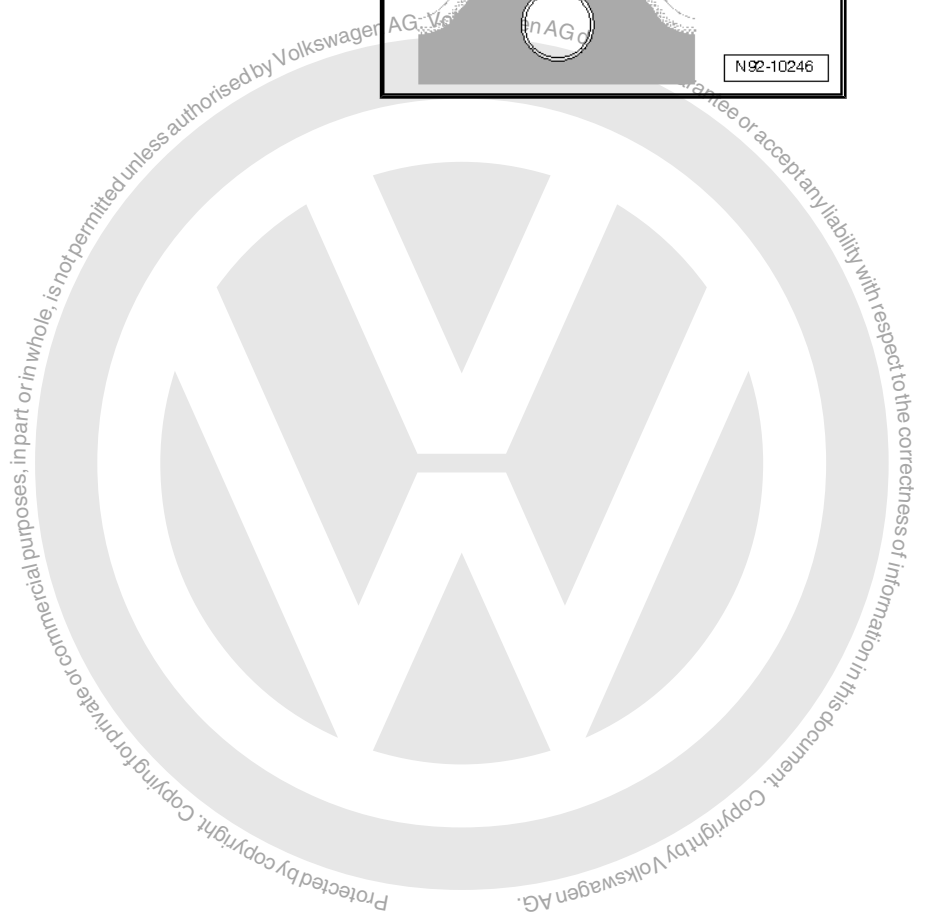
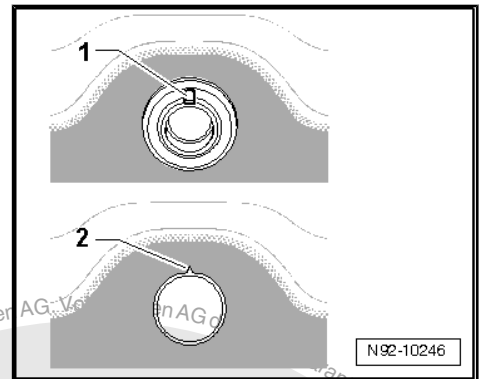
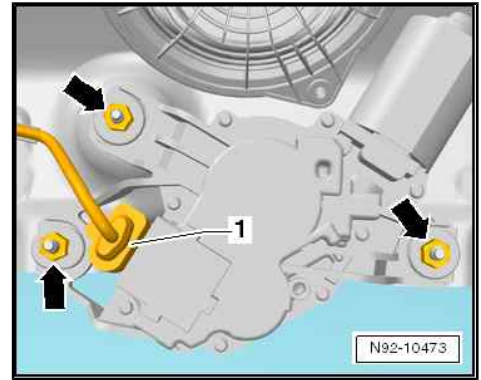
Installing

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.
- Install wiper arm ⇒ [page 39](#) .
- Adjust rear window wiper park position ⇒ [page 40](#) .

Specified torques

- ◆ ⇒ [“3.1 Assembly overview - rear window wiper system”, page 38](#)



4 Rear window washer system

⇒ [“4.1 Assembly overview - rear window washer system”, page 42](#)

⇒ [“4.2 Removing and installing washer jet”, page 42](#)

⇒ [“4.3 Adjusting spray jet”, page 43](#)

4.1 Assembly overview - rear window washer system

1 - Filler pipe with filler neck for washer fluid reservoir

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

2 - Windscreen and rear window washer pump - V59-

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

3 - Washer fluid reservoir

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

4 - Angled connection piece

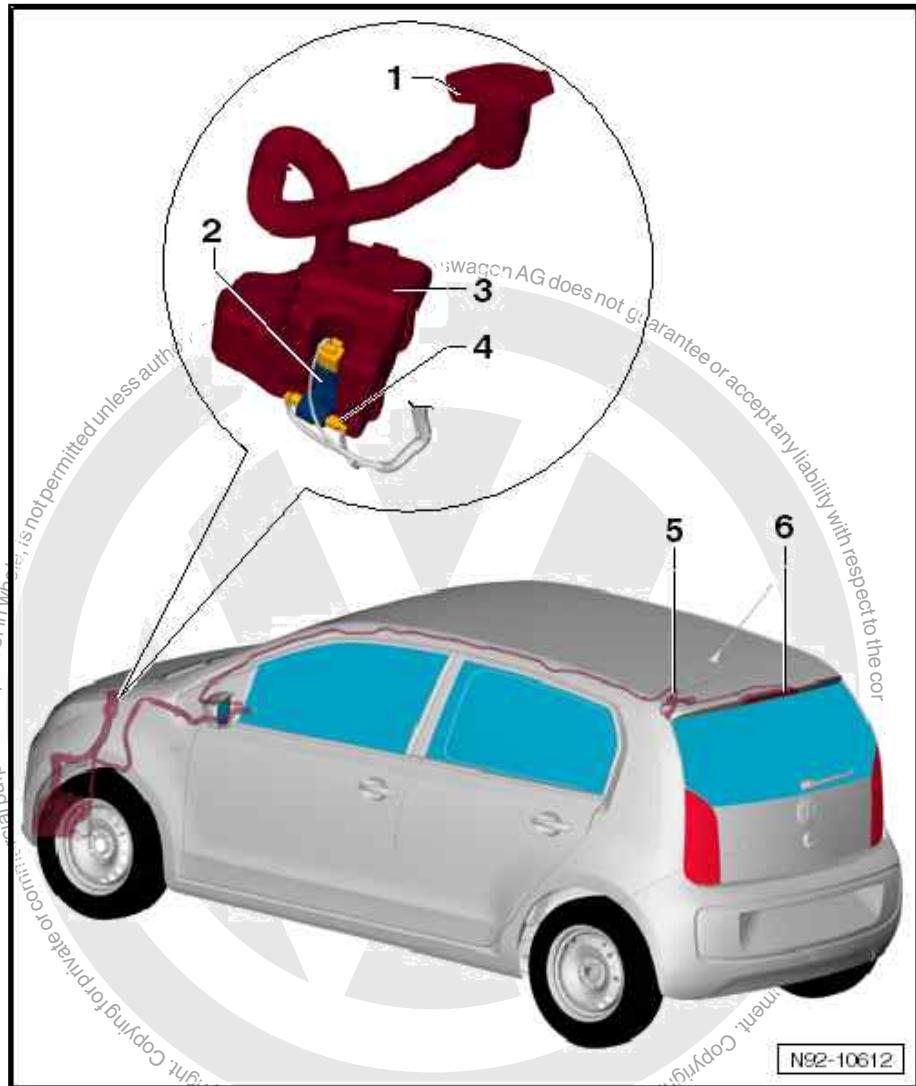
- ❑ Connection to windscreen and rear window washer pump - V59-

5 - Connection piece

- ❑ Point of separation, interior wiring harness to rear lid wiring harness

6 - Spray jet for rear window washer system

- ❑ In additional brake light
- ❑ Removing and installing
⇒ [page 42](#)
- ❑ Adjusting ⇒ [page 43](#) .



4.2 Removing and installing washer jet

The spray jet for rear window washer system is installed in the additional brake light - M25- .

Removing

- Remove additional brake light - M25- ⇒ [page 68](#)

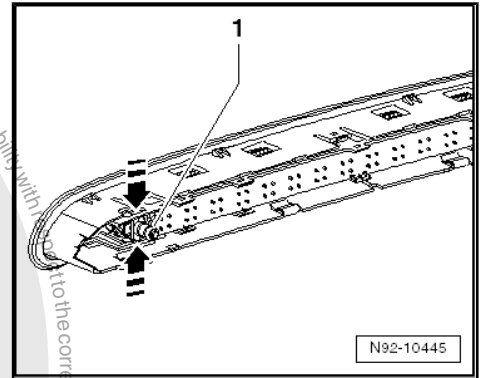


- Release both catches -arrows-, and pull spray jet -1- towards rear out of additional brake light - M25- .

Installing

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

- Adjusting spray jet ⇒ [page 43](#)



4.3 Adjusting spray jet

Note

In case of uneven spray field due to impurities within the spray jet: remove spray jet and rinse it through with water, opposite to direction of spray. Purging with compressed air against the spraying direction is then permitted. Do not use any objects for cleaning spray jets!

Adjusting rear window washer system spray jets "Maintenance manual" ⇒ Maintenance ; Booklet 35.1 ; Descriptions of work .



5 Washer fluid lines

⇒ ["5.1 Repairing washer fluid lines", page 44](#)

5.1 Repairing washer fluid lines

All instructions and notes regarding this chapter are available under ⇒ Electrical system, General information; Rep. gr. 92 ; Window wiper and washer system; Hose repair .





94 – Lights, bulbs, switches - exterior

1 Headlight

- ⇒ [“1.1 Assembly overview - headlight”, page 45](#)
- ⇒ [“1.2 Removing and installing headlight”, page 46](#)
- ⇒ [“1.3 Adjusting headlights”, page 48](#)
- ⇒ [“1.4 Adjusting headlight installation position”, page 48](#)
- ⇒ [“1.5 Removing and installing front turn signal bulb M5 / M7 ”, page 50](#)
- ⇒ [“1.6 Installing repair kit for headlight housing”, page 51](#)
- ⇒ [“1.7 Changing headlights over from driving on right to driving on left”, page 53](#)
- ⇒ [“1.8 Changing headlights over from driving on left to driving on right”, page 53](#)
- ⇒ [“1.9 Removing and installing headlight range control actuator V48 / V49 ”, page 53](#)
- ⇒ [“1.10 Removing and installing headlight dipped beam bulb M29 / M31 and headlight main beam bulb M30 / M32 ”, page 55](#)
- ⇒ [“1.11 Removing and installing side light bulb M1 / M3 ”, page 56](#)

1.1 Assembly overview - headlight



1 - Bolt

- 4 Nm

2 - Bolt

- 4 Nm

3 - Bracket

4 - Front left turn signal bulb - M5- or front right turn signal bulb - M7-

- Bulb, 12 V, PY21 W
- Removing and installing ⇒ [page 50](#)

5 - Bulb holder with grip element

- For front left turn signal bulb - M5- or front right turn signal bulb - M7-

6 - Left side-light bulb - M1- or right side-light bulb - M3-

- Lamp 12V, 5W
- Removing and installing ⇒ [page 56](#)

7 - Bulb holder with grip element

- For side-light bulb

8 - Bolt

- 4 Nm

9 - Bolt

- 4 Nm

10 - Adapter

11 - Left headlight range control motor - V48- or right headlight range control motor - V49-

- Removing and installing ⇒ [page 53](#)

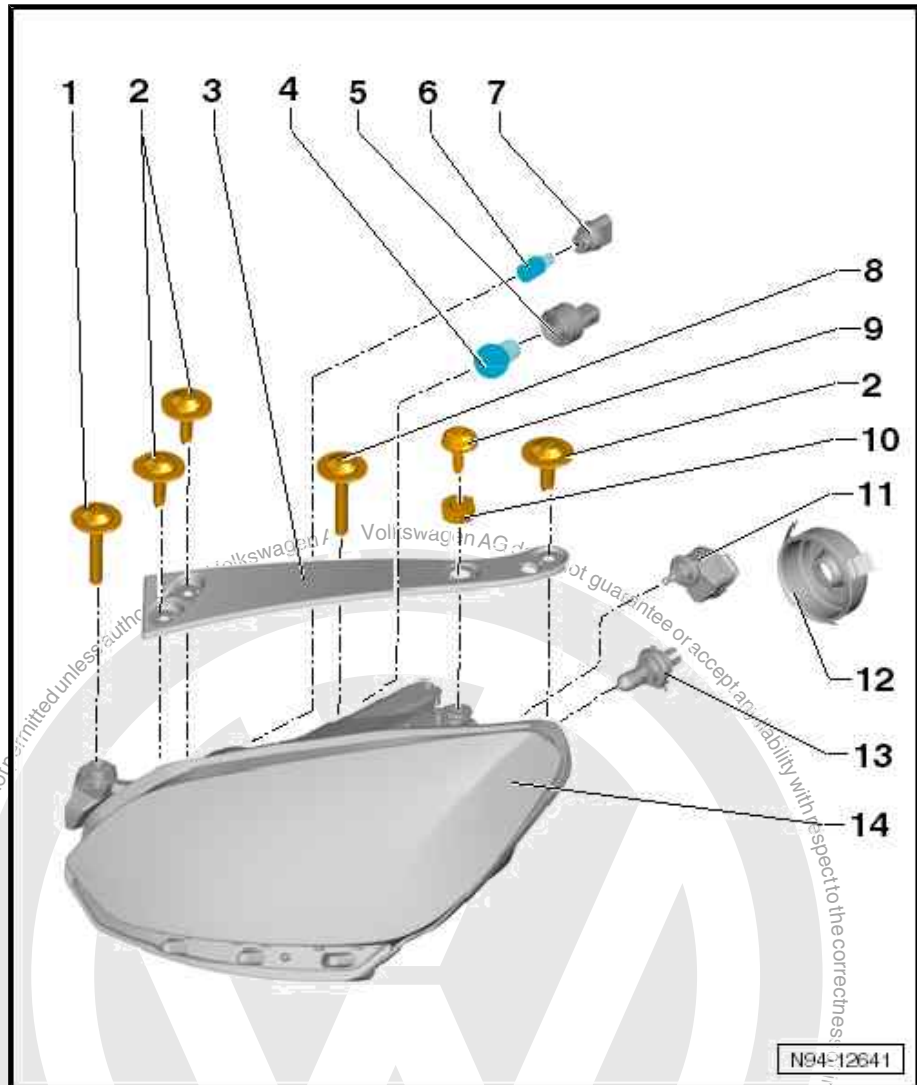
12 - Cover cap

13 - Bulb for dipped beam and main beam

- Left bulb which functions as bulb for left dipped beam - M29- and bulb for left main beam - M30-
- Right bulb which functions as bulb for right dipped beam - M31- and bulb for right main beam - M32-
- Bulb H4 12V, 60/55W
- Removing and installing ⇒ [page 55](#)

14 - Front left headlight - MX1- or front right headlight - MX2-

- Removing and installing ⇒ [page 46](#)
- Correcting installation position of headlight ⇒ [page 48](#)
- Installing repair kit for headlight housing ⇒ [page 51](#)
- Changing headlights over from driving on right to driving on left ⇒ [page 53](#)
- Changing headlights over from driving on left to driving on right ⇒ [page 53](#)

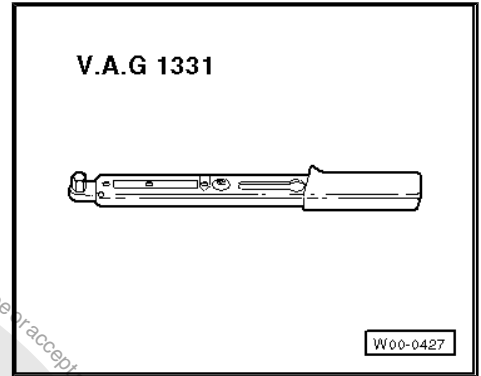


1.2 Removing and installing headlight

Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1331-

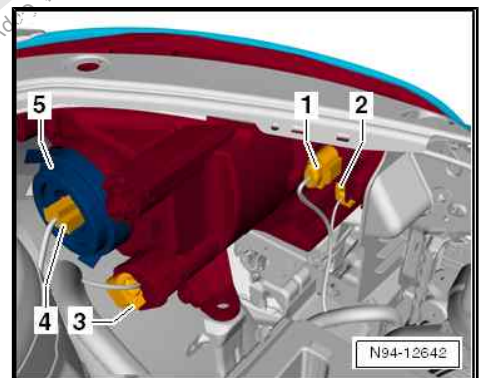


i Note

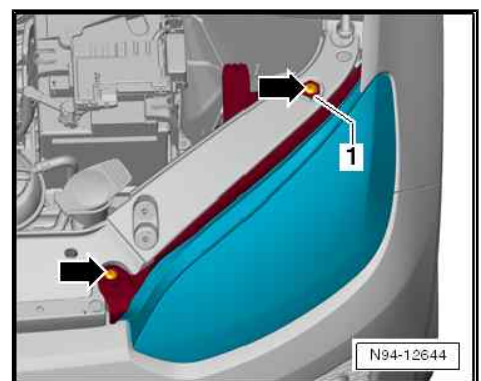
- ◆ *It is not necessary to disconnect the battery earth wire.*
- ◆ *The illustrations show removal and installation of the left headlight. The removal and installation of the right headlight follows the same principle.*
- ◆ *If a headlight is removed, it should always be adjusted following installation ⇒ Maintenance ; Booklet 35.1 ; Description of work*

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove front bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Assembly overview - front bumper .
- Disconnect connectors -1 to 4-.



- Unscrew bolts -arrows-, and remove adapter -1- from beneath upper bolt.





- Remove bolt -arrow-.
- Remove headlight forwards out of body aperture.

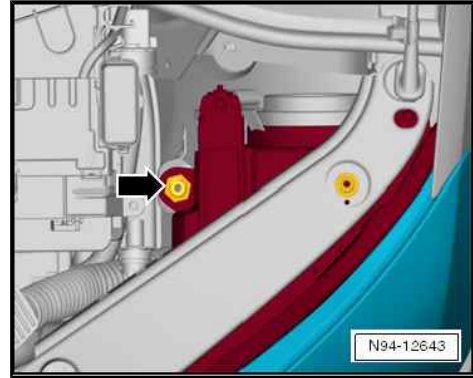
Installing

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

- Check installation position so that shut lines/gaps around headlight are even.

If the shut lines/gaps around the headlight are uneven, the installation position must be adjusted ⇒ [page 48](#) .

- Check functions of headlight.



Note

If a headlight is removed, it should always be adjusted following installation.

- Checking headlight settings and adjusting headlight if necessary "Maintenance manual" ⇒ Maintenance ; Booklet 35.1 ; Descriptions of work

Specified torques

- ◆ ⇒ ["1.1 Assembly overview - headlight", page 45](#)

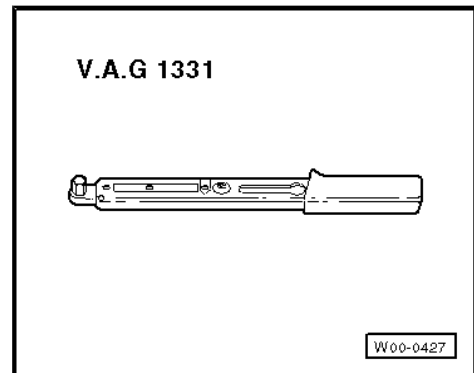
1.3 Adjusting headlights

Adjusting headlights: "Maintenance manual" ⇒ Maintenance ; Booklet 35.1 ; Descriptions of work

1.4 Adjusting headlight installation position

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-

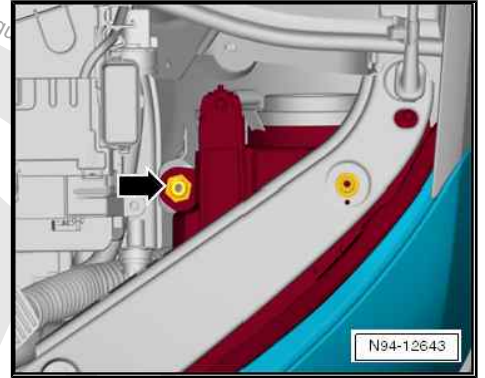


Note

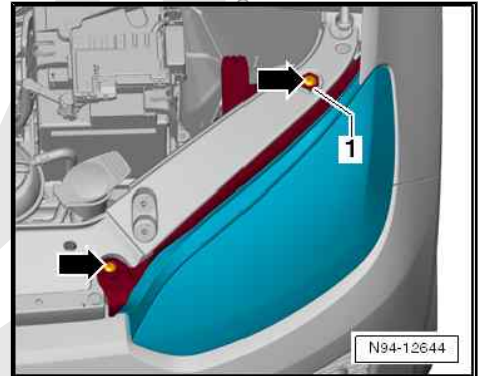
- ◆ *If the shut lines/gaps around the headlight are uneven after installation, the installation position must be adjusted.*
- ◆ *To adjust the installation position of the headlight, the front bumper does not have to be removed.*
- Switch off ignition and all electrical loads, and pull out ignition key.



- Undo screw -arrow-.



- Undo screws -arrows-.



- Adjust shut lines/flushness to body by pushing in or pulling out alignment bush -arrow- on headlight.
- Check headlight installation position to ensure gaps are even; correct if necessary.
- Check functions of headlight.



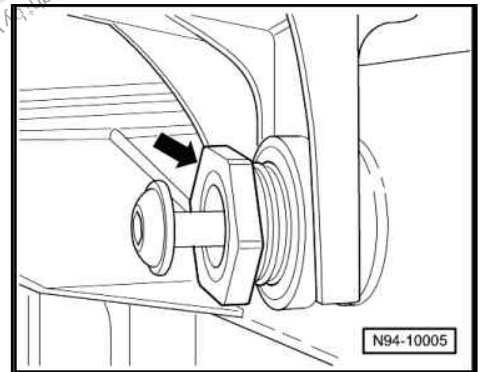
Note

If a headlight is removed or adjusted to fit more accurately to the vehicle body, it must be aligned following such measures.

- Checking headlight settings and adjusting headlight if necessary "Maintenance manual" => Maintenance ; Booklet 35.1 ; Descriptions of work

Specified torques

- ◆ => ["1.1 Assembly overview - headlight", page 45](#)





1.5 Removing and installing front turn signal bulb M5 / M7



Caution

Filament bulbs and gas discharge bulbs under pressure!

Danger of injury due to bursting filament lamps and gas discharge lamps!

- ◆ *Remove filament bulbs and gas discharge bulbs carefully.*
- ◆ *Always wear safety goggles and gloves when removing and installing filament bulbs or gas discharge bulbs!*
- ◆ *Avoid contact with burst glass bulbs.*

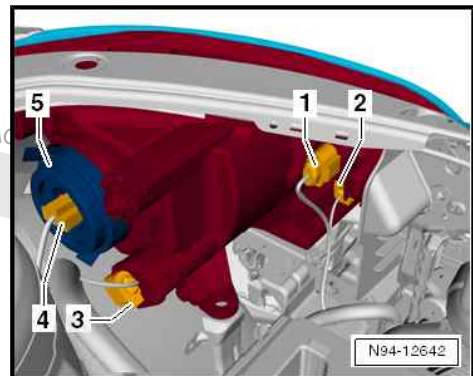


Note

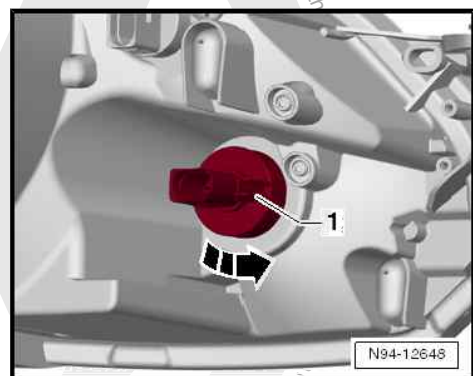
The illustrations show removal and installation of the bulb for front left turn signal - M5- . Removal and installation of front right turn signal bulb - M7- are carried out in the same way.

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Release connector -2- and pull off.



- Turn bulb holder -1- in direction of arrow- as far as stop and remove it together with bulb for front turn signal towards the rear and out of headlight.





- Push front turn signal bulb -2- into holder, and at the same time turn it in -direction of arrow-. Then, pull it out of holder -1-.

Front turn signal bulb : 12 V, PY 21 W

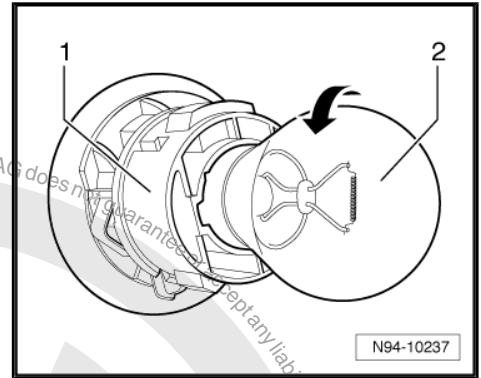
Installing

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 functions of headlight.
- Checking headlight settings and adjusting headlight if necessary: "Maintenance manual" ⇒ Maintenance ; Booklet 35.1 ; Descriptions of work

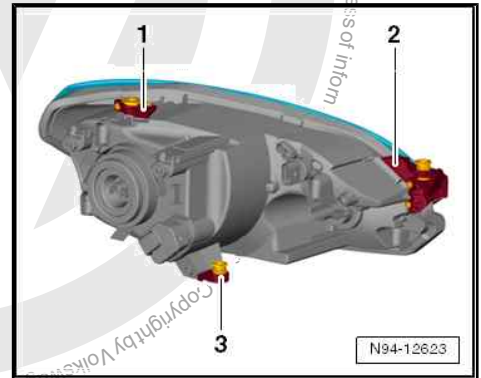


1.6 Installing repair kit for headlight housing

If the upper fastening point -1-, the inner retaining tab -2- or the rear retaining tab -3- has been damaged or broken off, the damage can be repaired by installing a repair kit. There is therefore no need to replace the entire headlight.

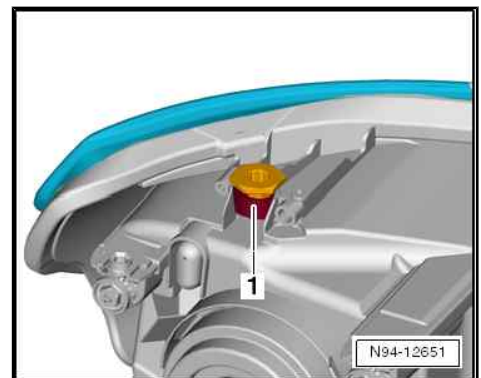
Note

- ◆ Check that there is no further damage to the headlight that would make installation of the repair kit unnecessary.
- ◆ The repair kits for the left and right headlights ⇒ ETKA (Electronic Parts Catalogue) are different.



Repairing upper fastening points

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove headlight ⇒ [page 46](#) .
- Remove old fastening point -1- as far as necessary until new fastening point rests flat against the surface.





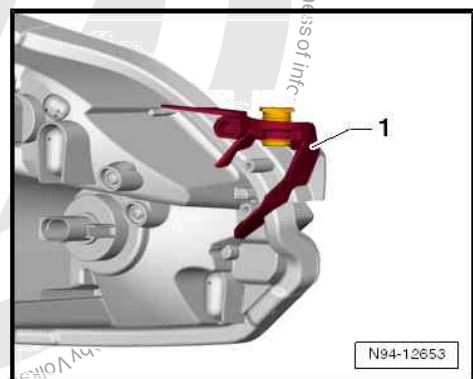
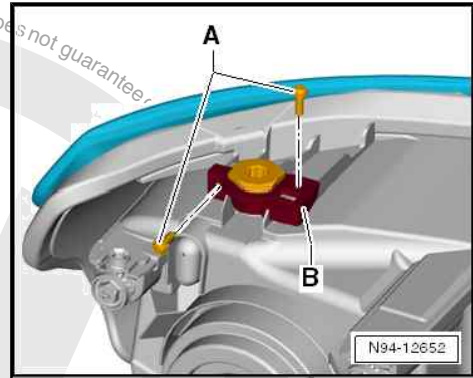
- Slot new retaining tab -B- onto base of old retaining tab on headlight, ensuring a positive fit, and tighten the two bolts -A-.
- Install headlight ⇒ [page 46](#)
- Check headlight settings and adjust if necessary ⇒ Maintenance ; Booklet 35.1 ; Descriptions of work .

Specified torques

- ◆ ⇒ ["1.1 Assembly overview - headlight", page 45](#)

Repairing inner retaining tab

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove headlight ⇒ [page 46](#) .
- Remove old retaining tab -1- as far as necessary until repair tab can be attached.



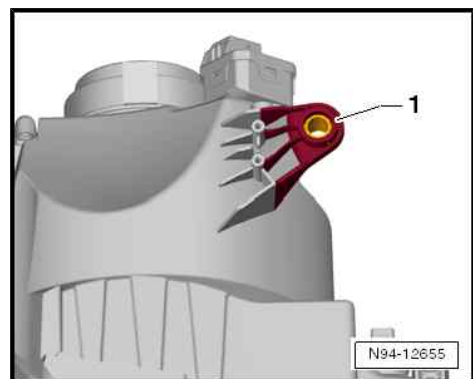
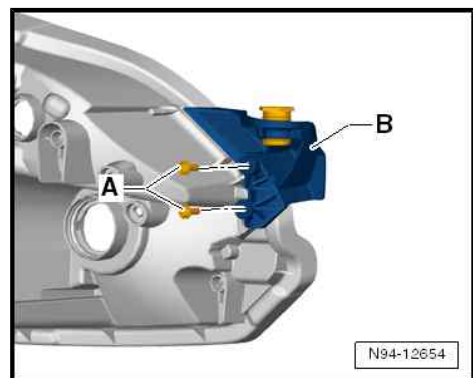
- Slot new retaining tab -B- onto base of old retaining tab on headlight, ensuring a positive fit, and tighten the two bolts -A-.
- Install headlight ⇒ [page 46](#) .
- Check headlight settings and adjust if necessary ⇒ Maintenance ; Booklet 35.1 ; Descriptions of work .

Specified torques

- ◆ ⇒ ["1.1 Assembly overview - headlight", page 45](#)

Repairing rear retaining tab

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove headlight ⇒ [page 46](#) .
- Remove old retaining tab -1- as far as necessary until repair tab can be attached.

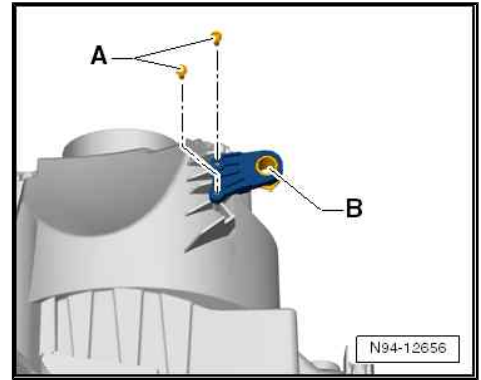




- Slot new retaining tab -B- onto base of old retaining tab on headlight, ensuring a positive fit, and tighten the two bolts -A-.
- Install headlight ⇒ [page 46](#) .
- Check headlight settings and adjust if necessary ⇒ Maintenance ; Booklet 35.1 ; Descriptions of work .

Specified torques

- ◆ ⇒ ["1.1 Assembly overview - headlight"](#), [page 45](#)



1.7 Changing headlights over from driving on right to driving on left



Note

- ◆ *To avoid dazzling oncoming traffic with the asymmetrical lights, both headlights should normally be converted relevant to the country (driving on the left or right) in which the vehicle is being driven.*
- ◆ *The asymmetrical dipped beam of the headlights in the up! remains below the legally prescribed dazzle values even if the headlight lens is masked.*
- ◆ *Converting the headlights for use in countries where vehicles drive on the other side of the road is therefore unnecessary.*

1.8 Changing headlights over from driving on left to driving on right



Note

- ◆ *To avoid dazzling oncoming traffic with the asymmetrical lights, both headlights should normally be converted relevant to the country (driving on the left or right) in which the vehicle is being driven.*
- ◆ *The asymmetrical dipped beam of the headlights in the up! remains below the legally prescribed dazzle values even if the headlight lens is masked.*
- ◆ *Converting the headlights for use in countries where vehicles drive on the other side of the road is therefore unnecessary.*

1.9 Removing and installing headlight range control actuator V48 / V49

Left headlight range control actuator - V48- and right headlight range control actuator - V49- are installed in the headlights in such a way that they can be replaced.

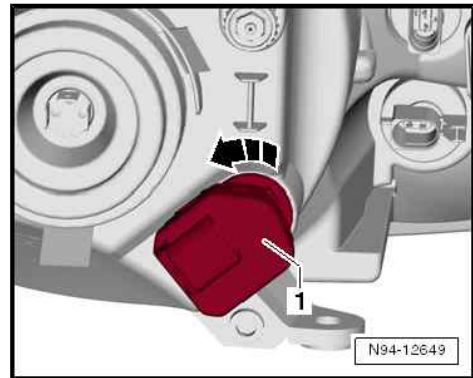


Note

- ◆ *If actuators are removed and reinstalled or renewed, the headlight adjustment must be checked and headlights must be adjusted as necessary ⇒ Maintenance ; Booklet ; Description of work .*
- ◆ *The following illustrations show how to remove and install the actuator on the left headlight. The removal and installation of the actuator on the right headlight follows the same principle.*

Removing

- Remove headlight ⇒ [page 46](#) .
- Turn headlight range control actuator -1- in -direction of arrow- as far as it will go.

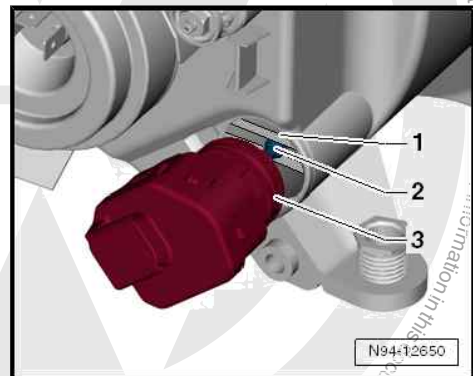
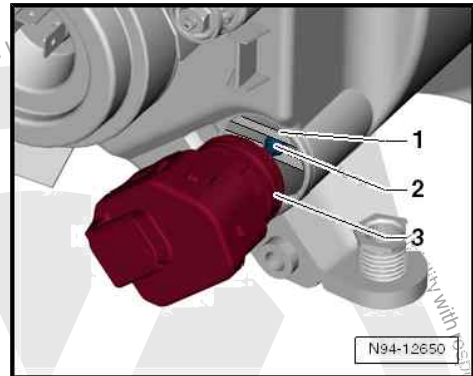


- Swing ball head of actuator -2- towards the right out of mounting in headlight -1-, and remove actuator -3- from headlight housing.

Installing

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

- Insert headlight range control actuator into headlight in position it was in before it was removed.
- Swing ball head of headlight range control actuator -2- into mounting in headlight -1- from the right, while pulling the reflector towards the rear.
- Insert actuator -3- into its mounting on headlight housing, and lock it in place by turning it clockwise as far as it will go.
- Check functions of headlight.
- Check headlight settings and adjust if necessary ⇒ Maintenance ; Booklet 35.1 ; Descriptions of work .



Specified torques

- ◆ ⇒ ["1.1 Assembly overview - headlight", page 45](#)



1.10 Removing and installing headlight dipped beam bulb M29 / M31 and headlight main beam bulb M30 / M32



Caution

Filament bulbs and gas discharge bulbs under pressure!

Danger of injury due to bursting filament lamps and gas discharge lamps!

- ◆ Remove filament bulbs and gas discharge bulbs carefully.
- ◆ Always wear safety goggles and gloves when removing and installing filament bulbs or gas discharge bulbs!
- ◆ Avoid contact with burst glass bulbs.

The bulb for the dipped beam and main beam is a single component and functions as the bulb for the left dipped beam headlight - M29- and bulb for the left main beam headlight - M30- or, respectively, the bulb for the right dipped beam headlight - M31- and bulb for right main beam headlight - M32- .

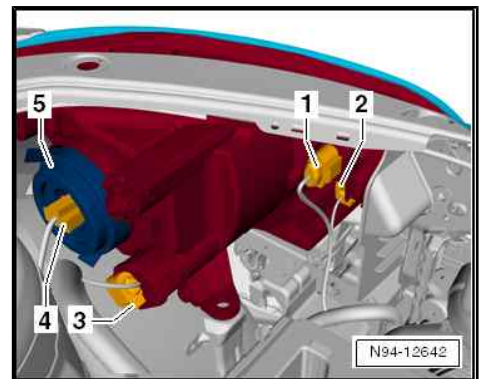


Note

- ◆ The illustrations show removal and installation of the bulb for dipped beam and main beam of left headlight. Removal and installation of the bulb for dipped beam and main beam of right headlight are analogous.
- ◆ The headlight does not need to be removed in order to install or remove bulb for dipped beam and main beam.

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Release connector -4- and pull off.
- Pull cover -5- off rear of headlight.





- Release retaining clip -2- and pull it to one side.
- Remove bulb for dipped beam and main beam -1- from reflector.

Bulb for dipped beam and main beam: H4 12V, 60/55W

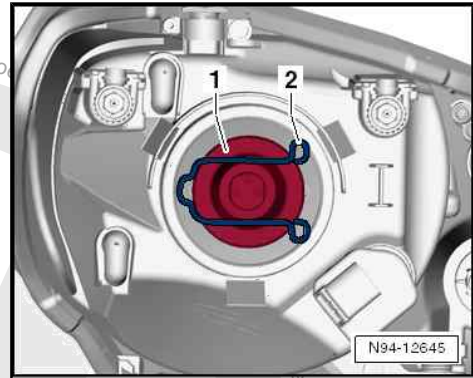
Installing

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



Caution

Make sure cover cap is correctly seated when installing. The ingress of water will lead to permanent damage to the headlight.



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 functions of headlight.
- Checking headlight settings and adjusting headlight if necessary: "Maintenance manual" ⇒ Maintenance ; Booklet 35.1 ; Descriptions of work

1.11 Removing and installing side light bulb M1 / M3



Caution

Filament bulbs and gas discharge bulbs under pressure!

Danger of injury due to bursting filament lamps and gas discharge lamps!

- ◆ **Remove filament bulbs and gas discharge bulbs carefully.**
- ◆ **Always wear safety goggles and gloves when removing and installing filament bulbs or gas discharge bulbs!**
- ◆ **Avoid contact with burst glass bulbs.**



Note

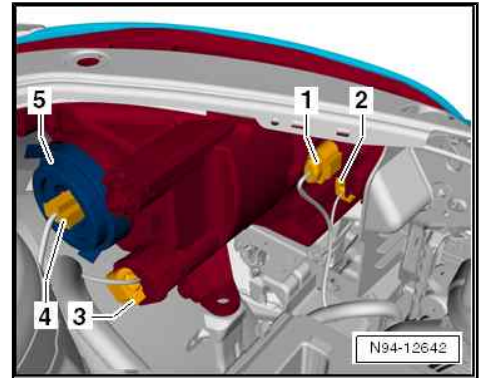
The illustrations show the removal and installation of the left side light bulb - M1- . Removal and installation of the right side light bulb - M3- are analogous.

Removing

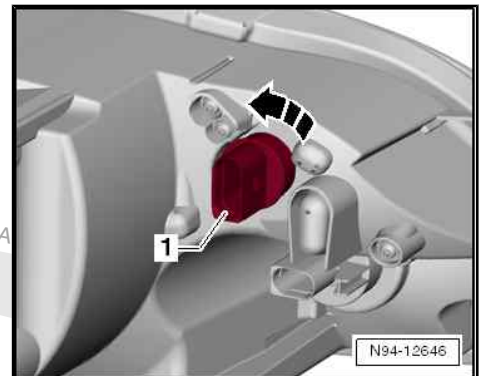
- Switch off ignition and all electrical loads, and pull out ignition key.



- Release connector -1- and pull off.



- Turn bulb holder -1- in -direction of arrow- as far as stop, and remove it together with side light bulb towards rear from headlight.



- Pull side light bulb -2- in a straight line out bulb holder -1-.

Side light bulb: 12V, 5W

Installing

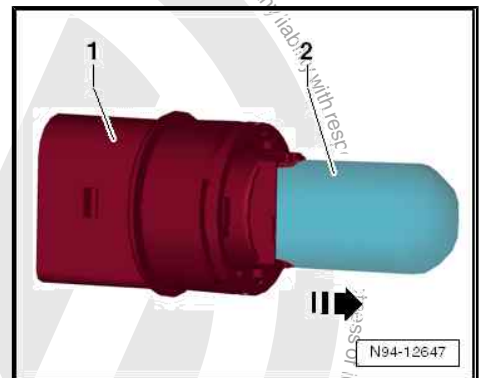
Install in the reverse order of removal, observing the following:



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 functions of headlight.
- Checking headlight settings and adjusting headlight if necessary: "Maintenance manual" ⇒ Maintenance ; Booklet 35.1 ; Descriptions of work





2 Daytime running lights

⇒ "2.1 Assembly overview - daytime running lights", page 58

⇒ "2.2 Removing and installing daytime running light bulb L174 / L175", page 59

⇒ "2.3 Removing and installing light strip for daytime running light", page 60

2.1 Assembly overview - daytime running lights

1 - Bolt

- Qty. 3
- 1.5 Nm

2 - Left daytime running light bulb - L174- or right daytime running light bulb - L175

- The daytime running light consists of the power electronics unit and three high-power LEDs.
- Removing and installing ⇒ [page 59](#)

3 - Bolt

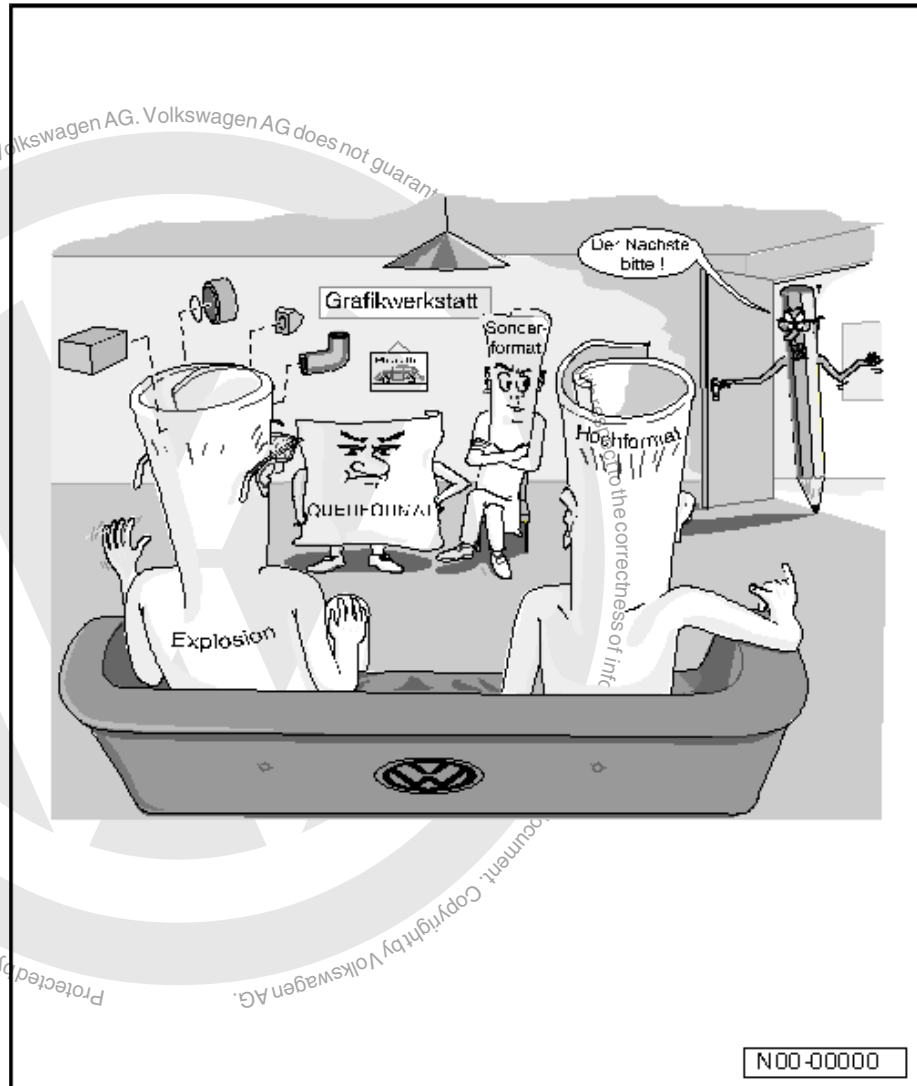
- Qty. 8
- 1.5 Nm

4 - Light strip for daytime running light

- Removing and installing ⇒ [page 60](#)

5 - Bumper

- Assembly overview ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Assembly overview - bumper cover .





2.2 Removing and installing daytime running light bulb L174 / L175

Note

- ◆ *The illustrations show removal and installation of left daytime running light bulb.*
- ◆ *Removal and installation of the right daytime running light bulb are analogous.*
- ◆ *Do not switch on the daytime running light bulb if it has been removed. The bulb becomes very hot and there is a risk of »flash burn« of the eyes.*

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Detach front wheel housing liner in front area to gain access to daytime running light bulb ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner: Assembly overview - wheel housing liner .
- Remove bolts -1-.

Note

The power electronics unit of the daytime running light bulb may be hot, if the bulb was still switched on prior to removal.

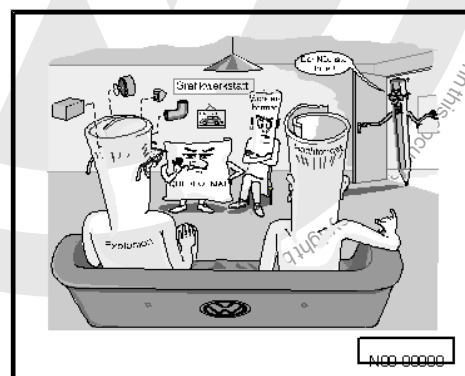
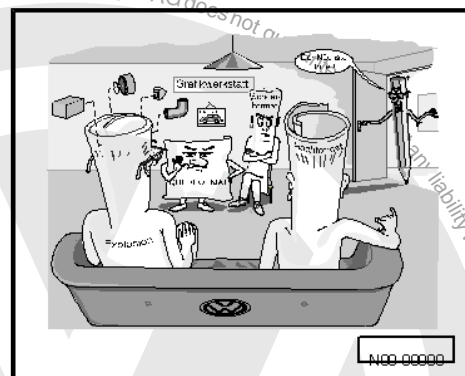
- Release and disconnect connector on daytime running light bulb.
- Remove daytime running light bulb.

The daytime running light bulb cannot be repaired. In case of damage, the daytime running light bulb must be renewed completely.

Installing

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

Do not touch the three LEDs -1- on the power electronics unit of the daytime running light bulb.



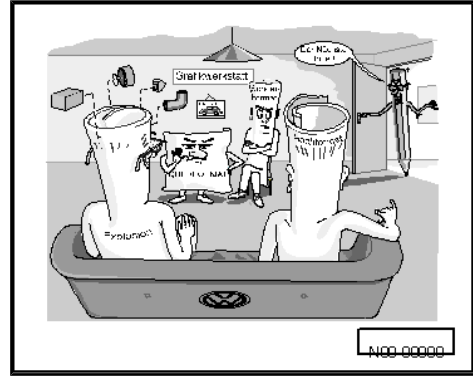


Ensure that the light passage on the light strip -1- for the daytime running light in the bumper is clean and in proper condition. Otherwise the light beam cannot be properly routed through the light strip, and the function of the daytime running light may be affected.

- Check function of daytime running light.

Specified torques

- ◆ ⇒ [“2.1 Assembly overview - daytime running lights”, page 58](#)



2.3 Removing and installing light strip for daytime running light



Note

- ◆ *The illustrations show removal and installation of left light strip for daytime running light.*
- ◆ *Removal and installation of the right light strip for daytime running light are analogous.*

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove front bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Assembly overview - front bumper .
- Unscrew bolts on light strip for daytime running light in bumper.

If the daytime running light bulb is to be removed from the light strip for daytime running light, refer to ⇒ [page 59](#) .

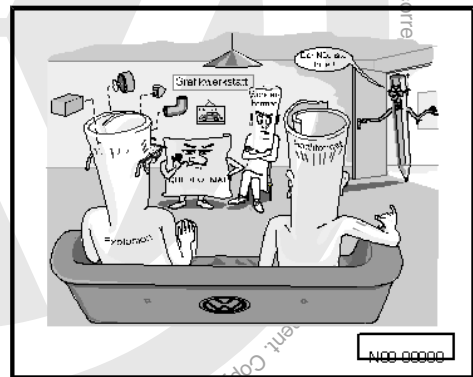
Installing

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

- Check function of daytime running light.

Specified torques

- ◆ ⇒ [“2.1 Assembly overview - daytime running lights”, page 58](#)





3 Turn signal repeater

⇒ [“3.1 Removing and installing turn signal repeater”, page 61](#)

⇒ [“3.2 Removing and installing turn signal repeater bulb M18 / M19”, page 62](#)

3.1 Removing and installing turn signal repeater

Fault detection and fault display:

The onboard supply control unit has a self-diagnostic function, which makes turn signal light fault finding easier.

For fault finding ⇒ Vehicle diagnostic tester, use the “Guided fault finding” mode.

The turn signal lights are built into the front wings on the left and right.



Note

The illustrations show removal and installation of the left turn signal light. Removal and installation of the right turn signal light are analogous.

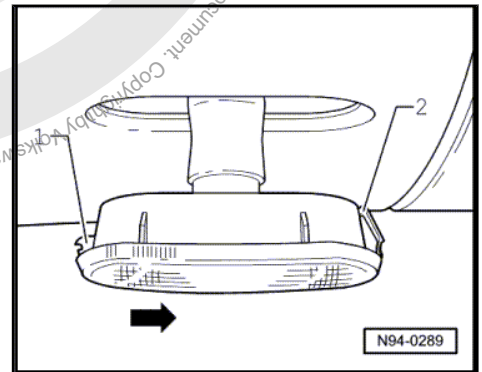
Removing

- Switch off ignition and all electrical loads, and pull out ignition key.



Caution

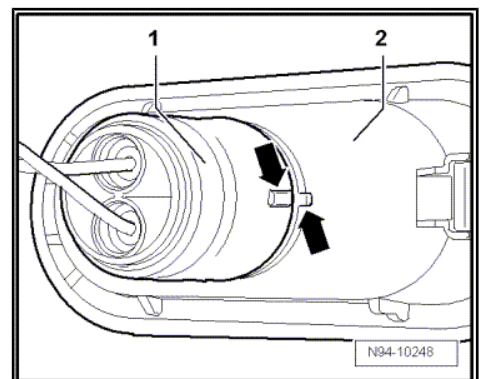
Release of side turn signals is only possible in one direction. Great care must be taken when signal lights are being removed as there is no way of determining which side of the turn signal light the fixed anchor point -1- and the spring clip -2- are on before the signal light is removed. If an attempt is made to lever out the light on fixed anchor point side -1- with force, there is a risk of damaging the turn signal and the paintwork of the body.



- Mask off the painted area on both sides of the turn signal.
- Carefully press the turn signal light in the direction of the spring clip -arrow- and, starting with the fixed anchor point, pull it out of the body.
- Pull holder together with glass base bulb -1- off bulb housing -2- and remove bulb housing.

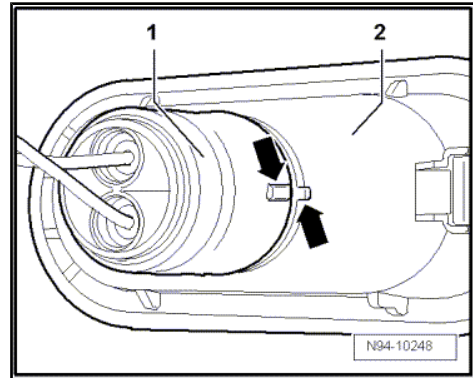
Installing

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

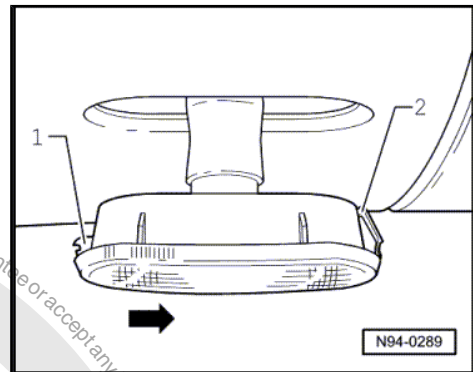




- Fit holder together with glass base bulb -1- onto bulb housing -2- so that retaining lugs -arrows- are opposite one another.



- Insert bulb housing into body, starting with spring clip -2-, press it in direction of spring clip -arrow-; and secure it firmly in body with fixed anchor point -1-.
- Following installation, check whether turn signal light is functioning correctly.



3.2 Removing and installing turn signal repeater bulb M18 / M19



Note

The illustrations show removal and installation of the bulb for left turn signal - M18-. Removal and installation of bulb for right turn signal - M19- are analogous.

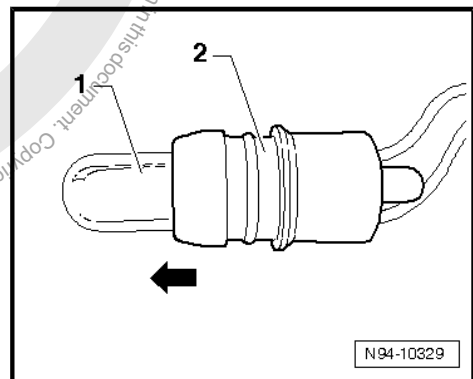
Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove turn signal light ⇒ [page 61](#) .
- Pull glass-base bulb -1- in a straight line out of bulb holder -2-.

Bulb for turn signal : 12 V, W 5 W

Installing

Installation is carried out in the reverse sequence.





4 Tail lights

- ⇒ [“4.1 Assembly overview - tail lights in body”, page 63](#)
- ⇒ [“4.2 Removing and installing bulb carrier”, page 64](#)
- ⇒ [“4.3 Removing and installing tail light bulb M2 / M4 ”, page 64](#)
- ⇒ [“4.4 Removing and installing tail light”, page 64](#)
- ⇒ [“4.5 Removing and installing rear fog light bulb L46 / L47 ”, page 65](#)
- ⇒ [“4.6 Removing and installing brake and tail light bulb M21 / M22 ”, page 66](#)
- ⇒ [“4.7 Removing and installing reversing light bulb M16 / M17 ”, page 66](#)
- ⇒ [“4.8 Removing and installing turn signal bulb M6 / M8 ”, page 67](#)

4.1 Assembly overview - tail lights in body

1 - Left tail light - MX3- or right tail light - MX4- in side panel

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

2 - Tail light bulb carrier in side panel

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

3 - Nut

- 2 Nm

4 - Left brake and tail light bulb - M21- or right brake and tail light bulb - M22-

- Filament bulb
12V, P21/4W

5 - Rear left turn signal bulb - M6- or rear right turn signal bulb - M8-

- Filament bulb
12V, RY10W

6 - Left tail light bulb - M4- or right tail light bulb - M2-

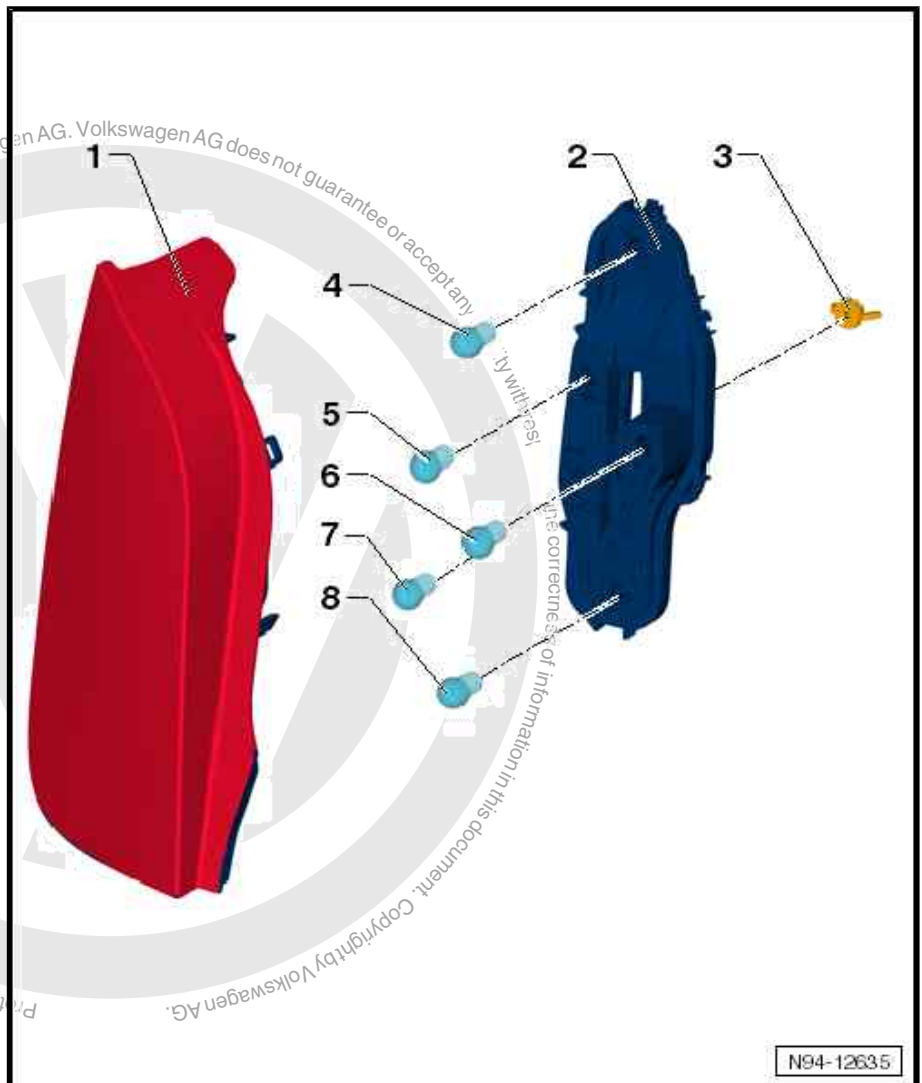
- Filament bulb
12V, P21/4W

7 - Left reverse light bulb - M16- or right reverse light bulb - M17-

- Filament bulb 12V,
R10W

8 - Rear left fog light bulb - L46- or rear right fog light bulb - L47-

- The rear fog light bulb with its 4-watt spiral also functions as a tail light bulb.
- Filament bulb 12V, P21/4W



N94-12635



4.2 Removing and installing bulb carrier

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove tail light in side panel ⇒ [page 64](#) .
- Push catches -arrows- outwards, and remove bulb carrier -1- from tail light housing.

Installing

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

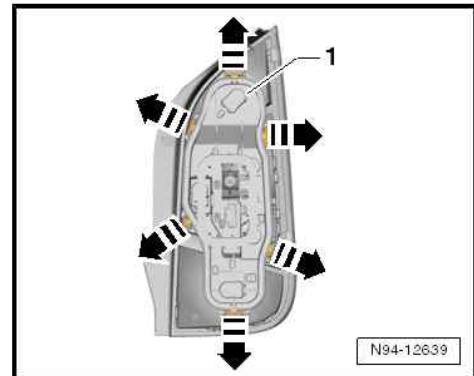


Note

When installing bulb carrier, make sure that all catches engage audibly.

Specified torques

- ◆ ⇒ [“4.1 Assembly overview - tail lights in body”, page 63](#)



4.3 Removing and installing tail light bulb M2 / M4

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove tail light bulb carrier in side panel ⇒ [page 64](#) .
- Push tail light bulb -2- into holder, turn it anti-clockwise, and pull it upwards out of bulb carrier -6-.

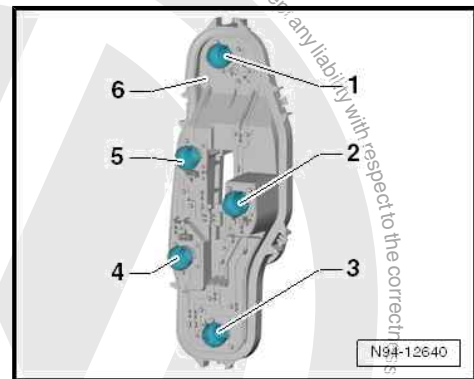
Bulb for rear light : filament bulb 12V, P21/4W

Installing

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

Specified torques

- ◆ ⇒ [“4.1 Assembly overview - tail lights in body”, page 63](#)



4.4 Removing and installing tail light



Note

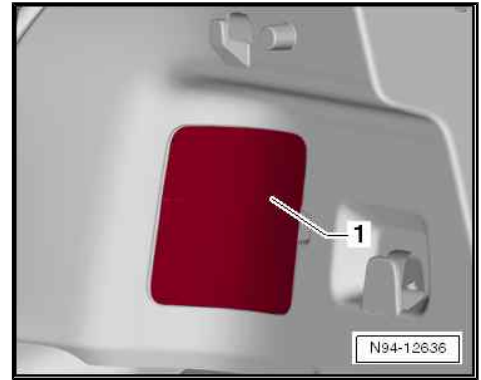
The illustrations show removal and installation of the left tail light - MX3- . Removal and installation of the right tail light - MX4- are analogous.

Removing

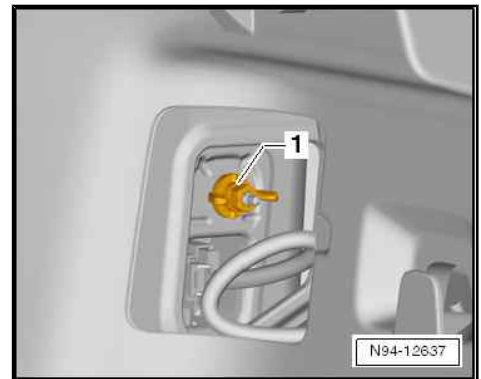
- Switch off ignition and all electrical loads, and pull out ignition key.



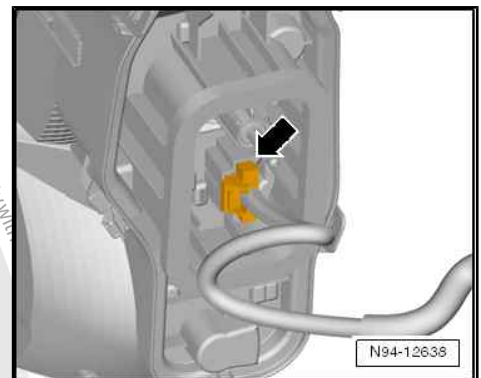
- Remove service flap -1- from luggage compartment side trim.



- Unscrew nut -1-, and remove tail light towards rear out of body aperture in side panel, while taking into account the length of connected wires.




- Disconnect connector -arrow-.



Installing

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

 **Caution**

Risk of wiring damage.

The wiring harness for the tail lights could become trapped when installing.

Once the electrical connector has been fitted, the wiring harness must be fed through the aperture to the inside without it getting trapped.

- When installation is complete, check gap/shut lines to body and functions of tail light.

Specified torques

- ◆ ⇒ ["4.1 Assembly overview - tail lights in body", page 63](#)

4.5 Removing and installing rear fog light bulb L46 / L47

Removing

- Switch off ignition and all electrical loads and pull out ignition key.
- Remove tail light bulb carrier in side panel ⇒ [page 64](#) .



- Push rear fog light bulb -3- into holder, turn it anti-clockwise, and pull upwards out of bulb carrier -6-.

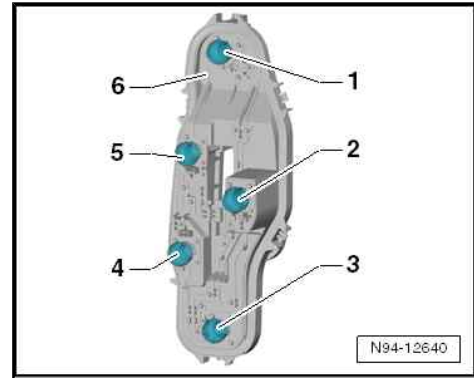
Bulb for rear fog light : filament bulb 12V, P21/4W

Installing

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

Specified torques

- ◆ ⇒ [“4.1 Assembly overview - tail lights in body”, page 63](#)



4.6 Removing and installing brake and tail light bulb M21 / M22

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove tail light bulb carrier in side panel ⇒ [page 64](#) .
- Push brake light and tail light bulb -1- into holder, turn it anti-clockwise, and pull it upwards out of bulb carrier -6-.

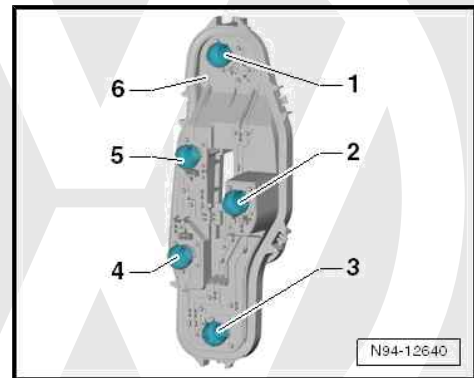
Bulb for brake light and tail light : filament bulb 12V, P21/4W

Installing

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

Specified torques

- ◆ ⇒ [“4.1 Assembly overview - tail lights in body”, page 63](#)



4.7 Removing and installing reversing light bulb M16 / M17

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove tail light bulb carrier in side panel ⇒ [page 64](#) .
- Push reversing light bulb -4- into holder, turn it anti-clockwise, and pull it upwards out of bulb carrier -6-.

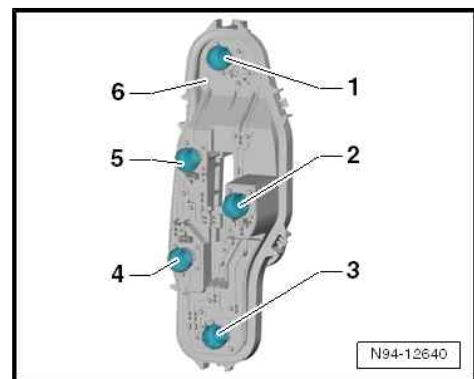
Reversing light bulb : filament bulb 12V, R10W

Installing

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

Specified torques

- ◆ ⇒ [“4.1 Assembly overview - tail lights in body”, page 63](#)





4.8 Removing and installing turn signal bulb M6 / M8

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove tail light bulb carrier in side panel ⇒ [page 64](#) .
- Push turn signal bulb -5- into holder, turn it anti-clockwise, and pull it upwards out of bulb carrier -6-.

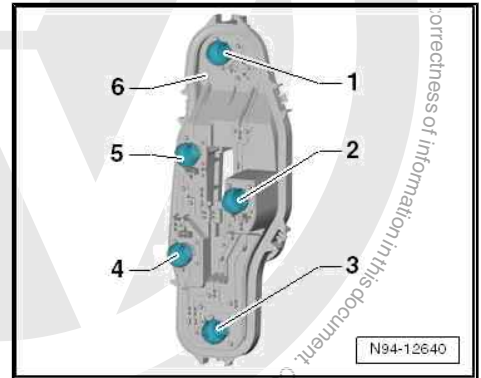
Turn signal bulb : filament bulb 12V, RY10W

Installing

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

Specified torques

- ◆ ⇒ ["4.1 Assembly overview - tail lights in body"](#), [page 63](#)





5 High-level brake light

⇒ "5.1 Removing and installing high-level brake light",
page 68

5.1 Removing and installing high-level brake light

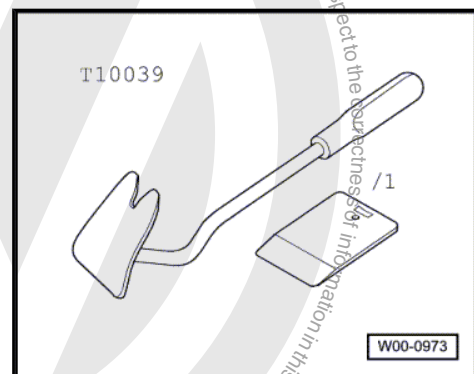


Note

- ◆ Failure of LEDs in additional brake lights
- ◆ The individual LEDs (light-emitting diodes) in the additional brake light are located together in groups of 3 LEDs and are supplied with current in groups.
- ◆ Due to the failure of individual LEDs, the intact LEDs of the group in question are placed under increased strain and it must therefore be anticipated that further LED will soon fail as well.
- ◆ If an LED group (3 individual light-emitting diodes) fails, the legal light values of the ECE ruling (ECE = Economic Commission for Europe) are still complied with.
- ◆ If more than 3 individual LEDs fail, the legal light values of the ECE ruling (ECE = Economic Commission for Europe) are no longer complied with and the light for the additional (high) brake must be replaced.
- ◆ When removing and installing components that are in view (switches, covers, trim and so on), mask off areas in which tools (assembly wedge - T10039/1-, screwdriver) are used to lever out those components using commercially available masking tape.

Special tools and workshop equipment required

- ◆ Wedge - T10039/1-

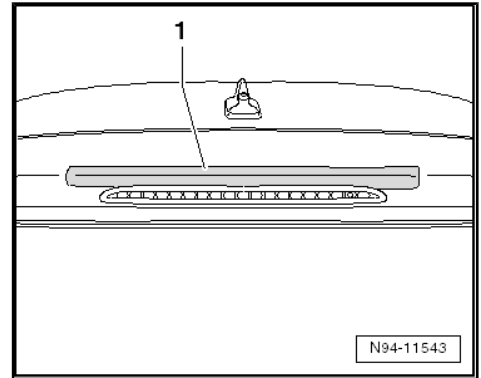


Removing

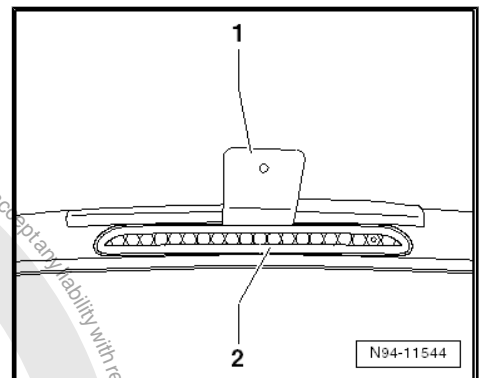
- Switch off ignition and all electrical loads, and pull out ignition key.



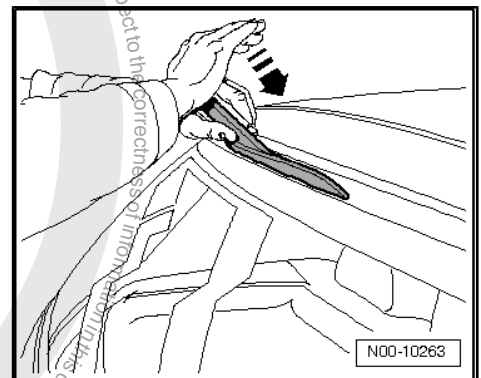
- Attach a strip of commercially available adhesive tape -1- to the area of the rear lid above the bulb for the additional brake light.



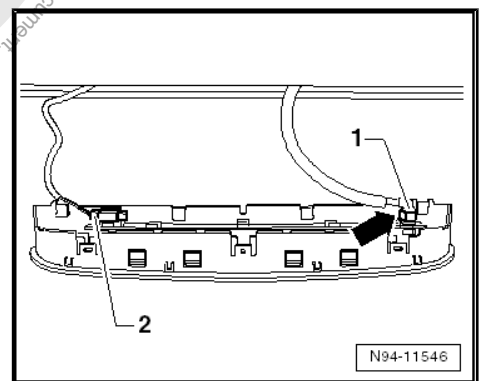
- Insert wedge - T10039/1- -1- at top between additional brake light bulb - M25- -2- and rear lid.



- Release catch of additional brake light bulb - M25- by pushing assembly wedge in direction of travel.
- Remove additional brake light bulb - M25- from rear lid, while taking into account the length of connected wires.



- Pull out hose lock -arrow-, and pull hose connection -1- off additional brake light bulb - M25- .
- Disconnect connector -2-, and remove additional brake light bulb - M25- .



Installing

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



Note

When installing additional brake light - M25- , ensure seal is seated correctly. Make sure that the seal is undamaged and that no loops are formed.

- Starting at the lower edge, insert bulb for additional brake light into rear lid, making sure it engages securely.
- Check functioning of additional brake light lamp - M25- .



6 Number plate light

⇒ [“6.1 Removing and installing number plate light X”](#),
[page 70](#)

⇒ [“6.2 Removing and installing bulb for number plate light X”](#),
[page 70](#)

6.1 Removing and installing number plate light - X-

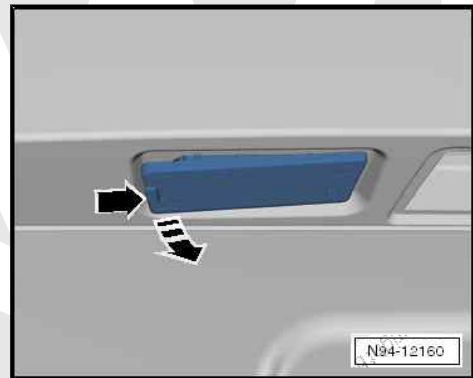


Note

When removing and installing components that are in view (switches, covers, trim and so on), mask off areas in which tools (assembly wedge - T10039/1- , screwdriver) are used to lever out those components using commercially available masking tape.

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Lever left-hand side of number plate light -arrow- out of bumper cover, using a screwdriver.
- Pull number plate light out of bumper cover, taking connected wire lengths into account.

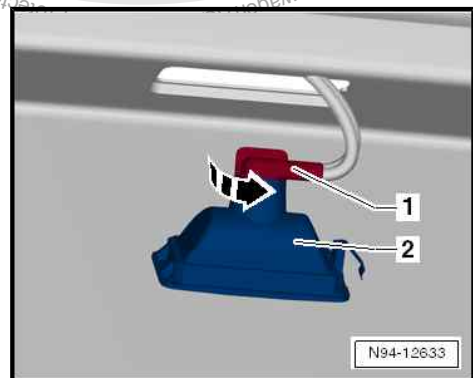


- Turn bulb holder -1- in -direction of arrow- and pull out.
- Remove number plate light -2-.

Installing

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

- Insert number plate light into bumper cover, starting at right-hand side, and then push it in on the left-hand side, making sure it is latched in place securely.
- Check function of number plate light.



6.2 Removing and installing bulb for number plate light - X-

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove number plate light - X- ⇒ [page 70](#) .



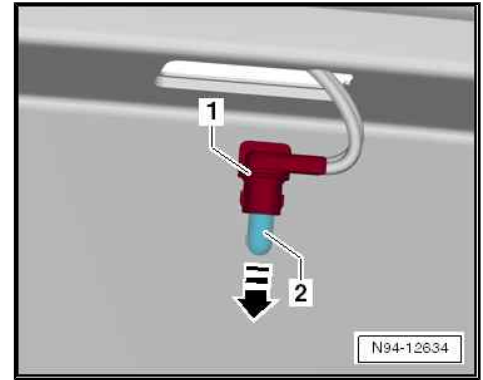
- Pull glass base bulb -2- in -direction of arrow- out of bulb holder -1- in a straight line.

Bulb for number plate light - X- : glass base bulb 12V, 5W.

Installing

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

- Check function of number plate light.





7 Steering column switch module (SCSM)

⇒ ["7.1 Removing and installing steering column switch module \(SCSM\)", page 72](#)

7.1 Removing and installing steering column switch module (SCSM)

General description

The following equipment-specific components are integrated into the steering column switch:

- ◆ Turn signal switch - E2-
- ◆ Windscreen washer pump switch (automatic wash/wipe and headlight washer system) - E44-
- ◆ Headlight dipper and flasher switch - E4-
- ◆ Parking light switch - E19-
- ◆ Intermittent wiper switch - E22-
- ◆ Rear window wiper switch - E34-
- ◆ Intermittent wiper regulator - E38-
- ◆ CCS switch - E45-
- ◆ Cruise control system (CCS) SET button - E227-



Note

The entire steering column combination switch is to be renewed ⇒ [page 72](#) if one of the above components is defective.

The airbag coil connector and return spring with slip ring - F138- are attached to the steering column switch and are to be replaced separately ⇒ General body repairs, interior; Rep. gr. 69 ; Driver side airbag; Removing and installing return spring with slip ring (coil connector) .

Fault detection and fault display

The following components feature self-diagnosis capability:

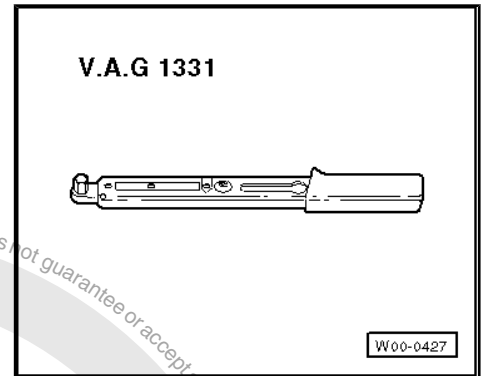
- ◆ Turn signal switch - E2-
- ◆ Windscreen washer pump switch (automatic wash/wipe and headlight washer system) - E44-
- ◆ CCS switch - E45-
- ◆ Intermittent wiper switch - E22-
- ◆ Steering angle sender - G85-

For fault finding ⇒ Vehicle diagnostic tester, use the "Guided fault finding" mode.

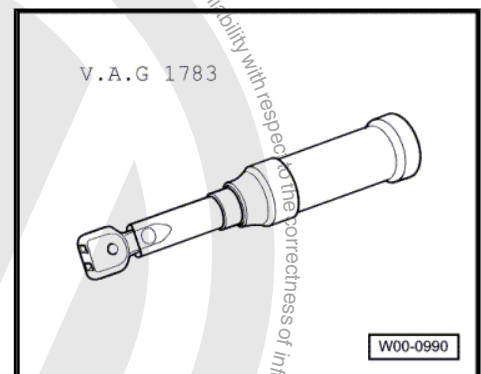
Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1331-



- ◆ Torque wrench - V.A.G 1783-



Note

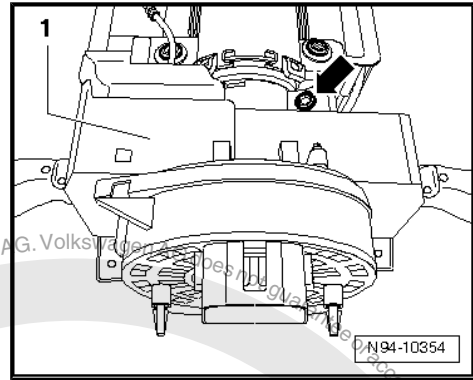
- ◆ For removal and installation of the airbag coil connector and return spring with slip ring - F138- or the steering column switch, the steering wheel must be in the "centre position" (wheels in "straight ahead position").
- ◆ The airbag coil connector and return spring with slip ring - F138- is not to be moved out of position.
- ◆ If the steering angle sender - G85- is integrated into the airbag coil connector and return spring with slip ring - F138- (vehicles with ESP = Electric Power Steering), the steering angle sender must be reset after work has been done on the steering column switch.

Removing

- Disconnect battery ⇒ [page 6](#) .
- Turn steering wheel to "centre position" (wheels in "straight ahead position").
- Remove steering wheel ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering wheel; Assembly overview - steering wheel .
- Move steering column to its lowest position by means of the steering column adjustment feature, and lock it in place with locking lever.
- Remove steering column trim ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers; Assembly overview - steering column trim



- Loosen bolt -arrow- of steering column switch -1-.

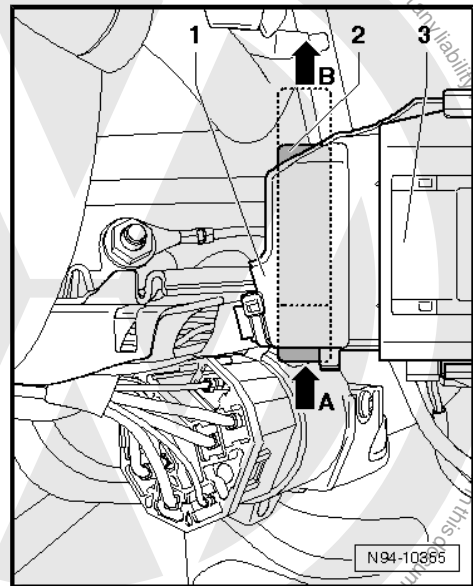


- Pull safety latch -2- upwards in -direction of arrow B- and pull connector -1- off steering column switch -3-.
- Pull steering column switch -3- towards the rear and off steering column.

Installing

Install in the reverse order of removal observing the following:

- If the steering angle sender - G85- is integrated into the airbag coil connector and return spring with slip ring - F138- (vehicles with ESP = Electric Power Steering), reset the steering angle sender ⇒ Vehicle diagnostic tester





8 Parking aid system

⇒ ["8.1 Overview of fitting locations - parking aid system", page 75](#)

⇒ ["8.2 Removing and installing parking aid control unit J446 ", page 76](#)

⇒ ["8.3 Removing and installing rear parking aid warning buzzer H15 ", page 76](#)

⇒ ["8.4 Adapting volume and frequency of rear parking aid warning buzzer H15 ", page 77](#)

⇒ ["8.5 Removing and installing rear parking aid senders G203 / G206 / G796 ", page 77](#)

⇒ ["8.6 Coding parking aid control unit J446 ", page 79](#)

⇒ ["8.7 Adapting parking aid control unit J446 ", page 79](#)

8.1 Overview of fitting locations - parking aid system

1 - Parking aid senders in rear bumper cover

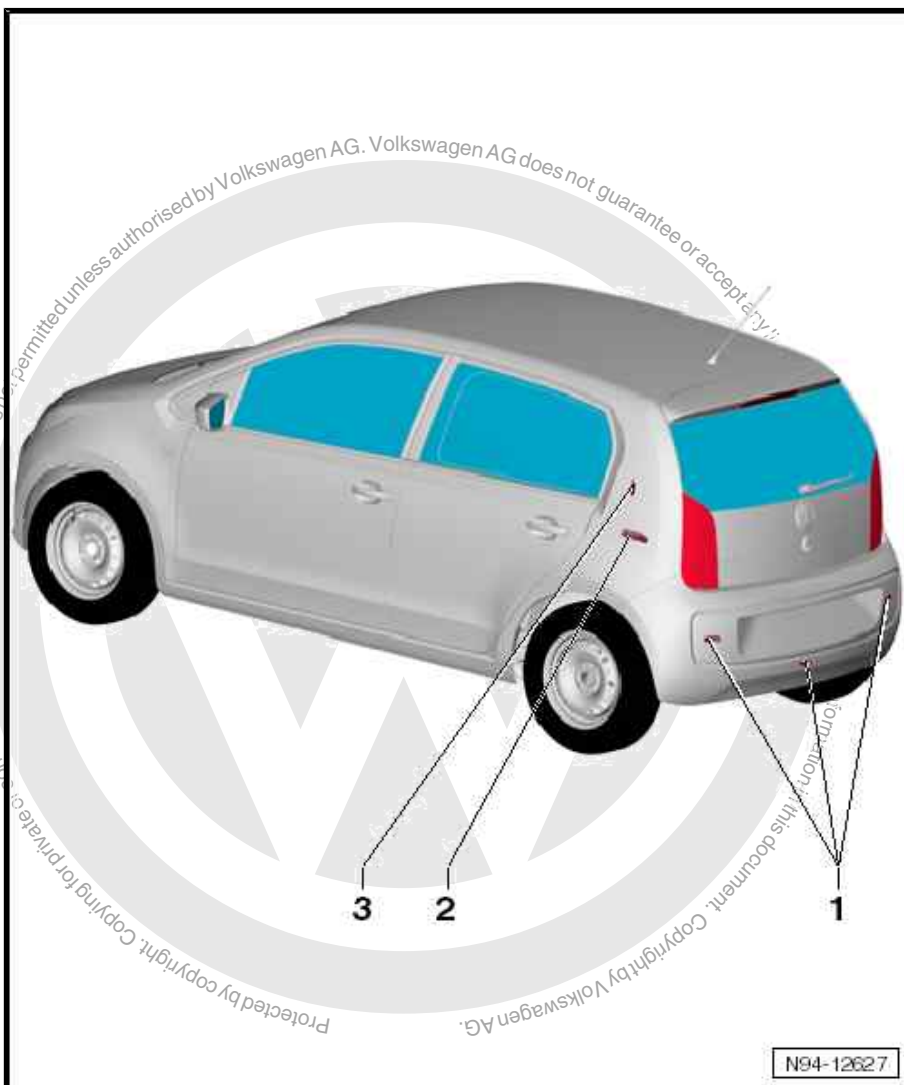
- Rear left parking aid sender - G203-
- Rear centre parking aid sender - G796-
- Rear right parking aid sender - G206-
- Removing and installing ⇒ [page 77](#)

2 - Parking aid control unit - J446-

- Removing and installing ⇒ [page 76](#)
- Adapting functions of parking aid control unit ⇒ [page 79](#)
- Coding parking aid control unit ⇒ [page 79](#)

3 - Parking aid warning buzzer - H15-

- Removing and installing ⇒ [page 76](#)
- Adapting functions of warning buzzer ⇒ [page 77](#)





8.2 Removing and installing parking aid control unit - J446-



Note

When faced with complaints, it is absolutely necessary to understand the function and operation of the parking aid system.

In the e-up!, a parking aid system (PDC = Park Distance Control) with 3 ultrasonic sensors (parking aid senders) is built into the rear bumper cover.

The parking aid system monitors the area at the rear of the vehicle by means of the ultrasonic sensors in the rear bumper. Acoustic distance warnings are provided by a warning buzzer inside the vehicle. Depending on the equipment, additional distance information from the optical parking system (OPS) is displayed on the screen of the portable navigation system.

The parking aid system helps the driver to manoeuvre and park the vehicle. If the rear of the vehicle approaches an obstacle, an intermittent warning tone is emitted. The smaller the distance becomes, the shorter the intervals become. If the obstacle is very near, a continuous warning tone is emitted. The parking aid system switches itself on/off automatically when reverse gear is selected/deselected.

The parking aid control unit - J446- is located under the left side panel trim in the luggage compartment.

Removing

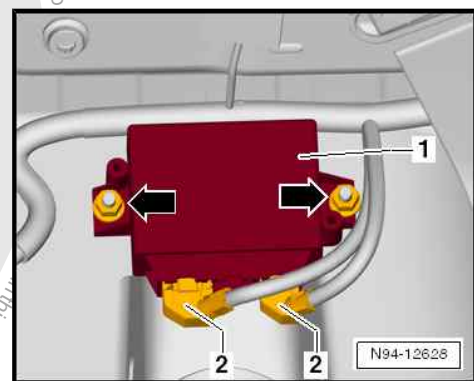
- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove left luggage compartment side trim ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim; Assembly overview - luggage compartment side trim .
- Separate connectors -2-.
- Unscrew nuts -arrows-, and remove parking aid control unit - J446- -1-.

Installing

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

Specified torques

Component	Specified torque
Nuts -arrows-	5 Nm



8.3 Removing and installing rear parking aid warning buzzer - H15-

The rear parking aid warning buzzer - H15- is under the right side panel trim in the luggage compartment.

Removing

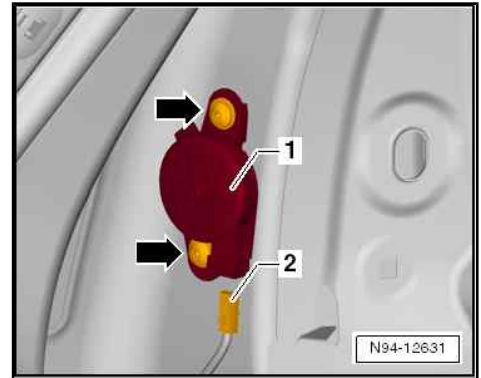
- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove left luggage compartment side trim ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim; Assembly overview - luggage compartment side trim .



- Unscrew pins of spreader rivets, and release spreader rivets -arrows-.
- Disconnect connector -2-, and remove warning buzzer -1-.

Installing

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



8.4 Adapting volume and frequency of rear parking aid warning buzzer - H15-

The volume and frequency of the warning buzzer for the rear parking aid system - H15- can be adjusted by means of the parking aid control unit - J446- → [page 79](#) .

8.5 Removing and installing rear parking aid senders G203 / G206 / G796

The following parking aid senders are built into the rear bumper cover:

- ◆ Rear left parking aid sender - G203-
- ◆ Rear centre parking aid sender - G796-
- ◆ Rear right parking aid sender - G206-



Note

- ◆ *3 parking aid senders are built into the rear bumper cover:*
- ◆ *To remove and install the two outer parking aid senders, the bumper cover must not be removed. The senders can be reached through the wheel housing.*
- ◆ *Removal and installation of the rear parking aid senders from and in the sender retainers is carried out in the same way for all senders and is described as follows for just one sender.*

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.



Caution

The order for removing the senders must be adhered to under all circumstances.

The sender may otherwise be damaged. Fractures may occur if too much pressure is applied to the sender, and this may cause the sender to fail.

First, remove sender from holder, and then release and pull off connector of sender.

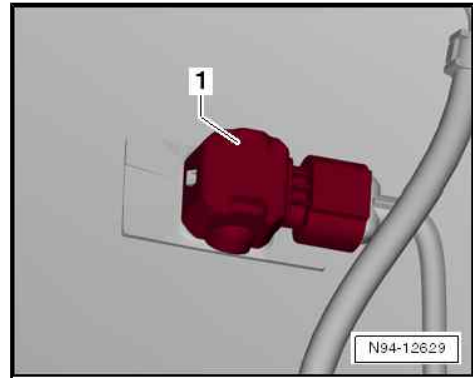
Only for removing and installing the sender in the middle

- Remove rear bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Rear bumper; Assembly overview - rear bumper .

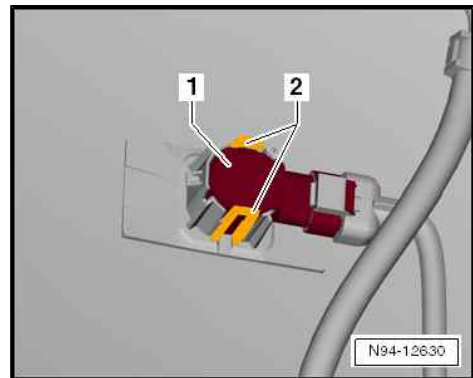


Removal and installation of all senders, continued

- Unclip rubber cap -1- from sender retainer.



- Push fasteners -2- on sender retainer outwards.
- Pull out sender -1- with wiring connected backwards from sender retainer.



Note

- ◆ *When removing the sender, make sure that the isolation ring (black silicone ring) on the sender head does not remain in the bracket or become lost.*
- ◆ *Stretching the isolation ring must be avoided under all circumstances.*

- Disconnect connector -2-, and pull it off sender -1-.

Installing

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

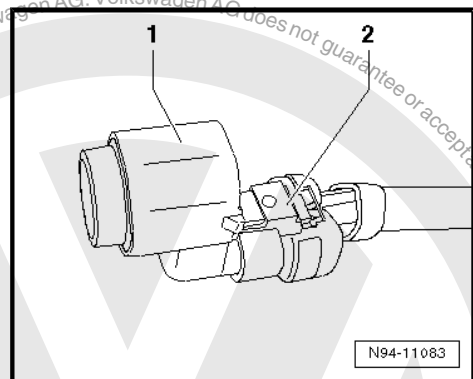


Caution

Function problems could occur if an incorrect or damaged isolation ring is used.

Stretching the isolation ring must be avoided under all circumstances.

Replace any damaged isolation rings and make sure that the right isolation ring is fitted in each case.

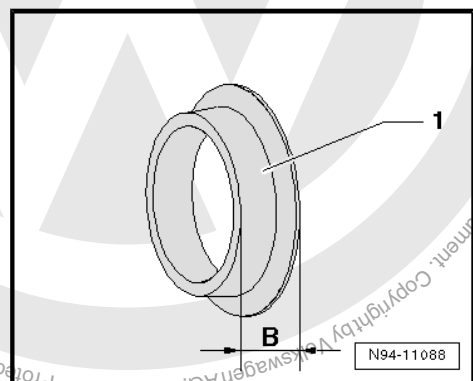


- Check isolation ring -1- of sender for damage and renew if necessary.



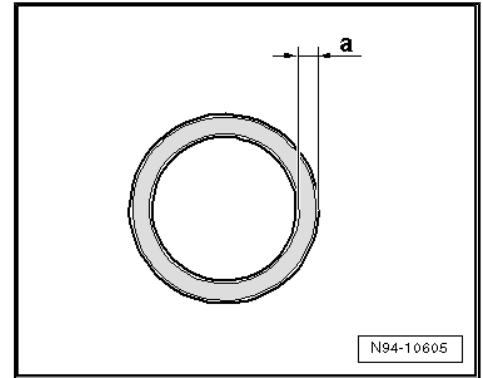
Note

- ◆ *When installing the sender, ensure that the isolation ring has been correctly fitted onto the sender head and does not ride or roll up on insertion into the sender retainer.*
- ◆ *Both locking lugs of sender retainer must audibly engage when installing the sender.*
- ◆ *Attach rubber cap to sender retainer so that it latches into place securely.*





- After installing the sender, check that the sender is correctly seated in the bracket. The size -a- of the ring gap which is visible on the outer side of the bumper and is located between sender head and bumper cover must be the same all round.
- Check functions of parking aid system.



8.6 Coding parking aid control unit - J446-

The parking aid control unit can be coded by means of the following function.

- Connect ⇒ Vehicle diagnostic tester ⇒ Electrical system, General information; Rep. gr. 97 ; Vehicle diagnosis, testing and information systems; Connecting vehicle diagnostic tester .
- Code parking aid control unit - J446- ⇒ Vehicle diagnostic tester.

8.7 Adapting parking aid control unit - J446-

The following parking aid functions can be adapted with this programme:

- ◆ Activating tone for parking aid system
- ◆ Frequency of parking aid warning buzzer
- ◆ Volume of parking aid warning buzzer
- ◆ Lowering of the audio signal
- ◆ Optical display for assisted parking
- Connect ⇒ Vehicle diagnostic tester ⇒ Electrical system, General information; Rep. gr. 97 ; Vehicle diagnosis, testing and information systems; Connecting vehicle diagnostic tester .
- Adapt parking aid control unit - J446- ⇒ Vehicle diagnostic tester.



9 Emergency braking function

⇒ "9.1 Removing and installing emergency braking function sensor unit J939", page 80

9.1 Removing and installing emergency braking function sensor unit - J939-

General description

The emergency braking function detects the traffic situation by means of the emergency braking function sensor unit - J939- attached to the interior mirror up to a distance of around 10 metres in front of the vehicle in a speed range of approximately 5 km/h to 30 km/h.

If the system detects a possible collision with a vehicle driving in front, the vehicle is prepared for possible emergency braking. If the driver does not react to the threat of a collision, the system can brake the vehicle automatically in order to reduce the speed for a possible collision. If the emergency braking function determines that the driver does not brake sufficiently when faced with the threat of a collision, the system can increase the braking force in order to reduce the speed for a possible collision.

In the following situations, it is possible that the emergency braking function will not react:

- ◆ In tight curves
- ◆ When accelerator pedal is fully depressed
- ◆ If emergency braking function has been switched off or is faulty
- ◆ If the laser sensor is dirty, is covered or has overheated
- ◆ During a snowfall, in heavy rain or in dense fog
- ◆ If vehicle is offset in relation to other vehicles
- ◆ When other vehicles cut across the driving direction
- ◆ When there are oncoming vehicles in the same lane
- ◆ If vehicles are dirty with a low degree of reflection
- ◆ When there is a lot of dust in the air



Note

- ◆ *When the emergency braking function triggers a braking process, the pedal travel of the brake pedal decreases. As a result, the brake pedal feels "harder".*
- ◆ *During automatic braking carried out by the emergency braking function, it is possible that unusual noises will occur. These are normal and are caused by the brake system.*
- ◆ *Automatic braking triggered by the emergency braking function can be cancelled by depressing the clutch pedal or the accelerator pedal, or by turning the steering wheel.*

Fault detection and fault display

The sensor unit for the emergency braking function has a self-diagnosis feature.

For fault finding ⇒ Vehicle diagnostic tester use "Guided fault finding" mode.

The sensor unit for the emergency braking function - J939- is located under a cover next to the interior mirror.



Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove cover from interior mirror → General body repairs, interior; Rep. gr. 68 ; Interior mirror; Assembly overview - interior mirror .
- Disconnect connector -1-.
- Pull catch -arrow- and remove sensor unit for emergency braking function - J939- -2- from holder on windscreen.

Installing

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



Note

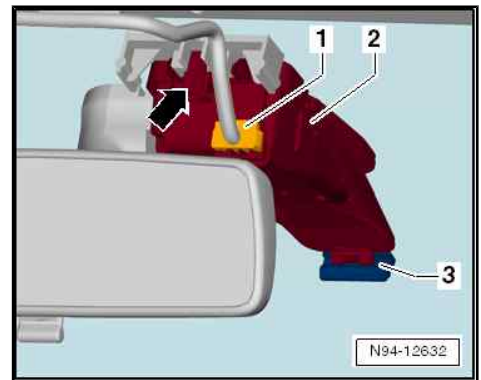
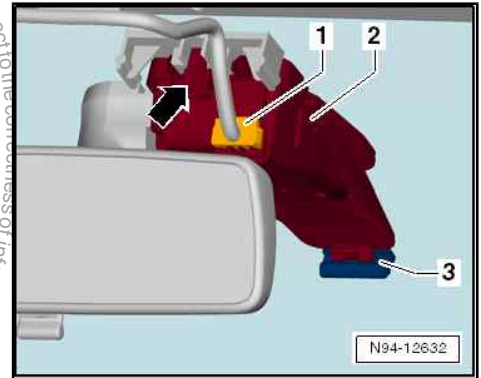
Before installing, make sure that the sensor unit lenses and the windscreen in the installation area are clean in order to avoid malfunctions.

- When installing the sensor unit -2-, first push it into the mounting -3- and then lock it securely into place with the catch -arrow-.



Note

If the sensor unit for the emergency braking function - J939- is removed, installed or replaced, coding or adaptation is not necessary.





96 – Lights, bulbs, switches - interior

1 Lights

⇒ [“1.1 Removing and installing central locking SAFELOCK function warning lamp K133”, page 82](#)

⇒ [“1.2 Checking central locking SAFELOCK function warning lamp K133”, page 82](#)

⇒ [“1.3 Renewing bulbs for front interior light W1”, page 83](#)

⇒ [“1.4 Removing and installing warning lamp for airbag deactivated on front passenger side K145”, page 84](#)

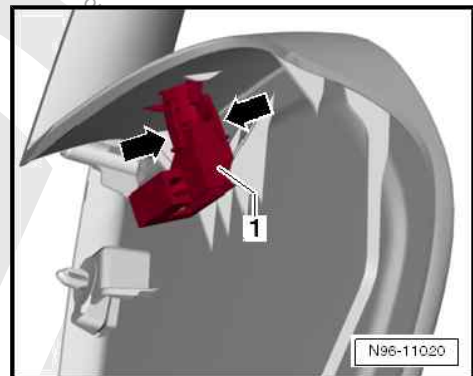
1.1 Removing and installing central locking SAFELOCK function warning lamp - K133-

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove cover in mirror triangle ⇒ [General body repairs, interior; Rep. gr. 70](#); [Door trims; Assembly overview - front door trim](#).
- Compress locking lugs -arrows-, and pull central locking SAFELOCK function warning lamp - K133- -1- out of cover.

Installing

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



1.2 Checking central locking SAFELOCK function warning lamp - K133-

The indicator lamp for the central locking SAFELOCK function - K133- can be checked by means of the final control diagnosis function of the onboard power supply control unit - J519- .



1.3 Renewing bulbs for front interior light - W1-

⇒ ["1.3.1 Renewing bulbs for front interior light W1 , vehicles without panorama sunroof"](#), page 83

⇒ ["1.3.2 Renewing bulbs for front interior light W1 , vehicles with panorama sunroof"](#), page 83

1.3.1 Renewing bulbs for front interior light - W1- , vehicles without panorama sunroof



Note

Bulb replacement does not involve removing front interior light - W1- .

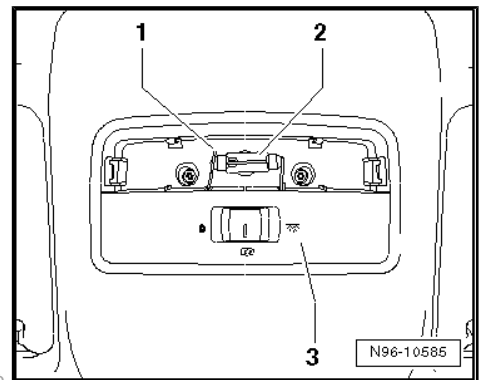
Removing

- Switch off ignition and all electrical consumers, and remove ignition key.
- Remove lens.
- Remove bulb -2- from bulb holder -1-.

Bulb for front interior light - W1- : festoon bulb 12V, 10W

Installing

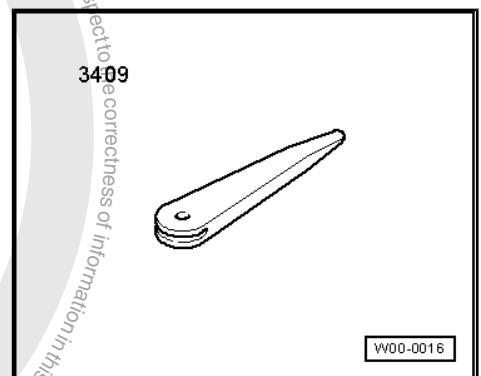
Installation is carried out in the reverse sequence.



1.3.2 Renewing bulbs for front interior light - W1- , vehicles with panorama sunroof

Special tools and workshop equipment required

- ◆ Removal wedge - VAS 3409-



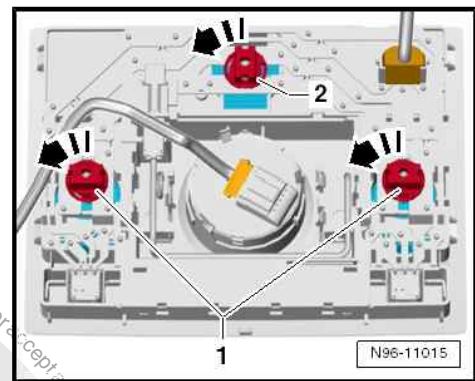


Note

- ◆ When removing and installing components that are in view (switches, covers, trim and so on), mask off areas in which tools (removal wedge - VAS 3409- , screwdriver) are used to lever out those components using commercially available masking tape.
- ◆ The front interior light - W1- has to be removed in order to change its bulb.

Removing

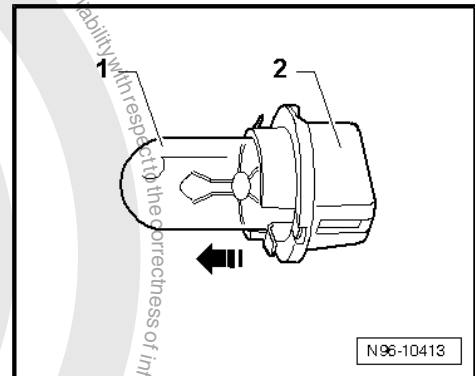
- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove front interior and reading light ⇒ [page 96](#) .
- Turn bulb holder -2- together with bulb of front interior light - W1- in -direction of arrow-, and remove it.



- Pull bulb -1- in -direction of arrow- out of bulb holder -2-.
- Bulb for front interior light - W1- : glass base bulb 12V, 5W.

Installing

Installation is carried out in the reverse sequence.



1.4 Removing and installing warning lamp for airbag deactivated on front passenger side - K145-

The indicator lamp for airbag on front passenger side - K145- is an integral part of the switch module in middle of dash panel and cannot be replaced separately.

Removing and installing switch module in middle of dash panel ⇒ [page 87](#) .



2 Controls

- ⇒ [“2.1 Removing and installing light switch E1 ”, page 85](#)
- ⇒ [“2.2 Removing and installing headlight range control adjuster E102 ”, page 86](#)
- ⇒ [“2.3 Removing and installing hazard warning light button E229 ”, page 87](#)
- ⇒ [“2.4 Removing and installing switch module in middle of dash panel”, page 87](#)
- ⇒ [“2.5 Removing and installing pushbutton for heated rear window E230 ”, page 88](#)
- ⇒ [“2.6 Removing and installing button for seat heating E654 / E653 ”, page 88](#)
- ⇒ [“2.7 Removing and installing key-operated switch to deactivate front passenger side airbag E224 ”, page 88](#)
- ⇒ [“2.8 Removing and installing operating unit for window regulator in driver door E512 ”, page 89](#)
- ⇒ [“2.9 Removing and installing front window regulator switch E40 / E41 ”, page 91](#)
- ⇒ [“2.10 Removing and installing mirror adjustment switch E43 ”, page 92](#)
- ⇒ [“2.11 Removing and installing driver side interior locking button for central locking system E308 ”, page 92](#)
- ⇒ [“2.12 Removing and installing front interior light W1 ”, page 93](#)
- ⇒ [“2.13 Removing and installing reading light bulbs W13 / W19 ”, page 96](#)
- ⇒ [“2.14 Removing and installing centre console switch module EX23 ”, page 97](#)
- ⇒ [“2.15 Removing and installing pushbutton for emergency braking function E773 ”, page 98](#)
- ⇒ [“2.16 Removing and installing sliding sunroof adjustment regulator EX4 ”, page 98](#)

2.1 Removing and installing light switch - E1-

The following components are integrated into the light switch E1- depending on the equipment:

- ◆ Front and rear fog light switch - E23-
- ◆ Light switch illumination bulb - L9-

Removing

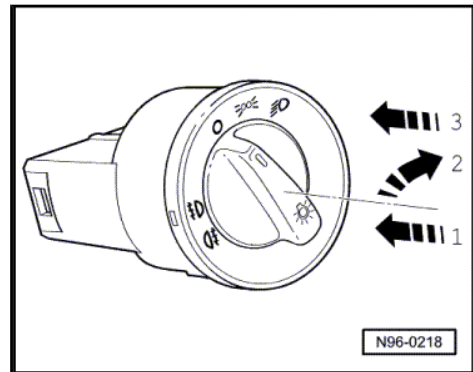
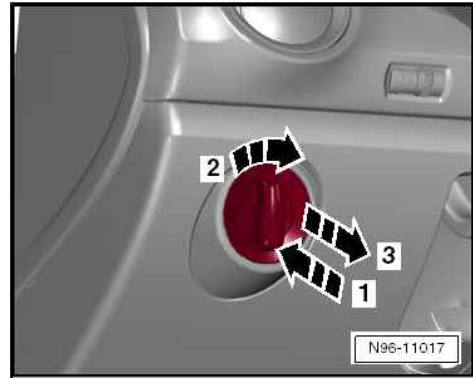
- Switch off ignition and all electrical loads, and pull out ignition key.



- Turn light switch - E1- to "0" position.
- Push in light switch - E1- -1-, and turn it towards right slightly -2-.
- Hold light switch - E1- in this position, and pull it out -3-, while taking into account the length of connected wires.
- Disconnect connector.

Installing

- Fit connector, and engage it.
- Hold light switch, and press rotary knob of light switch - E1- firmly into dash panel -1-, and then turn knob clockwise slightly -2-.
- Hold rotary grip in this position, and insert light switch - E1- into dash panel -3-.
- Turn grip of light switch to position "0", release and engage light switch - E1- .



2.2 Removing and installing headlight range control adjuster - E102-

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove footwell trim on driver side ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Assembly overview dash panel cover on driver side .



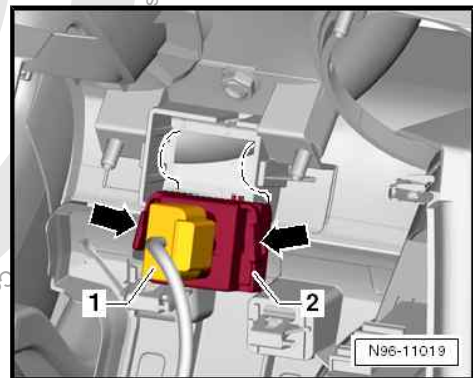
Note

For reasons of clarity, the following illustration shows the installed headlight range control regulator - E102- from the rear.

- Reach behind the dash panel and press together the two catches -arrows- on headlight range control regulator - E102- .
- Press headlight range control regulator - E102- -2- towards interior of vehicle out of dash panel.
- Disconnect connector -1-.

Installing

Installation is carried out in the reverse sequence.





2.3 Removing and installing hazard warning light button - E229-

The hazard warning light switch - E229- is an integral part of the switch module in middle of dash panel and cannot be replaced separately.

Removing and installing switch module in middle of dash panel
⇒ [page 87](#) .

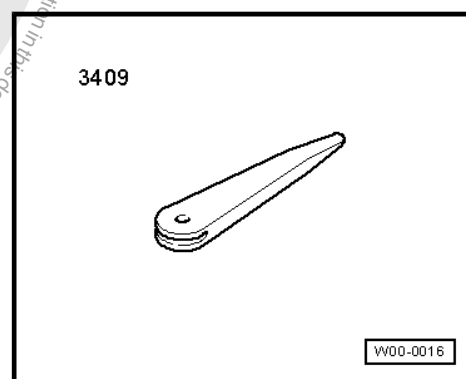
2.4 Removing and installing switch module in middle of dash panel

Depending on the equipment in the vehicle, the following push-buttons and lights are built into 2 switch modules on the left and right of the heating/air-conditioning controls. The procedure for removal and installation is identical for both switch modules and is therefore described for one switch module only. The removed switch modules cannot be dismantled further.

- ◆ Warning lamp button - E229-
- ◆ Front passenger side airbag deactivated warning lamp - K145-
- ◆ Heated rear window button - E230-
- ◆ Button for seat heater on right - E654-
- ◆ Button for seat heater on left - E653-
- ◆ Start/stop operation switch - E693-

Special tools and workshop equipment required

- ◆ Removal wedge - VAS 3409-



Note

- ◆ *When removing and installing components that are in view (switches, covers, trim and so on), mask off areas in which tools (removal wedge - VAS 3409-, screwdriver) are used to lever out those components using commercially available masking tape.*
- ◆ *The procedure for removal and installation is identical for both switch modules and is therefore described for one switch module only.*

Removing

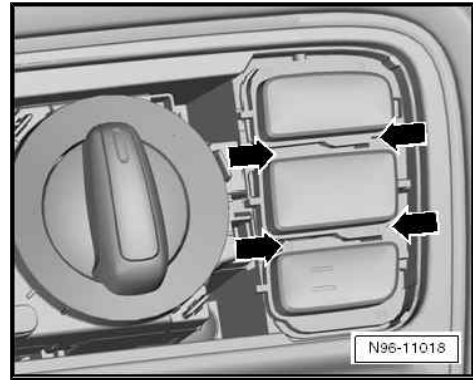
- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove centre dash panel trim ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Overview of fitting locations - compartments/covers .



- Prise out switch module in centre of dash panel, using removal wedge - VAS 3409- to release catches -arrows-.
- Disconnect connector, and remove switch module.

Installing

Installation is carried out in the reverse sequence.



2.5 Removing and installing pushbutton for heated rear window - E230-

The pushbutton for heated rear window - E230- is an integral part of the switch module in middle of dash panel and cannot be replaced separately.

Removing and installing switch module in middle of dash panel
⇒ [page 87](#) .

2.6 Removing and installing button for seat heating E654 / E653

The pushbutton for the seat heater on the right - E654- and the pushbutton for the seat heater on the left - E653- are integral parts of the switch module in middle of dash panel and cannot be replaced separately.

Removing and installing switch module in middle of dash panel
⇒ [page 87](#) .

2.7 Removing and installing key-operated switch to deactivate front passenger side airbag - E224-

The key-operated switch for deactivating the front passenger side airbag - E224- is located in the cover on the side of the dash panel on the front passenger side.



WARNING

- ◆ **Danger of the triggering of the airbag!**
- ◆ **Improper action on airbag unit may result in the triggering of the airbag!**
- ◆ **Observe safety precautions when working on airbag.**



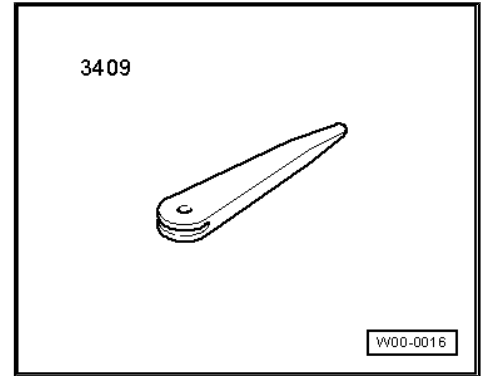
Note

When removing and installing components that are in view (switches, covers, trim and so on), mask off areas in which tools (removal wedge - VAS 3409- , screwdriver) are used to lever out those components using commercially available masking tape.

Special tools and workshop equipment required



- ◆ Removal wedge - VAS 3409-

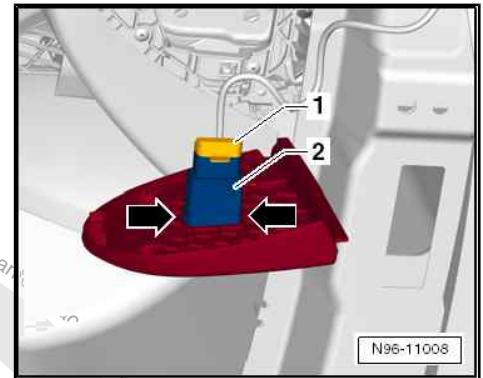


Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove cover on side of dash panel on front passenger side
⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/ covers; Assembly overview - dash panel cover on driver side .
- Disconnect connector -1-.
- Press catches -arrows- on both sides, and push key-operated switch for deactivating the front passenger side airbag - E224-2- through dash panel cover.

Installing

Installation is carried out in the reverse sequence.



2.8 Removing and installing operating unit for window regulator in driver door - E512-

Depending on the equipment, the control elements in the door trims contain the following buttons:

Driver side:

- ◆ Front left window regulator switch - E40-
- ◆ Driver side interior locking button for central locking system - E308-
- ◆ Mirror adjustment switch - E43-

Front passenger side:

- ◆ Front right window regulator switch - E41-

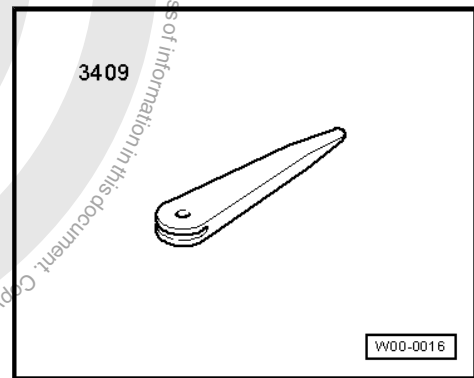


Note

- ◆ *The switch module on the driver side must be removed before the driver side interior locking button for central locking system - E308- and the mirror adjustment switch - E43- can be removed or installed.*
- ◆ *The front left window regulator switch - E40- or the front right window regulator switch - E41- can be removed without the switch module having to be removed first.*
- ◆ *When removing and installing components that are in view (switches, covers, trim and so on), mask off areas in which tools (removal wedge - VAS 3409-, screwdriver) are used to lever out those components using commercially available masking tape.*

Special tools and workshop equipment required

- ◆ Removal wedge - VAS 3409-

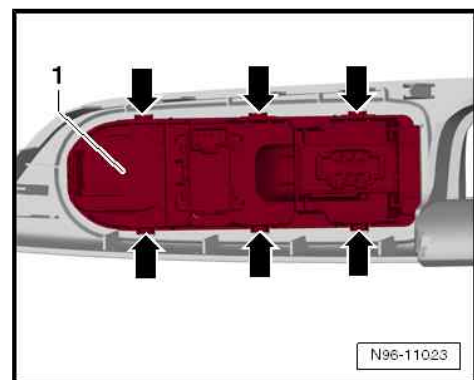


Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove door panel trim on driver side ⇒ General body repairs, interior; Rep. gr. 70 ; Door trims; Assembly overview - front door trim .
- Release catches -arrows- of switch module on driver side -1- using removal wedge - VAS 3409- or a suitable screwdriver.
- Remove switch module on driver side -1- from door trim, beginning at front.

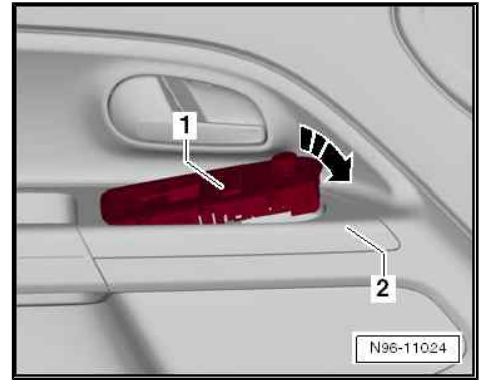
Installing

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





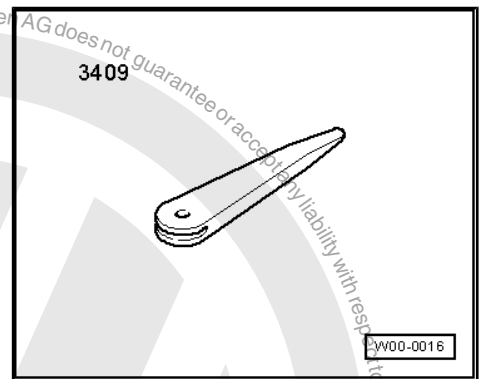
- Insert switch module on driver side -1- into door trim -2-, beginning at the rear, and then push it in at front so that it latches into place securely.



2.9 Removing and installing front window regulator switch E40 / E41

Special tools and workshop equipment required

- ◆ Removal wedge - VAS 3409-



Note

- ◆ *The following illustrations show removal and installation of the front left window regulator switch - E40- .*
- ◆ *Removal and installation of the front right window regulator switch - E41- are carried out in the same way.*
- ◆ *The switch module on the driver side does not have to be removed in order to remove the front left window regulator switch - E40- .*

Removing

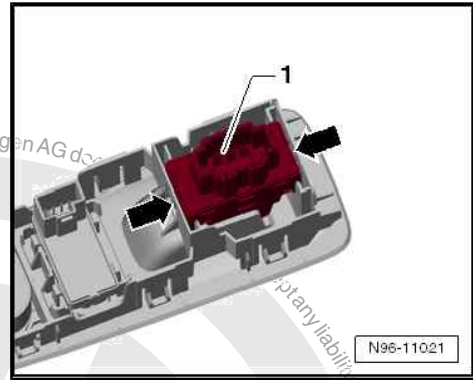
- Switch off ignition and all electrical loads, and pull out ignition key.
- Remove front door trim ⇒ General body repairs, interior; Rep. gr. 70 ; Door trims; Assembly overview - front door trim .



- Release the two catches -arrows-, and remove front left window regulator switch - E40- -1- from switch module on driver side.

Installing

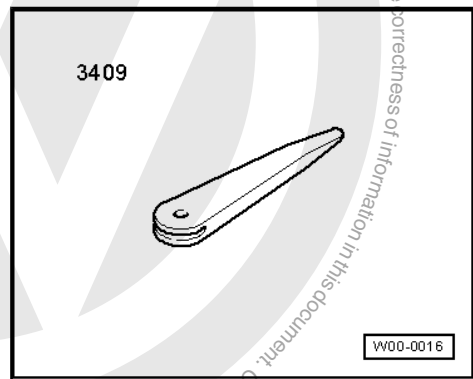
Installation is carried out in the reverse sequence.



2.10 Removing and installing mirror adjustment switch - E43-

Special tools and workshop equipment required

- ◆ Removal wedge - VAS 3409-

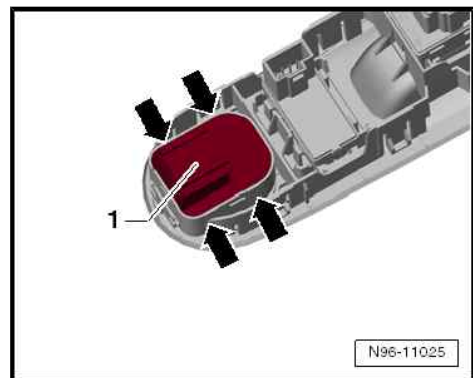


Removing

- Remove switch module on driver side ⇒ [page 89](#).
- Release the catches -arrows-, and press mirror adjuster switch - E43- -1- out of switch module on driver side.

Installing

Installation is carried out in the reverse sequence.

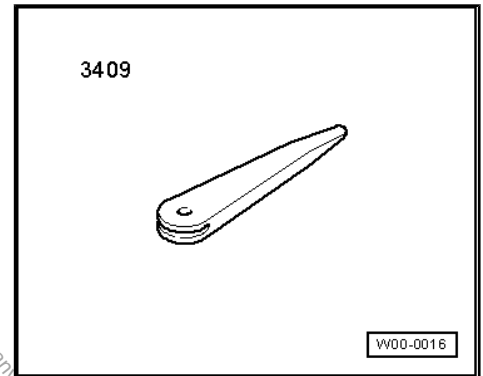


2.11 Removing and installing driver side interior locking button for central locking system - E308-

Special tools and workshop equipment required



- ◆ Removal wedge - VAS 3409-

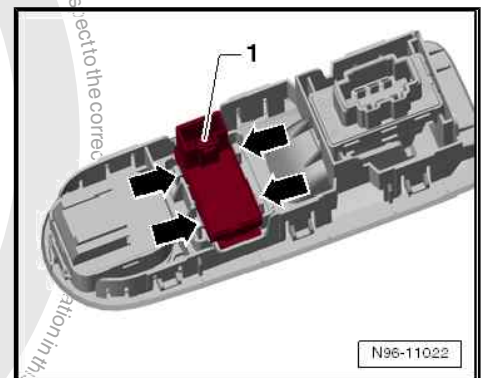


Removing

- Remove switch module on driver side ⇒ [page 89](#) .
- Release catches -arrows-, and push driver side interior locking button for central locking system - E308- -1- out of switch module on driver side.

Installing

Installation is carried out in the reverse sequence.



2.12 Removing and installing front interior light - W1-

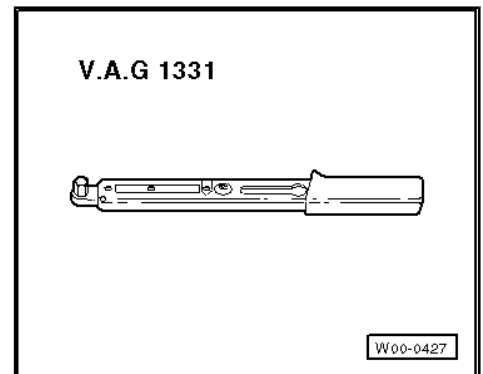
⇒ ["2.12.1 Removing and installing front interior light W1 , vehicles without panorama sunroof", page 93](#)

⇒ ["2.12.2 Removing and installing front interior light W1 , vehicles with panorama sunroof", page 95](#)

2.12.1 Removing and installing front interior light - W1- , vehicles without panorama sunroof

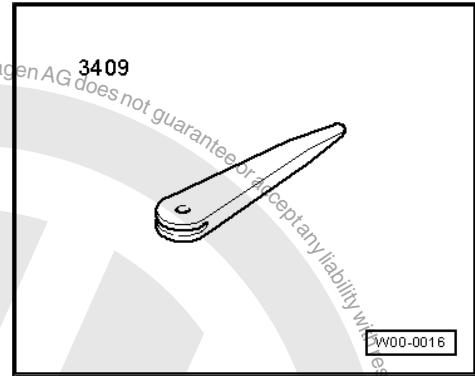
Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-





◆ Removal wedge - VAS 3409-

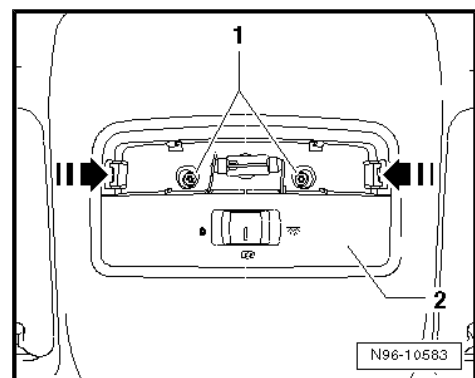
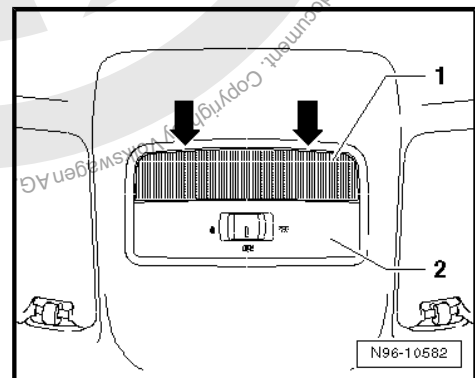


Note

When removing and installing components that are in view (switches, covers, trim and so on), mask off areas in which tools (removal wedge - VAS 3409-, screwdriver) are used to lever out those components using commercially available masking tape.

Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Using removal wedge - VAS 3409-, carefully lever out lens -1- at its catches -arrows-, and remove it from front interior light - W1- -2-.
- Unscrew bolts -1-.
- Release locking lugs in -direction of arrow-, and remove front interior light - W1- -2- from roof trim, while taking into account the length of connected wires.





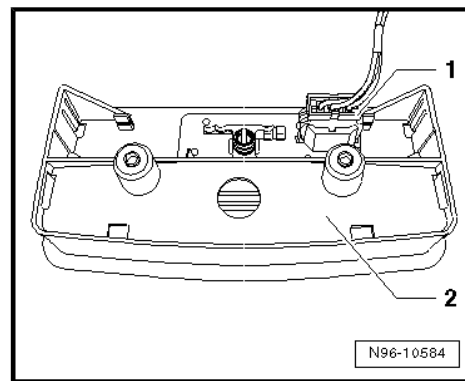
- Disconnect connector -1-.

Installing

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

Specified torques

Component	Specified torque
Bolts for securing interior light to roof console	1.5 Nm



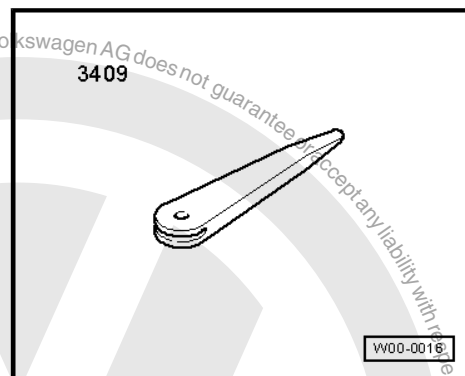
2.12.2 Removing and installing front interior light - W1- , vehicles with panorama sun-roof

The front interior and reading light contains the following components:

- ◆ Front interior light - W1-
- ◆ Front passenger reading light - W13-
- ◆ Driver side reading light - W19-
- ◆ Sliding sunroof adjustment regulator - EX4-

Special tools and workshop equipment required

- ◆ Removal wedge - VAS 3409-



Note

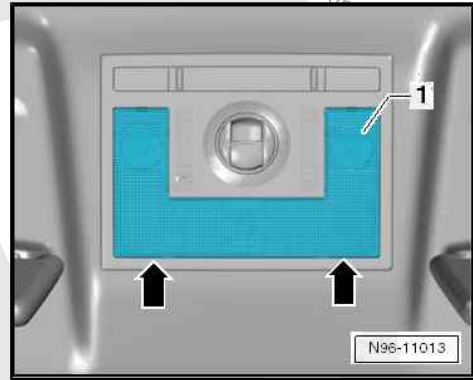
When removing and installing components that are in view (switches, covers, trim and so on), mask off areas in which tools (removal wedge - VAS 3409- , screwdriver) are used to lever out those components using commercially available masking tape.

Removing

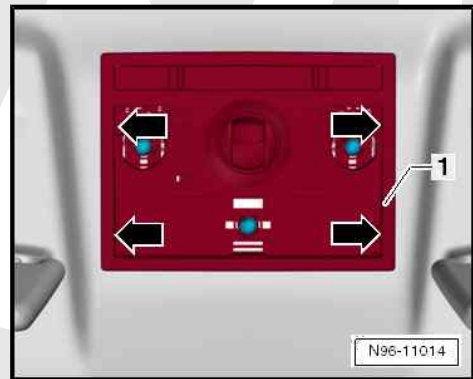
- Switch off ignition and all electrical consumers, and remove ignition key.



- Carefully lever out lens -1- of front interior and reading light with removal wedge - VAS 3409- applied to the catches -arrows-.



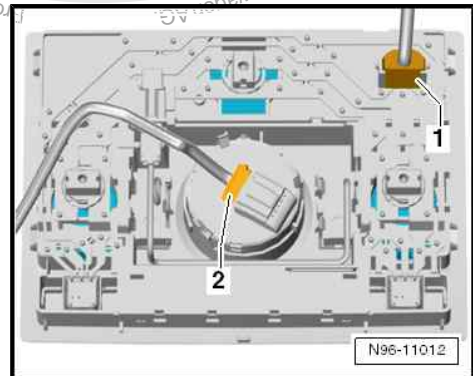
- Release locking lugs in -direction of arrow-, and remove front interior and reading light -1- from roof trim, while taking into account the length of connected wires.



- Disconnect connectors -1- and -2-, and remove front interior and reading light.

Installing

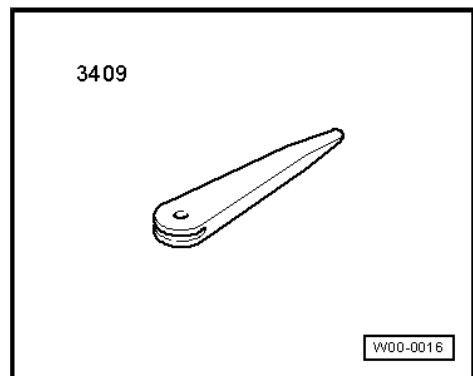
Installation is carried out in the reverse sequence.



2.13 Removing and installing reading light bulbs W13 / W19

Special tools and workshop equipment required

- ◆ Removal wedge - VAS 3409-



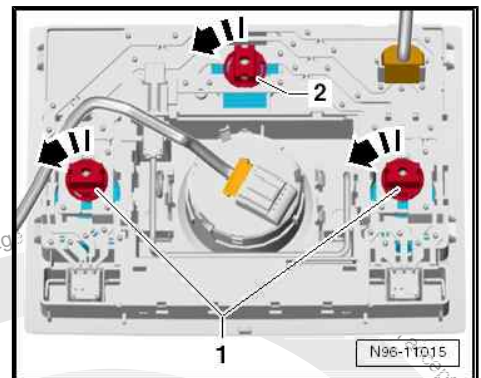


i Note

When removing and installing components that are in view (switches, covers, trim and so on), mask off areas in which tools (removal wedge - VAS 3409- , screwdriver) are used to lever out those components using commercially available masking tape.

Removing

- Switch off ignition and all electrical consumers, and remove ignition key.
- Remove front interior and reading light ⇒ [page 93](#) .
- Turn bulb holder -1- together with bulb of reading light in -direction of arrow-, and remove it.

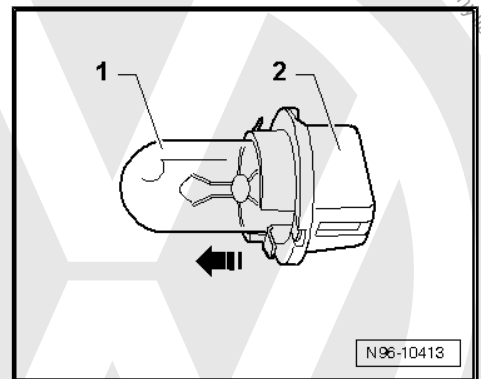


- Pull bulb -1- in -direction of arrow- out of bulb holder -2-.

Renewing bulb for front passenger reading light - W13- or driver side reading light - W19- : glass base bulb 12V, 5W

Installing

Installation is carried out in the reverse sequence.



2.14 Removing and installing centre console switch module - EX23-

The centre console switch module - EX23- is located in the centre console in front of the gear lever and, depending on the equipment in the vehicle, contains the following components:

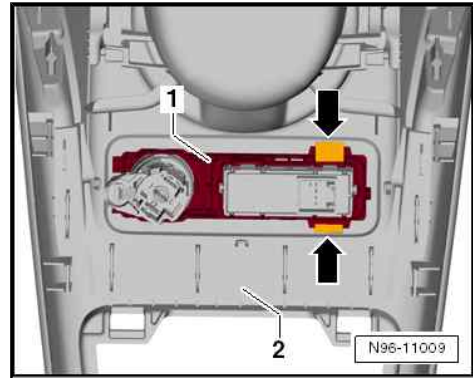
- ◆ Button for Charisma - E735-
- ◆ Immediate charge button - E766-
- ◆ Pushbutton for emergency braking function - E773-
- ◆ Socket - U- or cigarette lighter - U1-

Removing

- Switch off ignition and all electrical consumers, and remove ignition key.
- Remove cover of centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Assembly overview - centre console .



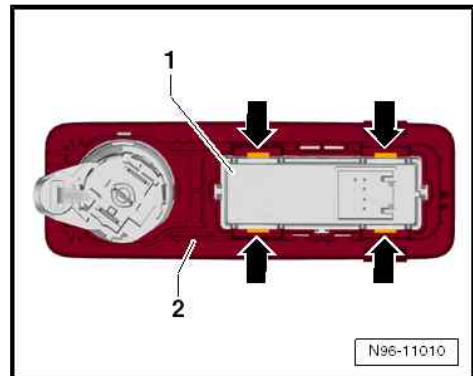
- Release the two catches -arrows-, and swing mounting frame -1- outwards out of centre console -2-.



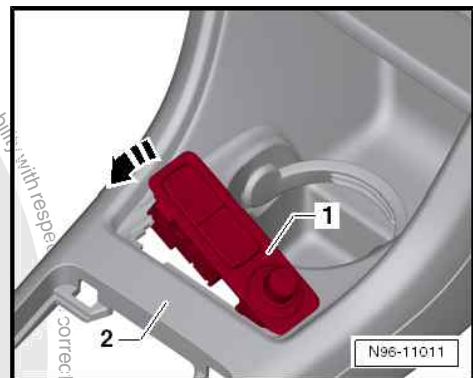
- Release catches -arrows- with a suitable screwdriver, and push centre console switch module - EX23- -1- out of mounting frame -2-.

Installing

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



- First, insert right side of mounting frame -1- into centre console cover -2-, and then engage it on left side.



2.15 Removing and installing pushbutton for emergency braking function - E773-

The pushbutton for emergency braking function - E773- is an integral part of centre console switch module 1 - EX23- in the centre console in front of the gear lever.

Removing and installing centre console switch module - EX23- ⇒ [page 97](#).

2.16 Removing and installing sliding sunroof adjustment regulator - EX4-

Removing

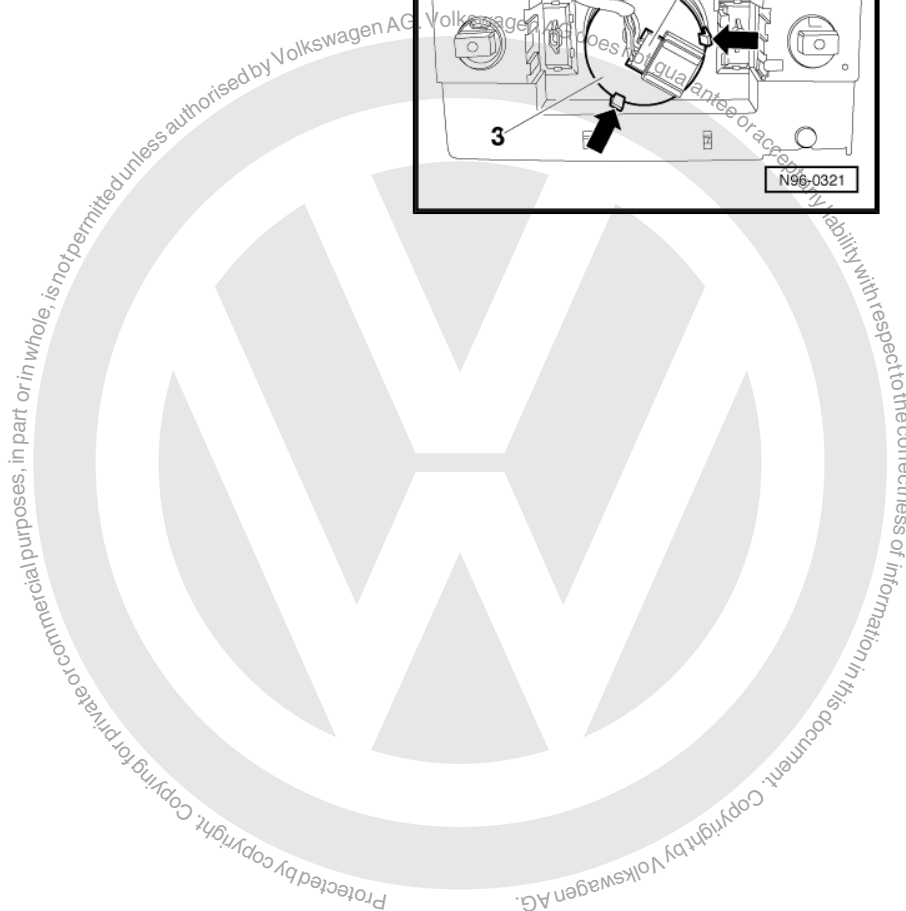
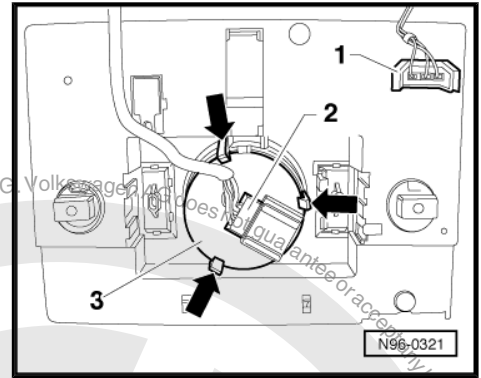
- Switch off ignition and all electrical consumers, and remove ignition key.
- Remove front interior and reading light ⇒ [page 96](#).



- Release catches -arrows-, and remove sliding sunroof adjustment regulator - EX4- -3- from interior and reading light.

Installing

Installation is carried out in the reverse sequence.





3 Other interior lights and controls

⇒ [“3.1 Removing and installing horn plate”, page 100](#)

⇒ [“3.2 Removing and installing ignition/starter switch D”, page 100](#)

⇒ [“3.3 Checking ignition/starter switch D”, page 101](#)

⇒ [“3.4 Removing and installing lock cylinder”, page 101](#)

⇒ [“3.5 Removing and installing steering lock housing”, page 103](#)

3.1 Removing and installing horn plate

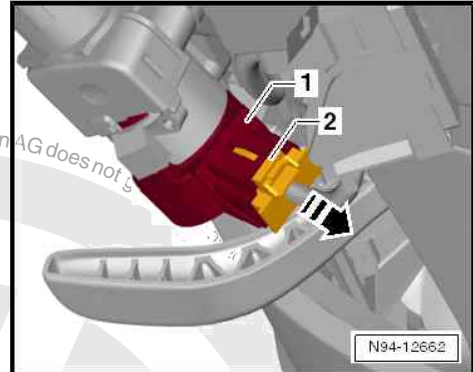
General description:

The horn is operated via the spring mounted cover in the centre of the steering wheel. Depending on equipment, the horn plate is either a component part of the steering wheel or integrated into the airbag unit on the driver side and cannot be replaced as an individual item. If horn plate is defective, replace driver side airbag unit or steering wheel.

3.2 Removing and installing ignition/starter switch - D-

Removing:

- Disconnect battery ⇒ [page 6](#) .
- Remove steering column combination switch - E595- ⇒ [page 72](#) .
- Pull primary locking element -2-, release connector -1- and pull it off ignition/starter switch - D- .



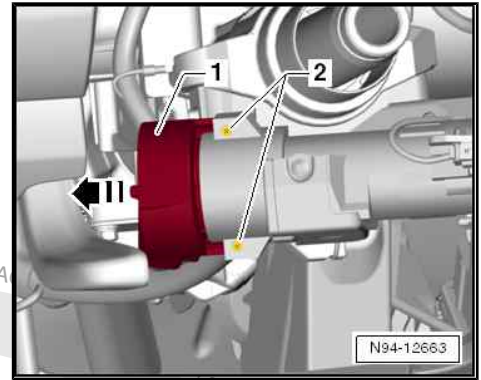


- Remove anti-tamper paint from both clamping bolts -2-.
- Loosen the two clamping bolts -2- slightly, and pull ignition/ starter switch - D- -1- in -direction of arrow- out of steering lock housing.

Installing:

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

- Push ignition switch into steering lock housing.



i Note

When installing the ignition/starter switch, ensure that the ignition/ starter switch and the lock cylinder are in the same position, e.g. "ignition on".

- Tighten clamping bolts, and seal them with anti-tamper paint.
- Push connector onto ignition/starter switch, and push it in primary locking element.

3.3 Checking ignition/starter switch - D-

- Connect vehicle diagnostic tester ⇒ Electrical system, General information; Rep. gr. 97 ; Vehicle diagnosis, testing and information systems. Connecting vehicle diagnostic tester .
- Select "Guided fault finding" in vehicle diagnostic tester .
- Using "GoTo" button, select "Functions/component" and then the following menu options in succession:
 - ◆ Body
 - ◆ Electrical system
 - ◆ Diagnostic capable systems
 - ◆ Onboard power supply control unit J519
 - ◆ Electrical components
 - ◆ Ignition/starter switch

3.4 Removing and installing lock cylinder

Removing:

- Disconnect battery ⇒ [page 6](#) .
- Remove steering wheel ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering wheel; Assembly overview - steering wheel .
- Remove steering column trim ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers; Assembly overview - steering column trim



- Release and disconnect connector -arrow- from immobiliser reader coil - D2- on lock cylinder.



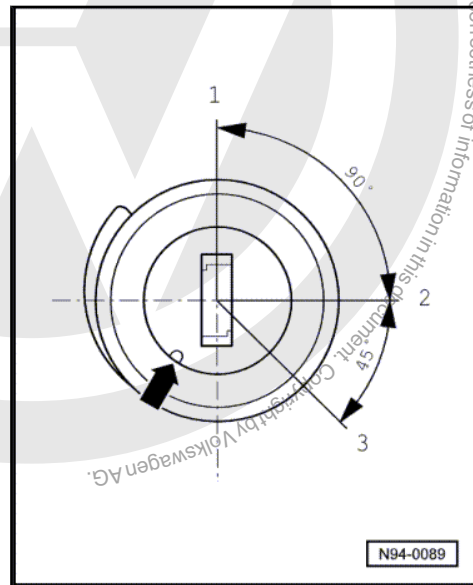
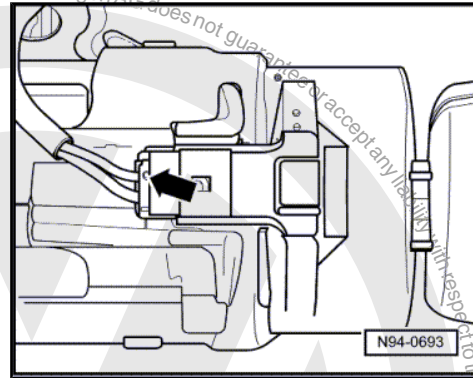
Note

The immobiliser reader coil - D2- is attached to the lock cylinder and cannot be renewed separately.

- Insert ignition key in lock cylinder and turn to position "Drive".

Positions for key in lock cylinder:

- 1 - Position "Stop"
- 2 - Position "Drive"
- 3 - Position "Start"





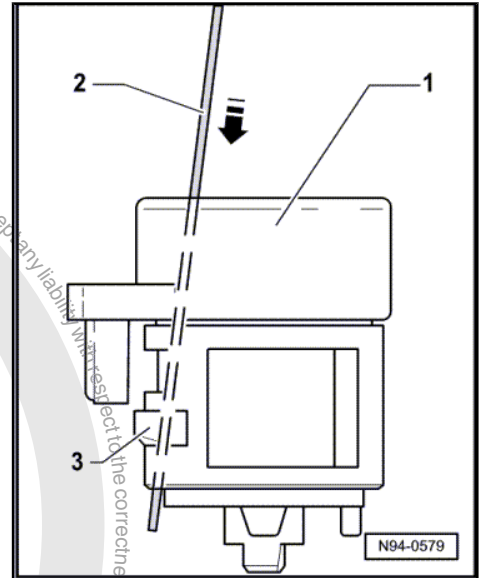
i Note

For reasons of clarity, the lock cylinder is shown in the following illustration without ignition key.

- Insert a piece of steel wire (approx. \varnothing 1.2 mm) in hole -arrow- next to ignition key.
- Using steel wire -2- release locking lever -3- of lock cylinder -1- -arrow-.
- Pull lock cylinder -1- out of steering lock housing.

Installing:

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



i Note

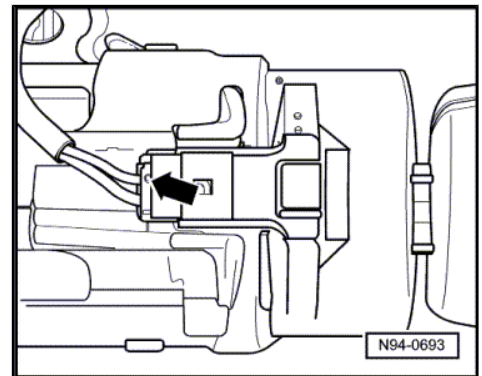
For reasons of clarity, the ignition key is not shown in the illustration below.

- Insert ignition key in lock cylinder and turn to position "Drive".
- Using steel wire -2- release locking lever -3- of lock cylinder -1- -arrow-.
- Insert lock cylinder -1- into steering lock housing.

i Note

The connection for the reader coil of the immobiliser must be inserted in the steering lock housing guide.

- Pull steel wire -2- out of lock cylinder -1- and check lock cylinder is seated correctly in the steering lock housing.
- Connect connector -arrow- to immobiliser reader coil - D2- on lock cylinder.



3.5 Removing and installing steering lock housing



Caution

To disconnect and reconnect the battery, the procedure described in the workshop manual should be strictly adhered to => [page 6](#).



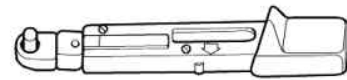
Caution

- ◆ *The steering lock could be destroyed.*
- ◆ *If the steering lock is actuated without lock cylinder, it will be jammed and must be renewed.*
- ◆ *The steering lock must not be actuated without lock cylinder.*

Special tools and workshop equipment required

- ◆ Angle hand drill
- ◆ Torque wrench - V.A.G 1410-

V.A.G 1410



W00-0554

Removing:



Note

To remove the steering lock housing, the shear bolts must be drilled out. New shear bolts are required for subsequent installation ⇒ ETKA (Electronic Parts Catalogue) .

- Disconnect battery ⇒ [page 6](#) .
- Remove steering column combination switch ⇒ [page 72](#) .
- Remove lock cylinder ⇒ [page 101](#) .
- Remove ignition/starter switch ⇒ [page 100](#) .



Caution

- ◆ *Ensure that all the components mounted on the steering lock housing have been removed before drilling out the shear-head bolts.*
- ◆ *The drilling operation can cause swarf to penetrate the adjacent components resulting in damage and/or malfunction!*



WARNING

Danger of eye injury from drillings.

When drilling out, drillings may fly off which may cause eye injury.

Wear safety goggles.



- Unscrew bolt -1-, and remove wire.
- Drill out shear bolts -arrows- of steering lock housing -2-.

i Note

M8 bolts -arrows-, core diameter 6.8 mm

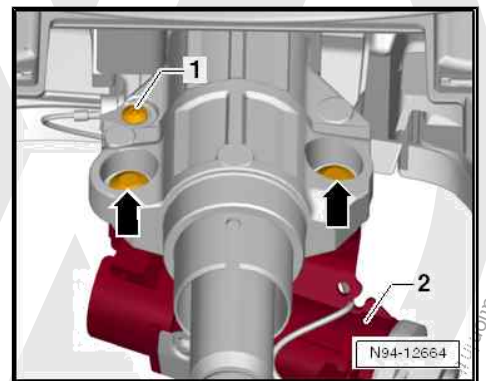
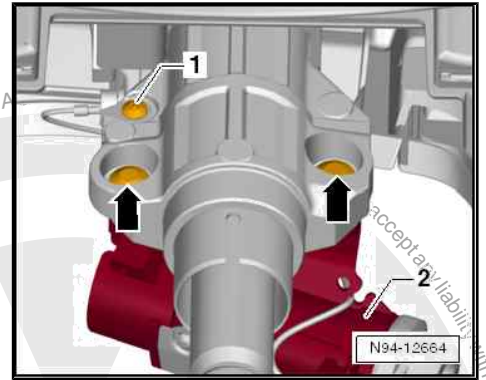
- Pull steering lock housing -2- towards rear and off steering column.

Installing:

- Push steering lock housing -2- onto steering column in a straight line as far as it will go, and align it with the threaded holes.
- Secure steering lock housing -2- to steering column using new shear bolts -arrows-.
- Tighten new shear bolts -arrows- until bolt heads shear off.
- Secure wire with bolt -1-.

Specified torques

Component	Specified torque
Bolt -1-	5 Nm





4 Immobiliser

⇒ [“4.1 Removing and installing immobiliser control unit”, page 106](#)

⇒ [“4.2 Removing and installing reader coil”, page 107](#)

4.1 Removing and installing immobiliser control unit

General description:

The up! is equipped with a fourth-generation immobiliser with on-line link and download. The main component of the fourth generation immobiliser is a central database, in which all of the theft-relevant data from the participating control units is stored. Adapting the control units associated with the immobiliser is not possible without an online link to this database.

Online system test; All instructions and notes regarding this chapter are available under ⇒ Electrical system; General information; Rep. gr. 97 ; Vehicle diagnosis, testing and information systems .

- ◆ A PIN request for the immobiliser components via fax or temporary access authorisation to the components is not available.
- ◆ All components associated with the immobiliser must be adapted online.
- ◆ All – including re-ordered – ignition keys are pre-coded to a specific vehicle in the factory and can only be adapted to this vehicle.
- ◆ The relevant vehicle identification number must be specified when re-ordering ignition keys.
- ◆ It is no longer possible to adapt components of other brands for use in Volkswagen vehicles.

Immobiliser components:

- ◆ Immobiliser control unit - J362- ⇒ [page 106](#)
- ◆ Engine control unit - J623-
- ◆ Immobiliser reader coil - D2- ⇒ [page 107](#)
- ◆ Ignition key



Note

After lock set or control units have been replaced, the “New identity on renewing all components” function must be called up.

Functions of immobiliser control unit - J362- :

- ◆ Communication between all components associated with the immobiliser.
- ◆ Encryption of data between associated control units.

Fault detection and fault display:

The immobiliser is equipped with self-diagnosis, which makes fault finding easier.

For fault finding, use vehicle diagnosis, testing and information system - VAS 5051A- in “Guided fault finding” mode.



The immobiliser control unit - J362- is integrated in the dash panel insert. In the event of control unit failure, the complete dash panel insert must be renewed.

- Renew dash panel insert.

4.2 Removing and installing reader coil

The immobiliser reader coil - D2- is joined to the ignition switch lock cylinder and cannot be renewed individually.

- Removing and installing lock cylinder => [page 101](#) .



5 Cigarette lighter, sockets

⇒ [“5.1 Removing and installing cigarette lighter”, page 108](#)

⇒ [“5.2 Removing and installing bulb for illuminating cigarette lighter”, page 108](#)

⇒ [“5.3 Removing and installing 12 V socket”, page 108](#)

5.1 Removing and installing cigarette lighter

All instructions and notes regarding this chapter are available under ⇒ Electrical system, General information; Rep. gr. 96 ; Lights, bulbs, switches - interior; Cigarette lighter .

5.2 Removing and installing bulb for illuminating cigarette lighter

The bulb for illuminating the cigarette lighter - L28- is an integral part of the cigarette lighter - U1- and can only be installed or removed together with the cigarette lighter - U1- .

– Removing and installing cigarette lighter - U1- ⇒ [page 108](#)

5.3 Removing and installing 12 V socket

All instructions and notes regarding this chapter are available under ⇒ Electrical system, General information; Rep. gr. 96 ; Lights, bulbs, switches - interior; 12 V socket .



97 – Wiring

1 Relay carriers, fuse holders, electronics boxes

⇒ [“1.1 Removing and installing electronics box \(electronics box\)”, page 109](#)

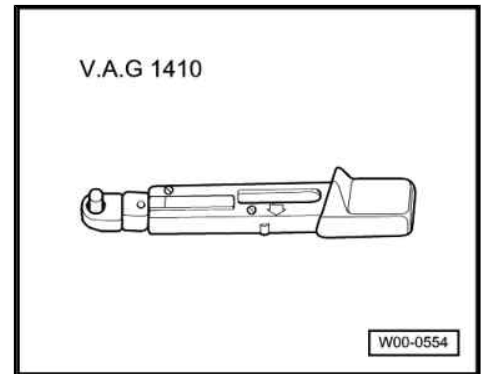
⇒ [“1.2 Removing and installing relay and fuse holder in electronics box”, page 110](#)

⇒ [“1.3 Removing and installing relay and fuse holder behind dash panel on driver side”, page 113](#)

1.1 Removing and installing electronics box (electronics box)

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-



Caution

To disconnect and reconnect the battery, the procedure described in the workshop manual should be strictly adhered to ⇒ [page 6](#).

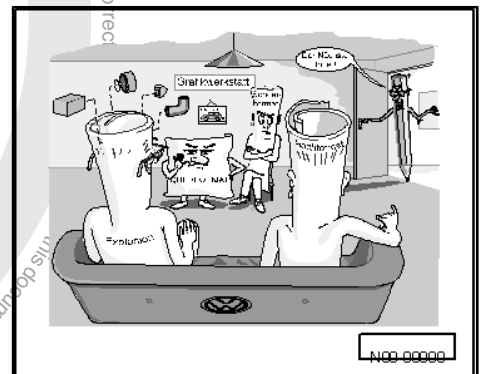
Removing

- Switch off ignition and all electrical loads, and pull out ignition key.
- Disconnect battery ⇒ [page 6](#).
- Release catches -arrows- and remove lid of electronics box -1-.
- Make a note of the assignment of electronics box connections.



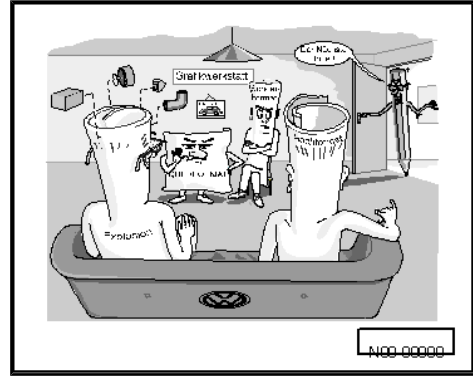
Caution

- ◆ *Electrical components protected by the multiple fuse can fail!*
- ◆ *When the nuts for the wiring connections are undone, the multiple fuse will be damaged!*
- ◆ *The multiple fuse must be renewed after any loosening of the connections!*

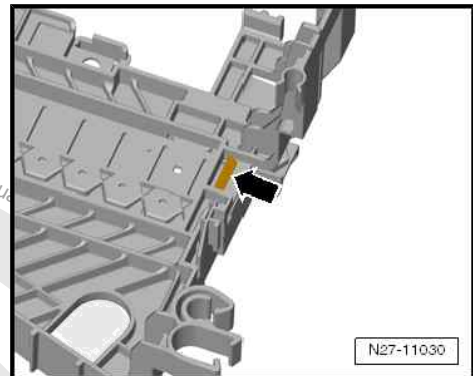




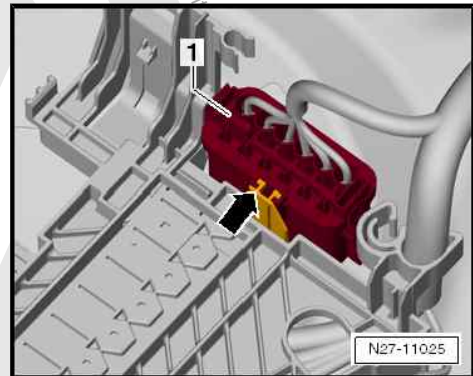
- Undo and remove all nuts of the wiring connections -arrows A- and remove wires from the connecting threads.
- Unscrew nut -arrow B-.
- Release the catches -arrow C- on each side of the electronics box holder and remove electronics box together with holder upwards off the battery.



- Turn the electronics box holder over, release the catch -arrow- and remove electronics box from its holder.



- Release locking lug -arrow- and pull fuse holder -1- upwards off the electronics box.
- Remove electronics box from vehicle.



Installing

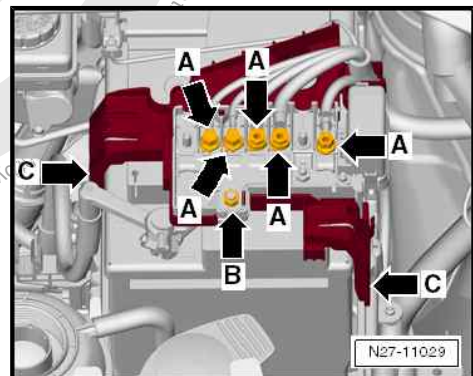
Install in the reverse order of removal, observing the following:

- Insert a new multiple fuse and tighten nuts -arrows A- and -arrow B-.

Specified torques

Component	Specified torque
Nuts -arrows A and B-	6 Nm

- Connecting battery ⇒ [page 6](#) .



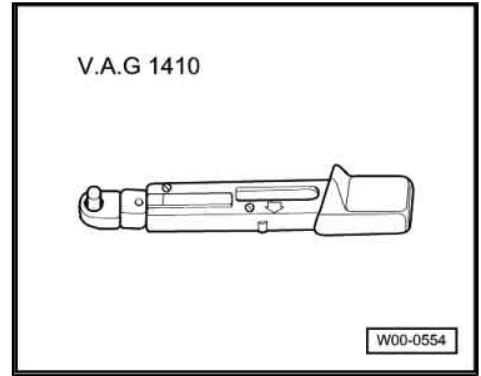
1.2 Removing and installing relay and fuse holder in electronics box

The fuse holder in the electronics box is attach to the side of the electronics box on the battery.

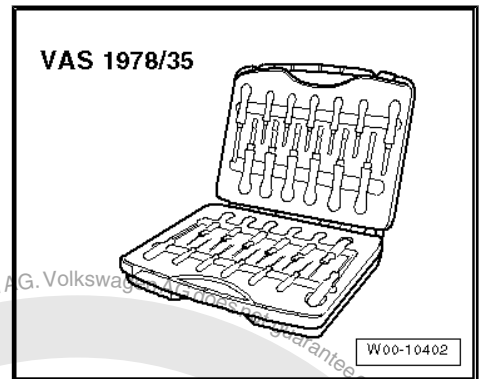
Special tools and workshop equipment required




- ◆ Torque wrench - V.A.G 1410-



- ◆ Release tool set - VAS 1978/35-




 **Caution**

To disconnect and reconnect the battery, the procedure described in the workshop manual should be strictly adhered to ⇒ [page 6](#) .

Removing

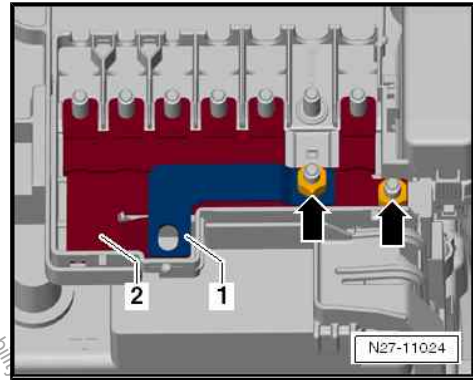
- Switch off ignition and all electrical loads, and pull out ignition key.
- Disconnect battery ⇒ [page 6](#) .
- Remove electronics box on battery ⇒ [page 109](#) .

 **Caution**

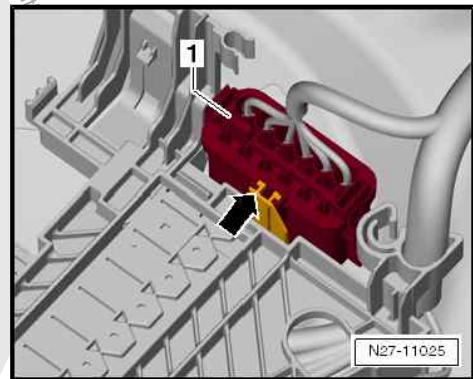
- ◆ *Electrical components protected by the multiple fuse can fail!*
- ◆ *When the nuts for the wiring connections are undone, the multiple fuse will be damaged!*
- ◆ *The multiple fuse must be renewed after any loosening of the connections!*



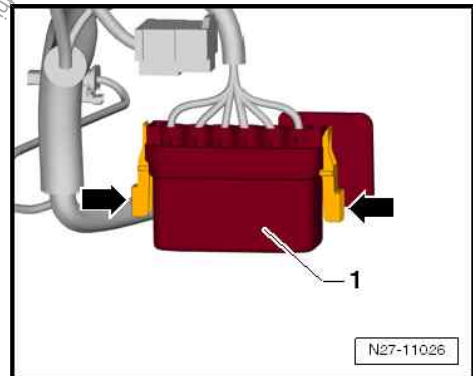
- Unscrew nuts -arrows-, and remove electroconductive plate -1- and multiple fuse -2- from electronics box.



Turn electronics box over, release locking lug -arrow-, and pull fuse holder -1- upwards off electronics box.



- Press catches at sides -arrows-, and remove lid of fuse holder -1-.
- Make a note of the fuse assignment and remove all fuses from the fuse holder.



- Pull primary locking element -1- in -direction of arrow-, release all plug-in contacts with the correct release tool from the release tool set - VAS 1978/35- and then pull downwards out of the fuse holder.

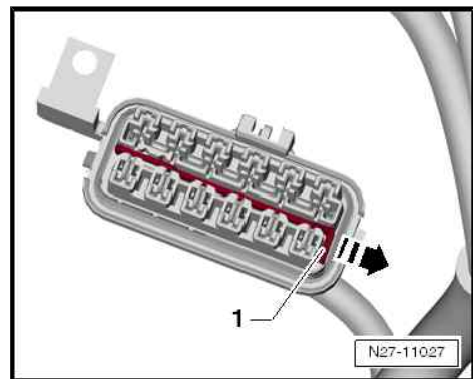


Note

The assignment of the correct release tool is shown in the table in the ⇒ operating instructions for the -VAS 1978/35-

Installing

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

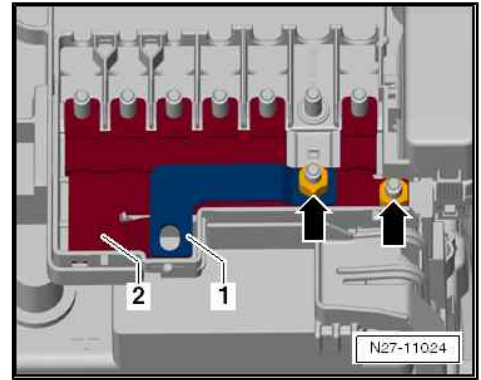




- Insert a new multiple fuse -2-, and tighten nuts -arrows-.
- Connecting battery => [page 6](#) .

Specified torques

Component	Specified torque
Nuts on relay carrier and fuse holder in electronics box	6 Nm



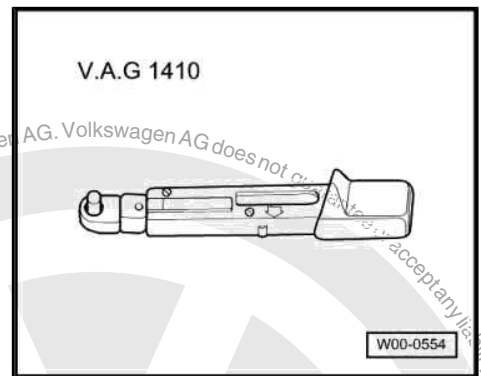
1.3 Removing and installing relay and fuse holder behind dash panel on driver side

Removing and installing fuse holder behind dash panel on driver side

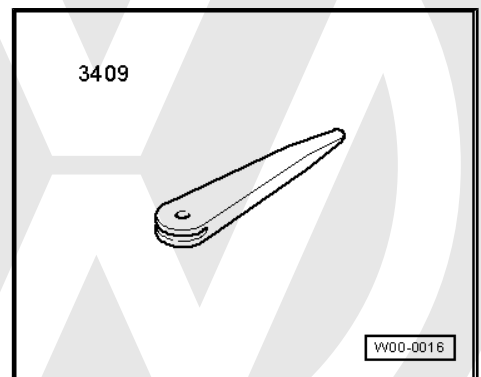
The fuse holder is located behind the right-hand side of the dash panel cover.

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-



- ◆ Removal wedge - VAS 3409-



Caution

To disconnect and reconnect the battery, the procedure described in the workshop manual should be strictly adhered to => [page 6](#) .

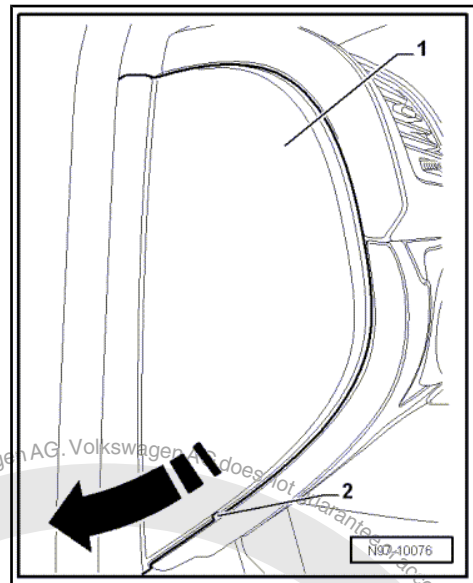


Note

- ◆ The illustrations show removal and installation of the fuse holder in an LHD vehicle.
- ◆ Removal and installation of the fuse holder in an RHD vehicle are analogous.

Removing

- Switch off ignition and all electrical consumers, and remove ignition key.
- Disconnect battery ⇒ [page 6](#) .
- Insert removal wedge - VAS 3409- into recess -2-, and lever off dash panel cover -1- in -direction of arrow-.



- Unscrew bolt -arrow-, and pull fuse holder -1- together with carrier -2- upwards off body.

Installing

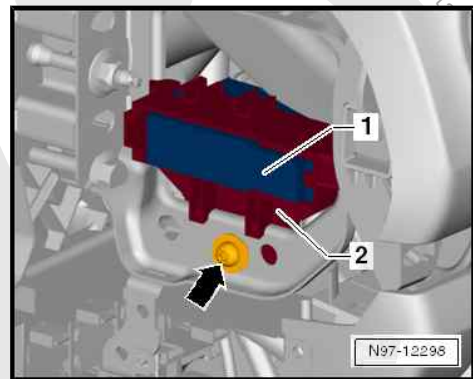
Install in the reverse order of removal, observing the following:

Specified torques

Component	Specified torque
Bolt on fuse holder	1,5 Nm

Removing and installing fuse carrier on relay carrier

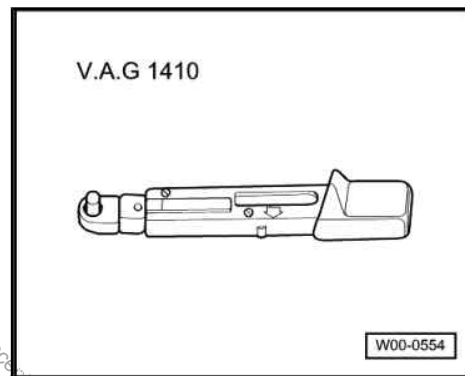
The fuse carrier is located behind the trim in the footwell, under the relay carrier.



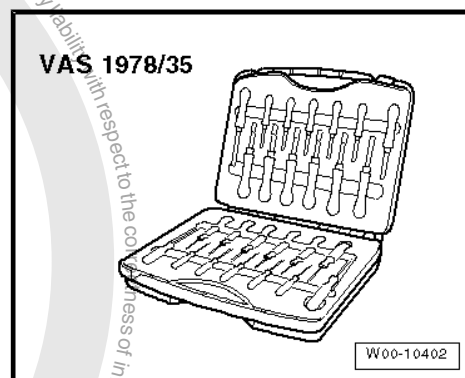
Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1410-



- ◆ Release tool set - VAS 1978/35-



Caution

To disconnect and reconnect the battery, the procedure described in the workshop manual should be strictly adhered to ⇒ [page 6](#) .



Note

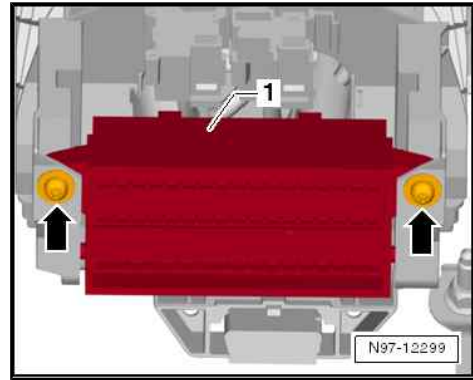
- ◆ *The illustrations show removal and installation of the fuse carrier in an LHD vehicle.*
- ◆ *Removal and installation of the fuse carrier in an RHD vehicle are analogous.*

Removing

- Switch off ignition and all electrical consumers, and remove ignition key.
- Disconnect battery ⇒ [page 6](#) .
- Remove trim in footwell ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers; Overview of fitting locations - storage compartments/covers .
- Remove lower section of A-pillar trim on driver side ⇒ General body repairs, interior; Rep. gr. 70 ; Interior trims; Assembly overview - A-pillar trim .



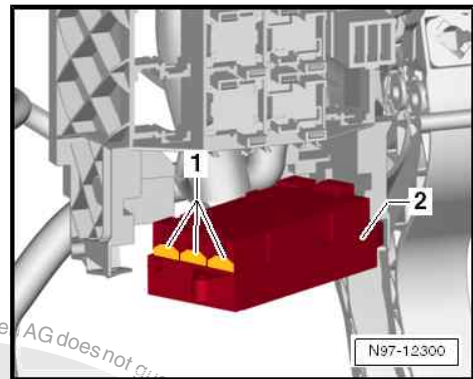
- Unscrew bolts -arrows-, and pull fuse carrier -1- out of relay carrier, while taking into account the length of connected wires.
- Make a note of the fuse assignment and remove all fuses from the fuse carrier.



- Pull primary locking elements -1-, release all plug-in contacts with the correct release tool from the release tool set - VAS 1978/35- and then pull downwards out of the fuse carrier.

i Note

The assignment of the correct release tool is shown in the table in the ⇒ operating instructions for the -VAS 1978/35-



Installing

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

Specified torques

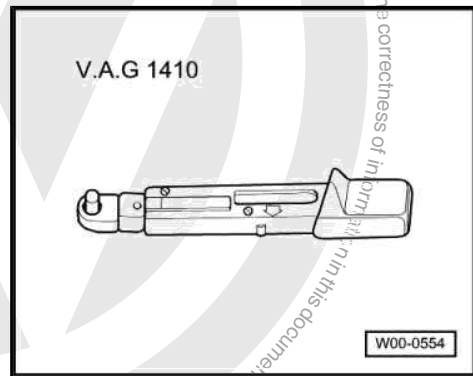
Component	Specified torque
Bolt on fuse carrier and relay carrier	4 Nm

Removing and installing dash panel relay carrier

The dash panel relay carrier is built into the driver side footwell, underneath the dash panel.

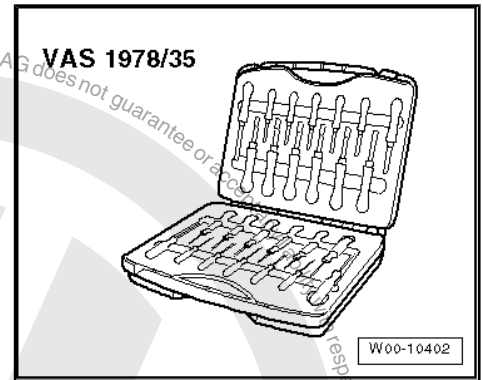
Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-





◆ Release tool set - VAS 1978/35-



Caution

To disconnect and reconnect the battery, the procedure described in the workshop manual should be strictly adhered to ⇒ [page 6](#) .

Note

- ◆ *The illustrations show removal and installation of the relay carrier in an LHD vehicle.*
- ◆ *Removal and installation of the relay carrier in an RHD vehicle are analogous.*

Removing

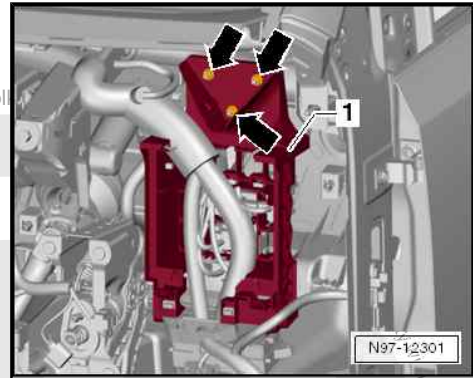
- Switch off ignition and all electrical consumers, and remove ignition key.
- Disconnect battery ⇒ [page 6](#) .
- Remove trim in footwell ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers; Overview of fitting locations - storage compartments/covers .
- Remove lower section of A-pillar trim on driver side ⇒ General body repairs, interior; Rep. gr. 70 ; Interior trims; Assembly overview - A-pillar trim .
- Remove fuse holder from relay carrier.
- Remove onboard supply control unit - J519- ⇒ [page 119](#) .

Note

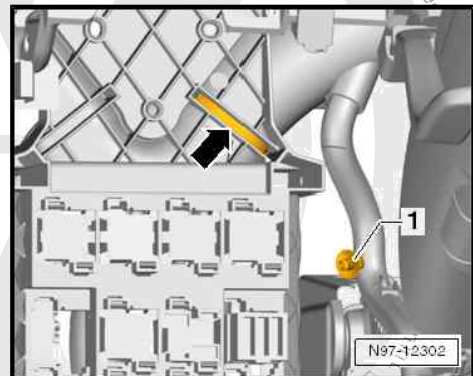
For reasons of clarity, the relay carrier is shown from the rear in the following illustrations.



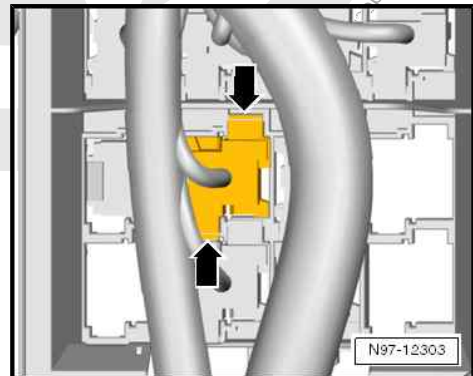
- Unscrew nuts -arrows-, and remove relay carrier -1- from threaded pins, while taking into account the length of connected wires.



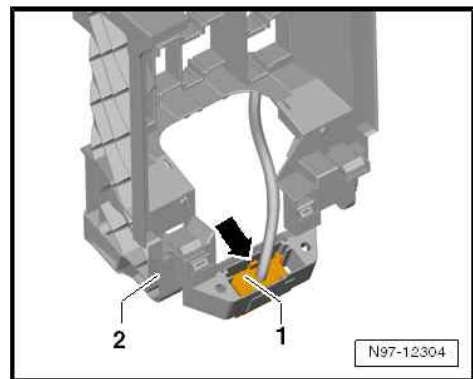
- Cut cable tie -arrow-, and unclip wire retainer -1- from relay carrier.
- Make a note of the assignment of the relays in the holder.



- Release all the connectors on rear of relay carrier -arrows- and pull them towards the rear out of the relay carrier together with the plugged-in relays.



- Release diagnostic connector -1- in -direction of arrow- and pull it out of relay carrier -2-.
- Remove relay carrier -2- from vehicle.



Installing

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



Note

Attach all cable ties cut during removal and all cable fuses in their original positions

Specified torques

Component	Specified torque
Nuts for securing relay carrier to body	4.5 Nm



2 Control units

⇒ [“2.1 Removing and installing onboard supply control unit”, page 119](#)

⇒ [“2.2 Removing and installing data bus diagnostic interface”, page 122](#)

2.1 Removing and installing onboard supply control unit

General description:

The onboard supply control unit - J519- is fastened to the rear of the relay carrier in the driver side footwell and performs the following functions in the vehicle.

- ◆ EFP relay
- ◆ Electrical load management
- ◆ Driver door contact
- ◆ Transfer of dimming information on the CAN bus
- ◆ Windscreen wiper speeds I, II and intermittent wipe
- ◆ Reading in of sender unit button for emergency braking function
- ◆ Operation of hazard warning flasher, turning signals, emergency braking warning flasher
- ◆ Horn
- ◆ Brake lights
- ◆ Terminal detection, terminal 15; S-contact
- ◆ Heated rear window
- ◆ Rear lid release without central locking
- ◆ Terminal 30, interior light
- ◆ CAN bus drive
- ◆ CAN diagnosis
- ◆ CAN gateway

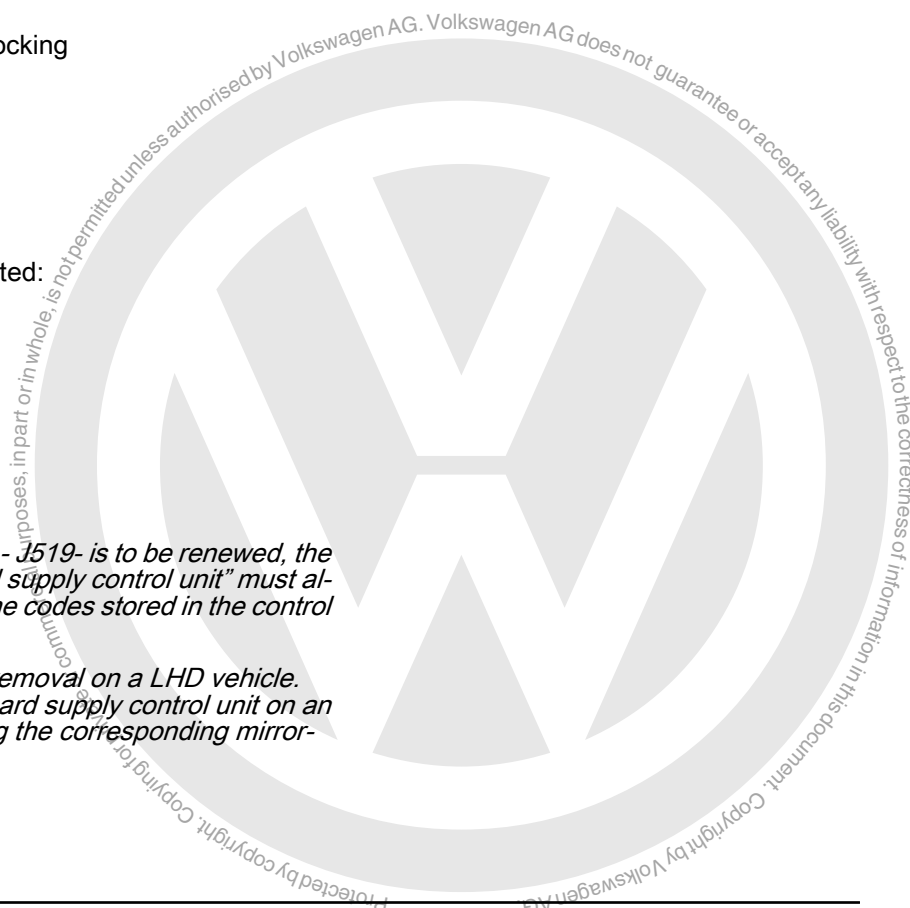
The following functions can be adapted:

- ◆ Adapting remote control key
- ◆ Checking remote control unit key
- ◆ Deactivating factory mode



Note

- ◆ *If the onboard supply control unit - J519- is to be renewed, the procedure for “renewing onboard supply control unit” must always be carried out for reading the codes stored in the control unit.*
- ◆ *The following illustrations show removal on a LHD vehicle. Removal and installation of onboard supply control unit on an RHD vehicle are performed using the corresponding mirror-image procedure.*





Replacement of onboard supply control unit:

- First of all, carry out the work involved in “renewing onboard supply control unit”.

Removing

- Switch off ignition and all electrical consumers, and remove ignition key.
- Remove trim in footwell ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers; Overview of fitting locations - storage compartments/covers .



Note

For reasons of space, the fuse holder has to be removed from the relay carrier but can remain connected.

- Remove fuse holder from relay carrier ⇒ [page 113](#) .



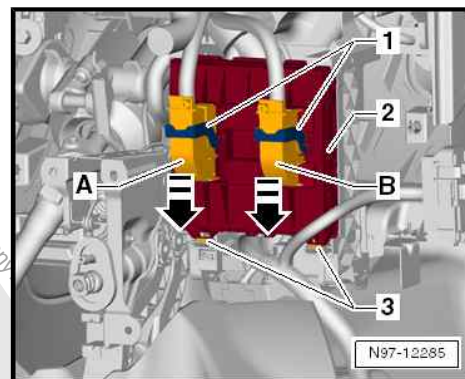
Note

The following illustration shows the installed onboard supply control unit on the rear of the relay carrier.





- Pull the two clips -1- of the primary locking system downwards in -direction of arrow-, and pull the two connectors -A- and -B- off onboard supply control unit - J519- -2-.
- Press the two locking buttons -3-, and pull onboard supply control unit - J519- -2- out of holder, starting at bottom



Installing

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

- First insert onboard supply control unit - J519- -2- into top mountings -1- on holder, and then push unit into catches at bottom -3- until it engages audibly.

Replacing onboard power supply control unit

This programme helps you to replace the onboard supply control unit. After replacement, the control unit must be coded online, after which the factory mode must be deactivated and the data bus diagnostic interface - J533- recoded. The programmes will be entered in the test schedule.

- Connect vehicle diagnostic tester ⇒ Electrical system, General information; Rep. gr. 97 ; Vehicle diagnosis, testing and information systems; Connecting vehicle diagnostic tester .
- Renewing onboard supply control unit - J519- ⇒ Vehicle diagnostic tester

Coding onboard supply control unit

The following steps can be carried out with this test program:

- ◆ Reading of code in order to display the current code of the onboard supply control unit - J519- , for example.
- ◆ Reading/writing of code in order to transfer the code to the new part after replacement of the onboard supply control unit - J519- .
- ◆ Transfer of the code stored in the Software Versions Management (SVM) system to the onboard supply control unit - J519- .
- Connect vehicle diagnostic tester ⇒ Electrical system, General information; Rep. gr. 97 ; Vehicle diagnosis, testing and information systems; Connecting vehicle diagnostic tester .
- Coding onboard supply control unit - J519- ⇒ Vehicle diagnostic tester.

Adapting onboard supply control unit

The following components can be adapted with this function:

- ◆ Adapting remote control key
- ◆ Checking remote control unit key
- ◆ Deactivating factory mode
- Connect vehicle diagnostic tester ⇒ Electrical system, General information; Rep. gr. 97 ; Vehicle diagnosis, testing and information systems; Connecting vehicle diagnostic tester .
- Adapt onboard supply control unit - J519- using ⇒ Vehicle diagnostic tester.

Final control diagnosis of onboard supply control unit

A final control test of the following components can be carried out with this function:

- ◆ Lighting
- ◆ Windscreen wipe/wash system

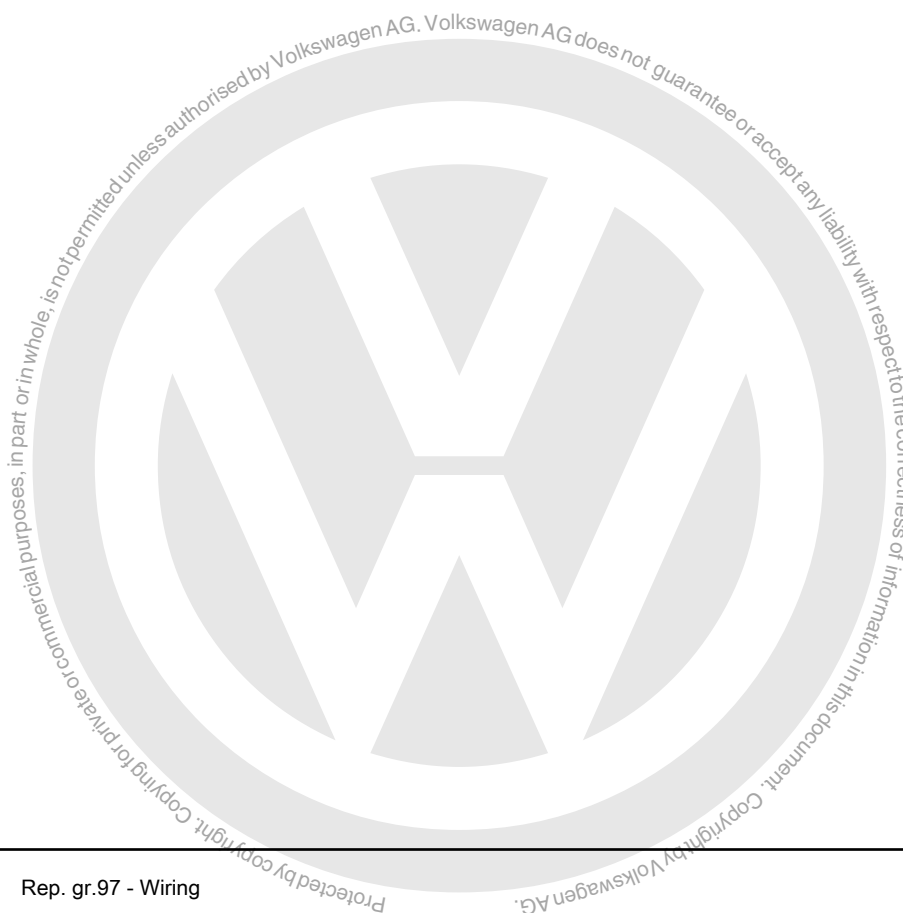


- ◆ Heating for windscreen, rear-window, seat and mirror
- ◆ Central locking
- ◆ Warning, monitoring and sliding/tilting roof
- ◆ Windows
- Connect vehicle diagnostic tester ⇒ Electrical system, General information; Rep. gr. 97 ; Vehicle diagnosis, testing and information systems; Connecting vehicle diagnostic tester .
- Final control diagnosis of onboard supply control unit - J519- ⇒ Vehicle diagnostic tester.

2.2 Removing and installing data bus diagnostic interface

The functions of the data bus diagnostic interface - J533- are integrated in the onboard supply control unit - J519- . The data bus diagnostic interface - J533- cannot be replaced separately.

Removing and installing onboard supply control unit - J519-
⇒ [page 119](#)





3 Connectors

⇒ [“3.1 Repairing electrical wiring harnesses and plug-in connections”, page 123](#)

3.1 Repairing electrical wiring harnesses and plug-in connections

All instructions and notes regarding this chapter are available under ⇒ Electrical system, General information; Rep. gr. 97 ; Wiring harness and connector repairs .



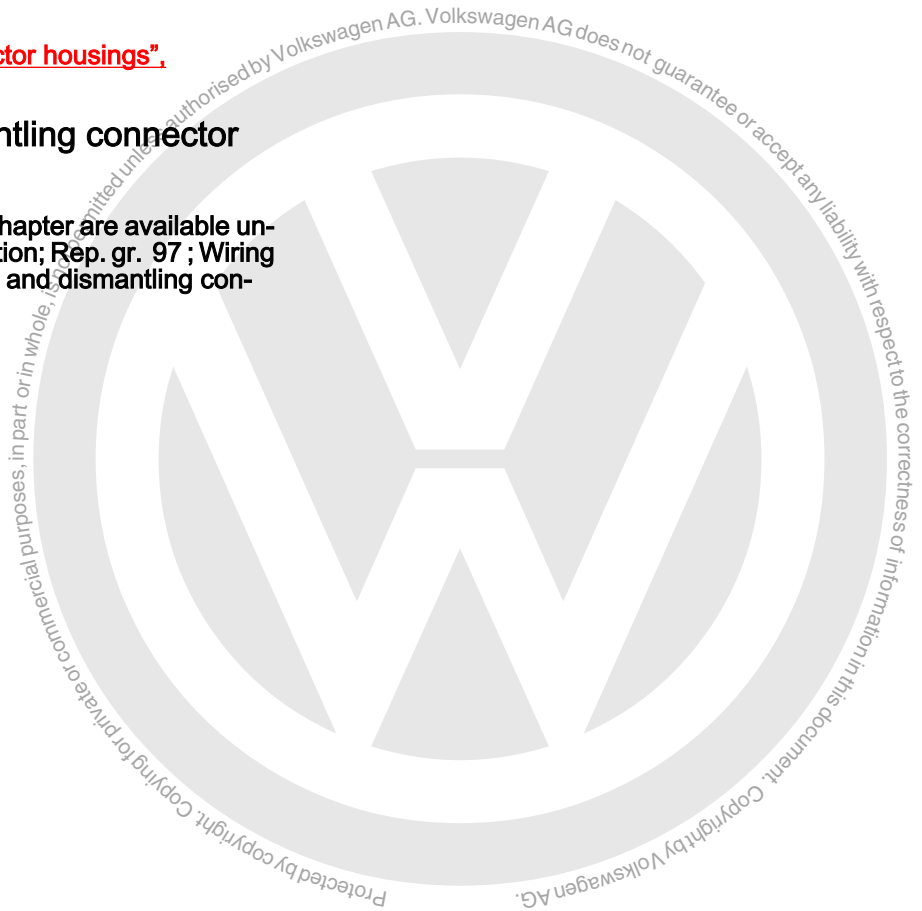


4 Releasing and dismantling connector housings

⇒ [“4.1 Releasing and dismantling connector housings”, page 124](#)

4.1 Releasing and dismantling connector housings

All instructions and notes regarding this chapter are available under ⇒ Electrical System, General Information; Rep. gr. 97 ; Wiring harness and connector repair; Releasing and dismantling connector housings .





5 Repair of aerial wires

⇒ **“5.1 Repair of aerial wires”, page 125**

5.1 Repair of 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 Repair of fibre optic cables

⇒ ["6.1 Repair of fibre optic cables", page 126](#)

6.1 Repair of fibre optic cables

All instructions and notes regarding this chapter are available under ⇒ Electrical System, General Information; Rep. gr. 97 ; Wiring harness and connector repair; Repair of fibre optic cables .





7 Vehicle diagnostic, testing and information systems

⇒ [“7.1 Vehicle diagnostic, testing and information systems”, page 127](#)

7.1 Vehicle diagnostic, 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 .

