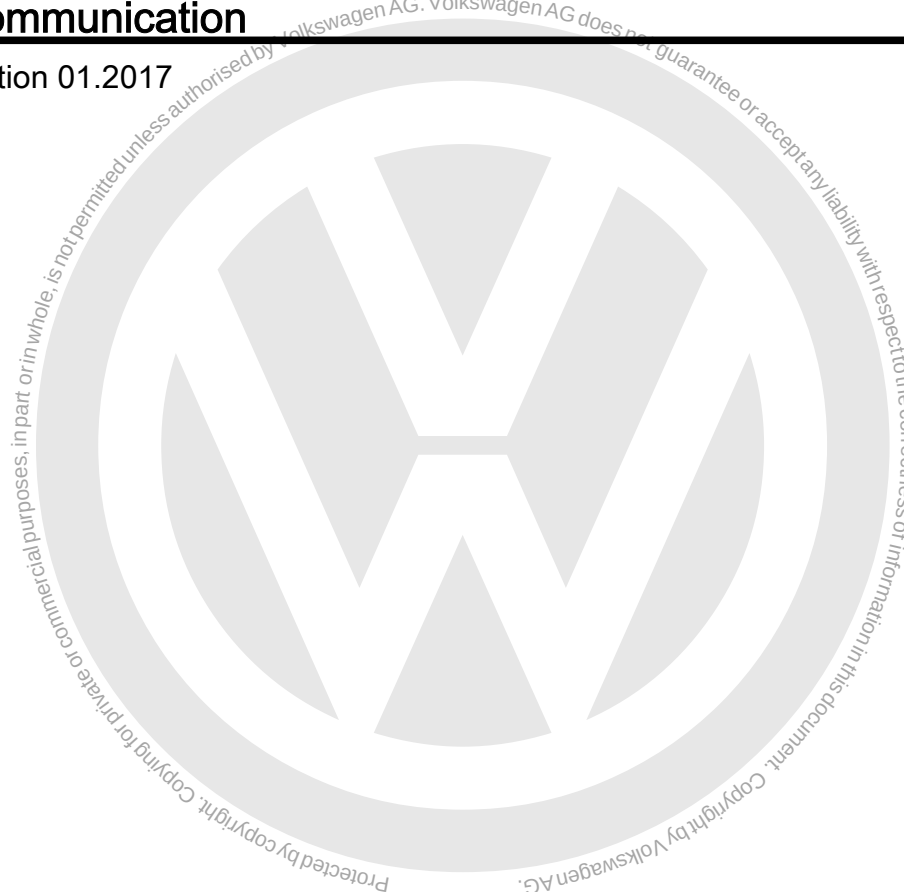




Workshop Manual Tiguan 2016 ➤

Communication

Edition 01.2017



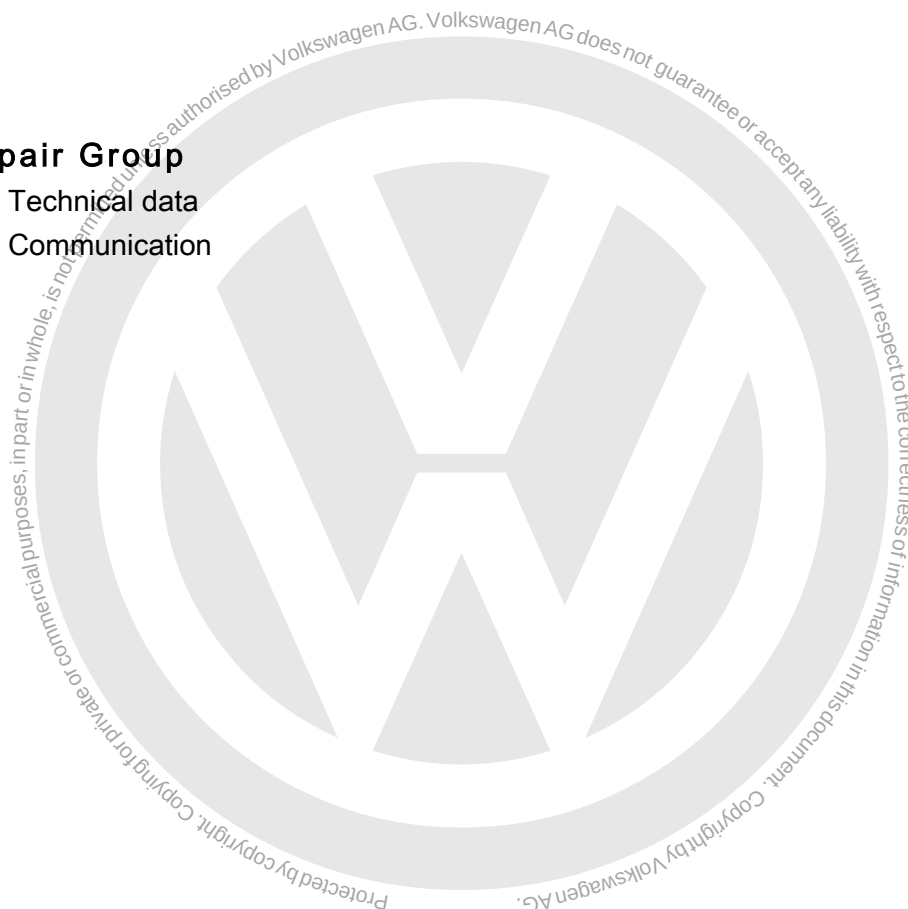


List of Workshop Manual Repair Groups

Repair Group

00 - Technical data

91 - Communication



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 Repair notes

(VRL009937; Edition 01.2017)

⇒ [“1.1 General repair instructions”, page 1](#)

⇒ [“1.2 Routing and attachment of lines”, page 1](#)

⇒ [“1.3 Notes on repair of CAN bus wiring”, page 1](#)

⇒ [“1.4 General information”, page 1](#)

1.1 General repair instructions

- Repairing wiring harnesses and connectors ⇒ Electrical system, General information; Rep. gr. 97 ; Wiring harness and connector repair .
- Releasing and dismantling connector housings ⇒ Electrical system, General information; Rep. gr. 97 ; Wiring harness and connector repair; Releasing and dismantling contact housings .
- Cleaning contact surfaces ⇒ Electrical system, General information; Rep. gr. 97 ; Repair case - VAS 6410- .
- Repairing aerial wires ⇒ Electrical system; General information; Rep. gr. 97 ; Wiring harness and connector repair; Repairing aerial wires .
- Repairing optical fibre conductors ⇒ Electrical System, General Information; Rep. gr. 97 ; Repairs to wiring harnesses and connectors; Repairing optical fibre conductors .
- Vehicle diagnostic, testing and information systems ⇒ Electrical system, General information; Rep. gr. 97 ; Vehicle diagnostic, testing and information systems

1.2 Routing and attachment of lines

- ◆ Mark lines prior to removal to prevent them from being interchanged and to ensure that they are fitted in their original positions. This applies for fuel, hydraulic and vacuum lines as well as lines for activated charcoal filter system and electrical wiring. Where necessary, make sketches or take photographs.
- ◆ Any wiring fasteners which have been released during removal must be of the same type and must be attached at the same locations when installing to prevent any rattling or damage.

1.3 Notes on repair of CAN bus wiring

- Repairing CAN bus wiring ⇒ Electrical System, General Information; Rep. gr. 97 ; Repairs to wiring harnesses and connectors; Repairing CAN bus wiring

1.4 General information



Note

Installation of aerials on bumpers is now prohibited by law. This improves pedestrian protection during accidents.



Description	Pmax (watts)	Prescribed aerial fitting locations
Short wave < 54 MHz	100 (PEAK) ¹⁾	All locations on roof
4 m frequency band	20 (effective) ²⁾	All locations (on vehicle exterior)
2 m frequency band	20 (effective) ²⁾	Front wing Front centre of roof Centre of roof Rear centre of roof
2 m frequency band	50 (effective) ²⁾	Centre of roof Rear centre of roof
70 cm	50 (effective) ²⁾	Front centre of roof Centre of roof Rear centre of roof
23 cm	20 (effective) ²⁾	All locations (on vehicle exterior)
TETRA/ TETRAPOL	25 (effective) ²⁾	All locations (on vehicle exterior)
D network GSM 900	20 (PEAK) ¹⁾	All locations (on vehicle exterior)
E network GSM 1800 GSM 1900 UMTS	10 (Peak) ¹⁾	All locations (on vehicle exterior)

1) PEAK = peak envelope power (max. carrier power)

2) effective = effective transmitting power



Note

- ◆ *Deviations from these specifications (aerial fitting location, frequency, power) are permitted only in specially justified exceptions following a single-case test performed by the EMC Centre of the VW AG in Wolfsburg*
- ◆ *EMC = electromagnetic compatibility*



91 – Communication





1 Infotainment system

⇒ ["1.1 Layout - infotainment system", page 4](#)

⇒ ["1.2 Overview of fitting locations - Infotainment system", page 13](#)

⇒ ["1.3 Removing and installing infotainment system display", page 14](#)

⇒ ["1.4 Removing and installing control unit 1 for information electronics J794", page 15](#)

1.1 Layout - infotainment system

⇒ ["1.1.1 Layout - infotainment system, Composition Touch and Composition Colour version", page 4](#)

⇒ ["1.1.2 Components of Infotainment system, Composition Media and Discover Media versions", page 7](#)

⇒ ["1.1.3 Layout - infotainment system, Discover Pro version", page 10](#)

1.1.1 Layout - infotainment system, Composition Touch and Composition Colour version

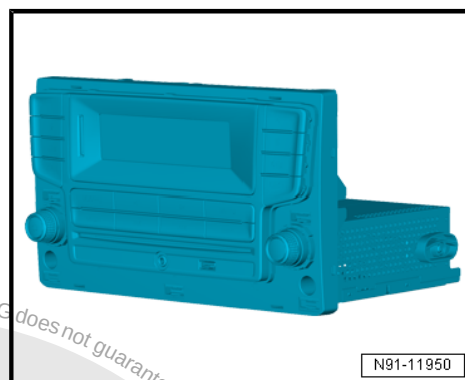
Control unit 1 for information electronics - J794- with display unit for front information display and operating unit control unit - J685-

Features of infotainment system Composition Touch

- ◆ 5-inch monochrome touch screen
- ◆ 2 x 20 watt output power
- ◆ RDS FM/AM radio
- ◆ AUX IN on front of unit via jack connector
- ◆ SD memory card reader
- ◆ MP3 play function
- ◆ WMA
- ◆ Support for multifunction steering wheel
- ◆ Support for vehicle menu
- ◆ Self-diagnosis, including loudspeaker diagnosis
- ◆ Speed dependent volume control (GALA)

Features of Infotainment system Composition Colour

- ◆ 5-inch multicolour touch screen
- ◆ 4 x 20 watt output power
- ◆ RDS FM/AM radio
- ◆ Integrated diversity function
- ◆ AUX IN on front of unit via jack connector
- ◆ SD memory card reader
- ◆ MP3 play function
- ◆ WMA
- ◆ Support for multifunction steering wheel
- ◆ Support for vehicle menu





- ◆ Self-diagnosis, including loudspeaker diagnosis
- ◆ Integrated CD drive
- ◆ Speed dependent volume control (GALA)

Optional for Composition Touch and Composition Colour

- ◆ Integrated DAB tuner for digital radio reception
- ◆ USB connection
- ◆ iPod connection
- ◆ Bluetooth hands-free system
- ◆ FBAS (reversing camera)/FBAS (overhead view camera),
Composition Colour only



Note

- ◆ *To deal with complaints it is paramount that the function and operation of the Infotainment system is understood.*
- ◆ *Additional information can be found in the ⇒ Operating manual .*
- ◆ *Other systems in the vehicle are connected via CAN bus (infotainment) and data bus diagnostic interface - J533- .*
- ◆ *Fault finding is performed using ⇒ Vehicle diagnostic tester.*

Infotainment system overview



1 - Multifunction buttons on left in steering wheel - E440-

- ❑ More information
⇒ [page 60](#)

2 - Multifunction buttons on right in steering wheel - E441-

- ❑ More information
⇒ [page 60](#)

3 - Telephone microphone - R38-

- ❑ More information
⇒ [page 39](#)

4 - Display unit for control device of front display and information control panel - J685-

- ❑ Combined with control unit 1 for information electronics - J794-
- ❑ More information
⇒ [page 13](#)

5 - Window aerial

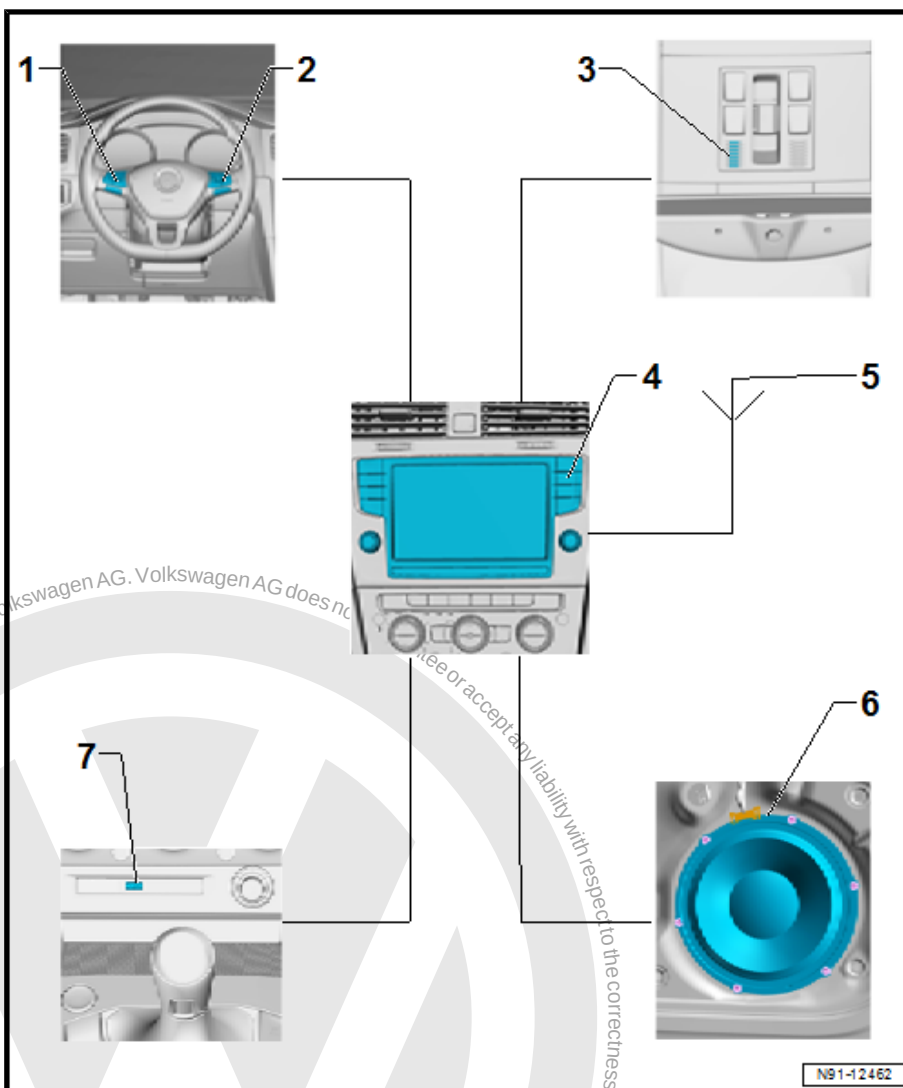
- ❑ More information
⇒ [page 28](#)

6 - Sound system

- ❑ More information
⇒ [page 17](#)

7 - USB connection in front centre console storage compartment

- ❑ More information
⇒ [page 66](#)





1.1.2 Components of Infotainment system, Composition Media and Discover Media versions

Control unit 1 for information electronics - J794- / display unit for front information display and operating unit control unit - J685-

Features of Composition Media infotainment system

- ◆ 8-inch multicolour touch screen (approach detection)
- ◆ 4 x 20 watt output power
- ◆ RDS FM/AM radio
- ◆ Integrated diversity function
- ◆ CD drive
- ◆ SD memory card reader with 1 SD card slot
- ◆ AUX IN above stereo jack in front centre console
- ◆ USB connection in front of centre console
- ◆ AAC
- ◆ MP3 play function
- ◆ WMA
- ◆ JPEG viewer
- ◆ Support for multifunction steering wheel
- ◆ Support for vehicle menu
- ◆ Self-diagnosis, including loudspeaker diagnosis
- ◆ Speed dependent volume control (GALA)
- ◆ Speed dependent dynamic compression (GADK)

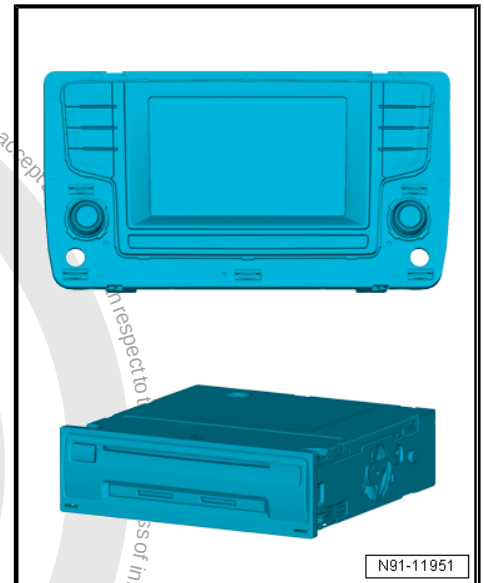
Features of infotainment system Discover Media

Additional features of Composition Media Infotainment system

- ◆ Navigation system with GPS satellite receiver
- ◆ SD memory card reader with 2 SD card slots

Optional

- ◆ Integrated DAB tuner for digital radio reception
- ◆ USB connection in rear
- ◆ iPod connection
- ◆ Bluetooth hands-free system
- ◆ Voice control
- ◆ FBAS (reversing camera)/FBAS (overhead view camera)
- ◆ App Connect ("Mirroring" of smartphone display on the infotainment touch-screen; allows display and operation of smartphone apps)
- ◆ Media Control (display and operation of navigation information, remote control of radio/media player, remote control of sound settings, control of air conditioning system, control of interior light settings)
- ◆ Carstick (to enable WLAN connectivity in the vehicle), only for Discover Media





- ◆ Car-Net "Guide & Inform" (with Google Earth, Google Street-view, POI Online and Google Search), only for Discover Media



Note

- ◆ To deal with complaints it is paramount that the function and operation of the Infotainment system is understood.
- ◆ Additional information can be found in the ⇒ Operating manual.
- ◆ Other systems in the vehicle are connected via CAN bus (infotainment) and data bus diagnostic interface - J533-.
- ◆ Fault finding is performed using ⇒ Vehicle diagnostic tester.

Infotainment system overview

1 - Roof aerial - RX5-

- ❑ More information
⇒ [page 28](#)

2 - Display unit for control device of front display and information control panel - J685-

- ❑ More information
⇒ [page 13](#)

3 - Multifunction buttons on left in steering wheel - E440-

- ❑ More information
⇒ [page 60](#)

4 - Multifunction buttons on right in steering wheel - E441-

- ❑ More information
⇒ [page 60](#)

5 - Window aerial

- ❑ More information
⇒ [page 28](#)

6 - Information electronics control unit 1 - J794-

- ❑ More information
⇒ [page 13](#)

7 - AUX-IN connection in front centre console storage compartment

- ❑ More information
⇒ [page 66](#)

8 - USB connection in front centre console storage compartment

- ❑ More information
⇒ [page 66](#)

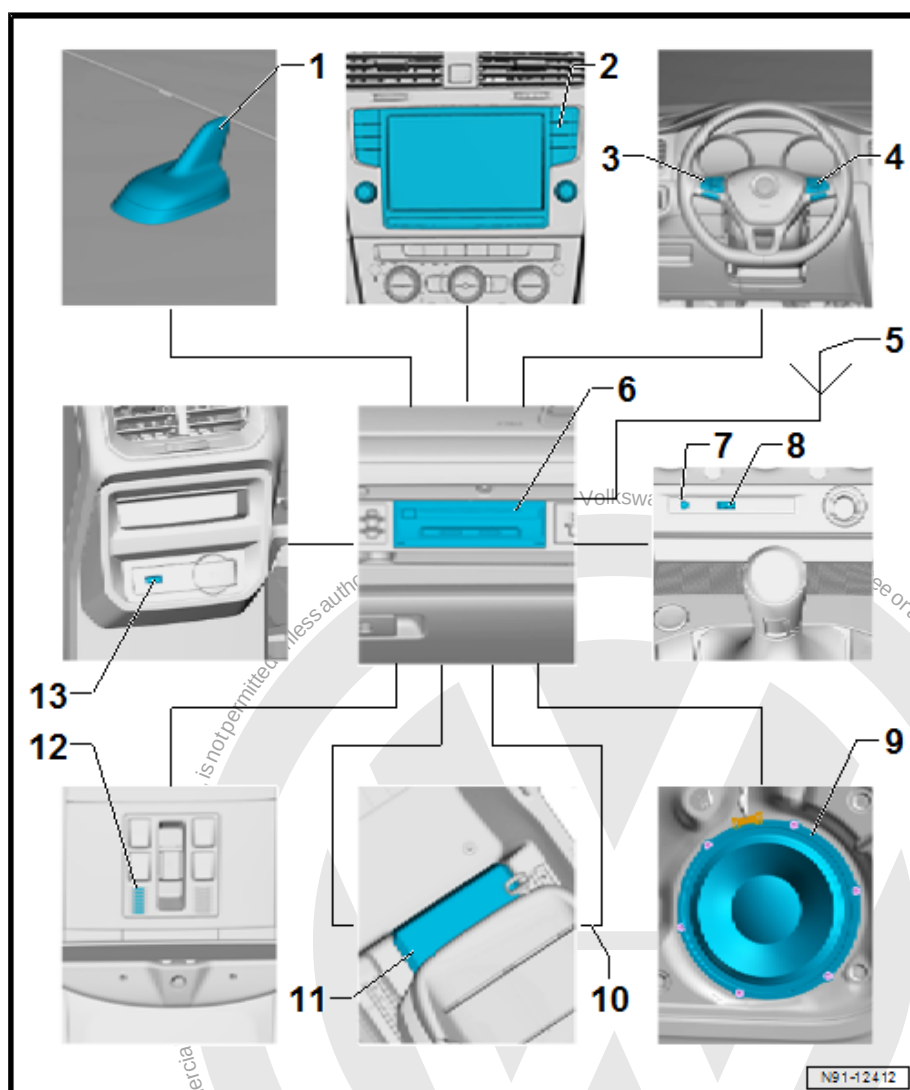
9 - Sound system

- ❑ More information ⇒ [page 17](#)

10 - MOST bus

11 - Digital sound package control unit - J525-

- ❑ More information ⇒ [page 17](#)





12 - Telephone microphone - R38-

- ❑ More information ⇒ [page 39](#)

13 - USB connection in rear

- ❑ More information ⇒ [page 66](#)

Notes on MOST bus

Apart from the CAN bus, the optical data bus "MOST bus" is used.

Optical fibre conductors are used as "connecting cables". For protection purposes, optical fibre conductors are run through corrugated pipes.

As far as possible, renew the complete optical fibre conductor.

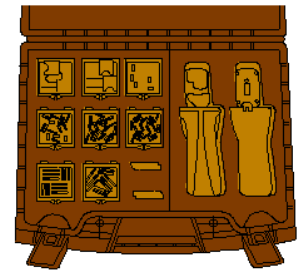
Make sure that the cross-cut ends of connectors are not dirty.

If connectors are separated, attach protective cap for cable-set connector - VAS 6223/9- .

When routing the optical fibre conductor, make sure that the minimum bending radius of 25 mm is observed. Optical fibre conductors must not be kinked or pinched.

Repairs to fibre optic cables ⇒ [page 1](#) .

VAS 6223 A



W00-11495





1.1.3 Layout - infotainment system, Discover Pro version

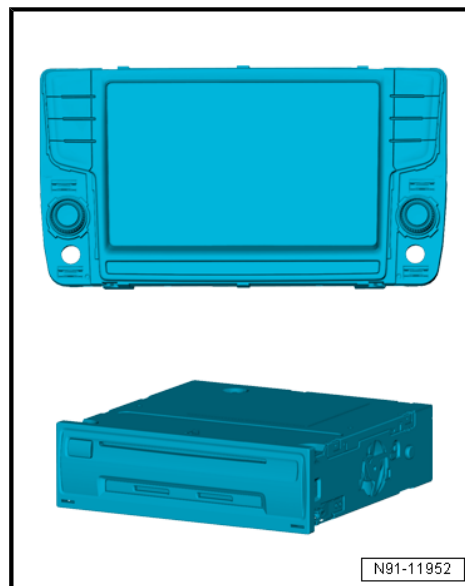
Control unit 1 for information electronics - J794- / display unit for front information display and operating unit control unit - J685-

Features, Discover Pro version

- ◆ 8-inch multicolour touch screen (approach detection)
- ◆ 4 x 20 watt output power
- ◆ RDS FM/AM radio
- ◆ Integrated Dual DAB tuner for digital radio reception
- ◆ Integrated diversity function
- ◆ 3 D navigation system with GPS satellite receiver
- ◆ CD/DVD drive
- ◆ SD memory card reader with 2 SD card slots
- ◆ 10 GB SSD drive
- ◆ AUX IN above stereo jack in front centre console
- ◆ USB connection in front of centre console
- ◆ iPod connection
- ◆ AAC
- ◆ AV output
- ◆ MP3 play function
- ◆ WMA
- ◆ JPEG viewer
- ◆ Support for multifunction steering wheel
- ◆ Support for vehicle menu
- ◆ Self-diagnosis, including loudspeaker diagnosis
- ◆ Speed dependent volume control (GALA)
- ◆ Speed dependent dynamic compression (GADK)

Optional

- ◆ Bluetooth hands-free system
- ◆ Voice control
- ◆ USB connection in rear
- ◆ WLAN internal
- ◆ UMTS
- ◆ FBAS (reversing camera)/FBAS (overhead view camera)
- ◆ TV tuner - R78-
- ◆ Car-Net (with Google Navigation, Google Street View, POI Online and Google Search)
- ◆ App Connect ("Mirroring" of smartphone display on the infotainment touch-screen; allows display and operation of smartphone apps)
- ◆ Media Control (display and operation of navigation information, remote control of radio/media player, remote control of sound settings, control of air conditioning system, control of interior light settings)





Note

- ◆ To deal with complaints it is paramount that the function and operation of the Infotainment system is understood.
- ◆ Additional information can be found in the ⇒ Operating manual.
- ◆ Other systems in the vehicle are connected via CAN bus (infotainment) and data bus diagnostic interface - J533-.
- ◆ Fault finding is performed using ⇒ Vehicle diagnostic tester.

Infotainment system overview

1 - Multifunction buttons on left in steering wheel - E440-

- More information ⇒ [page 60](#)

2 - Multifunction buttons on right in steering wheel - E441-

- More information ⇒ [page 60](#)

3 - Display unit for control device of front display and information control panel - J685-

- More information ⇒ [page 13](#)

4 - AUX-IN connection in front centre console storage compartment

- More information ⇒ [page 66](#)

5 - USB connection in front centre console storage compartment

- More information ⇒ [page 66](#)

6 - Window aerial

- More information ⇒ [page 28](#)

7 - Information electronics control unit 1 - J794-

- More information ⇒ [page 13](#)

8 - USB connection in rear

- More information ⇒ [page 66](#)

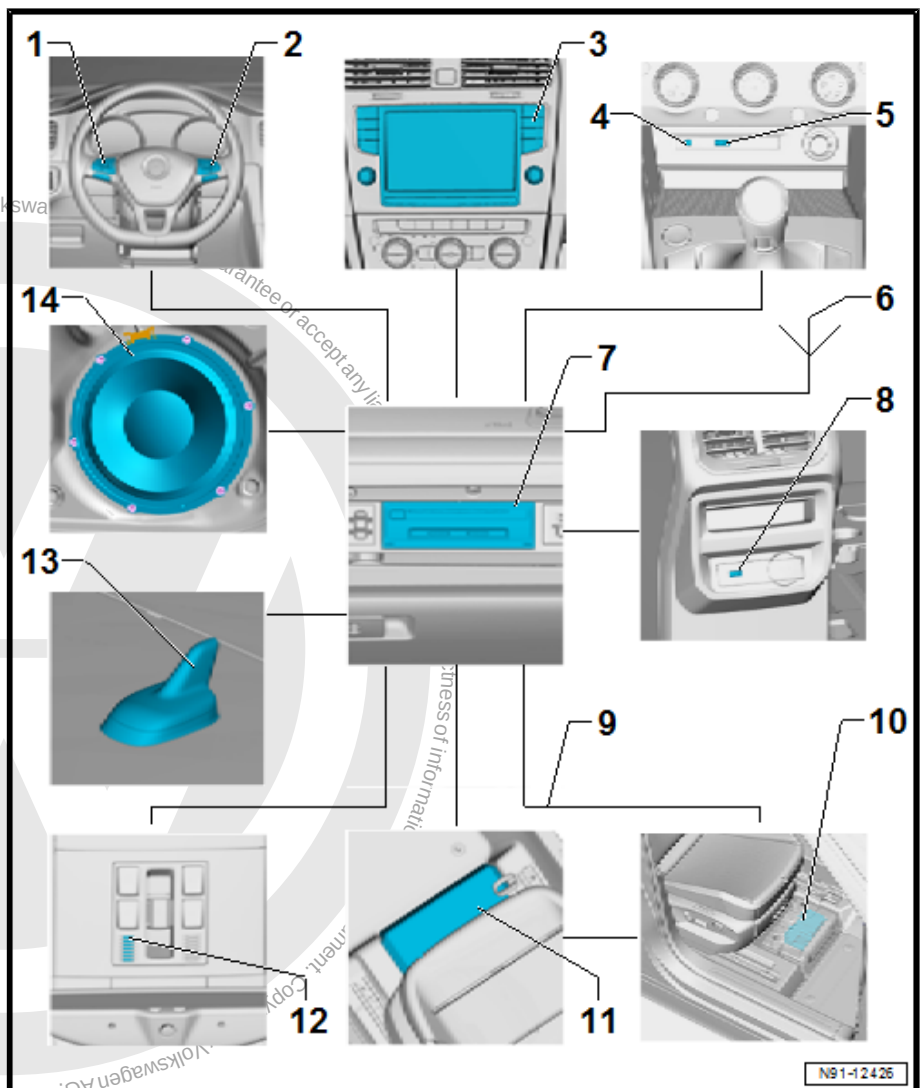
9 - MOST bus

10 - TV tuner - R78-

- More information ⇒ [page 47](#)

11 - Digital sound package control unit - J525-

- More information ⇒ [page 17](#)





12 - Telephone microphone - R38-

- ❑ More information ⇒ [page 39](#)

13 - Roof aerial - RX5-

- ❑ More information ⇒ [page 28](#)

14 - Sound system

- ❑ More information ⇒ [page 17](#)

Notes on MOST bus

Apart from the CAN bus, the optical data bus "MOST bus" is used.

Optical fibre conductors are used as "connecting cables". For protection purposes, optical fibre conductors are run through corrugated pipes.

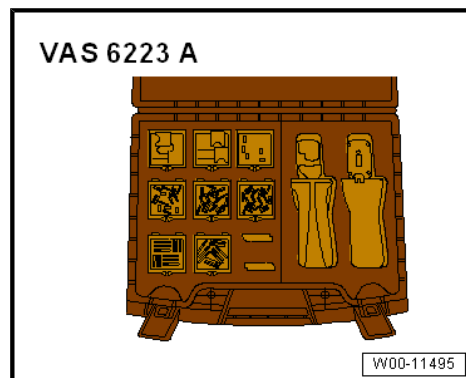
As far as possible, renew the complete optical fibre conductor.

Make sure that the cross-cut ends of connectors are not dirty.

If connectors are separated, attach protective cap for cable-set connector - VAS 6223/9- .

When routing the optical fibre conductor, make sure that the minimum bending radius of 25 mm is observed. Optical fibre conductors must not be kinked or pinched.

Repairs to fibre optic cables ⇒ [page 1](#) .





1.2 Overview of fitting locations - Infotainment system

1 - Multifunction buttons in steering wheel

- ☐ Multifunction buttons on left in steering wheel - E440- / multifunction buttons on right in steering wheel - E441-
- ☐ Removing and installing ➤ [page 62](#)

2 - Display unit for control device of front display and information control panel - J685-

- ☐ In dash panel in the middle
- ☐ Composition Touch and Composition Colour: in combination with control unit 1 for information electronics - J794-
- ☐ Composition Media and Discover Media or Discover Pro: individual display
- ☐ Removing and installing Composition Touch and Composition Colour ➤ [page 37](#)
- ☐ Removing and installing Composition Media, Discover Media or Discover Pro ➤ [page 14](#)

3 - Information electronics control unit 1 - J794-

- ☐ In glove compartment.
- ☐ Removing and installing ➤ [page 15](#)

4 - Roof aerial - RX5-

- ☐ Depending on vehicle equipment, with GPS aerial - R50- and GSM aerial - R205-
- ☐ Removing and installing ➤ [page 34](#)

5 - Rear window aerials

6 - USB connection in rear

- ☐ In rear depending on equipment level
- ☐ Removing and installing ➤ [page 66](#)

7 - TV tuner - R78-

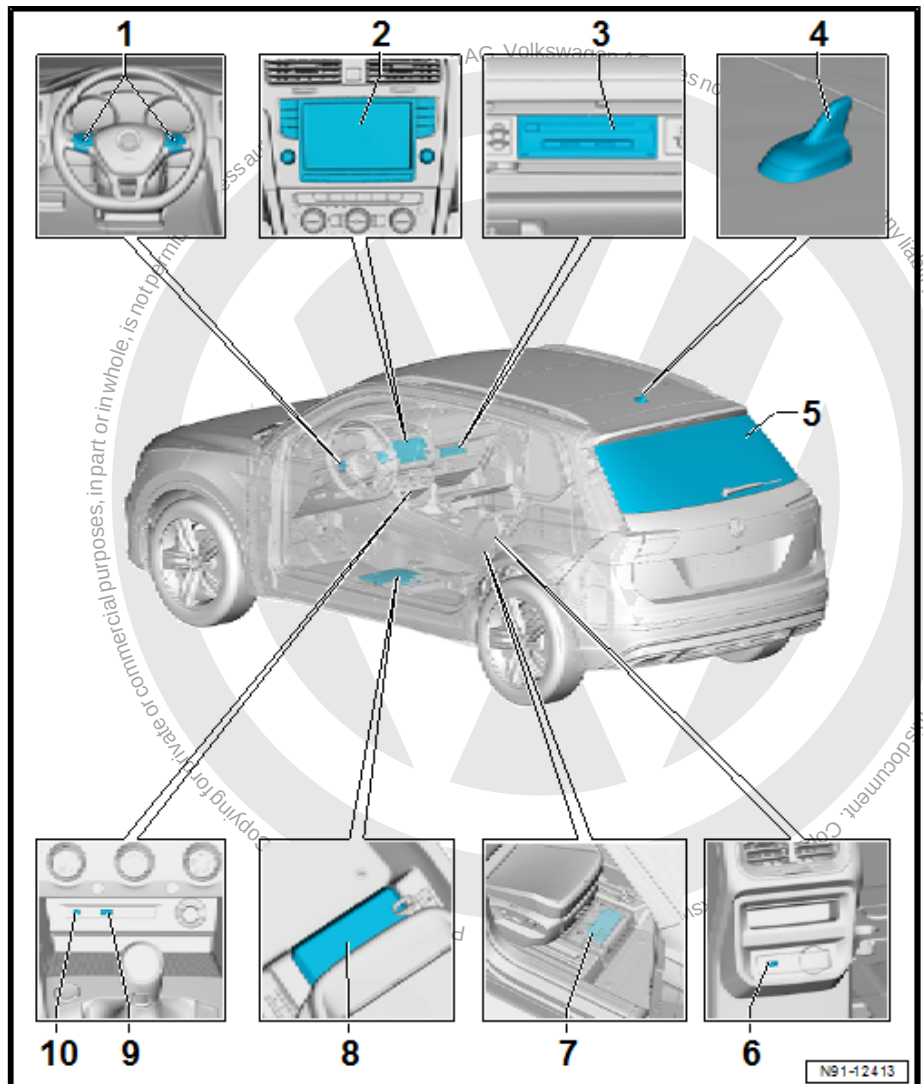
- ☐ Beneath front right seat depending on equipment level
- ☐ Removing and installing ➤ [page 48](#)

8 - Digital sound package control unit - J525-

- ☐ Beneath front left seat depending on equipment level
- ☐ Removing and installing ➤ [page 19](#)

9 - USB connection in front centre console storage compartment

- ☐ In front storage compartment of centre console depending on equipment level
- ☐ Removing and installing ➤ [page 66](#)





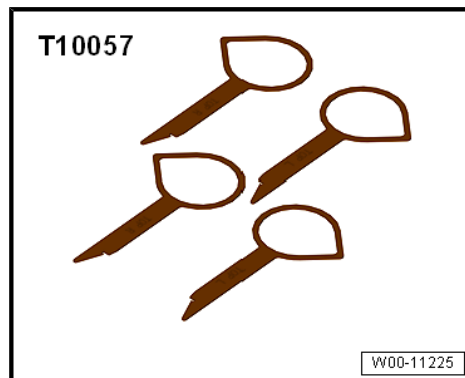
10 - AUX-IN connection in front centre console storage compartment

- ☐ In front storage compartment of centre console depending on equipment level
- ☐ Removing and installing ⇒ [page 67](#)

1.3 Removing and installing infotainment system display

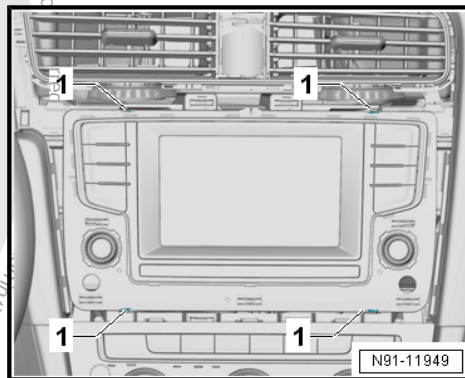
Special tools and workshop equipment required

- ◆ Radio release tool - T10057-



Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove centre dash panel trim ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing mounting frame for radio/navigation system .
- Insert radio release tools - T10057- into release slots -1- of display unit for front information display and operating unit control unit - J685- .
- The pointed projections on the grip rings of radio release tools - T10057- must point outwards.





- Release upper locking elements -1- by pressing them in direction of travel.
- Release lower locking elements -1- by pressing them in direction of travel.
- Remove display unit for control device of front display and information control panel - J685- -2-.
- Release and disconnect connectors.

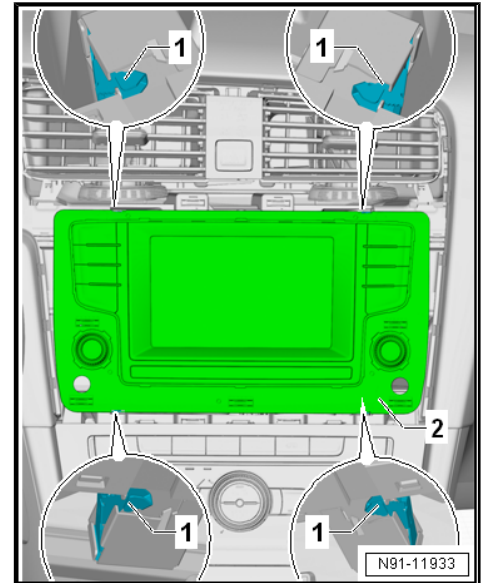
Installing

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



Note

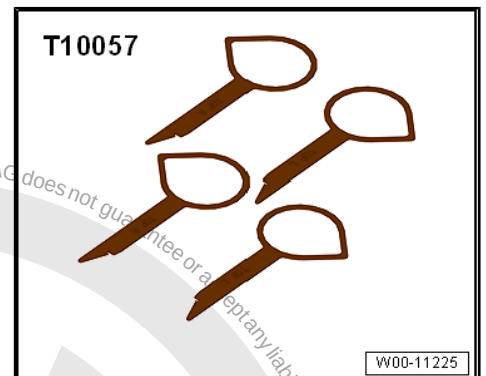
- ◆ *Danger of damage to components.*
- ◆ *When inserting display unit for control device of front display and information control panel - J685- do not press on the display and the control elements.*
- Display unit for front information display and operating unit control panel - J685- must engage audibly during installation.



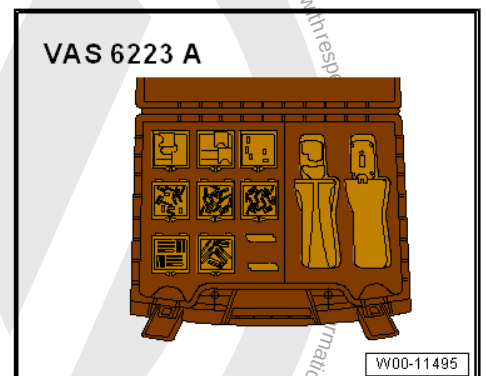
1.4 Removing and installing control unit 1 for information electronics - J794-

Special tools and workshop equipment required

- ◆ Radio release tool - T10057-



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



Note

If the control unit 1 for information electronics - J794- is renewed, start the respective function ⇒ Vehicle diagnostic tester.



Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Open glove compartment.
- Eject any data medium that is still in control unit 1 for information electronics - J794- .
- Insert 2 radio release tools - T10057- into slots in control unit 1 for information electronics - J794- -1- until they engage.
- The pointed projections on the grip rings of radio release tools - T10057- must point outwards.
- Grasp hold of grips on radio release tool - J794- and pull control unit 1 for information electronics - T10057- -1- out of dash panel.
- Release and unplug connectors at control unit 1 for information electronics - J794- -1-.

Equipment version with MOST bus

- Attach protective cap for cable-set connector - VAS 6223/9- -1- by plugging it on the connector of MOST bus -2-.

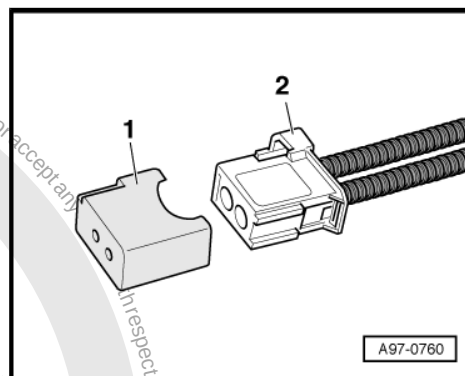
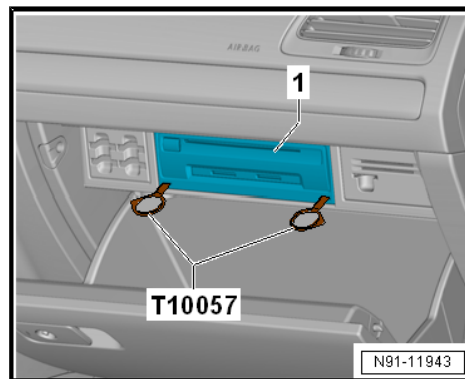
All versions

- Press catches on control unit 1 for information electronics - J794- , and pull out radio release tools - T10057- .

Installing

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

- Slide control unit 1 for information electronics - J794- into glove box until it engages.





2 Sound system

⇒ [“2.1 Components of sound system”, page 17](#)

⇒ [“2.2 Overview of fitting locations - sound system”, page 18](#)

⇒ [“2.3 Removing and installing digital sound package control unit/ amplifier”, page 19](#)

⇒ [“2.4 Removing and installing rear treble loudspeakers R14 / R16”, page 21](#)

⇒ [“2.5 Removing and installing front treble loudspeakers R20 / R22”, page 22](#)

⇒ [“2.6 Removing and installing rear bass loudspeakers R15 / R17”, page 22](#)

⇒ [“2.7 Removing and installing front bass loudspeakers R21 / R23”, page 24](#)

⇒ [“2.8 Removing and installing subwoofer R211”, page 25](#)

⇒ [“2.9 Removing and installing centre loudspeaker”, page 26](#)

2.1 Components of sound system

Vehicles with 4 loudspeakers

The sound systems of a vehicle with 4 loudspeakers comprises the following components:

- ◆ two loudspeakers (treble loudspeaker and bass loudspeaker) in each of the front doors
- ◆ Control unit 1 for information electronics - J794- in centre of dash panel/in glove compartment

Vehicles with 8 loudspeakers

The sound system in a vehicle with 8 loudspeakers comprises the following components:

- ◆ two loudspeakers (treble loudspeaker and bass loudspeaker) in each of the front doors
- ◆ two loudspeakers (treble loudspeaker and bass loudspeaker) in each of rear doors (left and right)
- ◆ Control unit 1 for information electronics - J794- in centre of dash panel/in glove compartment

Vehicles with “Dynaudio” sound system

On vehicles equipped with “Dynaudio” sound system, the sound system comprises the following components:

- ◆ two loudspeakers (treble loudspeaker and bass loudspeaker) in each of the front doors
- ◆ two loudspeakers (treble loudspeaker and bass loudspeaker) in each of rear doors (left and right)
- ◆ Centre loudspeaker - R208- in centre of dash panel
- ◆ Subwoofer - R211- in spare wheel well
- ◆ The digital sound package control unit - J525- is installed under the front left seat.
- ◆ Control unit 1 for information electronics - J794- in glove box

Data exchange between control unit 1 for information electronics - J794- and digital sound package control unit - J525- is realised via MOST bus.



Notes on MOST bus

Apart from the CAN bus, the optical data bus "MOST bus" is used.

Optical fibre conductors are used as "connecting cables". For protection purposes, optical fibre conductors are run through corrugated pipes.

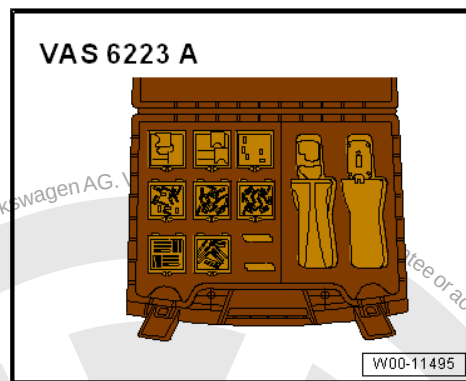
As far as possible, renew the complete optical fibre conductor.

Make sure that the cross-cut ends of connectors are not dirty.

If connectors are separated, attach protective cap for cable-set connector - VAS 6223/9- .

When routing the optical fibre conductor, make sure that the minimum bending radius of 25 mm is observed. Optical fibre conductors must not be kinked or pinched.

Repairs to fibre optic cables ⇒ [page 1](#) .



2.2 Overview of fitting locations - sound system

1 - Front treble loudspeaker

- ❑ Front left treble loudspeaker - R20-
- ❑ Front right treble loudspeaker - R22-
- ❑ At top in front door trim
- ❑ Removing and installing ⇒ [page 22](#)

2 - Centre loudspeaker - R208-

- ❑ In dash panel in the middle
- ❑ Removing and installing ⇒ [page 26](#)

3 - Rear treble speaker

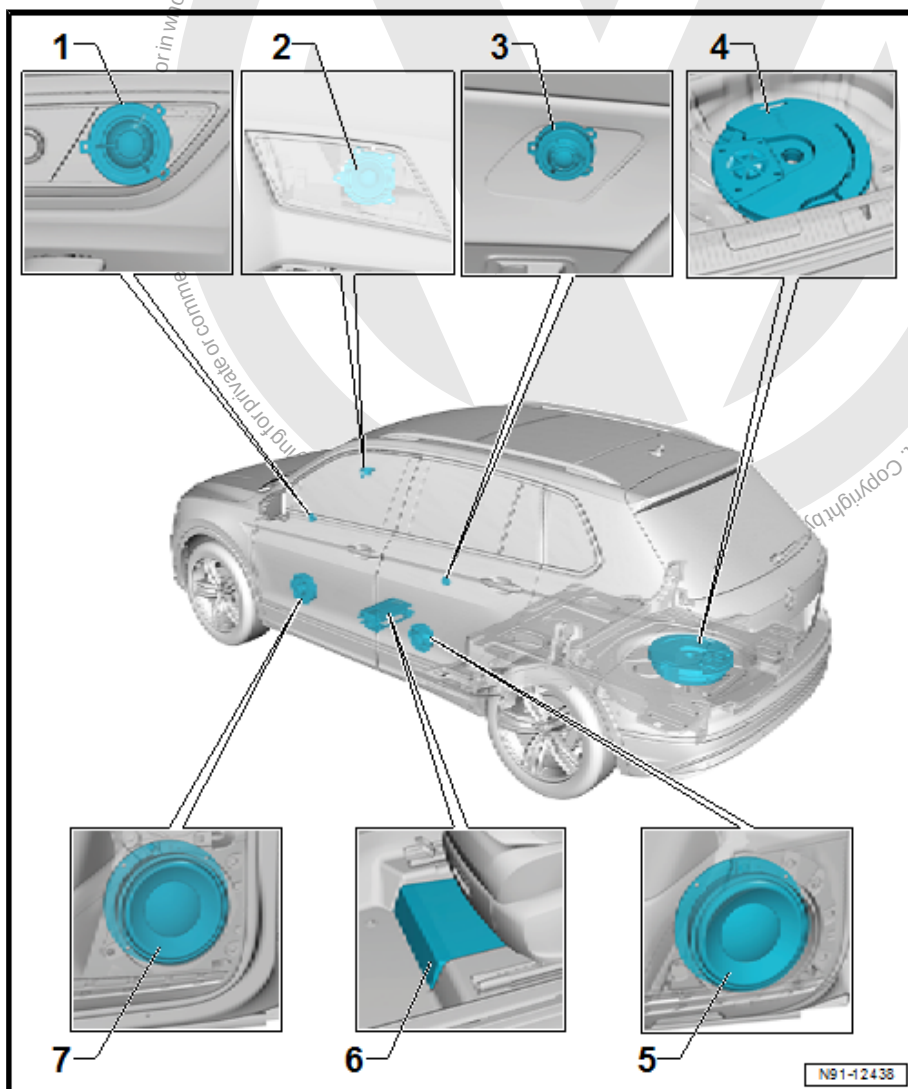
- ❑ Treble loudspeaker, rear left - R14-
- ❑ Treble loudspeaker, rear right - R16-
- ❑ In centre of rear door trim panels
- ❑ Removing and installing ⇒ [page 21](#)

4 - Subwoofer - R211-

- ❑ In spare wheel well
- ❑ Removing and installing ⇒ [page 25](#)

5 - Rear bass speaker

- ❑ Bass loudspeaker, rear left - R15-
- ❑ Bass loudspeaker, rear right - R17-
- ❑ At bottom of rear doors





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

6 - Digital sound package control unit - J525-

- ❑ Under left front seat
- ❑ Removing and installing ⇒ [page 19](#)

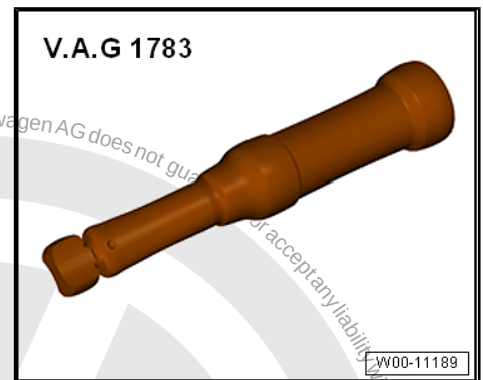
7 - Front bass loudspeaker

- ❑ Bass loudspeaker, front left - R21-
- ❑ Bass loudspeaker, front right - R23-
- ❑ At bottom of front doors
- ❑ Removing and installing ⇒ [page 24](#)

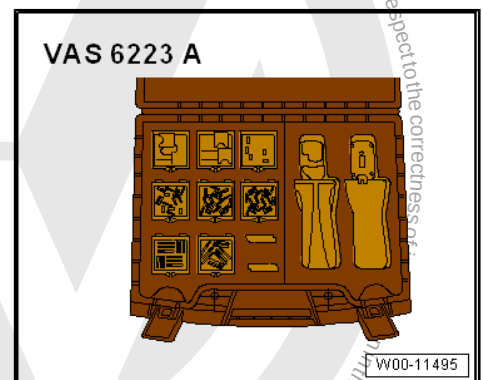
2.3 Removing and installing digital sound package control unit/amplifier

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



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



Remove digital sound package control unit - J525- ⇒ [page 20](#)

Remove retainer for digital sound package control unit - J525-
⇒ [page 21](#)

Electrical connectors on digital sound package control unit - J525-
⇒ [page 21](#)

Installing ⇒ [page 21](#)



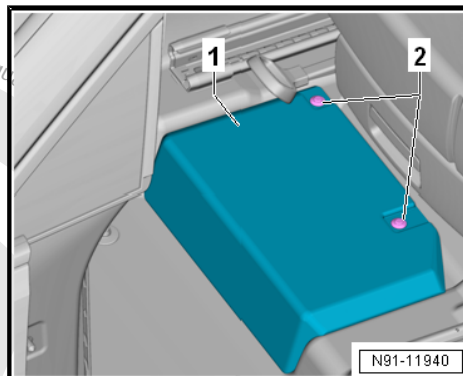
Note

*If the control unit 1 for information electronics - J794- is renewed,
start the respective function ⇒ Vehicle diagnostic tester.*

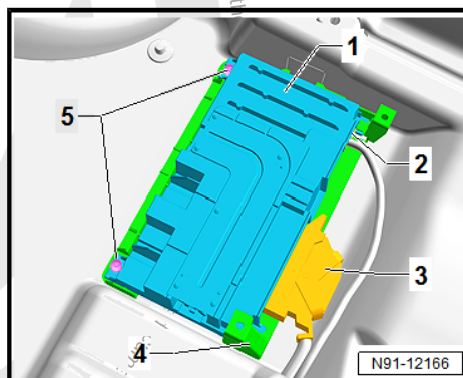


Remove digital sound package control unit - J525-

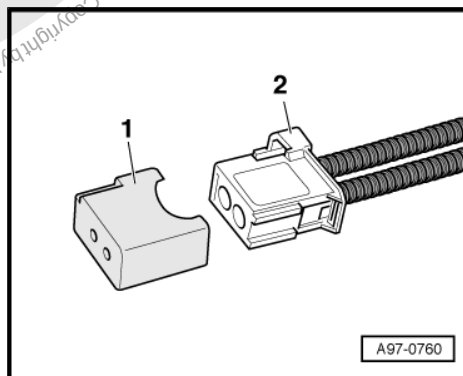
- Move front seat to highest and rearmost position.
- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Pull out expansion rivets -2-.
- Push cover -1- straight in direction of travel and remove it.



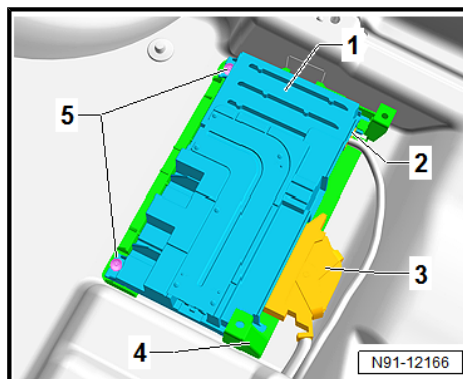
- Release and separate electrical connector of MOST bus -2- on digital sound package control unit - J525- -1-.



- Attach protective cap for cable-set connector - VAS 6223/9- -1- by plugging it on the connector of MOST bus -2-.



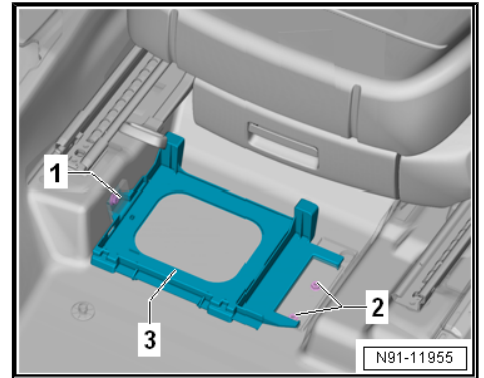
- Release and disconnect connector -3- on digital sound package control unit - J525- -1-.
- Unscrew bolts -5-.
- Pull out digital sound package control unit - J525- -1- from retainer -4- in direction of normal travel.





Remove retainer for digital sound package control unit - J525-

- If necessary, fold back floor covering and floor insulation on centre tunnel and on floor panel.
- Unscrew nuts -2- on floor.
- Unscrew bolt -1- on centre tunnel.
- Remove retainer from digital sound package control unit - J525- -3-.



Electrical connectors on digital sound package control unit - J525-

- 1 - Multi-pin connector, 38-pin
- 2 - MOST bus, 2-pin

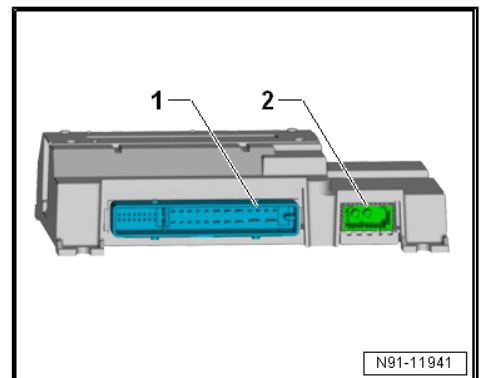
Installing

Install in the reverse order of removal observing the following:



Note

- ◆ When installing, ensure that the digital sound package control unit - J525- is seated correctly in the groove of the retainer.
- ◆ When installing the cover, ensure that it is properly fitted on the front edge of the retainer.



Specified torques

Component	Specified torque
Bolt digital sound package control unit - J525- on retainer	3 Nm
Bolt for retainer on middle tunnel	6 Nm
Nuts for retainer on floor	6 Nm

2.4 Removing and installing rear treble loudspeakers -R14- / -R16-

Rear left treble loudspeakers - R14- / rear right treble loudspeakers - R16- are located in centre of rear door trim panels.



Note

- ◆ Rear left treble loudspeaker - R14- / rear right treble loudspeaker - R16- are renewed together with loudspeaker trim.
- ◆ Removal and installation are described only for the left side. The removal and installation procedure on the right-hand side is basically the same.

Removing

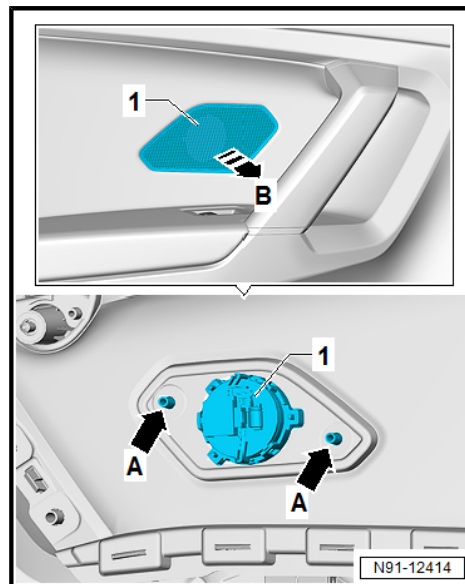
- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove rear left door trim ⇒ General body repairs, interior; Rep. gr. 70 ; Rear door trims; Removing and installing rear door trim .



Caution

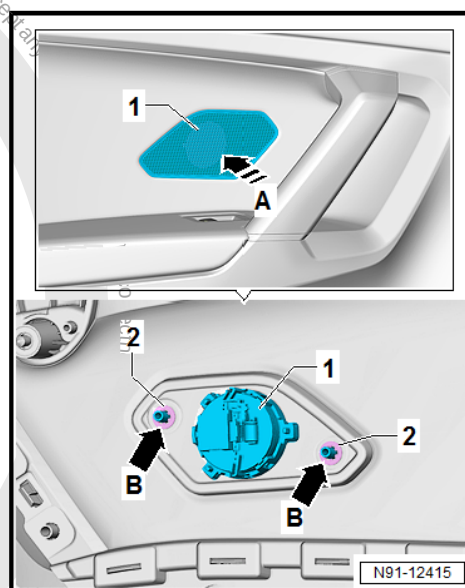
The door trim must not be damaged when drilling.

- Carefully and in succession, release attachment points -arrows A- at trim using a suitable drill bit.
- Remove rear left treble loudspeaker - R14- with trim -1- from rear door trim panel in direction of -arrow B-.



Installing

- Insert new rear left treble loudspeaker - R14- with trim -1- in rear door trim panel in direction of -arrow A-.
- Press clamping washers -2- onto pins -arrows B- of trim as far as they will go.
- Cut back pin protrusion -arrows B- above clamping washers -2- on trim to max. 2 mm.
- Remove left rear door trim ⇒ General body repairs, interior; Rep. gr. 70 ; Rear door trims; Removing and installing rear door trim .



2.5 Removing and installing front treble loudspeakers -R20- / -R22-

Front left treble loudspeaker -R20- / front right treble loudspeaker - R22- are located in interior door handles of front door trim panel.

Front left treble loudspeaker - R20- / front right treble loudspeaker - R22- are renewed together with front interior door handle.

- Removing and installing interior door handle ⇒ General body repairs, interior; Rep. gr. 70 ; Front door trim; Removing and installing interior door handle .

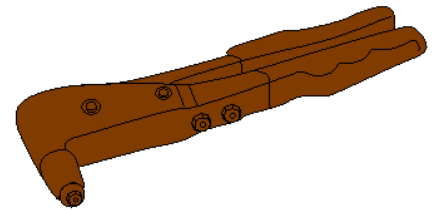
2.6 Removing and installing rear bass loudspeakers -R15- / -R17-

Special tools and workshop equipment required



◆ Pop rivet pliers - VAS 5072 A-

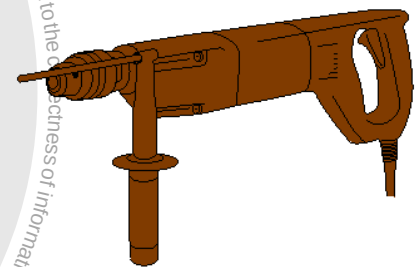
VAS 5072 A



W00-11780

◆ Hand drill - VAS 6267 A-

VAS 6267 A



W00-11779

◆ Suitable twist bit

Rear left bass loudspeakers - R15- / rear right bass loudspeakers - R17- are located in rear doors (bottom).

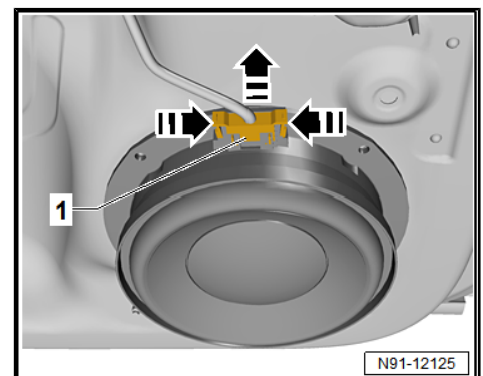


Note

Removal and installation are described only for the left side. The removal and installation procedure on the right-hand side is basically the same.

Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove rear left door trim ⇒ General body repairs, interior; Rep. gr. 70 ; Rear door trims; Removing and installing rear door trim .
- Release electrical connector -1- on rear left bass loudspeaker - R15- in direction of -arrow- and pull off.



N91-12125



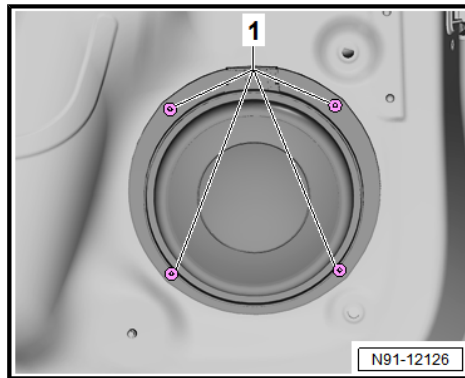
- Drill out pop rivets -1- using drill - VAS 5134- and a suitable drill bit.
- Remove rear left bass loudspeaker - R15- from inner door panel.



Caution

It is essential that all swarf be removed from the door because otherwise corrosion damage will occur.

Immediately rectify any paintwork damage caused when drilling out the rivets.



Installing

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



Note

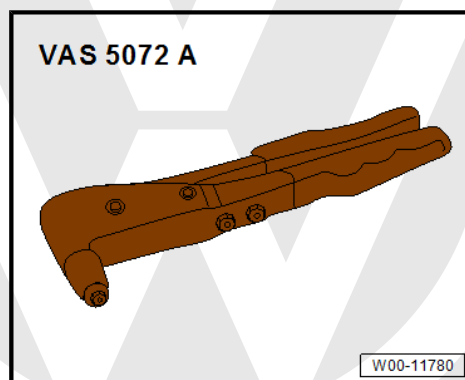
Only secure the loudspeaker using the specified pop rivets ⇒ Electronic parts catalogue (ETKA).

- Install pop rivets with pop rivet pliers - VAS 5072- .

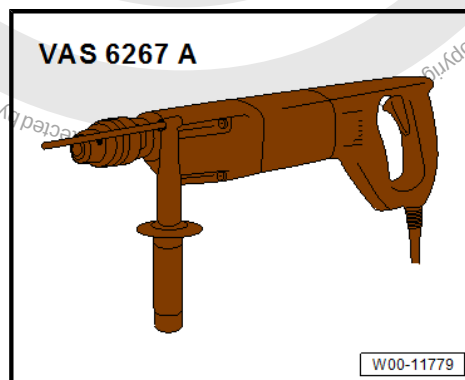
2.7 Removing and installing front bass loudspeakers -R21- / -R23-

Special tools and workshop equipment required

- ♦ Pop rivet pliers - VAS 5072 A-



- ♦ Hand drill - VAS 6267 A-



- ♦ Suitable twist bit

The front left bass loudspeaker - R21- and the front right bass loudspeaker - R23- are located in the front doors (bottom).



Note

Removal and installation are described only for the left side. The removal and installation procedure on the right-hand side is basically the same.

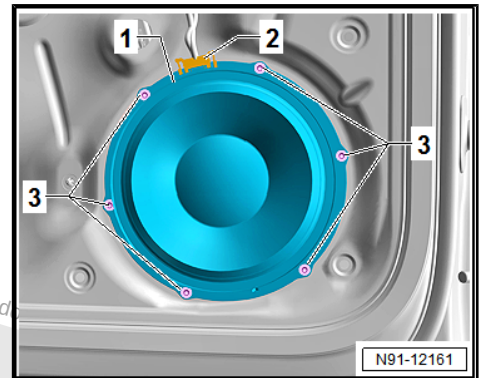
Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove front left door trim ⇒ General body repairs, interior; Rep. gr. 70 ; Front door trims; Removing and installing front door trim .
- Release electrical connector -2- and pull off.
- Drill out pop rivets -3- using drill - VAS 5134- and a suitable drill bit.
- Remove front left bass loudspeaker - R21- -1- from inner door panel.



Caution

It is essential that all swarf be removed from the door because otherwise corrosion damage will occur.
Immediately rectify any paintwork damage caused when drilling out the rivets.



Installing

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



Note

Only secure the loudspeaker using the specified pop rivets ⇒ Electronic parts catalogue (ETKA) .

- Install pop rivets with pop rivet pliers - VAS 5072- .

2.8 Removing and installing subwoofer - R211-

The subwoofer - R211- is located in the spare wheel well.

Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove luggage compartment floor from vehicle towards rear.



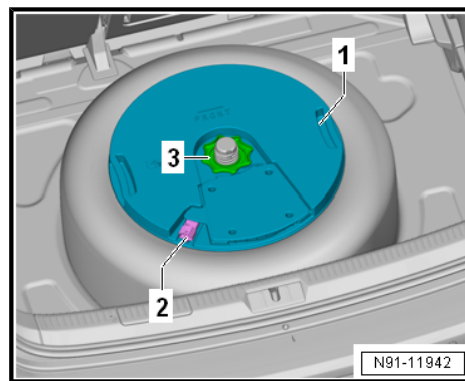
- Release electrical connector -2- on subwoofer - R211- -1- and pull off.
- Unscrew nut -3- on subwoofer - R211- -1-.
- Lift out subwoofer - R211- -1-.

Installing

Install in reverse order of removal.

Specified torques

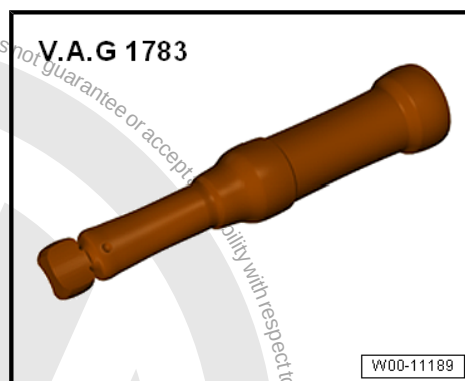
Component	Specified torque
Nut on subwoofer - R211-	6 Nm



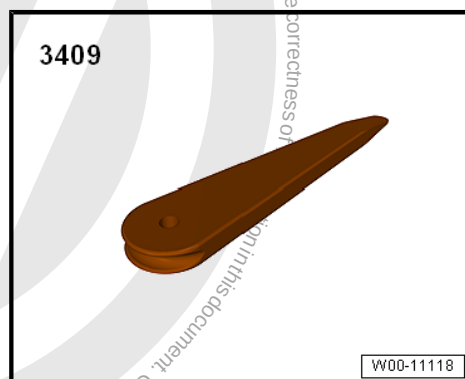
2.9 Removing and installing centre loudspeaker

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



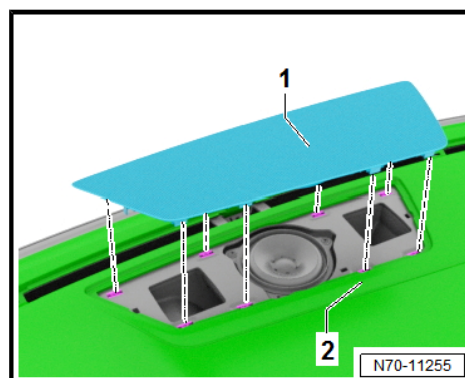
- ◆ Removal wedge - 3409-



The centre loudspeaker - R208- is located in centre of dash panel at front.

Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Using removal wedge - 3409- , carefully unclip loudspeaker trim -1- from mountings in dash panel -2-.





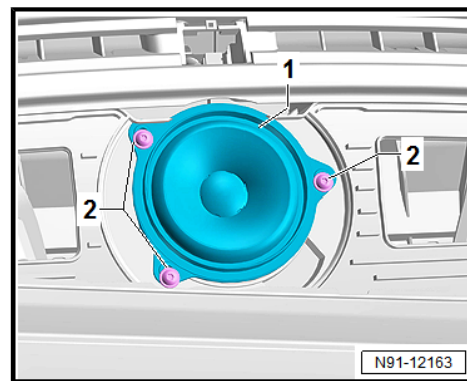
- Unscrew bolts -2-.
- Pull centre loudspeaker - R208- -1- upwards out of dash panel until connector becomes accessible.
- Release and disconnect connector on centre loudspeaker - R208- -1-.
- Remove centre loudspeaker - R208- -1-.

Installing

Installation is carried out in the reverse sequence of removal.

Specified torques

Component	Specified torque
Centre loudspeaker - R208- to dash panel	4.5 Nm





3 Aerial systems

- ⇒ ["3.1 Components of aerial systems", page 28](#)
- ⇒ ["3.2 Overview of fitting locations - aerial systems", page 28](#)
- ⇒ ["3.3 Removing and installing aerial module", page 30](#)
- ⇒ ["3.4 Removing and installing aerial amplifier", page 31](#)
- ⇒ ["3.5 Removing and installing amplitude modulation \(AM\) frequency filter R177", page 32](#)
- ⇒ ["3.6 Removing and installing frequency modulation \(FM\) frequency filter R178 / R179", page 33](#)
- ⇒ ["3.7 Removing and installing roof aerial", page 34](#)
- ⇒ ["3.8 Removing and installing right bumper aerial", page 35](#)

3.1 Components of aerial systems

The aerial system comprises the roof aerial and the window aers in the rear window with the corresponding frequency filters.

Window aerals:

- ◆ Radio aerial - R248- / TV aerial 1 - R55- to right aerial module - R109- on top right of rear lid
- ◆ Radio aerial 2 - R93- / digital radio aerial - R183- to left aerial module - R108- on top left on rear lid
- ◆ TV aerial 2 - R56- to aerial amplifier 1 for TV - R82- on bottom right of rear lid
- ◆ TV aerial 3 - R57- to aerial amplifier 2 for TV - R83- on bottom left of rear lid

Roof aerial - RX5- (depending on vehicle equipment):

- ◆ GPS aerial - R50-
- ◆ GSM aerial - R205-
- ◆ Auxiliary heater aerial - R182-

Frequency filter for window aerals:

- ◆ Amplitude modulation (AM) frequency filter - R177- on bottom right of rear lid
- ◆ Frequency modulation (FM) frequency filter in negative wire - R178- on window frame, right of rear lid
- ◆ Frequency modulation (FM) frequency filter in positive wire - R179- on window frame, left of rear lid

Repair of aerial wires ⇒ [page 1](#) .

3.2 Overview of fitting locations - aerial systems



1 - Aerial amplifier 2 for TV - R83-

- ☐ At bottom left of rear lid
- ☐ Belongs to TV aerial 3 - R57-
- ☐ Impedance transformer TV3
- ☐ Removing and installing ⇒ [page 31](#)

2 - Amplitude modulation (AM) frequency filter - R177-

- ☐ On rear lid (bottom right)
- ☐ Prevents aerial signals from being short-circuited to earth
- ☐ Removing and installing ⇒ [page 32](#)

3 - Aerial amplifier 1 for TV - R82-

- ☐ On rear lid (bottom right)
- ☐ Belongs to TV aerial 2 - R56-
- ☐ Impedance transformer TV2
- ☐ Removing and installing ⇒ [page 31](#)

4 - Frequency modulation (FM) frequency filter in negative wire - R178-

- ☐ On right window frame of rear lid
- ☐ FM trap circuit (-)
- ☐ Prevents aerial signals from being short-circuited to earth
- ☐ Removing and installing ⇒ [page 33](#)

5 - Right aerial module - R109-

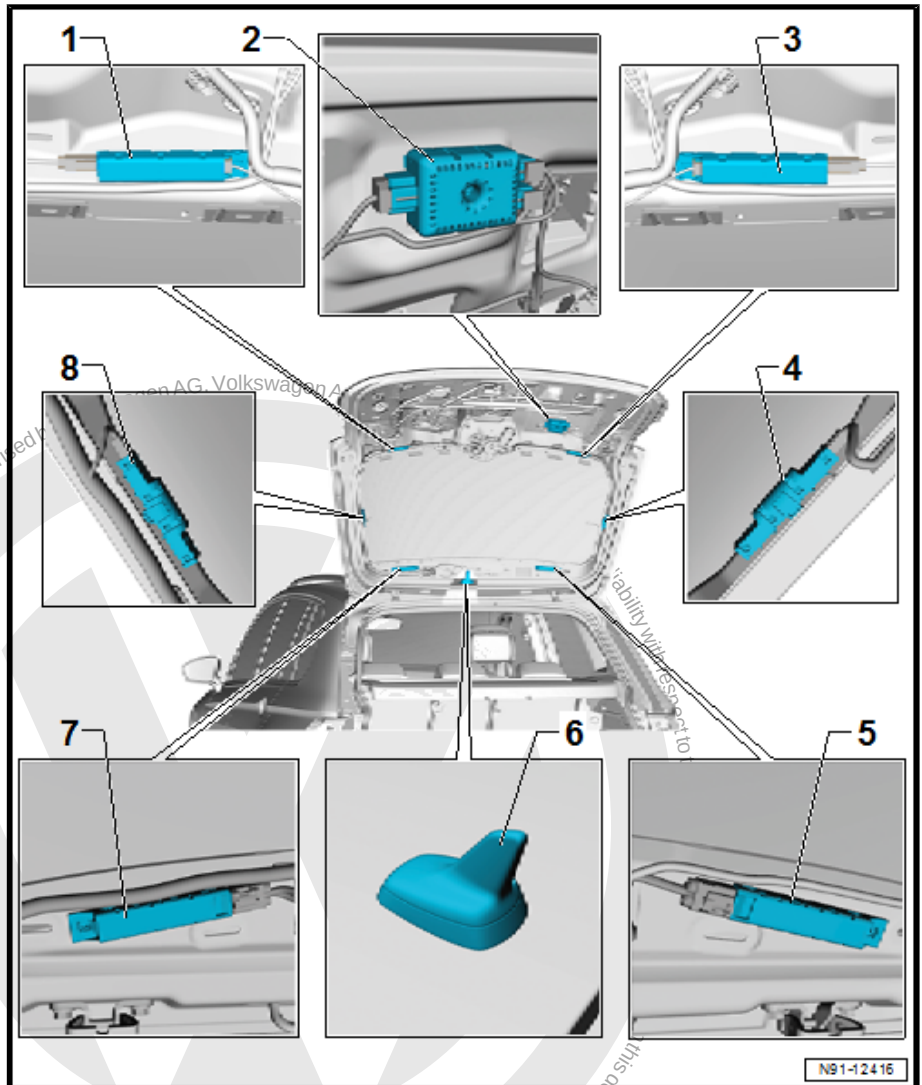
- ☐ On rear lid (top right)
- ☐ Belongs to radio aerial - R248- / TV aerial 1 - R55-
- ☐ Impedance converter AM/FM1/TV1
- ☐ Removing and installing ⇒ [page 30](#)

6 - Roof aerial - RX5-

- ☐ Depending on vehicle equipment:
- ◆ GPS aerial - R50-
- ◆ Auxiliary heater aerial - R182-
- ◆ GSM aerial - R205-
- ☐ Removing and installing ⇒ [page 34](#)

7 - Left aerial module - R108-

- ☐ On rear lid (top left)
- ☐ Belongs to radio aerial 2 - R93- / digital radio aerial - R183-
- ☐ Impedance converter FM2/DAB
- ☐ Removing and installing ⇒ [page 30](#)





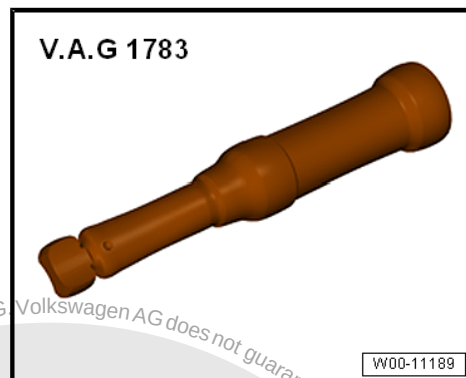
8 - Frequency modulation (FM) frequency filter in positive wire - R179-

- ☐ On left window frame of rear lid
- ☐ FM trap circuit (+)
- ☐ Prevents aerial signals from being short circuited to earth
- ☐ Removing and installing ⇒ [page 33](#)

3.3 Removing and installing aerial module

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



Left aerial module - R108- is installed on top left and right aerial module - R109- is installed on top right of rear lid.

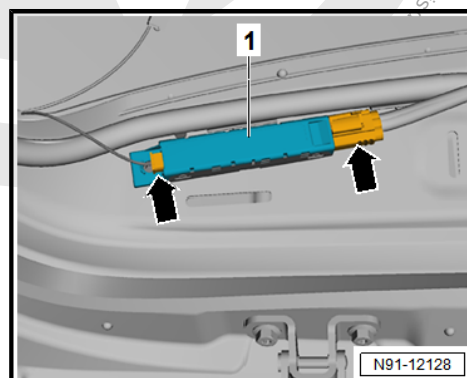


Note

The removal and installation procedure is described for the left aerial module - R108- only. The removal and installation procedure for the right aerial module - R109- is carried out in the same way.

Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove upper rear lid trim ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trims; Removing and installing rear lid trim .
- Release and separate electrical connectors -arrows- on left aerial module - R108- -1-.





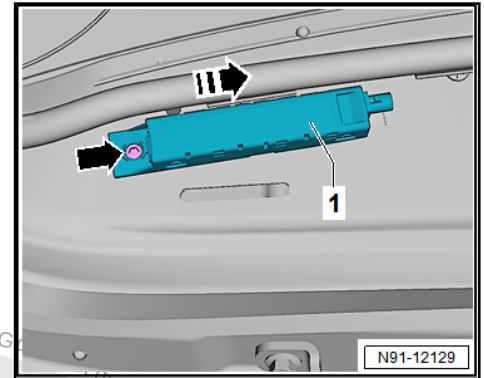
- Loosen bolt -arrow- on left aerial module - R108- -1-.
- Pull out bolt -arrow- with panel clip and left aerial module - R108- -1- from rear lid slightly.
- Push left aerial module - R108- -1- in direction of -arrow- and remove.

Installing

Install in reverse order of removal.

Specified torques

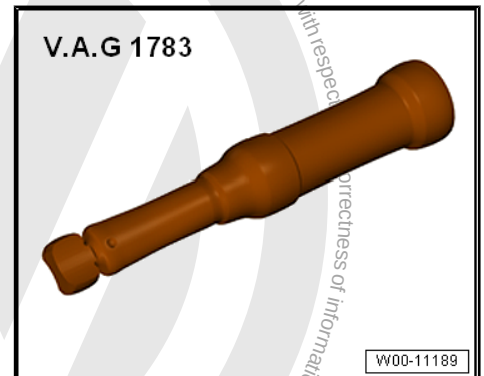
Component	Specified torque
Bolt on left aerial module - R108-	2 Nm



3.4 Removing and installing aerial amplifier

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



Aerial amplifier 1 for TV - R82- is installed on bottom right and aerial amplifier 2 for TV - R83- is installed on bottom left of rear left.



Note

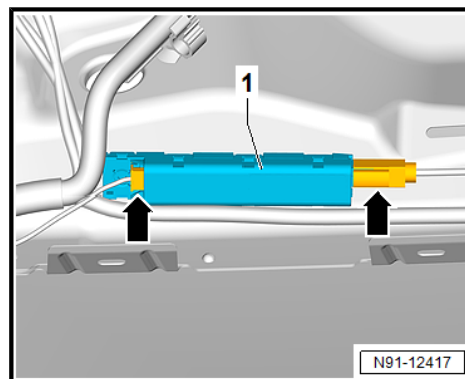
The installation and removal procedure is for aerial amplifier 2 for TV - R83- only. The removal and installation procedure for aerial amplifier 1 for TV - R82- is carried out in the same way.

Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove lower rear lid trim ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trims; Removing and installing lower rear lid trim .



- Release and separate electrical connectors -arrows- on aerial amplifier 2 for TV - R83- -1-.



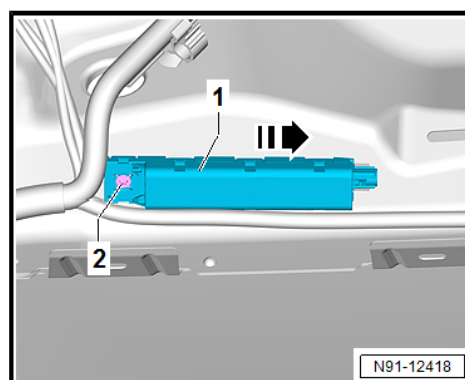
- Loosen bolt -2- on aerial amplifier 2 for TV - R83- -1-.
- Pull out bolt -2- with panel clip and aerial amplifier 2 for TV - R83- -1- from rear lid slightly.
- Push aerial amplifier 2 for TV - R83- -1- in direction of -arrow B- and remove.

Installing

Install in reverse order of removal.

Specified torques

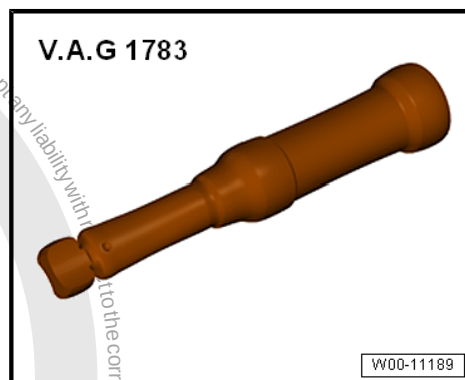
Component	Specified torque
Bolt on aerial amplifier 2 for TV - R83-	2 Nm



3.5 Removing and installing amplitude modulation (AM) frequency filter - R177-

Special tools and workshop equipment required

- ♦ Torque wrench - V.A.G 1783-



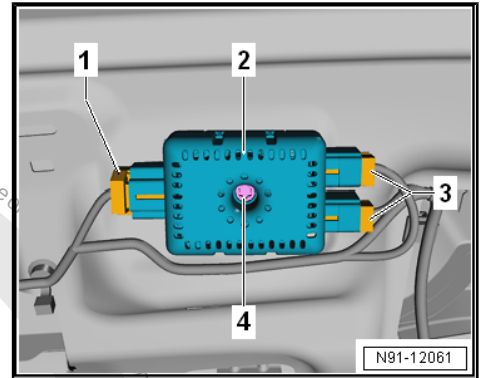
Amplitude modulation (AM) frequency filter - R177- is located on bottom right of rear lid.

Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove lower rear lid trim ⇒ General body repairs, interior; Rep. gr. 70; Luggage compartment trims; Removing and installing lower rear lid trim .



- Release and separate electrical connectors -1- and -3- on amplitude modulation (AM) frequency filter - R177- -2-.
- Unscrew bolt -4- on amplitude modulation (AM) frequency filter - R177- -2-.



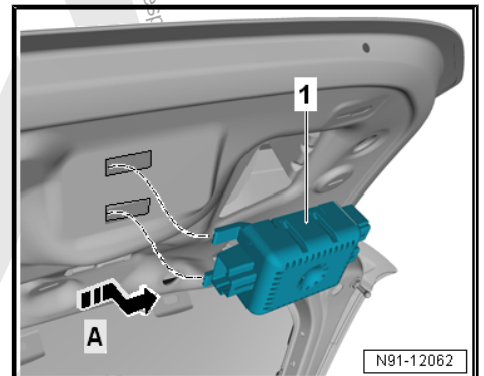
- Remove amplitude modulation (AM) frequency filter - R177- -1- in direction of -arrow A- from rear lid taking locking lugs into account.

Installing

Install in reverse order of removal.

Specified torques

Component	Specified torque
Bolt on amplitude modulation (AM) frequency filter - R177-	6 Nm



3.6 Removing and installing frequency modulation (FM) frequency filter R178 / R179

The frequency modulation (FM) frequency filter in negative wire - R178- is located on right window frame of rear lid.

The frequency modulation (FM) frequency filter in positive wire - R179- is located on left window frame of rear lid.



Note

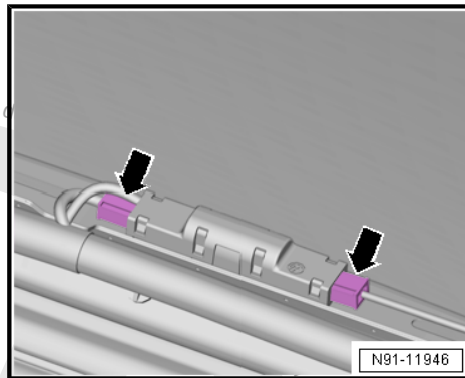
- ◆ The removal and installation procedures are described for the frequency modulation (FM) frequency filter in negative wire - R178-.
- ◆ Removal and installation of the frequency modulation (FM) frequency filter in positive wire - R179- are carried out in the same way.

Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove upper rear lid trim ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trims; Removing and installing upper rear lid trim .



- Release and separate electrical connectors -arrows- on frequency modulation (FM) frequency filter in negative wire - R178- .

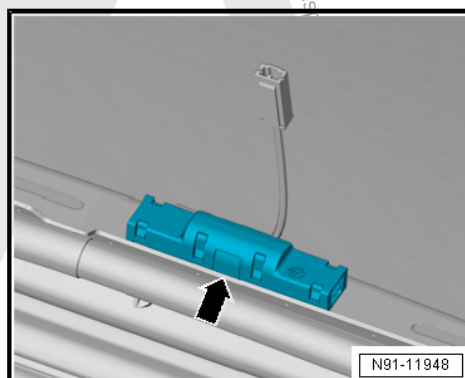


- Carefully lever out frequency modulation (FM) frequency filter in negative wire - R178- -arrow-, and remove it.

Installing

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

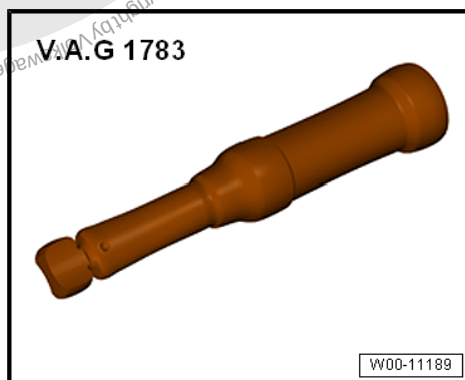
- Frequency modulation (FM) frequency filter in negative wire - R178- must engage audibly.



3.7 Removing and installing roof aerial

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



Aerial wirings are directly plugged at the base of roof aerial - RX5- .

Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Lower moulded headliner at rear ⇒ General body repairs, interior; Rep. gr. 70 ; Roof trim panels; Removing and installing moulded headliner .



- Release and separate electrical connectors -arrows- depending on vehicle equipment level.
- Loosen bolt -2-.
- Remove roof aerial - RX5- -1- upwards from roof.

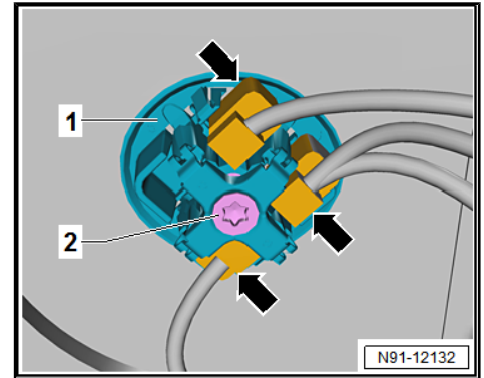
Installing

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

- Fit roof aerial - RX5- -2- onto roof, and press it on until it engages.

Specified torques

Component	Specified torque
Bolt on roof aerial - RX5-	6 Nm



3.8 Removing and installing right bumper aerial

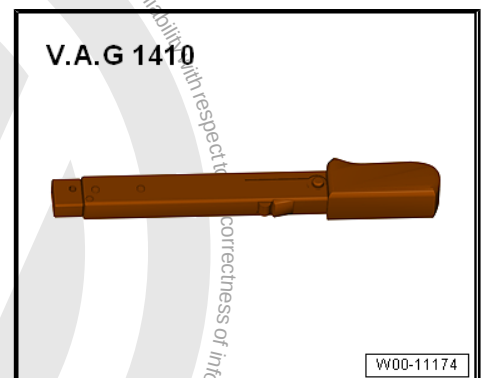
⇒ [“3.8.1 Removing and installing right bumper aerial, vehicles without towing bracket”, page 35](#)

⇒ [“3.8.2 Removing and installing right bumper aerial, vehicles with towing bracket”, page 36](#)

3.8.1 Removing and installing right bumper aerial, vehicles without towing bracket

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-



The right bumper aerial is located behind the rear right section of the bumper cover in the form of a GSM aerial - R205- only in vehicles with PR No. EL2/EL5, depending on equipment.

Removing

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



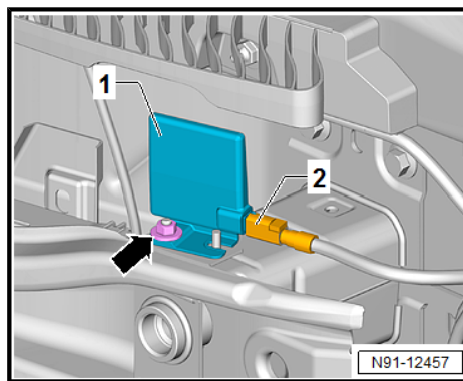
- Release and disconnect electrical connector -2-.
- Unscrew nut -arrow-.
- Remove bumper aerial -1- from impact bar.

Installing

Installation is carried out in the reverse sequence of removal.

Specified torques

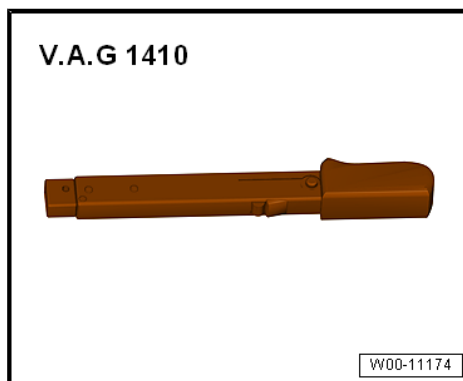
Component	Specified torque
Bumper aerial to impact bar	6 Nm



3.8.2 Removing and installing right bumper aerial, vehicles with towing bracket

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-



The right bumper aerial is located behind the rear right section of the bumper cover in the form of a GSM aerial - R205- only in vehicles with PR No. EL2/EL5, depending on equipment.

Removing

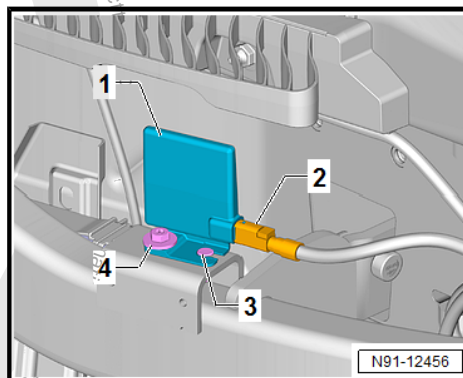
- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove rear bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Rear bumper; Removing and installing bumper cover .
- Release and disconnect electrical connector -2-.
- Remove spreader rivet -3-.
- Unscrew bolt -4-.
- Remove bumper aerial -1- from towing bracket.

Installing

Installation is carried out in the reverse sequence of removal.

Specified torques

Component	Specified torque
Bumper aerial to towing bracket	6 Nm





4 Radio

⇒ ["4.1 Components of radio system", page 37](#)

⇒ ["4.2 Removing and installing radio", page 37](#)

4.1 Components of radio system

⇒ ["4.1.1 Overview - radio, Composition Touch and Composition Colour version", page 37](#)

⇒ ["4.1.2 Components of radio, Composition Media", page 37](#)

4.1.1 Overview - radio, Composition Touch and Composition Colour version

The radio function is integrated in the control unit 1 for information electronics - J794- and installed in the centre of the dash panel.

Additional information ⇒ [page 4](#) .



Note

Fault finding is performed using ⇒ Vehicle diagnostic tester.

4.1.2 Components of radio, Composition Media

Radio function is integrated in control unit 1 for information electronics - J794- and installed in glove compartment.

Additional information ⇒ [page 7](#) .



Note

Fault finding is performed using ⇒ Vehicle diagnostic tester.

4.2 Removing and installing radio

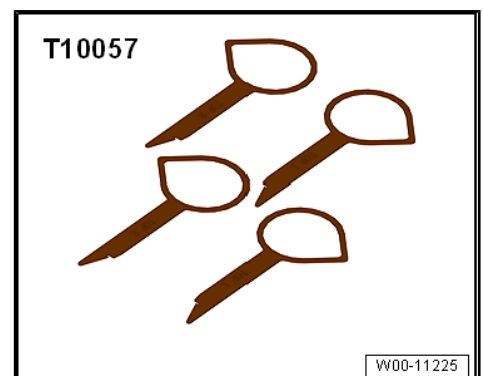
⇒ ["4.2.1 Removing and installing radio, Composition Touch and Composition Colour", page 37](#)

⇒ ["4.2.2 Removing and installing radio, Composition Media", page 38](#)

4.2.1 Removing and installing radio, Composition Touch and Composition Colour

Special tools and workshop equipment required

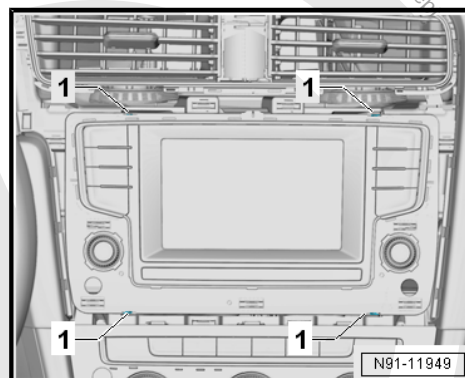
- ◆ Radio release tool - T10057-





Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove centre dash panel trim ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing mounting frame for radio/navigation system .
- Insert radio release tools - T10057- into slots -1- of radio.
- The pointed projections on the grip rings of radio release tools - T10057- must point outwards.



- Release upper locking elements -1- by pressing them in direction of travel.
- Release lower locking elements -1- by pressing them in direction of travel.
- Pull out radio -2-.
- Release and disconnect connectors.

Installing

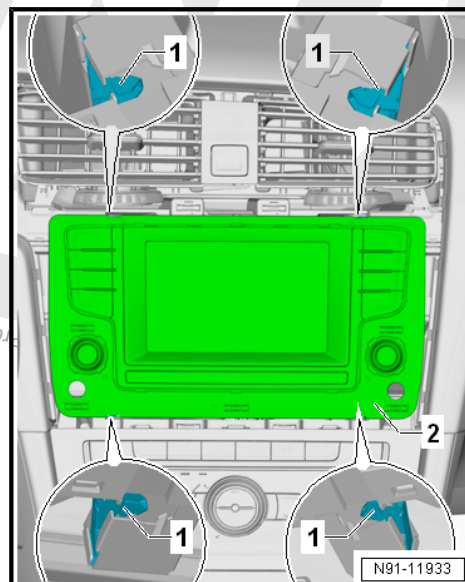
Install in the reverse order of removal, observing the following:



Caution

Danger of damage to components.

- ◆ *When inserting display unit for control device of front display and information control panel - J685- combined with information electronics control unit 1 - J794- do not press on the display and the control elements.*



- Slide in radio until it engages.

4.2.2 Removing and installing radio, Composition Media

The radio is part of control unit 1 for information electronics - J794- .

- Removing and installing control unit 1 for information electronics - J794- ⇒ [page 15](#) .



5 Telephone system

⇒ [“5.1 Mobile telephone preparation”, page 39](#)

⇒ [“5.2 Overview of fitting locations - telephone system”, page 40](#)

⇒ [“5.3 Removing and installing telephone microphone R38”, page 41](#)

⇒ [“5.4 Removing and installing two-way signal amplifier for mobile telephone/data services J984”, page 42](#)

⇒ [“5.5 Removing and installing storage compartment with interface for mobile telephone R265”, page 43](#)

5.1 Mobile telephone preparation

⇒ [“5.1.1 Mobile telephone preparation, Bluetooth hands-free system”, page 39](#)

⇒ [“5.1.2 Mobile telephone preparation, Bluetooth car phone on-line”, page 40](#)

5.1.1 Mobile telephone preparation, Bluetooth hands-free system

Bluetooth hands-free system is integrated in control unit 1 for information electronics - J794- .

Connection to mobile telephone - R54- is established via Bluetooth.

The aerial for Bluetooth - R152- is integrated in the control unit 1 for information electronics - J794- .

Hands-free system consists of the following components:

- ◆ Display unit for front information display and operating unit control unit - J685-
- ◆ Control unit 1 for information electronics - J794- with aerial for Bluetooth - R152-
- ◆ Telephone microphone - R38-
- ◆ Optional two-way signal amplifier for mobile telephone/data services - J984-
- ◆ Optional storage compartment with interface for mobile telephone - R265-



Note

Fault finding is performed using ⇒ Vehicle diagnostic tester.

Repair of aerial wires ⇒ [page 1](#) .

Notes on Bluetooth technology

A standardised wireless connection is used for transferring data between control unit 1 for information electronics - J794- and mobile telephone - R54- - Bluetooth technology.

An additional transmitter/receiver unit is located in control unit 1 for information electronics - J794- . Wireless operation of the mobile telephone - R152- is realised by the aerial for Bluetooth - J794- which connects the control unit 1 for information electronics - R54- and the mobile telephone - R54- .

The transmission range is approx. 10 m.



5.1.2 Mobile telephone preparation, Bluetooth car phone online

The Bluetooth car phone is integrated in the control unit 1 for information electronics - J794- and is located in the glove compartment.

Connection to mobile telephone - R54- is established via Bluetooth.

The aerial for Bluetooth - R152- is integrated in the control unit 1 for information electronics - J794- .

A WLAN hotspot is integrated to connect WLAN devices. A relevant mobile phone contract is a prerequisite for use.

Hands-free system consists of the following components:

- ◆ Display unit for front information display and operating unit control unit - J685-
- ◆ Control unit 1 for information electronics - J794- with aerial for Bluetooth - R152-
- ◆ Telephone microphone - R38-
- ◆ Optional two-way signal amplifier for mobile telephone/data services - J984-
- ◆ Optional storage compartment with interface for mobile telephone - R265-



Note

Fault finding is performed using ⇒ Vehicle diagnostic tester.

Repair of aerial wires ⇒ [page 1](#) .

Notes on Bluetooth technology

A standardised wireless connection is used for transferring data between control unit 1 for information electronics - J794- and mobile telephone - R54- - Bluetooth technology.

An additional transmitter/receiver unit is located in control unit 1 for information electronics - J794- . Wireless operation of the mobile telephone - R152- is realised by the aerial for Bluetooth - J794- which connects the control unit 1 for information electronics - R54- and the mobile telephone - R54- .

The transmission range is approx. 10 m.

5.2 Overview of fitting locations - telephone system



1 - Telephone microphone - R38-

- ☐ In front interior light - WX1-
- ☐ Removing and installing
⇒ [page 41](#)

2 - Information electronics control unit 1 - J794-

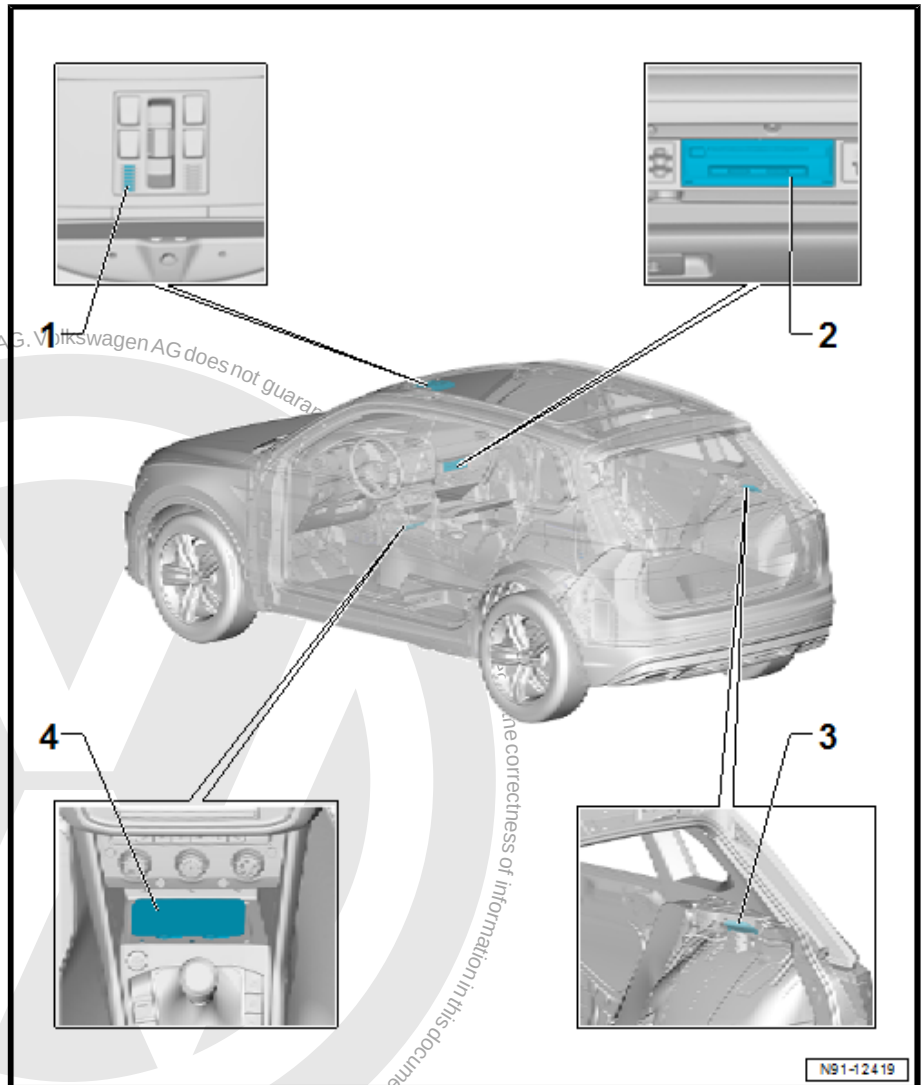
- ☐ In glove compartment.
- ☐ Removing and installing
⇒ [page 15](#)

3 - Two-way signal amplifier for mobile telephone/data services - J984-

- ☐ Behind luggage compartment side trim (right-side)
- ☐ Removing and installing
⇒ [page 42](#)

4 - Storage compartment with interface for mobile telephone - R265-

- ☐ In the front centre console storage compartment
- ☐ Removing and installing
⇒ [page 43](#)



5.3 Removing and installing telephone microphone - R38-

Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove front interior light - WX1- ⇒ Electrical system; Rep. gr. 96 ; Operating elements; Removing and installing interior/reading lights .

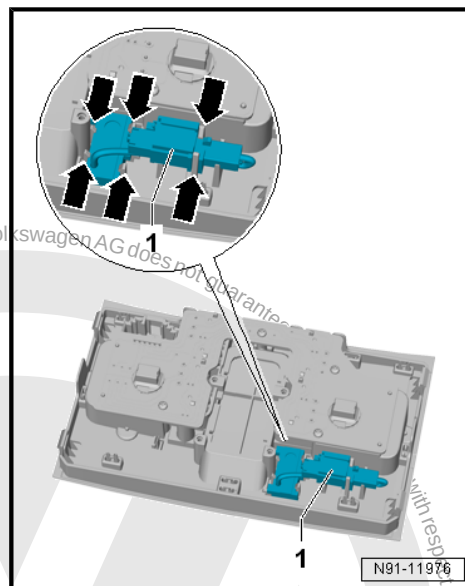


- Release fasteners -arrows-.
- Remove telephone microphone - R38- -1- out of front interior light - WX1- .

Installing

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

- Telephone microphone - R38- must engage audibly in front interior light - WX1- .



5.4 Removing and installing two-way signal amplifier for mobile telephone/data services - J984-

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-

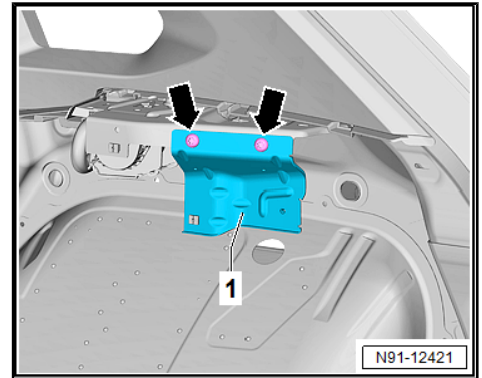


Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove luggage compartment side trim (right-side) ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trims; Removing and installing luggage compartment side trim .



- Remove bolts -arrows-.
- Remove and rotate mounting bracket -1- with two-way signal amplifier for mobile telephone/data services - J984- , allowing for lengths of wiring still connected.

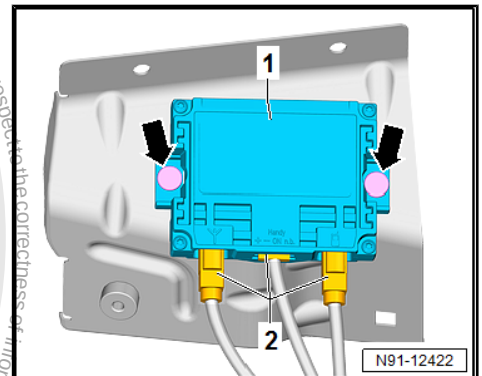


Release and separate electrical connectors -2- on two-way signal amplifier for mobile telephone/data services - J984- -1-.

- Remove spreader rivets -arrows-.
- Remove two-way signal amplifier for mobile telephone/data services - J984- -1- from mounting bracket.

Installing

Install in reverse order of removal.



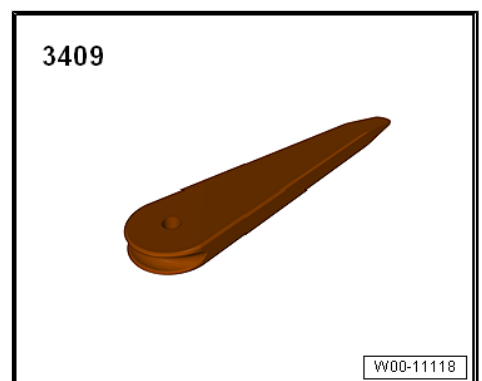
Specified torques

Component	Specified torque
Mounting bracket for body	4.5 Nm

5.5 Removing and installing storage compartment with interface for mobile telephone - R265-

Special tools and workshop equipment required

- ◆ Removal wedge - 3409-



Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove lining mat from storage compartment in front centre console.



Caution

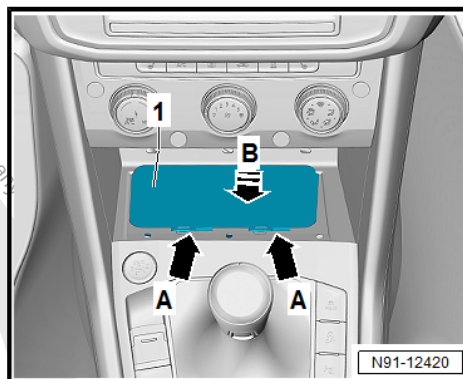
Danger of damage to component surfaces.

- ◆ ***When working with leverage tools, always mask off the components installed in visible areas using commercially available adhesive tape.***

- Unclip catches -arrows A- on storage compartment with interface for mobile telephone - R265- -1- upwards out of storage compartment in front centre console.
- Pull out storage compartment with interface for mobile telephone - R265- -1- in direction of -arrow B- from storage compartment in front centre console, allowing for lengths of wiring still connected.
- Release and separate electrical connectors on storage compartment with interface for mobile telephone - R265- -1-.

Installing

Install in reverse order of removal.





6 Navigation system

⇒ [“6.1 Components of navigation system”, page 45](#)

⇒ [“6.2 Overview of fitting locations - navigation system”, page 45](#)

⇒ [“6.3 Removing and installing control unit for navigation system”, page 46](#)

6.1 Components of navigation system

The navigation system is available as Discover Media and Discover Pro.

The navigation function is integrated in control unit 1 for information electronics - J794- .

For Discover Media version, the navigation data are stored on SD card.

For Discover Pro equipment version, navigation data are stored on an internal hard disk.

Additional information:

- ◆ Discover Media ⇒ [page 7](#)
- ◆ Discover Pro ⇒ [page 10](#)



Note

Fault finding is performed using ⇒ Vehicle diagnostic tester.

6.2 Overview of fitting locations - navigation system



Note

The vehicle shown in the illustration may differ from the actual vehicle.

1 - Display unit for control device of front display and information control panel - J685-

- ☐ In dash panel in the middle
- ☐ Removing and installing
⇒ [page 14](#)

2 - Information electronics control unit 1 - J794-

- ☐ In glove compartment.
- ☐ Removing and installing
⇒ [page 15](#)

3 - GPS aerial - R50-

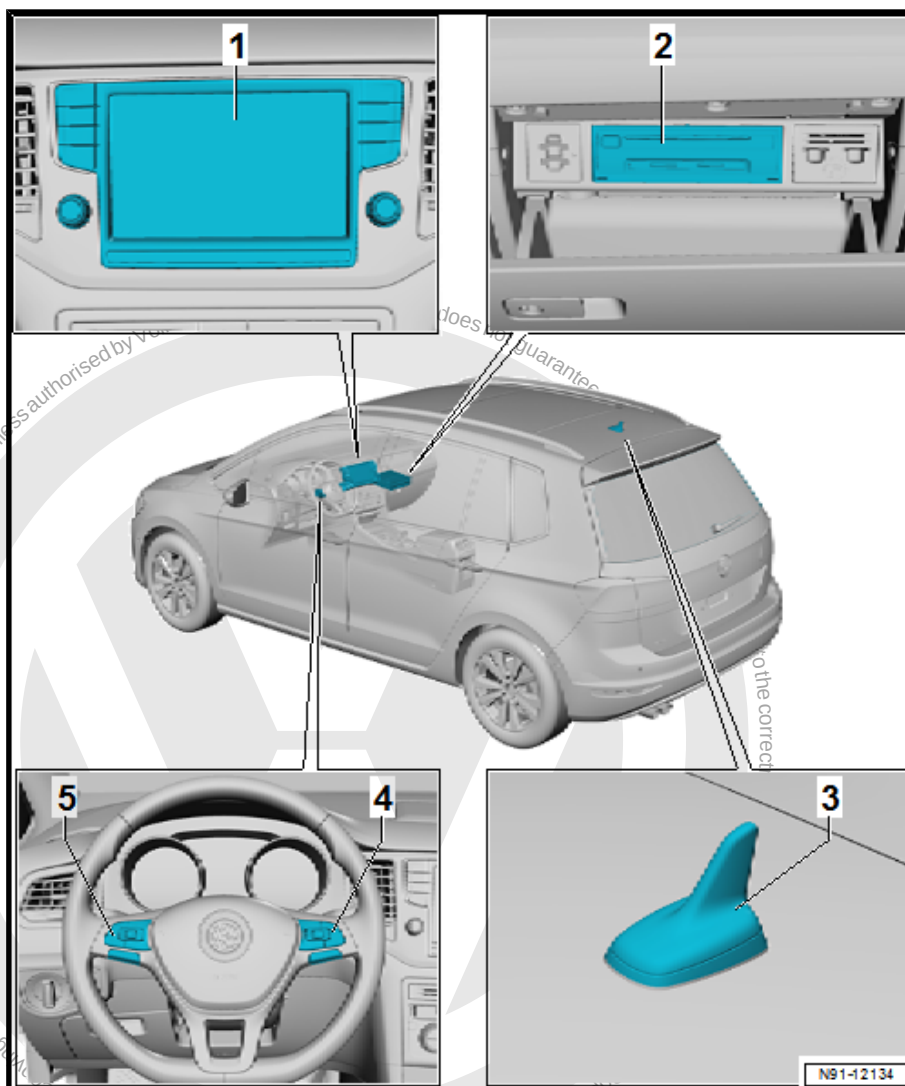
- ☐ In roof aerial - RX5-
- ☐ Removing and installing
⇒ [page 34](#)

4 - Multifunction buttons on right in steering wheel - E441-

- ☐ Removing and installing
⇒ [page 62](#)

5 - Multifunction buttons on left in steering wheel - E440-

- ☐ Removing and installing
⇒ [page 62](#)



6.3 Removing and installing control unit for navigation system

The navigation function is integrated in control unit 1 for information electronics - J794- .

- Removing and installing control unit 1 for information electronics - J794- ⇒ [page 15](#) .



7 TV system

⇒ "7.1 Overview - TV system", page 47

⇒ "7.2 Overview of fitting locations - TV system", page 48

⇒ "7.3 Removing and installing TV tuner", page 48

7.1 Overview - TV system

1 - Display unit for control device of front display and information control panel - J685-

- ☐ In dash panel in the middle
- ☐ Removing and installing ⇒ [page 14](#)

2 - AUX-IN connection in front centre console storage compartment

- ☐ In front storage compartment of centre console depending on equipment level
- ☐ Removing and installing ⇒ [page 67](#)

3 - USB connection in front centre console storage compartment

- ☐ In front storage compartment of centre console depending on equipment level
- ☐ Removing and installing ⇒ [page 66](#)

4 - Information electronics control unit 1 - J794-

- ☐ In glove compartment.
- ☐ Removing and installing ⇒ [page 15](#)

5 - Aerial module/aerial amplifier

- ☐ For TV aerials -R55- / -R56- / -R57-
- ☐ On rear lid
- ☐ Overview of fitting locations ⇒ [page 28](#)

6 - TV tuner - R78-

- ☐ Under front right seat
- ☐ Removing and installing ⇒ [page 48](#)

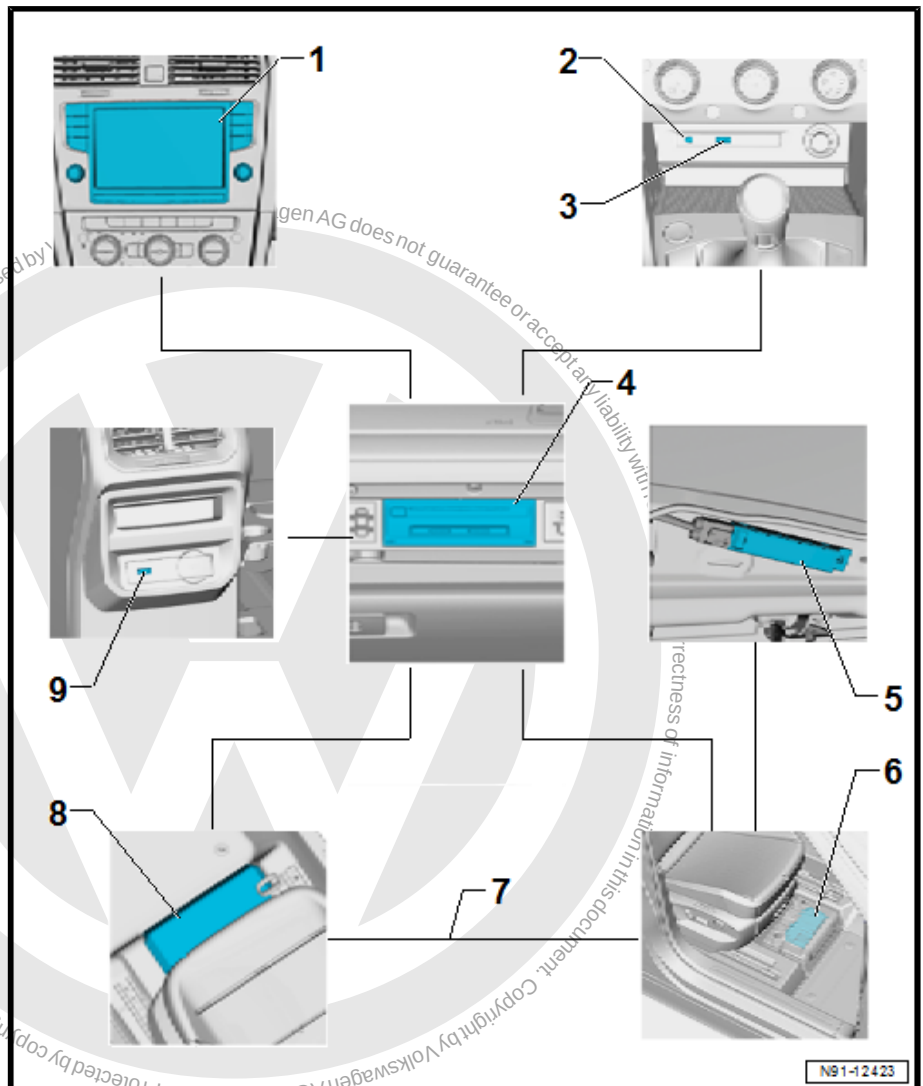
7 - MOST bus

8 - Digital sound package control unit - J525-

- ☐ Under left front seat
- ☐ Removing and installing ⇒ [page 19](#)

9 - USB connection in rear

- ☐ In rear depending on equipment level





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

7.2 Overview of fitting locations - TV system

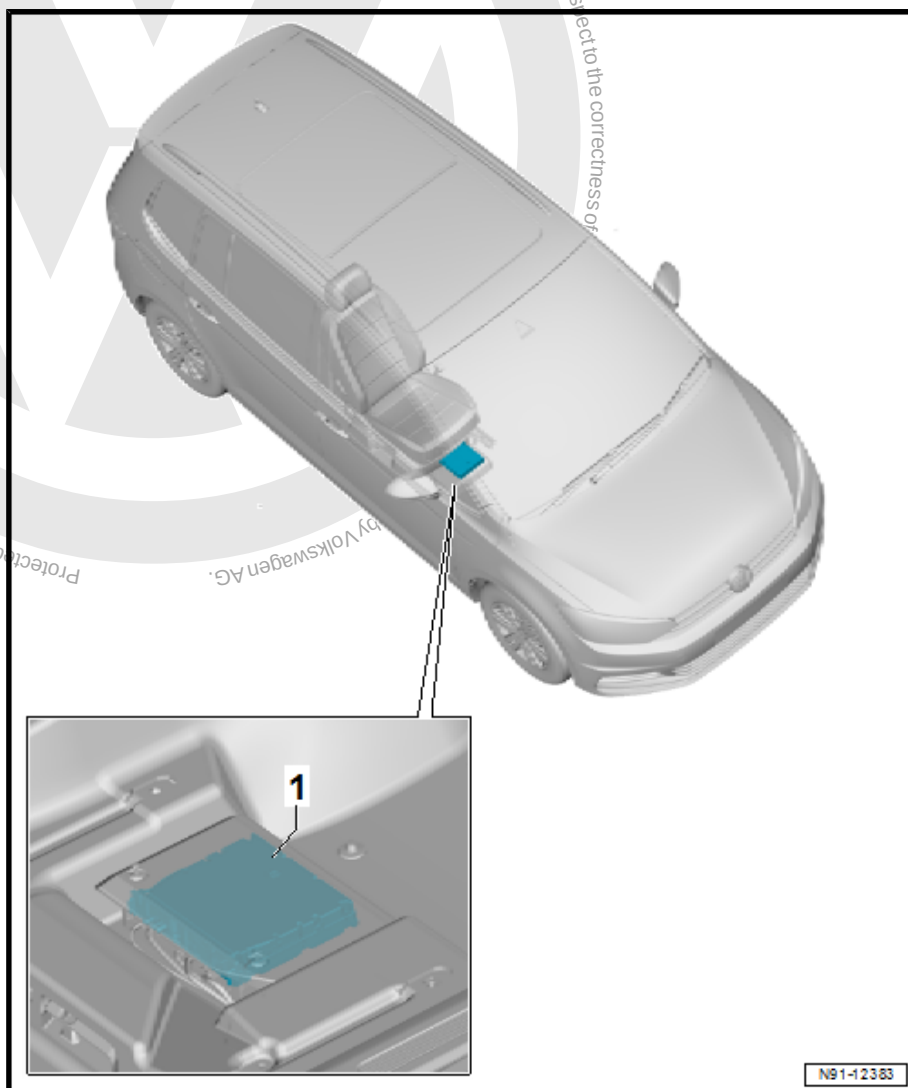


Note

The vehicle shown in the illustration may differ from the actual vehicle.

1 - TV tuner - R78-

- ❑ Under front right seat
- ❑ Removing and installing ⇒ [page 48](#)

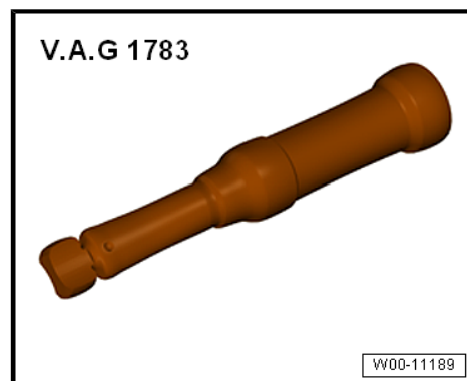


7.3 Removing and installing TV tuner

Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1783-



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



Removing TV tuner - R78- ⇒ [page 49](#)

Removing bracket for TV tuner - R78- ⇒ [page 51](#)

Installing ⇒ [page 51](#)



Note

*If the TV tuner - R78- is renewed, call-up the respective function
⇒ Vehicle diagnostic tester.*

Removing TV tuner - R78-

- Move front seat to rearmost and highest position using longitudinal adjustment mechanism.
- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.



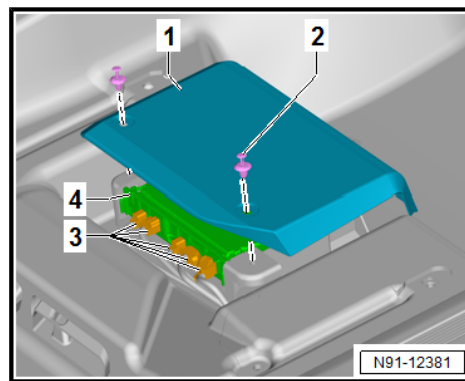
- Pull out expansion rivets -2-.

Vehicles without overhead view camera

- Push cover -1- straight in direction of travel and remove it.

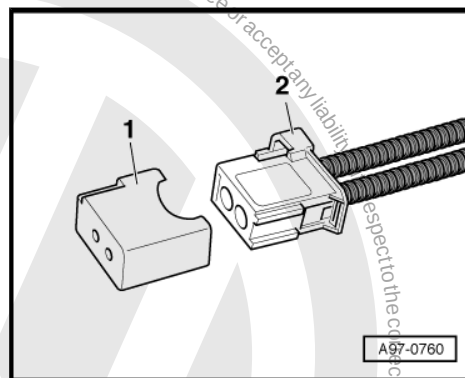
Vehicles with overhead view camera

- Push cover -1- with control unit with overhead view camera - J928- in straight line in direction of normal travel and rotate, allowing for lengths of wiring still connected.
- Release and separate electrical connectors on control unit for overhead view camera - J928- .
- Remove cover -1- with control unit for overhead view camera - J928- .

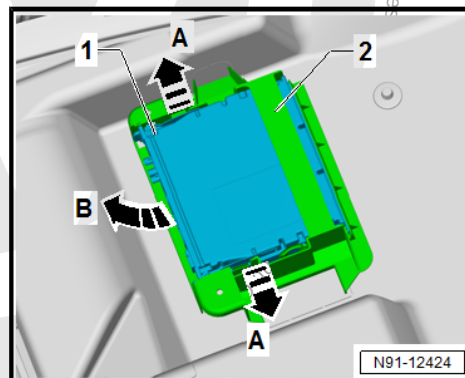


Continued for all vehicles

- Release and separate electrical connectors -3- on TV tuner - R78- -4-.
- Fit protective cap for cable connector - VAS 6223/9- -1- onto MOST bus connector -2-.



- Release locking lug on left and right of bracket -2- in direction of -arrow A-.
- At same time, pull out TV tuner - R78- -1- from bracket -2- in direction of -arrow B-.





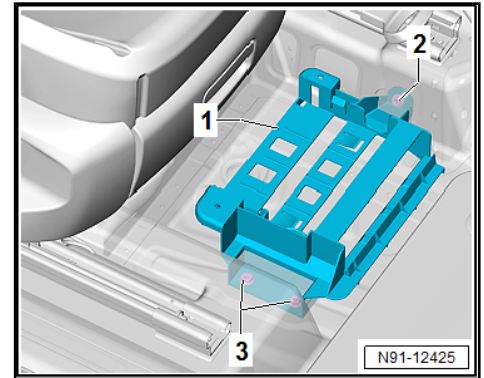
Remove bracket for TV tuner - R78-

- If necessary, fold back floor covering and floor insulation on centre tunnel and on floor panel.
- Unscrew nuts -3- on floor.
- Unscrew bolt -2- on centre tunnel.
- Remove bracket for TV tuner - R78- -1-.

Installing

Install in the reverse order of removal observing the following:

- TV tuner - R78- must engage audibly in bracket.
- Fit cover correctly on front edge of bracket.



Specified torques

Component	Specified torque
Bolt for retainer on middle tunnel	6 Nm
Nuts for retainer on floor	6 Nm





8 Rear view camera system

⇒ ["8.1 Components of rear view camera system", page 52](#)

⇒ ["8.2 Overview of fitting locations - rear view camera system", page 52](#)

⇒ ["8.3 Removing and installing reversing camera R189", page 53](#)

⇒ ["8.4 Removing and installing reversing camera system control unit J772", page 53](#)

⇒ ["8.5 Calibrating reversing camera system", page 54](#)

8.1 Components of rear view camera system

The reversing camera supports the driver during reversing as well as during transverse and longitudinal parking, or during trailer operation. It also helps the driver to keep better track of the cross traffic by providing the driver with an image of the traffic situation behind the vehicle via the display unit for front information display and operating unit control unit - J685- .

The system is switched on by engaging reverse gear.

The reversing camera system consists of the following components:

- ◆ The reversing camera - R189-
- ◆ The reversing camera system control unit - J772- (integrated in reversing camera - R189-)
- ◆ The control unit 1 for information electronics - J794-
- ◆ The display unit for front information display and operating unit control unit - J685-



Note

- ◆ *When handling complaints, it is essential to understand the function and operation of the reversing camera system.*
- ◆ *Additional information can be found in the ⇒ [Operating manual](#) .*
- ◆ *The reversing camera system may have to be recalibrated following repair work on the vehicle ⇒ [page 54](#) .*
- ◆ *Fault finding is performed using ⇒ [Vehicle diagnostic tester](#).*



Note

Installation of an additional number plate carrier is not permissible on vehicles with reversing camera system as this would impair the function of the reversing camera. The light of the number plate could also be impaired.

8.2 Overview of fitting locations - rear view camera system



1 - Display unit for control device of front display and information control panel - J685-

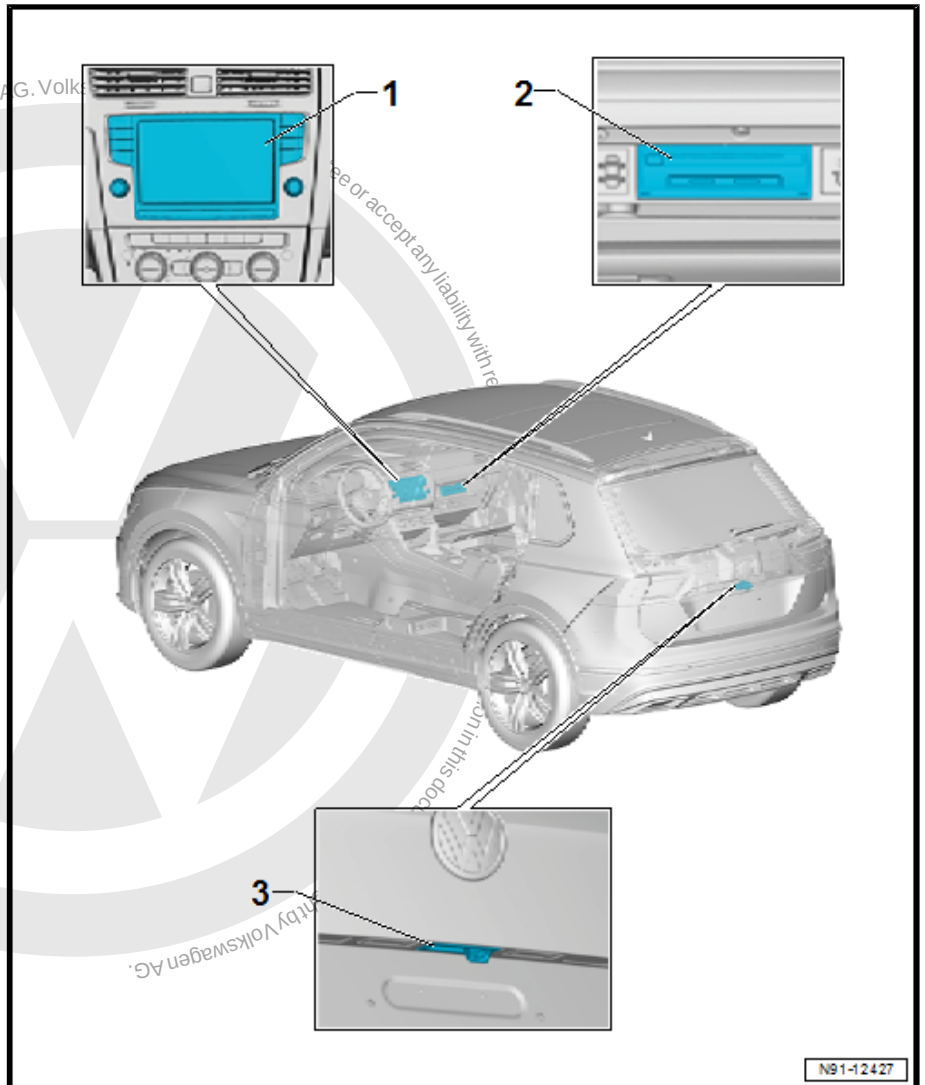
- ☐ In dash panel in the middle
- ☐ Removing and installing
⇒ [page 14](#)

2 - Information electronics control unit 1 - J794-

- ☐ In glove compartment.
- ☐ Removing and installing
⇒ [page 15](#)

3 - Reversing camera - R189-

- ☐ With integrated reversing camera system control unit - J772-
- ☐ Integrated in rear lid handle button
- ☐ Removing and installing
⇒ [page 53](#)
- ☐ Calibrating reversing camera system
⇒ [page 54](#)



8.3 Removing and installing reversing camera - R189-

The reversing camera - R189- is integrated in the rear lid handle button. The reversing camera - R189- and the handle button cannot be separated. In the event of damage, the complete handle button with reversing camera must be renewed.

- Removing and installing rear lid handle button ⇒ General body repairs, exterior; Rep. gr. 55 ; Rear lid; Removing and installing operating mechanism .
- The reversing camera - R189- must be calibrated after it has been removed and installed ⇒ [page 54](#) .

8.4 Removing and installing reversing camera system control unit - J772-

The reversing camera system control unit - J772- is integrated in the reversing camera - R189- and cannot be renewed individually.

The reversing camera system control unit - J772- must be renewed together with the reversing camera - R189- ⇒ [page 53](#) .



8.5 Calibrating reversing camera system

⇒ "8.5.1 Assembling and setting-up calibration unit VAS 6350", page 54

⇒ "8.5.2 Calibrating reversing camera R189", page 56

8.5.1 Assembling and setting-up calibration unit - VAS 6350-

Reversing camera system may have to be recalibrated following repair work on the vehicle. In detail, this is the case after:

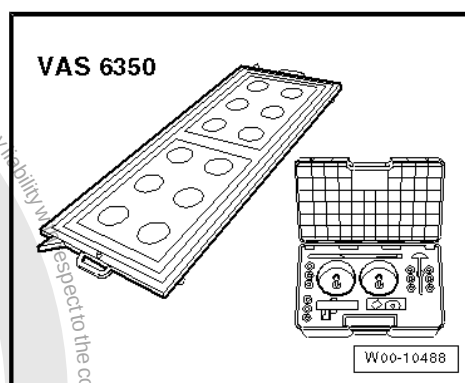
- ◆ Removing and installing rear lid handle button with reversing camera - R189-
- ◆ Accident repairs on rear lid
- ◆ After vehicle alignment
- ◆ Repairs to front or rear axle

Calibration requirements

- ◆ Camera lens must be clean.
- ◆ Vehicle needs to be positioned on a firm and level surface.
- ◆ There must be sufficient space all around the vehicle being calibrated.
- ◆ Parking brake is applied.
- ◆ Steering wheel in zero position, wheels point straight ahead.
- ◆ All doors and rear lid are closed.
- ◆ There is nobody in the vehicle.
- ◆ Vehicle is not loaded (curb weight).
- ◆ Before calibration: switch on ignition.

Special tools and workshop equipment required

- ◆ Calibration unit - VAS 6350-



- ◆ Vehicle diagnostic tester

The calibration unit - VAS 6350- consists of the following components:

- ◆ Wheel centre mounting - VAS 6350/1-
- ◆ Spacing laser - VAS 6350/2-
- ◆ Linear laser - VAS 6350/3-



Overview of assembled calibration unit - VAS 6350-



Note

The vehicle shown in the illustration may differ from the actual vehicle.

1 - Wheel centre mounting - VAS 6350/1-

2 - Wheel centre mounting - VAS 6350/1-

3 - Right bracket

- ☐ Spacing laser - VAS 6350/2- mounting

4 - Plastic foot

- ☐ Three on underbody of calibration board
- ☐ Adjustable to change horizontal position of calibration board

5 - Linear laser - VAS 6350/3-

- ☐ On calibration board
- ☐ Switching on and off => Owner's manual

6 - Spacing laser - VAS 6350/2-

- ☐ Notes on operation => Owner's manual

7 - Spirit level

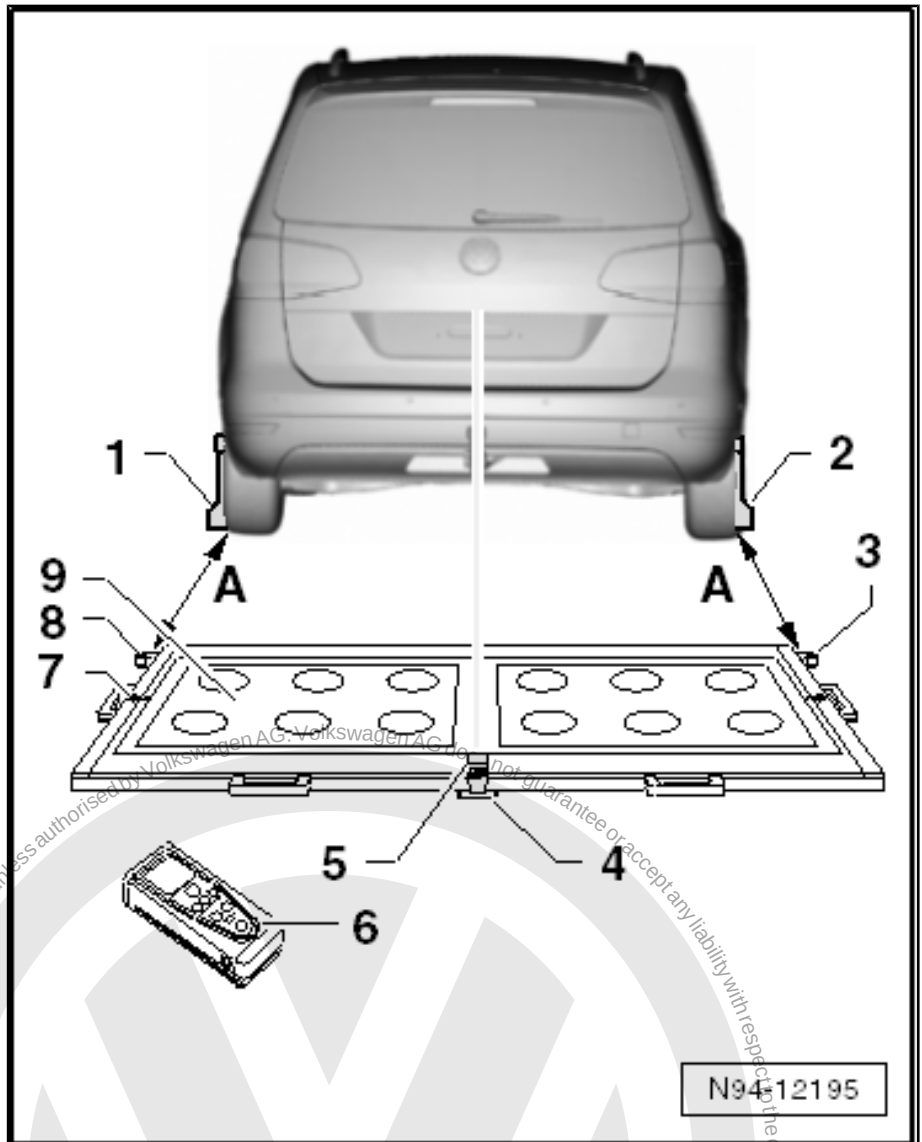
- ☐ On calibration board
- ☐ For checking horizontal position

8 - Left bracket

- ☐ Spacing laser - VAS 6350/2- mounting

9 - Calibration board

- ☐ Dimension -A- between calibration board and wheel centre mountings - VAS 6350/1- is 1.40 m to 2.00 m



Aligning the calibration board

- Position calibration unit - VAS 6350/4- behind vehicle at a distance of approx. 1.40 m - 2.00 m between angle brackets of calibration unit and paddles on wheel centre mountings, as shown in overview diagram -dimension A- => [Item 9 \(page 55\)](#) .
- Bring calibration device - VAS 6350- into the horizontal position.



- To do so, turn plastic feet beneath calibration platform to make air bubble in spirit level move exactly to centre of display -arrow-.



Note

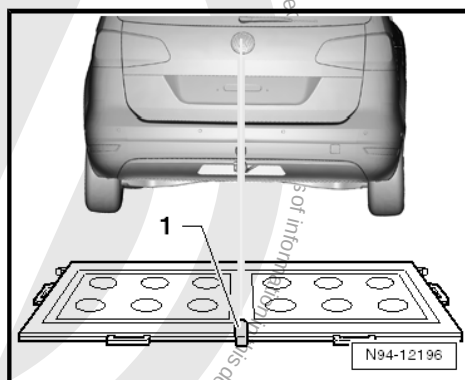
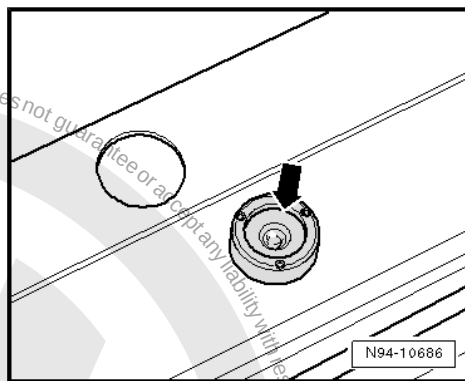
- ◆ Make sure there is no light reflection on the calibration board.
- ◆ Light reflections will impair the image recognition of the reversing camera - R189- and might make calibration impossible.



Note

The vehicle shown in the illustration may differ from the actual vehicle.

- Switch on linear laser - VAS 6350/3- -1- on calibration board, and align entire calibration unit - VAS 6350- so that the laser beam hits the rear of vehicle exactly at the centre of the Volkswagen emblem.
- Continue with calibration of reversing camera - R189-
⇒ [page 56](#) .



8.5.2 Calibrating reversing camera - R189-

- Make sure all necessary prerequisites are fulfilled
⇒ [page 54](#) .
- Connect vehicle diagnostic tester.

Fitting the wheel centre mounting - VAS 6350/1- :

- Check the bolt hole circle pattern on the wheels.
- Prepare wheel centre mountings - VAS 6350/1- accordingly.
- To do this, secure 3 wheel bolt adapters to each wheel centre mounting - VAS 6350/1- to match pitch circle diameter.
- Position paddles on both wheel centre mountings - VAS 6350/1- and secure each paddle with clamping bolt.



- Fit wheel centre mounting - VAS 6350/1- onto wheel securing bolts on front axle.

Wheel centre mountings - VAS 6350/1- are positioned and secured in the adapters by the "O-rings".



Note

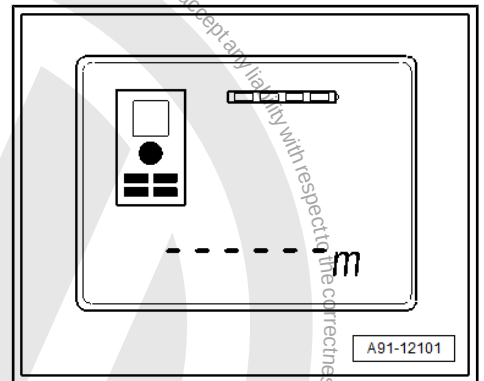
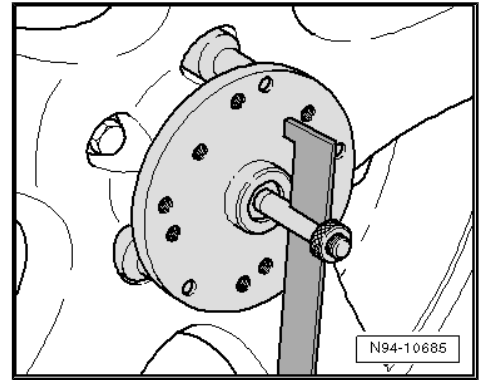
When fitting the wheel centre mountings - VAS 6350/1- on the wheels, ensure that any "anti-theft" wheel bolts are not attached to the wheel centre mountings - VAS 6350/1- .

- Adjust paddles using clamping bolts so that they can move freely just above the floor. Make sure the paddles can move freely.
- Assembling and setting-up calibration unit - VAS 6350-
⇒ [page 54](#) .

Determining the distance:

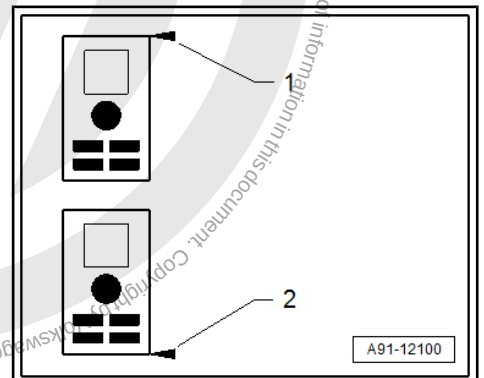
- Switch on spacing laser - VAS 6350/2- .

The following display appears:



The display shows how the spacing laser - VAS 6350/2- must be fitted. Press the respective button.

- 1 - Fit with front edge
- 2 - Fit with rear edge.





- Hold spacing laser - VAS 6350/2- -2- flush with bracket on one side of the calibration unit as shown in illustration. Spacing laser - VAS 6350/2- -2- must make firm contact with bracket.
- Briefly press the measurement button.

The laser is switched on.

Laser beam from spacing laser - VAS 6350/2- -2- must hit lower, larger part of paddle -1-.

If this is not the case, position of paddles must be corrected accordingly using clamping bolts on wheel centre mounting - VAS 6350/1- .

- Hold spacing laser - VAS 6350/2- in locating bracket on calibration unit - VAS 6350- with one hand while laser beam is visible on paddle.
- Press measuring button briefly to measure distance.
- Make a note of the displayed value.
- Perform same measuring procedure for front wheel on other side of calibration unit - VAS 6350- .

Measured distance value must be identical on both sides.

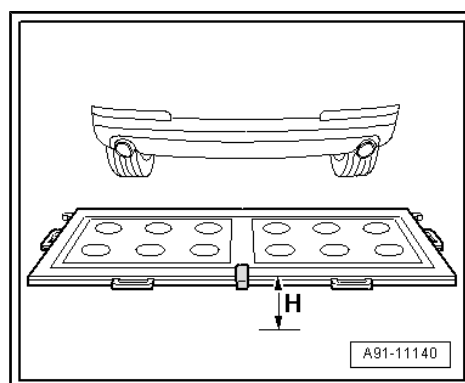
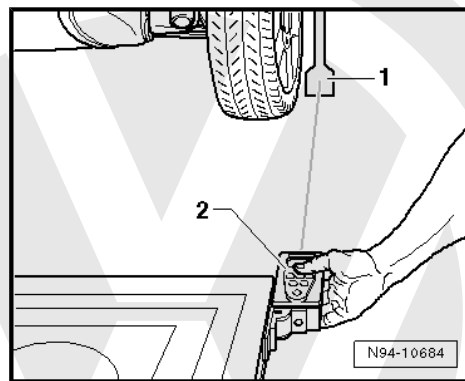
If the value is not identical:

- Adjust calibration unit - VAS 6350- until values on both sides are identical.
- When adjusting, make sure that linear laser - VAS 6350/3- hits centre of Volkswagen emblem and spirit level display also remains centred. If necessary, readjust accordingly.

Determining dimension -H-:

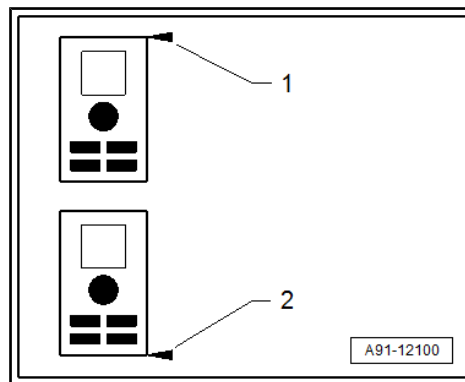
- Measure height of calibration unit - VAS 6350- : dimension -H- (top edge of platform - floor).

Make sure that spacing laser - VAS 6350/2- is set correctly (fitted with front edge).



The display shows how the spacing laser - VAS 6350/2- must be fitted. Press the respective button.

- 1 - Fit with front edge.
- 2 - Fit with rear edge.
- Note the reading for the height of the calibration unit - VAS 6350- .





Note

The vehicle shown in the illustration may differ from the actual vehicle.

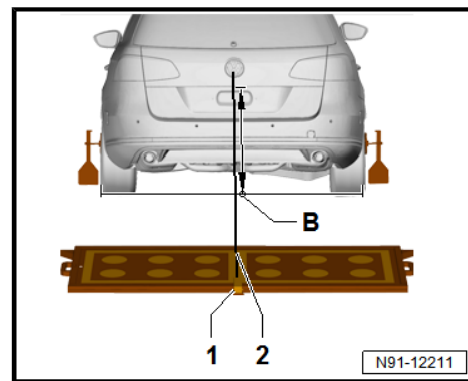
- Measure -dimension B- between the centre of the reversing camera lens and the wheel support surface using a commercially available folding ruler.
- Note the reading for dimension -B-.

The measured distance as well as the height of the calibration unit and the centre height of the reversing camera lens must now be entered in "millimetres" into the vehicle diagnostic tester.

Performing the calibration

Connect vehicle diagnostic tester.

Perform calibration using ⇒ Vehicle diagnostic tester.





9 Multifunction steering wheel

⇒ [“9.1 Components of multifunction steering wheel”, page 60](#)

⇒ [“9.2 Assembly overview - multifunction steering wheel”, page 60](#)

⇒ [“9.3 Removing and installing steering wheel multifunction buttons E441 / E440”, page 62](#)

⇒ [“9.4 Removing and installing Tiptronic switch in steering wheel E439 / E438”, page 64](#)

9.1 Components of multifunction steering wheel

For a better usability of infotainment, telephone, navigation, cruise control system and vehicle menu, buttons are integrated in steering wheel. For Tiptronic, additional rocker switches are provided to the right and to the left.

The control unit for multifunction steering wheel - J453- (multifunction buttons on left in steering wheel - E440-) reads the button information and transfers it to control unit for steering column electronics - J527- via LIN data bus. From control unit for steering column electronics - J527- the data are transferred to the individual devices via CAN bus (comfort) and data bus diagnostic interface - J533- .

Fault finding is performed using ⇒ Vehicle diagnostic tester.

9.2 Assembly overview - multifunction steering wheel





1 - Tiptronic switch in steering wheel to shift down - E439-

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

2 - Steering wheel

- ☐ Removing and installing
⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering wheel; Removing and installing steering wheel

3 - Tiptronic switch in steering wheel to shift up - E438-

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

4 - Bolts

- ☐ Qty. 2
- ☐ Secures Tiptronic switch to steering wheel
- ☐ 1.2 Nm

5 - Trim panel

- ☐ Removing and installing
⇒ [page 62](#)

6 - Multifunction buttons on right in steering wheel - E441-

- ☐ Removing and installing
⇒ [page 62](#)

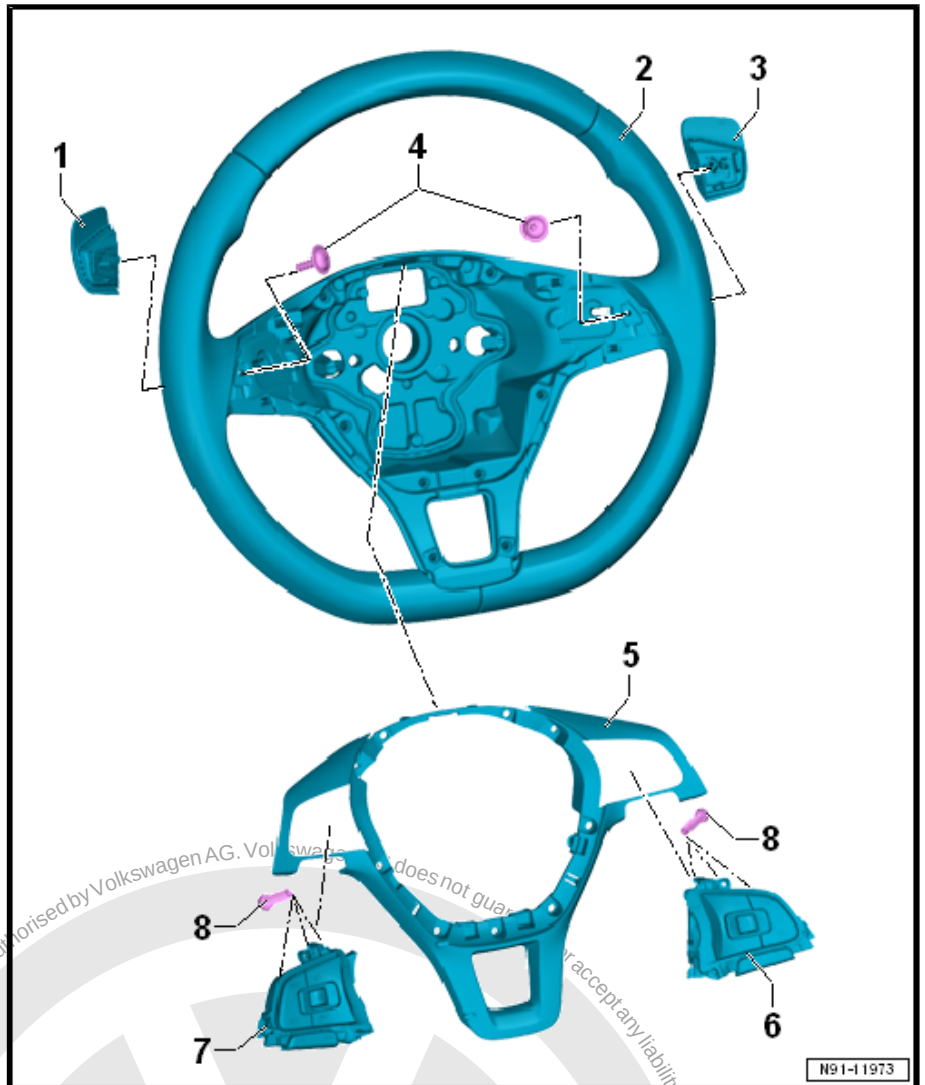
7 - Multifunction buttons on left in steering wheel - E440-

- ☐ With multifunction steering wheel control unit - J453-

- ☐ Removing and installing
⇒ [page 62](#)

8 - Bolts

- ☐ Qty. 3 on each side
- ☐ Secures multifunction buttons in steering wheel to trim panel
- ☐ 1 Nm



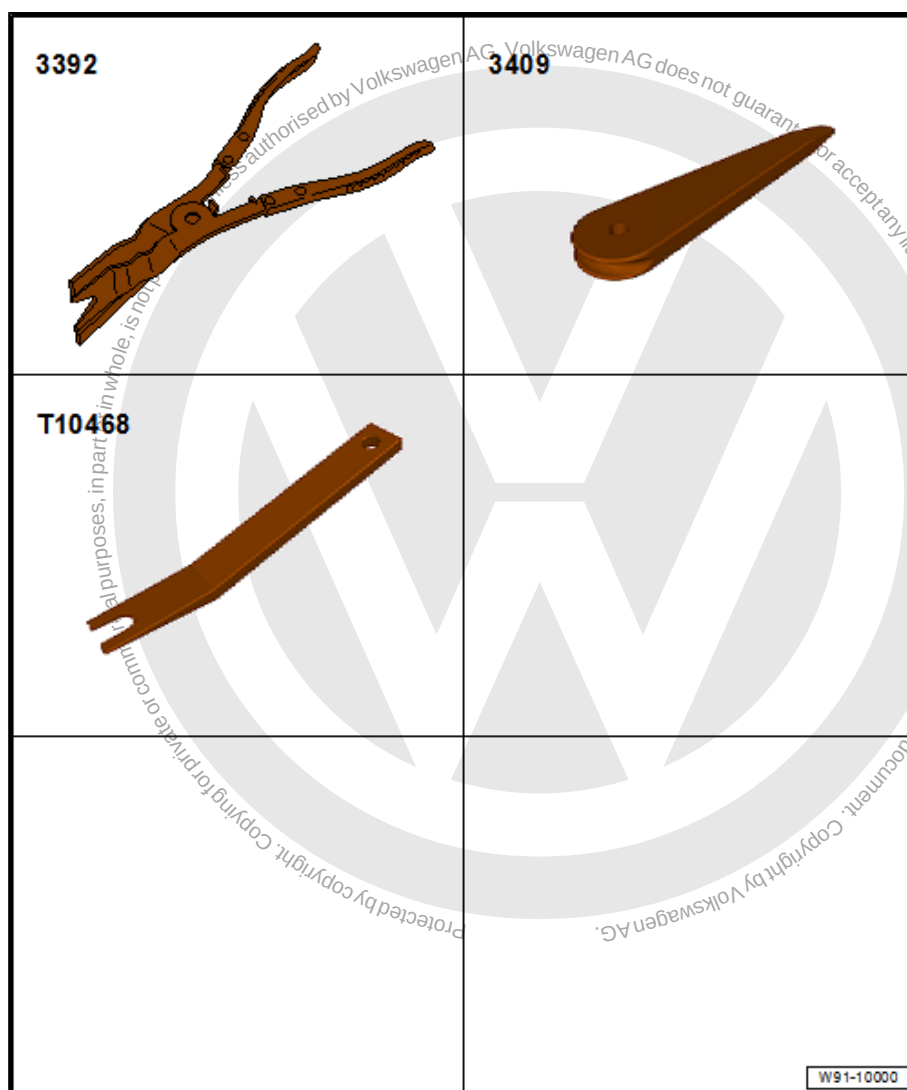
N91-11973



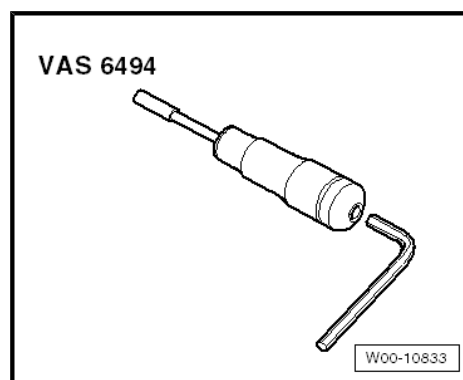
9.3 Removing and installing steering wheel multifunction buttons -E441- / -E440-

Special tools and workshop equipment required

- ◆ Removal pliers - 3392-
- ◆ Removal wedge - 3409- ,
qty. 2
- ◆ Lever - T10468-



- ◆ Torque screwdriver - VAS 6494-





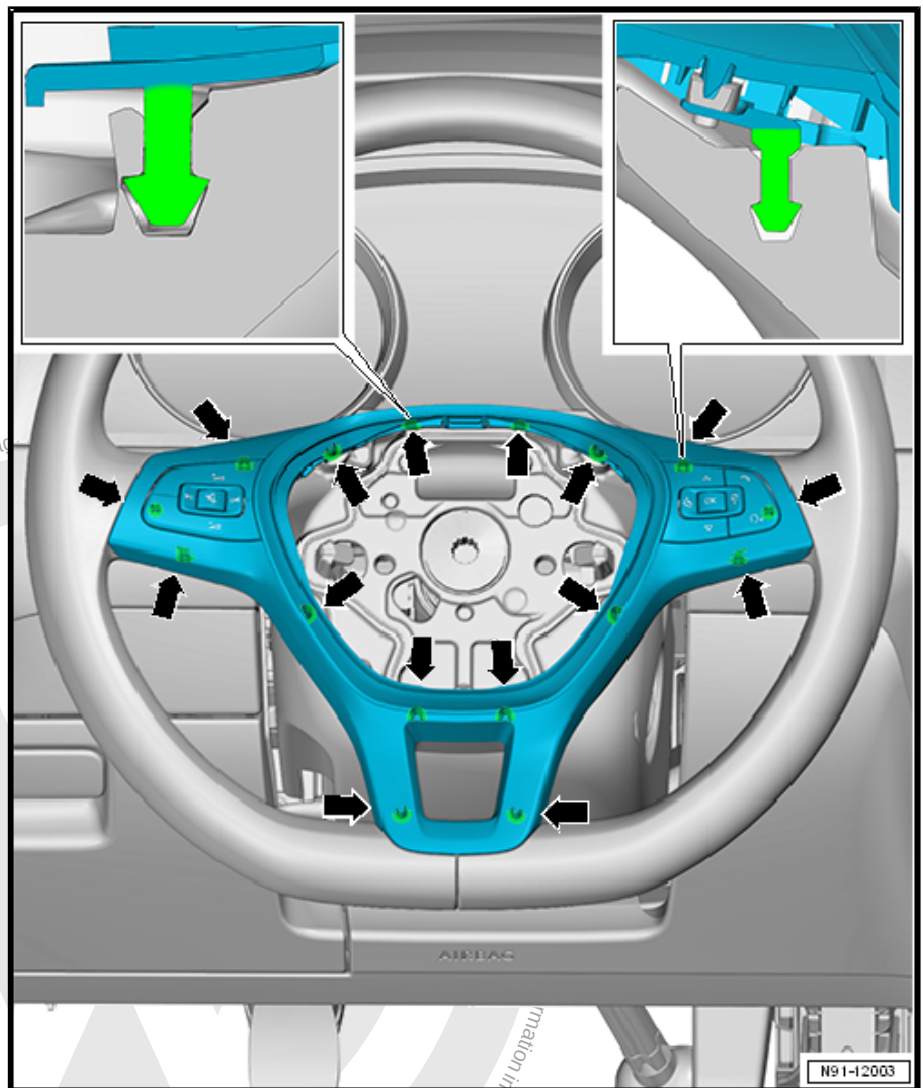
Removing



Note

The multifunction buttons in the steering wheel -E441- / -E440- are screwed to the trim. The trim together with the multifunction buttons is engaged on the steering wheel. It is easier to remove the trim using two removal wedges - 3409- .

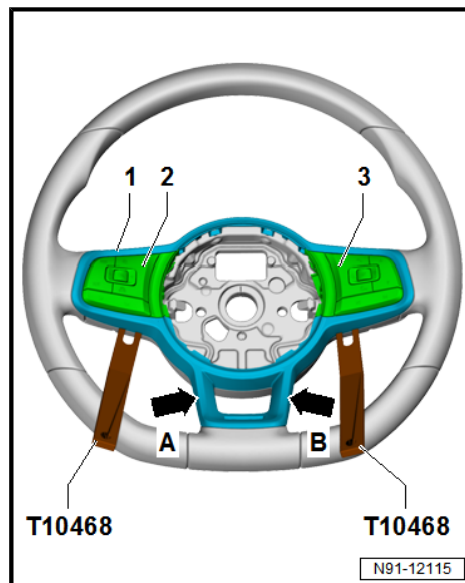
- Remove driver side airbag ⇒ General body repairs, interior; Rep. gr. 69 ; Driver side airbag; Removing and installing air-bag unit with igniter .



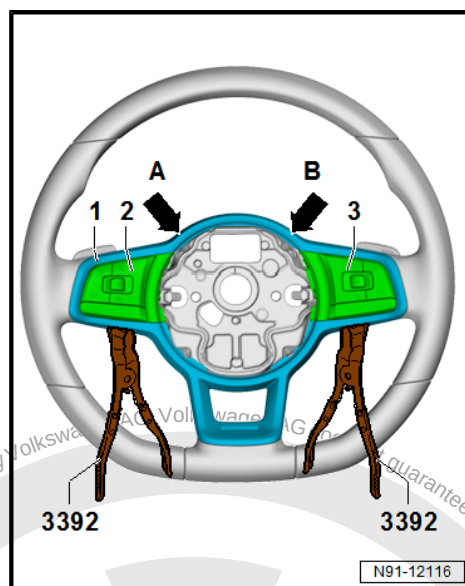
The trim is engaged in the multifunction steering wheel in areas indicated by the -arrows-.



- Using removal wedges - 3409- , release trim panel -1- in area of catches -arrow A- and -arrow B- from multifunction steering wheel.
- Using lever - T10468- , release trim panel -1- in area of multifunction buttons on left in steering wheel - E440- -2- and multifunction buttons on right in steering wheel - E441- -3-.



- Using removal pliers - 3392- , release trim -1- in area of multifunction buttons on left in steering wheel - E440- -2- and multifunction buttons on right in steering wheel - E441- -3-.
- Pull trim panel -1- in areas indicated by arrows -A- and -B- off multifunction steering wheel.
- Separate electrical connectors.
- Remove trim panel -1- together with multifunction buttons on left in steering wheel - E440- -2- and multifunction buttons on right in steering wheel - E441- -3-.
- Unscrew bolts for multifunction buttons on left in steering wheel - E440- -2- and multifunction buttons on right in steering wheel - E441- -3- on back of trim panel -1-.
- Remove multifunction buttons on left in steering wheel - E440- -2- and multifunction buttons on right in steering wheel - E441- -3- from trim panel -1-.



Installing

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



Note

Clip in trim panel from below to ease installation.

Specified torques

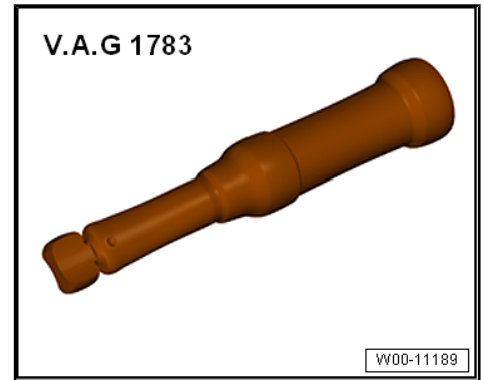
- ♦ => ["9.2 Assembly overview - multifunction steering wheel", page 60](#)

9.4 Removing and installing Tiptronic switch in steering wheel -E439- / -E438-

Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1783-



Note

Removal and installation are described only for the left side. The removal and installation procedure on the right-hand side is basically the same.

Removing

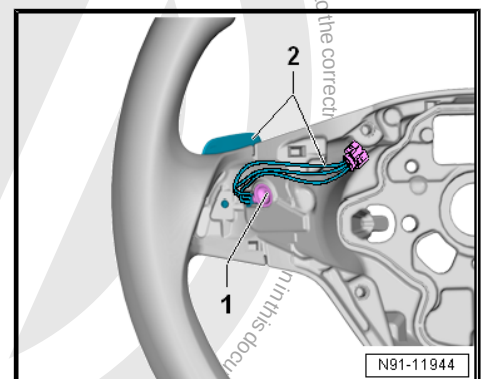
- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove trim panel with multifunction buttons on right in steering wheel - E441- and multifunction buttons on left in steering wheel - E440- ⇒ [page 62](#).
- Unscrew bolt -1- on multifunction steering wheel.
- Remove Tiptronic switch in steering wheel to shift down - E439- -2- with wire towards rear.

Installing

Install in reverse order of removal.

Specified torques

- ◆ ⇒ ["9.2 Assembly overview - multifunction steering wheel", page 60](#)



10 Connection for external multimedia devices

⇒ "10.1 Removing and installing connection for external multimedia devices", page 66

⇒ "10.2 Removing and installing USB hub R293", page 68

10.1 Removing and installing connection for external multimedia devices

⇒ "10.1.1 Removing and installing connection for external multimedia devices, USB port in storage compartment of front centre console", page 66

⇒ "10.1.2 Removing and installing connection for external multimedia devices, USB port in rear", page 67

⇒ "10.1.3 Removing and installing connection for external multimedia devices, AUX-IN port in storage compartment of front centre console", page 67

10.1.1 Removing and installing connection for external multimedia devices, USB port in storage compartment of front centre console

USB port -2- is located in storage compartment of front centre console.

USB port is connected to control unit 1 for information electronics - J794- or USB hub - R293- (depending on vehicle equipment).

Fault finding is performed using ⇒ Vehicle diagnostic tester.

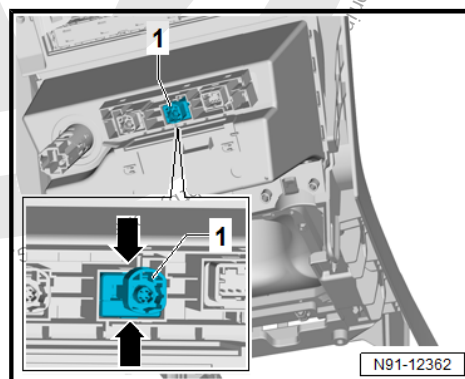
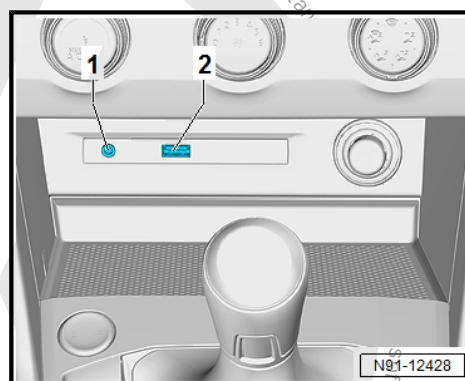
Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove centre console → General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .
- Release locking lugs -arrows- on USB port -1-.
- At same time, push out USB port -1- from trim of centre console.

Installing

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

- USB port must engage audibly in trim of centre console.





10.1.2 Removing and installing connection for external multimedia devices, USB port in rear

USB port -1- is located in trim of rear centre console.

USB port is connected to USB hub - R293- .

Fault finding is performed using ⇒ Vehicle diagnostic tester.

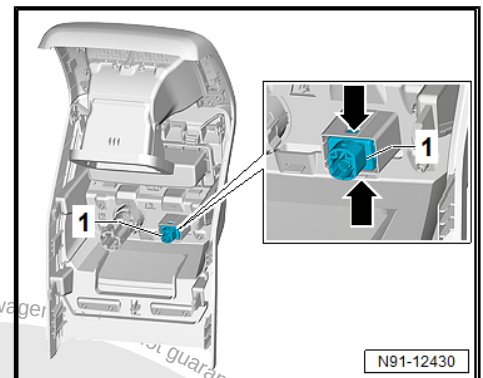
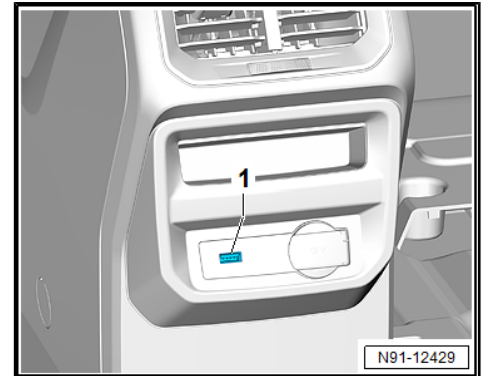
Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove trim at rear of centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing rear centre console trim .
- Release locking lugs -arrows- on USB port -1-.
- At same time, push out USB port -1- from trim of rear centre console.

Installing

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

- USB port must engage audibly in trim of rear centre console.



10.1.3 Removing and installing connection for external multimedia devices, AUX-IN port in storage compartment of front centre console

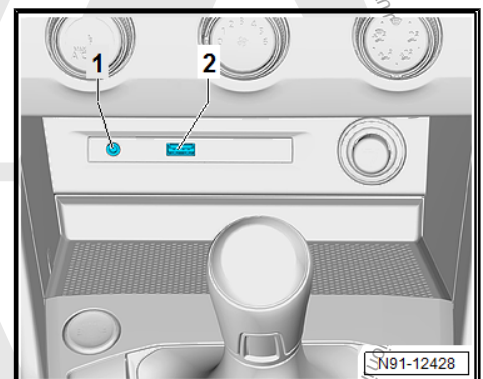
AUX-IN port -1- is located in storage compartment of front centre console.

AUX-IN port is connected to control unit 1 for information electronics - J794- .

Fault finding is performed using ⇒ Vehicle diagnostic tester.

Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .



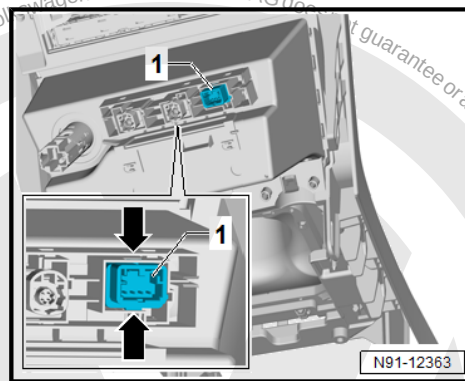


- Release locking lugs -arrows- on AUX-IN port -1-.
- At same time, push out AUX-IN port -1- from trim of centre console.

Installing

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

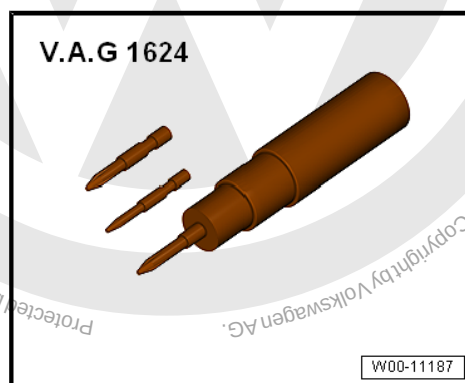
- AUX-IN port must engage audibly in trim of centre console.



10.2 Removing and installing USB hub - R293-

Special tools and workshop equipment required

- ♦ Torque screwdriver - V.A.G 1624-



Removing

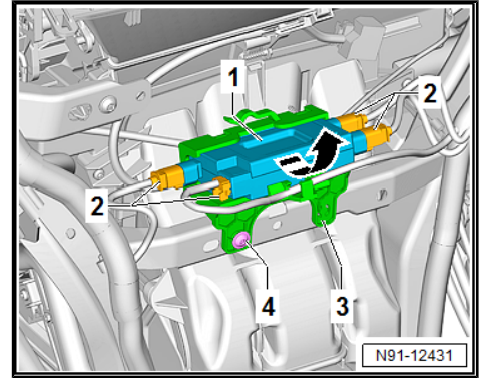
- Remove infotainment system display ⇒ [page 14](#) .



Note

For reasons of clarity, the dash panel is not shown in the diagram. However, it is not necessary to remove the dash panel to remove the USB hub - R293-.

- Swing out USB hub - R293- -1- from bracket -3- in direction of -arrow-.
- Unclip wiring harness from bracket -3-.
- Release and disconnect electrical connectors -2-.
- Remove USB hub - R293- -1-.



Note

If the bracket -3- for the USB hub - R293- -1- needs to be removed, the dash panel must first be removed ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Removing and installing dash panel.

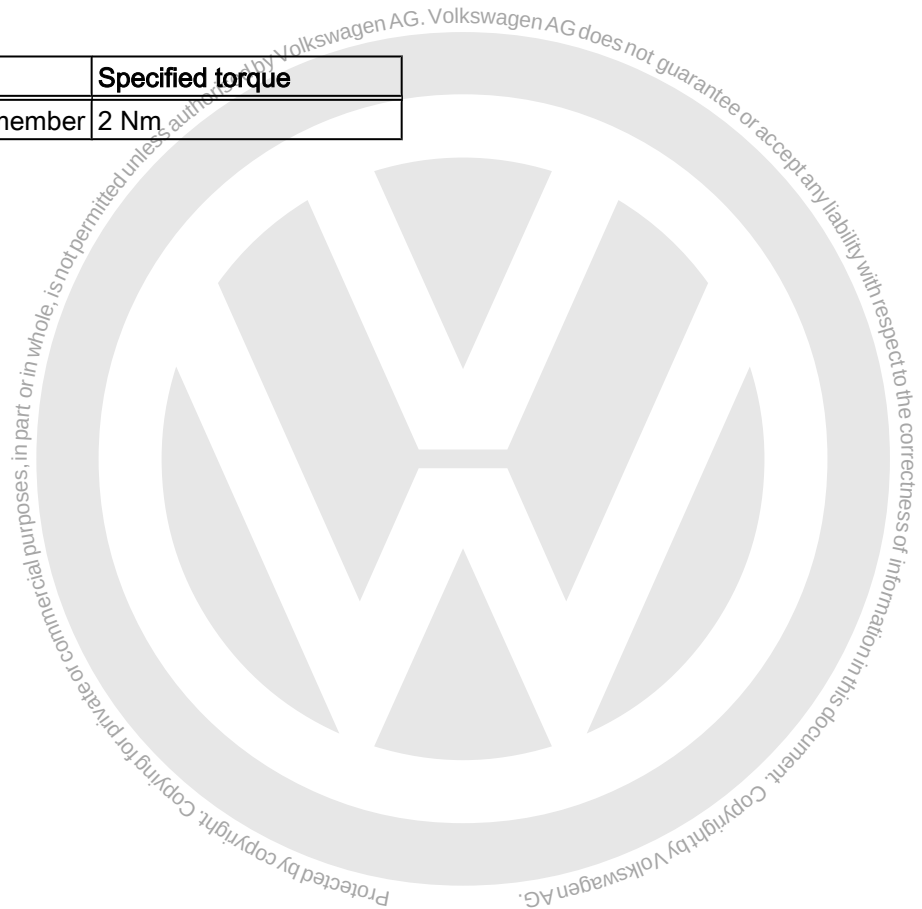
- Unscrew bolt -4-.
- Unclip bracket -3- from dash panel cross member.

Installing

Install in reverse order of removal.

Specified torques

Component	Specified torque
Bracket to dash panel cross member	2 Nm





11 Car-Net

⇒ ["11.1 General information", page 70](#)

⇒ ["11.2 Overview of fitting locations - Car-Net services", page 70](#)

⇒ ["11.3 Removing and installing emergency call module control unit and communication unit J949", page 73](#)

⇒ ["11.4 Removing and installing operating unit for preparation for mobile telephone E508", page 75](#)

⇒ ["11.5 Removing and installing loudspeaker for emergency call module R335", page 75](#)

⇒ ["11.6 Renewing control unit for emergency call module and communication unit J949", page 76](#)

11.1 General information

The mobile online service functions are integrated in the control unit 1 for information electronics - J794- / emergency call module control unit and communication unit - J949- .

Other systems in the vehicle are connected via CAN bus (infotainment/convenience) and data bus diagnostic interface - J533- .

In order to deal with complaints, it is absolutely necessary to understand the functions of the mobile online services system.

Additional information can be found in the ⇒ Operating manual .

Fault finding is performed using ⇒ Vehicle diagnostic tester.

11.2 Overview of fitting locations - Car-Net services

⇒ ["11.2.1 Overview of fitting locations - mobile online services, vehicles without emergency call module control unit and communication unit J949 \(PR no. EL3\)", page 70](#)

⇒ ["11.2.2 Overview of fitting locations - mobile online services, vehicles with emergency call module control unit and communication unit J949 \(PR no. EL2/EL5/NZ3\)", page 72](#)

11.2.1 Overview of fitting locations - mobile online services, vehicles without emergency call module control unit and communication unit - J949- (PR no. EL3)



1 - Dash panel insert - KX2-

- ☐ With control unit in dash panel insert - J285- .
- ☐ Removing and installing
⇒ Electrical system;
Rep. gr. 90 ; Dash panel insert; Removing and installing dash panel insert - KX2-

2 - Telephone microphone - R38-

- ☐ In front interior light - WX1-
- ☐ Removing and installing
⇒ [page 41](#)

3 - Information electronics control unit 1 - J794-

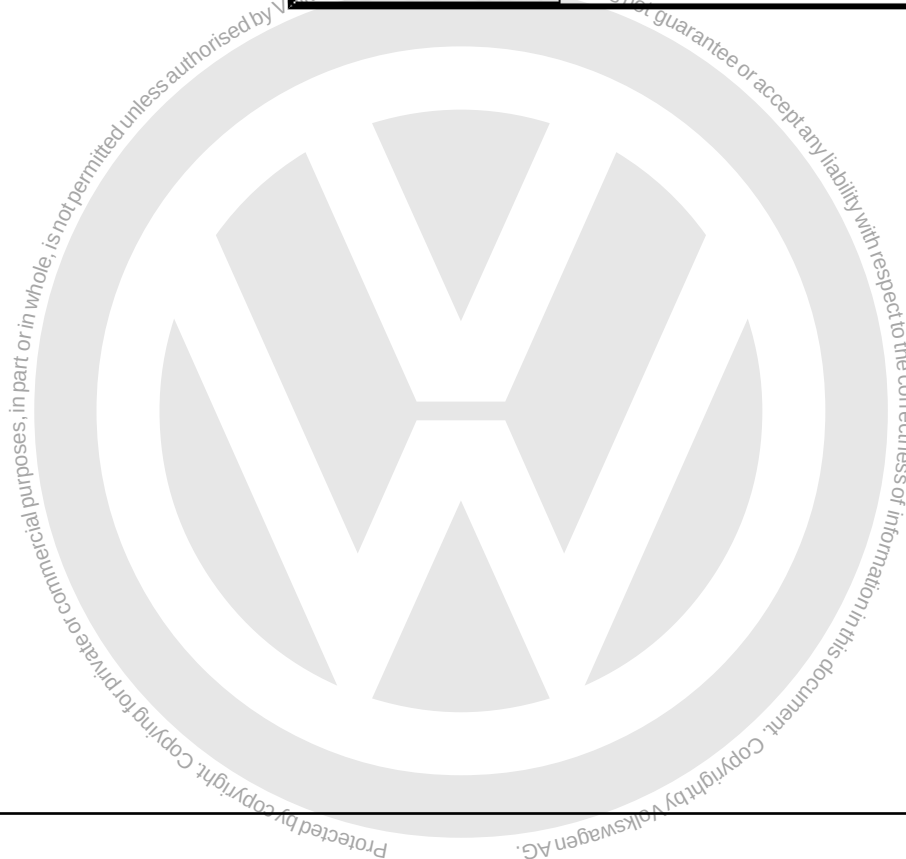
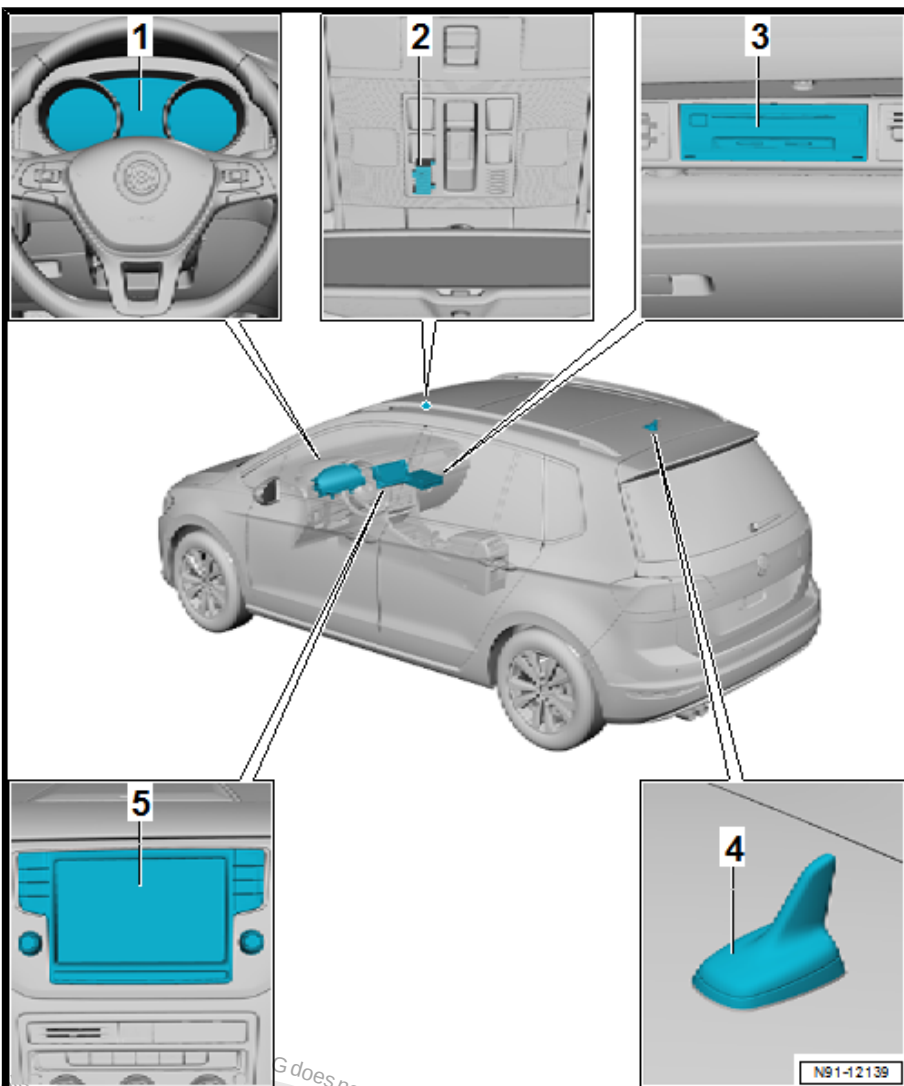
- ☐ In glove compartment.
- ☐ Removing and installing
⇒ [page 15](#)

4 - Roof aerial - RX5-

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

5 - Display unit for control device of front display and information control panel - J685-

- ☐ In dash panel in the middle
- ☐ Removing and installing
⇒ [page 14](#)



11.2.2 Overview of fitting locations - mobile online services, vehicles with emergency call module control unit and communication unit - J949- (PR no. EL2/EL5/NZ3)

1 - Display unit for control device of front display and information control panel - J685-

- ☐ In dash panel in the middle
- ☐ Composition Touch and Composition Colour: in combination with control unit 1 for information electronics - J794-
- ☐ Composition Media and Discover Media or Discover Pro: individual display
- ☐ Removing and installing Composition Touch and Composition Colour ⇒ [page 37](#)
- ☐ Removing and installing Composition Media, Discover Media or Discover Pro ⇒ [page 14](#)

2 - Operating unit for preparation for mobile telephone - E508-

- ☐ Removing and installing ⇒ [page 75](#)

3 - Telephone microphone - R38-

- ☐ In front interior light - WX1-
- ☐ Removing and installing ⇒ [page 41](#)

4 - Roof aerial - RX5-

- ☐ With GPS aerial - R50-
- ☐ Depending on equipment, for PR No. EL2/EL5 with GSM aerial - R205-
- ☐ For PR No. NZ3 with GSM aerial - R205-
- ☐ Removing and installing ⇒ [page 34](#)

5 - Bumper aerial, right

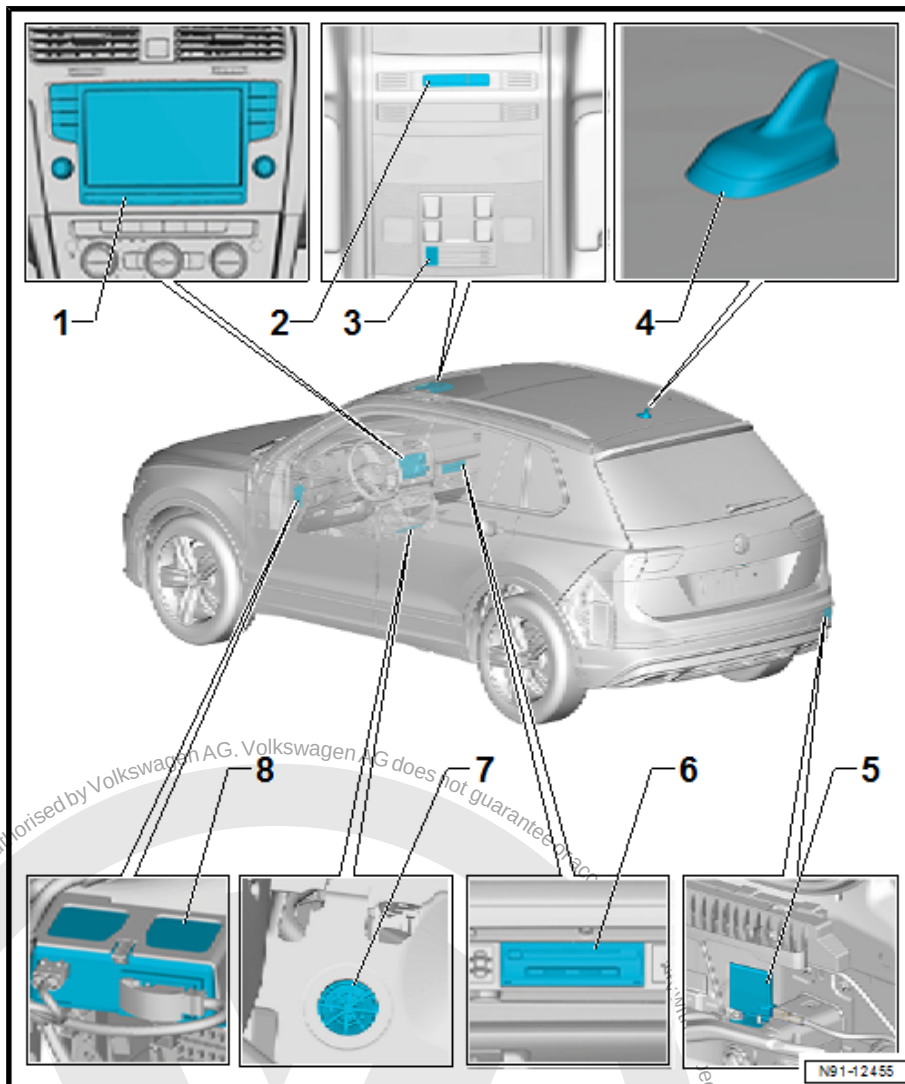
- ☐ Under rear right bumper cover
- ☐ Depending on equipment, for PR No. EL2/EL5 as GSM aerial - R205-
- ☐ Not installed in PR No. NZ3
- ☐ Removing and installing ⇒ [page 35](#)

6 - Information electronics control unit 1 - J794-

- ☐ In glove compartment.
- ☐ Removing and installing ⇒ [page 15](#)

7 - Loudspeaker for emergency call module - R335-

- ☐ in front passenger footwell on heater and air conditioning system
- ☐ Removing and installing ⇒ [page 75](#)





8 - Emergency call module control unit and communication unit - J949-

- ☐ Must not be interchanged with control unit from other vehicle
- ☐ Adhere to procedure for renewing control unit ⇒ [page 76](#)
- ☐ Removing and installing ⇒ [page 73](#)

11.3 Removing and installing emergency call module control unit and communication unit - J949-

⇒ ["11.3.1 Removing and installing emergency call module control unit and communication unit J949 , left-hand drive vehicles", page 73](#)

⇒ ["11.3.2 Removing and installing emergency call module control unit and communication unit J949 , right-hand drive vehicles", page 74](#)

11.3.1 Removing and installing emergency call module control unit and communication unit - J949- , left-hand drive vehicles

Emergency call module control unit and communication unit - J949- is installed behind dash panel on left above fuse holder C - SC- .

Emergency call module control unit and communication unit - J949- must not be interchanged with a control unit from another vehicle.



Note

If the emergency call module control unit and communication unit - J949- is renewed, call-up the respective function ⇒ Vehicle diagnostic tester.

Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove storage compartment on driver side ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers .
- Remove dash panel cover on driver side ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers .



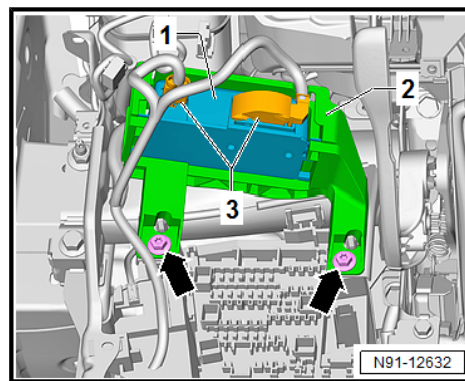
- Release and disconnect connectors -3-.
- Press emergency call module control unit and communication unit - J949- -1- upwards and pull out of bracket rearwards -2-.
- Unscrew nuts -arrows-.
- Remove bracket -2- from bracket for onboard supply control unit - J519- .

Installing

Install in reverse order of removal.

Specified torques

Component	Specified torque
Bracket for emergency call module control unit and communication unit - J949- to bracket bracket for onboard supply control unit - J519-	⇒ Electrical system; Rep. gr. 97 ; Relay carriers, fuse carriers, electronics boxes; Overview of fitting locations - relay carriers, fuse carriers, electronics boxes



11.3.2 Removing and installing emergency call module control unit and communication unit - J949- , right-hand drive vehicles

Emergency call module control unit and communication unit - J949- is installed behind dash panel on right of dash panel cross member.

Emergency call module control unit and communication unit - J949- must not be interchanged with a control unit from another vehicle.



Note

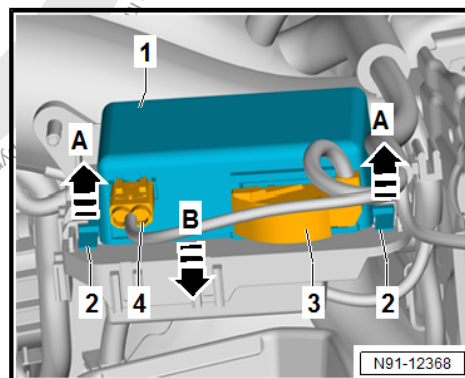
If the emergency call module control unit and communication unit - J949- is renewed, call-up the respective function ⇒ Vehicle diagnostic tester.

Removing

- Switch off ignition and all electrical consumers.
- Keep the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove dash panel.
- Disconnect electrical connectors -3- and -4-.
- Push locking lugs -2- in direction of -arrow A- and remove emergency call module control unit and communication unit - J949- -1- in direction of -arrow B-.

Installing

Install in reverse order of removal.





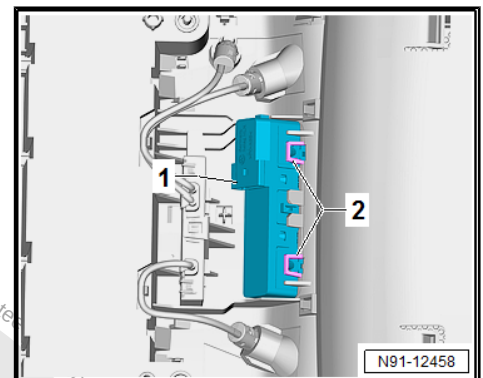
11.4 Removing and installing operating unit for preparation for mobile telephone - E508-

Removing

- Remove front interior light - WX1- ⇒ Electrical system; Rep. gr. 96 ; Operating elements; Removing and installing interior/reading lights .
- Remove storage compartment in roof headliner ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments and covers; Removing and installing storage compartment in roof headliner .
- Using a small screwdriver, carefully release retaining tabs -2- of storage compartment in headliner on both sides.
- At same time, remove operating unit for preparation for mobile telephone - E508- -1- upwards from storage compartment in headliner.

Installing

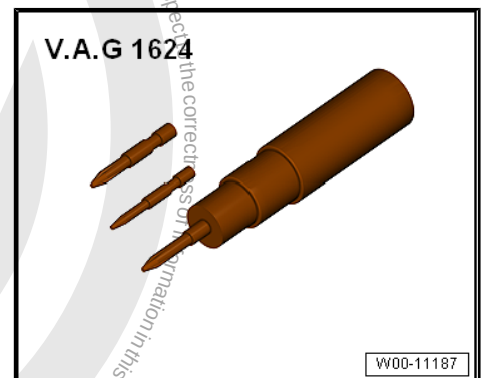
Install in reverse order of removal.



11.5 Removing and installing loudspeaker for emergency call module - R335-

Special tools and workshop equipment required

- ◆ Torque screwdriver - V.A.G 1624-



Loudspeaker for emergency call module - R335- is located in front passenger footwell on heater and air conditioning unit.

Removing

- Remove footwell cover on front passenger side ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers .



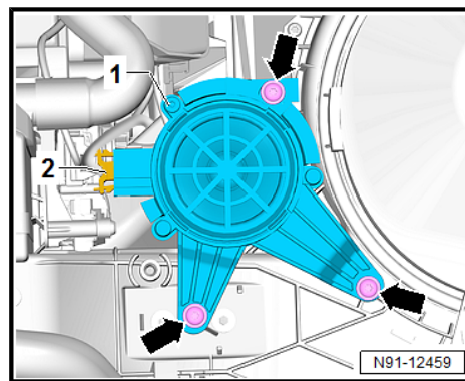
- Release and disconnect electrical connector -2-.
- Remove bolts -arrows-.
- Unclip loudspeaker for emergency call module - R335- -1- from heater and air conditioning unit and remove downwards.

Installing

Install in reverse order of removal.

Specified torques

Component	Specified torque
Loudspeaker for emergency call module - R335- on heater and air conditioning unit	4 Nm



11.6 Renewing control unit for emergency call module and communication unit - J949-

Renewing and adapting control unit for emergency call module and communication unit - J949-

- Data for "Guided Fault Finding" is current
- Using ⇒ Vehicle diagnostic tester in Guided fault finding or Guided functions mode, select Renew function for emergency call module control unit and communication unit - J949- .
- Remove control unit for emergency call module and communication unit - J949- ⇒ [page 73](#) .
- Install new control unit for emergency call module and communication unit - J949- ⇒ [page 73](#) .
- Using ⇒ Vehicle diagnostic tester in Guided fault finding or Guided functions mode, select Code function for emergency call module control unit and communication unit - J949- .
- Using ⇒ Vehicle diagnostic tester in Guided fault finding or Guided functions mode, select Adapt immobiliser function for emergency call module control unit and communication unit - J949- .
- Using ⇒ Vehicle diagnostic tester in Guided fault finding or Guided functions mode, select Activate function for emergency call module control unit and communication unit - J949- .
- Exit Guided functions or Guided fault finding.
- Switch off ignition.



12 Overhead view camera

⇒ [“12.1 Overview - overhead view camera”, page 77](#)

⇒ [“12.2 Overview of fitting locations - overhead view camera”, page 79](#)

⇒ [“12.3 Removing and installing overhead view camera control unit J928”, page 80](#)

⇒ [“12.4 Removing and installing front overhead view camera R243”, page 80](#)

⇒ [“12.5 Removing and installing left overhead view camera R244”, page 81](#)

⇒ [“12.6 Removing and installing right overhead view camera R245”, page 82](#)

⇒ [“12.7 Removing and installing rear overhead view camera R246”, page 82](#)

⇒ [“12.8 Calibrating overhead view camera”, page 82](#)

12.1 Overview - overhead view camera

The overhead view camera system comprises 4 cameras. They are located in the front bumper cover as well as in the exterior mirrors on both sides and in the rear lid. The system supports the driver during parking, manoeuvring, as well as when entering or leaving a drive way or when towing a trailer. Images from the camera are displayed on the display unit for front information display and operating unit control unit - J685- (display).

Selectable camera views:

- ◆ Bird's eye view (bird view): images from all 4 cameras (front overhead view camera - R243- / left overhead view camera - R244- / right overhead view camera - R245- / rear overhead view camera - R246-) show an all-round view of the whole vehicle.
- ◆ Front camera (front view): image from the camera located in the front bumper cover (front overhead view camera - R243-) shows the area in front of the vehicle (as far as the left and right bumper edge).
- ◆ Side cameras (side view): images from the cameras in the exterior mirrors on the left and right (left overhead view camera - R244- / right overhead view camera - R245-) show the immediate area to the side of the vehicle.
- ◆ Rear camera (rear view): image from the camera located in the rear lid (rear overhead view camera - R246-) shows the area behind the vehicle.

Components of the overhead view camera system:

- ◆ Front overhead view camera - R243-
- ◆ Left overhead view camera - R244-
- ◆ Right overhead view camera - R245-
- ◆ Rear overhead view camera - R246-
- ◆ Overhead view camera control unit - J928-
- ◆ Information electronics control unit 1 - J794-
- ◆ Display unit for front information display and operating unit control unit - J685-

Depending on vehicle equipment, other control units may be installed.

1 - Display unit for control device of front display and information control panel - J685-

- ❑ More information
⇒ [page 13](#)

2 - Information electronics control unit 1 - J794-

- ❑ More information
⇒ [page 13](#)

3 - FBAS wire

- ❑ From control unit for overhead view camera - J928- to control unit 1 for information electronics - J794-

4 - Right overhead view camera - R245-

- ❑ More information
⇒ [page 79](#)

5 - Overhead view camera control unit - J928-

- ❑ More information
⇒ [page 79](#)

6 - Rear overhead view camera - R246-

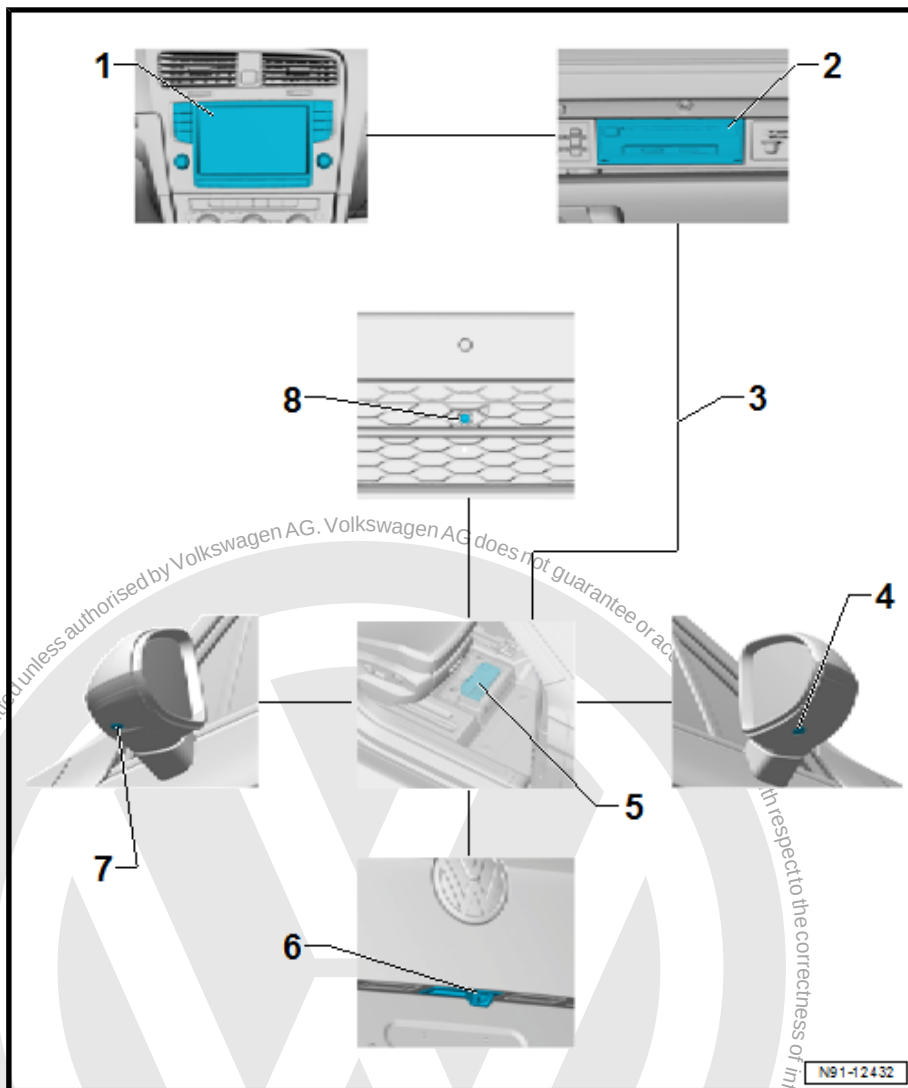
- ❑ More information
⇒ [page 79](#)

7 - Left overhead view camera - R244-

- ❑ More information
⇒ [page 79](#)

8 - Front overhead view camera - R243-

- ❑ More information ⇒ [page 79](#)





12.2 Overview of fitting locations - overhead view camera

1 - Overhead view camera control unit - J928-

- ☐ Under front right seat
- ☐ Removing and installing ⇒ [page 80](#)
- ☐ Calibration ⇒ [page 82](#)

2 - Rear overhead view camera - R246-

- ☐ Integrated in rear lid handle button
- ☐ Removing and installing ⇒ [page 82](#)
- ☐ Calibration ⇒ [page 82](#)

3 - Left overhead view camera - R244- / right overhead view camera - R245-

- ☐ In exterior mirror on right and left
- ☐ Removing and installing left overhead view camera - R244- ⇒ [page 81](#)
- ☐ Removing and installing right overhead view camera - R245- ⇒ [page 82](#)
- ☐ Calibration ⇒ [page 82](#)

4 - Bracket

- ☐ For left overhead view camera - R244- / right overhead view camera - R245-

5 - Bolt

- ☐ Qty. 2
- ☐ 2 Nm

6 - Front overhead view camera - R243-

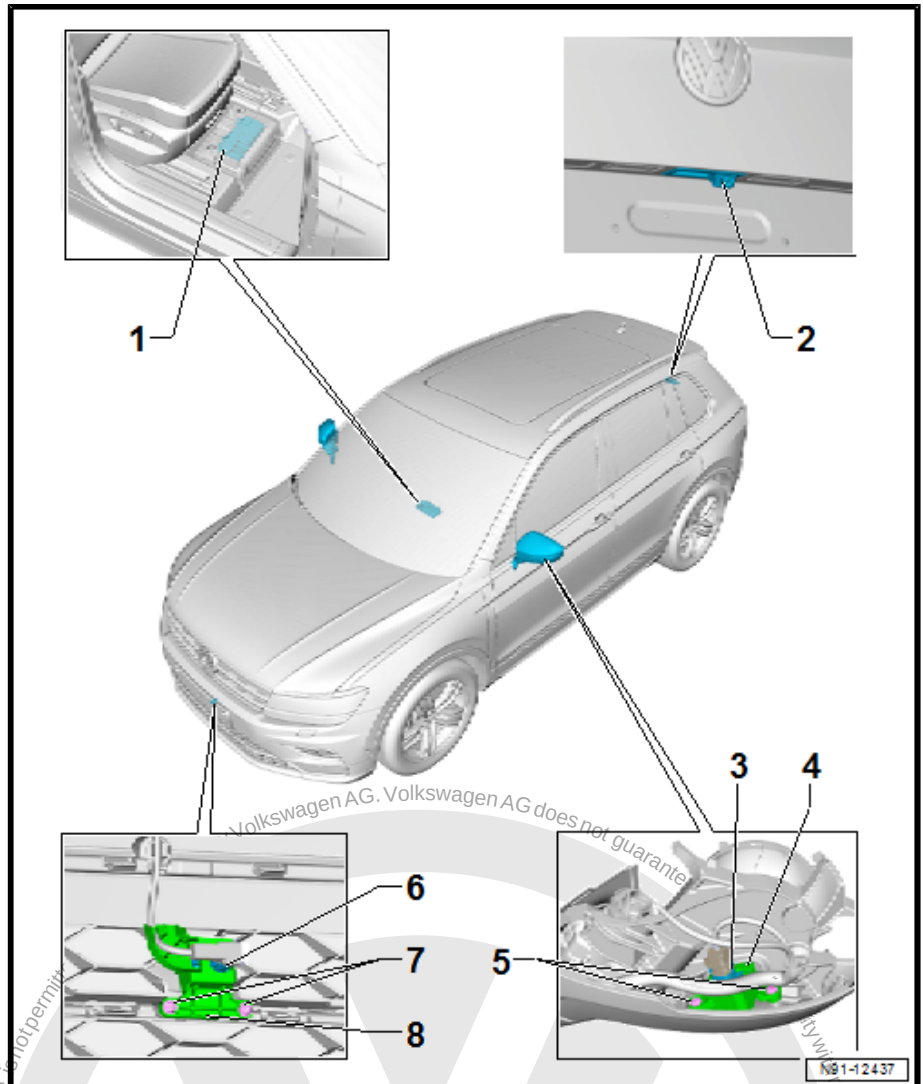
- ☐ In front bumper cover
- ☐ Removing and installing ⇒ [page 80](#)
- ☐ Calibration ⇒ [page 82](#)

7 - Bolt

- ☐ Qty. 2
- ☐ 2 Nm

8 - Bracket

- ☐ For front overhead view camera - R243-





12.3 Removing and installing overhead view camera control unit - J928-

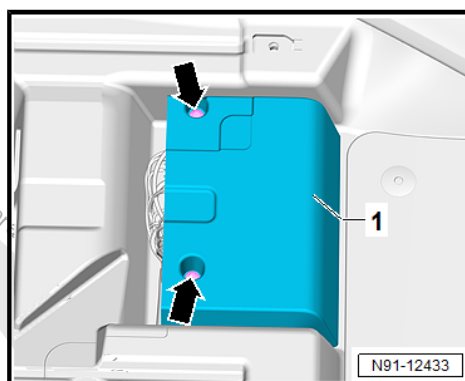


Note

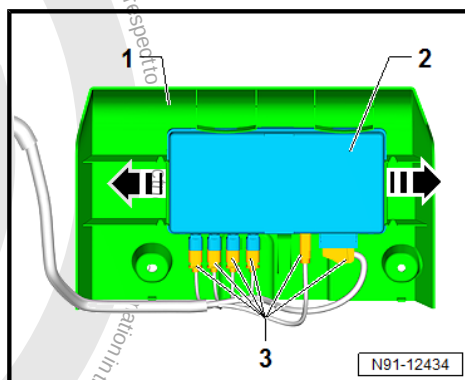
If the control unit for overhead view camera - J928- is renewed, call-up the respective function ⇒ Vehicle diagnostic tester.

Removing

- Move front seat to highest and rearmost position.
- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove spreader rivets -arrows-.
- Push cover -1- with control unit with overhead view camera - J928- in straight line in direction of normal travel and rotate, allowing for lengths of wiring still connected.



- Release and disconnect connectors -3-.
- Release fasteners on cover -1- in direction of -arrow-.
- At same time, remove control unit for overhead view camera - J928- -2- from cover -1-.



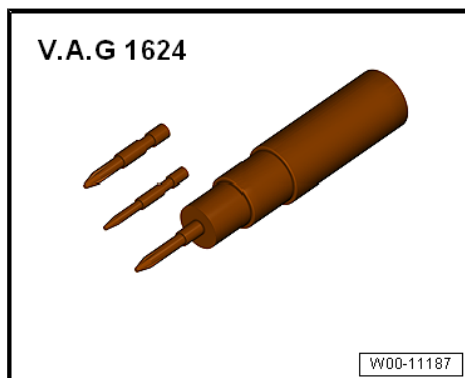
Installing

Install in reverse order of removal.

12.4 Removing and installing front overhead view camera - R243-

Special tools and workshop equipment required

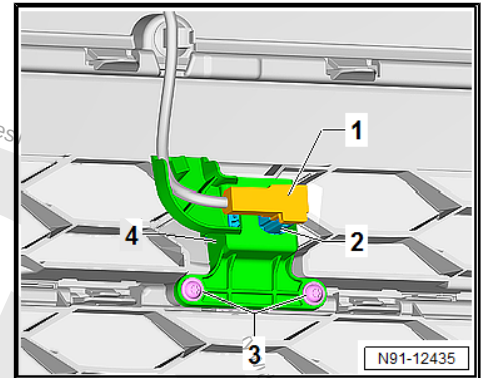
- ♦ Torque screwdriver - V.A.G 1624-





Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove front bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; Removing and installing bumper cover .
- Release and disconnect connector -1-.
- Remove electrical wire from bracket -4- and lay aside.
- Unscrew bolts -3-.
- Unclip bracket -4- with front overhead view camera - R243- -2- from bumper cover.
- Unclip front overhead view camera - R243- -2- from bracket -4-.



Installing

Install in reverse order of removal.

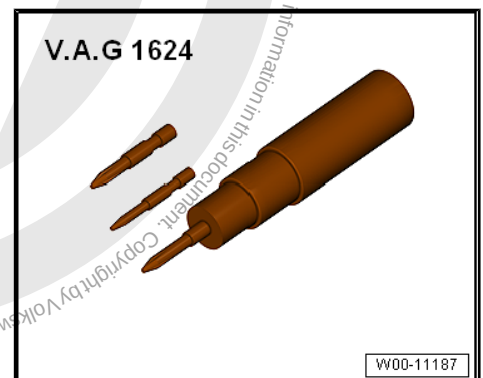
Specified torques

- ◆ ⇒ ["12.2 Overview of fitting locations - overhead view camera", page 79](#)

12.5 Removing and installing left overhead view camera - R244-

Special tools and workshop equipment required

- ◆ Torque screwdriver - V.A.G 1624-



Removing

- Switch off ignition and all electrical consumers.
- Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.
- Remove turn signal repeater ⇒ Electrical system; Rep. gr. 94 ; Lamps in exterior mirror; Removing and installing turn signal .



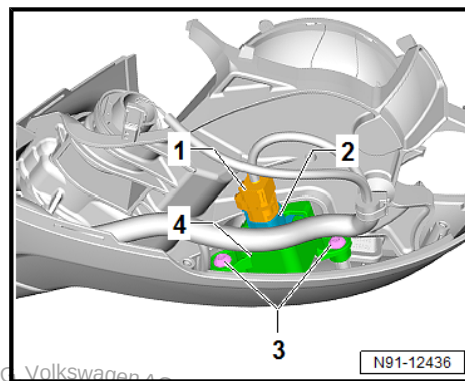
- Unscrew bolts -3-.
- Guide bracket -4- together with left overhead view camera - R244- -2- out of mirror mounting.
- Release and separate electrical connector -1- on left overhead view camera - R244- -2-.
- Remove left overhead view camera - R244- -2- from bracket -4-.

Installing

Install in reverse order of removal.

Specified torques

- ♦ ⇒ ["12.2 Overview of fitting locations - overhead view camera", page 79](#)



12.6 Removing and installing right overhead view camera - R245-

Removal and installation of the right overhead view camera - R245- are performed in the same manner as the left overhead view camera - R244- .

- Removing and installing left overhead view camera - R244- ⇒ [page 81](#) .

12.7 Removing and installing rear overhead view camera - R246-

Rear overhead view camera - R246- is integrated in handle button of rear lid. Rear overhead view camera - R246- and handle button cannot be separated. In the event of damage, the complete handle button with overhead view camera must be renewed.

- Removing and installing rear lid handle button ⇒ General body repairs, exterior; Rep. gr. 55 ; Rear lid; Removing and installing operating mechanism .
- After removing and installing rear overhead view camera - R246- it is necessary for overhead view camera to be calibrated ⇒ [page 82](#) .

12.8 Calibrating overhead view camera

⇒ ["12.8.1 Setting up calibration unit VAS 721 001", page 82](#)

⇒ ["12.8.2 Calibrating overhead view camera system", page 84](#)

12.8.1 Setting up calibration unit - VAS 721 001-

The overhead view camera may have to be recalibrated following repair work on the vehicle. In detail, this is the case after:

- ♦ Renewal of at least one of the cameras
- ♦ Renewal of control unit for overhead view camera - J928-
- ♦ Flashing of the software of the control unit for overhead view camera - J928-
- ♦ Recording of data sets in the control unit for overhead view camera - J928-
- ♦ Repair work on components in which a camera is installed, or components which affect the installation position of the camera
- ♦ Running gear adjustment



- ◆ Offset in overlapping area of individual camera images
- ◆ Suspension height adjustment on one axle by more than 5 mm
- ◆ Suspension height adjustment of complete vehicle by more than 10 mm

Prerequisites for calibration on vehicle

- ◆ Camera lenses must always be clean. Clean camera lenses with a damp cloth only.
- ◆ Check camera images on display unit for front information display and operating unit control unit - J685-. If camera image is impaired due to damaged camera, renew the respective camera. If image is crooked, check if respective camera is secured correctly.
- ◆ Both exterior mirrors must be folded out.
- ◆ Parking brake is applied.
- ◆ Steering wheel in zero position, wheels point straight ahead.
- ◆ All doors and rear lid are closed.
- ◆ There is nobody in the vehicle.
- ◆ Vehicle is not loaded (curb weight).
- ◆ Battery charger is connected; battery charger must not be within the field of view of the cameras.
- ◆ Ignition is switched on.
- ◆ System is active and is displayed on display unit for front information display and operating unit control unit - J685-.
- ◆ Vehicle must not be moved during calibration.

Requirements regarding calibration unit/calibration environment

- Level calibration surface
- No objects within surrounding area of calibration field to prevent erroneous line detection
- Uniform lighting (no projectors or direct lighting), avoid excessive variations in lighting

Special tools and workshop equipment required

- ◆ Calibration unit - VAS 721 001-
- ◆ Vehicle diagnostic tester

Overview of assembled calibration unit - VAS 721 001-



WARNING

Make sure there is no light reflection on the calibration unit - VAS 721 001-.

Light reflections will impair the image recognition of the cameras and might make calibration impossible.



Note

The vehicle shown in the illustration may differ from the actual vehicle.



1 - Left calibration boards

- ❑ From calibration unit - VAS 721 001-

2 - Front overhead view camera - R243-

- ❑ Calibrating ⇒ [page 84](#)

3 - Right calibration boards

- ❑ From calibration unit - VAS 721 001-

4 - Right overhead view camera - R245-

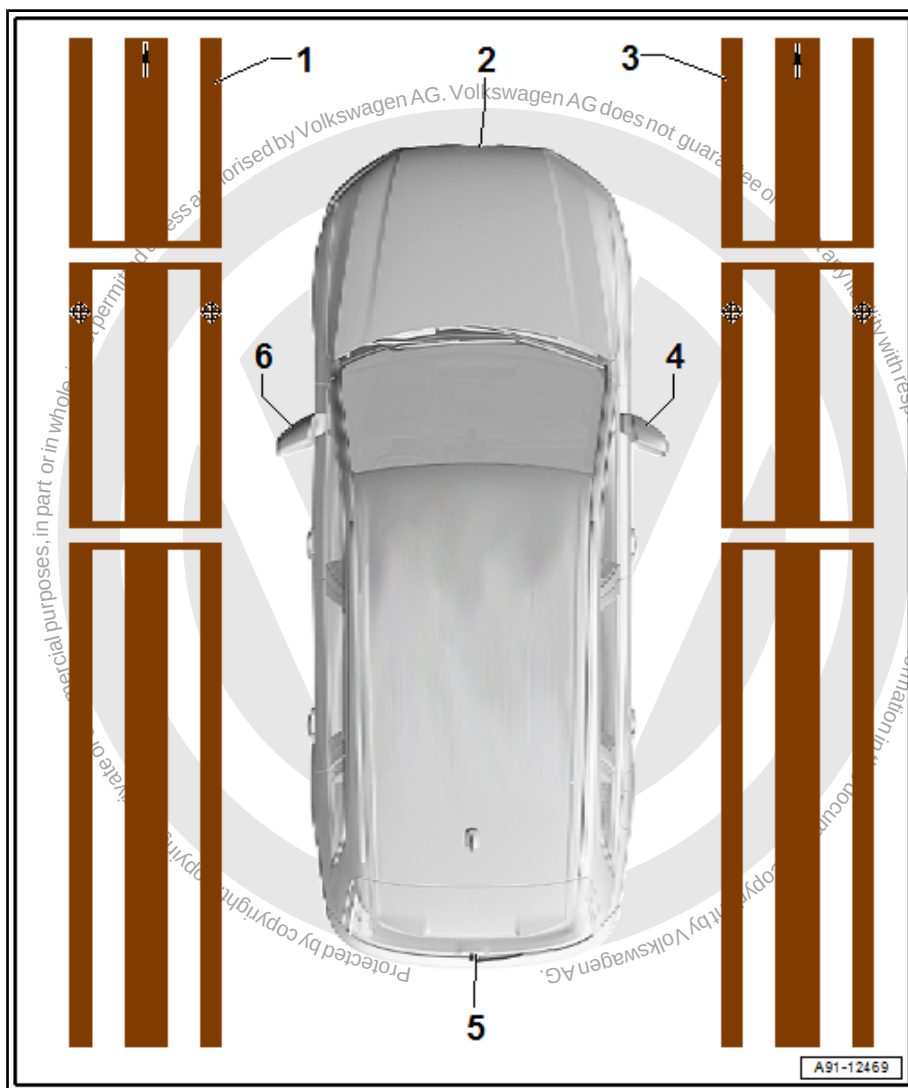
- ❑ Calibrating ⇒ [page 84](#)

5 - Rear overhead view camera - R246-

- ❑ Calibrating ⇒ [page 84](#)

6 - Left overhead view camera - R244-

- ❑ Calibrating ⇒ [page 84](#)



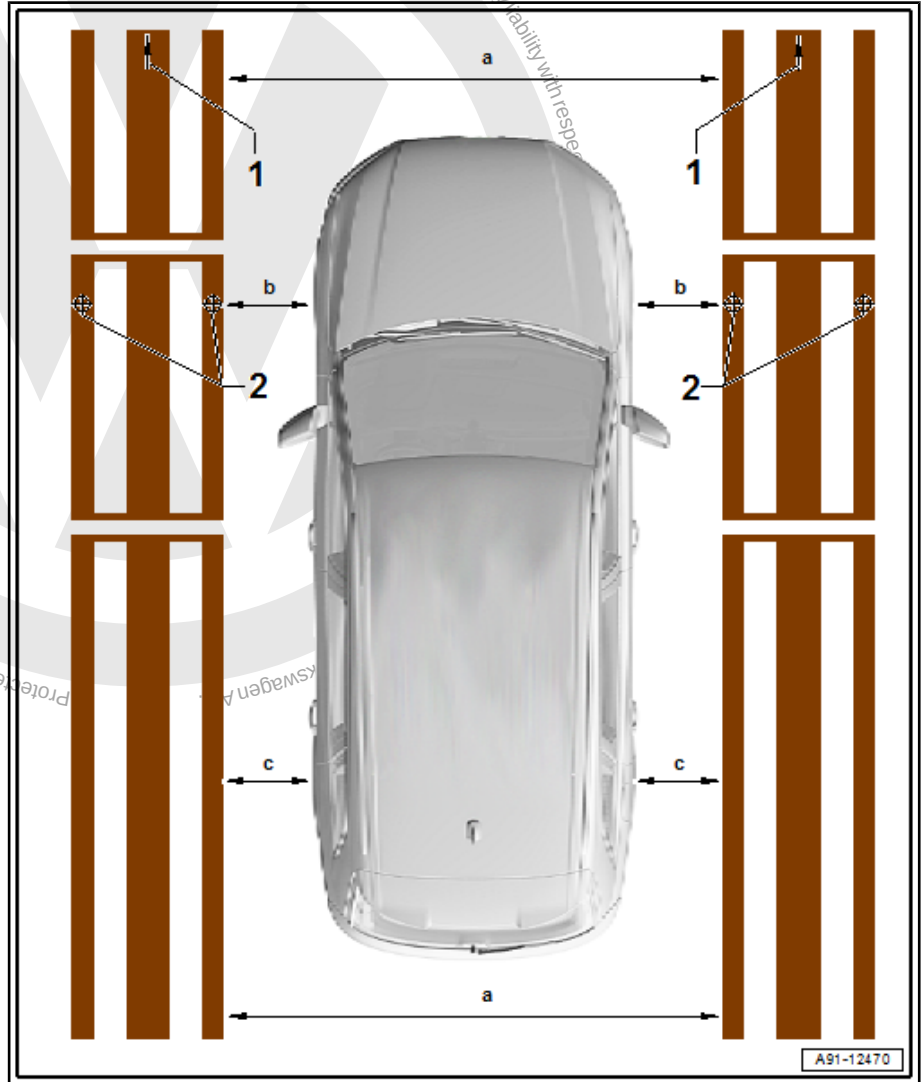
12.8.2 Calibrating overhead view camera system

- Park vehicle on hard level standing.



Note

The vehicle shown in the illustration may differ from the actual vehicle.



- Roll out calibration device - VAS 721 001- on left and right next to vehicle.
- Attach fastening strips to front and rear of calibration boards of calibration device - VAS 721 001- .
- Align cross-hairs -2- to front axle of vehicle (centre of front wheel).
- Align both calibration boards so that they are parallel. Vehicle must be located centrally between both calibration boards.

Observe the following dimension specifications:

- Make sure all necessary prerequisites for vehicle are fulfilled
⇒ [page 83](#) .
- Connect vehicle diagnostic tester.
- Perform calibration using ⇒ Vehicle diagnostic tester.