

Workshop Manual Audi A3 2004 ➤

Communication: Cabriolet

Edition 02.2008



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List of Workshop Manual Repair Groups

Repair Group

91 - Radio, telephone, navigation



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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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91 – Radio, telephone, navigation

1 Radio systems

1.1 General notes

Radio systems

- ◆ “chorus”
- ◆ “concert”
- ◆ “symphony”

Pre-fitted components for radio installation

4 or 6 passive loudspeakers and aerials

General notes

Radio generation II+ units receive their signals via two internal tuners with “phase diversity”.

The further design corresponds to that of “symphony”.

Along with “switching diversity”, “phase diversity” is the second feature designed to reduce interference in the incoming radio signals.

This requires at least two aerials with aerial amplifiers and a radio unit -R- with two internal tuners.

If the incoming signal is affected by interference, the two signals are digitalised in the radio unit -R- after passing through the tuners, and then separated in such a way that the interference is largely eliminated.

If there is no interference in the incoming signal, the radio unit -R- will continuously compare the signals from the two aerials to determine which is the stronger signal. This is then passed on accordingly.

In this case, the second tuner will scan through the frequency band in the background to locate better reception frequencies for the current station. If a better signal is found, this tuner will then be used for reception and the other tuner is faded into the background.

Communication with other vehicle systems takes place via the CAN Bus (Infotainment) and data bus diagnostic interface -J533-.

An optional AUX-IN socket (connection for external audio source -R199-), for connecting MP3 players and other low-frequency sources, or an iPod holder -R192- (in glove box) may be fitted.

Fault finding is performed via the “Guided Fault Finding” ⇒ Vehicle diagnosis, testing and information system VAS 5051.

Aerial wire repairs ⇒ Electrical system; Rep. Gr. 97 ; Renewing aerial wires .

CAN bus wire repairs ⇒ Electrical system; Rep. Gr. 97 ; Wiring harness and connector repairs .

Transport mode in radio “symphony II+”

“symphony II+” is provided with a special transport safeguard for the internal CD changer.

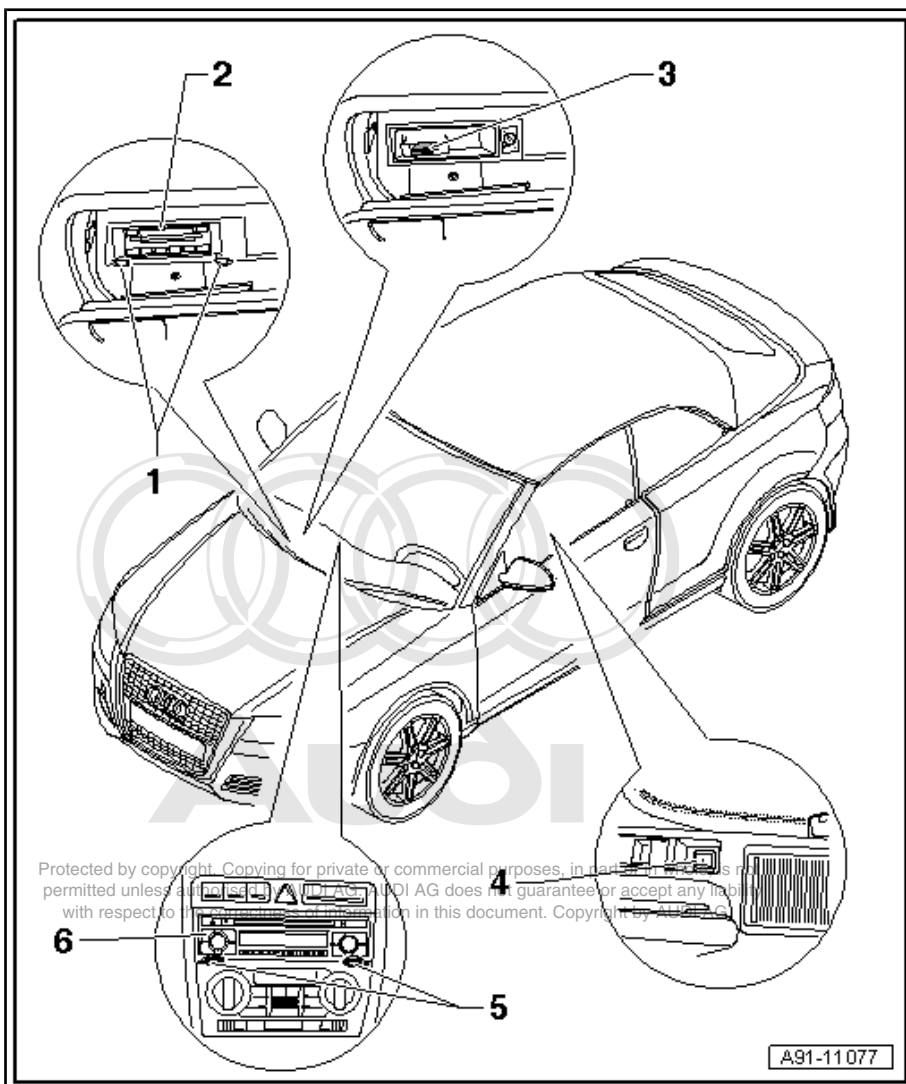
The transport safeguard is activated during the transport of the radio unit and must be deactivated after installing.

The transport safeguard must also be activated before removing the radio unit.

Activating/deactivating transport mode ⇒ [page 8](#) .

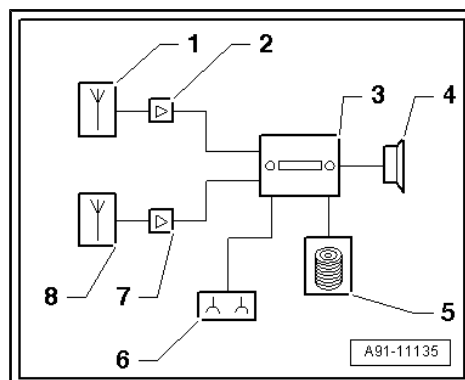
1.2 Overview

- 1 - Radio release tool -T10057-
- 2 - CD changer -R41-
- 3 - iPod holder -R192-
- 4 - Connection for external audio source -R199-
- 5 - Radio release tool -T10057-
- 6 - Radio -R-



1.3 Radio systems - layout

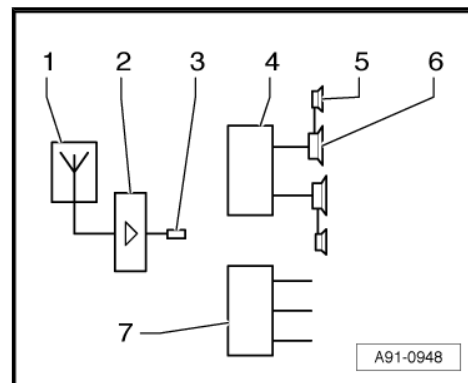
- 1 - Windscreen aerial (left-side)
- 2 - Aerial amplifier -R24- at A-pillar (left-side)
- 3 - Radio -R- in dash panel
- 4 - Sound systems
- 5 - CD changer -R41- / iPod holder -R192- in glove box
- 6 - Connection for external audio source -R199- in centre console (bottom)
- 7 - Aerial amplifier 2 -R111- at A-pillar (right-side)
- 8 - Windscreen aerial (right-side)



1.3.1 Pre-fitted components for radio installation

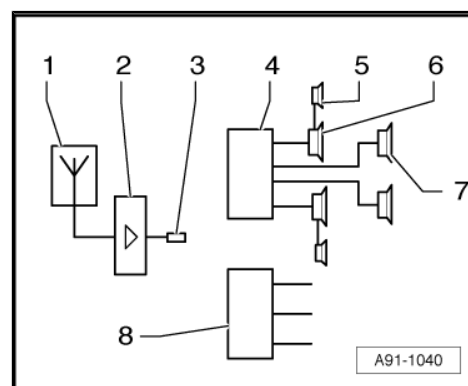
4 passive loudspeakers

- 1 - Windscreen aerial (right-side)
- 2 - Aerial amplifier 2 -R111- at A-pillar (right-side)
- 3 - Aerial connection to radio -R-
- 4 - Loudspeaker connector (T8k, brown)
- 5 - Front left treble loudspeaker -R20- / front right treble loudspeaker -R22- in A-pillar (centre)
- 6 - Front left mid-range and bass loudspeaker -R101- / front right mid-range and bass loudspeaker -R102- in doors (bottom)
- 7 - Voltage supply connector (T8, black)



6 passive loudspeakers

- 1 - Windscreen aerial (right-side)
- 2 - Aerial amplifier 2 -R111- at A-pillar (right-side)
- 3 - Aerial connection to radio -R-
- 4 - Loudspeaker connector (T8k, brown)
- 5 - Front left treble loudspeaker -R20- / front right treble loudspeaker -R22- in A-pillar (centre)
- 6 - Front left mid-range and bass loudspeaker -R101- / front right mid-range and bass loudspeaker -R102- in doors (bottom)
- 7 - Rear left loudspeaker -R4- / rear right loudspeaker -R5- in side trim
- 8 - Voltage supply connector (T8, black)



1.4 Connectors on Radio -R-

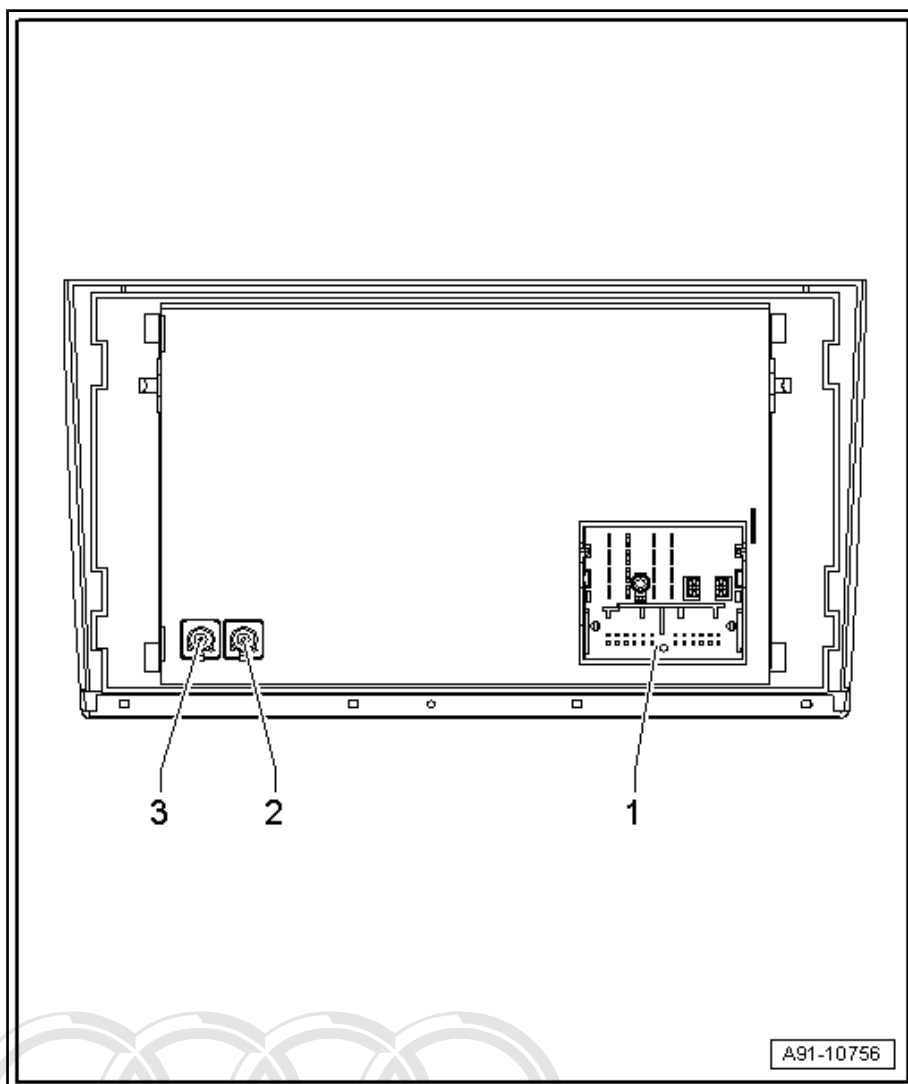


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1 - Connection block with four multi-pin connectors and one fuse for unit

2 - Connection HF1, white (high frequency) from aerial amplifier 2 -R111-

3 - Connection HF2, white (high frequency) from aerial amplifier -R24-



A91-10756



Note

Contacts which are not listed are not used.

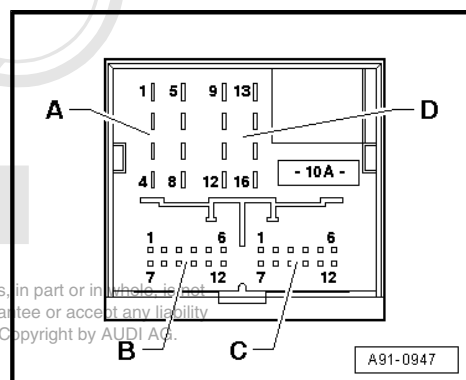
A - Multi-pin connector, 8-pin, black (T8p)

2 - Front right loudspeaker (+) (not with BOSE)

3 - Front left loudspeaker (+) (not with BOSE)

6 - Front right loudspeaker (-) (not with BOSE)

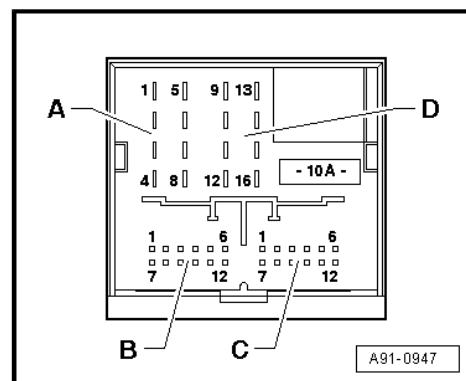
7 - Front left loudspeaker (-) (not with BOSE)



A91-0947

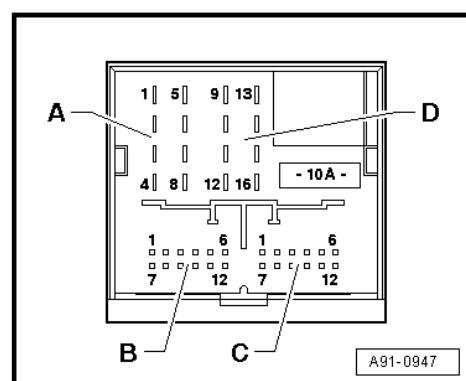
B - Multi-pin connector, 12-pin, blue (T12l)

- 1 - NF in, left-side (low frequency) from connection for external audio source -R199-
- 2 - Signal earth to CD changer -R41- / iPod holder -R192-
- 3 - NF in, earth (low frequency) from connection for external audio source -R199-
- 4 - Permanent live to CD changer -R41- / iPod holder -R192-
- 5 - BOSE coding to earth (only with BOSE)
- 6 - Data output to CD changer -R41- / iPod holder -R192-
- 7 - NF in, right-side (low frequency) from connection for external audio source -R199-
- 8 - Signal (left-side) from CD changer -R41- / iPod holder -R192-
- 9 - Signal (right-side) from CD changer -R41- / iPod holder -R192-
- 10 - Switched positive to CD changer -R41- / iPod holder -R192-
- 11 - Data input from CD changer -R41- / iPod holder -R192-
- 12 - CLK (clock) from CD changer -R41- / iPod holder -R192-



C - Multi-pin connector, 12-pin, green (T12m)

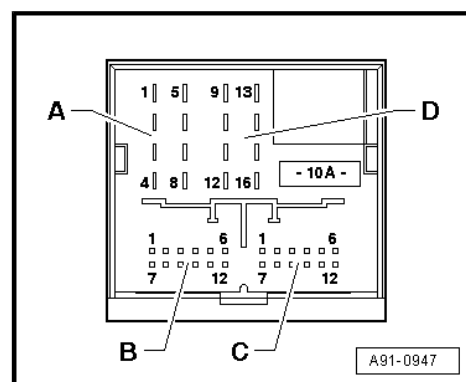
- 1 - Speed signal (not used)
- 3 - Signal (front left) to amplifier -R12- (only with BOSE)
- 5 - Signal (rear left) to amplifier -R12-
- 6 - NF (-) (low frequency) from telephone transmitter and receiver unit -R36- / pre-fitted components for mobile phone installation
- 7 - K-diagnosis (not used)
- 8 - Signal earth to amplifier -R12-
- 9 - Signal (front right) to amplifier -R12- (only with BOSE)
- 10 - AudioPilot on/off to amplifier -R12- (only with BOSE)
- 11 - Signal (rear right) to amplifier -R12-
- 12 - NF (+) (low frequency) from telephone transmitter and receiver unit -R36- / pre-fitted components for mobile phone installation



D - Multi-pin connector, 8-pin, black (T16g)

9 - CAN Bus High (Infotainment)
10 - CAN Bus Low (Infotainment)

- 11 - NF mute (low frequency) from pre-fitted components for mobile phone installation
- 12 - Terminal 31
- 13 - Switched positive to amplifier -R12-
- 14 - Anti-theft alarm earth (not used)
- 15 - Terminal 30
- 16 - Permanent live connected to PIN 15 (anti-theft alarm)



1.5 Fitting locations

1 - CD changer -R41-

- ☐ In glove box
- ☐ Connectors
⇒ [page 48](#)
- ☐ Removing and installing
⇒ [page 48](#)

- iPod holder -R192-

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

2 - Aerial amplifier 2 -R111-

- ☐ At A-pillar (right-side)
- ☐ Connectors
⇒ [page 20](#)
- ☐ Removing and installing
⇒ [page 21](#)

3 - Internal microphone -R74-

- ☐ Only with BOSE
- ☐ In front interior light - W1-
- ☐ Overview ⇒ [page 10](#)
- ☐ Function test
⇒ [page 14](#)
- ☐ Removing and installing
⇒ [page 18](#)

4 - Connection for external audio source -R199-

- ☐ In centre console (bottom)
- ☐ Connectors
⇒ [page 52](#)
- ☐ Removing and installing ⇒ [page 52](#)

5 - Amplifier -R12- (with bass loudspeaker -R100-)

- ☐ Behind rear right side trim

- Bass loudspeaker -R100-

- ☐ Only with BOSE
- ☐ Connector on amplifier -R12- (with bass loudspeaker -R100-) ⇒ [page 12](#)
- ☐ Removing and installing amplifier -R12- (with bass loudspeaker -R100-) ⇒ [page 16](#)
- ☐ Removing and installing bass loudspeaker -R100- ⇒ [page 16](#)

6 - Amplifier -R12-

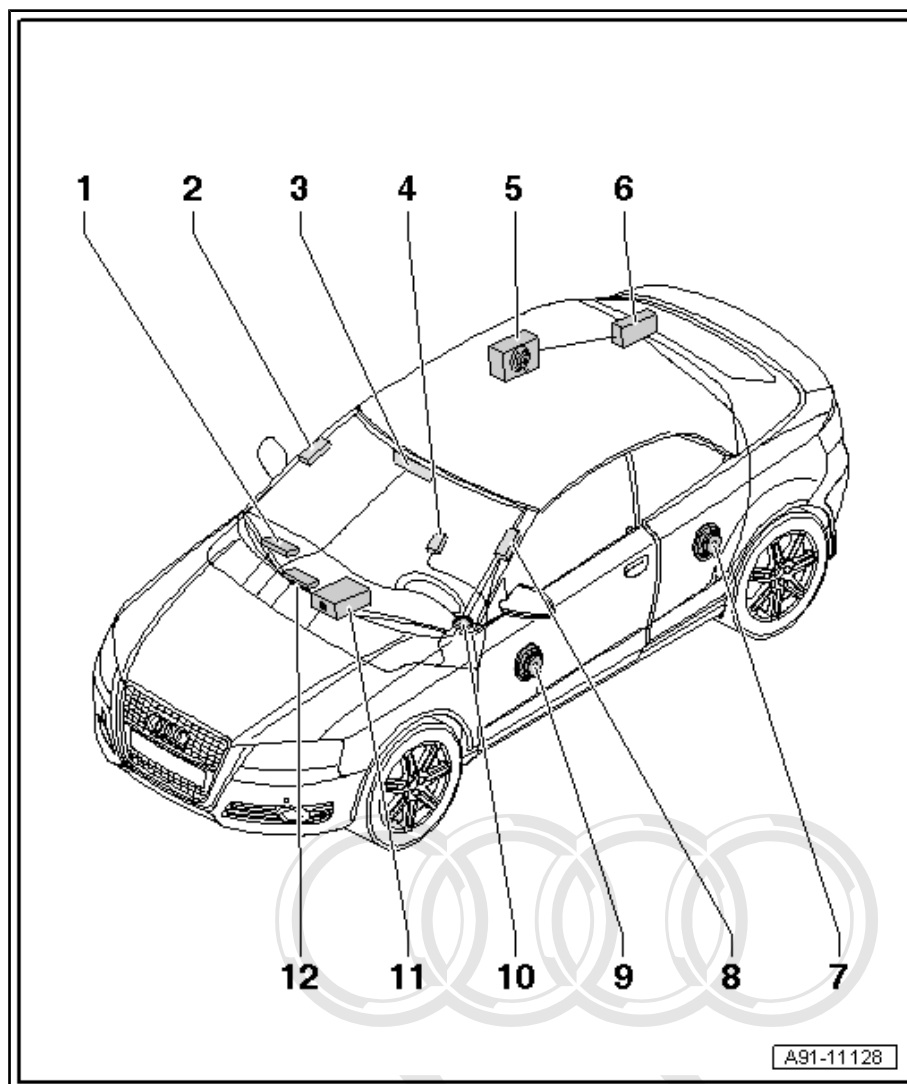
- ☐ Only with BOSE
- ☐ Behind luggage compartment side trim (right-side)
- ☐ Connector ⇒ [page 11](#)
- ☐ Removing and installing ⇒ [page 14](#)

7 - Rear left mid-range loudspeaker -R105- / rear right mid-range loudspeaker -R106-

- ☐ Behind rear side trim

- Rear left loudspeaker -R4- / rear right loudspeaker -R5-

- ☐ Only with BOSE
- ☐ Removing and installing ⇒ [page 15](#)



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8 - Aerial amplifier -R24-

- ☐ At A-pillar (left-side)
- ☐ Connectors ⇒ [page 20](#)
- ☐ Removing and installing ⇒ [page 21](#)

9 - Front left mid-range and bass loudspeaker -R101- / front right mid-range and bass loudspeaker -R102-

- ☐ In doors (bottom)
- ☐ Removing and installing ⇒ [page 15](#)

10 - Front left treble loudspeaker -R20- / front right treble loudspeaker -R22-

- ☐ In centre of A-pillars
- ☐ Removing and installing ⇒ [page 17](#)

11 - Radio -R-

- ☐ In dash panel
- ☐ Connectors ⇒ [page 3](#)
- ☐ Removing and installing "chorus" and "concert" radios ⇒ [page 7](#)
- ☐ Removing and installing "symphony" radio ⇒ [page 8](#)
- ☐ Activating/deactivating transport mode of "symphony" radio unit ⇒ [page 8](#)

12 - Centre mid-range and treble loudspeaker -R158-

- ☐ Only with BOSE
- ☐ In dash panel (front centre)
- ☐ Removing and installing ⇒ [page 17](#)

1.6 Removing and installing "chorus" and "concert" radios

Special tools and workshop equipment required

- ◆ Radio release tool -T10057-

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When renewing control unit, select "Replacement" function for appropriate control unit in "Guided Fault Finding".

For this purpose, use vehicle diagnostic, testing and information system -VAS 5051- .

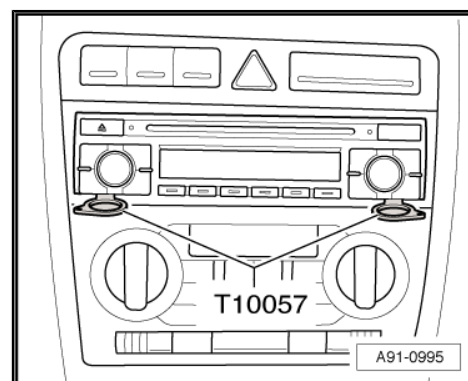
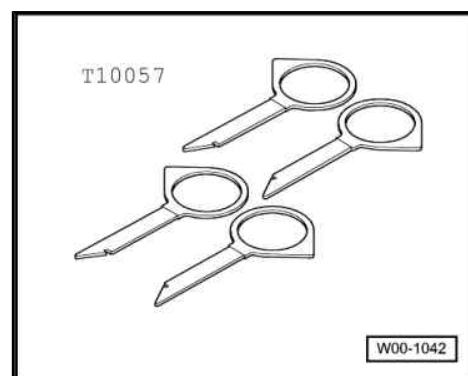
- Switch off all electrical equipment.
- Remove ignition key.

Removing

- Insert two radio release tools -T10057- into slots on radio -R- until they engage. Pointed ends of grips must face outwards.
- Pull radio -R- out of dash panel.
- Release and unplug connectors at radio -R- .
- Press release tabs on radio -R- and remove radio release tool -T10057- .

Installing

- Plug in all connectors.
- Slide radio -R- carefully into dash panel and engage it in mounting frame.



1.7 Removing and installing “symphony” radio

Special tools and workshop equipment required

- ◆ Radio release tool -T10057-

- When renewing control unit, select “Replacement” function for appropriate control unit in “Guided Fault Finding”.

For this purpose, use vehicle diagnostic, testing and information system -VAS 5051- .

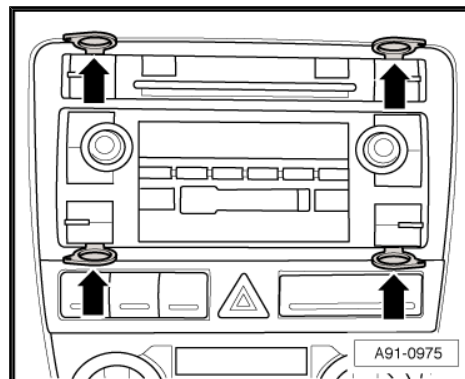
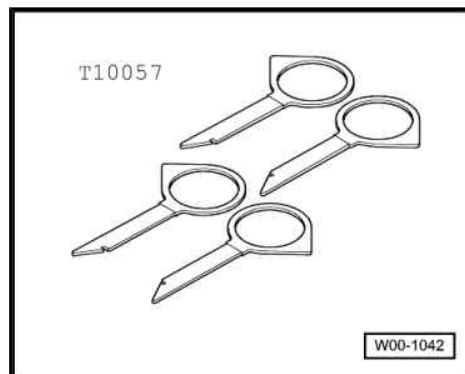
- Activate transport mode of “symphony II+” radio unit
⇒ [page 8](#) .
- Switch off all electrical equipment.
- Remove ignition key.

Removing

- Insert radio release tool -T10057- into slots on radio -R- -arrows- until it engages. Pointed ends of grips must face outwards.
- Pull radio -R- out of dash panel.
- Release and unplug connectors at radio -R- .
- Press release tabs on radio -R- and remove radio release tool -T10057- .

Installing

- Plug in all connectors.
- Slide radio -R- carefully into dash panel and engage it in mounting frame.
- Deactivate transport mode of “symphony II+” radio unit
⇒ [page 8](#) .



1.8 Activating/deactivating transport mode of “symphony II+” radio unit

The transport mode must always be activated before removing/ shipping a “symphony II+” radio unit.

After activation, the internal CD changer drive is in the transport position.

When renewing a “symphony II+” radio unit, the transport mode must be deactivated after the unit is installed.

Activating transport mode

“symphony II+” radio is installed and connected.

- Press the station buttons **[3]** and **[5]** and the **[TONE]** button at the same time.

After approx. 5 seconds “TRANSPORT” will appear in the radio display.

Deactivating transport mode

“symphony II+” radio is installed and connected.

- Press the **[CANCEL]** button.

The word “TRANSPORT” will go out in the display.

Transport mode is deactivated.

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2 Sound system

2.1 General notes

There are two different versions:

Sound systems

- ◆ Active loudspeakers
- ◆ BOSE

The individual loudspeakers are fitted in the doors, A-pillars and rear side trim.

2.2 Overview

1 - Front left treble loudspeaker -R20- / front right treble loudspeaker -R22-

2 - Amplifier -R12- (with bass loudspeaker -R100-)

3 - Bolt
□ 3.5 Nm

4 - Nut
□ 3.5 Nm

5 - Amplifier -R12-

6 - Nut
□ 4.5 Nm

7 - Rear left mid-range loudspeaker -R105- / rear right mid-range loudspeaker -R106-

8 - Bolt
□ 2 Nm

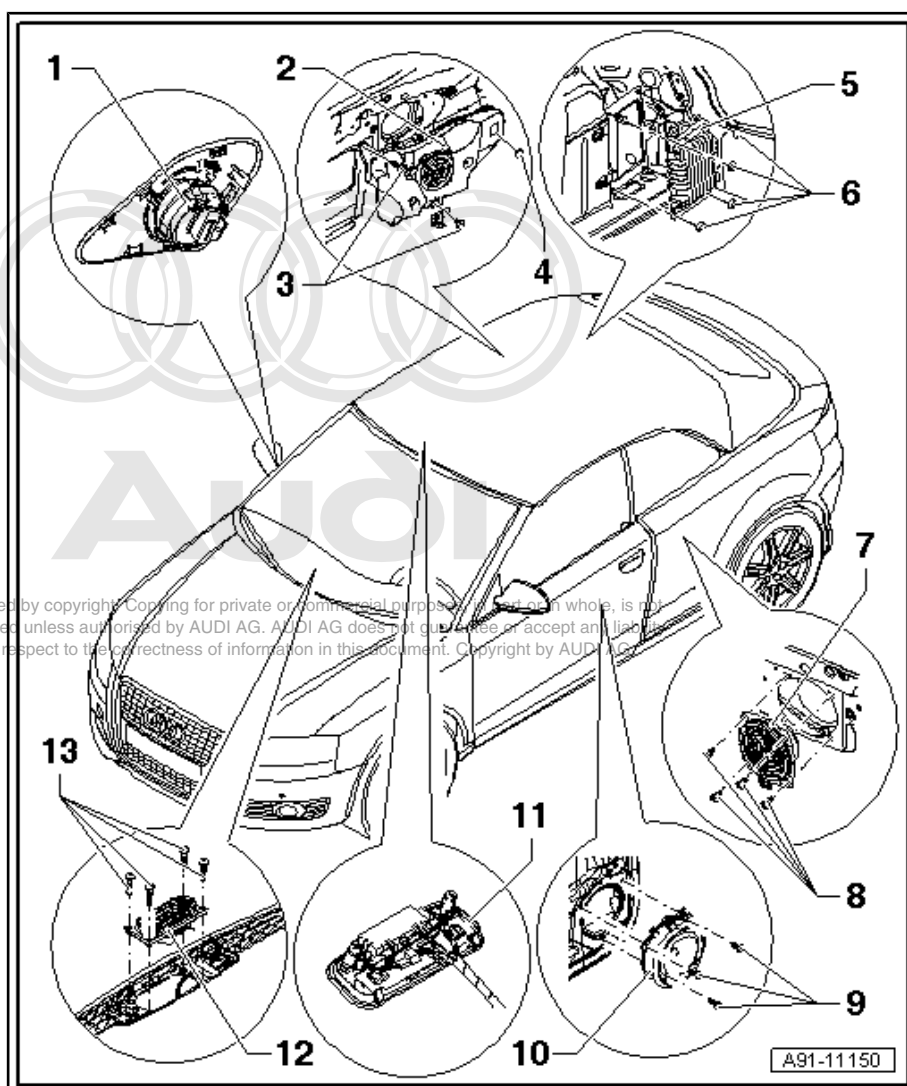
9 - Bolt
□ 2 Nm

10 - Front left mid-range and bass loudspeaker -R101- / front right mid-range and bass loudspeaker -R102-

11 - Internal microphone -R74-

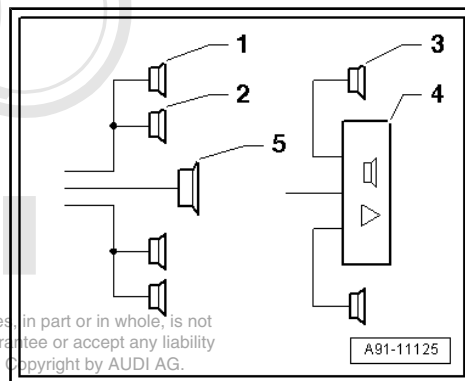
12 - Centre mid-range and treble loudspeaker -R158-

13 - Bolt
□ 1 Nm



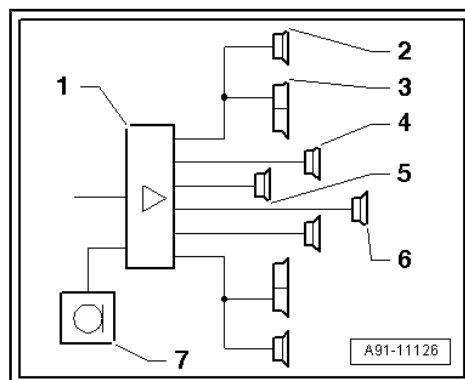
2.3 Active loudspeakers - layout

- 1 - Front left treble loudspeaker -R20- / front right treble loudspeaker -R22- in A-pillars (centre)
- 2 - Front left mid-range and bass loudspeaker -R101- / front right mid-range and bass loudspeaker -R102- in doors (bottom)
- 3 - Rear left mid-range loudspeaker -R105- / rear right mid-range loudspeaker -R106- in rear side trim
- 4 - Amplifier -R12- (with bass loudspeaker -R100-) in side trim (rear right)
- 5 - Centre mid-range and treble loudspeaker -R158- in dash panel (front centre)



2.4 BOSE sound system - layout

- 1 - Amplifier -R12- behind luggage compartment side trim (right-side)
- 2 - Front left treble loudspeaker -R20- / front right treble loudspeaker -R22- in A-pillars (centre)
- 3 - Front left mid-range and bass loudspeaker -R101- / front right mid-range and bass loudspeaker -R102- in doors (bottom)
- 4 - Rear left loudspeaker -R4- / rear right loudspeaker -R5- in side trim (rear)
- 5 - Centre mid-range and treble loudspeaker -R158- in dash panel (front centre)
- 6 - Bass loudspeaker -R100- in side trim (rear right)
- 7 - Internal microphone -R74- in front interior light -W1-



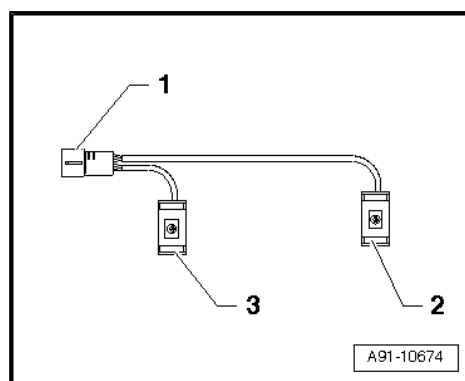
2.5 Microphones - overview

1 - Multi-pin connector, 4-pin, black

- 1 - Telephone microphone -R38- to telephone transmitter and receiver unit -R36-
- 2 - Telephone microphone -R38- to telephone transmitter and receiver unit -R36-
- 3 - Internal microphone -R74- to amplifier -R12-
- 4 - Internal microphone -R74- to amplifier -R12-

2 - Telephone microphone -R38-

3 - Internal microphone -R74-



2.6 Connector on amplifier -R12-

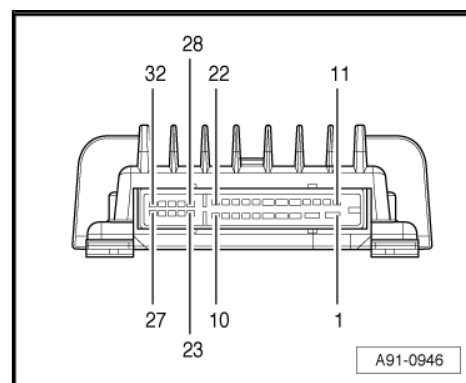


Note

Contacts which are not listed are not used.

Multi-pin connector, 32-pin, black

- 1 - Terminal 30
- 2 - Terminal 31
- 3 - Bass loudspeaker -R100- (PIN 4)
- 4 - Rear left loudspeaker -R4- (-)
- 5 - Rear right loudspeaker -R5- (+)
- 6 - Switched positive from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-
- 7 - Signal (-) from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-
- 11 - Bass loudspeaker -R100- (PIN 3)
- 12 - Bass loudspeaker -R100- (PIN 1)
- 13 - Centre mid-range and treble loudspeaker -R158- (-)
- 14 - Centre mid-range and treble loudspeaker -R158- (+)
- 15 - Bass loudspeaker -R100- (PIN 2)
- 16 - Rear left loudspeaker -R4- (+)
- 17 - Rear right loudspeaker -R5- (-)
- 18 - Signal (convertible roof) from right latch switch for convertible roof -F170-
- 19 - Signal (front left) from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-
- 20 - Signal (front right) from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-
- 21 - Signal (rear left) from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-
- 22 - Signal (rear right) from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-
- 24 - AudioPilot deactivation from radio -R-
- 26 - Front right ouspeaker (-)
- 27 - Front right loudspeaker (+)
- 29 - Microphone input (+) from internal microphone -R74-
- 30 - Microphone input (-) from internal microphone -R74-
- 31 - Front left loudspeaker (+)
- 32 - Front left loudspeaker (-)



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2.7 Connector on amplifier -R12- (with bass loudspeaker -R100-)



Note

Contacts which are not listed are not used.

Multi-pin connector, 23-pin

1 - Signal (rear right) from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

2 - Signal (-) from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

3 - Signal (rear left) from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

5 - CAN Bus Low (Infotainment)

6 - CAN Bus High (Infotainment)

9 - Switched positive from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

17 - Rear left mid-range loudspeaker -R105- (+)

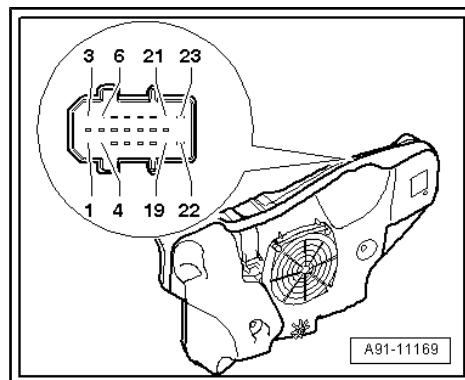
18 - Rear left mid-range loudspeaker -R105- (-)

20 - Rear right mid-range loudspeaker -R106- (+)

21 - Rear right mid-range loudspeaker -R106- (-)

22 - Terminal 31

23 - Terminal 30



2.8 Fitting locations

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1 - CD changer -R41-

- iPod holder -R192-

- ☐ In glove box

2 - Aerial amplifier 2 -R111-

- ☐ At A-pillar (right-side)

3 - Internal microphone -R74-

- ☐ Only with BOSE
- ☐ In front interior light - W1-
- ☐ Overview ⇒ [page 10](#)
- ☐ Function test ⇒ [page 14](#)
- ☐ Removing and installing ⇒ [page 18](#)

4 - Connection for external audio source -R199-

- ☐ In centre console (bottom)

5 - Amplifier -R12- (with bass loudspeaker -R100-)

- ☐ Behind rear right side trim

- Bass loudspeaker -R100-

- ☐ Only with BOSE
- ☐ Connector on amplifier - R12- (with bass loudspeaker -R100-) ⇒ [page 12](#)
- ☐ Removing and installing amplifier -R12- (with bass loudspeaker - R100-) ⇒ [page 16](#)

- ☐ Removing and installing bass loudspeaker -R100- ⇒ [page 16](#)

6 - Amplifier -R12-

- ☐ Only with BOSE
- ☐ Behind luggage compartment side trim (right-side)
- ☐ Connectors ⇒ [page 11](#)
- ☐ Removing and installing ⇒ [page 14](#)

7 - Rear left mid-range loudspeaker -R105- / rear right mid-range loudspeaker -R106-

- ☐ Behind rear side trim

- Rear left loudspeaker -R4- / rear right loudspeaker -R5-

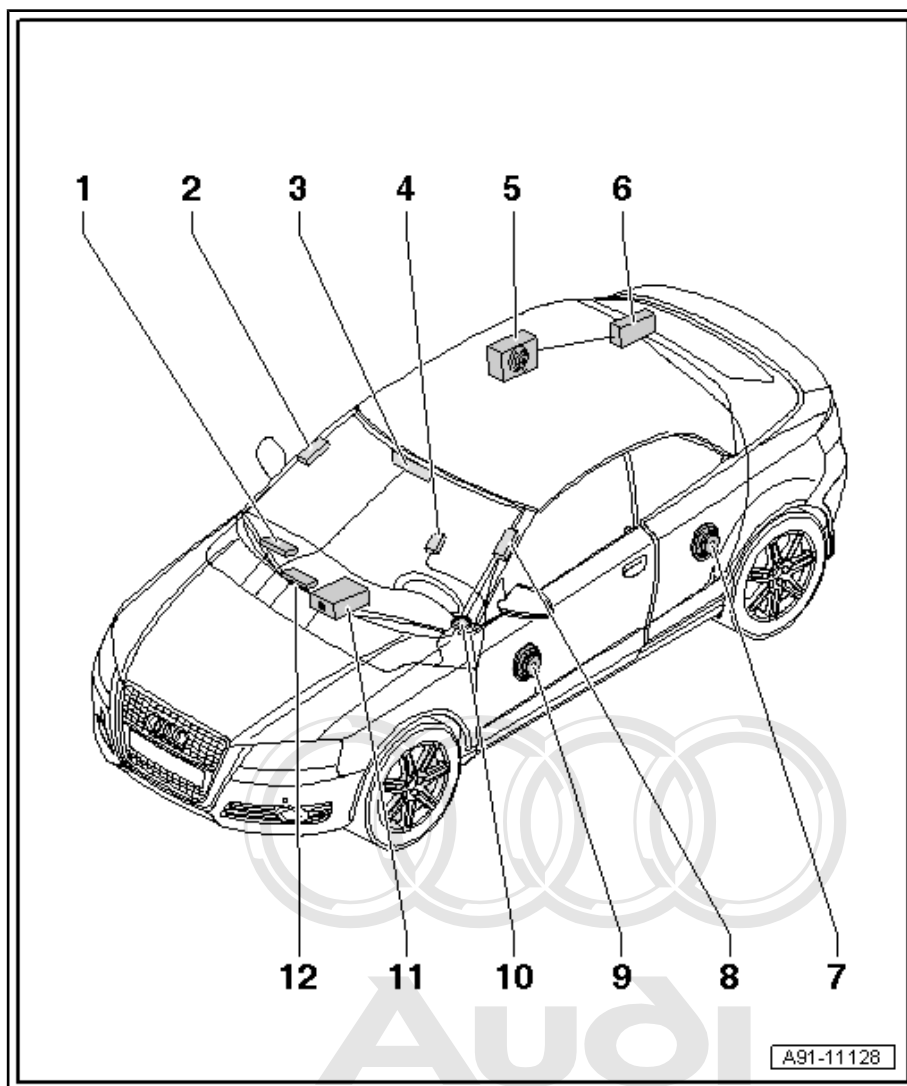
- ☐ Only with BOSE
- ☐ Behind rear side trim
- ☐ Removing and installing ⇒ [page 15](#)

8 - Aerial amplifier -R24-

- ☐ At A-pillar (left-side)

9 - Front left mid-range and bass loudspeaker -R101- / front right mid-range and bass loudspeaker -R102-

- ☐ In doors (bottom)
- ☐ Removing and installing ⇒ [page 15](#)



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10 - Front left treble loudspeaker -R20- / front right treble loudspeaker -R22-

- ☐ In centre of A-pillars
- ☐ Removing and installing ⇒ [page 17](#)

11 - Radio -R-

- ☐ In dash panel

12 - Centre mid-range and treble loudspeaker -R158-

- ☐ Only with BOSE
- ☐ In dash panel (front centre)
- ☐ Removing and installing ⇒ [page 17](#)

2.9 Removing and installing amplifier -R12-

The amplifier -R12- is located behind the luggage compartment side trim (right-side).

- Switch off all electrical equipment.
- Remove ignition key.

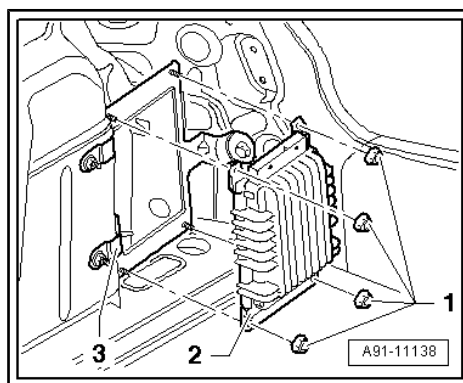
Removing

- Remove luggage compartment side trim (right-side) ⇒ General body repairs, interior; Rep. Gr. 70 .
- Unplug connector at amplifier -R12- -2-.
- Unscrew nuts -1- and detach amplifier -R12- -2- from bracket -3-.

Installing

- Installation is performed in reverse sequence.

Tightening torques ⇒ [page 9](#)



2.10 Function test for internal microphone -R74-

An internal microphone -R74- is installed on vehicles with the BOSE Sound system to measure interior noise levels (AudioPilot). It is connected directly to the amplifier -R12-. When noise increases in the interior, the amplifier -R12- (Audiopilot) automatically adjusts the volume according to a preset pattern.

When the radio -R- is switched on, the amplifier -R12- checks the voltage supply level of the internal microphone -R74-. If the result is OK, there is no reaction.

If, however, the microphone -R74- is not installed, three short tones are emitted three times.

In the case of a short circuit, three short tones are emitted.

Function test

- Switch on the radio -R- and tune in to a station (preferably pop music).
- Set the volume level to approx. "20".
- Tap lightly on the internal microphone -R74- (front interior light -W1-) for a while.

You should hear the volume of the radio -R- increase. The process occurs slowly.

- Stop tapping.

The volume of the radio -R- should decrease audibly.

2.11 Removing and installing front left mid-range and bass loudspeaker -R101-

Front left mid-range and bass loudspeaker -R101- and front right mid-range and bass loudspeaker -R102- are located in doors (bottom).

The procedure for removing and installing front left mid-range and bass loudspeaker -R101- / front right mid-range and bass loudspeaker -R102- is the same.

- Switch off all electrical equipment.
- Remove ignition key.

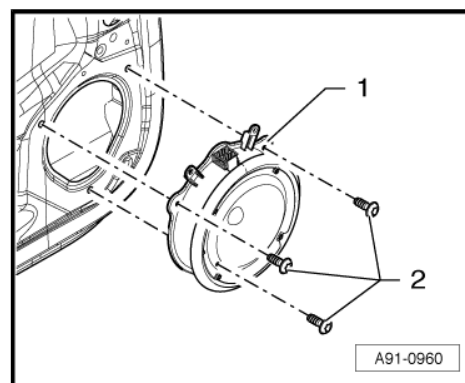
Removing

- Remove door trim ⇒ General body repairs, interior; Rep. Gr. 70 .
- Unplug electrical connector at front left mid-range and bass loudspeaker -R101- -1-.
- Remove bolts -2-.
- Detach front left mid-range and bass loudspeaker -R101- -1- from door.

Installing

- Installation is performed in reverse sequence.

Tightening torques ⇒ [page 9](#)



2.12 Removing and installing rear left mid-range loudspeaker -R105-

Rear left mid-range loudspeaker -R105- , rear right mid-range loudspeaker -R106- , rear left loudspeaker -R4- and rear right loudspeaker -R5- are located behind side trim.

The procedure for removing and installing rear left mid-range loudspeaker -R105- , rear right mid-range loudspeaker -R106- , rear left loudspeaker -R4- and rear right loudspeaker -R5- is the same.

- Switch off all electrical equipment.
- Remove ignition key.

Removing

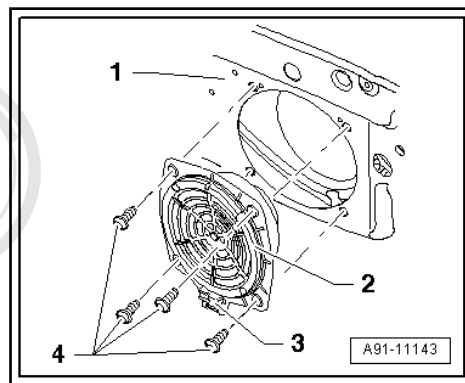
- Remove side trim (left-side) ⇒ General body repairs, interior; Rep. Gr. 70 .

- Unplug connector -3- at rear left mid-range loudspeaker - R105- -2-.
- Remove bolts -4-.
- Detach rear left mid-range loudspeaker -R105- -2- from side panel -1-.

Installing

- Installation is performed in reverse sequence.

Tightening torques ⇒ [page 9](#)



2.13 Removing and installing amplifier -R12- (with bass loudspeaker -R100-)

The amplifier -R12- (with bass loudspeaker -R100-) is located behind the side trim (right-side).

- Switch off all electrical equipment.
- Remove ignition key.

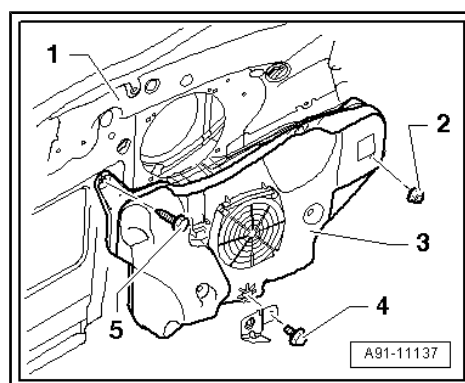
Removing

- Remove side trim (right-side) ⇒ General body repairs, interior; Rep. Gr. 70 .
- Unplug connector at amplifier -R12- (with bass loudspeaker - R100-) -3-.
- Unscrew nut -2-.
- Remove bolts -4- and -5-.
- Detach amplifier -R12- (with bass loudspeaker -R100-) -3- from side panel -1-.

Installing

- Installation is performed in reverse sequence.

Tightening torques ⇒ [page 9](#)



2.14 Removing and installing bass loudspeaker -R100-

The bass loudspeaker -R100- is located behind the side trim (right-side).

- Switch off all electrical equipment.
- Remove ignition key.

Removing

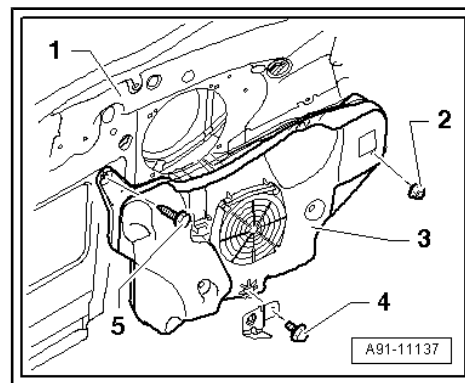
- Remove side trim (right-side) ⇒ General body repairs, interior; Rep. Gr. 70 .

- Unplug electrical connector at bass loudspeaker -R100- -3-.
- Unscrew nut -2-.
- Remove bolts -4- and -5-.
- Detach bass loudspeaker -R100- -3- from side panel -1-.

Installing

- Installation is performed in reverse sequence.

Tightening torques ⇒ [page 9](#)



2.15 Removing and installing front left treble loudspeaker -R20-

Front left treble loudspeaker -R20- and front right treble loudspeaker -R22- are located in A-pillars.

The procedure for removing and installing front left treble loudspeaker -R20- and front right treble loudspeaker -R22- is the same.

- Switch off all electrical equipment.
- Remove ignition key.

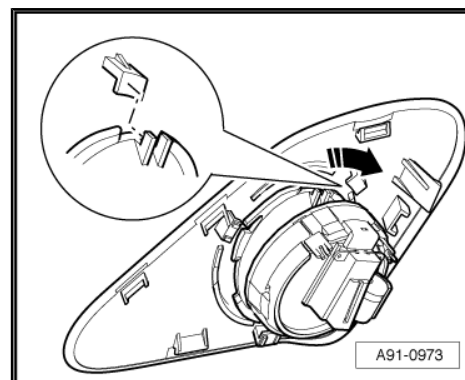
Removing

The front left treble loudspeaker -R20- is attached to the loudspeaker trim; the loudspeaker trim is attached to the A-pillar trim.

- Remove A-pillar trim ⇒ General body repairs, interior ; Rep. Gr. 70 .
- Unplug electrical connector at front left treble loudspeaker -R20- .
- Turn front left treble loudspeaker -R20- in direction of “arrow” until both “lugs” align with each other.
- Detach front left treble loudspeaker -R20- from trim.

Installing

- Installation is performed in reverse sequence.
- Make sure the two lugs coincide before turning front left treble loudspeaker -R20- anti-clockwise.



2.16 Removing and installing centre mid-range and treble loudspeaker -R158-

Centre mid-range and treble loudspeaker -R158- is located in dash panel (front centre).

- Switch off all electrical equipment.
- Remove ignition key.

Removing

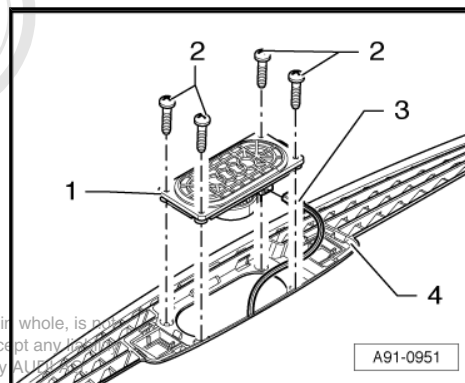
- Unclip cover at centre front of dash panel.

- Remove bolts -2-.
- Lift centre mid-range and treble loudspeaker -R158- -1- out of dash panel -4- and unplug electrical connector -3-.

Installing

- Installation is performed in reverse sequence.

Tightening torques ➔ [page 9](#)



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2.17 Removing and installing internal microphone -R74-

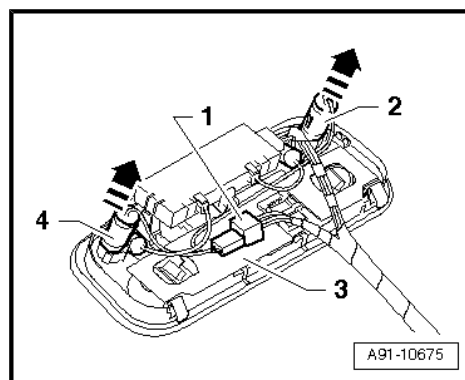
One or two microphones (internal microphone -R74- / telephone microphone -R38-) are installed in the front interior light -W1- . They can only be renewed together.

Removing

- Remove front interior light -W1- ➔ Electrical system; Rep. Gr. 96 .
- Unplug connector -1-.
- Pry microphones -2- and -4- out of front interior light -W1- -3- -arrows-.

Installing

- Installation is performed in reverse sequence.



3 Aerial system

3.1 General notes

The aerals for radio reception are located in the windscreen on the left side (FM2) and on the right side (AM/FM1/FZV remote locking).

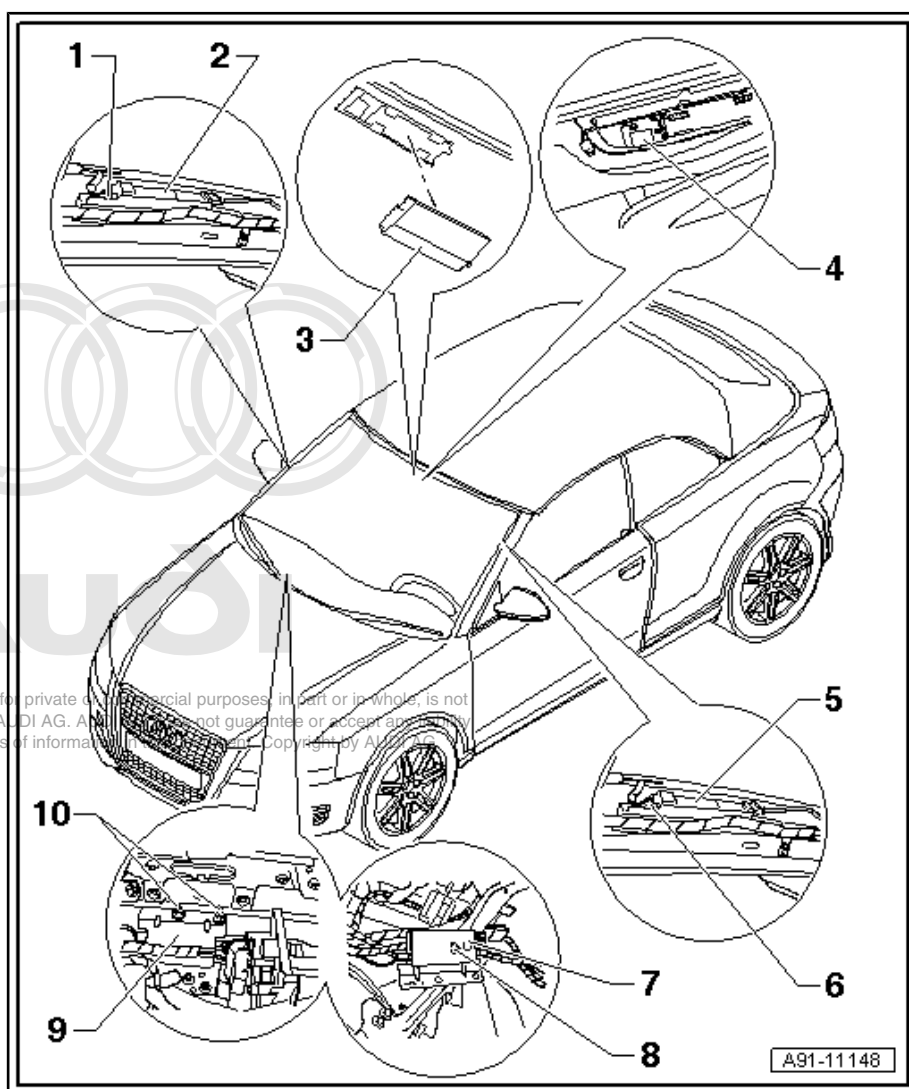
The signals are processed by aerial amplifiers in the A-pillars. In addition, for RNS-E/Low, the aerial selection control unit -J515- is fitted behind the glove box.

The aerals for navigation/telephone are located behind the front interior light -W1- .

Aerial wire repairs ⇒ Electrical system; Rep. Gr. 97 ; Renewing aerial wires .

3.2 Overview

- 1 - Bolt
□ 2 Nm
- 2 - Aerial amplifier 2 -R111-
- 3 - Telephone aerial -R65-
- 4 - GPS aerial -R50-
- 5 - Aerial amplifier -R24-
- 6 - Bolt
□ 2 Nm
- 7 - Aerial selection control unit -J515-
- 8 - Bolt
□ 2 Nm
- 9 - Bracket
- 10 - Nut
□ 2.5 Nm



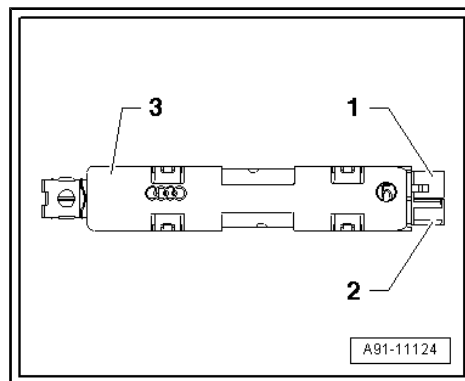
3.3 Pin assignment for aerial amplifier 2 - R111-

Aerial amplifier 2 -R111-

1 - Connection HF1/AM/FM1 to radio -R- / aerial selection control unit -J515-

2 - Connection FZV (remote locking) to convenience system central control unit -J393-

3 - Connection for windscreen aerial (right-side)



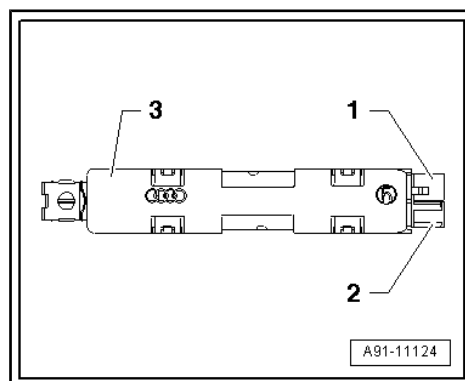
3.4 Pin assignment for aerial amplifier -R24-

Aerial amplifier -R24-

1 - Connection HF2/FM2 to radio -R- / aerial selection control unit -J515-

2 - Not used

3 - Connection for windscreen aerial (left-side)



3.5 Pin assignment for aerial selection control unit -J515-

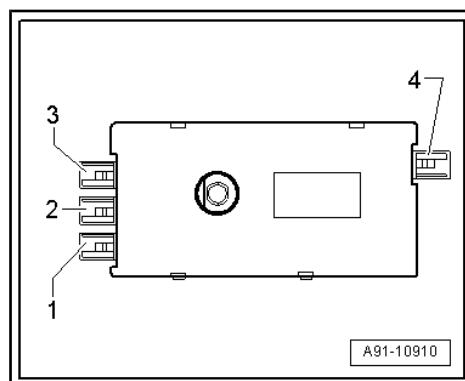
Aerial selection control unit -J515-

1 - Connection AM/FM1 (black) from aerial amplifier 2 -R111-

2 - Connection HF, white (high frequency) to navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

3 - Connection ZF, yellow (intermediate frequency) from navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

4 - Connection FM2 (yellow) from aerial amplifier -R24-



3.6 Fitting locations

1 - Aerial amplifier for mobile telephone -R86-

- ☐ Behind glove box
- ☐ Connectors [⇒ page 28](#)
- ☐ Removing and installing [⇒ page 31](#)

2 - Aerial amplifier 2 -R111-

- ☐ At A-pillar (right-side)
- ☐ Connectors [⇒ page 20](#)
- ☐ Removing and installing [⇒ page 21](#)

3 - Telephone aerial -R65-

- ☐ On windscreen (top)
- ☐ Removing and installing [⇒ page 23](#)

4 - GPS aerial -R50-

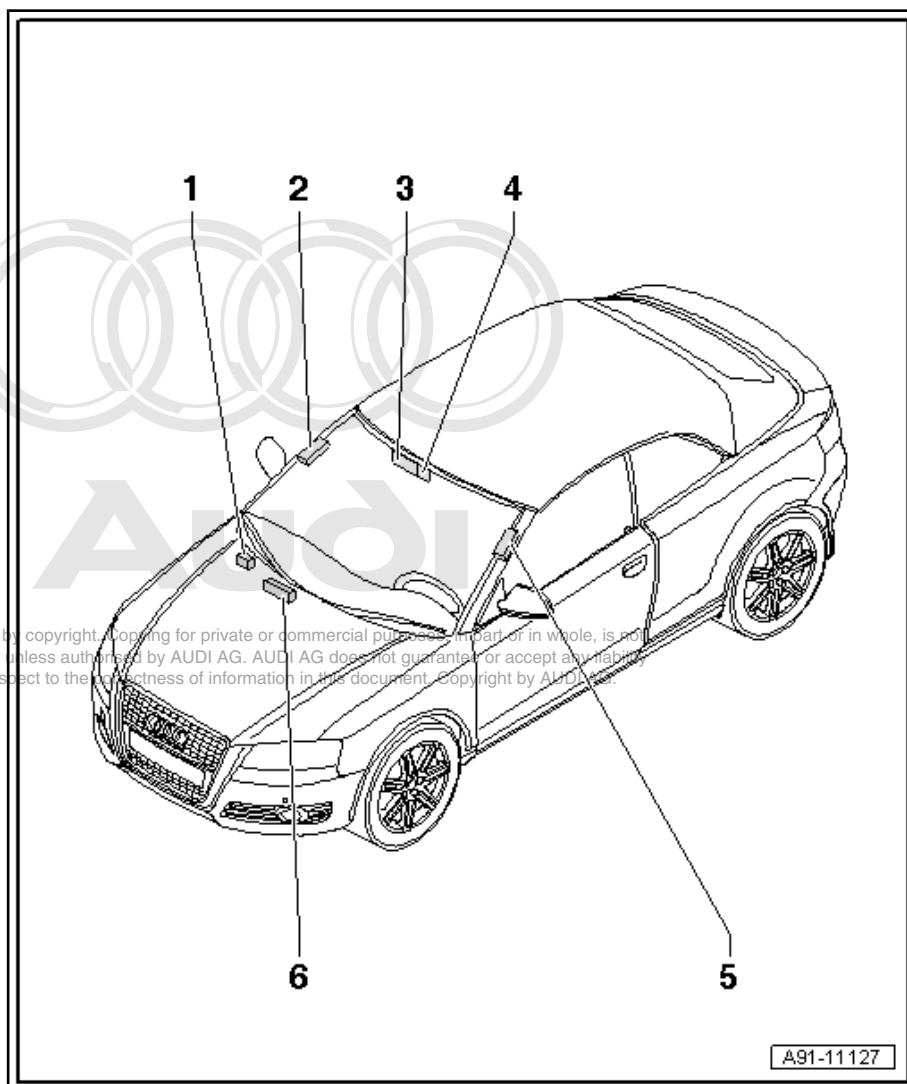
- ☐ On windscreen (top)
- ☐ Removing and installing [⇒ page 22](#)

5 - Aerial amplifier -R24-

- ☐ At A-pillar (left-side)
- ☐ Connectors [⇒ page 20](#)
- ☐ Removing and installing [⇒ page 21](#)

6 - Aerial selection control unit -J515-

- ☐ Behind glove box
- ☐ Connectors [⇒ page 20](#)
- ☐ Removing and installing [⇒ page 22](#)



3.7 Removing and installing aerial amplifier -R24- / aerial amplifier 2 -R111-

The aerial amplifier -R24- and aerial amplifier 2 -R111- are located at the A-pillars.

The procedure for removing and installing the aerial amplifier -R24- and the aerial amplifier 2 -R111- is the same.

- Switch off all electrical equipment.
- Remove ignition key.

Removing

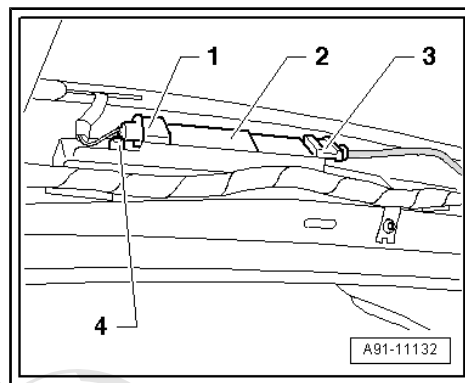
- Remove A-pillar trim (top) ⇒ General body repairs, interior; Rep. Gr. 70.

- Unplug connectors -1- and -3- at aerial amplifier -R24- -2-.
- Unscrew bolt -4- and detach aerial amplifier -R24- -2- from bracket at A-pillar.

Installing

- Installation is performed in reverse sequence.

Tightening torques ⇒ [page 19](#)



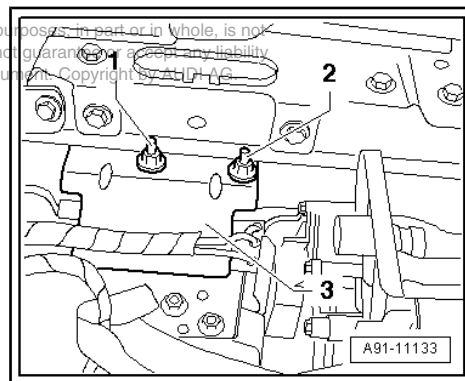
3.8 Removing and installing aerial selection control unit -J515-

Aerial selection control unit -J515- is located behind glove box.

- Switch off all electrical equipment.
- Remove ignition key.

Removing

- Remove the glove box ⇒ General body repairs, interior; Rep. Gr. 70 .
- Unscrew nuts -1- and -2- on bracket -3-.
- Detach bracket -3- with aerial selection control unit -J515-.

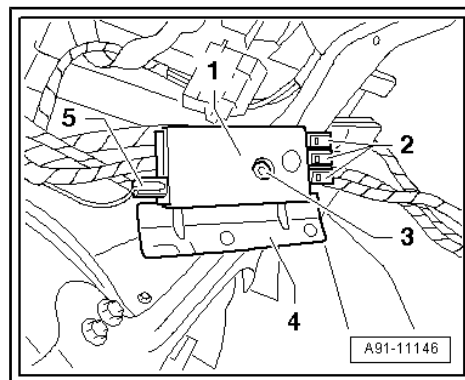


- Unplug connectors -2- and -5- at aerial selection control unit -J515- -1-.
- Remove bolt -3- on aerial selection control unit -J515- -1-.
- Detach aerial selection control unit -J515- -1- from bracket -4-.

Installing

- Installation is performed in reverse sequence.

Tightening torques ⇒ [page 19](#)



3.9 Removing and installing navigation system aerial -R50-

GPS aerial -R50- is located behind cover in front of front interior light -W1- .

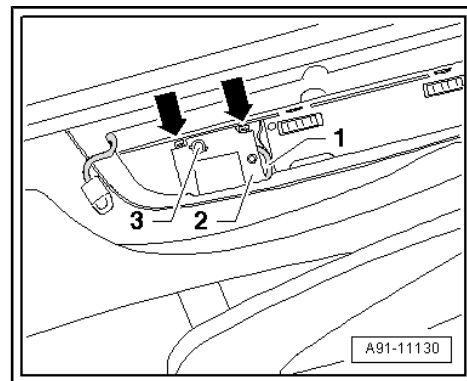
- Switch off all electrical equipment.
- Remove ignition key.

Removing

- Unclip cover in front of front interior light -W1- .
- Unplug connector -3- at GPS aerial -R50- -2-.
- Unclip tabs -arrows- using a small screwdriver and remove GPS aerial -R50- -2- from mounting -1-.

Installing

- Installation is performed in reverse sequence.



3.10 Removing and installing telephone aerial -R65-

Telephone aerial -R65- is located behind cover in front of front interior light -W1- .

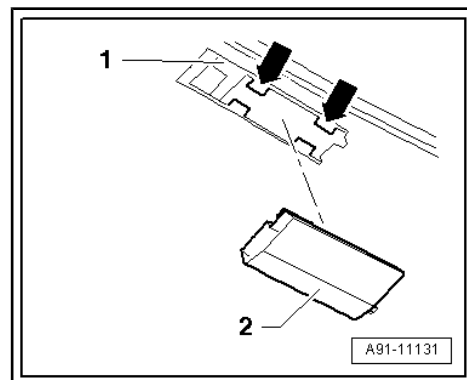
- Switch off all electrical equipment.
- Remove ignition key.

Removing

- Unclip cover in front of front interior light -W1- .
- Unplug connector at telephone aerial -R65- -2-.
- Unclip tabs -arrows- using a small screwdriver and remove telephone aerial -R65- -2- from mounting -1-.

Installing

- Installation is performed in reverse sequence.



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4 Telephone systems

4.1 General notes

Phone pre-installation

- ◆ Telephone transmitter and receiver unit -R36-
- ◆ Aerial amplifier for mobile telephone -R86-
- ◆ Telephone aerial -R65- on windscreen (top)
- ◆ Telephone bracket -R126- with mobile telephone -R54-
- ◆ Telephone microphone -R38- in front interior light -W1-

The telephone transmitter and receiver unit -R36- is fitted with a Bluetooth aerial -R152-. This enables all mobile telephones -R54- approved by Audi with Bluetooth interface to be operated with the mobile phone system installed in the vehicle.

It is not possible to connect up other devices via Bluetooth, for example headset, laptop or PDA.

Notes on operation and types of mobile phones:

www.audi.de/telefon

Pre-fitted components for mobile phone installation

- ◆ Multi-pin connector, 18-pin (T18a), black, behind glove box
- ◆ Telephone aerial -R65- on windscreen (top)
- ◆ Telephone microphone -R38- in front interior light -W1-

Fault finding is performed via the "Guided Fault Finding" ⇒ Vehicle diagnosis, testing and information system VAS 5051.

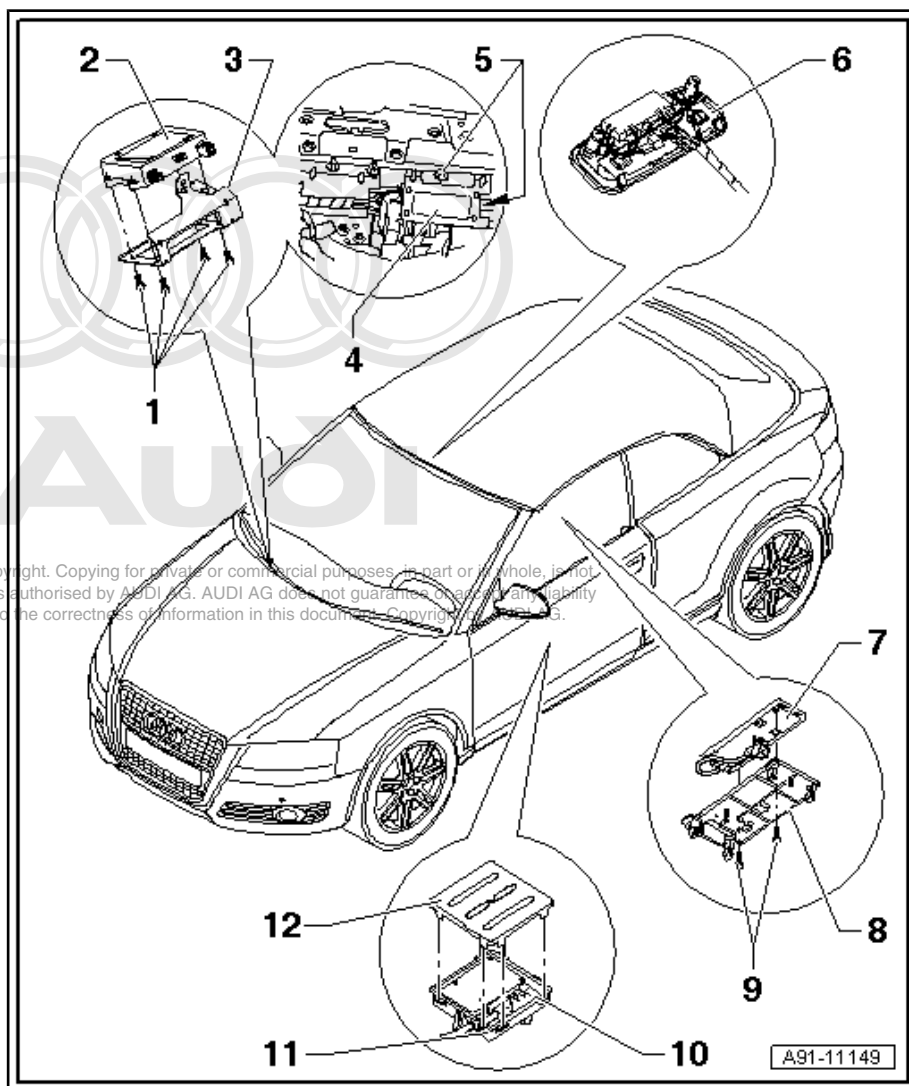
Aerial wire repairs ⇒ Electrical system; Rep. Gr. 97 ; Renewing aerial wires .

CAN bus wire repairs ⇒ Electrical system; Rep. Gr. 97 ; Wiring harness and connector repairs .

4.2 Overview

- 1 - Bolt
☐ 3 Nm
- 2 - Aerial amplifier for mobile telephone -R86-
- 3 - Bracket
- 4 - Bracket
- 5 - Bolt
☐ 9 Nm
- 6 - Front interior light -W1- with telephone microphone -R38-
- 7 - Telephone bracket -R126-
- 8 - Base plate
- 9 - Bolt
☐ 2 Nm
- 10 - Telephone transmitter and receiver unit -R36-
- 11 - Electronics box
- 12 - Cover for electronics box

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4.3 Phone pre-installation - layout

1 - Telephone bracket -R126- with mobile telephone -R54- in centre armrest

2 - Radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503- in dash panel

3 - Sound systems

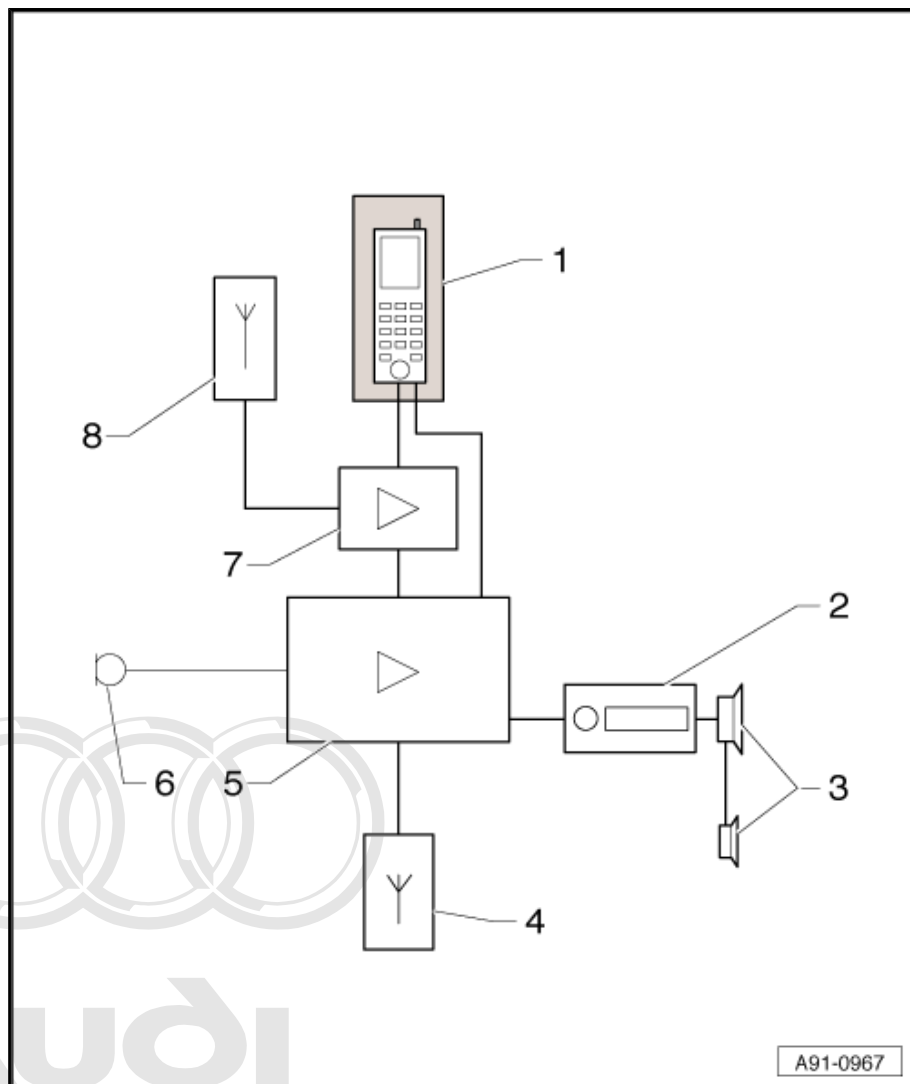
4 - Aerial for Bluetooth -R152- on telephone transmitter and receiver unit -R36-

5 - Telephone transmitter and receiver unit -R36- in electronics box under front seat (left-side)

6 - Telephone microphone -R38- in front interior light -W1-

7 - Aerial amplifier for mobile telephone -R86- behind glove box

8 - Telephone aerial -R65- on windscreen (top)



4.4 Pre-fitted components for mobile phone installation - layout

1 - Multi-pin connector, 18-pin (T18a), black, behind glove box

2 - Telephone aerial -R65- on windscreen (top)

3 - Telephone microphone -R38-

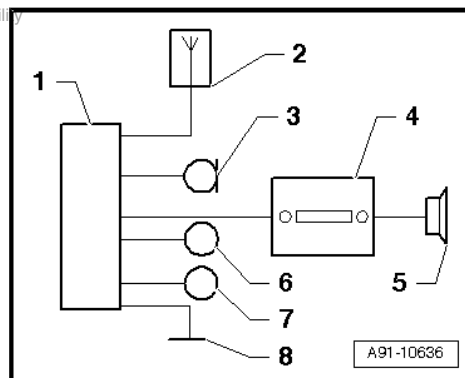
4 - Radio -R-

5 - Sound systems

6 - Terminal 15

7 - Terminal 30

8 - Terminal 31



4.5 Connectors and pin assignment

4.5.1 Telephone transmitter and receiver unit -R36-

Connectors

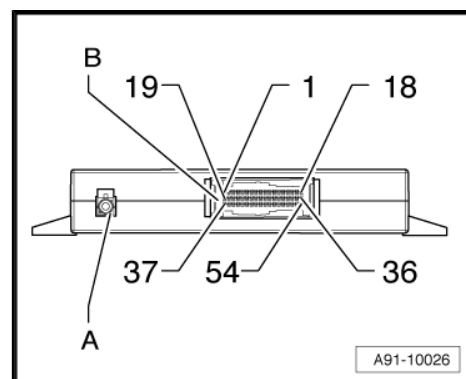
A - Connection (yellow) for aerial for Bluetooth -R152-

B - Multi-pin connector, 54-pin, black (T54)



Note

Contacts which are not listed are not used.



B - Multi-pin connector, 54-pin, black (T54)

1 - Terminal 30

2 - Terminal 31

3 - Mobile phone "ON" signal to aerial amplifier for mobile telephone -R86-

8 - NF+ (low frequency) to radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

9 - NF- (low frequency) to radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

10 - Terminal 31 screen earth (not used)

11 - Microphone input (+), telephone microphone -R38- / navigation operating electronics control unit -J402-

12 - Microphone input (-), telephone microphone -R38- / navigation operating electronics control unit -J402-

16 - NF mute (low frequency) not used

17 - CAN Bus High (Infotainment)

18 - CAN Bus Low (Infotainment)

37 - Terminal 30 to telephone bracket -R126-

39 - Terminal 31 to telephone bracket -R126-

41 - Terminal 30 to telephone bracket -R126-

42 - Microphone output (+) to telephone bracket -R126-

43 - Microphone output (-) to telephone bracket -R126-

44 - Terminal 31 (screen earth)

45 - NF input (+) (low frequency) from telephone bracket -R126-

46 - NF input (-) (low frequency) from telephone bracket -R126-

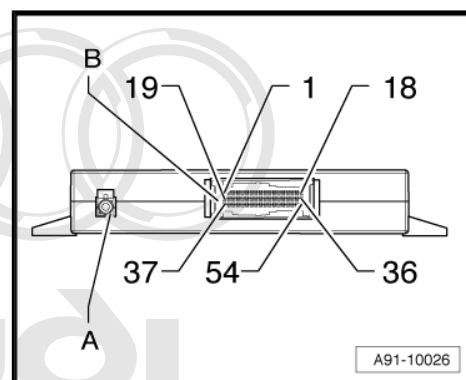
47 - SNDREQ signal from telephone bracket -R126-

49 - Ser-Tx (+) to telephone bracket -R126-

50 - Ser-Tx (-) to telephone bracket -R126-

51 - Ser-Rx (+) from telephone bracket -R126-

52 - Ser-Rx (-) from telephone bracket -R126-



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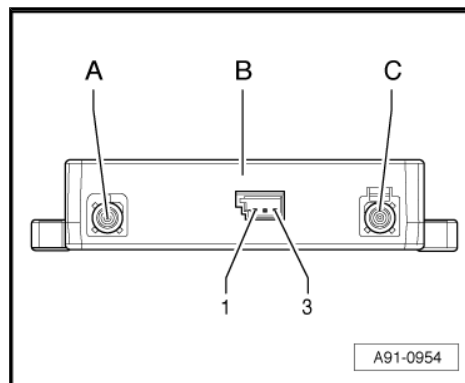
4.5.2 Aerial amplifier for mobile telephone - R86-

Connectors

A - GSM connection (purple) from telephone aerial -R65-

B - Multi-pin connector, 3-pin, black (T3h)

C - Aerial connection (purple) to mobile telephone -R54-

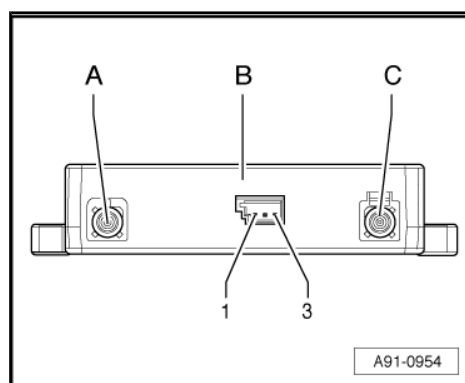


B - Multi-pin connector, 3-pin, black (T3h)

1 - Terminal 30

2 - Terminal 31

3 - "Mobile phone ON" signal from telephone transmitter and receiver unit -R36-



4.5.3 Pre-fitted components for mobile phone installation

Multi-pin connector, 18-pin, black (T18a)

1 - Terminal 31

4 - NF mute (low frequency) to radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

7 - NF- (low frequency) to radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

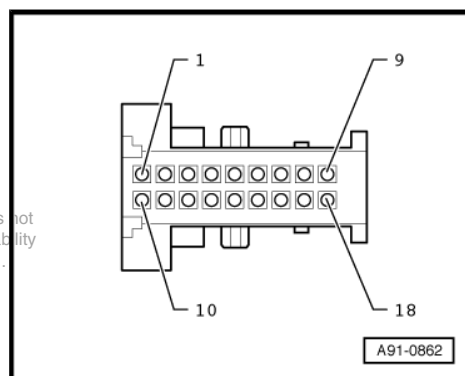
9 - Telephone microphone -R38- (-)

10 - Terminal 15

11 - Terminal 30

16 - NF+ (low frequency) to radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

18 - Telephone microphone -R38- (+)



4.6 Fitting locations

1 - Aerial amplifier for mobile telephone -R86-

- ☐ Behind glove box
- ☐ Connectors ⇒ [page 28](#)
- ☐ Removing and installing ⇒ [page 31](#)

2 - Telephone aerial -R65-

- ☐ On windscreen (top)
- ☐ Removing and installing ⇒ [page 23](#)

3 - Telephone microphone - R38-

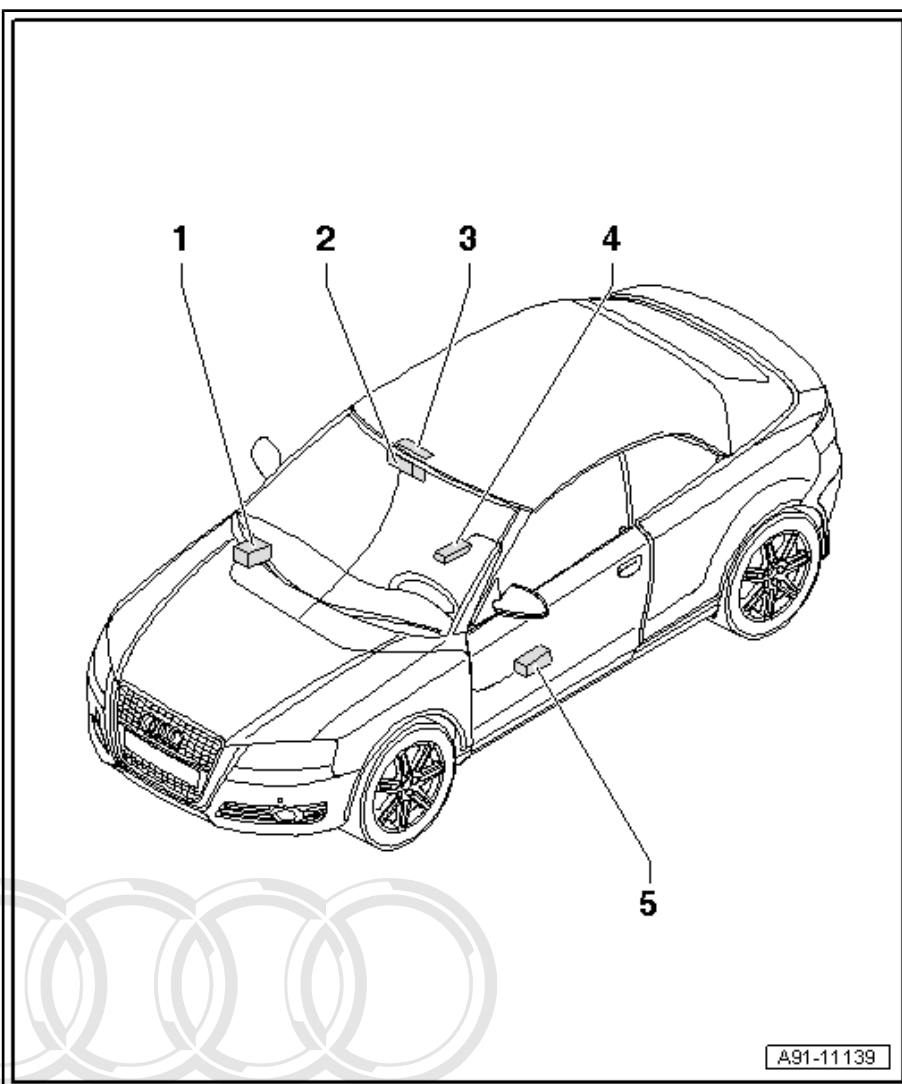
- ☐ In front interior light - W1-
- ☐ Overview ⇒ [page 10](#)
- ☐ Removing and installing ⇒ [page 31](#)

4 - Telephone bracket -R126-

- ☐ In centre armrest
- ☐ Removing and installing ⇒ [page 29](#)

5 - Telephone transmitter and receiver unit -R36-

- ☐ In electronics box under front seat (left-side)
- ☐ Connectors ⇒ [page 27](#)
- ☐ Removing and installing ⇒ [page 30](#)



A91-11139

4.7 Removing and installing telephone bracket -R126-

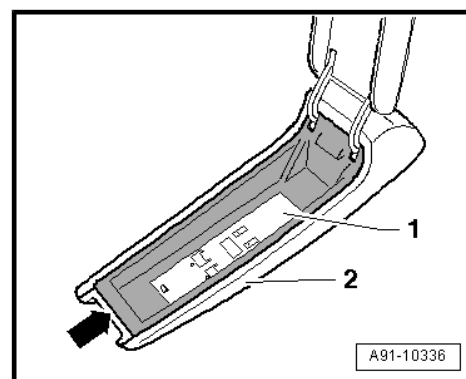
- Switch off all electrical equipment.

- Remove ignition key.

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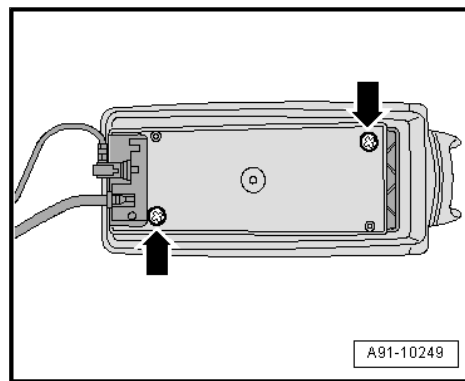
Removing

- Remove mobile telephone -R54- from telephone bracket and disengage bracket.
- Carefully pry the storage compartment -1- out of the trim -2- starting from the front -arrow-.



A91-10336

- Unscrew bolts -arrows- on underside of storage compartment.

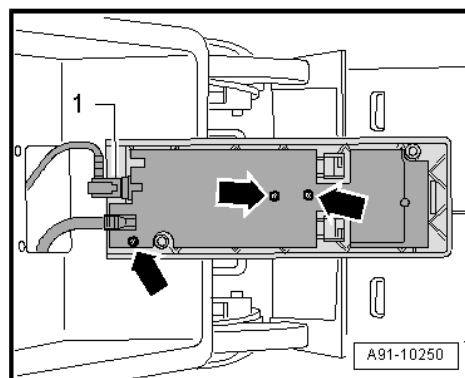


- Unplug connector -1- and remove bolts -arrows-.
- Unplug remaining electrical connectors and remove telephone bracket -R126- .

Installing

- Installation is performed in reverse sequence.

Tightening torques ⇒ [page 24](#)



4.8 Removing and installing telephone transmitter and receiver unit -R36-

Telephone transmitter and receiver unit -R36- is located in electronics box beneath front seat (left-side).

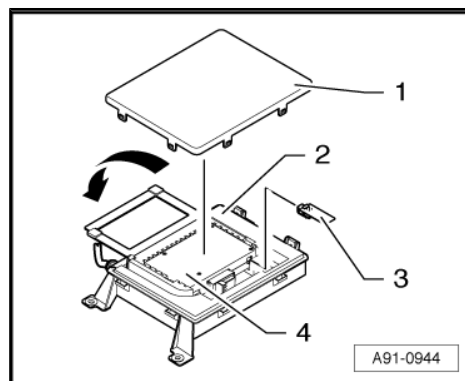
- When renewing control unit, select “Replacement” function for appropriate control unit in “Guided Fault Finding”.

For this purpose, use vehicle diagnostic, testing and information system -VAS 5051- .

- Switch off all electrical equipment.
- Remove ignition key.

Removing

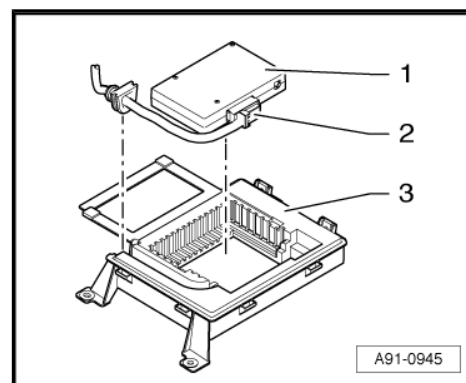
- Remove front seat (left-side) ⇒ General body repairs, interior; Rep. Gr. 72 ; Front seats .
- Fold back floor covering ⇒ General body repairs, interior; Rep. Gr. 70 ; Trim .
- Unclip and lift off cover -1- on electronics box -2-.
- Fold open latch in the electronics box in direction of -arrow-.
- Disconnect aerial for Bluetooth -R152- -3- from telephone transmitter and receiver unit -R36- -4-.



- Lift telephone transmitter and receiver unit -R36- -1- out of electronics box -3- and unplug electrical connector -2-.

Installing

- Installation is performed in reverse sequence.



4.9 Removing and installing aerial amplifier for mobile telephone -R86-

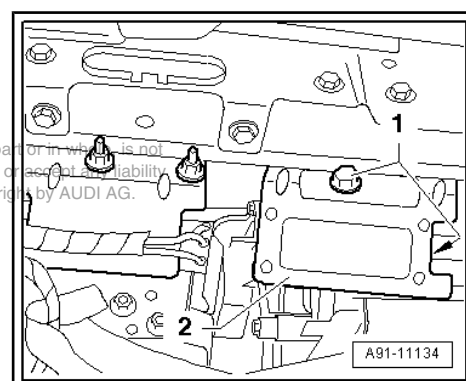
Aerial amplifier for mobile telephone -R86- is located behind glove box.

- Switch off all electrical equipment.
- Remove ignition key.

Removing

- Remove the glove box ⇒ General body repairs, interior; Rep. Gr. 70 .
- Unscrew bolts -1- at bracket -2-.
- Detach bracket -2- with aerial amplifier for mobile telephone -R86- .

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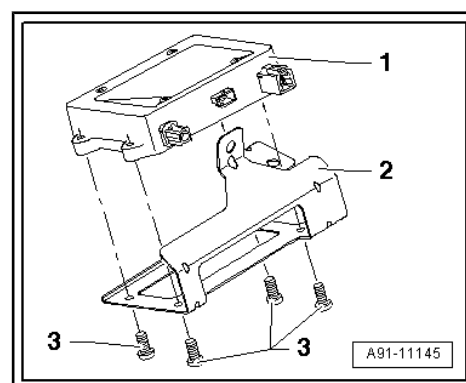


- Unplug connectors at aerial amplifier for mobile telephone -R86- -1-.
- Unscrew bolts -3- at aerial amplifier for mobile telephone -R86- -1-.
- Detach aerial amplifier for mobile telephone -R86- -1- from bracket -2-.

Installing

- Installation is performed in reverse sequence.

Tightening torques ⇒ [page 24](#)



4.10 Removing and installing telephone microphone -R38-

One or two microphones are installed in the front interior light -W1- . They can only be renewed together.

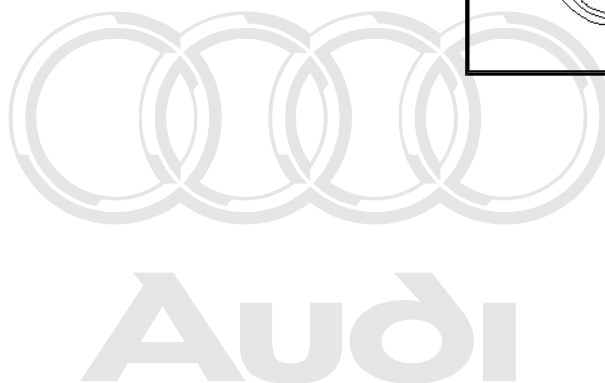
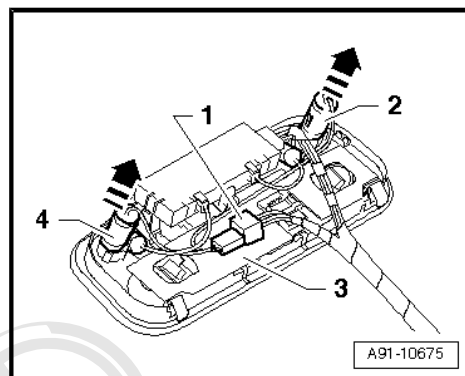
- Switch off all electrical equipment.
- Remove ignition key.

Removing

- Remove front interior light -W1- ⇒ Electrical system; Rep. Gr. 96 .
- Unplug connector -1-.
- Pry microphones -2- and -4- out of front interior light -W1- -3- -arrows-.

Installing

- Installation is performed in reverse sequence.



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5 Navigation system RNS-E

5.1 General notes

Description

The navigation system RNS-E is an enhanced version. The function selection switch is integrated into the device (same as MMI operation). A DVD (map of Europe) is used as the navigation media.

The display can be folded open. A DVD drive and two MP3 card readers are located behind the display.

In addition to the navigation system, the RNS-E incorporates a radio, two MP3 card readers and prefitted connections for navigation system tuner for TV -J415- and CD changer -R41-. The DVD drive can be used to play music CDs.

An optional AUX-IN socket (connection for external audio source -R199-), for connecting MP3 players and other low-frequency sources, or an iPod holder -R192- (in glove box) may be fitted.

Fault finding is performed via the "Guided Fault Finding" ⇒ Vehicle diagnosis, testing and information system VAS 5051.

Aerial wire repairs ⇒ Electrical system; Rep. Gr. 97 ; Renewing aerial wires .

CAN bus wire repairs ⇒ Electrical system; Rep. Gr. 97 ; Wiring harness and connector repairs .

5.2 On-screen fault messages

In the event of a system fault, the fault is stored in fault memory and/or fault message appears on display of operating electronics control unit for navigation -J402- .

At present, the following fault messages can be shown on the display of operating electronics control unit for navigation -J402- .

Indicated on display:

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CD/DVD is unreadable Please check the CD/DVD

This fault message occurs in the following situations:

- ◆ The DVD cannot be read.
- ◆ DVD is defective.
- ◆ The DVD drive is defective.
- Check whether the DVD drive can read a replacement DVD.

If the same fault message occurs:

- Perform adaption of channel 41.

To do so, use the vehicle diagnostic, testing and information system -VAS 5051- .

Indicated on display:

CD/DVD drive defect. Unable to read data. Consult your dealer.

This fault message occurs in the following situations:

- ◆ The DVD drive cannot read the DVD data.

- ◆ DVD is defective.
- ◆ The DVD drive is defective.
- Check whether the DVD drive can read a replacement DVD.

If the same fault message occurs:

- Perform adaption of channel 41.

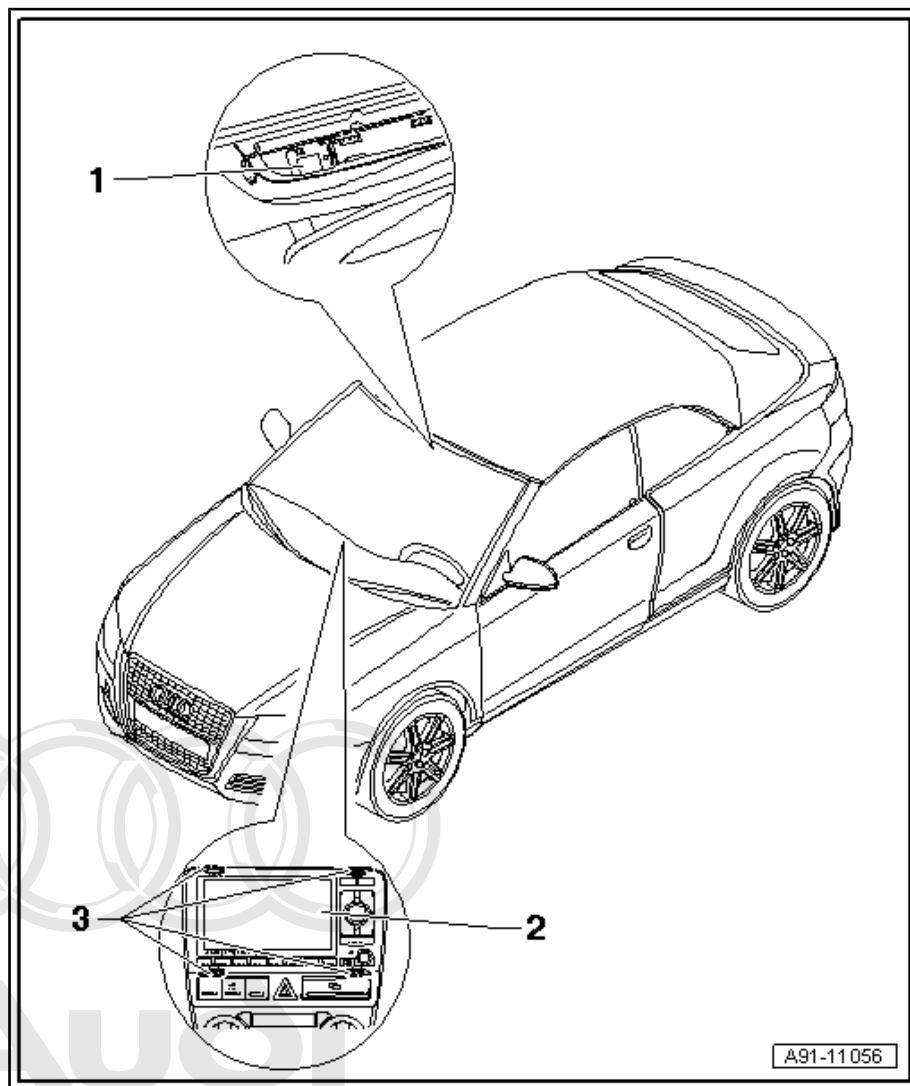
To do so, use the vehicle diagnostic, testing and information system -VAS 5051- .

5.3 Overview

1 - GPS aerial -R50-

2 - Navigation operating electronics control unit -J402-

3 - Radio release tool -T10057-



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5.4 RNS-E - layout

1 - GPS aerial -R50- on wind-screen (top)

2 - Windscreen aerals

3 - Aerial amplifier -R24- at A-pillar (left-side)

4 - Aerial selection control unit -J515- behind glove box

5 - Aerial amplifier 2 -R111- at A-pillar (right-side)

6 - Navigation operating electronics control unit -J402- in dash panel

7 - Sound systems

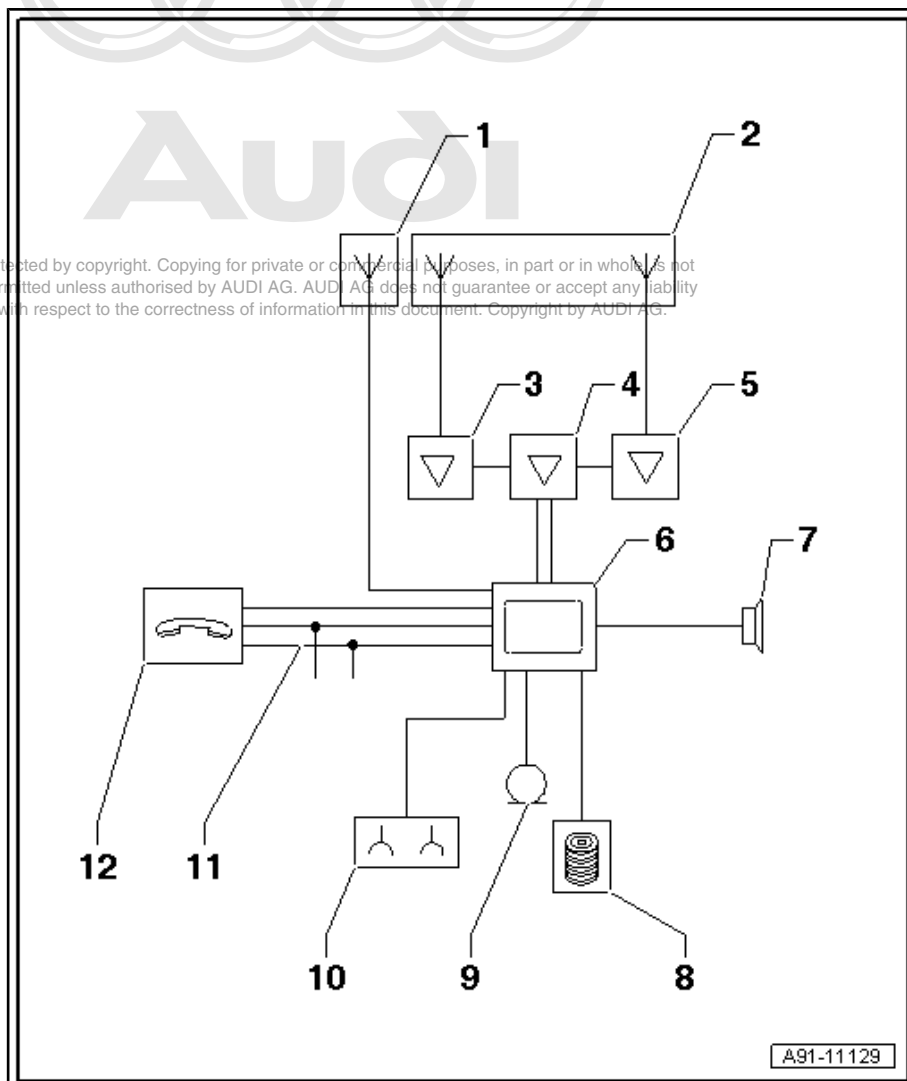
8 - CD changer -R41- / iPod holder -R192- in glove box

9 - Telephone microphone -R38- in front interior light -W1-

10 - Connection for external audio source -R199- in centre console (bottom)

11 - CAN bus (infotainment)

12 - Telephone transmitter and receiver unit -R36- beneath front seat (left-side)



5.5 Connectors on navigation operating electronics control unit -J402-

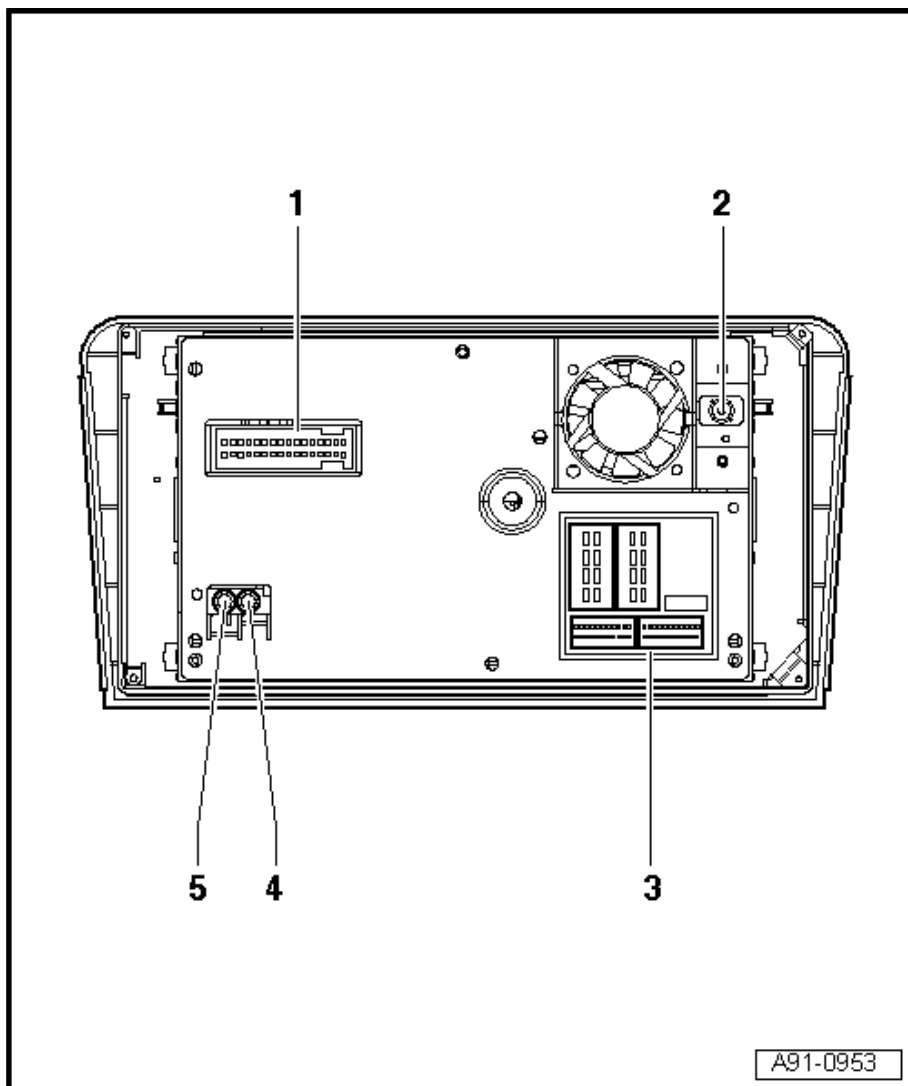
1 - Multi-pin connector, 32-pin, grey (T32d) to connection for external audio source -R199-

2 - GPS connection (blue) from navigation system aerial -R50-

3 - Connection block with four multi-pin connectors and one fuse for unit

4 - Connection ZF, white (intermediate frequency) to aerial selection control unit -J515-

5 - Connection HF, white (high frequency) from aerial selection control unit -J515-



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i Note

Contacts which are not listed are not used.

1 - Multi-pin connector, 32-pin, grey (T32d)

6 - NF in, right-side (low frequency) from connection for external audio source -R199-

13 - Audio input (right-side)

14 - Screen earth

15 - Video input sync.

16 - Video input (green)

19 - NF (low frequency) input (-)

20 - NF (low frequency) input (+)

21 - NF in, earth (low frequency) from connection for external audio source -R199-

22 - NF in, left-side (low frequency) from connection for external audio source -R199-

28 - Audio earth

29 - Audio input (left-side)

30 - Video earth

31 - Video input (blue)

32 - Video input (red)

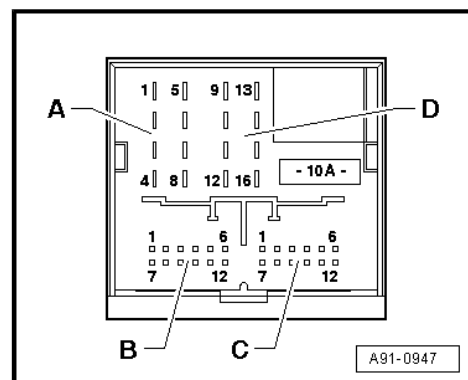
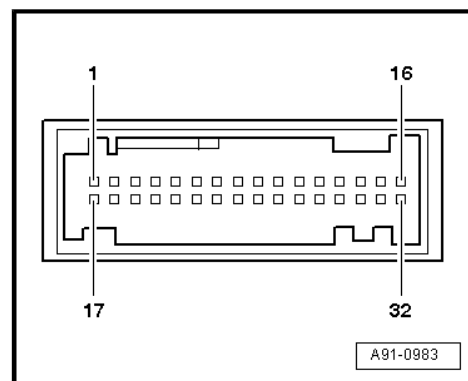
A - Multi-pin connector, 8-pin, brown (T8p)

2 - Front right loudspeaker (+) (not with BOSE)

3 - Front left loudspeaker (+) (not with BOSE)

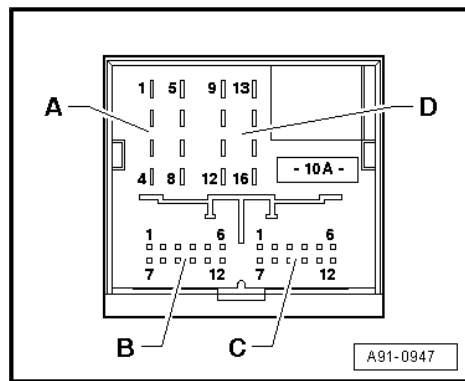
6 - Front right loudspeaker (-) (not with BOSE)

7 - Front left loudspeaker (-) (not with BOSE)



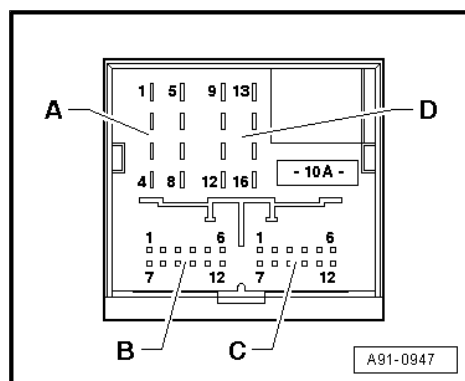
B - Multi-pin connector, 12-pin, blue (T12I)

- 2 - Signal earth to CD changer -R41- / iPod holder -R192-
- 3 - Speed signal (not used)
- 4 - Permanent live to CD changer -R41- / iPod holder -R192-
- 5 - K-diagnosis (not used)
- 6 - Data output to CD changer -R41- / iPod holder -R192-
- 7 - BOSE coding to earth (only with BOSE)
- 8 - Signal (left-side) from CD changer -R41- / iPod holder -R192-
- 9 - Signal (right-side) from CD changer -R41- / iPod holder -R192-
- 10 - Switched positive to CD changer -R41- / iPod holder -R192-
- 11 - Data input from CD changer -R41- / iPod holder -R192-
- 12 - CLK (clock) from CD changer -R41- / iPod holder -R192-



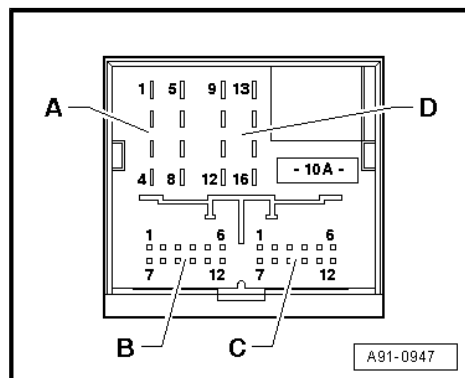
C - Multi-pin connector, 12-pin, black

- 1 - Microphone input (-) from telephone microphone -R38-
- 2 - Signal from reversing light switch -F4- (not used)
- 3 - Signal (front left) to amplifier -R12- (only with BOSE)
- 4 - Microphone output (-) to telephone transmitter and receiver unit -R36-
- 5 - Signal (rear left) to amplifier -R12-
- 6 - NF (-) (low frequency) from telephone transmitter and receiver unit -R36- / pre-fitted components for mobile phone installation
- 7 - Microphone input (+) from telephone microphone -R38-
- 8 - Signal earth to amplifier -R12-
- 9 - Signal (front right) to amplifier -R12- (only with BOSE)
- 10 - Microphone output (+) to telephone transmitter and receiver unit -R36-
- 11 - Signal (rear right) to amplifier -R12-
- 12 - NF (+) (low frequency) from telephone transmitter and receiver unit -R36- / pre-fitted components for mobile phone installation



D - Multi-pin connector, 8-pin, black (T16g)

- 9 - CAN Bus High (Infotainment)
- 10 - CAN Bus Low (Infotainment)
- 11 - NF mute (low frequency) from pre-fitted components for mobile phone installation
- 12 - Terminal 31
- 13 - Switched positive to amplifier -R12-
- 14 - Anti-theft alarm earth (not used)
- 15 - Terminal 30
- 16 - Permanent live (not used)



5.6 Fitting locations

1 - Aerial selection control unit -J515-

- ☐ Behind glove box
- ☐ Connectors ➔ [page 20](#)
- ☐ Removing and installing ➔ [page 22](#)

2 - Aerial amplifier 2 -R111-

- ☐ At A-pillar (right-side)
- ☐ Connectors ➔ [page 20](#)
- ☐ Removing and installing ➔ [page 21](#)

3 - GPS aerial -R50-

- ☐ On windscreen (top)
- ☐ Removing and installing ➔ [page 22](#)

4 - Connection for external audio source -R199-

- ☐ In centre console (bottom)

5 - Amplifier -R12- (with bass loudspeaker -R100-)

- ☐ Behind side trim (right-side)

- Bass loudspeaker -R100-

- ☐ Only with BOSE

6 - Amplifier -R12-

- ☐ Only with BOSE
- ☐ Behind luggage compartment side trim (right-side)

7 - Rear left mid-range loudspeaker -R105- / rear right mid-range loudspeaker -R106-

- ☐ In rear side trim

- Rear left loudspeaker -R4- / rear right loudspeaker -R5-

- ☐ Only with BOSE

8 - Aerial amplifier -R24-

- ☐ At A-pillar (left-side)
- ☐ Connectors ➔ [page 20](#)
- ☐ Removing and installing ➔ [page 21](#)

9 - Front left mid-range and bass loudspeaker -R101- / front right mid-range and bass loudspeaker -R102-

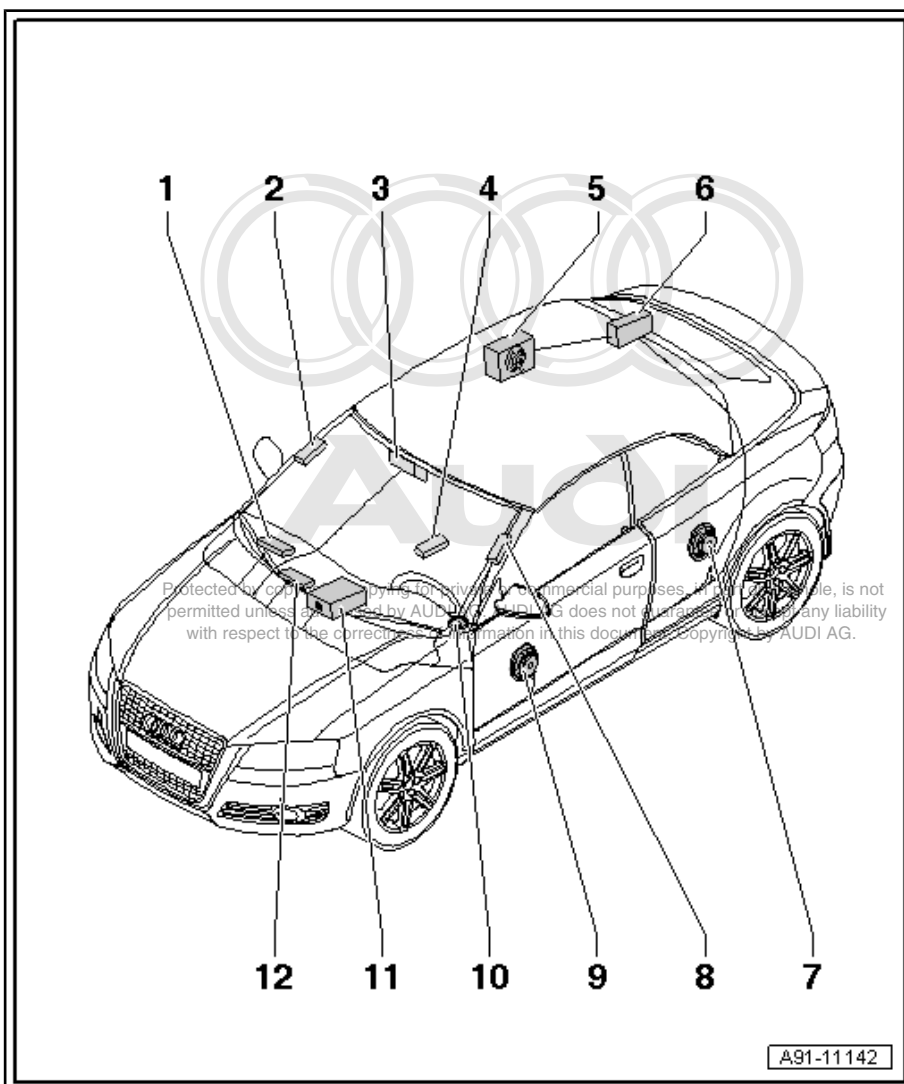
- ☐ In doors (bottom)

10 - Front left treble loudspeaker -R20- / front right treble loudspeaker -R22-

- ☐ In centre of A-pillars

11 - Navigation operating electronics control unit -J402-

- ☐ In dash panel
- ☐ Connectors ➔ [page 36](#)
- ☐ Removing and installing ➔ [page 40](#)



12 - CD changer -R41-

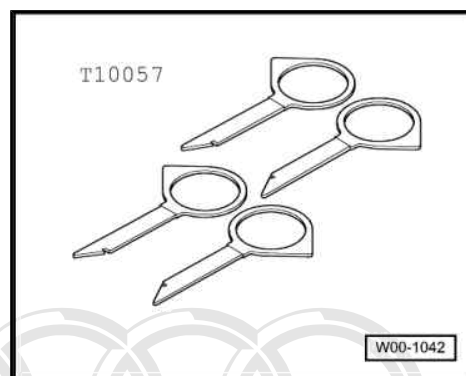
- iPod holder -R192-

- In glove box

5.7 Removing and installing operating electronics control unit for navigation -J402-

Special tools and workshop equipment required

- ◆ Radio release tool -T10057-



- When renewing control unit, select "Replacement" function for appropriate control unit in "Guided Fault Finding".

For this purpose, use vehicle diagnostic, testing and information system -VAS 5051- .

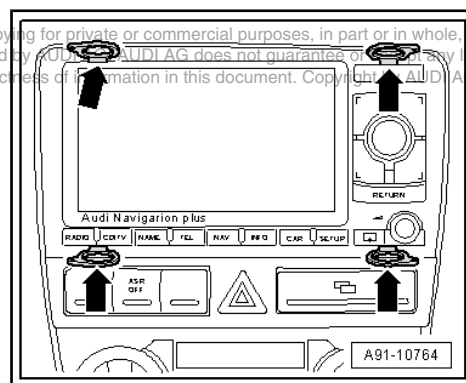
- Switch off all electrical equipment.
- Remove ignition key.

Removing

- Insert radio release tools -T10057- -arrows- into slots on operating electronics control unit for navigation -J402- until they engage. Pointed ends of grips must face outwards.
- Pull operating electronics control unit for navigation -J402- out of dash panel.
- Release and unplug electrical connectors at operating electronics control unit for navigation -J402- .
- Press release tabs on operating electronics control unit for navigation -J402- and remove radio release tool -T10057- .

Installing

- Plug in all connectors.
- Hold operating electronics control unit for navigation -J402- straight and slide it into dash panel until it engages in mounting frame.



6 Navigation system RNS-Low

6.1 General notes

Description

RNS-Low is the "Low" version of system RNS-E.

The function selection switch is integrated into the device (same as MMI operation). A CD is used as the navigation media.

In addition to the navigation system, the RNS-Low incorporates a radio, CD player and prefitted connections for CD changer - R41- . The CD drive can be used to play music CDs.

An optional AUX-IN socket (connection for external audio source -R199-), for connecting MP3 players and other low-frequency sources, or an iPod holder -R192- (in glove box) may be fitted.

Fault finding is performed via the "Guided Fault Finding" ⇒ Vehicle diagnosis, testing and information system VAS 5051.

Aerial wire repairs ⇒ Electrical system; Rep. Gr. 97 ; Renewing aerial wires .

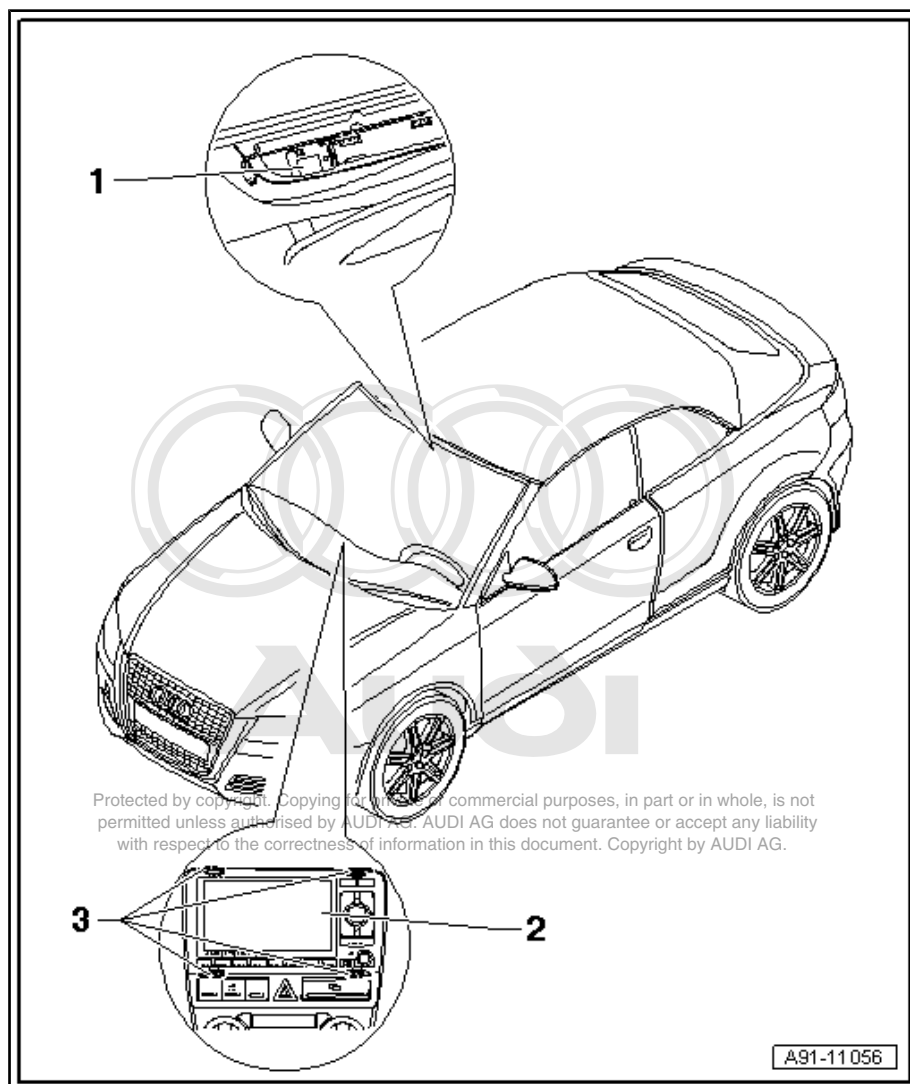
CAN bus wire repairs ⇒ Electrical system; Rep. Gr. 97 ; Wiring harness and connector repairs .

6.2 Overview

1 - GPS aerial -R50-

2 - Control unit with display for
radio and navigation -J503-

3 - Radio release tool -T10057-



6.3 RNS-Low - layout

1 - GPS aerial -R50- on wind-screen (top)

2 - Windscreen aerials

3 - Aerial amplifier -R24- at A-pillar (left-side)

4 - Aerial selection control unit -J515- behind glove box

5 - Aerial amplifier 2 -R111- at A-pillar (right-side)

6 - Control unit with display for radio and navigation -J503- in dash panel

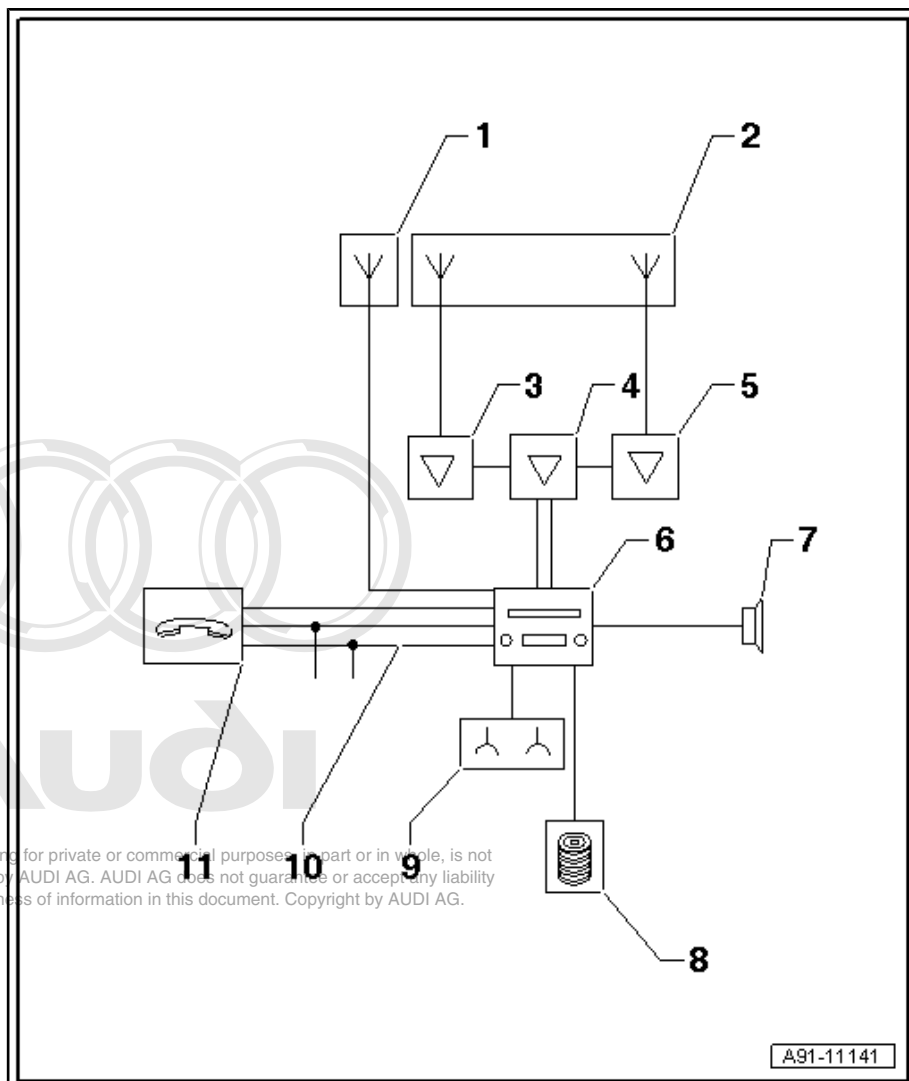
7 - Sound systems

8 - CD changer -R41- / iPod holder -R192- in glove box

9 - Connection for external audio source -R199- in centre console (bottom)

10 - CAN bus (infotainment)

11 - Telephone transmitter and receiver unit -R36- beneath front seat (left-side)



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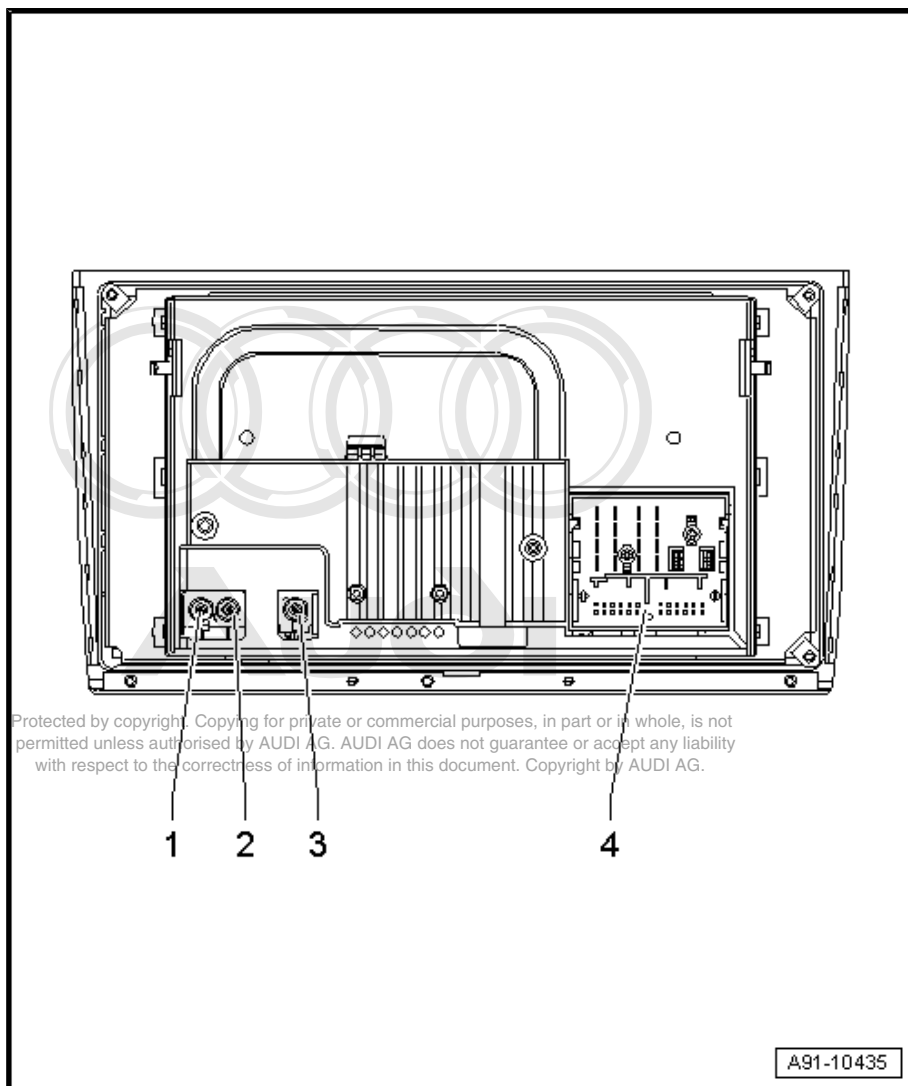
6.4 Connectors for control unit with display for radio and navigation -J503-

1 - Connection HF, white (high frequency) from aerial selection control unit -J515- f

2 - Connection ZF, white (intermediate frequency) to aerial selection control unit -J515-

3 - GPS connection (blue) from navigation system aerial -R50-

4 - Connection block with four multi-pin connectors and one fuse for unit



Note

Contacts which are not listed are not used.

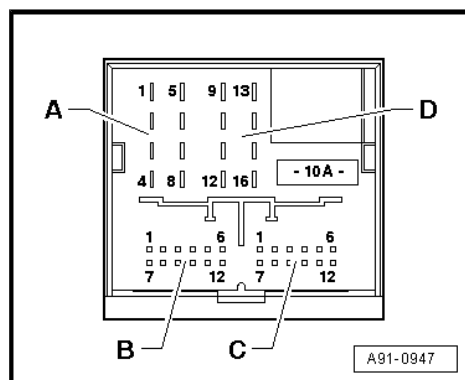
A - Multi-pin connector, 8-pin, brown (T8p)

2 - Front right loudspeaker (+) (not with BOSE)

3 - Front left loudspeaker (+) (not with BOSE)

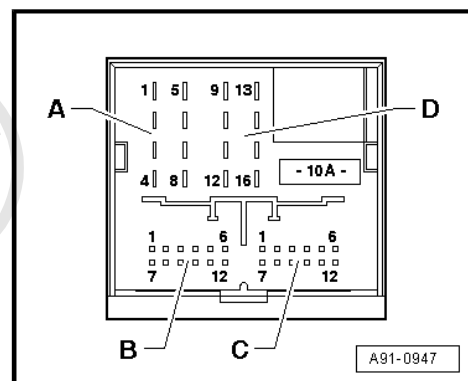
6 - Front right loudspeaker (-) (not with BOSE)

7 - Front left loudspeaker (-) (not with BOSE)



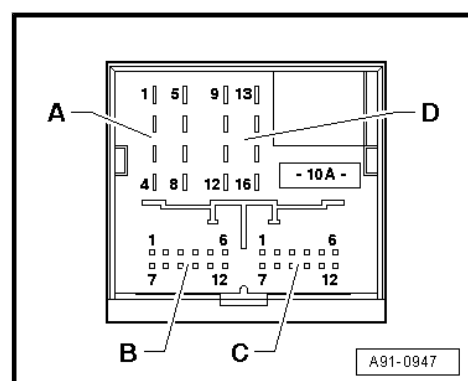
B - Multi-pin connector, 12-pin, blue (T12l)

- 1 - NF in, left-side (low frequency) from connection for external audio source -R199-
- 2 - Signal earth to CD changer -R41- / iPod holder -R192-
- 3 - NF in, earth (low frequency) from connection for external audio source -R199-
- 4 - Permanent live to CD changer -R41- / iPod holder -R192-
- 5 - BOSE coding to earth (only with BOSE)
- 6 - Data output to CD changer -R41- / iPod holder -R192-
- 7 - NF in, right-side (low frequency) from connection for external audio source -R199-
- 8 - Signal (left-side) from CD changer -R41- / iPod holder -R192-
- 9 - Signal (right-side) from CD changer -R41- / iPod holder -R192-
- 10 - Switched positive to CD changer -R41- / iPod holder -R192-
- 11 - Data input from CD changer -R41- / iPod holder -R192-
- 12 - CLK (clock) from CD changer -R41- / iPod holder -R192-



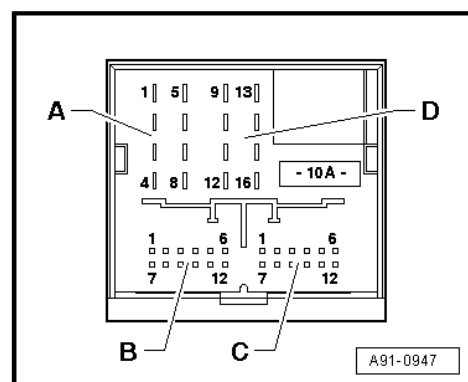
C - Multi-pin connector, 12-pin, black (T12m)

- 1 - Speed signal (not used)
- 2 - Signal from reversing light switch -F4- (not used)
- 3 - Signal (front left) to amplifier -R12- (only with BOSE)
- 5 - Signal (rear left) to amplifier -R12-
- 6 - NF (-) (low frequency) from telephone transmitter and receiver unit -R36- / pre-fitted components for mobile phone installation
- 7 - K-diagnosis (not used)
- 8 - Signal earth to amplifier -R12-
- 9 - Signal (front right) to amplifier -R12- (only with BOSE)
- 11 - Signal (rear right) to amplifier -R12-
- 12 - NF (+) (low frequency) from telephone transmitter and receiver unit -R36- / pre-fitted components for mobile phone installation



D - Multi-pin connector, 8-pin, black (T16g)

- 9 - CAN Bus High (Infotainment)
- 10 - CAN Bus Low (Infotainment)
- 11 - NF mute (low frequency) from pre-fitted components for mobile phone installation
- 12 - Terminal 31
- 13 - Switched positive to amplifier -R12-
- 14 - Anti-theft alarm earth (not used)
- 15 - Terminal 30
- 16 - Permanent live to PIN 15 (anti-theft system)



6.5 Fitting locations

1 - Aerial selection control unit -J515-

- ☐ Behind glove box
- ☐ Connectors ⇒ [page 20](#)
- ☐ Removing and installing ⇒ [page 22](#)

2 - Aerial amplifier 2 -R111-

- ☐ At A-pillar (right-side)
- ☐ Connectors ⇒ [page 20](#)
- ☐ Removing and installing ⇒ [page 21](#)

3 - GPS aerial -R50-

- ☐ On windscreen (top)
- ☐ Removing and installing ⇒ [page 22](#)

4 - Connection for external audio source -R199-

- ☐ In centre console (bottom)

5 - Amplifier -R12- (with bass loudspeaker -R100-)

- ☐ Behind side trim (right-side)

- Bass loudspeaker -R100-

- ☐ Only with BOSE

6 - Amplifier -R12-

- ☐ Only with BOSE
- ☐ Behind luggage compartment side trim (right-side)

7 - Rear left mid-range loudspeaker -R105- / rear right mid-range loudspeaker -R106-

- ☐ In rear side trim

- Rear left loudspeaker -R4- / rear right loudspeaker -R5-

- ☐ Only with BOSE

8 - Aerial amplifier -R24-

- ☐ At A-pillar (left-side)
- ☐ Connectors ⇒ [page 20](#)
- ☐ Removing and installing ⇒ [page 21](#)

9 - Front left mid-range and bass loudspeaker -R101- / front right mid-range and bass loudspeaker -R102-

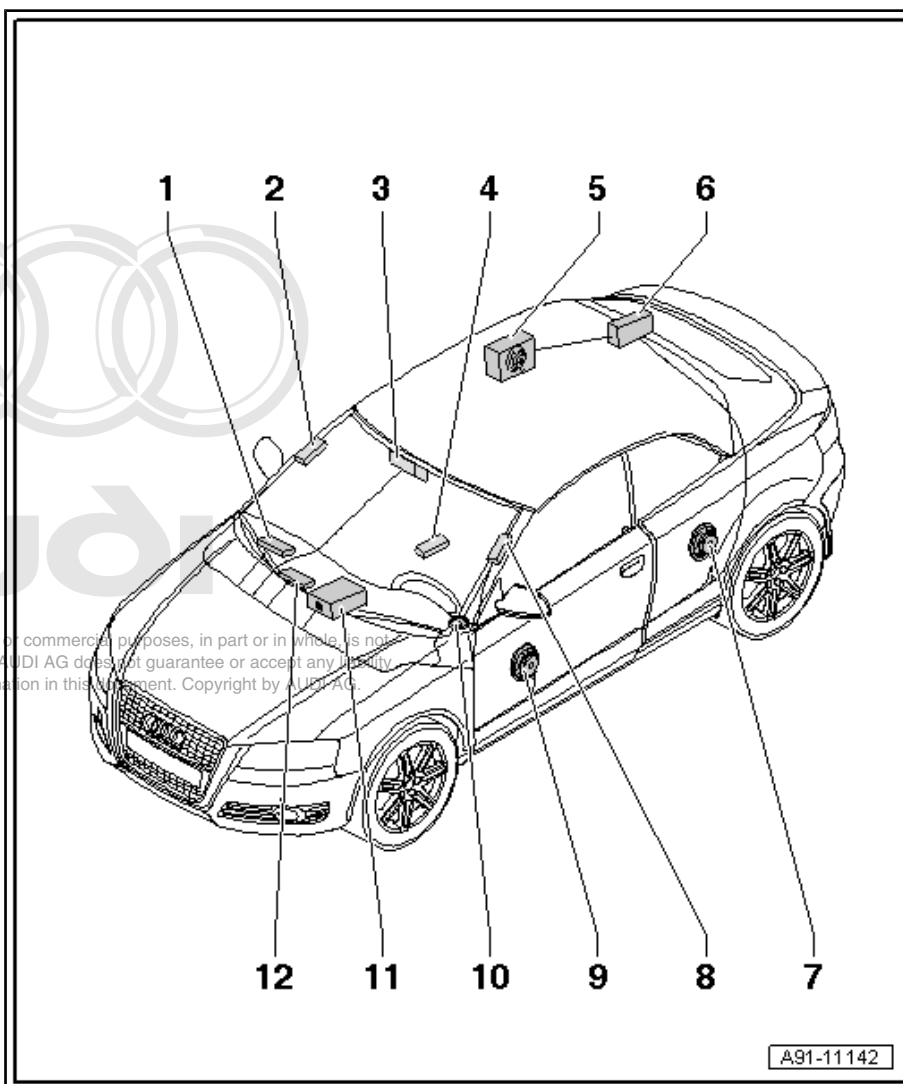
- ☐ In doors (bottom)

10 - Front left treble loudspeaker -R20- / front right treble loudspeaker -R22-

- ☐ In centre of A-pillars

11 - Control unit with display for radio and navigation -J503-

- ☐ In dash panel
- ☐ Connectors ⇒ [page 44](#)
- ☐ Removing and installing ⇒ [page 47](#)



12 - CD changer -R41-

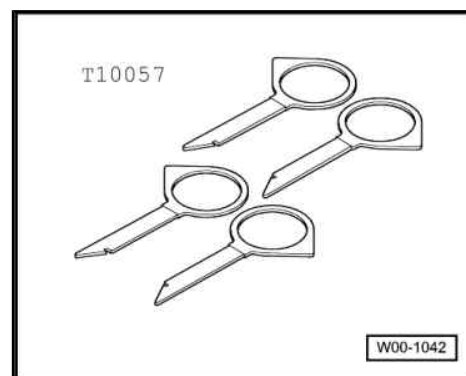
- iPod holder -R192-

- ☐ In glove box

6.6 Removing and installing control unit with display for radio and navigation -J503-

Special tools and workshop equipment required

- ◆ Radio release tool -T10057-



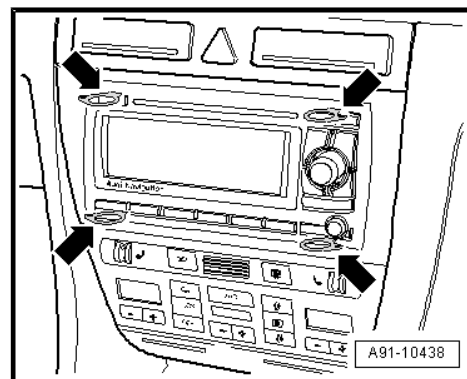
- When renewing control unit, select "Replacement" function for appropriate control unit in "Guided Fault Finding".

For this purpose, use vehicle diagnostic, testing and information system -VAS 5051- .

- Switch off all electrical equipment.
- Remove ignition key.

Removing

- Insert radio release tools -T10057- -arrows- into slots on control unit with display for radio and navigation -J503- until they engage. Pointed ends of grips must face outwards.
- Pull control unit with display for radio and navigation -J503- out of dash panel.
- Release and unplug electrical connectors at control unit with display for radio and navigation -J503- .
- Press release tabs on control unit with display for radio and navigation -J503- and remove radio release tool -T10057- .



Installing

- Plug in all connectors.
- Hold control unit with display for radio and navigation -J503- straight and slide it into dash panel until it engages in mounting frame.

7 CD changer -R41-

7.1 General notes

The optional CD changer -R41- is fitted in the glove box.

It is connected directly to the radio -R- .

Fault finding is performed via the "Guided Fault Finding" for the radio -R- ⇒ Vehicle diagnosis, testing and information system VAS 5051. This checks the wiring and displays any faults that are detected.

7.2 Connectors on CD changer -R41-



Note

Contacts which are not listed are not used.

Multi-pin connector, 12-pin, black

1 - Data output to radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

2 - CLK (clock) output to radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

3 - Terminal 31

4 - Data input from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

6 - Permanent live from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

7 - Signal (right-side) to radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

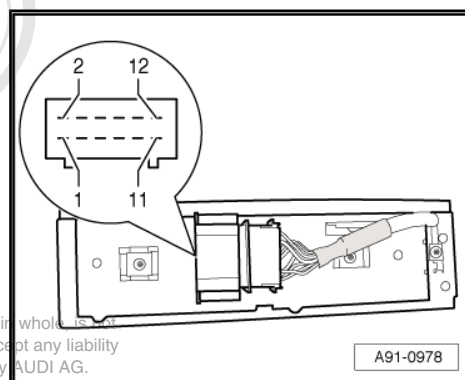
8 - Switched positive from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

9 - Signal earth from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

10 - Signal (left-side) to radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

11 - TOC Check Control (not used)

12 - Terminal 58 (not used)



7.3 Removing and installing CD changer -R41-

The CD changer -R41- is fitted in the glove box.

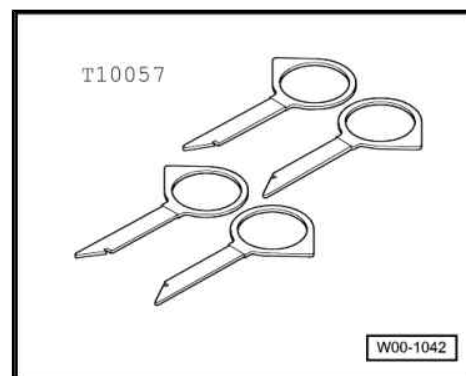
Special tools and workshop equipment required

◆ Radio release tool -T10057-

- Switch off all electrical equipment.
- Remove ignition key.

Removing

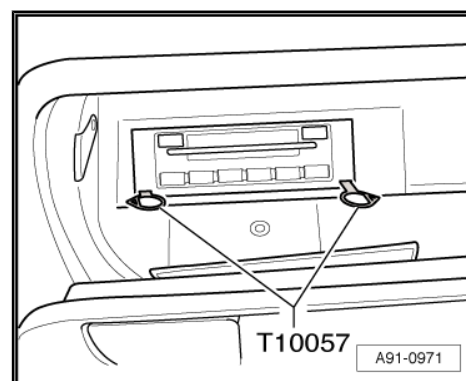
- Open glove box.



- Insert two radio release tools -T10057- into slots on CD changer -R41- until they engage. Pointed ends of grips must face outwards.
- Pull CD changer -R41- out of mounting frame.
- Unplug electrical connector on CD changer -R41- .
- Press release tabs on CD changer -R41- and remove radio release tool -T10057- .

Installing

- Attach connector.
- Slide CD changer -R41- into mounting frame until it engages.



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8 iPod holder -R192-

8.1 General notes

The iPod holder -R192- is fitted in the glove box in place of the CD changer -R41-.

The iPod holder -R192- is connected directly to the radio -R- in the same way as the CD changer -R41-.

Fault finding is performed via the "Guided Fault Finding" for the radio -R- ⇒ Vehicle diagnosis, testing and information system VAS 5051. This checks the wiring and displays any faults that are detected.

8.2 Connectors on iPod holder -R192-



Note

Contacts which are not listed are not used.

Multi-pin connector, 12-pin, black

1 - Data output to radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

2 - CLK (clock) output to radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

3 - Terminal 31

4 - Data input from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

6 - Permanent live from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

7 - Signal (right-side) to radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

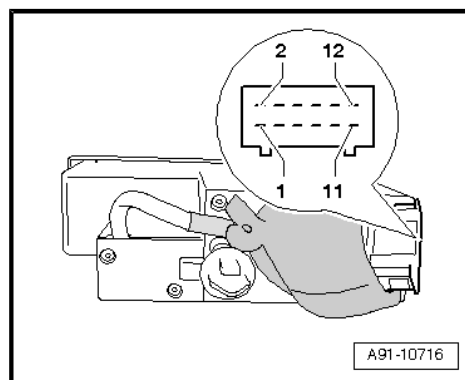
8 - Switched positive from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

9 - Signal earth from radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

10 - Signal (left-side) to radio -R- / navigation operating electronics control unit -J402- / control unit with display for radio and navigation -J503-

11 - TOC Check Control (not used)

12 - Terminal 58 (not used)



8.3 Removing and installing iPod holder -R192-

The iPod holder -R192- is fitted in the glove box.

Special tools and workshop equipment required

◆ Removal wedge -3409-

- Switch off all electrical equipment.
- Remove ignition key.

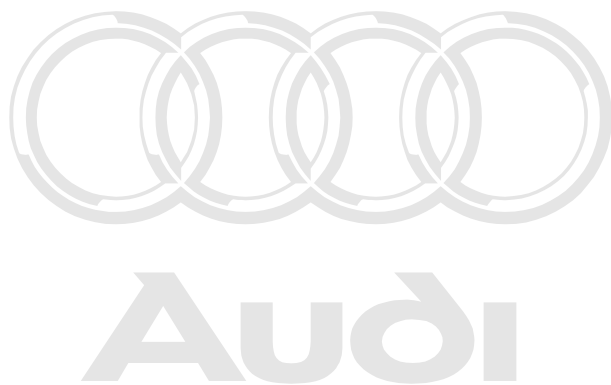
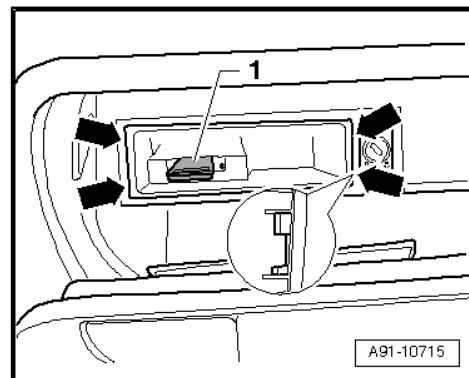
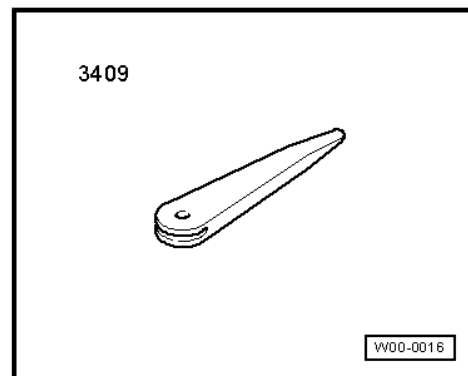
Removing

- Open glove box.

- Remove iPod -1- from iPod holder -R192- .
- Using removal wedge -3409- , carefully lever iPod holder -R192- out of its retainers -arrows-.
- Pull iPod holder -R192- out of mounting frame.
- Unplug connector at iPod holder -R192- .

Installing

- Installation is performed in reverse sequence.



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9 Connection for external audio source -R199-

9.1 General notes

Connection for external audio source -R199- is fitted in centre console.

External audio sources such as MP3 or CD players can be connected to connection for external audio source -R199- .

Connection for external audio source -R199- is connected directly to radio -R- .

Fault finding is performed via the "Guided Fault Finding" for the radio -R- ⇒ Vehicle diagnosis, testing and information system VAS 5051. This checks the wiring and displays any faults that are detected.

9.2 Connectors on connection for external audio source -R199-

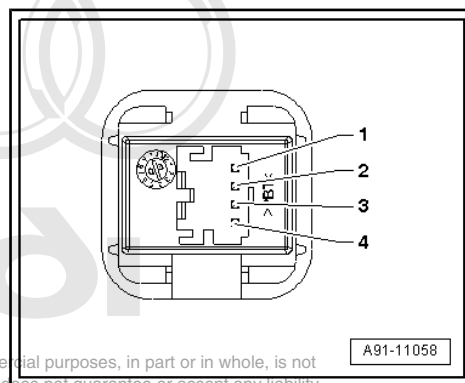


Note

Contacts which are not listed are not used.

Multi-pin connector, 4-pin

- 1 - Earth to radio -R-
- 2 - NF left (low frequency) to radio -R-
- 3 - NF right (low frequency) to radio -R-
- 4 - Earth to radio -R-



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9.3 Removing and installing connection for external audio source -R199-

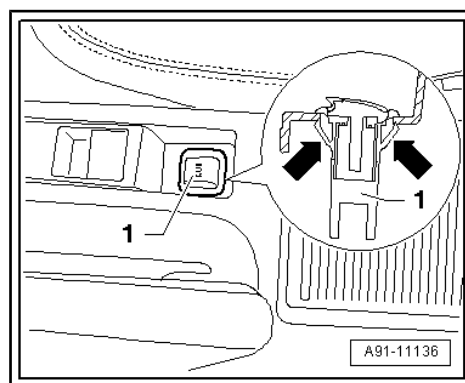
Connection for external audio source -R199- is located in centre console storage compartment.

- Switch off all electrical equipment.
- Remove ignition key.

Removing

Connection for external audio source -R199- is secured in the centre console by retaining tabs. The tabs -arrows- cannot be released without removing the centre console.

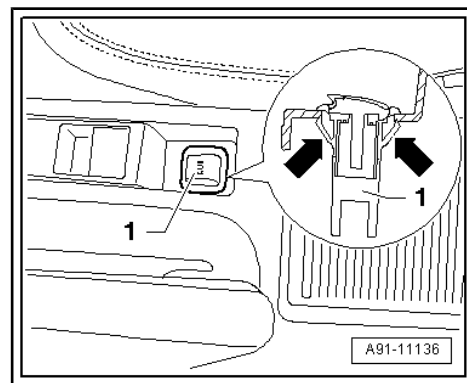
- Remove centre console ⇒ General body repairs, interior; Rep. Gr. 68 .
- Unplug connector at connection for external audio source -R199- .



- Press together tabs -arrows- on connection for external audio source -R199- -1- and slide connection for external audio source -R199- -1- out of storage compartment.

Installing

- Installation is performed in reverse sequence.



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10 Steering column electronics control unit -J527-

10.1 General notes

Description

The steering column electronics control unit -J527- forms part of the "steering column switch module". The "steering column switch module" comprises the following:

- ◆ Left and right steering column switch
- ◆ Coil connector
- ◆ Steering angle sender -G85-
- ◆ Ignition/starter switch-D-
- ◆ Steering column electronics control unit -J527-

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The steering column electronics control unit -J527- is responsible for the exchange of data between the vehicle control units (on-board supply control unit -J519-), the steering column modules (steering column switches) and the steering wheel modules (air-bag).

In addition, the signals from the multi-function steering wheel buttons are processed and relayed via the CAN bus.

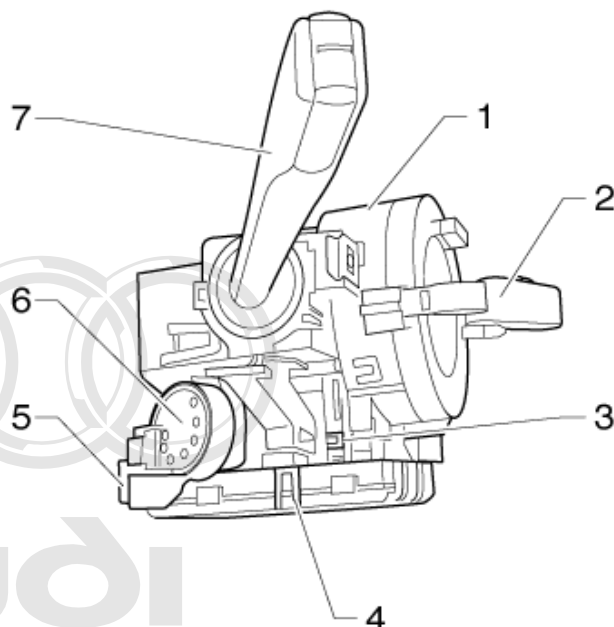
Fault finding is performed via the "Guided Fault Finding" ⇒ Vehicle diagnosis, testing and information system VAS 5051.

Removing and installing steering column switch module ⇒ Electrical system; Rep. Gr. 94 .

CAN bus wire repairs ⇒ Electrical system; Rep. Gr. 97 ; Wiring harness and connector repairs .

10.2 Steering column switch module - overview

- 1 - Coil connector
- 2 - Wiper switch/on-board computer
- 3 - Steering angle sender - G85-
- 4 - Steering column electronics control unit -J527-
- 5 - Connector, 20 pin, black (T20b) on steering column electronics control unit -J527-
- 6 - Ignition/starter switch -D-
- 7 - Turn signal switch/cruise control switch



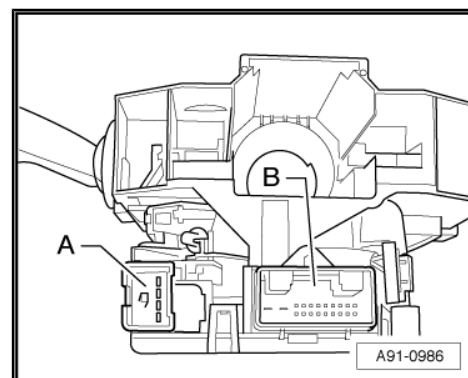
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10.3 Connectors on steering column electronics control unit -J527-

Connectors

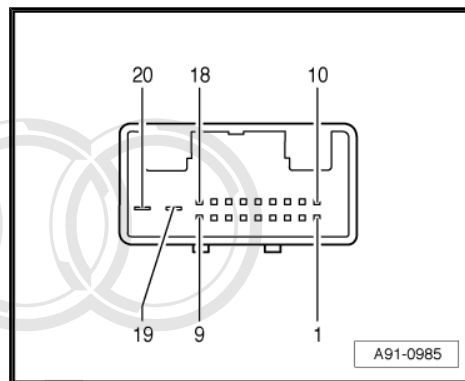
- A - Multi-pin connector, 4-pin, yellow (T4n)
- B - Multi-pin connector, 20-pin, black (T20b)



A91-0986

B - Multi-pin connector, 20-pin, black (T20b)

- 11 - CAN Bus Low (drive train)
- 12 - CAN Bus High (drive train)
- 13 - Cruise control locked "OFF" to engine control unit -J623-
- 14 - CAN Bus High (convenience)
- 15 - CAN Bus Low (convenience)
- 16 - "Parking lock" signal (from automatic gearbox selector gate)
- 17 - Terminal 15 to onboard power supply control unit -J519-
- 18 - Terminal 50 to onboard power supply control unit -J519-
- 19 - Terminal 30
- 20 - Terminal 31



10.4 Removing and installing steering column electronics control unit -J527-

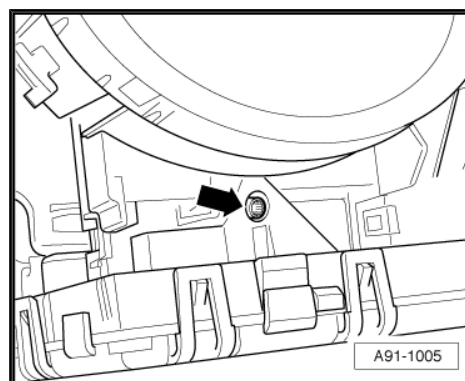
- When renewing control unit, select "Replacement" function for appropriate control unit in "Guided Fault Finding".

For this purpose, use vehicle diagnostic, testing and information system -VAS 5051- .

Removing

- Disconnect battery earth cable ⇒ Electrical system; Rep. Gr. 27 ; Battery .
- Note the safety measures for airbag systems ⇒ General body repairs, interior; Rep. Gr. 69 ; Airbag; Safety measures when working on airbags .
- Remove steering wheel: ⇒ Running gear; Rep. Gr. 48 .
- Remove steering column switch module ⇒ Electrical system; Rep. Gr. 96 ; Steering column switch module .
- Unscrew bolt -arrow- (2 Nm) beneath coil connector.

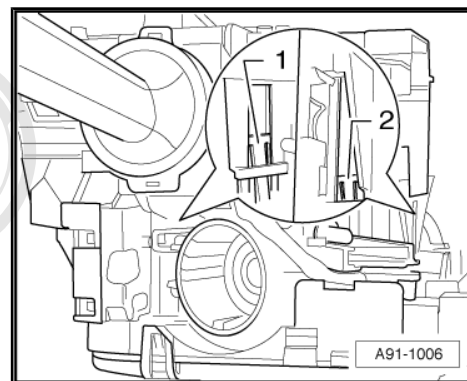
The steering column electronics control unit -J527- is attached to steering column module with two spring catches.



- Use small screwdriver to release springs -1- and -2-.
- Detach the steering column electronics control unit -J527- by pulling it downwards from steering column module.

Installing

- Note the safety measures for airbag systems ⇒ General body repairs, interior; Rep. Gr. 69 ; Airbag; Safety measures when working on airbags .
- Installation is performed in reverse sequence.
- Make sure that all connectors are engaged and that wires are positioned in guides provided.



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11 Multi-function steering wheel

11.1 General notes

Description

Buttons are integrated into the steering wheel to facilitate operation of the radio -R- , mobile telephone -R54- , navigation and CD changer -R41- .

Additional rocker switches are provided if vehicle is fitted with tiptronic (automatic gearbox).

The electronics integrated into the steering wheel process the button signals and transmit the signals by way of a single-wire bus (LIN) to the steering column electronics control unit -J527- . There the signals are transferred to the CAN Bus (Convenience).

The multi-function steering wheel is part of the "steering column switch module" and provides data for the steering column electronics control unit -J527- via LIN data Bus.

The individual button blocks and tiptronic buttons can be renewed.

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The electronics integrated in the steering wheel cannot be replaced. In the event of a fault, the steering wheel has to be renewed.

Fault finding is performed via the "Guided Fault Finding" ⇒ Vehicle diagnosis, testing and information system VAS 5051.

CAN bus wire repairs ⇒ Electrical system; Rep. Gr. 97 ; Wiring harness and connector repairs .

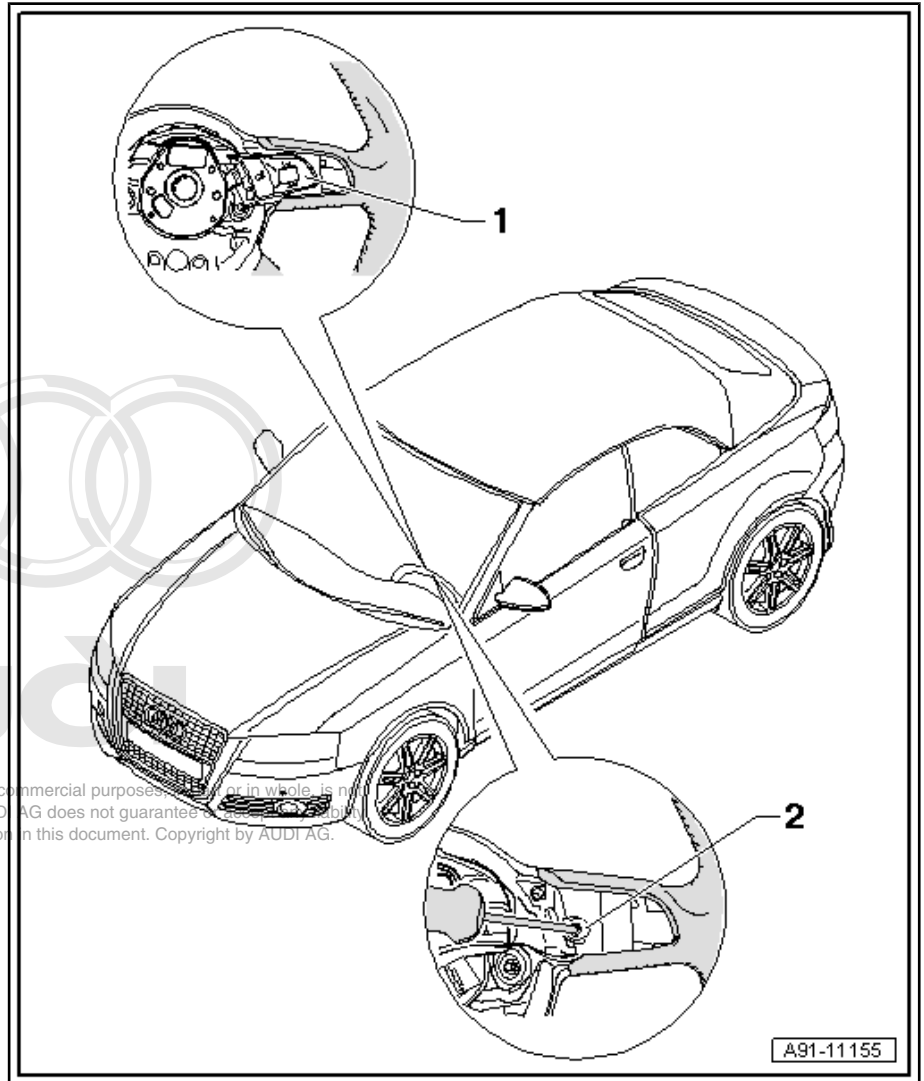
11.2 Overview

1 - Multi-function buttons

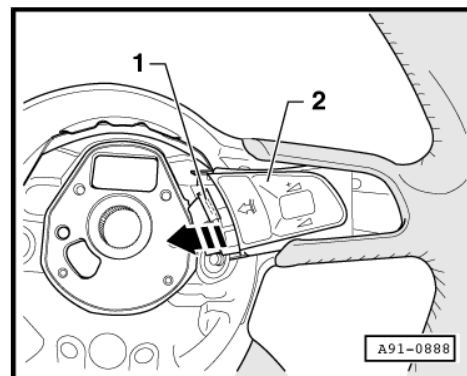
2 - Bolt

□ 3 Nm

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- Unplug connector -1- at button -2-.
- Push button -2- out of steering wheel in direction of -arrow-.
- Turn button over.

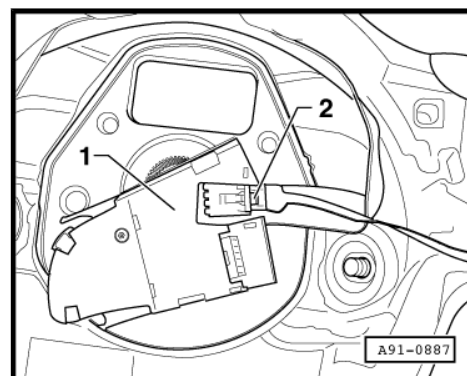


- Unplug connector -2- for tiptronic switch from multi-function button -1- and remove button.

Installing

- Installation is performed in reverse sequence.

Removal and installation procedures for the left-side multi-function button are the same.

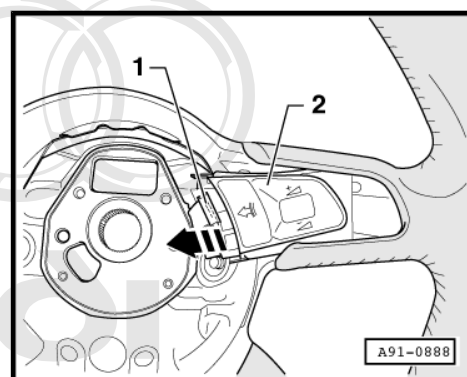


11.5 Removing and installing tiptronic buttons

- Switch off all electrical equipment.
- Remove ignition key.

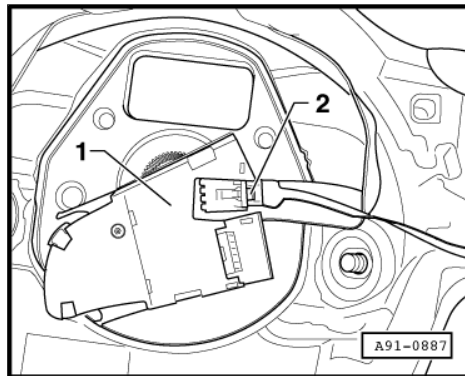
Removing

- Remove driver's airbag ⇒ General body repairs, interior; Rep. Gr. 69 .
- Pull trim ring off steering wheel.
- Push multi-function button -2- out of steering wheel in direction of -arrow-.
- Turn button over.



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- Unplug connector -2- at multi-function button -1-.



- Unscrew bolt -arrow- and remove tiptronic switch from behind steering wheel.

Installing

- Installation is performed in reverse sequence.

Removal and installation procedures for the left-side switch are the same.

Tightening torques → [page 58](#)

