



Workshop Manual

Golf Variant 2007 ➤

Golf Variant 2010 ➤

Jetta 2005 ➤

Jetta 2011 ➤

Communication

Edition 04.2010



List of Workshop Manual Repair GroupsList of Workshop Manual Repair GroupsList of Workshop Manual Repair Groups

Repair Group

91 - Radio, telephone, navigation



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 Communication systems

The communication systems include the radio systems, the navigation system, the aerial system, the loudspeaker systems, the digital sound package, the telephone system, the CD changer, the compass system and the multifunction steering wheel.

Some equipment is optional so not all systems are installed in every vehicle.

When dealing with complaints, it is absolutely necessary to understand the functions and the operation of the communication systems ⇒ Instruction manual .

In the event of repair work or fault finding ⇒ Vehicle diagnosis, testing and information system VAS 5051 use “Guided fault finding” mode.

1.1 Fault finding

The communication systems are self-diagnosing.

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





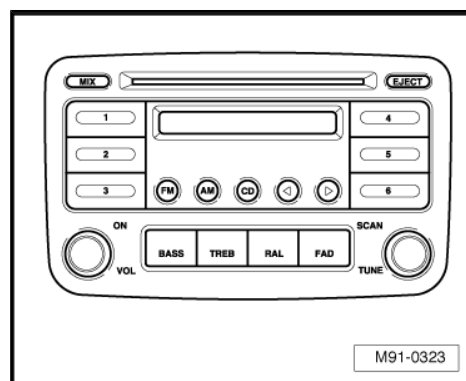
2 Radio "Lowentry"

Radio Lowentry



Note

- ◆ When dealing with complaints, it is absolutely necessary to understand the functions and the operation of the communication systems ⇒ *Instruction manual*.
- ◆ The anti-theft coding system uses a fixed code. Deactivating ⇒ [page 9](#).
- ◆ In the event of repair work or fault finding ⇒ *Vehicle diagnosis, testing and information system VAS 5051*.
- ◆ When the battery -A- is reconnected, please remember to check vehicle equipment (radio, clock, convenience electronics, etc.) in accordance with the ⇒ *Electrical system; Rep. Gr. 27 workshop manual and/or the ⇒ owner's manual*.



2.1 General description

The "Lowentry" radio system consists of the radio -R- and the loudspeakers in the doors.

The radio -R- has a final output stage with an output power of 4 x 20 W.

The loudspeakers are designed as a 3-way system in the front and as a 2-way system in the rear.

The following is installed in the "Lowentry" radio system:

- ◆ A bass loudspeaker, a mid-range loudspeaker and a treble loudspeaker in each of the front doors.
- ◆ A bass loudspeaker and a treble loudspeaker in each of the rear doors.

The CD drive integrated in the radio -R- can play the following formats:

- ◆ Audio CD
- ◆ CD-R
- ◆ CD-RW
- ◆ MP3

The following formats cannot be played:

- ◆ CD with diameter of 8 cm
- ◆ "Mixed CD" (CD with data and audio files)

The aerial is a window aerial and is located in the rear window (saloon). In the Variant, the aerial is located in the roof aerial.

2.1.1 Fault finding

The radio -R- is equipped with self-diagnosis.

For fault finding, use the vehicle diagnosis, testing and information system -VAS 5051B- in "Guided fault finding" mode.



2.2 Overview of radio "Lowentry"

1 - Radio -R-

- ☐ Connectors
⇒ [page 7](#)
- ☐ Removing and installing
⇒ [page 4](#)

2 - Aerial -R11-

- ☐ Aerial systems (saloon)
⇒ [page 171](#)
- ☐ Aerial systems (Variant)
⇒ [page 179](#)

3 - Rear left treble loudspeaker -R14- / rear right treble loudspeaker -R16-

- ☐ Installed in the rear left and right door trims
- ☐ Loudspeaker systems
⇒ [page 106](#)

4 - Rear left bass loudspeaker -R15- / rear right bass loudspeaker -R17-

- ☐ Installed in the rear left and right door trims
- ☐ Loudspeaker systems
⇒ [page 106](#)

5 - Front left bass loudspeaker -R21- / front right bass loudspeaker -R23-

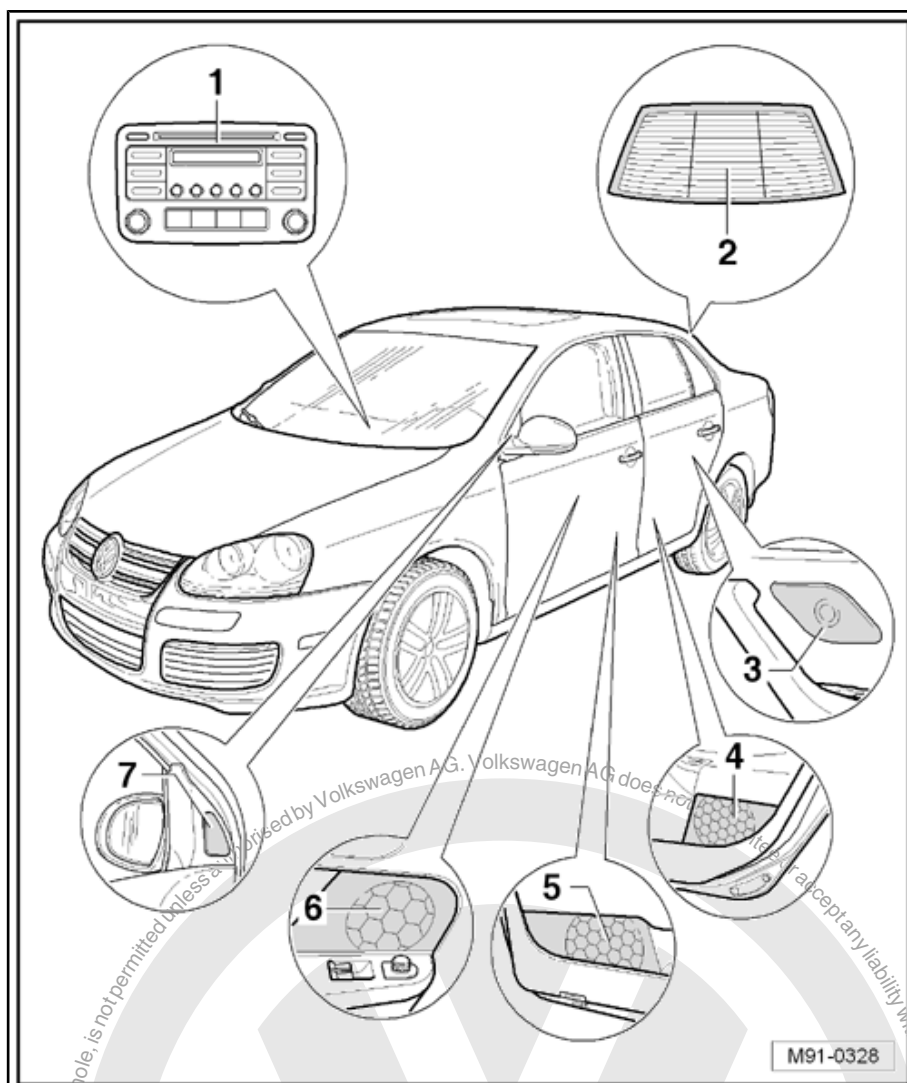
- ☐ Installed in the front left and right door trims
- ☐ Loudspeaker systems
⇒ [page 106](#)

6 - Front left mid-range loudspeaker -R103- / front right mid-range loudspeaker -R104-

- ☐ Installed in the front left and right door trims
- ☐ Loudspeaker systems ⇒ [page 106](#)

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

- ☐ Installed in mirror triangle of the right and left front doors
- ☐ Loudspeaker systems ⇒ [page 106](#)





2.3 Removing and installing radio "Lowentry"

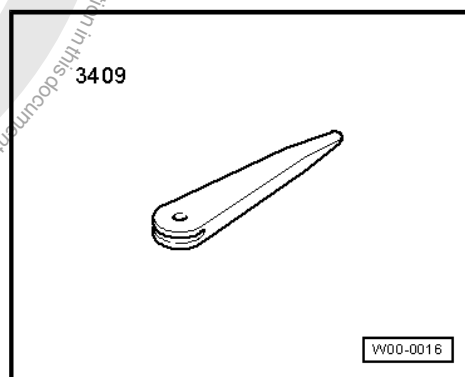


Note

- ◆ The part number for the radio -R- can be found on a sticker on the radio -R- housing.
- ◆ If the radio -R- has to be renewed, deactivate the anti-theft coding system ⇒ [page 9](#) . The new code number should be given to the customer.
- ◆ If the anti-theft code is not known it can be requested via the established systems. For this, you need the identification number of the radio -R- . It is located on a sticker on the side of the radio -R- . The identification number is also embossed in the material of the side panel of the radio -R- .

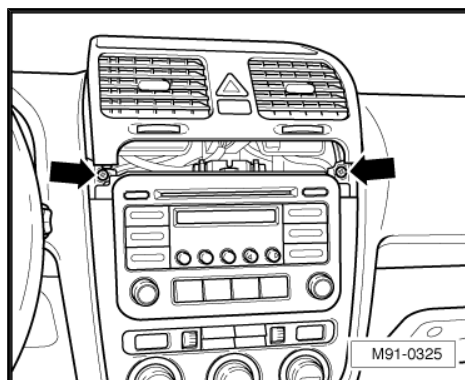
Special tools and workshop equipment required

- ◆ Removal wedge -3409-



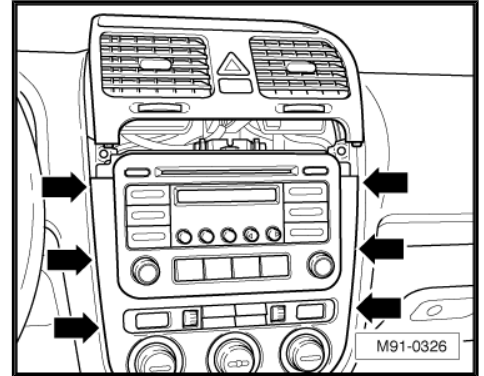
Removing

- Remove CD from radio -R- ⇒ Owner's manual .
- Switch off ignition and all electrical consumers and remove ignition key.
- Remove upper cover together with air vents out of the dash panel until the underneath bolts of the centre console cover can be reached, ⇒ General body repairs, exterior; Rep. Gr. 68 .
- Remove bolts -arrows- (1.5 Nm).

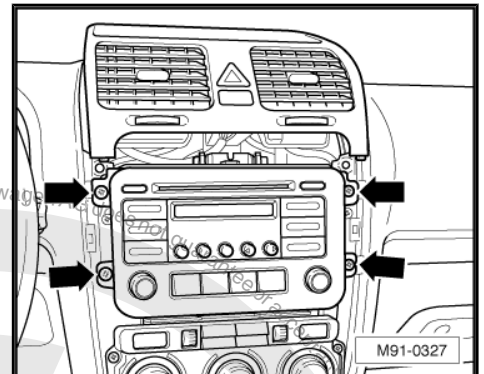




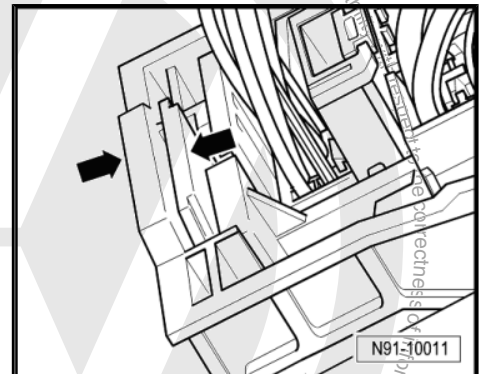
- Carefully lever out cover of centre console using removal wedge -3409- -arrows- and take it off.



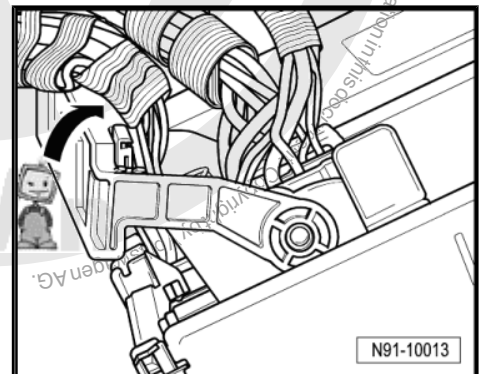
- Remove bolts -arrows- (1.5 Nm) on radio -R- .
- Pull the radio -R- out of the installation shaft until you can gain access to the connectors on the back of the radio -R- .



- Press together connector locking mechanism in direction of -arrows-.



- Then swing locking bar up in direction of -arrow- and disconnect connector.





- Release connector -arrow- on aerial connection and disconnect it.

Installing

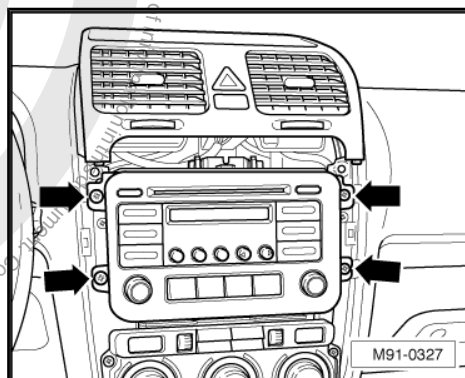
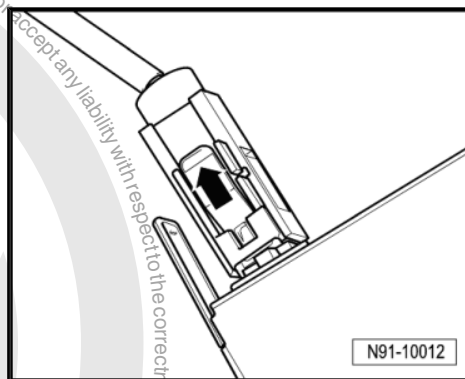
- Fit connectors on the radio -R- and lock them.
- Push the radio -R- straight into the dash panel.



Note

Never press on the display or the operating buttons when fitting the radio -R-, as the radio -R- may be damaged.

- Fit the radio -R- with 4 bolts -arrows- (1.5 Nm).
- Install centre console cover.
- Deactivate anti-theft coding ⇒ [page 9](#) .
- Check the radio -R- coding and recode the radio -R- ⇒ [page 10](#)





2.4 “Lowentry” connectors

1 - Multi-pin connector 1, 8-pin, loudspeaker outputs

- ☐ Pin assignment
➔ [page 7](#)

2 - Multi-pin connector 2, 8-pin, CAN bus, telephone

- ☐ Pin assignment
➔ [page 8](#)

3 - Multi-pin connector 3, 12-pin, telephone

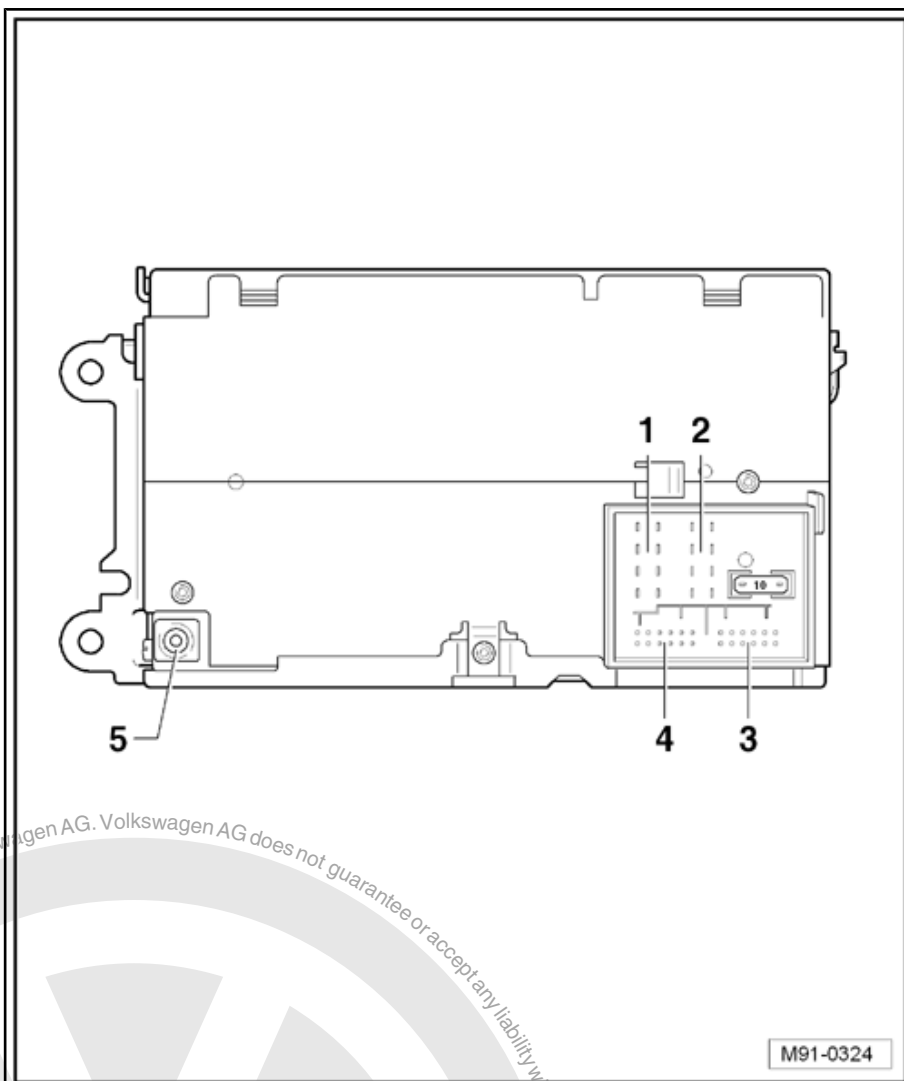
- ☐ Pin assignment
➔ [page 8](#)

4 - Multi-pin connector 4

- ☐ Not assigned

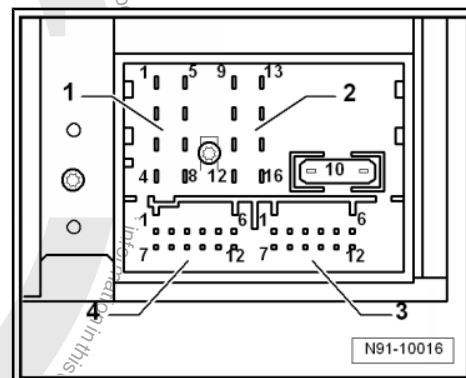
5 - Aerial connection

- ☐ Connector colour, white
- ☐ AM/FM
- ☐ Aerial systems (saloon)
➔ [page 171](#)
- ☐ Aerial systems (Variant)
➔ [page 179](#)



2.4.1 Multi-pin connector 1, 8-pin, loudspeaker outputs

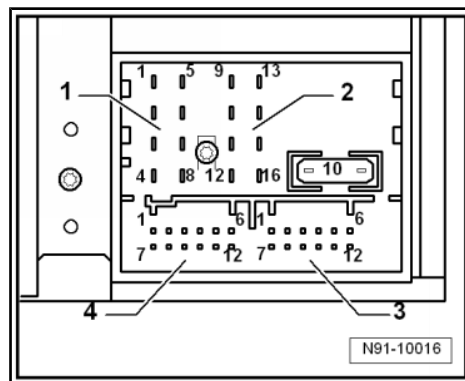
- 1 - Rear right loudspeaker (+)
- 2 - Front right loudspeaker (+)
- 3 - Front left loudspeaker (+)
- 4 - Rear left loudspeaker (+)
- 5 - Rear right loudspeaker (-)
- 6 - Front right loudspeaker (-)
- 7 - Front left loudspeaker (-)
- 8 - Rear left loudspeaker (-)





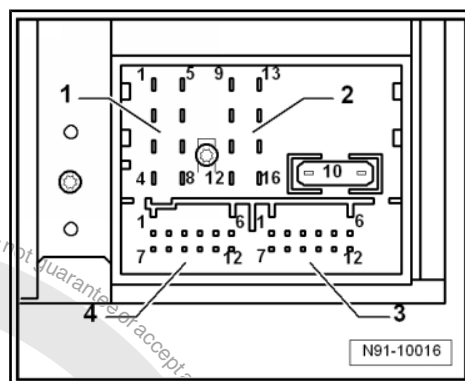
2.4.2 Multi-pin connector 2, 8-pin, CAN bus, telephone

- 9 - CAN bus (high)
- 10 - CAN bus (low)
- 11 - Telephone mute
- 12 - Terminal 31
- 13 - Radio -R- on
- 14 - ATA terminal 30
- 15 - Terminal 30
- 16 - ATA (SAFE) terminal 30



2.4.3 Multi-pin connector 3, 12-pin, telephone

- 1-5 - Not assigned
- 6 - Telephone LF input signal (-)
- 7-11 - Not assigned
- 12 - Telephone LF input signal (+)



2.5 Anti-theft coding

The "Lowentry" radio -R- is equipped with an anti-theft coding system which works in conjunction with the dash panel insert.

If the voltage supply for the radio -R- is disconnected and then reconnected, the radio will be still operational without the need to enter the anti-theft code again. A prerequisite is that the initial activation of the anti-theft coding takes place and that the radio -R- is reconnected in the same vehicle.

2.5.1 Functional notes

After initial activation of the anti-theft coding, an internal radio code is stored in the radio -R- and in the dash panel insert. If the radio -R- is now disconnected from the voltage supply due to repairs (e.g. radio -R- or battery -A-) removed and the voltage supply is then reconnected, data is transferred between the radio -R- and the dash panel insert.

When this is done, the internal code of the radio -R- is compared with the code in the dash panel insert. If the codes are identical with each other, the dash panel insert will recognise that the connected radio -R- belongs to the vehicle. The radio -R- is therefore immediately operational without the need to enter the anti-theft code again.

If the radio -R- is replaced, the radio code must be entered again.

Deactivating anti-theft coding ➤ [page 9](#)

Then after switching on the "S contact" via the ignition lock the code is automatically compared between the dash panel insert and the radio -R- .



Comparison takes approx. 5 seconds. It must be ensured that a diagnostic unit has not been connected or is not connected during this period of time.

After this time, the radio -R- of the vehicle will be ready for operation without the need to enter the radio code again even if the voltage supply has been cut off and then reconnected.

The anti-theft coding becomes effective and blocks the radio -R- when:

- ◆ The radio -R- is installed in another vehicle or
- ◆ The dash panel insert is changed.

A radio -R- which has been locked by the anti-theft coding is shown when "SAFE" and "1000" is shown in the display when switching the radio -R- on.

Deactivate the anti-theft coding to release the unit lock

⇒ [page 9](#).

2.5.2 Deactivating anti-theft coding

A locked radio -R- will only work again if the correct radio code for the anti-theft coding system is entered.




Note

- ◆ *The anti-theft radio code is stuck on the radio card together with the unit number ⇒ Instruction manual .*
- ◆ *The radio card should not be kept in the vehicle for security reasons. Ask the customer for the radio code.*
- ◆ *If a radio -R- is renewed, the numerical code of the replacement radio must be used.*
- ◆ *The customer must be informed that the radio code has changed.*

- Obtain the code of the radio -R- .
- Switch on the radio -R- .

The radio -R- automatically displays "SAFE" and then "1000".

- Enter the radio code using station buttons 1 to 4. Use station button 1 to enter the first digit of the radio code and station 2 for the second digit etc.
- Then press the function button  and hold it down until the electronic anti-theft coding system is activated. This is indicated by a brief signal sound.

If the radio code has been entered correctly into the radio -R- , a radio frequency appears in the display.



Note

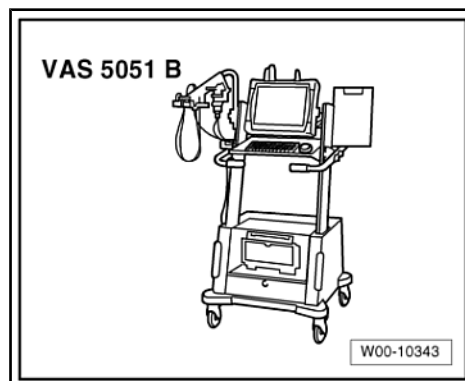
If an incorrect anti-theft code is entered, it can be immediately corrected with a further attempt. If an incorrect radio code is entered twice, the radio -R- will be blocked for one hour. During the locking period, the radio -R- must remain switched on and the ignition key must remain in the ignition lock. The process can then be repeated after one hour. Do not forget that only two attempts are allowed, after which the radio -R- will be blocked for one hour.



2.6 Adapting radio -R- components

Special tools and workshop equipment required

- ◆ Vehicle diagnostic, testing and information system -VAS 5051B-



Procedure

- In vehicle diagnostic, testing and information system -VAS 5051B- , select “Guided fault finding”.
- Using **GoTo** button, select “Functions/component” and the following menu options in succession:
 - ◆ Body
 - ◆ Electrical system
 - ◆ 01 - On board diagnosis-capable systems
 - ◆ Corresponding radio system
 - ◆ Radio system functions





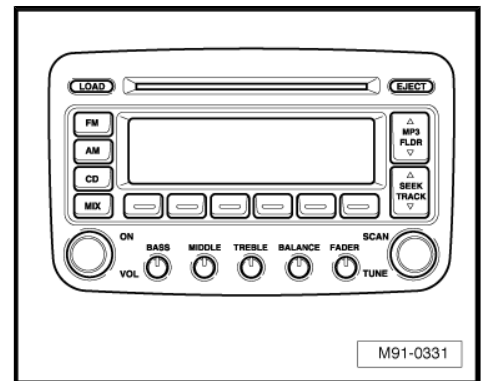
3 Radio "Premium 7"

Radio Premium 7



Note

- ◆ When dealing with complaints, it is absolutely necessary to understand the functions and the operation of the communication systems. ⇒ *Instruction manual*.
- ◆ The anti-theft coding uses a fixed code, deactivating anti-theft coding ⇒ [page 19](#).
- ◆ In the event of repair work or fault finding ⇒ *Vehicle diagnosis, testing and information system VAS 5051*.
- ◆ When the battery -A- is reconnected, please remember to check vehicle equipment (radio, clock, convenience electronics, etc.) in accordance with the ⇒ *Electrical system; Rep. Gr. 27 workshop manual and/or the ⇒ instruction manual*.



3.1 General description

The radio system "Premium 7" comprises a radio -R-, an integrated 6-disc CD changer and loudspeakers in the doors.

The radio -R- has a final output stage with an output power of 4 x 20 W. The loudspeakers are designed as a 3-way system in the front and as a 2-way system in the rear.

The following is installed in the "Premium 7" radio system:

- ◆ A bass loudspeaker, a mid-range loudspeaker and a treble loudspeaker in each of the front doors.
- ◆ A bass loudspeaker and a treble loudspeaker in each of the rear doors.

To extend the functions, connection options are available for amplifier -R12-, telephone and satellite radio -R146-.

The 6-disc CD changer integrated in the radio -R- can play the following formats:

- ◆ Audio CD
- ◆ CD-R
- ◆ CD-RW
- ◆ MP3

The following formats cannot be played:

- ◆ CD with diameter of 8 cm
- ◆ "Mixed CD" (CD with data and audio files)

The aerial is a window aerial and is located in the rear window (saloon). In the Variant, the aerials are located in the rear right side window and in the roof aerial. The aerial system includes a "diversity function" integrated in the radio -R-.

3.1.1 Fault finding

The radio -R- is equipped with self-diagnosis.

For fault finding, use the vehicle diagnosis, testing and information system -VAS 5051B- in "Guided fault finding" mode.

3.2 Overview of radio "Premium 7"

1 - Radio -R-

- ☐ Connectors
⇒ [page 16](#)
- ☐ Removing and installing
⇒ [page 13](#)

2 - Amplifier -R12-

- ☐ Optional
- ☐ Under left front seat
- ☐ Amplifier -R12-
⇒ [page 100](#) .

3 - Satellite tuner aerial -R172-

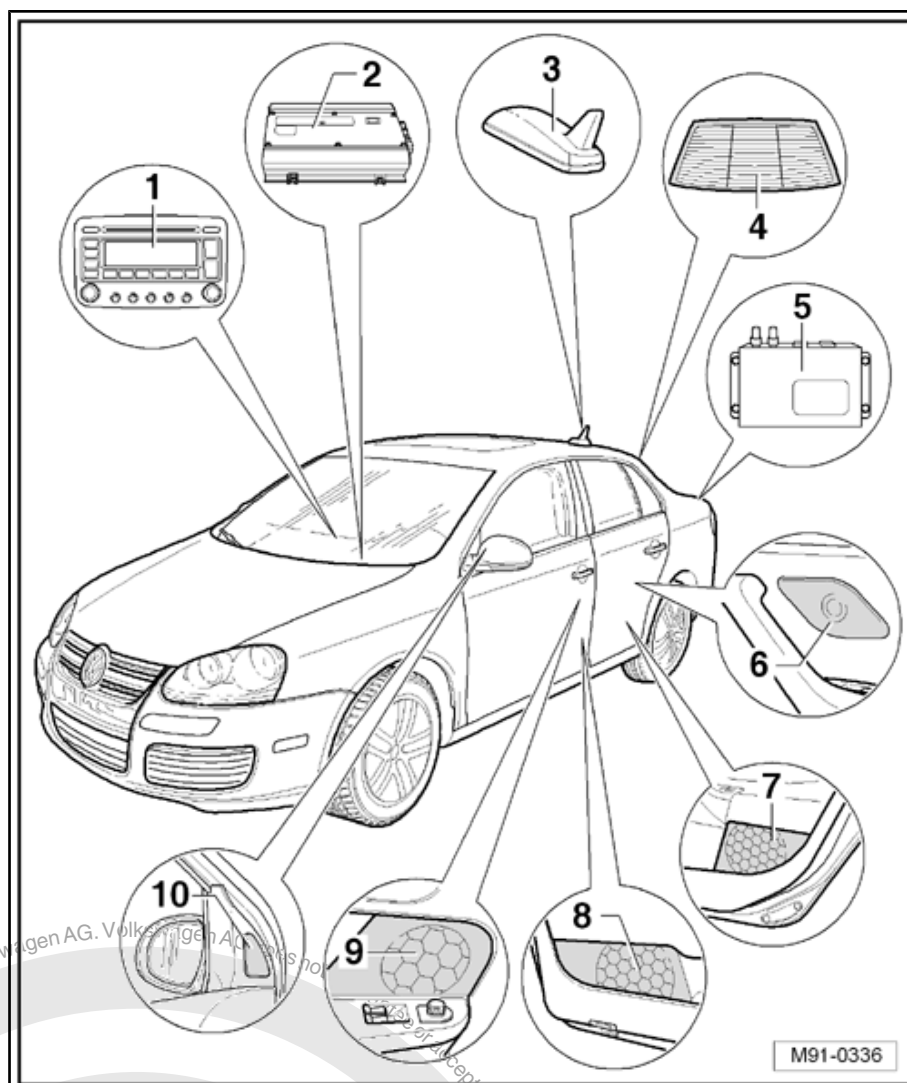
- ☐ Optional
- ☐ On roof rear side
- ☐ Aerial systems (saloon)
⇒ [page 171](#)
- ☐ Aerial systems (Variant)
⇒ [page 179](#)

4 - Aerial -R11- / Radio aerial 2 -R93-

- ☐ Aerial systems (saloon)
⇒ [page 171](#)
- ☐ Aerial systems (Variant)
⇒ [page 179](#)

5 - Satellite radio -R146-

- ☐ Optional
- ☐ Under rear shelf in luggage compartment (saloon).
- ☐ Under right front seat (Variant).
- ☐ Satellite radio -R146-
⇒ [page 117](#) .



6 - Rear left treble loudspeaker -R14- / rear right treble loudspeaker -R16-

- ☐ Installed in the rear left and right door trims
- ☐ Loudspeaker systems ⇒ [page 106](#)

7 - Rear left bass loudspeaker -R15- / rear right bass loudspeaker -R17-

- ☐ Installed in the rear left and right door trims.
- ☐ Loudspeaker systems ⇒ [page 106](#) .

8 - Front left bass loudspeaker -R21- / front right bass loudspeaker -R23-

- ☐ Installed in the front left and right door trims
- ☐ Loudspeaker systems ⇒ [page 106](#) .

9 - Front left mid-range loudspeaker -R103- / front right mid-range loudspeaker -R104-

- ☐ Installed in the front left and right door trims
- ☐ Loudspeaker systems ⇒ [page 106](#) .

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

- ☐ Installed in mirror triangle of the right and left front doors
- ☐ Loudspeaker systems ⇒ [page 106](#) .



3.3 Removing and installing radio "Premium 7"

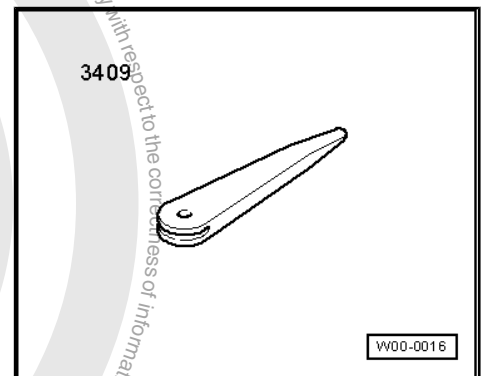


Note

- ◆ The part number for the radio -R- can be found on a sticker on the radio -R- housing.
- ◆ If the radio -R- has to be renewed, deactivate the electronic anti-theft coding system ➔ [page 19](#). Please inform the customer of the new radio code.
- ◆ If the radio code is not known, it can be requested via the established systems. For this, you need the identification number of the radio -R-. It is located on a sticker on the side of the radio -R-. The identification number is also embossed in the material of the side panel of the radio -R-.

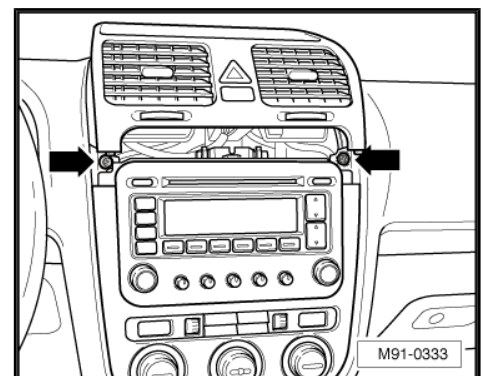
Special tools and workshop equipment required

- ◆ Removal wedge -3409-



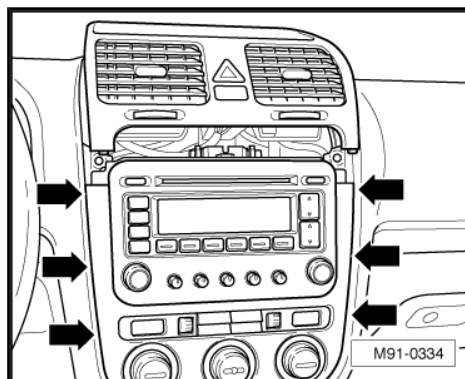
Removing

- Remove CD from radio -R- ➔ Owner's manual .
- Switch off ignition and all electrical consumers and remove ignition key.
- Remove upper cover together with air vents out of the middle of the dash panel until the underneath bolts of the centre console cover can be reached, ➔ General body repairs, exterior; Rep. Gr. 68 .
- Remove bolts -arrows- (1.5 Nm).

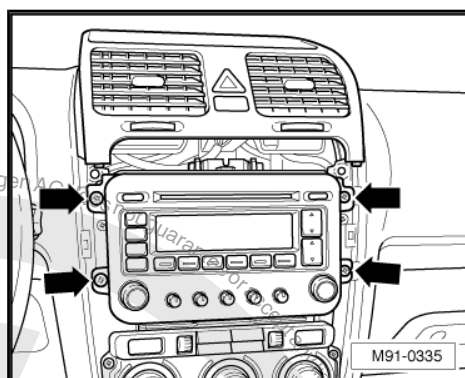




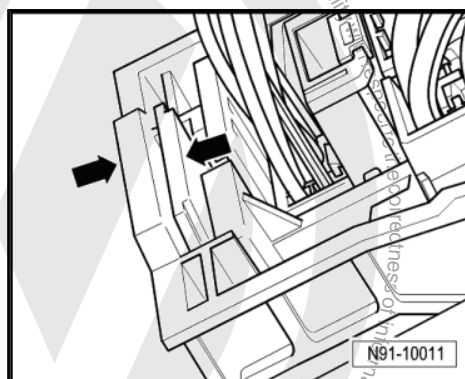
- Carefully lever out cover of centre console using removal wedge -3409- -arrows- and take it off.



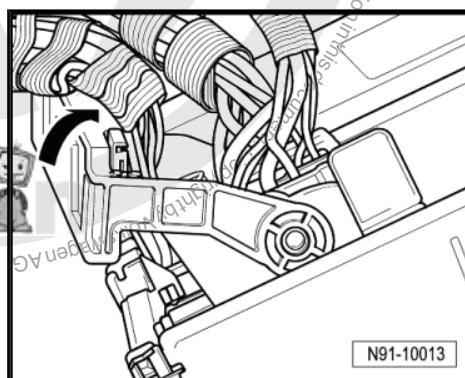
- Remove bolts -arrows- (1.5 Nm) on radio -R- .
- Pull the radio -R- out of the installation shaft until you can gain access to the connectors on the back of the radio -R- .



- Press together connector locking mechanism in direction of -arrows-.



- Then swing locking bar up in direction of -arrow- and disconnect connector.





- Release connectors -arrows- from aerial connections and disconnect them.

Installing

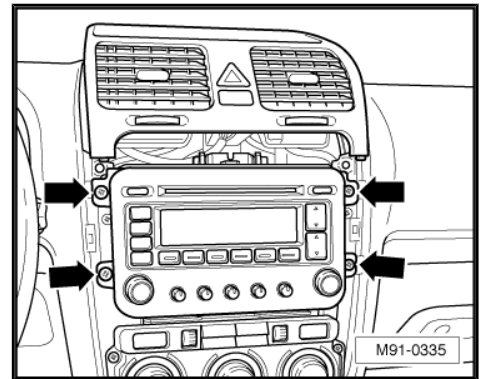
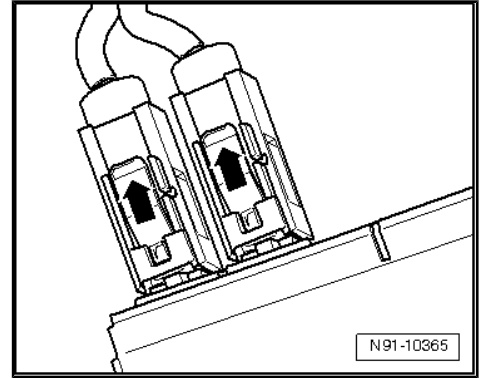
- Fit connectors on the radio -R- and lock them.
- Push the radio -R- straight into the dash panel.



Note

Never press on the display or the operating buttons when fitting the radio -R-, as the radio -R- may be damaged.

- Fit the radio -R- with 4 bolts -arrows- (1.5 Nm).
- Install centre console cover.
- Deactivate the anti-theft coding ⇒ [page 19](#) .
- Check the radio -R- coding and recode the radio -R- ⇒ [page 19](#) .





3.4 “Premium 7” connectors

1 - Multi-pin connector 1, 8-pin, loudspeaker outputs

- ☐ Pin assignment
⇒ [page 16](#)

2 - Multi-pin connector 2, 8-pin, CAN bus, telephone

- ☐ Pin assignment
⇒ [page 17](#)

3 - Multi-pin connector 3, 12-pin, telephone

- ☐ Pin assignment
⇒ [page 17](#)

4 - Multi-pin connector 4, 12-pin, satellite radio -R146-

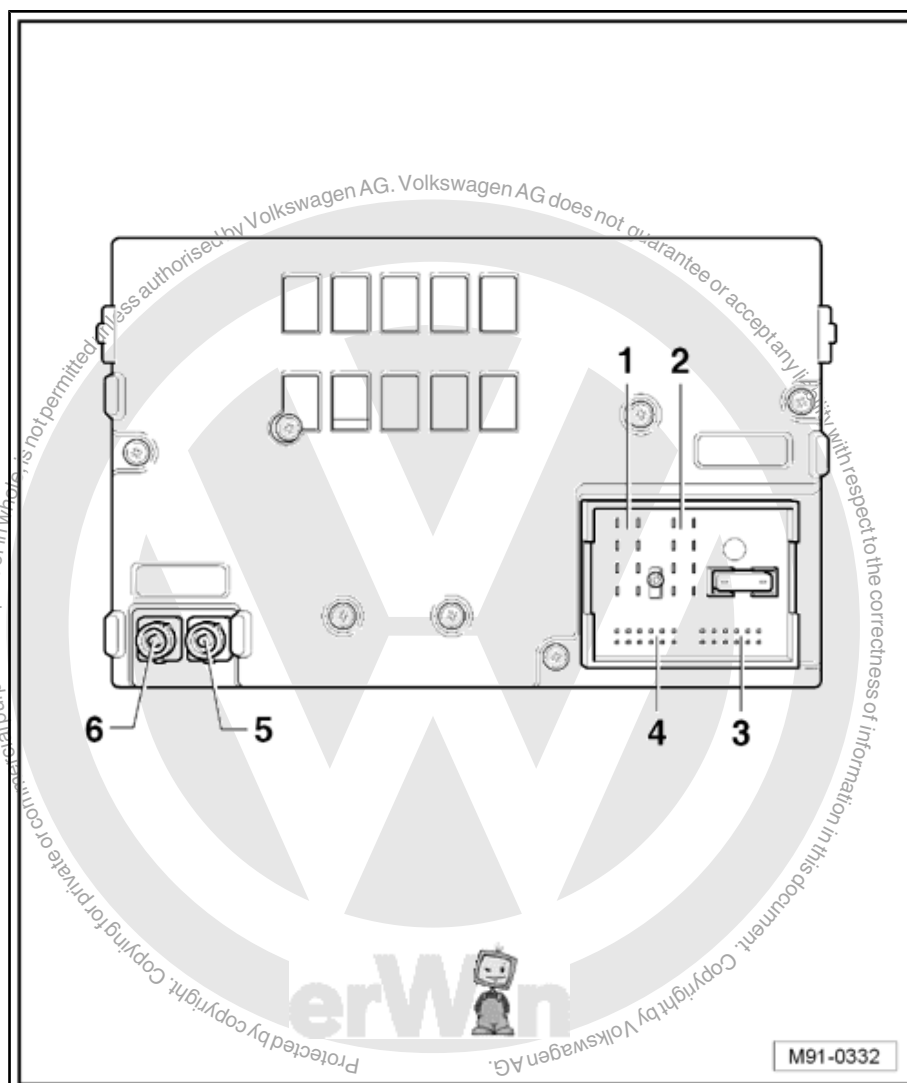
- ☐ Pin assignment
⇒ [page 17](#)

5 - Aerial connection

- ☐ Connector colour beige
- ☐ Pin assignment
⇒ [page 18](#)

6 - Aerial connection

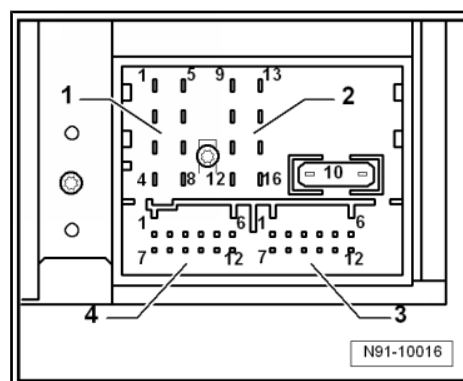
- ☐ Connector colour transparent
- ☐ Pin assignment
⇒ [page 18](#)



3.4.1 Multi-pin connector 1, 8-pin, loudspeaker outputs

In combination with amplifier -R12- , audio signals from radio -R- are used as input signals for amplifier -R12- .

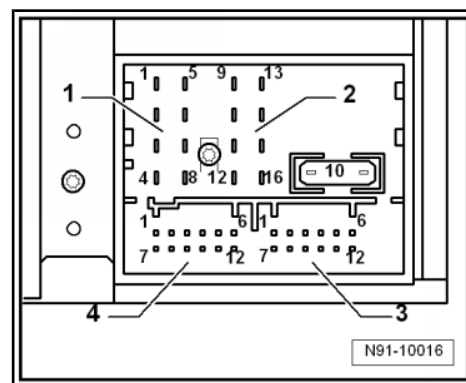
- 1 - Rear right loudspeaker (+)
- 2 - Front right loudspeaker (+)
- 3 - Front left loudspeaker (+)
- 4 - Rear left loudspeaker (+)
- 5 - Rear right loudspeaker (-)
- 6 - Front right loudspeaker (-)
- 7 - Front left loudspeaker (-)
- 8 - Rear left loudspeaker (-)





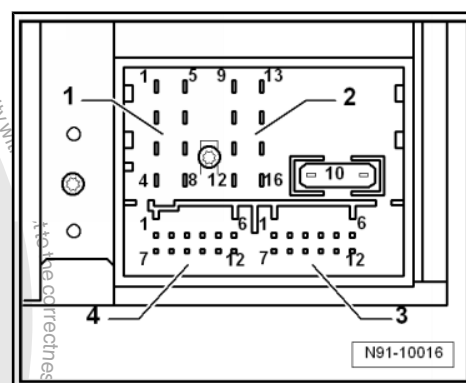
3.4.2 Multi-pin connector 2, 8-pin, CAN bus, telephone

- 9 - CAN bus (high)
- 10 - CAN bus (low)
- 11 - Telephone mute
- 12 - Terminal 31
- 13 - Radio -R- on
- 14 - ATA terminal 30
- 15 - Terminal 30
- 16 - ATA (SAFE) terminal 30



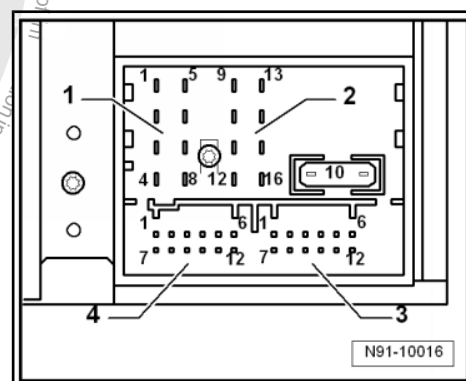
3.4.3 Multi-pin connector 3, 12-pin, telephone

- 1-5 - Not assigned
- 6 - Telephone LF input signal (-)
- 7-11 - Not assigned
- 12 - Telephone LF input signal (+)



3.4.4 Multi-pin connector 4, 12-pin, satellite radio -R146-

- 1 - Audio left from satellite radio -R146-
- 2 - Not assigned
- 3 - Audio earth from satellite radio -R146-
- 4 - Not assigned
- 5 - Terminal 30 to satellite radio -R146-
- 6 - Not assigned
- 7 - Audio right from satellite radio -R146-
- 8 - 12 - Not assigned





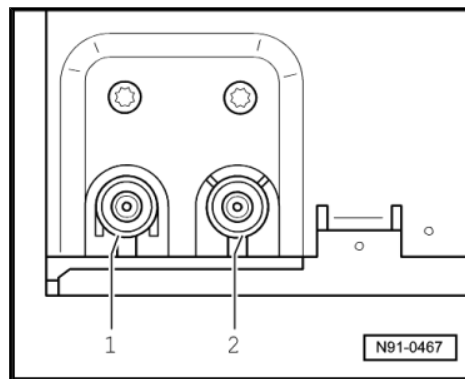
3.4.5 Aerial connections

- 1 - Connector colour white, saloon aerial systems ➤ [page 171](#)
- Connector colour white, Variant aerial systems ➤ [page 179](#)
- 2 - Connector colour beige, saloon aerial systems ➤ [page 171](#)
- Connector colour beige, Variant aerial systems ➤ [page 179](#)



Note

The radio -R- has an aerial diversity function for terrestrial radio reception. Both aerial connections are signal inputs. The radio -R- analyses continuously which of the two connected aerials transmits the better reception signal. The aerial with the better reception signal is then selected. This switching process is not audible.



3.5 Electronic anti-theft coding

The "Premium 7" radio -R- is equipped with an electronic anti-theft coding system which works in conjunction with the dash panel insert.

If the voltage supply for the radio -R- is cut off and then reconnected, the radio will still be operational without the need to enter the radio code again. A prerequisite is that the electronic anti-theft coding system has already been activated for the first time and that the radio -R- is reconnected in the same vehicle.

3.5.1 Functional notes

After initial activation of the anti-theft coding, an internal radio code is stored in the radio -R- and in the dash panel insert. If the radio -R- is now disconnected from the voltage supply due to repairs (e.g. radio -R- or battery -A-) removed and the voltage supply is then reconnected, data is transferred between the radio -R- and the dash panel insert.

When this is done, the internal code of the radio -R- is compared with the code in the dash panel insert. If the codes are identical with each other, the dash panel insert will recognise that the connected radio -R- belongs to the vehicle. The radio -R- is therefore immediately operational without the need to enter the anti-theft code again.

If the radio -R- is replaced, the radio code must be entered.

Deactivating anti-theft coding ➤ [page 19](#)

Then after switching on the "S contact" via the ignition lock the code is automatically compared between the dash panel insert and the radio -R- .

The comparison takes approx. 5 seconds. During this period no diagnostic unit may be connected.

After this time, the radio -R- of the vehicle will be ready for operation without the need to enter the radio code again even if the voltage supply has been cut off and then reconnected.

The anti-theft coding becomes effective and blocks the radio -R- when:

- ◆ The radio -R- is installed in another vehicle or
- ◆ The dash panel insert is changed.



A radio -R- which has been locked by the anti-theft coding is shown when "SAFE" and "1000" is shown in the display when switching the radio -R- on.

Deactivate the anti-theft coding to release the unit lock
⇒ [page 19](#) .

3.5.2 Deactivating electronic anti-theft coding

A locked radio -R- will only work again if the correct radio code for the anti-theft coding system is entered.



Note

- ◆ *The anti-theft radio code is stuck on the radio card together with the unit number ⇒ Instruction manual .*
 - ◆ *The radio card should not be kept in the vehicle for security reasons. Ask the customer for the radio code.*
 - ◆ *If a radio -R- is renewed, the radio code of the replacement device must be used.*
 - ◆ *The customer must be informed that the radio code has changed.*
- Obtain the code of the radio -R- .
 - Switch on the radio -R- .

The radio -R- automatically displays "SAFE" and then "1000".

- Enter the radio code stuck on the radio card using station buttons 1 to 4. Use station button 1 to enter the first digit of the radio code and station 2 for the second digit etc.
- Then press the station button, which is located under "OK" on the display (normally it is the last station button) and hold the button down until the electronic anti-theft coding system is activated. This is indicated by a brief signal sound.

If the radio code has been entered correctly into the radio -R- , a radio frequency appears in the display.



Note

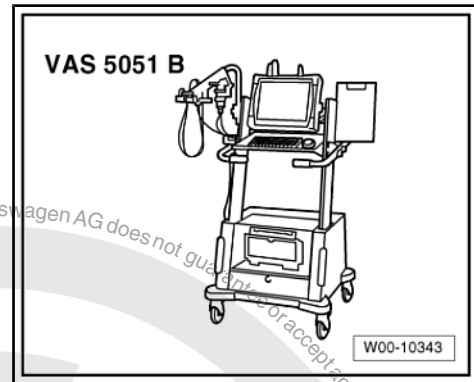
If the incorrect radio code is entered, it can be immediately corrected with a further attempt. If an incorrect radio code is entered twice, the radio -R- will be blocked for one hour. During the locking period, the radio -R- must remain switched on and the ignition key must remain in the ignition lock. The process of deactivating the anti-theft coding can then be repeated after one hour. Do not forget that only two attempts are allowed, after which the radio -R- will be blocked for one hour.

3.6 Adapting radio -R- components

Special tools and workshop equipment required



- ◆ Vehicle diagnosis, testing and information system -VAS 5051B-



Procedure

- Select "guided fault finding" in the vehicle diagnosis, testing and information system -VAS 5051B- .
- Using **GoTo** button, select "Functions/component" and the following menu options in succession:
 - ◆ Body
 - ◆ Electrical system
 - ◆ 01 - On board diagnosis-capable systems
 - ◆ Corresponding radio system
 - ◆ Radio system functions



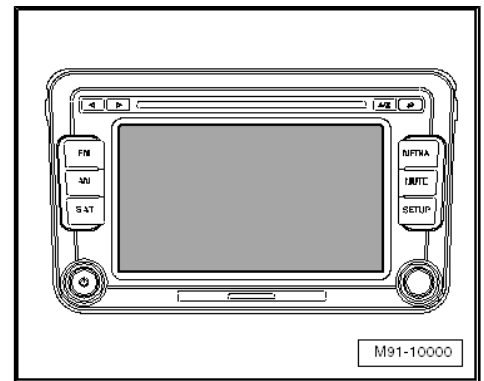
4 Radio "Premium 8"

Radio Premium 8



Note

- ◆ *When dealing with complaints, it is absolutely necessary to understand the functions and the operation of the communication systems ⇒ Instruction manual .*
- ◆ *The anti-theft coding uses a fixed code ⇒ [page 77](#) .*
- ◆ *In the event of repair work or fault finding ⇒ Vehicle diagnosis, testing and information system VAS 5051.*
- ◆ *When the battery -A- is reconnected, please remember to check vehicle equipment (radio, clock, convenience electronics, etc.) in accordance with the ⇒ Electrical system; Rep. Gr. 27 workshop manual and/or the ⇒ owner's manual .*



4.1 General description

The radio system "Premium 8" comprises a radio -R- , an integrated 6-disc CD changer and loudspeakers in the doors.

The radio -R- has a plug position for the use of SD storage cards for reproducing audio content and an output stage with 4 x 20 W output.

The loudspeakers are designed as a 3-way system in the front and as a 2-way system in the rear.

The radio system "Premium 8" is available in a version with loudspeakers operated via the 4 internal loudspeaker outputs or in a version with the amplifier -R12- . In this case, the loudspeakers are connected directly to the amplifier -R12- and the loudspeaker outputs of the radio -R- are used for amplifier -R12- input signals.

The following loudspeakers are installed with the radio system "Premium 8":

- ◆ A bass loudspeaker, a mid-range loudspeaker and a treble loudspeaker in each of the front doors;
- ◆ A bass loudspeaker and a treble loudspeaker in each of the rear doors.

To extend the functions, connection options are available for amplifier -R12- , CD changer -R41- and telephone.

An optional satellite radio -R146- is integrated into radio -R- "Premium 8".

The integrated 6-disc CD changer can play the following formats:

- ◆ Audio CD
- ◆ CD-R
- ◆ CD-RW
- ◆ MP3

The following formats cannot be played:

- ◆ CD with diameter of 8 cm
- ◆ "Mixed CD" (CD with data and audio files)



Note

The internal CD changer has a transport protection device which must be deactivated before installing a new radio -R-. The transport protection device must also be switched on before shipping a removed radio -R-. For this, the Radio -R- must still be connected to the voltage supply.

The aerial is a window aerial and is located in the rear window (saloon). In the Variant, the aerials are located in the rear side windows and in the roof aerial. The aerial system includes a "diversity function" integrated in the radio -R-.

4.1.1 Fault finding

The radio -R- is equipped with self-diagnosis.

For fault finding, use the vehicle diagnosis, testing and information system -VAS 5051B- in "Guided fault finding" mode.

4.2 Overview of radio "Premium 8"

1 - Radio -R-

- ☐ Connectors
⇒ [page 26](#)
- ☐ Activating and deactivating transport protection device ⇒ [page 28](#)
- ☐ Removing and installing
⇒ [page 23](#).

2 - Amplifier -R12-

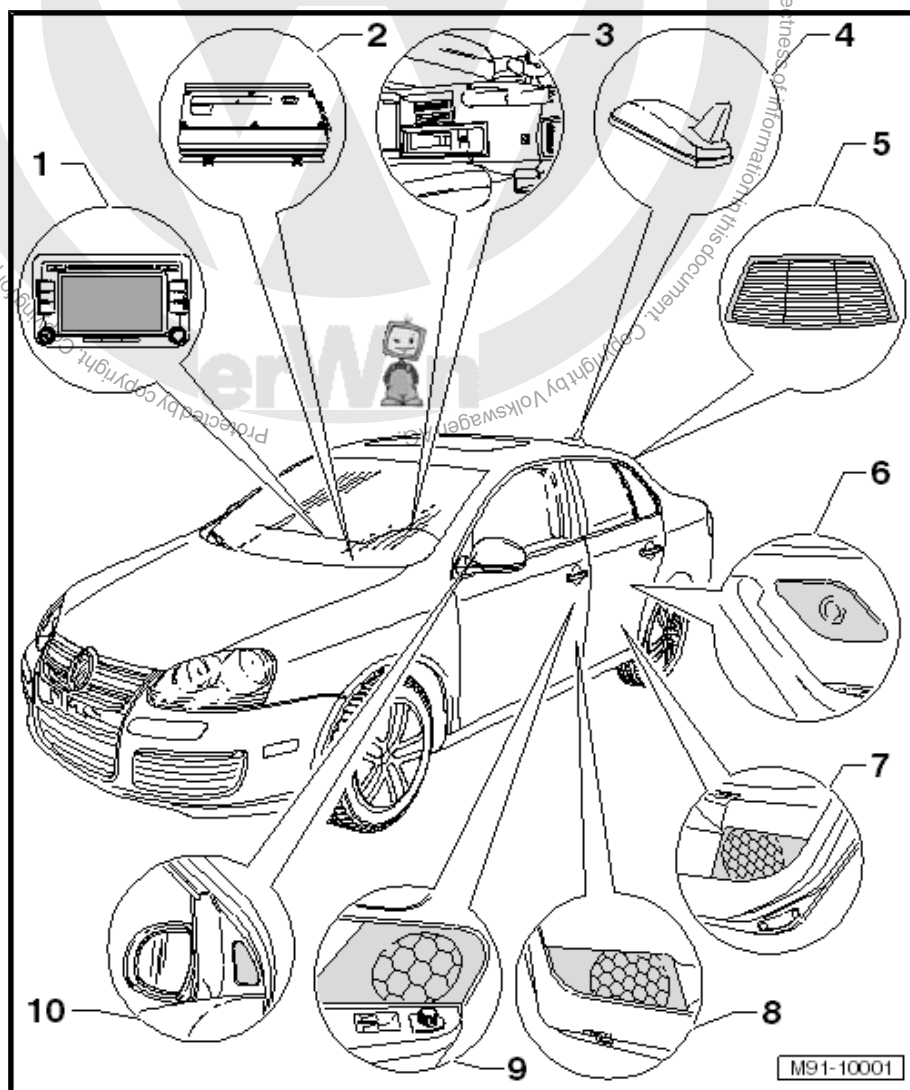
- ☐ Optional
- ☐ Under left front seat
- ☐ Amplifier -R12-
⇒ [page 100](#).

3 - Multimedia system control unit -J650-

- ☐ Optional
- ☐ In centre console
- ☐ Multimedia system control unit -J650-
⇒ [page 95](#)
- ☐ CD changer -R41-
⇒ [page 79](#)
- ☐ Connection for external audio sources -R199-
⇒ [page 91](#)

4 - Satellite tuner aerial -R172-

- ☐ Roof aerial.
- ☐ Aerial systems (saloon)
⇒ [page 171](#).
- ☐ Aerial systems (Variant)
⇒ [page 179](#).
- ☐ Aerial systems in saloons from model year 2011 ⇒ [page 179](#)





5 - Aerial -R11- / Radio aerial 2 -R93-

- ☐ Aerial systems (saloon) ➤ [page 171](#) .
- ☐ Aerial systems (Variant) ➤ [page 179](#) .
- ☐ Aerial systems in saloons from model year 2011 ➤ [page 179](#)

6 - Rear left treble loudspeaker -R14- / rear right treble loudspeaker -R16-

- ☐ Installed in the rear left and right door trims.
- ☐ Loudspeaker systems ➤ [page 106](#) .

7 - Rear left bass loudspeaker -R15- / rear right bass loudspeaker -R17-

- ☐ Installed in the rear left and right door trims
- ☐ Loudspeaker systems ➤ [page 106](#)

8 - Front left bass loudspeaker -R21- / front right bass loudspeaker -R23-

- ☐ Installed in the front left and right door trims
- ☐ Loudspeaker systems ➤ [page 106](#)

9 - Front left mid-range loudspeaker -R103- / front right mid-range loudspeaker -R104-

- ☐ Installed in the front left and right door trims
- ☐ Loudspeaker systems ➤ [page 106](#)

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

- ☐ Installed in mirror triangle of the right and left front doors
- ☐ Loudspeaker systems ➤ [page 106](#)

4.3 Removing and installing radio "Premium

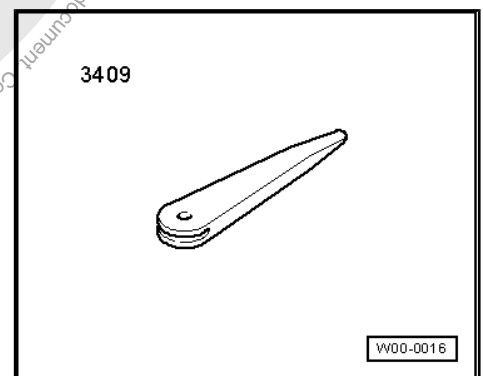
8"

Note

- ◆ The part number for the radio -R- can be found on a sticker on the radio -R- housing.
- ◆ If the radio -R- has to be renewed, deactivate the electronic anti-theft coding system ➤ [page 29](#) .
- ◆ The integrated CD changer has a transport protection device which must be deactivated before installing a new radio -R- . The transport protection device must also be activated before shipping a removed radio -R- . For this, the radio -R- must still be connected to the voltage supply. Activating and deactivating transport protection device ➤ [page 28](#) .

Special tools and workshop equipment required

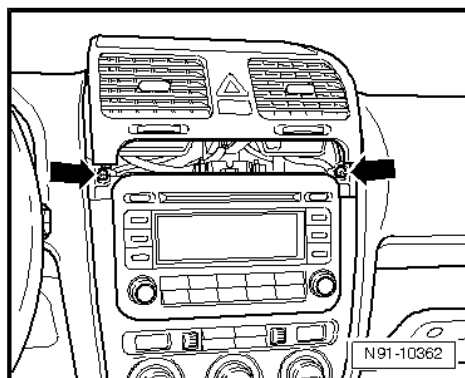
- ◆ Removal wedge -3409-



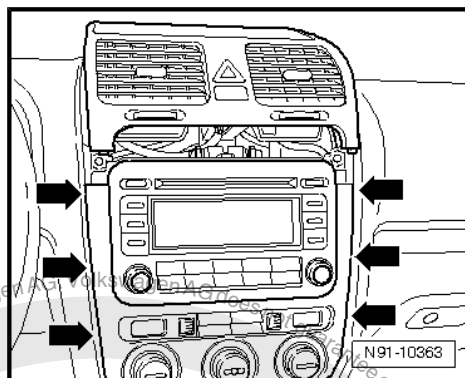


Removing

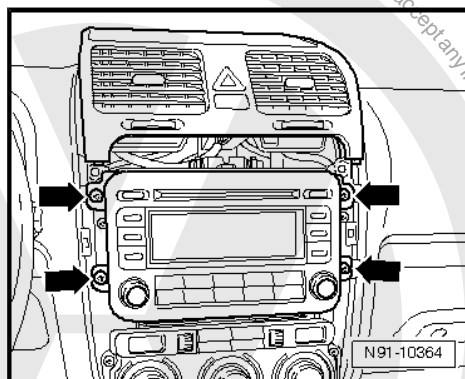
- Remove CD from radio -R- ➔ Operating manual .
- Activate the transport protection device ➔ [page 28](#) .
- Switch off ignition and all electrical consumers and remove ignition key.
- Remove upper cover together with air vents out of the middle of the dash panel until the underneath bolts of the centre console cover can be reached, ➔ General body repairs, exterior; Rep. Gr. 68 .
- Remove bolts -arrows- (1.5 Nm).



- Carefully lever out cover of centre console using removal wedge -3409- -arrows- and take it off.

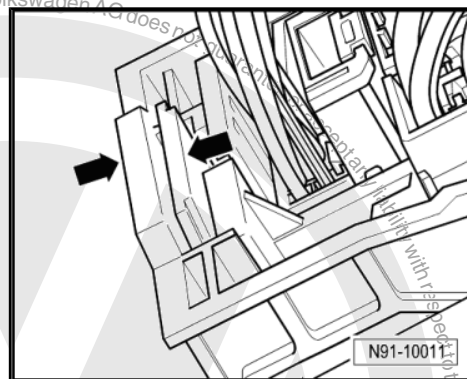


- Remove bolts -arrows- (1.5 Nm) on radio -R-.
- Pull the radio -R- out of the installation shaft until you can gain access to the connectors on the back of the radio -R- .

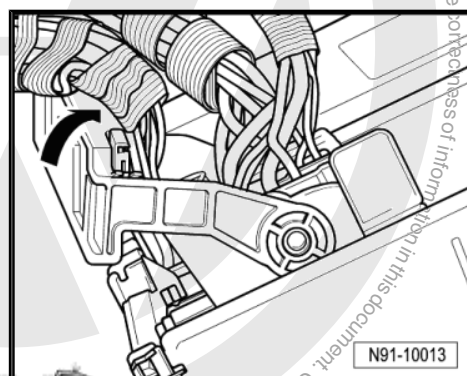




- Press together connector locking mechanism in direction of -arrows-.



- Then swing locking bar up in direction of -arrow- and pull out connectors.



- Release connectors -arrows- of aerial connections and disconnect connectors.

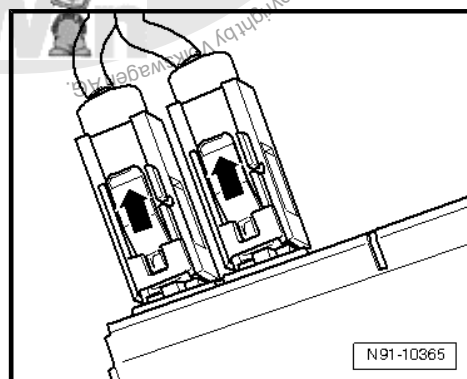
Installing

- Fit connectors on the radio -R- and lock them.
- Push the radio -R- straight into the dash panel.

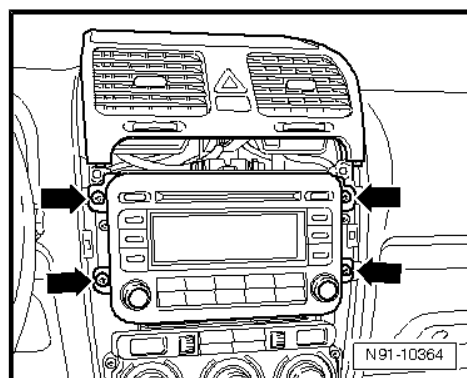


Note

Never press on the display or the operating buttons when fitting the radio -R-, as the radio -R- may be damaged.



- Fit the radio -R- with 4 bolts -arrows- (1.5 Nm).
- Install centre console cover.
- Deactivate the anti-theft coding ➤ [page 29](#) .
- Deactivate the transport protection device ➤ [page 28](#) .
- Check the radio -R- coding and recode the radio -R- ➤ [page 30](#) .





4.4 “Premium 8” connectors

1 - Aerial connection

- ☐ Connector colour, black
- ☐ SAT connection to roof aerial (saloon)
⇒ [page 171](#) .
- ☐ SAT connection to roof aerial (Variant)
⇒ [page 179](#) .
- ☐ Aerial systems in saloons from model year 2011 ⇒ [page 179](#)

2 - Multi-pin connector 1, 8-pin, loudspeaker outputs

- ☐ Pin assignment
⇒ [page 27](#)

3 - Multi-pin connector 2, 8-pin, CAN bus, telephone

- ☐ Pin assignment
⇒ [page 27](#)

4 - Multi-pin connector 3, 12-pin, telephone

- ☐ Pin assignment
⇒ [page 27](#)

5 - Multi-pin connector 4, 12-pin, CD changer -R41-

- ☐ Pin assignment
⇒ [page 28](#)

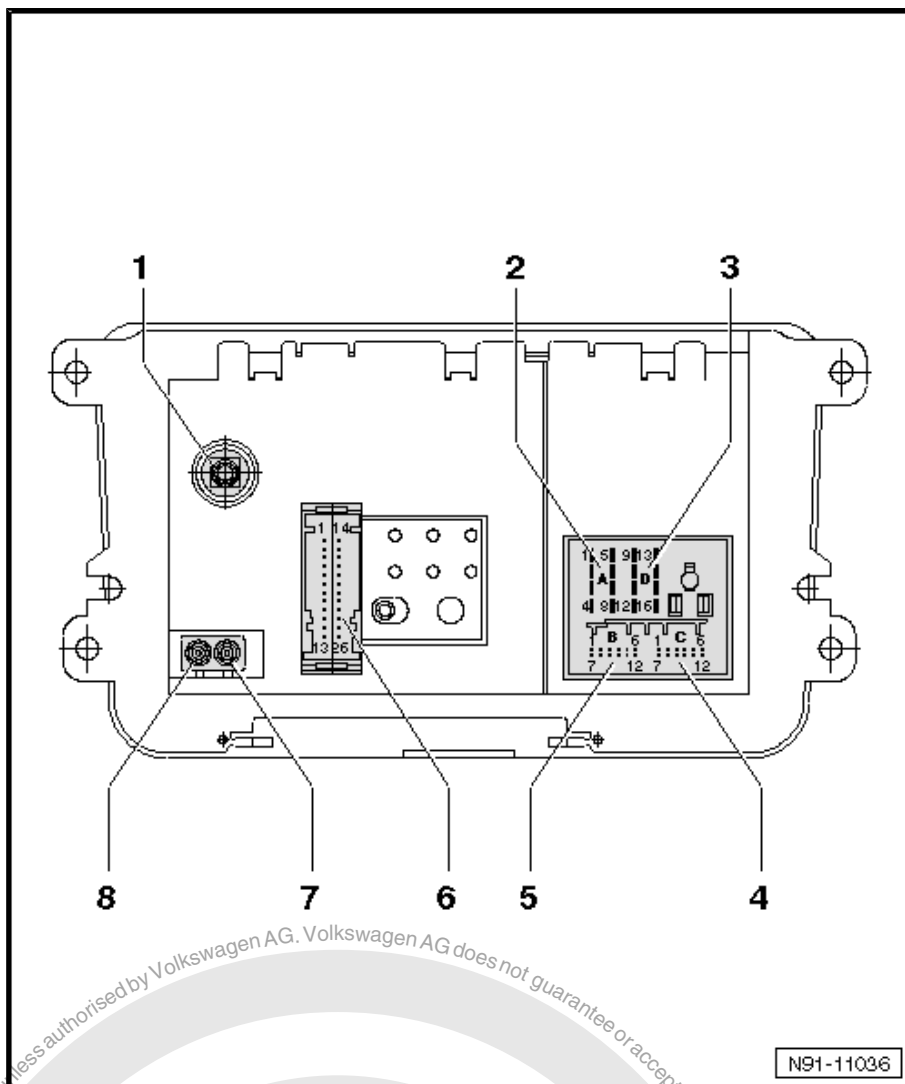
6 - Not fitted

7 - Aerial connection

- ☐ Connector colour, white
- ☐ FM2
- ☐ Aerial systems (saloon)
⇒ [page 171](#) .
- ☐ Aerial systems (Variant) ⇒ [page 179](#) .
- ☐ Aerial systems in saloons from model year 2011 ⇒ [page 179](#)

8 - Aerial connection

- ☐ Connector colour, white
- ☐ AM/FM
- ☐ Aerial systems (saloon) ⇒ [page 171](#) .
- ☐ Aerial systems (Variant) ⇒ [page 179](#) .
- ☐ Aerial systems in saloons from model year 2011 ⇒ [page 179](#)

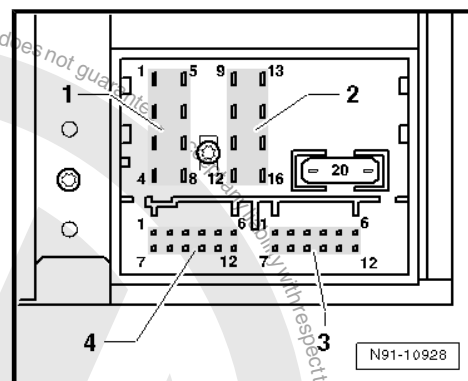




4.4.1 Multi-pin connector 1, 8-pin, loudspeaker outputs

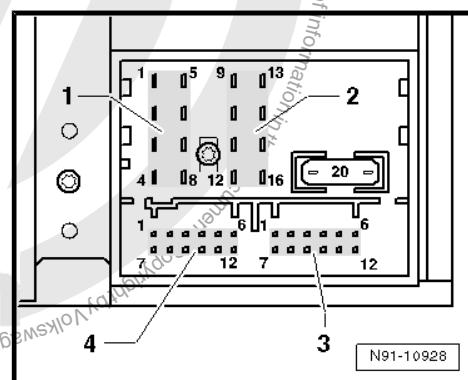
In combination with amplifier -R12-, audio signals from radio -R- are used as input signals for amplifier -R12-.

- 1 - Rear right loudspeaker (+)
- 2 - Front right loudspeaker (+)
- 3 - Front left loudspeaker (+)
- 4 - Rear left loudspeaker (+)
- 5 - Rear right loudspeaker (-)
- 6 - Front right loudspeaker (-)
- 7 - Front left loudspeaker (-)
- 8 - Rear left loudspeaker (-)



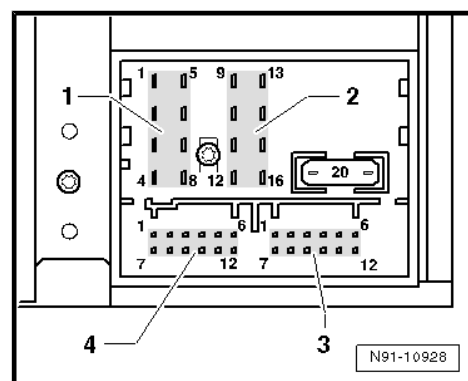
4.4.2 Multi-pin connector 2, 8-pin, CAN bus, telephone

- 9 - CAN bus (high)
- 10 - CAN bus (low)
- 11 - Telephone mute
- 12 - Terminal 31
- 13 - Not assigned
- 14 - Not assigned
- 15 - Terminal 30
- 16 - ATA (SAFE) terminal 30



4.4.3 Multi-pin connector 3, 12-pin, telephone

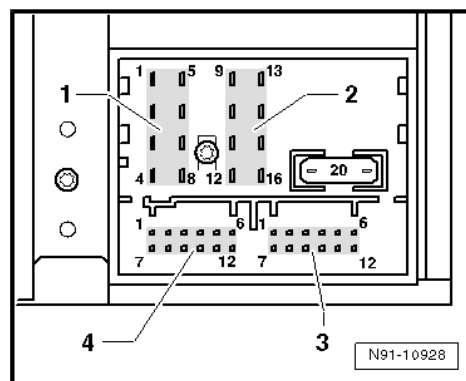
- 1-5 - Not assigned
- 6 - Telephone LF input signal (-)
- 7-11 - Not assigned
- 12 - Telephone LF input signal (+)





4.4.4 Multi-pin connector 4, 12-pin, CD changer -R41-

- 1 - Audio input left (+)
- 2 - Audio input earth
- 3 - Audio earth from CD changer -R41-
- 4 - Terminal 30 to CD changer -R41-
- 5 - Not assigned
- 6 - CD data out to CD changer -R41-
- 7 - Audio input right (+)
- 8 - Audio left from CD changer -R41-
- 9 - Audio right from CD changer -R41-
- 10 - Control signal to CD changer -R41-
- 11 - CD data in from CD changer -R41-
- 12 - CD clock from CD changer -R41-



4.5 Activating and deactivating transport protection device

The transportation device must be activated before shipping a "Premium 8" and deactivated when installing a new radio -R-. This takes place electronically via the key pad of the radio -R-. When the transport protection device has been activated, the drive of the internal CD changer is brought to a "transport position".

Activating transport protection device:

Unit status: "ON" or "OFF". The radio -R- must be connected to the voltage supply.

- Press and hold keys marked with -arrows- simultaneously for at least 5 seconds.

Once the drive of the internal CD changer reaches the transport position, "CDC transport protection device activated" appears in the display.

Deactivating transport protection device:

- Connect and install the radio -R-.

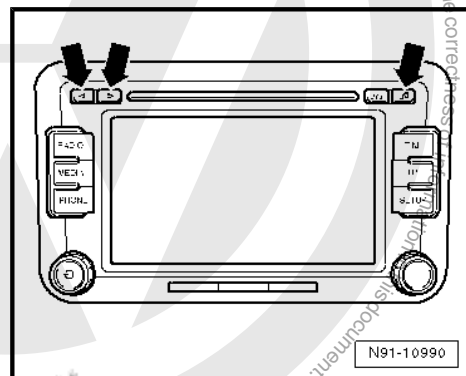
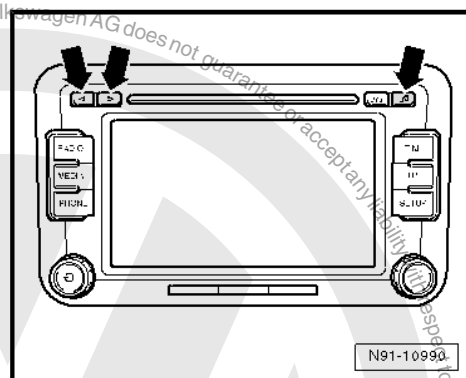
- Press and hold keys marked with -arrows- simultaneously for at least 5 seconds.

The following appears on the radio display: "CDC transport protection device activated".

A button with the word "Deactivate" is located under it.

- Press "Deactivate" button.

Transport protection device has now been deactivated.





4.6 Electronic anti-theft coding

The radio -R- is equipped with an electronic anti-theft coding system which works in conjunction with the dash panel insert.

If the voltage supply for the radio -R- is cut off and then reconnected, the radio will still be operational without the need to enter the radio code again. A prerequisite is that the electronic anti-theft coding system has already been activated for the first time and that the radio -R- is reconnected in the same vehicle.

The radio code is determined by means of the vehicle diagnosis, testing and information system -VAS 5051B-. The radio card used in the past and the sticker on the radio -R- have been discontinued.




Note

In order to find out the numerical code, the vehicle diagnosis, testing and information system -VAS 5051B- must be connected "online" (network connection), and the user must possess valid rights to use the programme for requesting radio codes.

4.6.1 Deactivating electronic anti-theft coding

A locked radio -R- will only work again if the correct numerical code for the electronic anti-theft coding system is entered.

Using the VAS tester to find out the radio code:

- Select "guided fault finding" in the vehicle diagnosis, testing and information system -VAS 5051B- .
- Using  button, select "Functions/component" and the following menu options in succession:
 - ◆ Body
 - ◆ Electrical system
 - ◆ 01 - On board diagnosis-capable systems
 - ◆ Corresponding radio system
 - ◆ Radio system functions
 - ◆ Radio code request

Your system rights are then determined. The operating data, the VIN and the unit number of the radio -R- are then read out automatically.



Note

When a new radio -R- is being installed, it is possible that the vehicle diagnosis, testing and information system -VAS 5051B- cannot read out the unit number of the radio -R- . In this case, please enter the unit number manually. It can be read on a sticker on the radio -R- unit and is also embossed on the side of the unit.

The radio code determined is then shown on the display of the vehicle diagnosis, testing and information system -VAS 5051B- .

The radio code must be entered in the radio -R- manually.

Deactivating anti-theft coding:

- Switch on the radio -R- .

An entry mask appears.



- Using the keypad, enter the right radio code in the entry mask.
- Confirm the entry by pressing the entry button.

The radio -R- will be released and is ready for use.



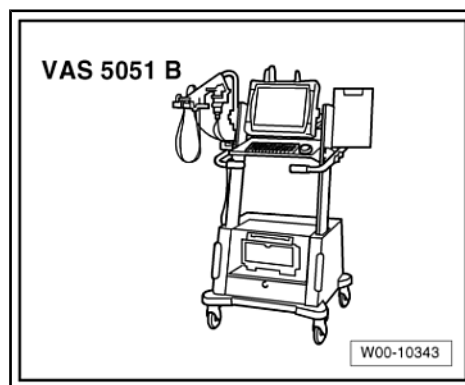
Note

If an incorrect radio code has been entered on deactivating the electronic lock, "SAFE" first flashes in the display, followed by "1000" again. The entire process can now be repeated again. The number of attempts is shown in the display. If an incorrect radio code is entered again, the radio -R- will be blocked for approx. one hour, i.e. it cannot be operated. This lock is indicated by the fact that "SAFE" is permanently shown in the display. The process of deactivating the anti-theft coding can then be repeated after one hour. Do not forget that only two attempts are allowed, after which the radio -R- will be blocked for one hour.

4.7 Adapting radio -R- components

Special tools and workshop equipment required

- ♦ Vehicle diagnosis, testing and information system -VAS 5051B-



Procedure

- Select "guided fault finding" in the vehicle diagnosis, testing and information system -VAS 5051B- .
- Using **GoTo** button, select "Functions/component" and the following menu options in succession:
 - ♦ Body
 - ♦ Electrical system
 - ♦ 01 - On board diagnosis-capable systems
 - ♦ Corresponding radio system
 - ♦ Radio system functions



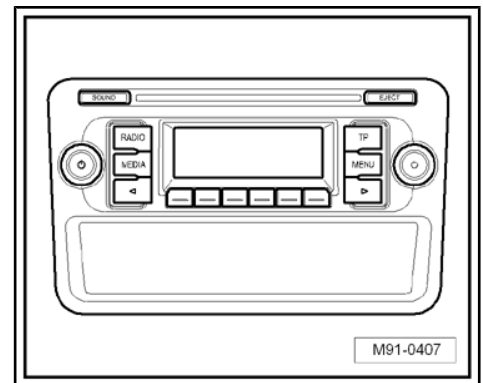
5 Radio system "RCD 210"

Radio RCD 210



Note

- ◆ When dealing with complaints, it is absolutely necessary to understand the functions and the operation of the communication systems ⇒ *Instruction manual*.
- ◆ The anti-theft coding uses a fixed code ⇒ [page 37](#).
- ◆ In the event of repair work or fault finding ⇒ *Vehicle diagnosis, testing and information system VAS 5051*.
- ◆ When the battery -A- is reconnected, please remember to check vehicle equipment (radio, clock, convenience electronics, etc.) in accordance with the ⇒ *Electrical system, Rep. Gr. 27 workshop manual* and/or the ⇒ *instruction manual*.



5.1 General description

The "RCD 210" radio system consists of the radio -R- and the loudspeakers in the doors.

The radio -R- has an output stage with 2 x 20 W output power; 4 x 20 W output power is also available as an option.

The loudspeakers are designed as a 2-way system. Depending on equipment, loudspeaker systems are installed in the front only (2 x 20 W) or front and rear (4 x 20 W).

The following is installed in the version with 2 x 20 W in the front doors:

- ◆ A bass loudspeaker, a mid-range loudspeaker and a treble loudspeaker on each side

In the version with 4 x 20 W, a bass loudspeaker and a treble loudspeaker are additionally installed in each rear door.

To extend the functionality, there is a connection for a CD changer -R41- and a telephone.

The CD drive integrated in the radio -R- can play the following formats:

- ◆ Audio CD
- ◆ CD-R
- ◆ CD-RW
- ◆ MP3

The following formats cannot be played:

- ◆ CD with diameter of 8 cm
- ◆ "Mixed CD" (CD with data and audio files)

The aerial is a window aerial and is located in the rear window (saloon). In the Variant, the aerial is located in the roof aerial. The aerial version comes without "diversity function".

5.1.1 Fault finding

The radio -R- is equipped with self-diagnosis.

For fault finding, use the vehicle diagnosis, testing and information system -VAS 5051B- in "Guided fault finding" mode.



5.2 Overview of radio system "RCD 210"

1 - Radio -R-

- ☐ Connectors
⇒ [page 36](#)
- ☐ Removing and installing
⇒ [page 33](#)

2 - Connection for external audio sources -R199-

- ☐ In centre console
- ☐ Connection for external audio sources -R199-
⇒ [page 91](#)

3 - Aerial -R11-

- ☐ Aerial systems (saloon)
⇒ [page 171](#) .
- ☐ Aerial systems (Variant)
⇒ [page 179](#) .

4 - Rear left treble loudspeaker -R14- / rear right treble loudspeaker -R16-

- ☐ Installed in the rear left and right door trims.
- ☐ Loudspeaker systems
⇒ [page 106](#) .

5 - Rear left bass loudspeaker -R15- / rear right bass loudspeaker -R17-

- ☐ Installed in the rear left and right door trims.
- ☐ Loudspeaker systems
⇒ [page 106](#) .

6 - Front left bass loudspeaker -R21- / front right bass loudspeaker -R23-

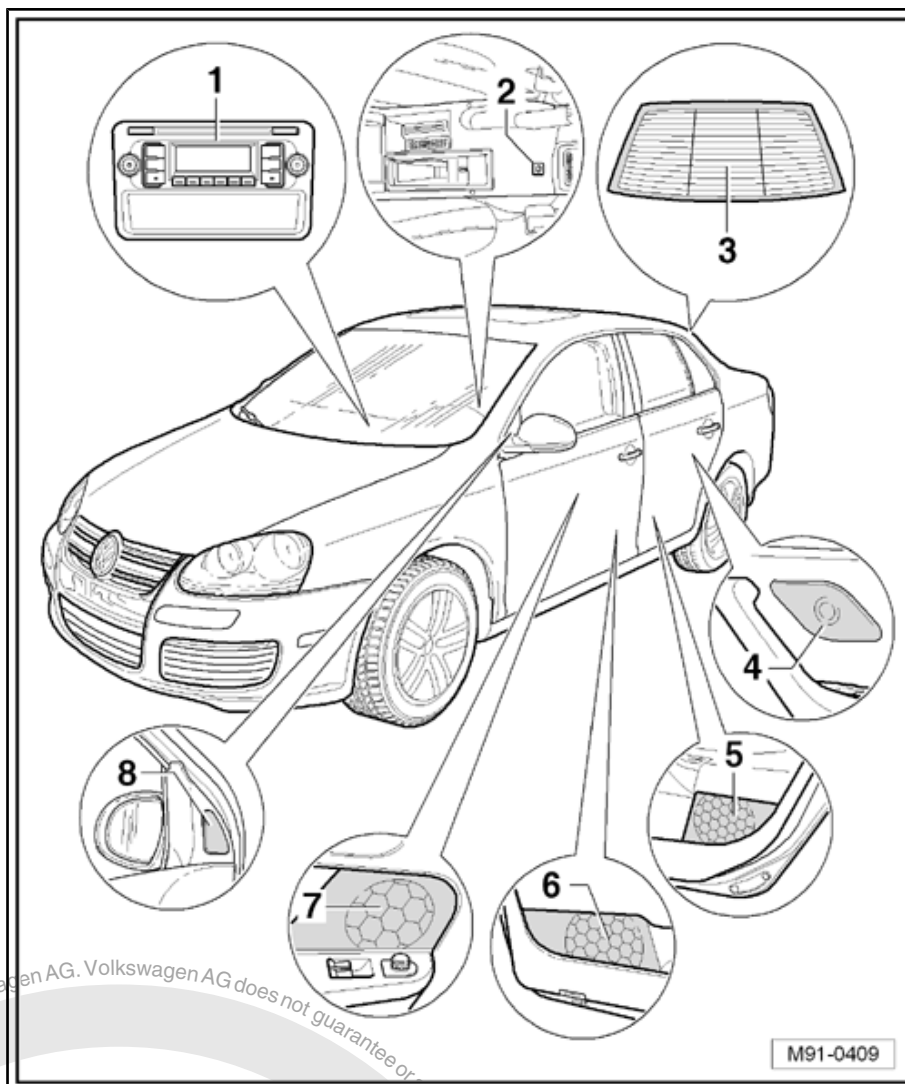
- ☐ Installed in the front left and right door trims
- ☐ Loudspeaker systems ⇒ [page 106](#) .

7 - Front left mid-range loudspeaker -R103- / front right mid-range loudspeaker -R104-

- ☐ Installed in the front left and right door trims
- ☐ Loudspeaker systems ⇒ [page 106](#) .

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

- ☐ Installed in mirror triangle of the right and left front doors
- ☐ Loudspeaker systems ⇒ [page 106](#) .





5.3 Removing and installing radio "RCD 210"

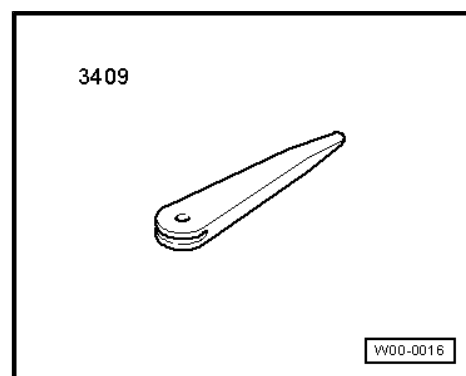


Note

- ◆ The part number for the radio -R- can be found on a sticker on the radio -R- housing.
- ◆ If the radio -R- has to be renewed, deactivate the electronic anti-theft coding system ➔ [page 38](#).

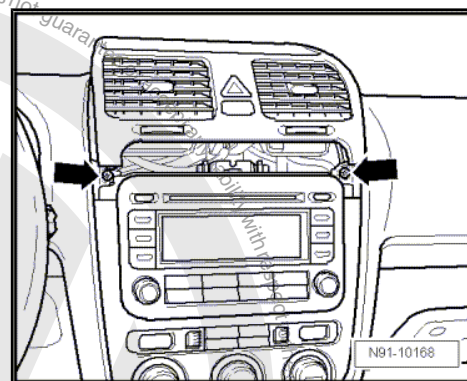
Special tools and workshop equipment required

- ◆ Removal wedge -3409-



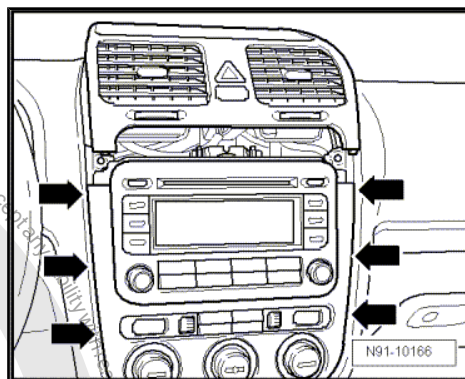
Removing

- Remove CD from radio -R- ➔ Owner's manual .
- Switch off ignition and all electrical consumers and remove ignition key.
- Remove upper cover together with air vents out of the middle of the dash panel until the underneath bolts of the centre console cover can be reached, ➔ General body repairs, exterior; Rep. Gr. 68 .
- Remove bolts -arrows- (1.5 Nm)

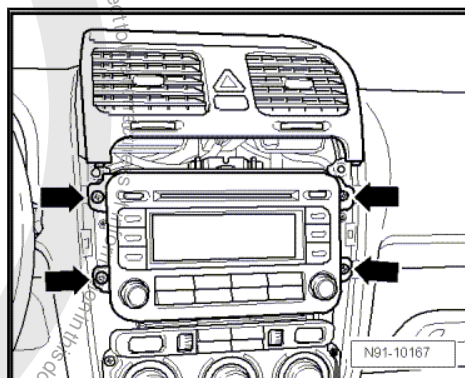




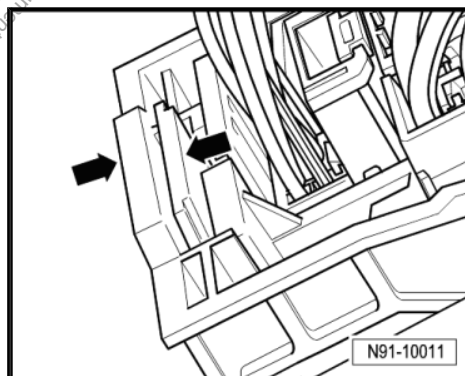
- Carefully lever out cover of centre console using removal wedge -3409- -arrows- and take it off.



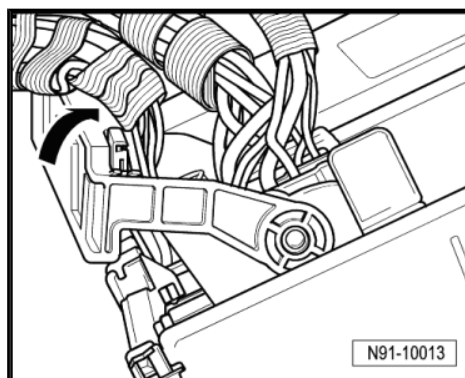
- Remove bolts -arrows- (1.5 Nm) on radio -R- .
- Pull the radio -R- out of the installation shaft until you can gain access to the connectors on the back of the radio -R- .



- Press together connector locking mechanism in direction of -arrows-.



- Then swing locking bar up in direction of -arrow- and disconnect connector.





- Release connector -arrow- on aerial connection and pull it off.

Installing

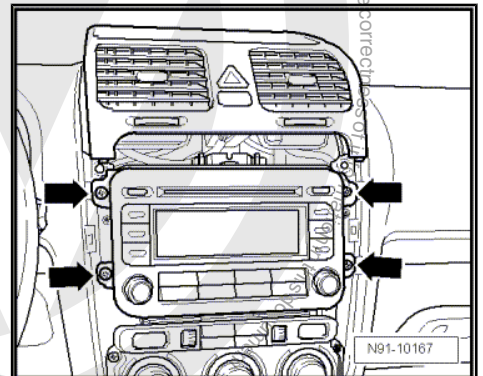
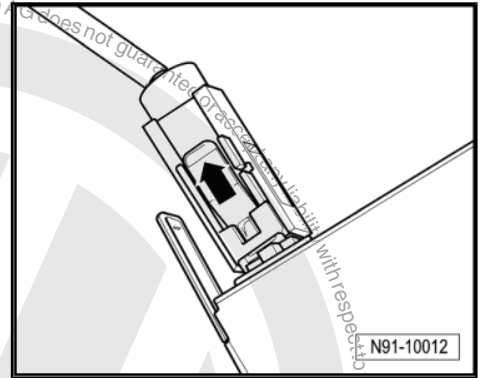
- Fit connectors on the radio -R- and lock them.
- Push the radio -R- straight into the dash panel.



Note

Never press on the display or the operating buttons when fitting the radio -R- , as the radio -R- may be damaged.

- Fit the radio -R- with 4 bolts -arrows- (1.5 Nm).
- Install centre console cover again.
- Deactivate the anti-theft coding ⇒ [page 38](#) .
- Check the radio -R- coding and recode the radio -R- ⇒ [page 39](#) .





5.4 “RCD 210” connectors

1 - Aerial connection

- ☐ Connector colour, white
- ☐ AM/FM
- ☐ Aerial system, saloon
⇒ [page 171](#) .
- ☐ Aerial system, Variant
⇒ [page 179](#) .

2 - Multi-pin connector 1, 8-pin, loudspeaker outputs

- ☐ Pin assignment
⇒ [page 36](#)

3 - Multi-pin connector 2, 8-pin, CAN bus, telephone

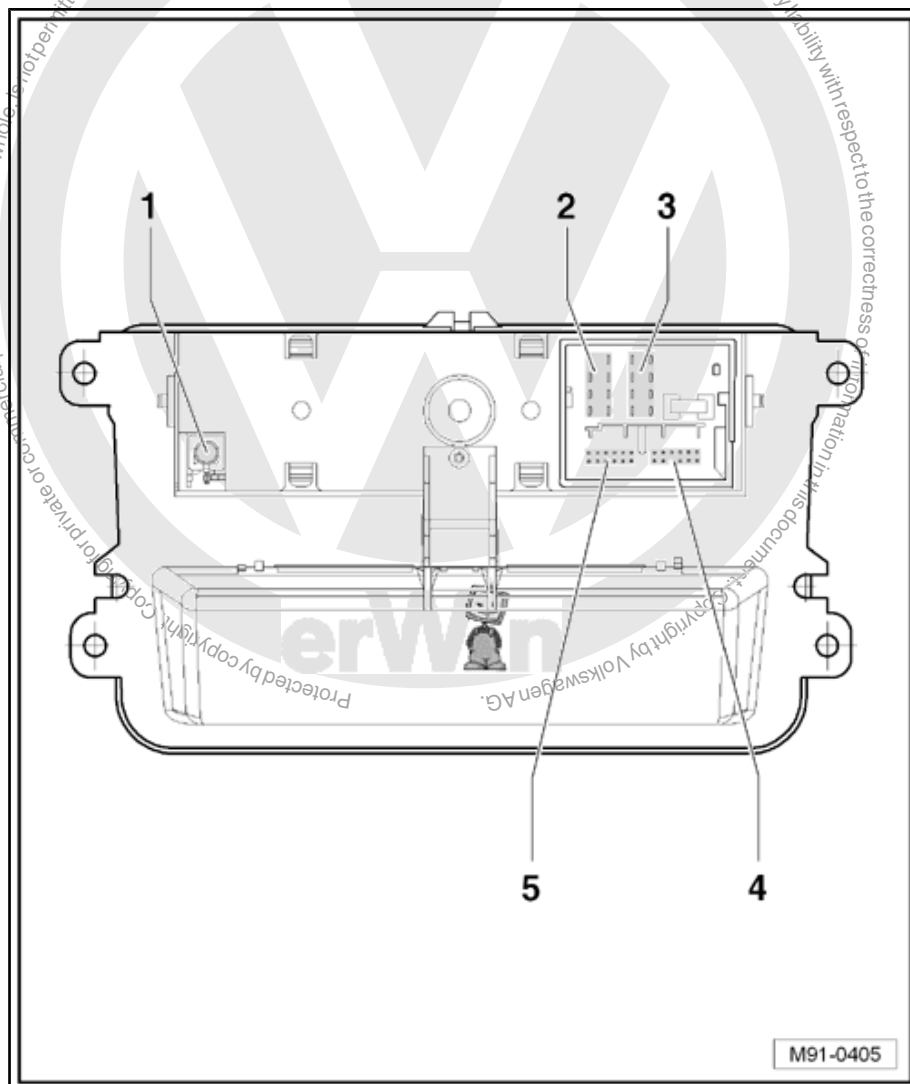
- ☐ Pin assignment
⇒ [page 37](#)

4 - Multi-pin connector 3, 12-pin, telephone

- ☐ Pin assignment
⇒ [page 37](#)

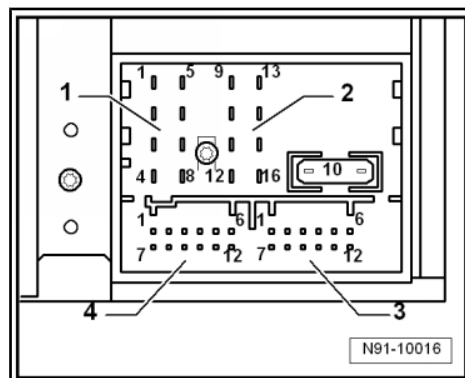
5 - Multi-pin connector 4, 12-pin, CD changer -R41-

- ☐ Pin assignment
⇒ [page 37](#)



5.4.1 Multi-pin connector 1, 8-pin, loudspeaker outputs

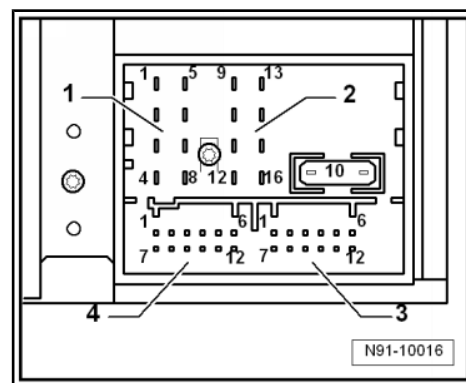
- 1 - Rear right loudspeaker (+)
- 2 - Front right loudspeaker (+)
- 3 - Front left loudspeaker (+)
- 4 - Rear left loudspeaker (+)
- 5 - Rear right loudspeaker (-)
- 6 - Front right loudspeaker (-)
- 7 - Front left loudspeaker (-)
- 8 - Rear left loudspeaker (-)





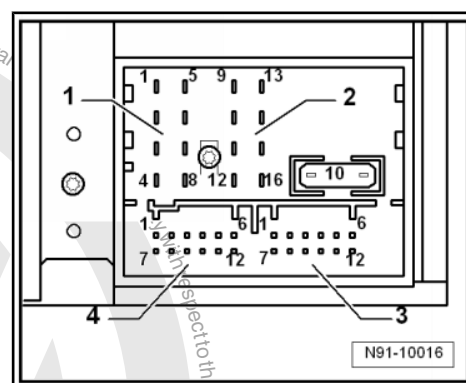
5.4.2 Multi-pin connector 2, 8-pin, CAN bus, telephone

- 9 - CAN bus (high)
- 10 - CAN bus (low)
- 11 - Telephone mute
- 12 - Terminal 31
- 13 - Not assigned
- 14 - Not assigned
- 15 - Terminal 30
- 16 - ATA (SAFE) terminal 30



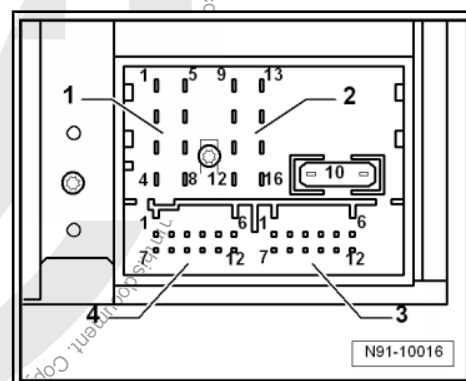
5.4.3 Multi-pin connector 3, 12-pin, telephone

- 1-5 - Not assigned
- 6 - Telephone LF input signal (-)
- 7-11 - Not assigned
- 12 - Telephone LF input signal (+)



5.4.4 Multi-pin connector 4, 12-pin, CD changer -R41-

- 1 - Audio input left (+)
- 2 - Audio input earth
- 3 - Audio earth from CD changer -R41-
- 4 - Terminal 30 to CD changer -R41-
- 5 - Not assigned
- 6 - CD data out to CD changer -R41-
- 7 - Audio input right (+)
- 8 - Audio left from CD changer -R41-
- 9 - Audio right from CD changer -R41-
- 10 - Control signal to CD changer -R41-
- 11 - CD data in from CD changer -R41-
- 12 - CD clock from CD changer -R41-



5.5 Electronic anti-theft coding

The radio -R- is equipped with an electronic anti-theft coding system which works in conjunction with the dash panel insert.

If the voltage supply for the radio -R- is cut off and then reconnected, the radio will still be operational without the need to enter the radio code again. A prerequisite is that the electronic anti-theft coding system has already been activated for the first time and that the radio -R- is reconnected in the same vehicle.

The radio code is determined by means of the vehicle diagnosis, testing and information system -VAS 5051B-. The radio card



used in the past and the sticker on the radio -R- have been discontinued.



Note

In order to find out the radio code, the vehicle diagnosis, testing and information system -VAS 5051B- must be connected "online" (network connection), and the user must possess valid rights to use the programme for requesting radio codes.

5.5.1 Deactivating electronic anti-theft coding

A locked radio -R- will only work again if the correct radio code for the anti-theft coding system is entered.

Using the VAS tester to find out the radio code:

- Select "guided fault finding" in the vehicle diagnosis, testing and information system -VAS 5051B- .
- Using **GoTo** button, select "Functions/component" and the following menu options in succession:
 - ◆ Body
 - ◆ Electrical system
 - ◆ 01 - On board diagnosis-capable systems
 - ◆ Corresponding radio system
 - ◆ Radio system functions
 - ◆ Radio code request

Your system rights are then determined. The operating data, the VIN and the unit number of the radio -R- are then read out automatically.



Note

When a new radio -R- is being installed, it is possible that the vehicle diagnosis, testing and information system -VAS 5051B- cannot read out the unit number of the radio -R- . In this case, please enter the unit number manually. It can be read off from the sticker affixed to the unit and is additionally stamped into the side of the unit.

The radio code determined is then shown on the display of the vehicle diagnosis, testing and information system -VAS 5051B- .

The radio code must be entered in the radio -R- manually.

Deactivating anti-theft coding:

- Switch on the radio -R- .

The word "SAFE" appears for approx. 10 seconds on the display and then number sequence "1000".

- Enter the radio code by pressing the corresponding function buttons until the right number sequence appears.

After the four-digit radio code has been entered, "OK" appears on the display.

- Once you have entered the correct radio code, confirm it with the "OK" function button on the display.

The radio -R- will be released and is ready for use.



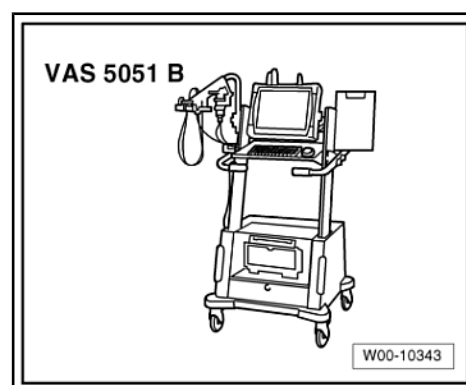
Note

If the incorrect radio code is entered, it can be immediately corrected with a further attempt. If an incorrect radio code is entered twice, the radio -R- will be blocked for one hour. Then leave the radio -R- and the ignition on. The process of deactivating the anti-theft coding can then be repeated after one hour. Do not forget that only two attempts are allowed, after which the radio -R- will be blocked for one hour.

5.6 Adapting radio -R- components

Special tools and workshop equipment required

- ◆ Vehicle diagnosis, testing and information system -VAS 5051B-



Procedure

- Select “guided fault finding” in the vehicle diagnosis, testing and information system -VAS 5051B-.
- Using **GoTo** button, select “Functions/component” and the following menu options in succession:
 - ◆ Body
 - ◆ Electrical system
 - ◆ 01 - On board diagnosis-capable systems
 - ◆ Corresponding radio system
 - ◆ Radio system functions



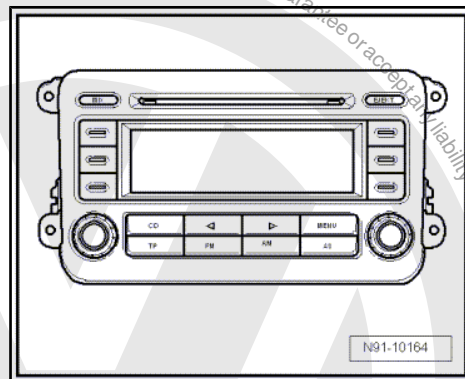
6 Radio system "RCD 300"

Radio RCD 300



Note

- ◆ When dealing with complaints, it is absolutely necessary to understand the functions and the operation of the communication systems ⇒ *Instruction manual*.
- ◆ The anti-theft coding uses a fixed code, deactivating anti-theft coding ⇒ [page 47](#).
- ◆ In the event of repair work or fault finding ⇒ *Vehicle diagnosis, testing and information system VAS 5051*.
- ◆ When the battery -A- is reconnected, please remember to check vehicle equipment (radio, clock, convenience electronics, etc.) in accordance with the ⇒ *Electrical system; Rep. Gr. 27 workshop manual* and/or the ⇒ *instruction manual*.



6.1 General description

The "RCD 300" radio system consists of the radio -R- and the loudspeakers in the doors.

The radio -R- has an output stage with 2 x 20 W output power; 4 x 20 W output power is also available as an option.

The loudspeakers are designed as a 3-way system in the front and as a 2-way system in the rear.

The following is installed in the version with 2 x 20 W in the front doors:

- ◆ A bass loudspeaker, a mid-range loudspeaker and a treble loudspeaker on each side

In the version with 4 x 20 W, a bass loudspeaker and a treble loudspeaker are additionally installed in each rear door.

To extend the functionality, there is a connection for a CD changer -R41- and a telephone.

The CD drive integrated in the radio -R- can play the following formats:

- ◆ Audio CD
- ◆ CD-R
- ◆ CD-RW
- ◆ MP3

The following formats cannot be played:

- ◆ CD with diameter of 8 cm
- ◆ "Mixed CD" (CD with data and audio files)

The aerial is a window aerial and is located in the rear window (saloon). In the Variant, the aerials are located in the rear right side window and in the roof aerial. The aerial system includes a "diversity function" integrated in the radio -R-.

6.1.1 Fault finding

The radio -R- is equipped with self-diagnosis.

For fault finding, use the vehicle diagnosis, testing and information system -VAS 5051B- in "Guided fault finding" mode.

1 - Radio -R-

- 2 - CD changer -R41-

- 3 - Aerial -R11- / Radio aerial 2
-R93-**

- 4 - Rear left treble loudspeaker
-R14- / rear right treble loud-
speaker -R16-

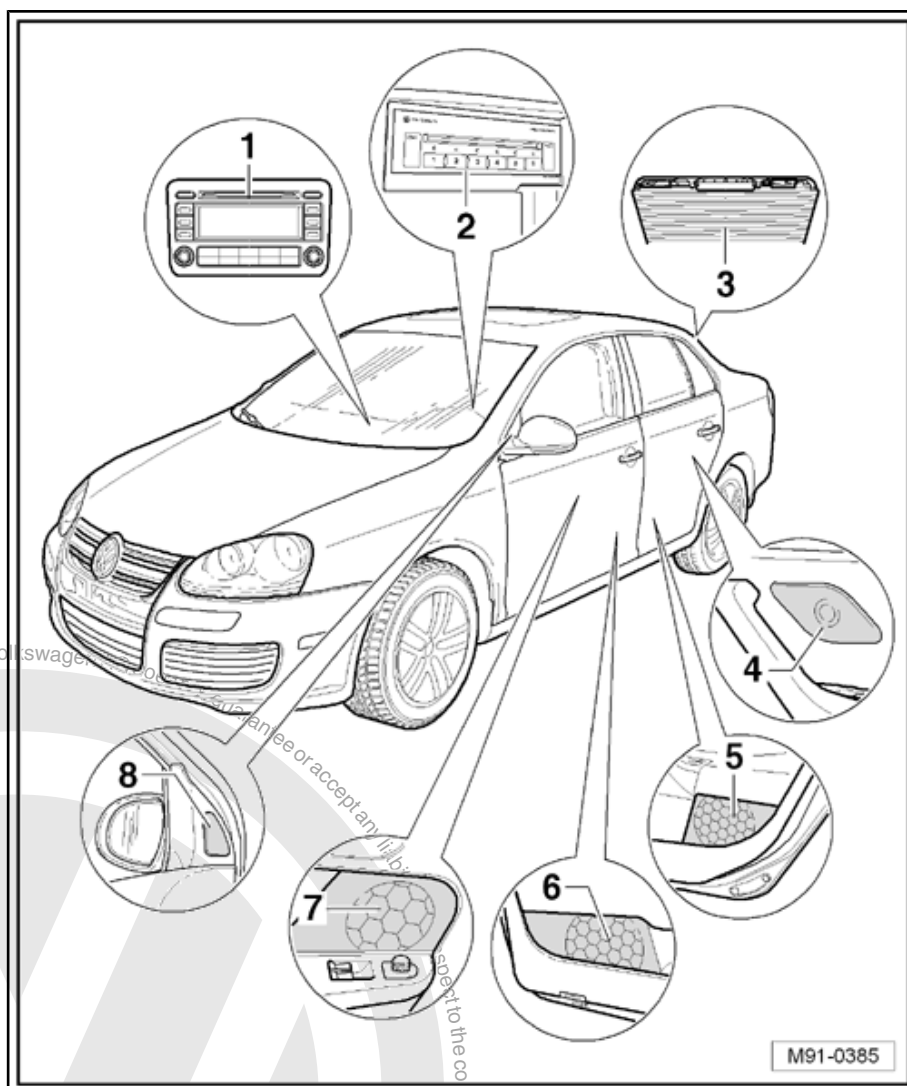
- 5 - Rear left bass loudspeaker
-R15- / rear right bass loud-
speaker -R17-**

- 6 - Front left bass loudspeaker
-R21- / front right bass loud-
speaker -R23-**

- 7 - Front left mid-range loudspeaker -R103- / front right mid-range loudspeaker -R104-**

- 8- Front left treble loudspeaker -R20- / front right treble loudspeaker -R22-**

- ❑ Installed in mirror triangle of the right and left front doors
- ❑ Loudspeaker systems ⇒ **page 106**.





6.3 Removing and installing radio "RCD 300"

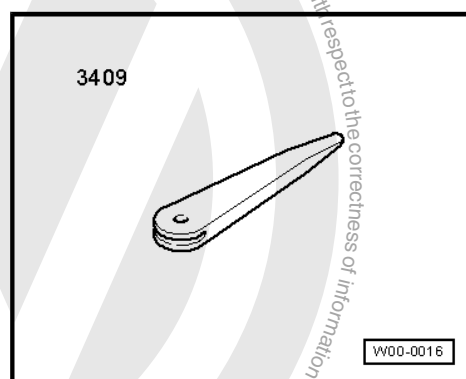


Note

- ◆ The part number for the radio -R- can be found on a sticker on the radio -R- housing.
- ◆ If the radio -R- has to be renewed, deactivate the electronic anti-theft coding system ⇒ [page 47](#) . Please inform the customer of the new radio code.
- ◆ If the radio code is not known, it can be requested via the established systems. For this, you need the identification number of the radio -R- . It is located on a sticker on the side of the radio -R- . The identification number is also embossed in the material of the side panel of the radio -R- .

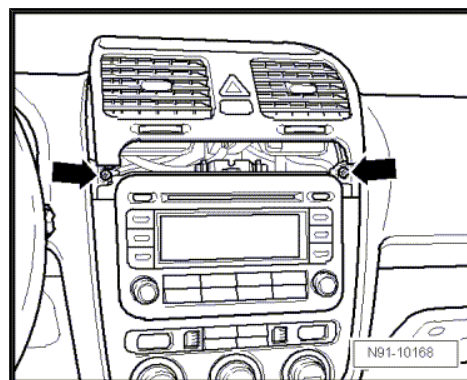
Special tools and workshop equipment required

- ◆ Removal wedge -3409-



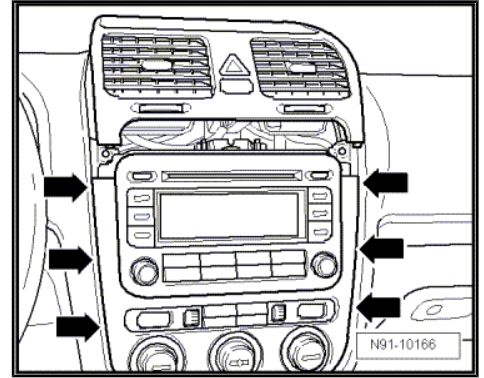
Removing

- Remove CD from radio -R- ⇒ Owner's manual .
- Switch off ignition and all electrical consumers and remove ignition key.
- Remove upper cover together with air vents out of the middle of the dash panel until the underneath bolts of the centre console cover can be reached, ⇒ General body repairs, exterior; Rep. Gr. 68 .
- Remove bolts -arrows- (1.5 Nm).

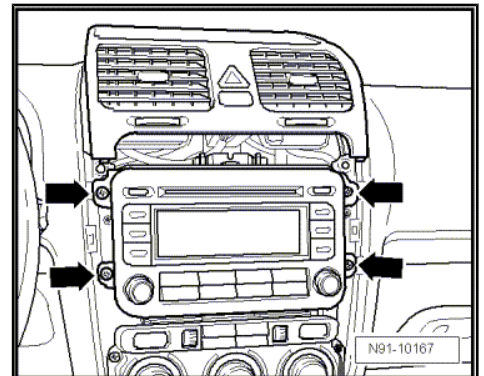




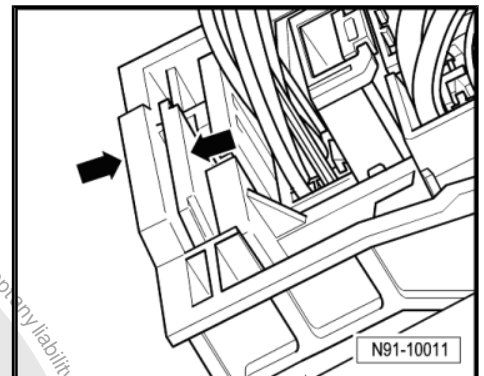
- Carefully lever out cover of centre console using removal wedge -3409- -arrows- and take it off.



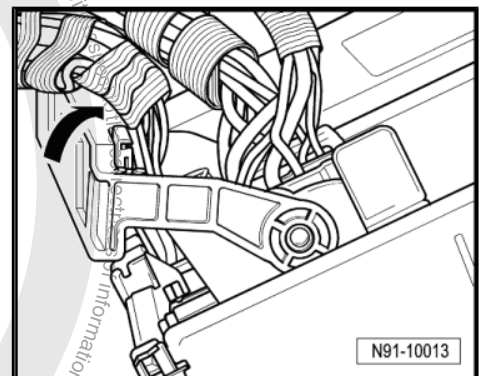
- Remove bolts -arrows- (1.5 Nm) on radio -R- .
- Pull the radio -R- out of the installation shaft until you can gain access to the connectors on the back of the radio -R- .



- Press together connector locking mechanism in direction of -arrows-.



- Then swing locking bar up in direction of -arrow- and disconnect connector.





- Release connectors -arrows- from aerial connections and disconnect them.

Installing

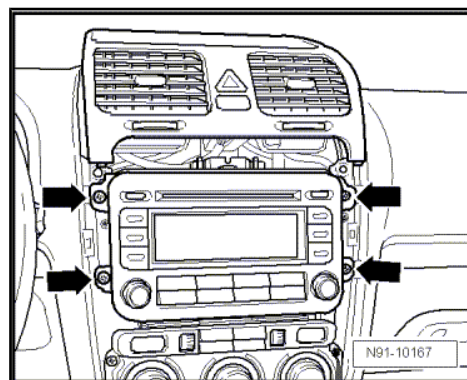
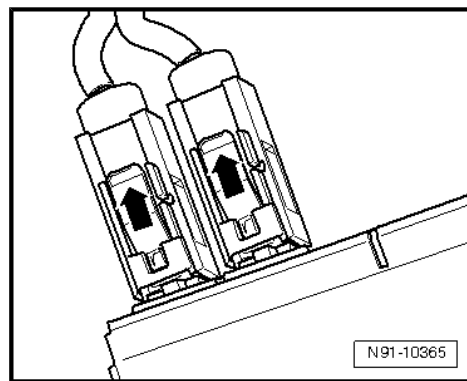
- Fit connectors on the radio -R- and lock them.
- Push the radio -R- straight into the dash panel.



Note

Never press on the display or the operating buttons when fitting the radio -R-, as the radio -R- may be damaged.

- Fit the radio -R- with 4 bolts -arrows- (1.5 Nm).
- Install centre console cover again.
- Deactivate the anti-theft coding ⇒ [page 47](#) .
- Check the radio -R- coding and recode the radio -R- ⇒ [page 48](#) .





6.4 “RCD 300” connectors

1 - Multi-pin connector 1, 8-pin, loudspeaker outputs

- ☐ Pin assignment
⇒ [page 45](#)

2 - Multi-pin connector 2, 8-pin, CAN bus, telephone

- ☐ Pin assignment
⇒ [page 46](#)

3 - Multi-pin connector 3, 12-pin, telephone

- ☐ Pin assignment
⇒ [page 46](#)

4 - Multi-pin connector 4, 12-pin, CD changer -R41-

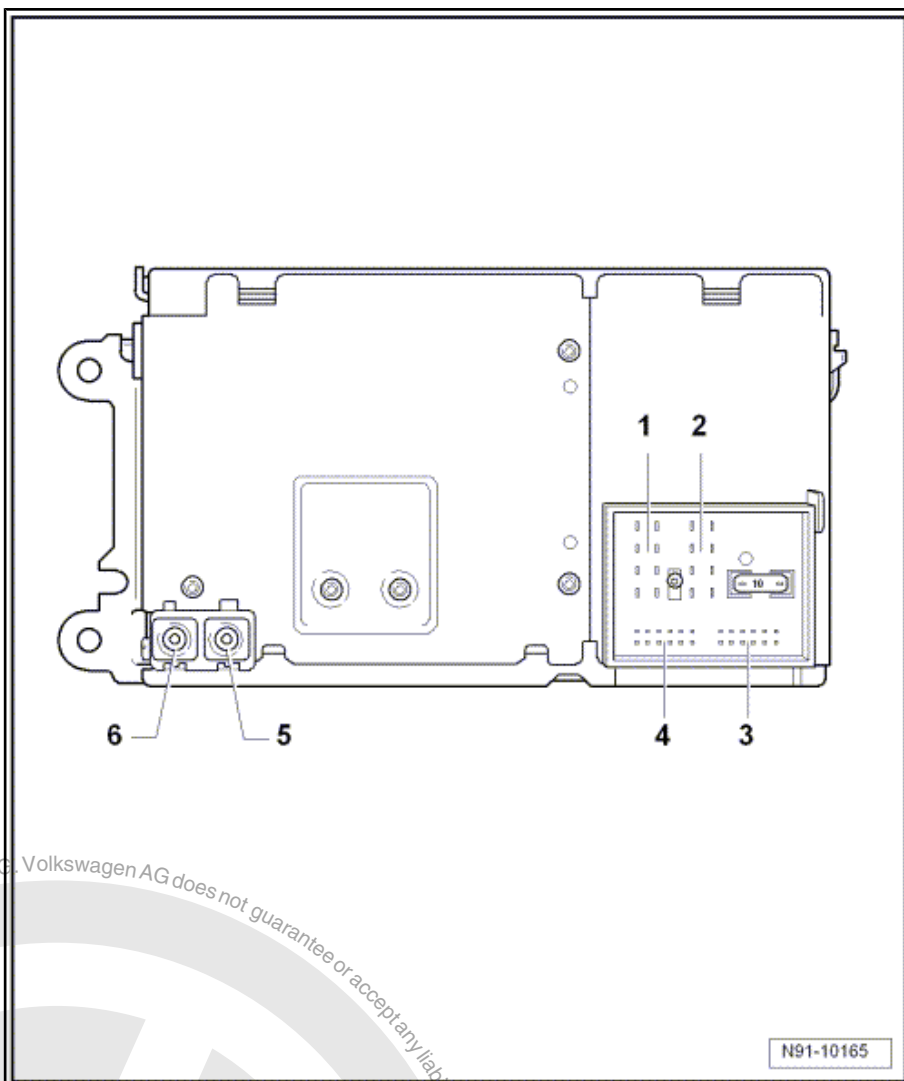
- ☐ Pin assignment
⇒ [page 46](#)

5 - Aerial connection

- ☐ Connector colour beige
- ☐ FM2
- ☐ Aerial system, saloon
⇒ [page 171](#) .
- ☐ Aerial system, Variant
⇒ [page 179](#) .

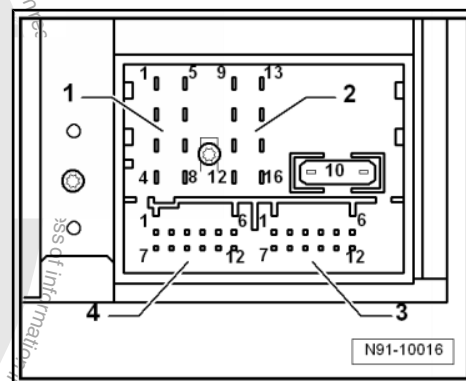
6 - Aerial connection

- ☐ Connector colour transparent
- ☐ AM/FM
- ☐ Aerial system, saloon
⇒ [page 171](#) .
- ☐ Aerial system, Variant
⇒ [page 179](#) .



6.4.1 Multi-pin connector 1, 8-pin, loudspeaker outputs

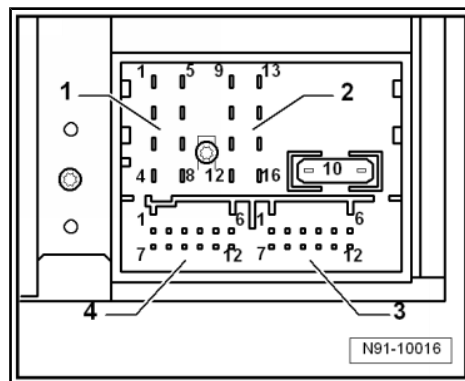
- 1 - Rear right loudspeaker (+)
- 2 - Front right loudspeaker (+)
- 3 - Front left loudspeaker (+)
- 4 - Rear left loudspeaker (+)
- 5 - Rear right loudspeaker (-)
- 6 - Front right loudspeaker (-)
- 7 - Front left loudspeaker (-)
- 8 - Rear left loudspeaker (-)





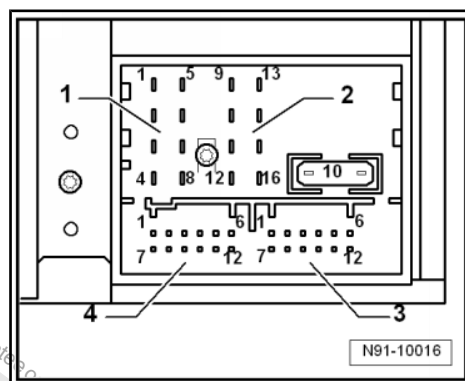
6.4.2 Multi-pin connector 2, 8-pin, CAN bus, telephone

- 9 - CAN bus (high)
- 10 - CAN bus (low)
- 11 - Telephone mute
- 12 - Terminal 31
- 13 - Not assigned
- 14 - Not assigned
- 15 - Terminal 30
- 16 - ATA (SAFE) terminal 30



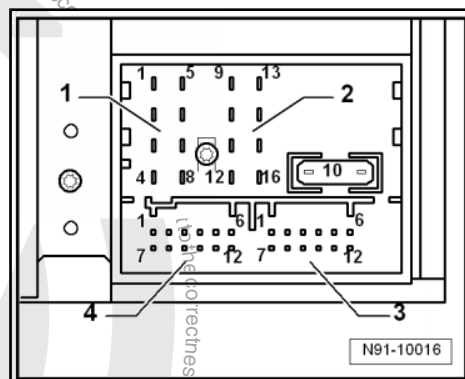
6.4.3 Multi-pin connector 3, 12-pin, telephone

- 1-5 - Not assigned
- 6 - Telephone LF input signal (-)
- 7-11 - Not assigned
- 12 - Telephone LF input signal (+)



6.4.4 Multi-pin connector 4, 12-pin, CD changer -R41-

- 1 - Not assigned
- 2 - Audio earth from CD changer -R41-
- 3 - Not assigned
- 4 - Terminal 30 to CD changer -R41-
- 5 - Not assigned
- 6 - CD data out to CD changer -R41-
- 7 - Not assigned
- 8 - Audio left from CD changer -R41-
- 9 - Audio right from CD changer -R41-
- 10 - Control signal to CD changer -R41-
- 11 - CD data in from CD changer -R41-
- 12 - CD clock from CD changer -R41-



6.5 Electronic anti-theft coding



The radio -R- is equipped with an electronic anti-theft coding system which works in conjunction with the dash panel insert.

If the voltage supply for the radio -R- is cut off and then reconnected, the radio will still be operational without the need to enter the radio code again. A prerequisite is that the electronic anti-theft coding system has already been activated for the first time and that the radio -R- is reconnected in the same vehicle.



6.5.1 Functional notes

After initial activation of the anti-theft coding, an internal radio code is stored in the radio -R- and in the dash panel insert. If the radio -R- is now disconnected from the voltage supply due to repairs (e.g. radio -R- or battery -A-) removed and the voltage supply is then reconnected, data is transferred between the radio -R- and the dash panel insert.

When this is done, the internal code of the radio -R- is compared with the code in the dash panel insert. If the codes are identical with each other, the dash panel insert will recognise that the connected radio -R- belongs to the vehicle. The radio -R- is therefore immediately operational without the need to enter the anti-theft code again.

If the radio -R- is replaced, the radio code must be entered.

Deactivating anti-theft coding ⇒ [page 47](#)

Then after switching on the “S contact” via the ignition lock the code is automatically compared between the dash panel insert and the radio -R- .

Comparison takes approx. 5 seconds. It must be ensured that a diagnostic unit has not been connected or is not connected during this period of time.

After this time, the radio -R- of the vehicle will be ready for operation without the need to enter the radio code again even if the voltage supply has been cut off and then reconnected.

The anti-theft coding becomes effective and blocks the radio -R- when:

- ◆ The radio -R- is installed in another vehicle or
- ◆ The dash panel insert is changed.

A radio -R- which has been locked by the anti-theft coding is shown when “SAFE” and “1000” is shown in the display when switching the radio -R- on.

Deactivate the anti-theft coding to release the unit lock
⇒ [page 47](#) .

6.5.2 Deactivating electronic anti-theft coding

A locked radio -R- will only work again if the correct radio code for the anti-theft coding system is entered.



Note

- ◆ *The radio code is stuck on the radio card together with the unit number ⇒ Instruction manual .*
- ◆ *The radio card should not be kept in the vehicle for security reasons. Ask the customer for the radio code.*
- ◆ *If a radio -R- is renewed, the radio code of the replacement device must be used.*
- ◆ *The customer must be informed that the radio code has changed.*
- Obtain the code of the radio -R- .
- Switch on the radio -R- .

The radio -R- automatically displays “SAFE” and then “1000”.

Next to the four function buttons, the display shows the position of the radio code to be entered with an “X”.



- Enter the code on the radio card in the correct sequence, using the four function buttons indicated. Press the relevant function button as many times as necessary until the correct number is shown in the centre of the display.
- Then press the function button next to the word “ENTER”. The unit is then ready to operate again and switches to its last operating state.



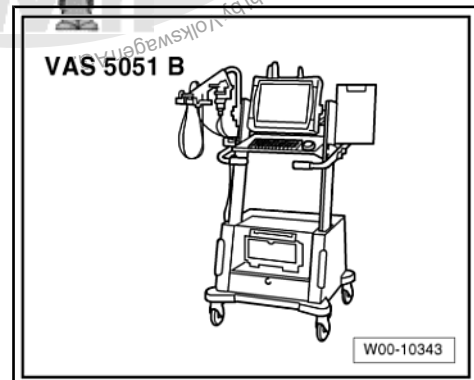
Note

If you enter an incorrect radio code to deactivate the electronic lock, “SAFE” first flashes in the display, followed by “1000” again. The entire process can now be repeated again. The number of attempts is shown in the display. If an incorrect radio code is entered again, the radio -R- will be blocked for approx. one hour, i.e. it cannot be operated. This lock is indicated by the fact that “SAFE” is permanently shown in the display. The process of deactivating the anti-theft coding can then be repeated after one hour. Do not forget that only two attempts are allowed, after which the radio -R- will be blocked for one hour.

6.6 Adapting radio -R- components

Special tools and workshop equipment required

- ♦ Vehicle diagnosis, testing and information system -VAS 5051B-



Procedure

- Select “guided fault finding” in the vehicle diagnosis, testing and information system -VAS 5051B- .
- Using **GoTo** button, select “Functions/component” and the following menu options in succession:
 - ♦ Body
 - ♦ Electrical system
 - ♦ 01 - On board diagnosis-capable systems
 - ♦ Corresponding radio system
 - ♦ Radio system functions



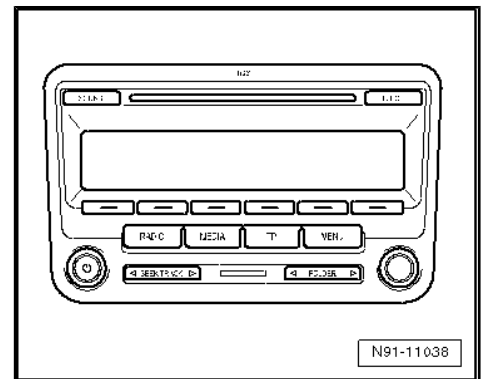
7 Radio system "RCD 310"

Radio RCD 310



Note

- ◆ *When dealing with complaints, it is absolutely necessary to understand the functions and the operation of the communication systems ➔ Instruction manual .*
- ◆ *The anti-theft coding uses a fixed code ➔ **page 56***
- ◆ *In the event of repair work or fault finding ➔ Vehicle diagnosis, testing and information system VAS 5051.*
- ◆ *When the battery -A- is reconnected, please remember to check vehicle equipment (radio, clock, convenience electronics, etc.) in accordance with the ➔ Electrical system; Rep. Gr. 27 workshop manual and/or the ➔ instruction manual .*



7.1 General description

The main features of the RCD 310 radio -R- are, among others, as follows:

- ◆ 4 x 20 watt loudspeaker channels
- ◆ Monochrome display
- ◆ Control for external CD changer -R41-
- ◆ Telephone controls (hands-free system)
- ◆ Connection for external sound amplifier
- ◆ DAB operation possible

The "RCD 310" radio system consists of the radio -R- and the front and rear loudspeakers.

The CD drive integrated in the radio -R- can play the following CD formats:

- ◆ Audio CD
- ◆ CD-R
- ◆ CD-RW
- ◆ MP3

The following formats cannot be played:

- ◆ CD with diameter of 8 cm
- ◆ "Mixed CD" (CD with data and audio files)

The aerial is installed in the rear side windows. The aerial system includes a "diversity function" integrated in the radio -R- .

7.1.1 Fault finding

The radio -R- is equipped with self-diagnosis.

For fault finding, use the vehicle diagnosis, testing and information system -VAS 5051B- in "Guided fault finding" mode.



7.2 Overview of radio system "RCD 310"

1 - Radio -R-

- ☐ Connectors
⇒ [page 54](#)
- ☐ Removing and installing
⇒ [page 51](#)

2 - CD changer -R41-

- ☐ Optional
- ☐ In centre console
- ☐ CD changer -R41-
⇒ [page 79](#)

3 - Multimedia system control unit -J650-

- ☐ Optional
- ☐ In centre console
- ☐ Multimedia system control unit -J650-
⇒ [page 95](#)

4 - Connection for external audio sources -R199-

- ☐ In centre console
- ☐ Connection for external audio sources -R199-
⇒ [page 91](#)

5 - Aerial -R11- / Radio aerial 2 -R93-

- ☐ Aerial systems (saloon)
⇒ [page 171](#) .
- ☐ Aerial systems (Variant)
⇒ [page 179](#) .
- ☐ Aerial systems in saloons from model year 2011
⇒ [page 179](#)

6 - Rear left treble loudspeaker -R14- / rear right treble loudspeaker -R16-

- ☐ Installed in the rear left and right door trims
- ☐ Loudspeaker systems ⇒ [page 106](#)

7 - Rear left bass loudspeaker -R15- / rear right bass loudspeaker -R17-

- ☐ Installed in the rear left and right door trims
- ☐ Loudspeaker systems ⇒ [page 106](#)

8 - Front left bass loudspeaker -R21- / front right bass loudspeaker -R23-

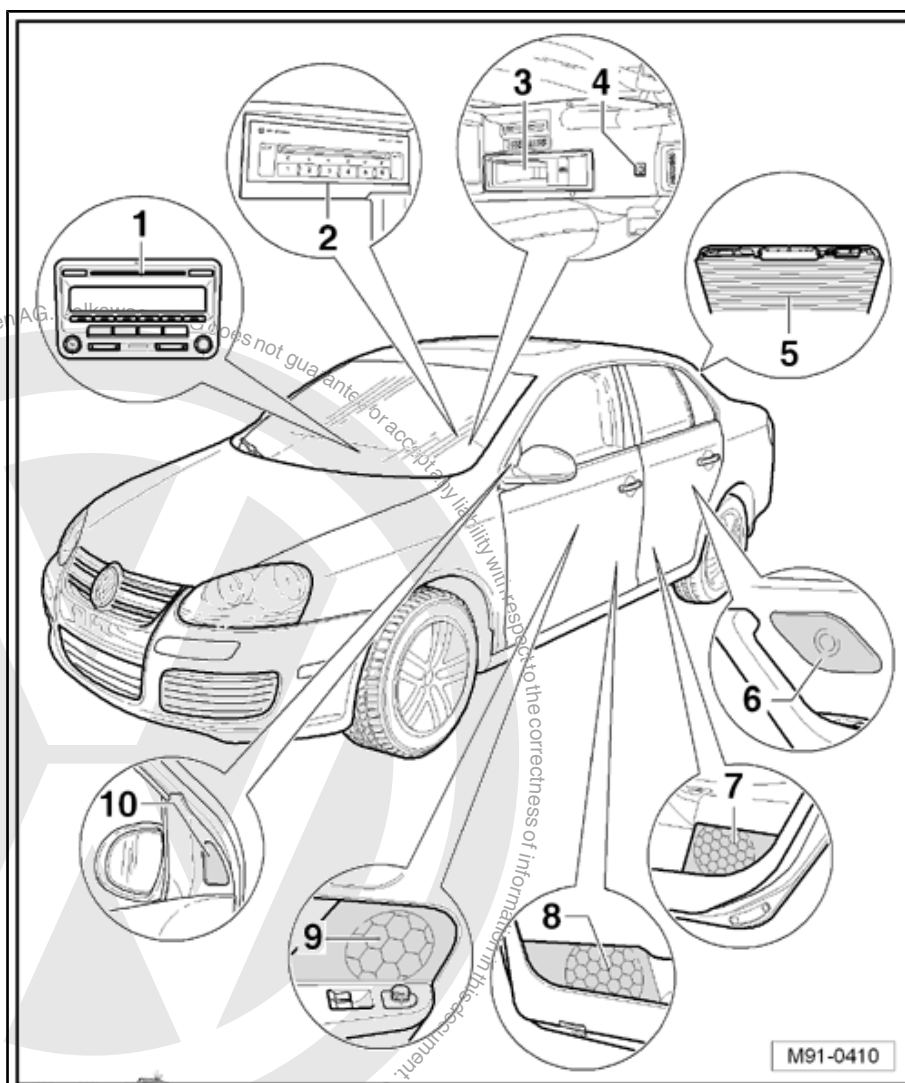
- ☐ Installed in the front left and right door trims
- ☐ Loudspeaker systems ⇒ [page 106](#)

9 - Front left mid-range loudspeaker -R103- / front right mid-range loudspeaker -R104-

- ☐ Installed in the front left and right door trims
- ☐ Loudspeaker systems ⇒ [page 106](#)

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

- ☐ Installed in mirror triangle of the right and left front doors
- ☐ Loudspeaker systems ⇒ [page 106](#)





7.3 Removing and installing radio "RCD 310"

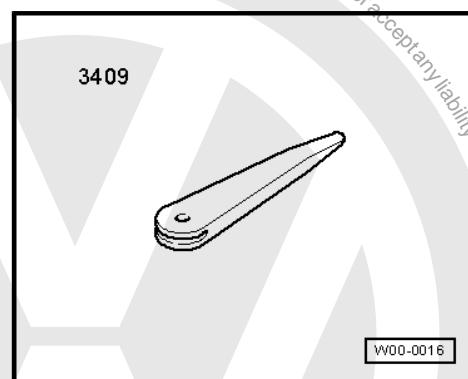


Note

- ◆ The part number for the radio -R- can be found on a sticker on the radio -R- housing.
- ◆ If the radio -R- has to be renewed, deactivate the electronic anti-theft coding system ➔ [page 56](#).

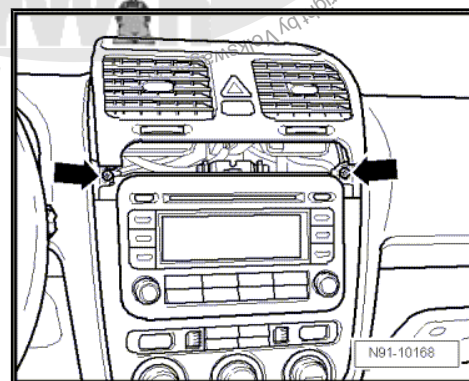
Special tools and workshop equipment required

- ◆ Removal wedge -3409-



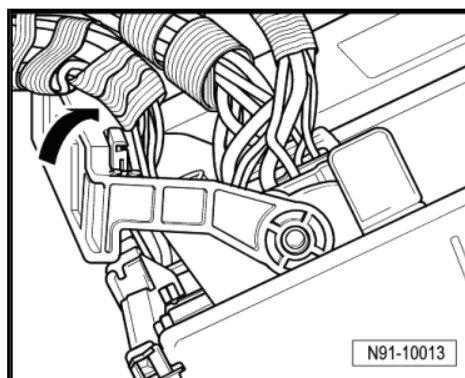
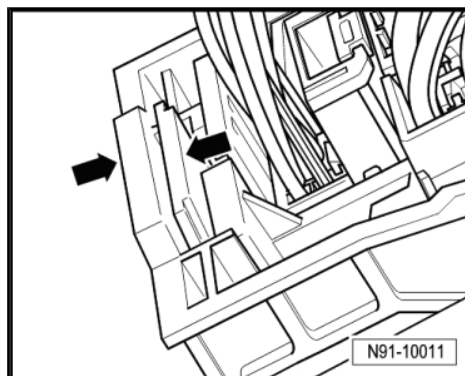
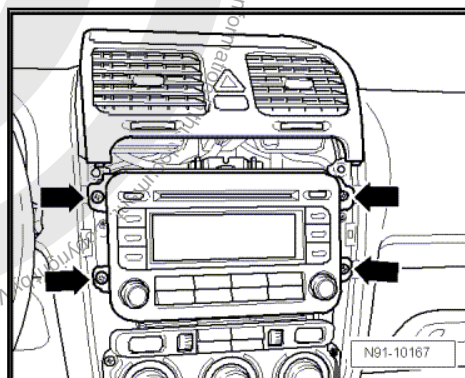
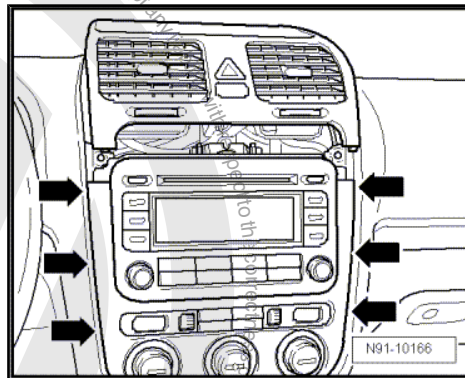
Removing

- Remove CD from radio -R- ➔ Owner's manual .
- Switch off ignition and all electrical consumers and remove ignition key.
- Remove upper cover together with air vents out of the middle of the dash panel until the underneath bolts of the centre console cover can be reached, ➔ General body repairs, exterior; Rep. Gr. 68 .
- Remove bolts -arrows- (1.5 Nm).





- Carefully lever out cover of centre console using removal wedge -3409- -arrows- and take it off.
- Remove bolts -arrows- (1.5 Nm).
- Pull the radio -R- out of the installation shaft until you can gain access to the connectors on the back of the radio.
- Press together connector locking mechanism in direction of -arrows-.
- Then swing locking bar up in direction of -arrow- and disconnect connector.





- Release connectors -arrows- of aerial connections and disconnect connectors.

Installing

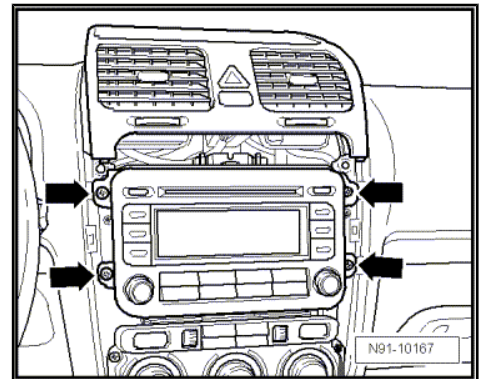
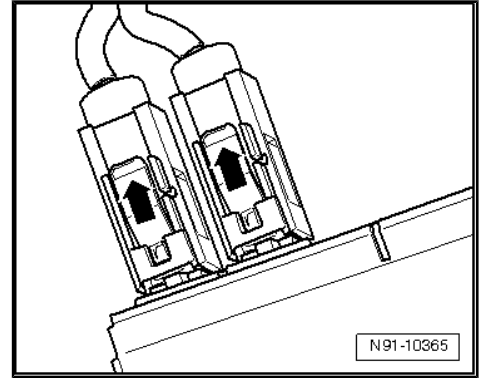
- Fit connectors on radio -R- .
- Push radio -R- straight into the dash panel.



Note

Never press on the display or the operating buttons when fitting the radio -R- as the radio -R- may be damaged.

- Fit the radio -R- with 4 bolts -arrows- (1.5 Nm).
- Install centre console cover.
- Deactivate the anti-theft coding ➔ [page 56](#) .
- Check the radio -R- code and recode it ➔ [page 57](#) .





7.4 “RCD 310” connectors

1 - Aerial connection

- ☐ Connector colour, black
- ☐ DAB
- ☐ Aerial system, saloon
⇒ [page 171](#) .
- ☐ Aerial system, Variant
⇒ [page 179](#) .
- ☐ Aerial systems in saloons from model year 2011
⇒ [page 179](#)

2 - Multi-pin connector 1, 8-pin, loudspeaker outputs

- ☐ Pin assignment
⇒ [page 55](#)

3 - Multi-pin connector 2, 8-pin, CAN bus, telephone

- ☐ Pin assignment
⇒ [page 55](#)

4 - Multi-pin connector 3, 12-pin, telephone

- ☐ Pin assignment
⇒ [page 55](#)

5 - Multi-pin connector 4, 12-pin, CD changer -R41-

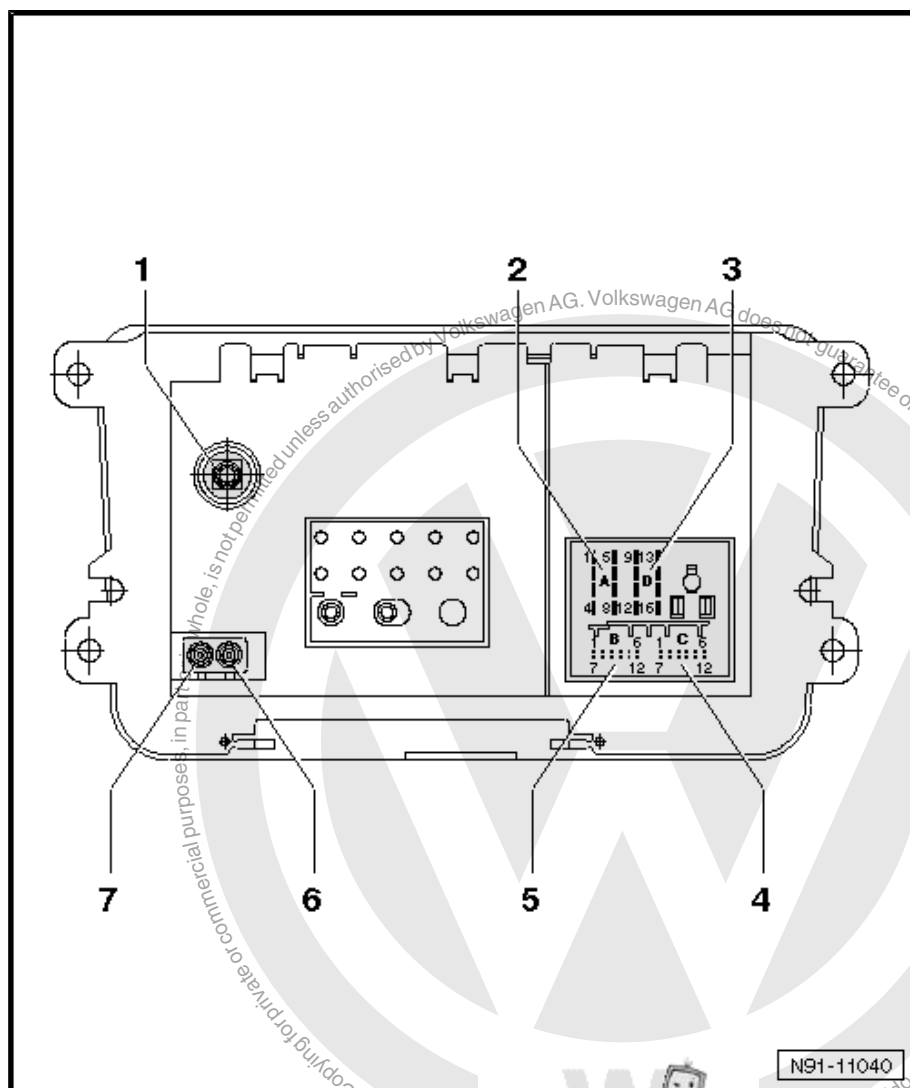
- ☐ Pin assignment
⇒ [page 56](#)

6 - Aerial connection

- ☐ Connector colour, white
- ☐ FM2
- ☐ Aerial system, saloon
⇒ [page 171](#) .
- ☐ Aerial system, Variant
⇒ [page 179](#) .
- ☐ Aerial systems in saloons from model year 2011
⇒ [page 179](#)

7 - Aerial connection

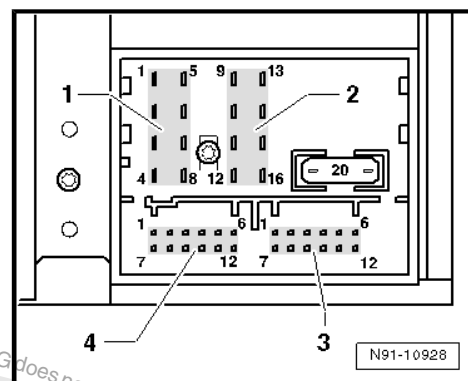
- ☐ Connector colour, white
- ☐ AM/FM
- ☐ Aerial system, saloon ⇒ [page 171](#) .
- ☐ Aerial system, Variant ⇒ [page 179](#) .
- ☐ Aerial systems in saloons from model year 2011 ⇒ [page 179](#)





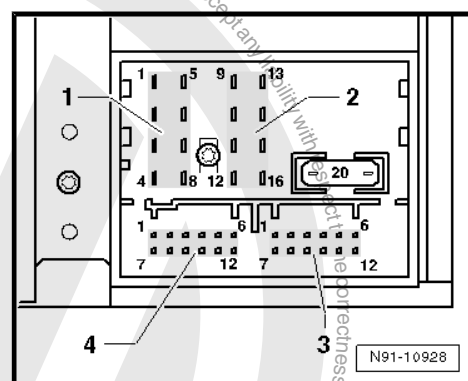
7.4.1 Multi-pin connector 1, 8-pin, loudspeaker outputs

- 1 - Rear right loudspeaker (+)
- 2 - Front right loudspeaker (+)
- 3 - Front left loudspeaker (+)
- 4 - Rear left loudspeaker (+)
- 5 - Rear right loudspeaker (-)
- 6 - Front right loudspeaker (-)
- 7 - Front left loudspeaker (-)
- 8 - Rear left loudspeaker (-)



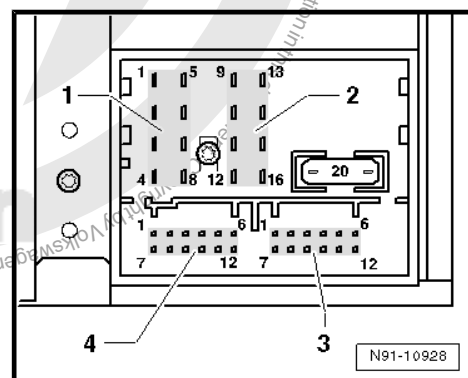
7.4.2 Multi-pin connector 2, 8-pin, CAN bus, telephone

- 9 - CAN bus (high)
- 10 - CAN bus (low)
- 11 - Telephone mute
- 12 - Terminal 31
- 13 - Not assigned
- 14 - Not assigned
- 15 - Terminal 30
- 16 - ATA (SAFE) terminal 30



7.4.3 Multi-pin connector 3, 12-pin, telephone

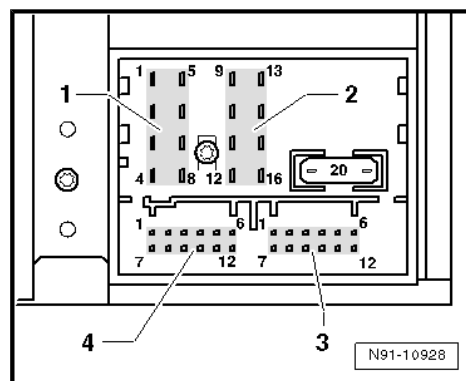
- 1-5 - Not assigned
- 6 - Telephone LF input signal (-)
- 7-11 - Not assigned
- 12 - Telephone LF input signal (+)





7.4.4 Multi-pin connector 4, 12-pin, CD changer -R41-

- 1 - Audio input left (+)
- 2 - Audio input earth
- 3 - Audio earth from CD changer -R41-
- 4 - Terminal 30 to CD changer -R41-
- 5 - Not assigned
- 6 - CD data out to CD changer -R41-
- 7 - Audio input right (+)
- 8 - Audio left from CD changer -R41-
- 9 - Audio right from CD changer -R41-
- 10 - Control signal to CD changer -R41-
- 11 - CD data in from CD changer -R41-
- 12 - CD clock from CD changer -R41-



7.5 Electronic anti-theft coding

The radio -R- is equipped with an electronic anti-theft coding system which works in conjunction with the dash panel insert.

If the voltage supply for the radio -R- is cut off and then reconnected, the radio will still be operational without the need to enter the radio code again. A prerequisite is that the electronic anti-theft coding system has already been activated for the first time and that the radio -R- is reconnected in the same vehicle.

The radio code is determined by means of the vehicle diagnosis, testing and information system -VAS 5051B-. The radio card used in the past and the sticker on the radio -R- have been discontinued.



Note

In order to find out the radio code, the vehicle diagnosis, testing and information system -VAS 5051B- must be connected "online" (network connection), and the user must possess valid rights to use the programme for requesting radio codes.

7.5.1 Deactivating electronic anti-theft coding

A locked radio -R- will only work again if the correct radio code for the anti-theft coding system is entered.

Using the VAS tester to find out the radio code:

- Select "guided fault finding" in the vehicle diagnosis, testing and information system -VAS 5051B- .
- Using **GoTo** button, select "Functions/component" and the following menu options in succession:
 - ◆ Body
 - ◆ Electrical system
 - ◆ 01 - On board diagnosis-capable systems
 - ◆ Corresponding radio system
 - ◆ Radio system functions



◆ Radio code request

Your system rights are then determined. The operating data, the VIN and the unit number of the radio -R- are then read out automatically.



Note

When a new radio -R- is being installed, it is possible that the vehicle diagnosis, testing and information system -VAS 5051B- cannot read out the unit number of the radio -R-. In this case, please enter the unit number manually. It can be read on a sticker on the radio -R- and is also embossed on the radio -R-.

The radio code determined is then shown on the display of the vehicle diagnosis, testing and information system -VAS 5051B-.

The radio code must be entered in the radio -R- manually.

Deactivating anti-theft coding:

- Switch on the radio -R-.

The word “SAFE” appears for approx. 10 seconds on the display and then number sequence “1000”.

- Enter the radio code by pressing the corresponding function buttons until the right number sequence appears.

After the four-digit radio code has been entered, “OK” appears on the display.

- Once you have entered the correct radio code, confirm it with the “OK” function button on the display.

The radio -R- will be released and is ready for use.



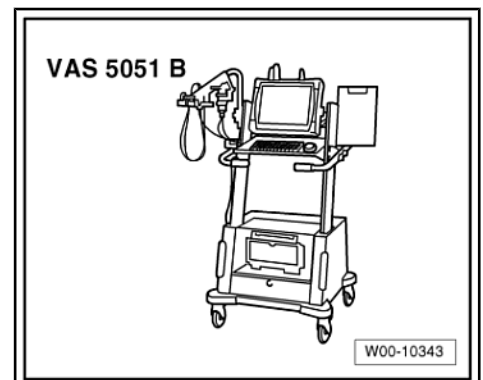
Note

If the incorrect radio code is entered, it can be immediately corrected with a further attempt. If an incorrect radio code is entered twice, the radio -R- will be blocked for one hour. Then leave the radio -R- and the ignition on. The process of deactivating the anti-theft coding can then be repeated after one hour. Do not forget that only two attempts to enter the code are allowed, after which the radio -R- will be blocked for one hour.

7.6 Adapting radio components “RCD 310”

Special tools and workshop equipment required

- ◆ Vehicle diagnostic, testing and information system -VAS 5051B-





Procedure

- In vehicle diagnostic, testing and information system -VAS 5051B- , select “Guided fault finding”.
- Using **GoTo** button, select “Functions/component” and the following menu options in succession:
 - ◆ Body
 - ◆ Electrical system
 - ◆ 01 - On board diagnosis-capable systems
 - ◆ Corresponding radio system
 - ◆ Radio system functions



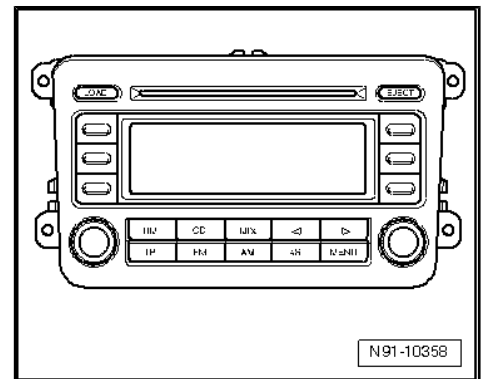
8 Radio system "RCD 500"

Radio RCD 500



Note

- ◆ When dealing with complaints, it is absolutely necessary to understand the functions and the operation of the communication systems ⇒ *Instruction manual*.
- ◆ The anti-theft coding uses a fixed code, deactivating anti-theft coding ⇒ [page 67](#).
- ◆ In the event of repair work or fault finding ⇒ *Vehicle diagnosis, testing and information system VAS 5051*.
- ◆ When the battery -A- is reconnected, please remember to check vehicle equipment (radio, clock, convenience electronics, etc.) in accordance with the ⇒ *Electrical system; Rep. Gr. 27 workshop manual and/or the ⇒ instruction manual*.



8.1 General description

The radio "RCD 500" consists of the radio -R-, the integrated 6-disc CD changer and the loudspeakers in the doors.

The radio -R- has a final output stage with an output power of 4 x 20 W. The loudspeakers are designed as a 3-way system in the front and as a 2-way system in the rear.

The radio system "RCD 500" is available in a version with loudspeakers operated via the 4 internal loudspeaker outputs or in a version with the amplifier -R12-. In this case, the loudspeakers are connected directly to the amplifier -R12- and the loudspeaker outputs of the radio -R- are used for amplifier -R12- input signals.

The following loudspeakers are installed with the radio system "RCD 500":

- ◆ A bass loudspeaker, a mid-range loudspeaker and a treble loudspeaker in each of the front doors.
- ◆ A bass loudspeaker and a treble loudspeaker in each of the rear doors.

To extend the functions, connection options are available for amplifier -R12-, CD changer -R41- and telephone.

The integrated 6-disc CD changer can play the following formats:

- ◆ Audio CD
- ◆ CD-R
- ◆ CD-RW
- ◆ MP3

The following formats cannot be played:

- ◆ CD with diameter of 8 cm
- ◆ "Mixed CD" (CD with data and audio files)



Note

The integrated CD changer has a transport protection device which must be deactivated before installing a new radio -R-. The transport protection device must also be activated before shipping a removed radio -R-. For this, the radio -R- must still be connected to the voltage supply.

The aerial is a window aerial and is located in the rear window (saloon). In the Variant, the aerials are located in the rear right side window and in the roof aerial. The aerial system includes a "diversity function" integrated in the radio -R-.

8.1.1 Fault finding

The radio -R- is equipped with self-diagnosis.

For fault finding, use the vehicle diagnosis, testing and information system -VAS 5051B- in "Guided fault finding" mode.

8.2 Overview of radio system "RCD 500"

1 - Radio -R-

- ☐ Connectors
⇒ [page 64](#)
- ☐ Activating and deactivating transport protection device ⇒ [page 65](#)
- ☐ Removing and installing
⇒ [page 61](#)

2 - CD changer -R41-

- ☐ In centre console
- ☐ CD changer -R41-
⇒ [page 79](#)

3 - Amplifier -R12-

- ☐ Optional
- ☐ Under left front seat
- ☐ Amplifier -R12-
⇒ [page 100](#).

4 - Aerial -R11- / Radio aerial 2 -R93-

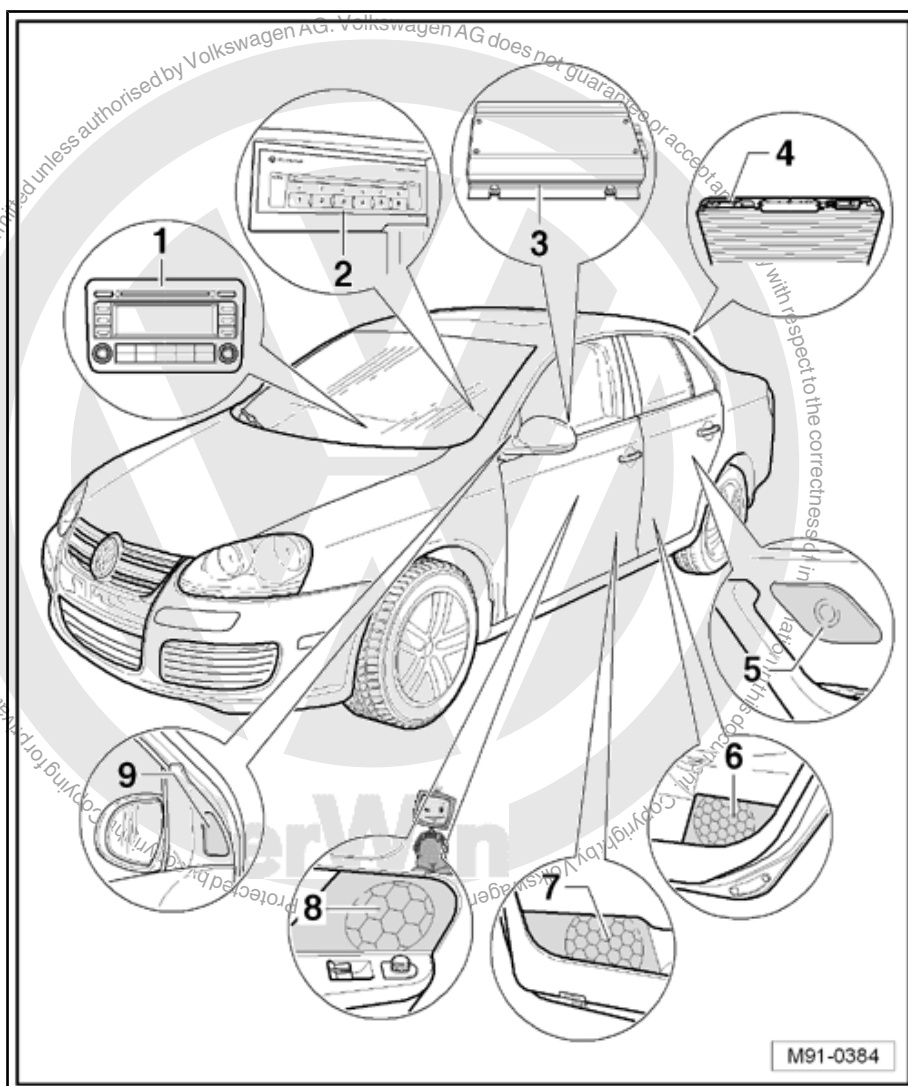
- ☐ Aerial systems (saloon)
⇒ [page 171](#).
- ☐ Aerial systems (Variant)
⇒ [page 179](#).

5 - Rear left treble loudspeaker -R14- / rear right treble loudspeaker -R16-

- ☐ Installed in the rear left and right door trims.
- ☐ Loudspeaker systems
⇒ [page 106](#).

6 - Rear left bass loudspeaker -R15- / rear right bass loudspeaker -R17-

- ☐ Installed in the rear left and right door trims.
- ☐ Loudspeaker systems ⇒ [page 106](#).





7 - Front left bass loudspeaker -R21- / front right bass loudspeaker -R23-

- ☐ Installed in the front left and right door trims
- ☐ Loudspeaker systems ⇒ [page 106](#) .

8 - Front left mid-range loudspeaker -R103- / front right mid-range loudspeaker -R104-

- ☐ Installed in the front left and right door trims
- ☐ Loudspeaker systems ⇒ [page 106](#) .

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

- ☐ Installed in mirror triangle of the right and left front doors
- ☐ Loudspeaker systems ⇒ [page 106](#) .

8.3 Removing and installing radio "RCD 500"

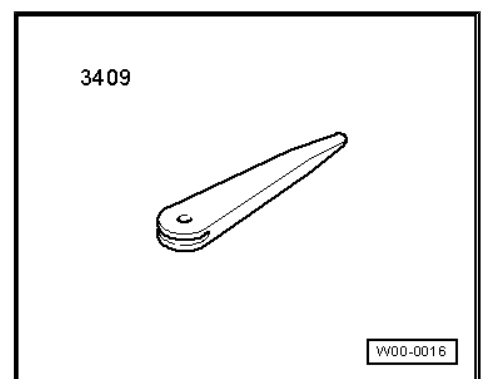


Note

- ◆ The part number for the radio -R- can be found on a sticker on the radio -R- housing.
- ◆ If the radio -R- has to be renewed, deactivate the electronic anti-theft coding system ⇒ [page 67](#) . Please inform the customer of the new radio code.
- ◆ If the radio code is not known, it can be requested via the established systems. For this, you need the identification number of the radio -R- . It is located on a sticker on the side of the radio -R- . The identification number is also embossed in the material of the side panel of the radio -R- .
- ◆ The CD changer in the radio -R- has a transport protection device which must be deactivated before installing a new radio -R- . The transport protection device must also be activated before shipping a removed radio -R- . For this, the Radio -R- must still be connected to the voltage supply. Activating and deactivating transport protection device ⇒ [page 65](#) .

Special tools and workshop equipment required

- ◆ Removal wedge -3409-

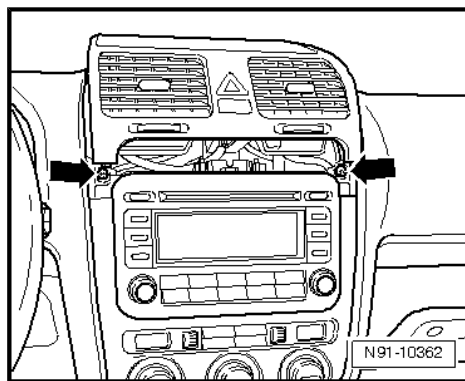


Removing

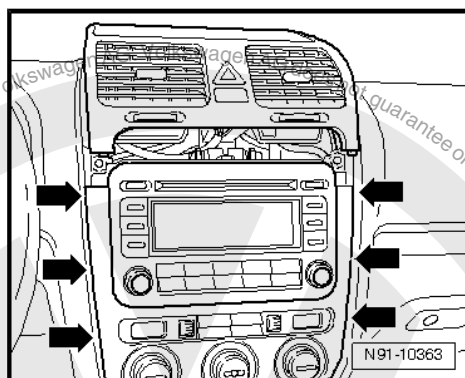
- Remove CD from radio -R- ⇒ Operating manual .
- Switch off ignition and all electrical consumers and remove ignition key.
- Remove upper cover together with air vents out of the middle of the dash panel until the underneath bolts of the centre console cover can be reached, ⇒ General body repairs, exterior; Rep. Gr. 68 .



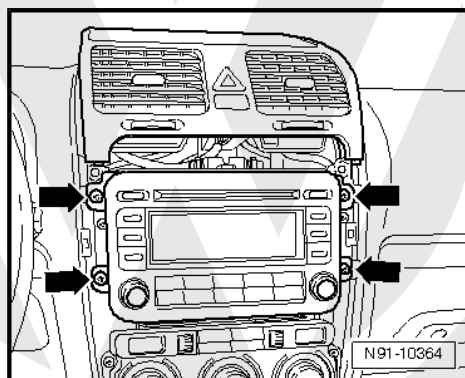
- Remove bolts -arrows- (1.5 Nm).



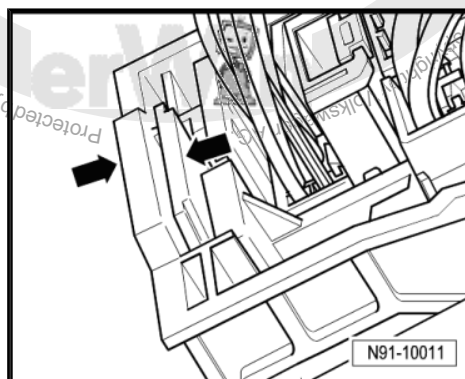
- Carefully lever out cover of centre console using removal wedge -3409- -arrows- and take it off.



- Remove bolts -arrows- (1.5 Nm) on radio -R- .
- Pull the radio -R- out of the installation shaft until you can gain access to the connectors on the back of the radio -R- .

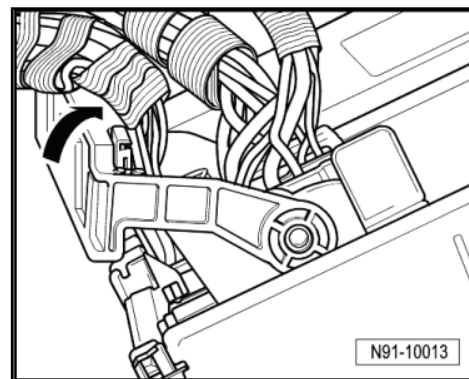


- Press together connector locking mechanism in direction of -arrows-.





- Then swing locking bar up in direction of -arrow- and pull out connectors.



- Release connectors -arrows- of aerial connections and disconnect connectors.

Installing

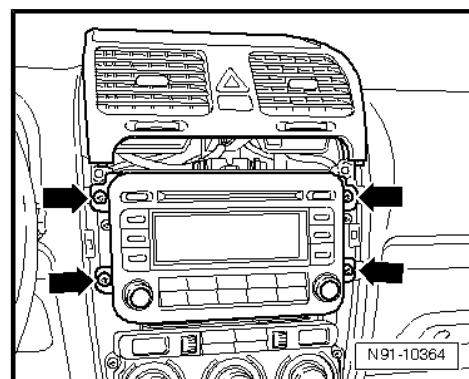
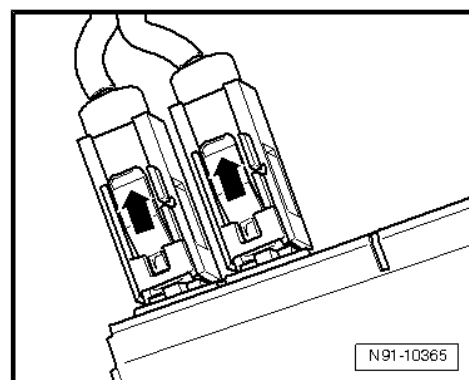
- Fit connectors on the radio -R- and lock them.
- Push the radio -R- straight into the dash panel.



Note

Never press on the display or the operating buttons when fitting the radio -R-, as the radio -R- may be damaged.

- Fit the radio -R- with 4 bolts -arrows- (1.5 Nm).
- Install centre console cover.
- Deactivate the anti-theft coding ⇒ [page 66](#) .
- Deactivate the transport protection device ⇒ [page 65](#) .
- Check the radio -R- coding and recode the radio -R- ⇒ [page 67](#) .



8.4 “RCD 500” connectors

1 - Multi-pin connector 1, 8-pin, loudspeaker outputs

- ☐ Pin assignment
⇒ [page 64](#)

2 - Multi-pin connector 2, 8-pin, CAN bus, telephone

- ☐ Pin assignment
⇒ [page 65](#)

3 - Multi-pin connector 3, 12-pin, telephone

- ☐ Pin assignment
⇒ [page 65](#)

4 - Multi-pin connector 4, 12-pin, CD changer -R41-

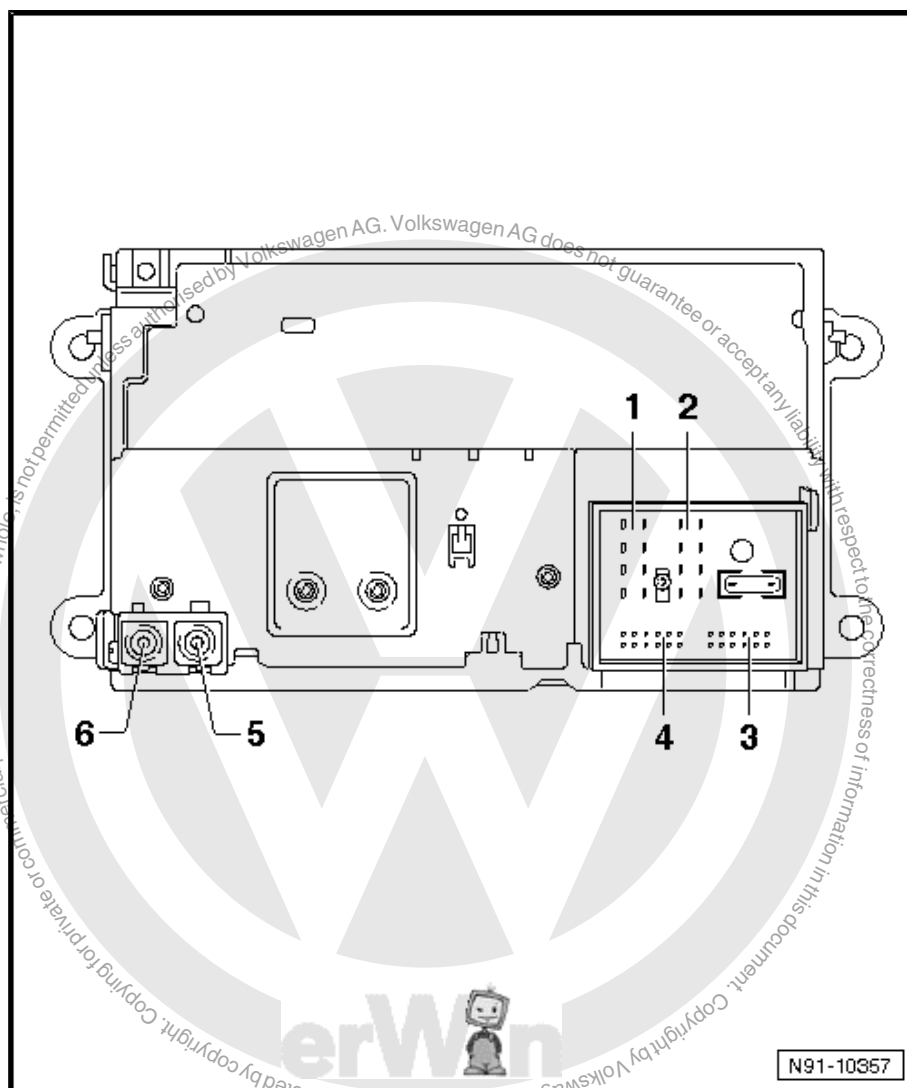
- ☐ Pin assignment
⇒ [page 65](#)

5 - Aerial connection

- ☐ Connector colour beige
- ☐ FM2
- ☐ Aerial system, saloon
⇒ [page 171](#) .
- ☐ Aerial system, Variant
⇒ [page 179](#) .

6 - Aerial connection

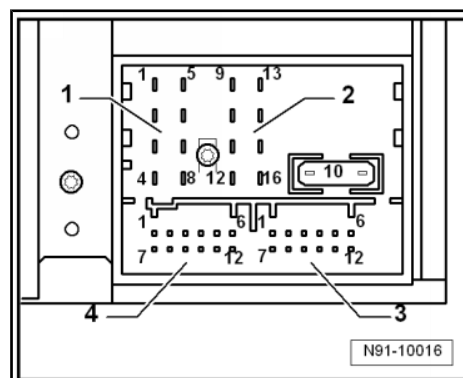
- ☐ Connector colour transparent
- ☐ AM/FM
- ☐ Aerial system, saloon
⇒ [page 171](#) .
- ☐ Aerial system, Variant
⇒ [page 179](#) .



8.4.1 Multi-pin connector 1, 8-pin, loudspeaker outputs

In combination with amplifier -R12- , audio signals from radio -R- are used as input signals for amplifier -R12- .

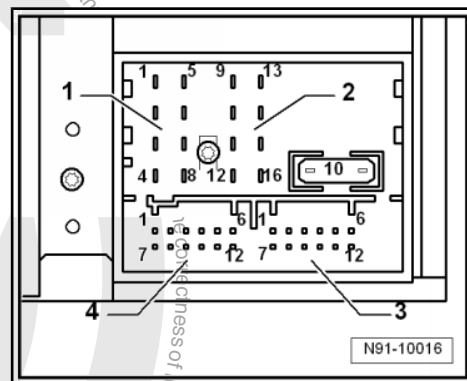
- 1 - Rear right loudspeaker (+)
- 2 - Front right loudspeaker (+)
- 3 - Front left loudspeaker (+)
- 4 - Rear left loudspeaker (+)
- 5 - Rear right loudspeaker (-)
- 6 - Front right loudspeaker (-)
- 7 - Front left loudspeaker (-)
- 8 - Rear left loudspeaker (-)





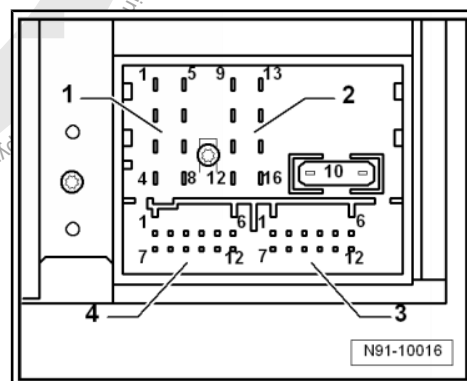
8.4.2 Multi-pin connector 2, 8-pin, CAN bus, telephone

- 9 - CAN bus (high)
- 10 - CAN bus (low)
- 11 - Telephone mute
- 12 - Terminal 31
- 13 - Not assigned
- 14 - Not assigned
- 15 - Terminal 30
- 16 - ATA (SAFE) terminal 30



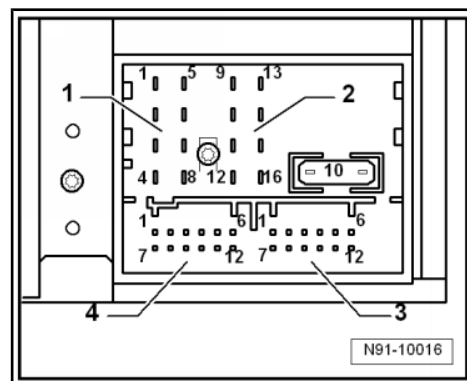
8.4.3 Multi-pin connector 3, 12-pin, telephone

- 1-5 - Not assigned
- 6 - Telephone LF input signal (-)
- 7-11 - Not assigned
- 12 - Telephone LF input signal (+)



8.4.4 Multi-pin connector 4, 12-pin, CD changer -R41-

- 1 - Not assigned
- 2 - Audio earth from CD changer -R41-
- 3 - Not assigned
- 4 - Terminal 30 to CD changer -R41-
- 5 - Not assigned
- 6 - CD data out to CD changer -R41-
- 7 - Not assigned
- 8 - Audio left from CD changer -R41-
- 9 - Audio right from CD changer -R41-
- 10 - Control signal to CD changer -R41-
- 11 - CD data in from CD changer -R41-
- 12 - CD clock from CD changer -R41-



8.5 Activating and deactivating transport protection device

The transport protection device must be activated before shipping a "RCD 500" and deactivated before installing a new radio -R-. This takes place electronically via the key pad of the radio -R-. When the transport lock has been activated, the player of the CD changer is brought to a "transport position".



Activating transport protection device:

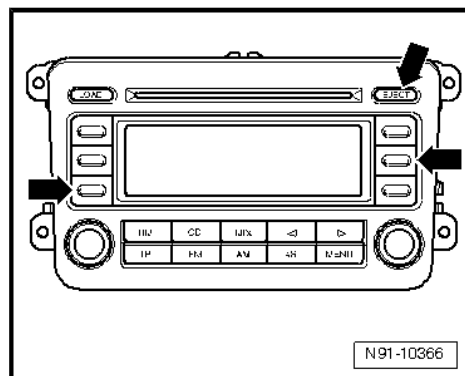
Unit status: "ON" or "OFF", wiring must be connected to the radio -R- .

- Press and hold keys marked with -arrows- simultaneously for at least 5 seconds.

The radio -R- unit display shows "TRANSPRT" when the player of the CD changer has moved into transport position.

Deactivating transport protection device:

- Connect and install the radio -R- .
- Press **CANCEL** key to deactivate transport protection device.



8.6 Electronic anti-theft coding

The radio -R- is equipped with an electronic anti-theft coding system which works in conjunction with the dash panel insert.

If the voltage supply for the radio -R- is cut off and then reconnected, the radio will still be operational without the need to enter the radio code again. A prerequisite is that the electronic anti-theft coding system has already been activated for the first time and that the radio -R- is reconnected in the same vehicle.

8.6.1 Functional notes

After initial activation of the anti-theft coding, an internal radio code is stored in the radio -R- and in the dash panel insert. If the radio -R- is now disconnected from the voltage supply due to repairs (e.g. radio -R- or battery -A-) removed and the voltage supply is then reconnected, data is transferred between the radio -R- and the dash panel insert.

When this is done, the internal code of the radio -R- is compared with the code in the dash panel insert. If the codes are identical with each other, the dash panel insert will recognise that the connected radio -R- belongs to the vehicle. The radio -R- is therefore immediately operational without the need to enter the anti-theft code again.

If the radio -R- is replaced, the radio code must be entered.

Deactivating anti-theft coding ⇒ [page 67](#)

Then after switching on the "S contact" via the ignition lock the code is automatically compared between the dash panel insert and the radio -R- .

Comparison takes approx. 5 seconds. It must be ensured that a diagnostic unit has not been connected or is not connected during this period of time.

After this time, the radio -R- of the vehicle will be ready for operation without the need to enter the radio code again even if the voltage supply has been cut off and then reconnected.

The anti-theft coding becomes effective and blocks the radio -R- when:

- ♦ The radio -R- is installed in another vehicle or
- ♦ The dash panel insert is changed.

A radio -R- which has been locked by the anti-theft coding is shown when "SAFE" and "1000" is shown in the display when switching the radio -R- on.



Deactivate the anti-theft coding to release the unit lock
⇒ [page 67](#) .

8.6.2 Deactivating electronic anti-theft coding

A locked radio -R- will only work again if the correct radio code for the anti-theft coding system is entered.



Note

- ◆ *The radio code is stuck on the radio card together with the unit number ⇒ Instruction manual .*
- ◆ *The radio card should not be kept in the vehicle for security reasons. Ask the customer for the radio code.*
- ◆ *If a radio -R- is renewed, the radio code of the replacement device must be used.*
- ◆ *The customer must be informed that the radio code has changed.*

- Obtain the code of the radio -R- .
- Switch on the radio -R- .

The radio -R- automatically displays “SAFE” and then “1000”.

Next to the four function buttons, the display shows the position of the radio code to be entered with an “X”.

- Enter the radio code in the correct sequence, using the four function buttons indicated. Press the relevant function button as many times as necessary until the correct number is shown in the centre of the display.
- Then press the function button next to the word “ENTER”. The radio -R- is ready for operation again and switches to the last operating mode.



Note

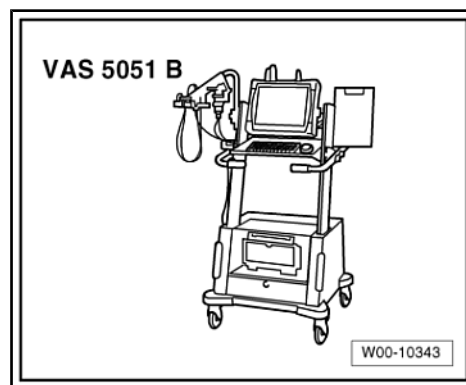
If you enter an incorrect radio code to deactivate the electronic lock, “SAFE” first flashes in the display, followed by “1000” again. The entire process can now be repeated again. The number of attempts is shown in the display. If an incorrect radio code is entered again, the radio -R- will be blocked for approx. one hour, i.e. it cannot be operated. This lock is indicated by the fact that “SAFE” is permanently shown in the display. The process of deactivating the anti-theft coding can then be repeated after one hour. Do not forget that only two attempts are allowed, after which the radio -R- will be blocked for one hour.

8.7 Adapting radio components “RCD 500”

Special tools and workshop equipment required



- ◆ Vehicle diagnostic, testing and information system -VAS 5051B-



Procedure

- In vehicle diagnostic, testing and information system -VAS 5051B- , select “Guided fault finding”.
- Using **GoTo** button, select “Functions/component” and the following menu options in succession:
 - ◆ Body
 - ◆ Electrical system
 - ◆ 01 - On board diagnosis-capable systems
 - ◆ Corresponding radio system
 - ◆ Radio system functions





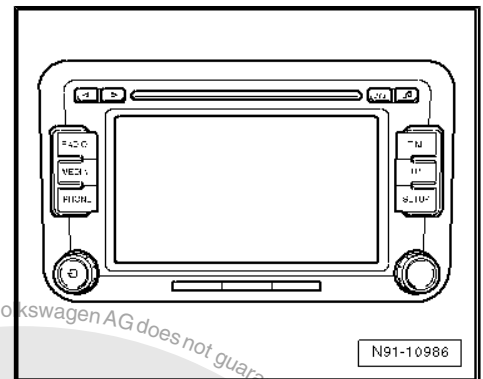
9 Radio system "RCD 510"

Radio RCD 510



Note

- ◆ When dealing with complaints, it is absolutely necessary to understand the functions and the operation of the communication systems ⇒ *Instruction manual*.
- ◆ The anti-theft coding uses a fixed code ⇒ [page 77](#).
- ◆ In the event of repair work or fault finding ⇒ *Vehicle diagnosis, testing and information system VAS 5051*.
- ◆ When the battery -A- is reconnected, please remember to check vehicle equipment (radio, clock, convenience electronics, etc.) in accordance with the ⇒ *Electrical system; Rep. Gr. 27 workshop manual and/or the ⇒ owner's manual*.



9.1 General description

The radio "RCD 510" consists of the radio -R-, the integrated 6-disc CD changer and the loudspeakers in the doors.

The radio -R- has a plug position for the use of SD storage cards for reproducing audio content and an output stage with 4 x 20 W output.

The loudspeakers are designed as a 3-way system in the front and as a 2-way system in the rear.

The radio system "RCD 510" is available in a version with loudspeakers operated via the 4 internal loudspeaker outputs or in a version with the amplifier -R12-. In this case, the loudspeakers are connected directly to the amplifier -R12- and the loudspeaker outputs of the radio -R- are used for amplifier -R12- input signals.

The following loudspeakers are installed with the radio system "RCD 510":

- ◆ A bass loudspeaker, a mid-range loudspeaker and a treble loudspeaker in each of the front doors.
- ◆ A bass loudspeaker and a treble loudspeaker in each of the rear doors.

To extend the functions, connection options are available for amplifier -R12-, CD changer -R41- and telephone.

The integrated 6-disc CD changer can play the following formats:

- ◆ Audio CD
- ◆ CD-R
- ◆ CD-RW
- ◆ MP3

The following formats cannot be played:

- ◆ CD with diameter of 8 cm
- ◆ "Mixed CD" (CD with data and audio files)



Note

The internal CD changer has a transport protection device which must be deactivated before installing a new radio -R-. The transport protection device must also be switched on before shipping a removed radio -R-. For this, the radio -R- must still be connected to the voltage supply.

The aerial is a window aerial and is located in the rear window (saloon). In the Variant, the aerials are located in the rear right side window and in the roof aerial. The aerial system includes a "diversity function" integrated in the radio -R-.

9.1.1 Fault finding

The radio -R- is equipped with self-diagnosis.

For fault finding, use the vehicle diagnosis, testing and information system -VAS 5051B- in "Guided fault finding" mode.

9.2 Overview of radio system "RCD 510"

1 - Radio -R-

- ☐ Connectors
⇒ [page 74](#)
- ☐ Activating and deactivating transport protection device
⇒ [page 76](#)
- ☐ Removing and installing
⇒ [page 71](#)

2 - CD changer -R41-

- ☐ Optional
- ☐ In centre console
- ☐ CD changer -R41-
⇒ [page 79](#)

3 - Multimedia system control unit -J650-

- ☐ Optional
- ☐ In centre console
- ☐ Multimedia system control unit -J650-
⇒ [page 95](#)

4 - Connection for external audio sources -R199-

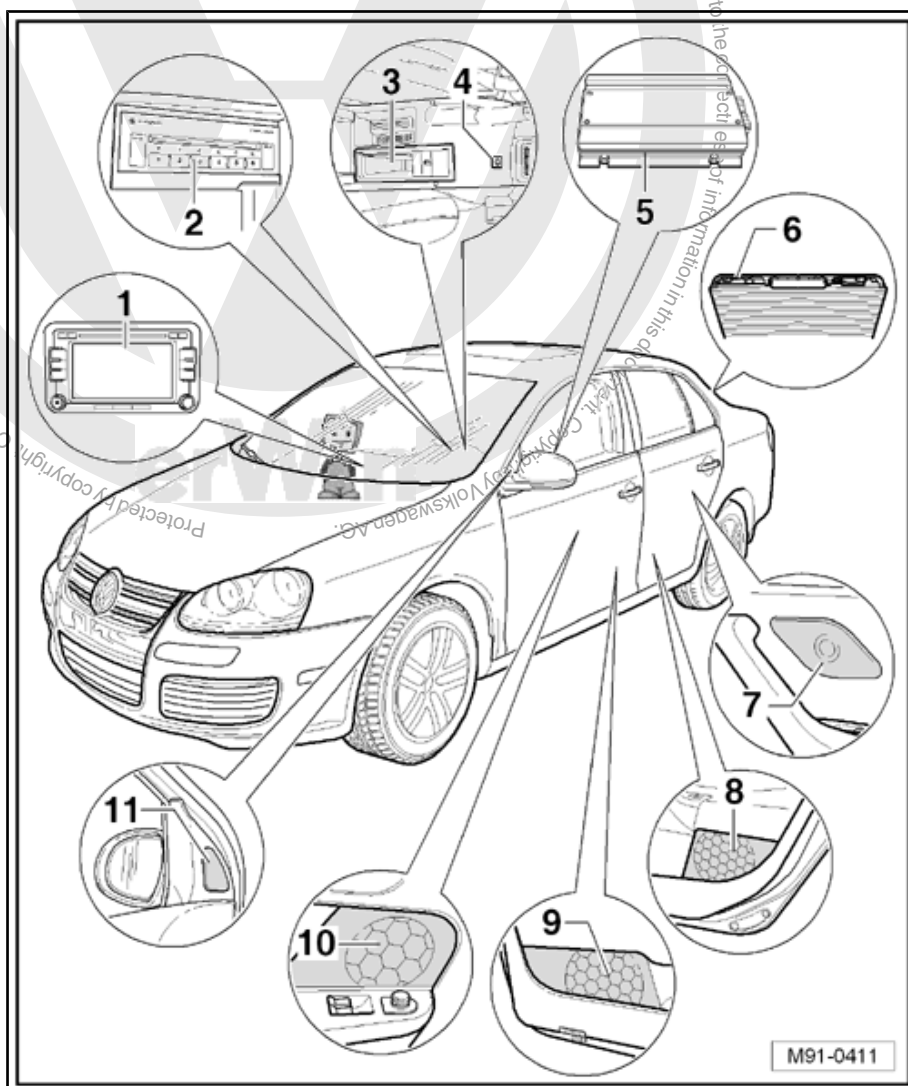
- ☐ In centre console
- ☐ Connection for external audio sources -R199-
⇒ [page 91](#)

5 - Amplifier -R12-

- ☐ Optional
- ☐ Under left front seat
- ☐ Amplifier -R12-
⇒ [page 100](#)

6 - Aerial -R11- / Radio aerial 2 -R93-

- ☐ Aerial systems (saloon) ⇒ [page 171](#)
- ☐ Aerial systems (Variant) ⇒ [page 179](#)



M91-0411



- ☐ Aerial systems in saloons from model year 2011 ➔ [page 179](#)

7 - Rear left treble loudspeaker -R14- / rear right treble loudspeaker -R16-

- ☐ Installed in the rear left and right door trims
- ☐ Loudspeaker systems ➔ [page 106](#)

8 - Rear left bass loudspeaker -R15- / rear right bass loudspeaker -R17-

- ☐ Installed in the rear left and right door trims
- ☐ Loudspeaker systems ➔ [page 106](#)

9 - Front left bass loudspeaker -R21- / front right bass loudspeaker -R23-

- ☐ Installed in the front left and right door trims
- ☐ Loudspeaker systems ➔ [page 106](#)

10 - Front left mid-range loudspeaker -R103- / front right mid-range loudspeaker -R104-

- ☐ Installed in the front left and right door trims
- ☐ Loudspeaker systems ➔ [page 106](#)

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

- ☐ Installed in mirror triangle of the right and left front doors
- ☐ Loudspeaker systems ➔ [page 106](#)

9.3 Removing and installing radio "RCD 510"

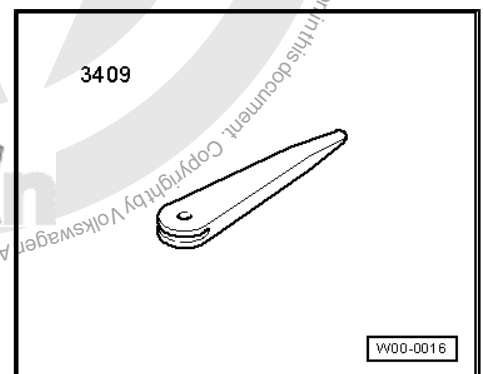


Note

- ◆ The part number for the radio -R- can be found on a sticker on the radio -R- housing.
- ◆ If the radio -R- has to be renewed, deactivate the electronic anti-theft coding system ➔ [page 29](#).
- ◆ The integrated CD changer has a transport protection device which must be deactivated before installing a new radio -R-. The transport protection device must also be activated before shipping a removed radio -R-. For this, the radio -R- must still be connected to the voltage supply. Activating and deactivating transport protection device ➔ [page 76](#).

Special tools and workshop equipment required

- ◆ Removal wedge -3409-

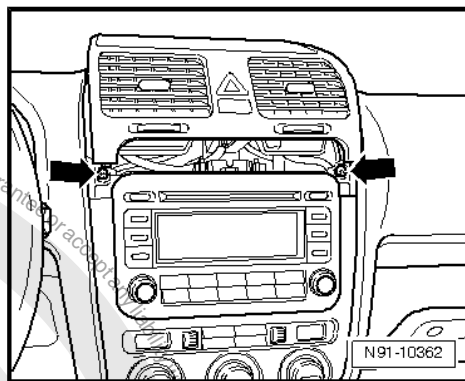


Removing

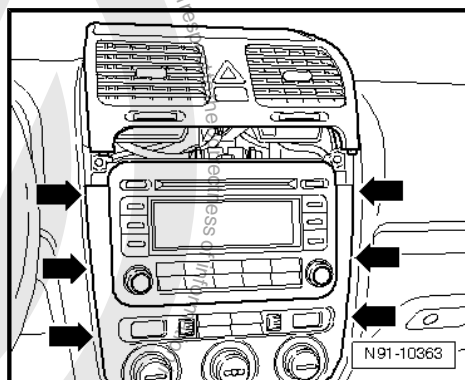
- Remove CD from radio -R- ➔ Operating manual .
- Activate the transport protection device ➔ [page 76](#) .



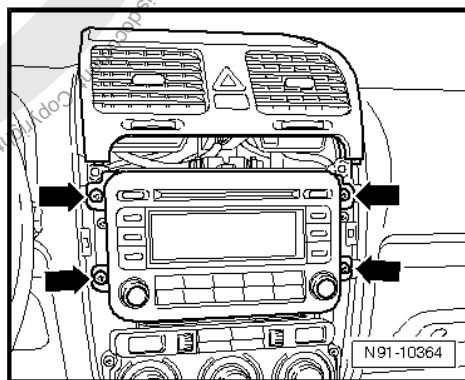
- Switch off ignition and all electrical consumers and remove ignition key.
- Remove upper cover together with air vents out of the middle of the dash panel until the underneath bolts of the centre console cover can be reached, ⇒ General body repairs, exterior; Rep. Gr. 68 .
- Remove bolts -arrows- (1.5 Nm).



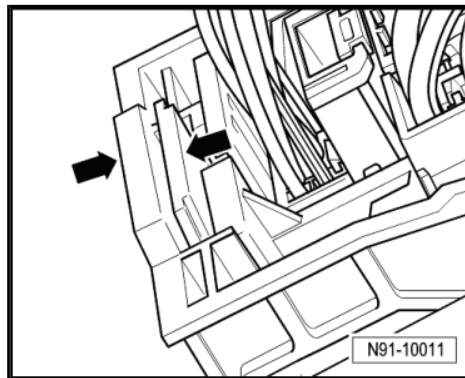
- Carefully lever out cover of centre console using removal wedge -3409- -arrows- and take it off.



- Remove bolts -arrows- (1.5 Nm) on radio -R- .
- Pull the radio -R- out of the installation shaft until you can gain access to the connectors on the back of the radio -R- .

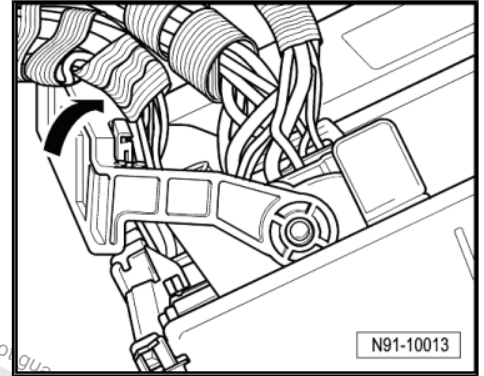


- Press together connector locking mechanism in direction of -arrows-.





- Then swing locking bar up in direction of -arrow- and pull out connectors.



- Release connectors -arrows- of aerial connections and disconnect connectors.

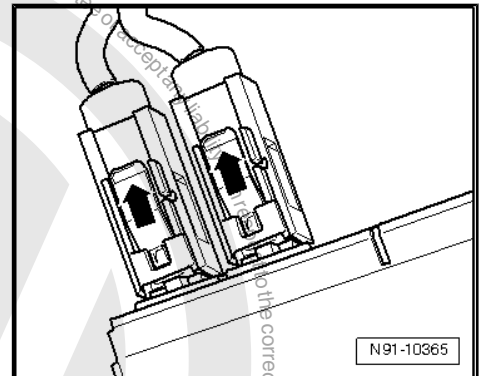
Installing

- Fit connectors on the radio -R- and lock them.
- Push the radio -R- straight into the dash panel.

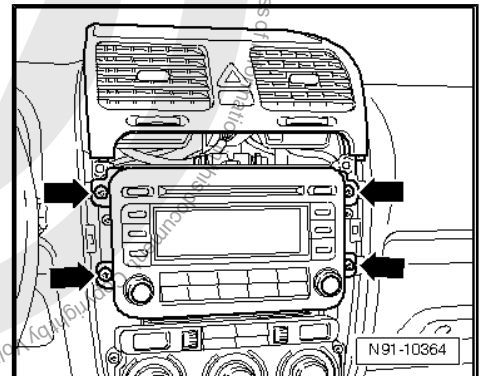


Note

Never press on the display or the operating buttons when fitting the radio -R-, as the radio -R- may be damaged.



- Fit the radio -R- with 4 bolts -arrows- (1.5 Nm).
- Install centre console cover.
- Deactivate the anti-theft coding ⇒ [page 29](#) .
- Deactivate the transport protection device ⇒ [page 76](#) .
- Check the radio -R- coding and recode the radio -R- ⇒ [page 78](#) .





9.4 “RCD 510” connectors

1 - Aerial connection

- ☐ Connector colour, black
- ☐ DAB
- ☐ Aerial system, saloon
⇒ [page 171](#) .
- ☐ Aerial system, Variant
⇒ [page 179](#) .
- ☐ Aerial systems in saloons from model year 2011 ⇒ [page 179](#)

2 - Multi-pin connector 1, 8-pin, loudspeaker outputs

- ☐ Pin assignment
⇒ [page 27](#)

3 - Multi-pin connector 2, 8-pin, CAN bus, telephone

- ☐ Pin assignment
⇒ [page 27](#)

4 - Multi-pin connector 3, 12-pin, telephone

- ☐ Pin assignment
⇒ [page 27](#)

5 - Multi-pin connector 4, 12-pin, CD changer -R41-

- ☐ Pin assignment
⇒ [page 28](#)

6 - Not fitted

7 - Aerial connection

- ☐ Connector colour, white
- ☐ FM2
- ☐ Aerial system, saloon
⇒ [page 171](#) .
- ☐ Aerial system, Variant ⇒ [page 179](#) .
- ☐ Aerial systems in saloons from model year 2011 ⇒ [page 179](#)

8 - Aerial connection

- ☐ Connector colour, white
- ☐ AM/FM
- ☐ Aerial system, saloon ⇒ [page 171](#) .
- ☐ Aerial system, Variant ⇒ [page 179](#) .
- ☐ Aerial systems in saloons from model year 2011 ⇒ [page 179](#)

