

Volkswagen Touareg 2003-> (7L)

Note: For Guided Fault Finding information, refer to VAS 5051 Diagnostic Tester

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Self Study Programs

[89E303: The Touareg](#)

[89G303: The Touareg Heating, Ventilation, and Air Conditioning Systems](#)

[89J303: The Touareg Electrical System](#)

Communication

General information

The integrated Radio/CD Player, optional CD Changer, Amplifier, optional Radio/Navigation system, Diversity Antenna, Multi-function steering wheel and optional Telematics systems are combined to form the Communication system.

Communication system control modules are connected and exchange data using the "Infotainment CAN Data Bus." Data is also exchanged with other vehicle CAN Bus systems via the Data Bus On Board Diagnostic Interface -J533- ("Gateway").

Before troubleshooting or servicing, technicians must be familiar with the functions and operation specifics of the applicable Communication system. Always read the owner's manual and review specific Communication system functions.

Additional information:

⇒ *Self-Study Program - Course Number 89E303 "The Touareg"*

⇒ *Self-Study Program - Course Number 89J303 "The Touareg Electrical System Design and Function"*

CAUTION!

When disconnecting and reconnecting battery terminals, observe all applicable Notes and torque specifications, as well as instructions on performing OBD program and electrical system function checks as specified ⇒ [Repair Manual, Electrical Equipment, Repair Group 27](#) .



On Board Diagnostic (OBD)

The individual Communication systems have extensive On Board Diagnostic (OBD) capabilities.

In the event that malfunctions occur in any Communication system, troubleshooting is performed using the VAS 5051 Vehicle Diagnostic Testing and Information System or VAS 5052 Vehicle Diagnostic and Service System in operating mode "Guided Fault Finding".



Communication system components, adaptation

General information

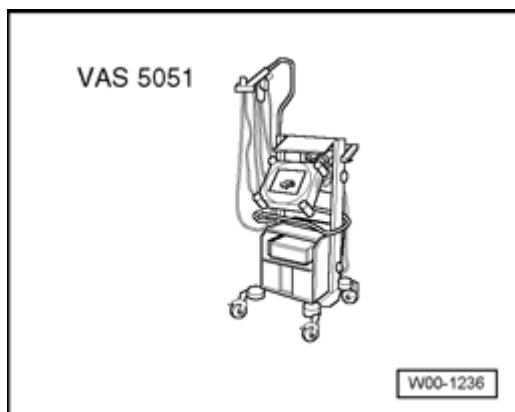
In the event any Communication system control module or related component is replaced, or removed and installed, it may be necessary to adapt the component (e.g.: code component, perform basic setting or registration).

Adaptation is performed using the VAS 5051 Vehicle Diagnostic Testing and Information System or VAS 5052 Vehicle Diagnostic and Service System in operating mode "Guided Fault Finding".



Radio/Navigation system components, adaptation

Special tools, testers and auxiliary items needed



- ◆ VAS 5051 Vehicle Diagnostic Testing and Information System
- ◆ Optional: VAS 5052 Vehicle Diagnostic and Service System
- ◆ Diagnostic cable VAS 5051/5a/6a or VAS 5052/3
- Select "Guided Fault Finding".

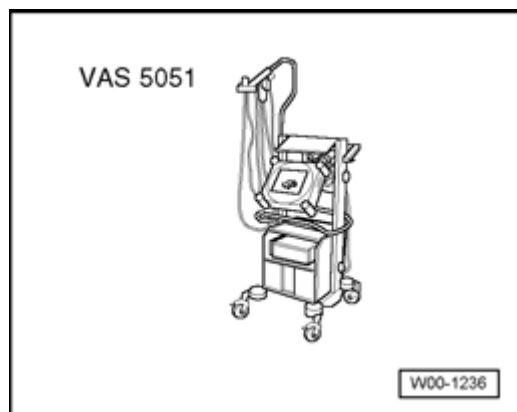
Once all Control Modules have been interrogated:

- Press "Goto" button
- Select "Function / Component Selection "
- Select "Body (Repair Group 01; 27; 50 to 97)"
- Select "Electrical System (Repair Group 01; 27; 90 to 97)"
- Select "01 - Systems capable of self-diagnosis"
- Select "Radio-navigation system"
- Select "Radio-navigation system functions"
- Select "Code navigation system"
- Follow testers prompts



Radio system components, adaptation

Special tools, testers and auxiliary items needed



- ◆ VAS 5051 Vehicle Diagnostic Testing and Information System
- ◆ Optional: VAS 5052 Vehicle Diagnostic and Service System
- ◆ Diagnostic cable VAS 5051/5a/6a or VAS 5052/3

- Select "Guided Fault Finding"

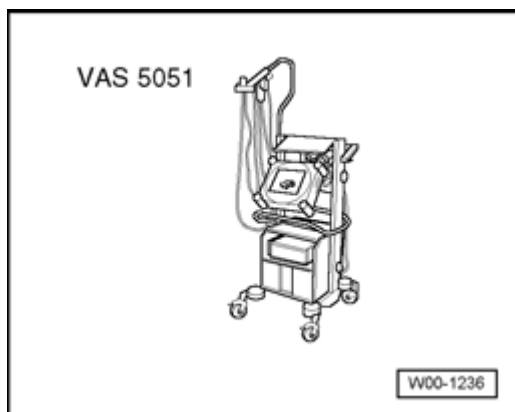
Once all Control Modules have been interrogated:

- Press "Goto" button
- Select "Function / Component Selection "
- Select "Body (Repair Group 01; 27; 50 to 97)"
- Select "Electrical System (Repair Group 01; 27; 90 to 97)"
- Select "01 - Systems capable of self-diagnosis"
- Select Radio System applicable to vehicle
- Select "Functions"
- Select "Code radio functions"
- Follow testers prompts



Multi-function steering wheel components, adaptation

Special tools, testers and auxiliary items needed



- ◆ VAS 5051 Vehicle Diagnostic Testing and Information System
- ◆ Optional: VAS 5052 Vehicle Diagnostic and Service System
- ◆ Diagnostic cable VAS 5051/5a/6a or VAS 5052/3

- Select "Guided Fault Finding"

Once all Control Modules have been interrogated:

- Press "Goto" button
- Select "Function / Component Selection "
- Select "Body (Repair Group 01; 27; 50 to 97)"
- Select "Electrical System (Repair Group 01; 27; 90 to 97)"
- Select "01 - Systems capable of self-diagnosis"
- Select "Steering wheel electronics"
- Select "Steering wheel electronics functions"
- Select "Coding control module steering wheel electronics"
- Follow testers prompts



Telematics system components, adaptation

After replacing the Telematics Control Module, the control module must be coded and OnStar[®] system needs to be reconfigured.

Code control module ⇒ [Page 91-124](#) .

Reconfigure control module ⇒ [Page 91-126](#) .

Radio system "Premium VI" & "Premium VI - Sound I"

General information

The standard "Premium VI" radio system consists of an integrated AM/FM receiver/single-CD player control head and 10 loudspeakers. The radio control head is in "Double DIN" format.

Loudspeakers are mounted in the front and rear doors. The standard system uses four (radio) internal speaker outputs that power the speakers directly.

The optional "Premium VI - Sound I" system uses 11 loudspeakers that are powered by an external 300W amplifier. The radio in this case provides speaker output signals to the amplifier.

Speaker applications:

- ◆ High, low and midrange loudspeakers located in the front doors
- ◆ Low and midrange loudspeakers located in the rear doors.
- ◆ The optional "Premium VI - Sound I" also uses an additional loudspeaker installed in the instrument panel.

Radios are protected with anti-theft security coding (fixed code). Additional information:

⇒ *Radio owner's manual*



The standard, integrated single-CD player can play CD formats "CD-R" and "CD-RW".

CAUTION!

♦ ***Do not use 8 cm diameter "mini disks".
Should a "mini disk be inserted, it will not
eject and CD player damage will result.***

♦ ***Do not use CDs that contain a mix of
computer and music data.***

The optional CD Changer unit is located in the right side of the luggage compartment behind a removable access panel. Wiring from the radio unit to the CD Changer location is pre-wired in production.

The antenna system consists of a single amplified antenna integrated with the left rear quarter window.

Notes:

- ♦ *Only factory approved accessory radios and radio equipment (available from Volkswagen of America, Inc.) should be installed. This ensures proper installation and optimum function.*
- ♦ *When retrofitting components, carrying out diagnostic procedures or repairs ⇒ Electrical Wiring Diagrams, Troubleshooting and Component Locations.*

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Before troubleshooting or servicing, technicians must be familiar with the functions and operation specifics of the standard or optional Radio system. Always read the owner's manual and review specific system functions.

Additional information:

⇒ *Self-Study Program - Course Number 89E303 "The Touareg"*

⇒ *Self-Study Program - Course Number 89J303 "The Touareg Electrical System Design and Function"*

CAUTION!

When disconnecting and reconnecting battery terminals, observe all applicable Notes and torque specifications, as well as instructions on performing OBD program and electrical system function checks as specified ⇒ [Repair Manual, Electrical Equipment, Repair Group 27](#) .

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On Board Diagnostic (OBD)

"Premium VI" and "Premium VI - Sound I" radio systems have extensive OnBoard Diagnostic (OBD) capabilities.

In the event that malfunctions occur in the radio system, troubleshooting is performed using the VAS 5051 Vehicle Diagnostic Testing and Information System or VAS 5052 Vehicle Diagnostic and Service System in operating mode "Guided Fault Finding".

91-12



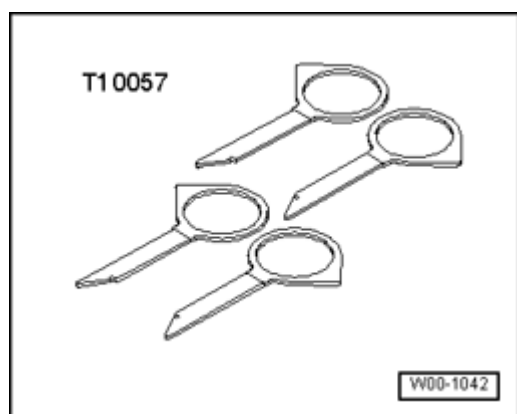
Radio - "Premium VI" & "Premium VI - Sound I", removing and installing

Notes:

- ◆ *The replacement part number is printed on a sticker on the unit housing. Always confirm proper application.*
- ◆ *Before removing radio unit, obtain anti-theft security code from customer. If unit is replaced, ensure anti-theft security code is activated (see owner's manual). The new code number must be given to the customer.*

Special tools, testers, and auxiliary items needed

- ◆ Recommended: Radio removal tool JC4225.
- ◆ Optional: T10057 Release tool
Two complete sets of release tool T10057 are required.



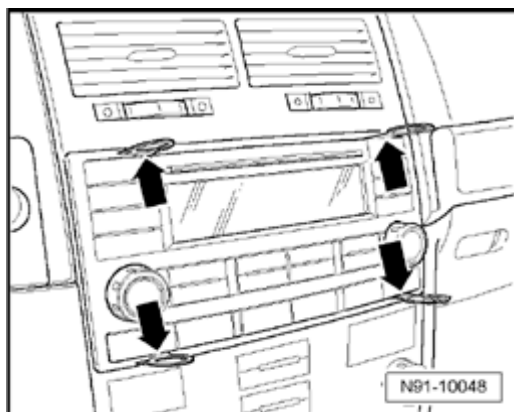
Removing

CAUTION!

Before beginning repairs on the electrical system:

- ◆ **Obtain the anti-theft radio security code.**
- ◆ **Remove any CDs which may have been left in CD player ⇒ operating instructions.**
- ◆ **Switch off all electrical consumers.**
- ◆ **Switch ignition off and remove ignition key.**

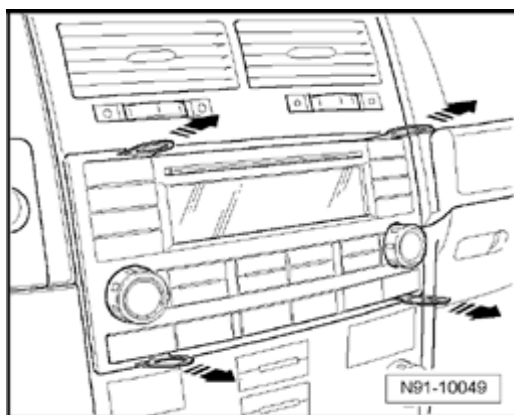
91-13



- Insert tools into openings in face of radio
-arrows- until they engage.

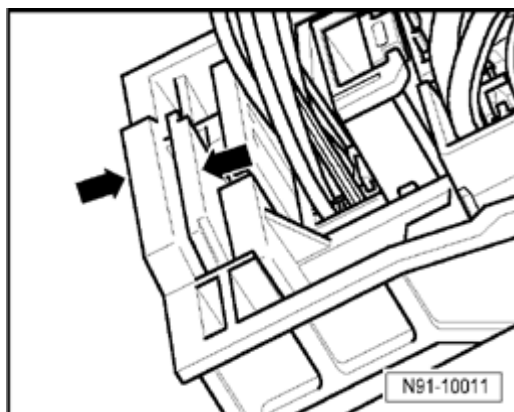
Note:

Use of separate tools T10057 is illustrated here. Procedure is essentially the same for tool JC4225 where all release prongs are integrated into a frame

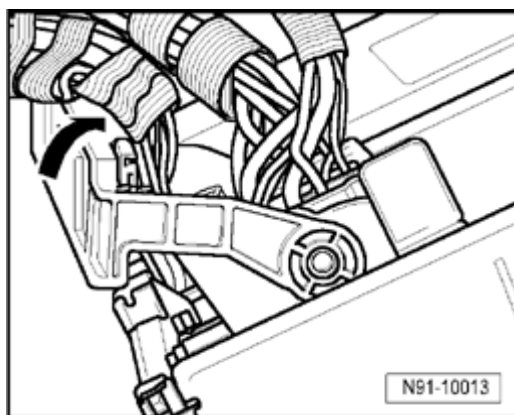


- Pull radio from instrument panel opening
using handles on tools T10057 or frame
of tool JC4225 -arrows- until electrical
connections on rear of unit are
accessible.

91-14

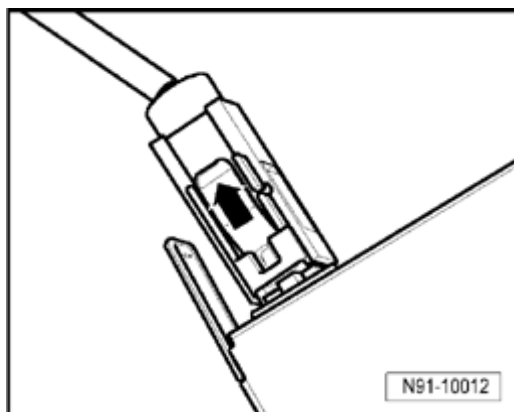


- Depress connector locks -arrows- until they disengage.

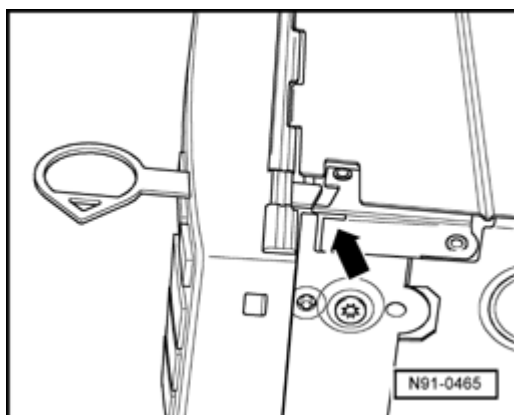


- Slide locking arm upwards -arrow- and disconnect electrical connections.

91-15



- Unlock and disconnect antenna connections -arrow-.



- Press lock -arrow- and pull out release tool from unit.

91-16



Installing

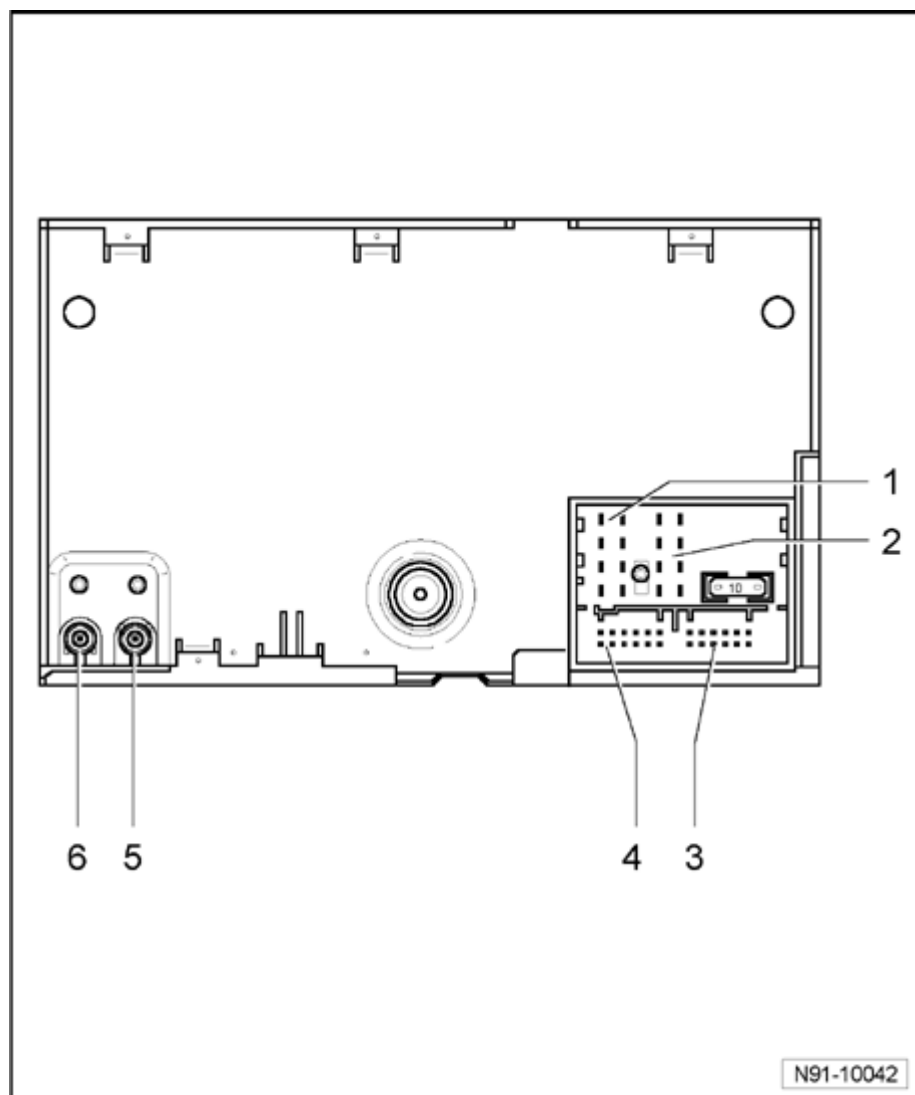
- Reconnect electrical/antenna connections and lock into position.
- Slide unit straight into instrument panel opening until it engages in assembly frame.

CAUTION!

In the event of a collision where occupants may make contact with interior trim, some interior knobs and buttons are designed to break away in a controlled manner in order to protect the occupant. When installing the radio unit, do not press on control buttons or display in order to engage locking tabs. Damage will result.

- Check operation, code or recode as necessary.
- Coding radio system ⇒ Adapting components, radio ⇒ [Page 91-5](#) .

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Multi-pin connector assignments

Multi-pin connectors, overview

1 - Multi-pin connector I

- ◆ For loudspeaker output
- ◆ Pin assignments
⇒ [Page 91-19](#)

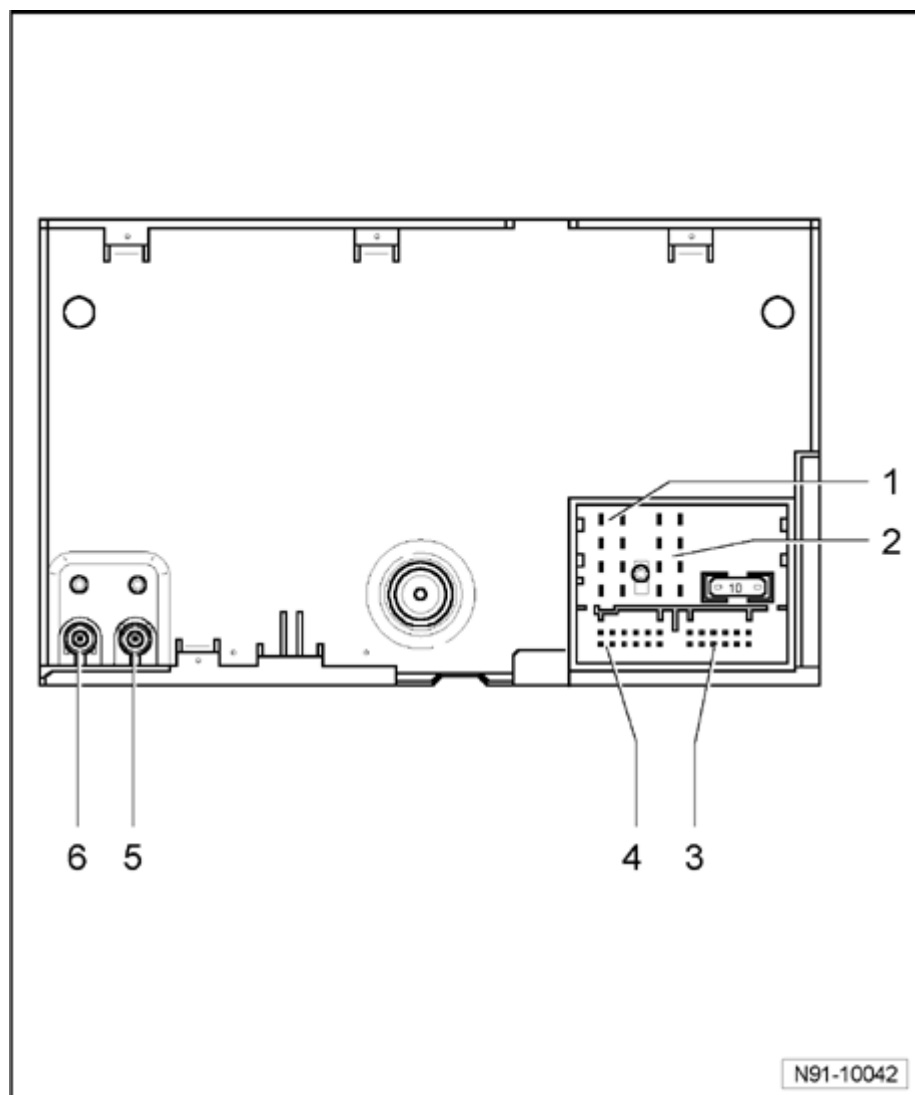
2 - Multi-pin connector II

- ◆ For power supply & CAN Bus
- ◆ Pin assignments
⇒ [Page 91-19](#)

3 - Multi-pin connector III

- ◆ For line-out audio signals and Telephone (where applicable)
- ◆ Pin assignments
⇒ [Page 91-20](#)

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**4 - Multi-pin connector IV**

- ◆ For CD Changer control
- ◆ Pin assignments
⇒ [Page 91-20](#)

5 - Antenna connector

- ◆ Brown
- ◆ Pin assignments
⇒ [Page 91-21](#)

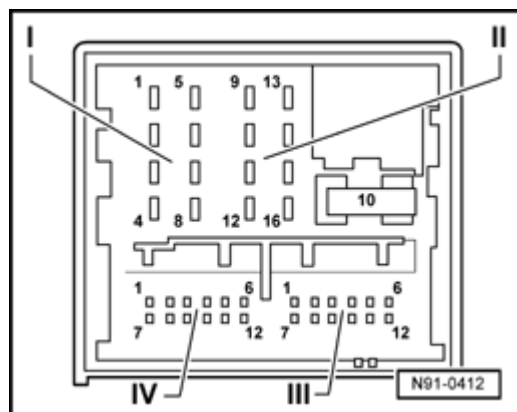
6 - Antenna connector

- ◆ Transparent
- ◆ Pin assignments
⇒ [Page 91-21](#)

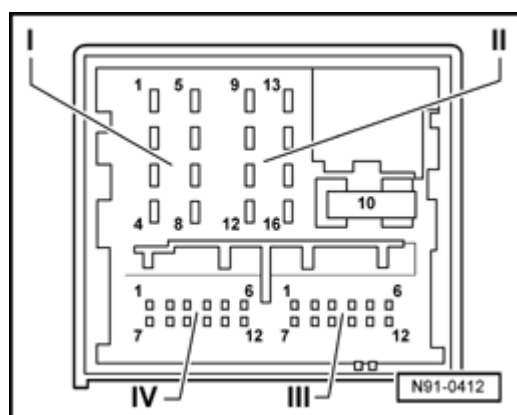
91-19

**Note:**

On "Premium VI - Sound I" systems, the following are outputs are input to the amplifier.

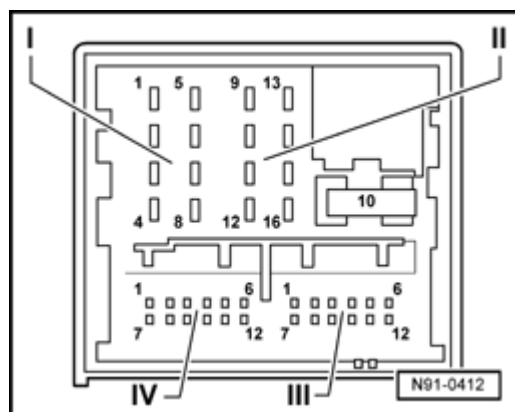
**Multi-pin connector I, 8-pin for loudspeaker output**

- 1 - Right rear speaker +
- 2 - Right front speaker +
- 3 - Left front speaker +
- 4 - Left rear speaker +
- 5 - Right rear speaker -
- 6 - Right front speaker -
- 7 - Left front speaker -
- 8 - Left rear speaker -

**Multi-pin connector II, 8-pin for power supply and CAN Bus**

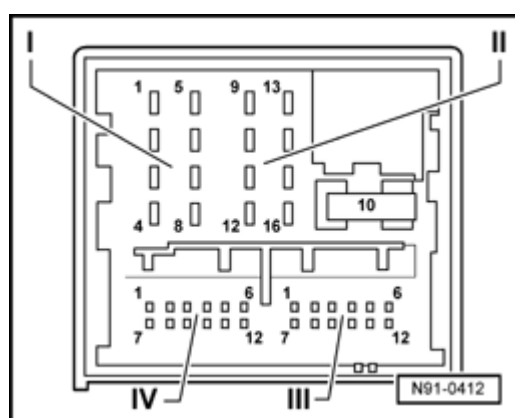
- 9 - CAN Bus - High
- 10 - CAN Bus - Low
- 11 - Telephone mute circuit
- 12 - Ground (GND) ((terminal 31))
- 13 - Connection for ignition key controlled switching on and off (S contact)
- 14 - Anti-theft alarm system contact
- 15 - Battery B+ (terminal 30)
- 16 - Anti-theft system control signal, SAFE (terminal 30)

91-20



Multi-pin connector III, 12-pin for line-out audio signals and Telephone (where applicable)

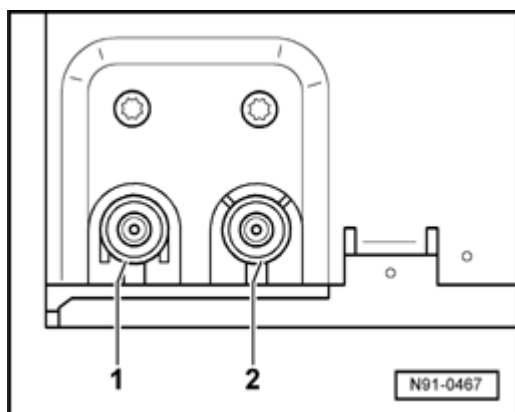
- 1 - 5 not assigned
- 6 - Telephone audio input -
- 7 - 11 not assigned
- 12 - Telephone audio input +



Multi-pin connector IV, for CD Changer control

- 1 - not assigned
- 2 - CD Changer, left and right channel, Ground (GND)
- 3 - not assigned
- 4 - CD Changer, terminal 30 voltage supply (+)
- 5 - not assigned
- 6 - CD Changer, bus DATA OUT (CD Changer control signal from radio to CD Changer)
- 7 - not assigned
- 8 - CD Changer, left channel, CD/L
- 9 - CD Changer, right channel, CD/R
- 10 - CD Changer, control signal
- 11 - CD Changer, bus DATA IN (CD Changer control signal from CD Changer to radio)
- 12 - CD Changer, bus CLOCK (internal check protocol that monitors data flow)

91-21



Connectors 5 and 6, antenna connections

1 - Transparent connection for antenna input signal, FM from antenna module

2 - Brown connection for antenna output signal FM to antenna module (diversity, antenna selection)

The antenna signal input from connection 1 is checked in the radio and the result sent via connection 2 to the antenna module. If the antenna signal is too weak, the module then switches to another antenna (diversity). This process is not audible to the customer.



Radio/Navigation system "Sound II"

General information

The optional, integrated Radio/Navigation system "Sound II" combines the Navigation system with a high quality RDS Radio/CD Player and 11 loudspeakers.

The "Double DIN" control head of the Radio/Navigation system consists of:

- ◆ an RDS radio receiver
- ◆ a 6.5 inch LCD color display
- ◆ a Navigation system with GPS satellite receiver
- ◆ a CD-ROM drive for Audio and Navigation system.
- ◆ a Traffic Message Channel (TMC) tuner (where applicable)

Audio is supplemented by a separate 400 watt amplifier mounted in the luggage compartment.

High, low and midrange loudspeakers are located in the front and rear doors. An additional loudspeaker is installed in the instrument panel.

Radios are protected with anti-theft security coding (fixed code). Additional information:

⇒ *Radio owner's manual*

When a music CD is being played in the CD ROM driver, only limited Navigation functions are possible.

**CAUTION!**

- ◆ ***Do not use 8 cm diameter "mini disks".
Should a "mini disk be inserted, it will not
eject and CD player damage will result.***
- ◆ ***Do not use CDs that contain a mix of
computer and music data.***

The optional CD Changer unit is located in the right side of the luggage compartment behind a removable access panel. Wiring from the radio unit to the CD Changer location is pre-wired in production.

The antenna system with diversity function is used to improve and optimize radio reception. This is achieved by using three separate, amplified antennas integrated into the rear window(s).

Notes:

- ◆ *Only factory approved accessory radios and radio equipment (available from Volkswagen of America, Inc.) should be installed. This ensures proper installation and optimum function.*
- ◆ *When retrofitting components, carrying out diagnosis or repairs ⇒Electrical Wiring Diagrams, Troubleshooting and Component Locations.*
- ◆ *For optimum Navigation system operation, the turn angle sensor in the unit relies on a specific installation orientation in relation to the vehicle. Always note the part number when exchanging equipment. Incorrect installation will lead to Navigation system malfunctions.*



- ◆ *In the event that devices (such as additional antennas) that use a magnetic mounting fixture are attached to the roof, the residual magnetization of the roof sheet metal will adversely affect the operation of the compass module. Before proceeding with any diagnosis of the compass module, ask customer if such a device is/was used.*

Before troubleshooting or servicing, technicians must be familiar with the functions and operation specifics of the Radio/Navigation system. Always read the owner's manual and review specific system functions.

Additional information:

⇒ *Self-Study Program - Course Number 89E303 "The Touareg"*

⇒ *Self-Study Program - Course Number 89J303 "The Touareg Electrical System Design and Function"*

CAUTION!

When disconnecting and reconnecting battery terminals, observe all applicable Notes and torque specifications, as well as instructions on performing OBD program and electrical system function checks as specified ⇒ [Repair Manual, Electrical Equipment, Repair Group 27](#) .

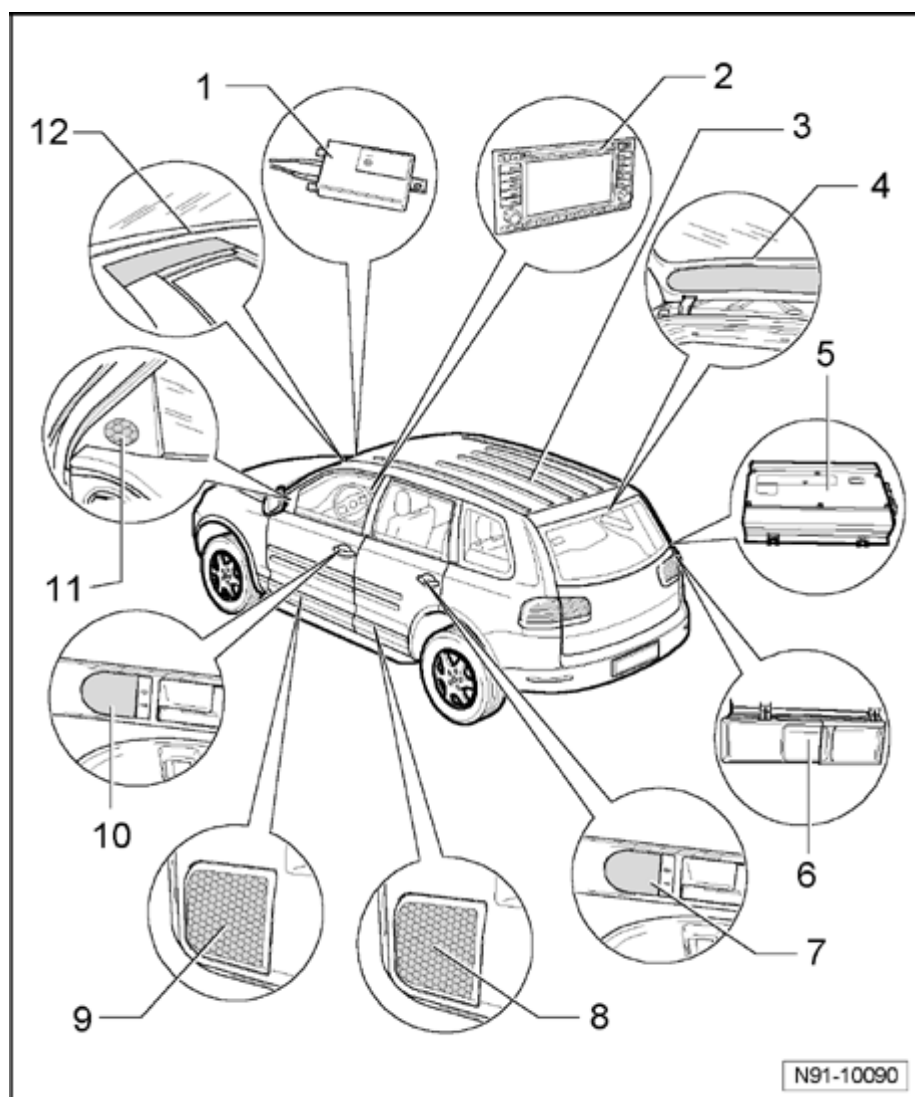
91-25



On Board Diagnostic (OBD)

The Radio/Navigation "Sound II" system has extensive On Board Diagnostic (OBD) capabilities.

In the event that malfunctions occur in the Radio/Navigation system, troubleshooting is performed using the VAS 5051 Vehicle Diagnostic Testing and Information System or VAS 5052 Vehicle Diagnostic and Service System in operating mode "Guided Fault Finding".



Radio/Navigation system "Sound II", component overview

1 Navigation System (GPS) Antenna -R50-, Radio/Telephone Antenna -R51-, Telephone/Radio Antenna Amplifier -R45-

◆ Integrated antenna/amplifier unit.

- ◆ In right front fender above headlight assembly

- ◆ Removing and installing
⇒ [Page 91-90](#).

2 Radio/Navigation Display Control Module -J503-

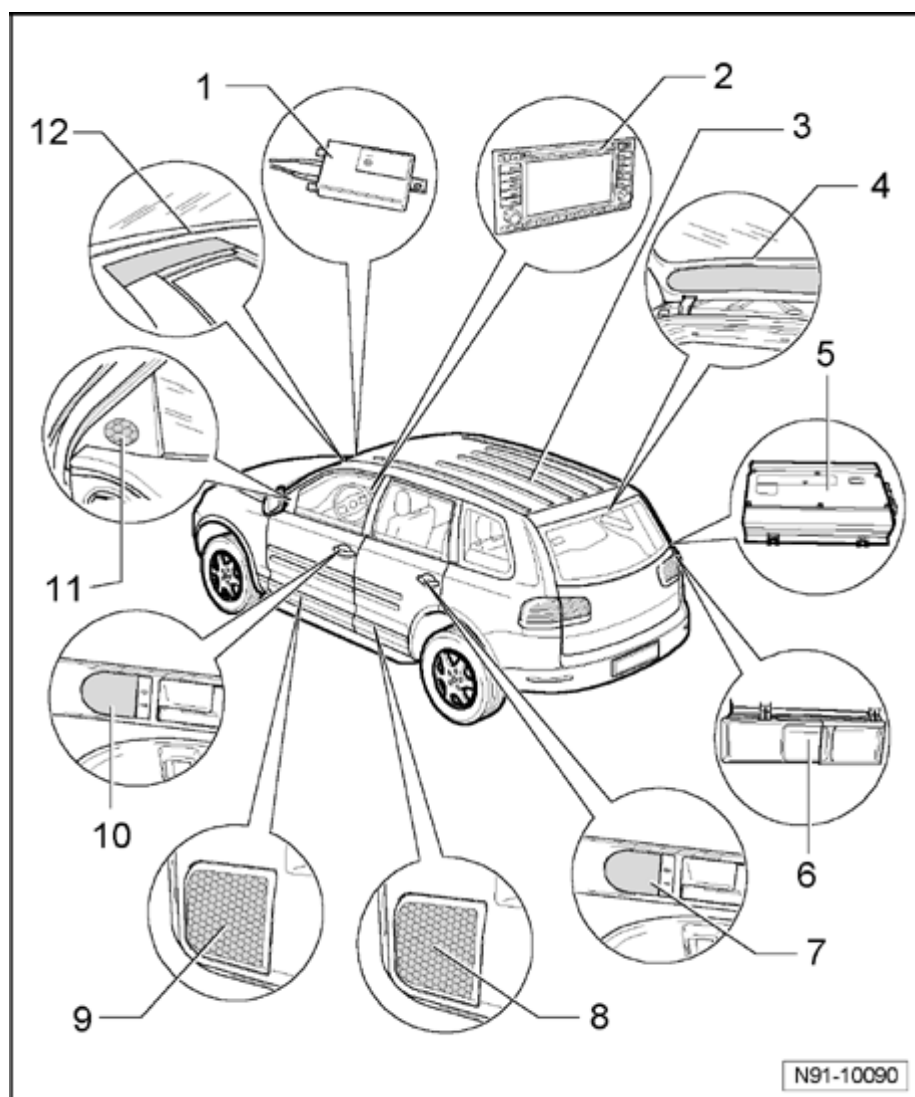
- ◆ In center console.
- ◆ Multi-pin connector assignments
⇒ [Page 91-33](#).
- ◆ Removing and installing
⇒ [Page 91-29](#).

3 - Antenna Selection Control Module -J515-

- ◆ Under rear molded

headlining.

◆ Removing
and installing
⇒ [Page 91-
88](#)



4 - Antenna Amplifier 2 - R111-, Antenna Amplifier 3 - R112-

- ◆ In upper part of rear lid.
- ◆ Removing and installing ⇒ [Page 91-83](#)

5 - Amplifier

- ◆ In right rear luggage compartment behind access panel.
- ◆ Removing and installing ⇒ [Page 91-57](#).

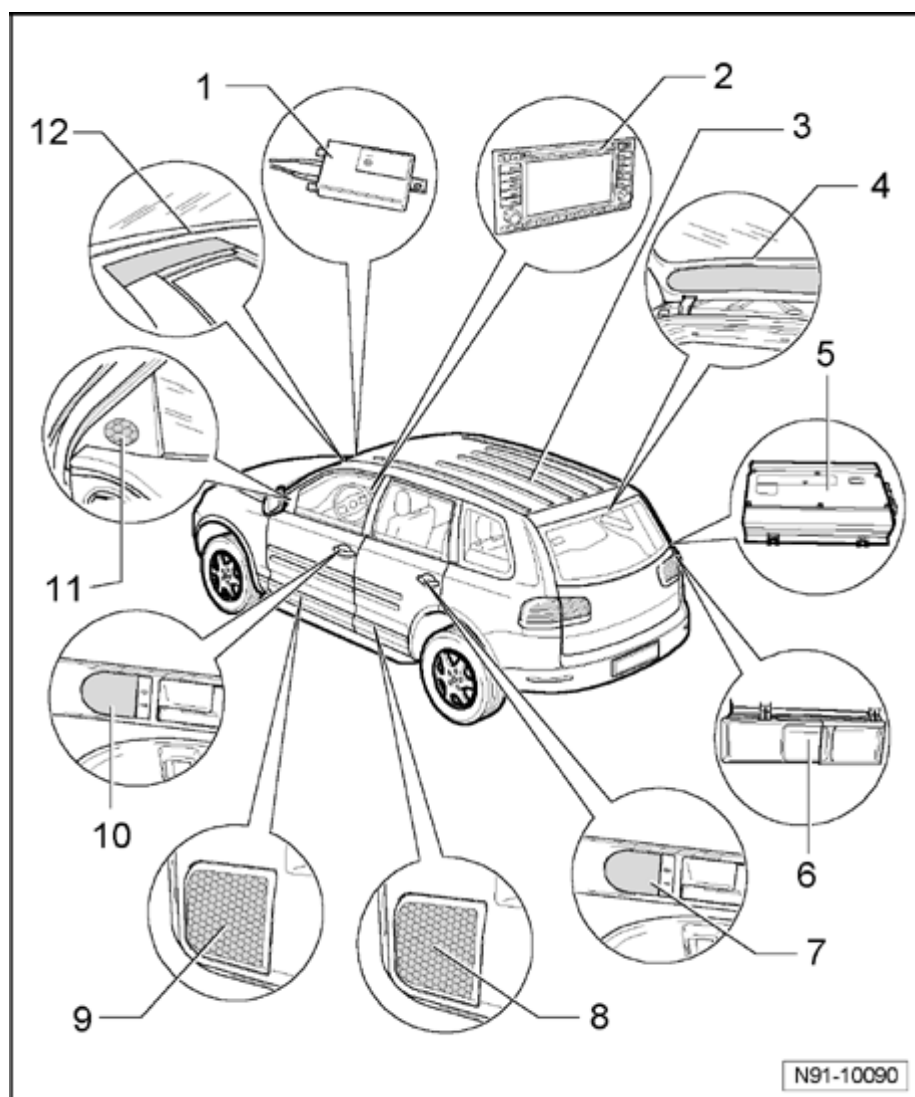
6 - CD Changer - R41-

- ◆ In right rear luggage compartment behind access panel.
- ◆ Removing and installing ⇒ [Page 91-61](#).

7 - Rear DSP Midrange Speakers - R105-, -R106-

- ◆ In rear doors by door handle trim.
- ◆ Removing

and installing
⇒ [Page 91-75](#) .



8 - Rear Bass Speakers - R15-, -R17-

- ◆ In lower rear door trim.
- ◆ Removing and installing ⇒ [Page 91-73](#).

9 - Front Bass Speakers - R21-, -R23-

- ◆ In lower front door trim.
- ◆ Removing and installing ⇒ [Page 91-69](#)

10 - Front DSP Midrange Speakers - R103-, -R104-

- ◆ In front door by door handle
- ◆ Removing and installing ⇒ [Page 91-71](#)

11 - Front Treble Speakers - R20-, -R22-

- ◆ In front door in mirror triangle
- ◆ Removing and installing ⇒ [Page 91-72](#)

12 - Center Mid/High Range

**Loudspeaker -
R158-**

- ◆ In center of instrument panel.
- ◆ Removing and installing
⇒ [Page 91-76](#) .



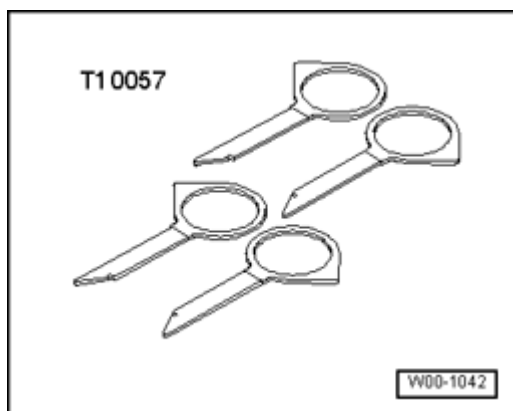
Radio/Navigation Display Control Module -J503-, removing and installing

Notes:

- ◆ *The replacement part number is printed on a sticker on the unit housing. Always confirm proper application.*
- ◆ *Before removing Radio - Radio/Navigation control head unit, obtain anti-theft security code from customer. If unit is replaced, ensure anti-theft security code is activated (see owner's manual). The new code number must be given to the customer.*
- ◆ *If a Radio/Navigation unit from a vehicle is installed into a different vehicle, it is essential that the part number of the replacement unit is the same as unit previously installed. Otherwise the Navigation system will malfunction due to turn angle sensor settings in the Radio/Navigation unit that are incompatible with the vehicle.*

Special tools, testers, and auxiliary items needed

- ◆ Recommended: Radio removal tool JC4225.
- ◆ Optional: T10057 Release tool
Two complete sets of release tool T10057 are required.



91-30

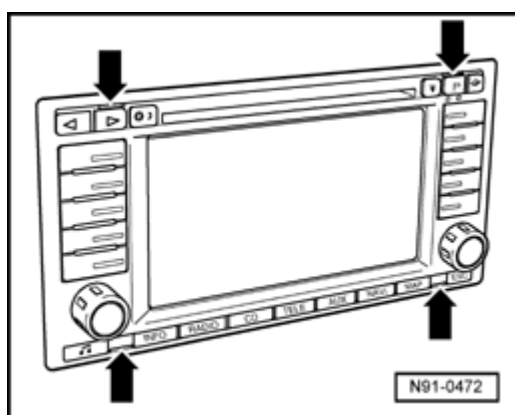


Removing

CAUTION!

Before beginning repairs on the electrical system:

- ♦ **Obtain the anti-theft radio security code.**
- ♦ **Remove any CDs which may have been left in CD player ⇒ operating instructions.**
- ♦ **Switch off all electrical consumers.**
- ♦ **Switch ignition off and remove ignition key.**

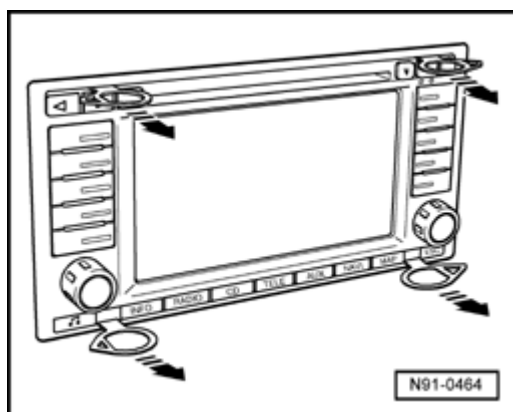


- Insert tools into openings in face of unit -arrows- until they engage.

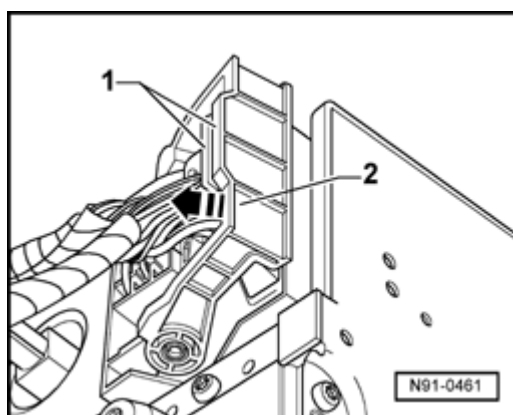
Note:

Use of separate tools T10057 is illustrated here. Procedure is essentially the same for tool JC4225 where all release prongs are integrated into a frame

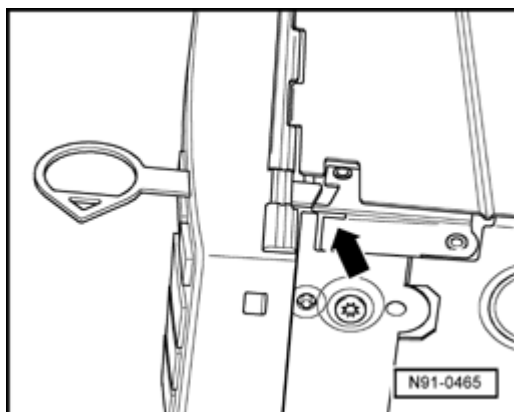
91-31



- Pull radio from instrument panel opening using handles on tools T10057 or frame of tool JC4225 -arrows- until electrical connections on rear of unit are accessible.



- Press connector locks -1- together and pull locking arm -2- upwards -arrow-.
- Release and separate remaining electrical connections.



- Press lock -arrow- and pull out release tool from unit.

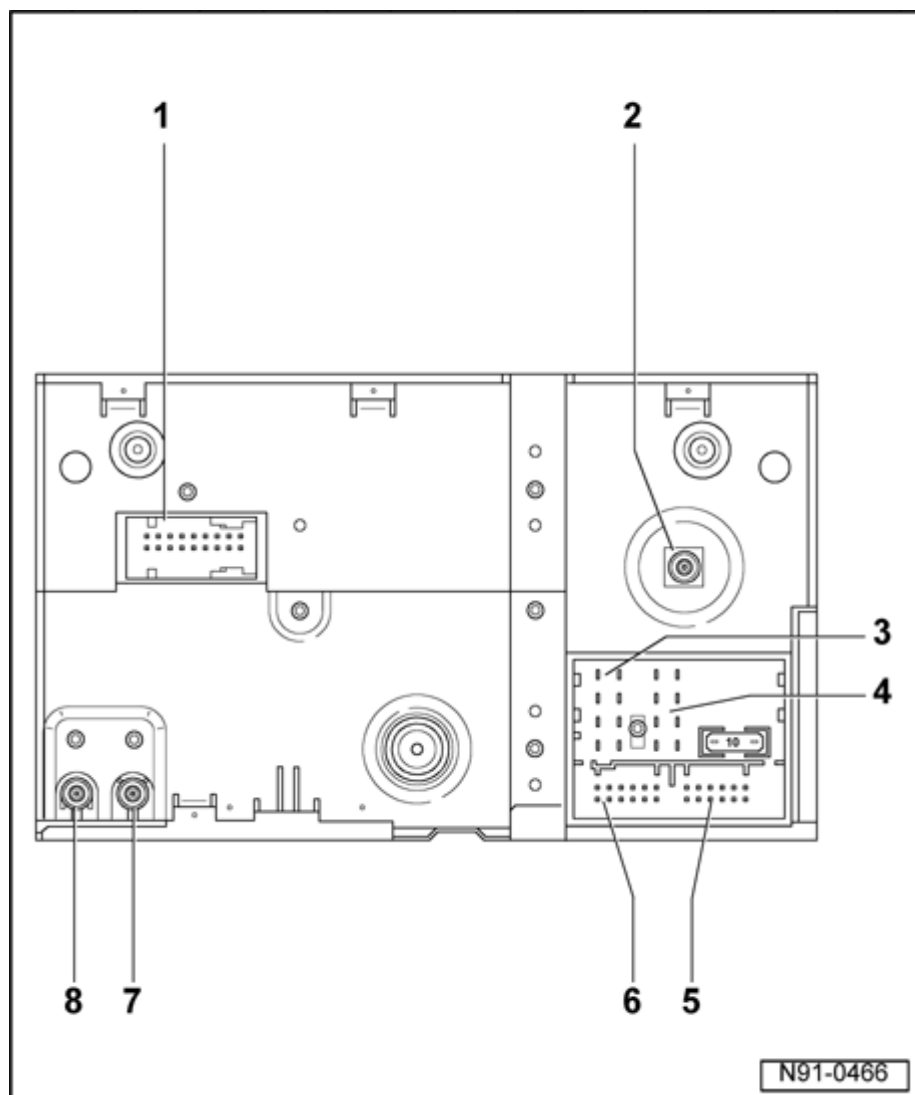
Installing

- Reconnect electrical connections and lock into position.
- Slide unit straight into instrument panel opening until it engages in assembly frame.

CAUTION!

In the event of a collision where occupants may make contact with interior trim, some interior knobs and buttons are designed to break away in a controlled manner in order to protect the occupant. When installing the radio unit, do not press on control buttons or display in order to engage locking tabs. Damage will result.

- Check operation, code or recode as necessary.
- Coding radio system in Radio/Navigation system ⇒ Adapting components, radio ⇒ [Page 91-5](#) .
- Coding Navigation system in Radio/Navigation system ⇒ Adapting components, Navigation system ⇒ [Page 91-3](#) .



Multi-pin connector assignments

Multi-pin connector assignments, overview

1 - Multi-pin connector 1, 18-pin

- ◆ Pin assignments ⇒ [Page 91-35](#).

2 - Connector 2

- ◆ Antenna connection for Navigation system antenna.
- ◆ Pin assignments ⇒ [Page 91-36](#).

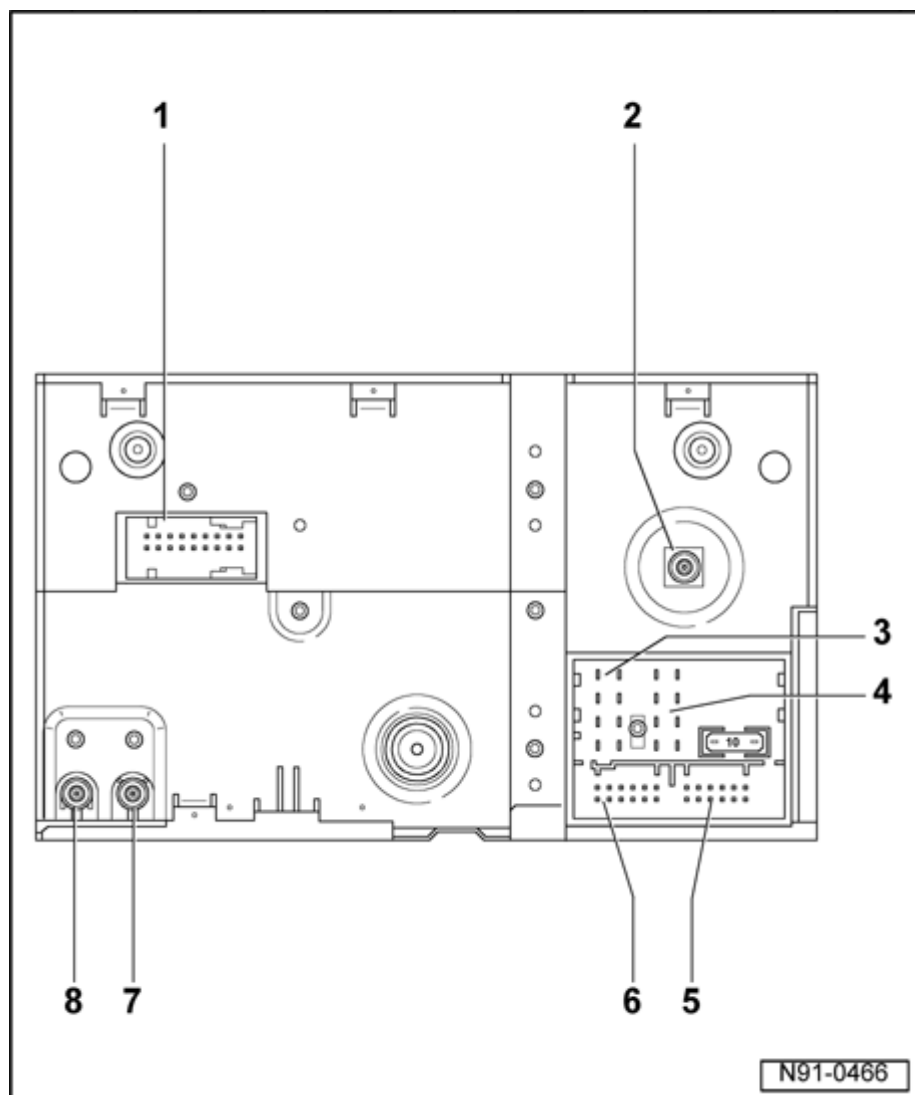
3 - Multi-pin connector 3, 8-pin

- ◆ Pin assignments ⇒ [Page 91-36](#).

4 - Multi-pin connector 4, 8-pin

- ◆ Pin assignments ⇒ [Page 91-37](#).

91-34

**5 - Multi-pin connector 5, 12-pin**

- ◆ Pin assignments
⇒ [Page 91-38](#).

6 - Multi-pin connector 6, 12-pin

- ◆ Pin assignments
⇒ [Page 91-38](#).

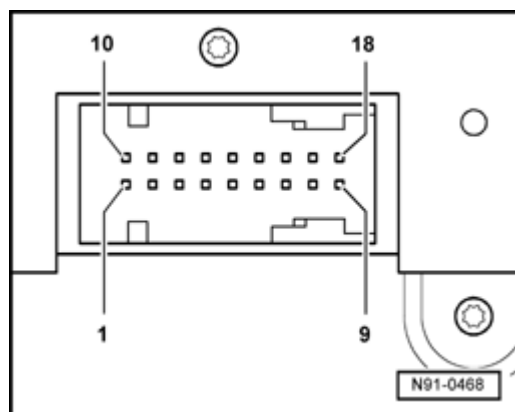
7 - Connector 7

- ◆ Antenna connection
- ◆ Pin assignments
⇒ [Page 91-39](#).

8 - Connector 8

- ◆ Antenna connection
- ◆ Pin assignments
⇒ [Page 91-39](#).

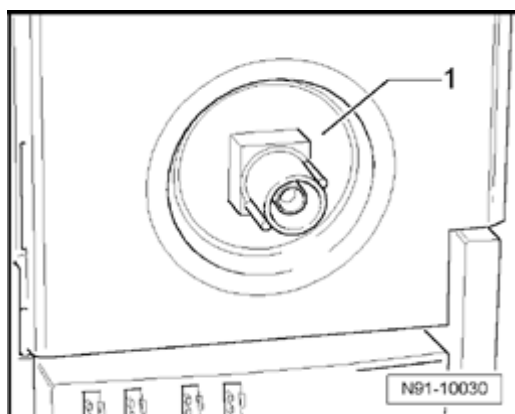
91-35



Multi-pin connector 1, 18-pin for video and low frequency input (where applicable)

- 1 - not assigned
- 2 - Audio signal Ground (GND)
- 3 - Audio signal Ground (GND)
- 4 - Screening Ground (GND)
- 5 - Video signal Ground (GND)
- 6 - Video switch signal
- 7 - Video signal Ground (GND)
- 8 - Video signal Ground (GND)
- 9 - Video signal Ground (GND)
- 10 - not assigned
- 11 - Audio signal, left
- 12 - Audio signal, right
- 13 - Screening Ground (GND)
- 14 - Vertical and horizontal picture signal
- 15 - 50 Hertz/ 60 Hertz
- 16 - Blue picture signal input (Video)
- 17 - Green picture signal input (Video)
- 18 - Red picture signal input (Video)

91-36

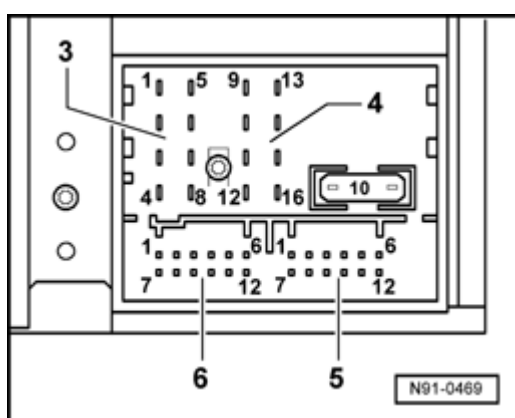


Connector 2

1 - Violet antenna cable connection - Navigation (GPS) antenna input signal.

Note:

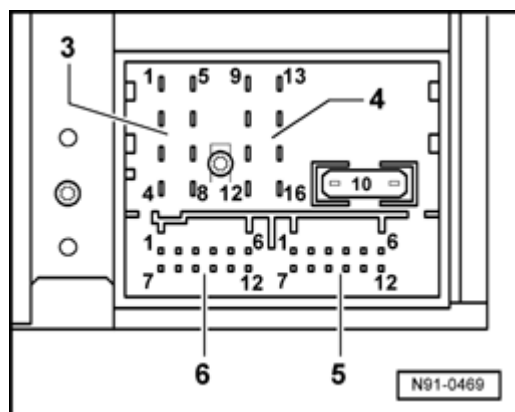
On "Premium VI - Sound I" systems, the following are outputs are input to the amplifier.



Multi-pin connector 3, 8-pin for loudspeaker output

- 1 - Right rear speaker +
- 2 - Right front speaker +
- 3 - Left front speaker +
- 4 - Left rear speaker +
- 5 - Right rear speaker -
- 6 - Right front speaker -
- 7 - Left front speaker -
- 8 - Left rear speaker -

91-37



Multi-pin connector 4, 8-pin for power supply and CAN Bus

9 - CAN Bus - High

10 - CAN Bus - Low

11 - Telephone mute circuit

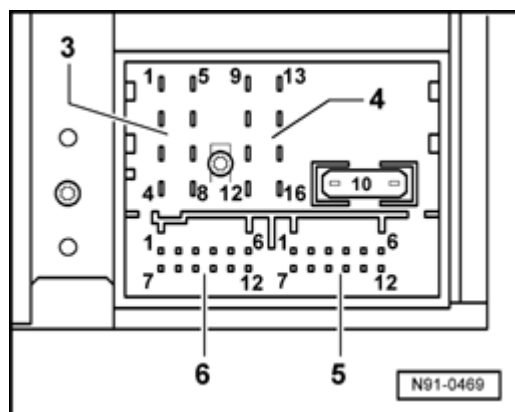
12 - Ground (GND) ((terminal 31))

13 - Connection for ignition key controlled switching on and off (S contact)

14 - Anti-theft alarm system contact

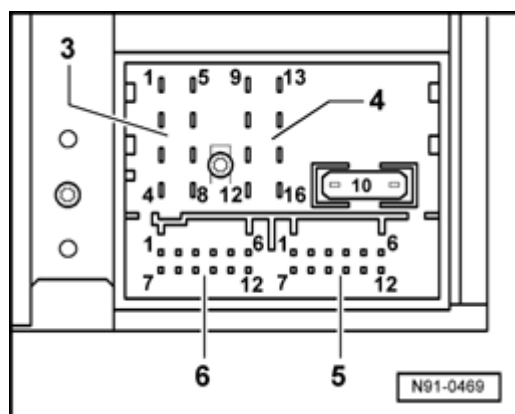
15 - Battery + (B+ - terminal 30)

16 - Anti-theft system control signal, SAFE (terminal 30)



Multi-pin connector 5, 12-pin for telephone signal pre-amplifier output signal (where applicable)

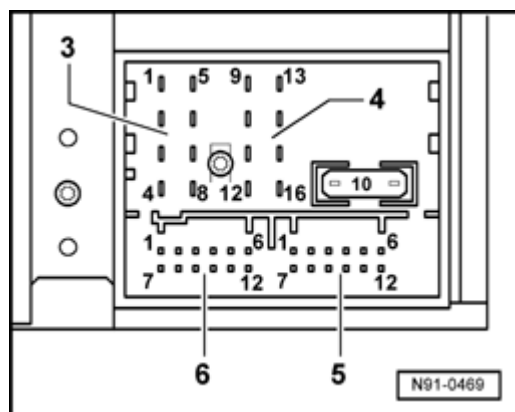
- 1 - External audio input, left
- 2 - External audio input, Ground (GND)
- 3 - Line out. left
- 4 - not assigned
- 5 - Navigation instructions Nf +
- 6 - Telephone input signal, TEL-
- 7 - External audio input, right
- 8 - Line out, Ground (GND)
- 9 - Line out, right
- 10 - not assigned
- 11 - Navigation instructions Nf -
- 12 - Telephone input signal, TEL+



Multi-pin connector 6, 12-pin for CD Changer control and CD audio input signal

- 1 - Right headphone audio output + (where applicable)
- 2 - CD Changer, left and right channel, Ground (GND)
- 3 - Headphone audio output - (where applicable)
- 4 - CD Changer, terminal 30 voltage supply (+)
- 5 - Left headphone audio output + (where applicable)

91-39



6 - CD Changer, bus DATA OUT (CD Changer control signal from radio to CD Changer)

7 - not assigned

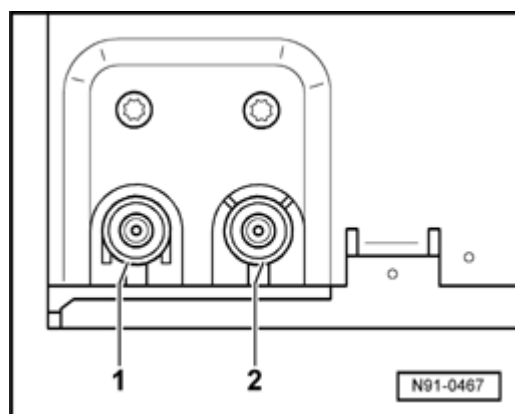
8 - CD Changer, left channel, CD/L

9 - CD Changer, right channel, CD/R

10 - CD Changer, control signal

11 - CD Changer, bus DATA IN (CD Changer control signal from CD Changer to radio)

12 - CD Changer, bus CLOCK (internal check protocol that monitors data flow)



Connectors 7 and 8, antenna connections

1 - Transparent connection for antenna input signal, FM from antenna module

2 - Brown connection for antenna output signal FM to antenna module (diversity, antenna selection)

The antenna signal input from connection 1 is checked in the radio and the result sent via connection 2 to the antenna module. If the antenna signal is too weak, the module then switches to another antenna (diversity). This process is not audible to the customer.



Compass

General information

Compass functions are supported by the Vehicle Position Recognition Control Module -J603- and controlled/displayed via the Roof Display Unit - J702- installed in the forward molded headlining.

-J702- function overview:

- ◆ Compass display
- ◆ Auxiliary heater (where applicable)
- ◆ Clock display
- ◆ Telematics (OnStar®) control buttons (where applicable)

The roof display unit operating mode is set with the buttons on the display unit.

The compass display indicates the current vehicle direction in a maximum of eight compass indications. Eg.: "N" = North, "NW" = North West etc..

91-41

**Note:**

In the event that devices (such as additional antennas) that use a magnetic mounting fixture are attached to the roof, the residual magnetization of the roof sheet metal will adversely affect the operation of the compass module. Before proceeding with any diagnosis of the compass module, ask customer if such a device is/was used.

Before troubleshooting or servicing, technicians must be familiar with the functions and operation specifics of the Compass. Always read the owner's manual and review specific system functions.

Additional information (E.g.: calibrating compass):

⇒ *Owner's Manual*

CAUTION!

When disconnecting and reconnecting battery terminals, observe all applicable Notes and torque specifications, as well as instructions on performing OBD program and electrical system function checks as specified ⇒ [Repair Manual, Electrical Equipment, Repair Group 27](#) .

91-42



On Board Diagnostic (OBD)

The Compass system has extensive OnBoard Diagnostic (OBD) capabilities.

In the event that malfunctions occur in the compass system, troubleshooting is performed using the VAS 5051 Vehicle Diagnostic Testing and Information System or VAS 5052 Vehicle Diagnostic and Service System in operating mode "Guided Fault Finding".

91-43



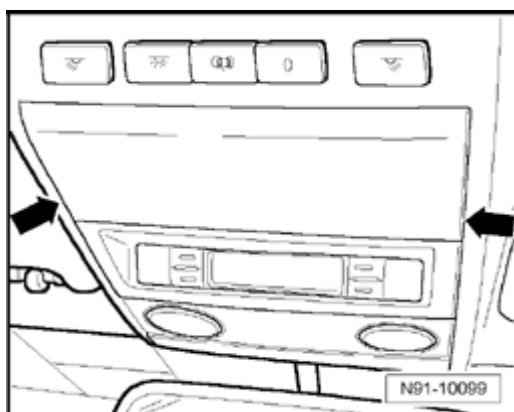
Roof Display Module -J702-, removing and installing

Removing

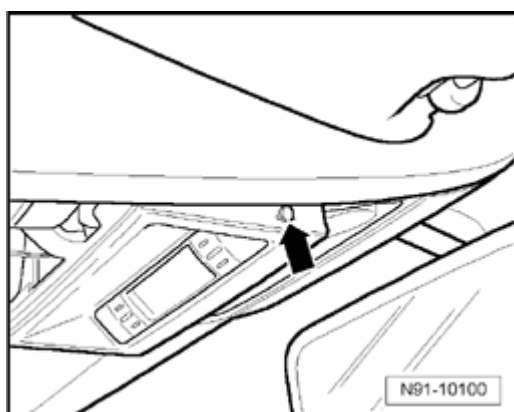
CAUTION!

Before beginning repairs on the electrical system:

- ♦ **Switch off all electrical consumers.**
- ♦ **Switch ignition off and remove ignition key.**

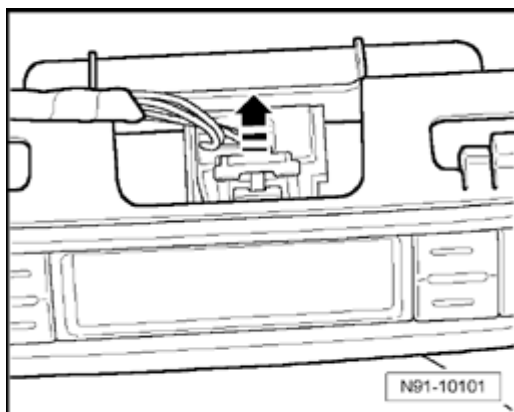


- Using appropriate screwdriver, carefully unclip rear portion of roof console trim from areas indicated with -arrows-.

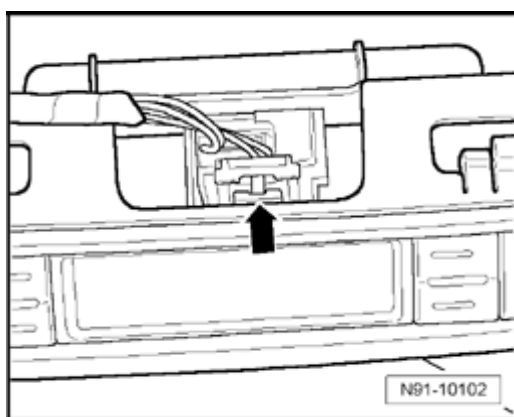


- Using appropriate screwdriver, carefully unclip both sides of display unit in area indicated with -arrow-.

91-44



- Unclip and pull up red connector lock in direction of -arrow-.



- Lift connector lock in direction of -arrow- and disconnect electrical connection.

Installing

- Install in reverse order of removal.



Vehicle Position Recognition Control Module -J603-, removing and installing

Removing

CAUTION!

Before beginning repairs on the electrical system:

- ♦ ***Switch off all electrical consumers.***
- ♦ ***Switch ignition off and remove ignition key.***

- Remove molded headling

⇒ [Repair Manual, Body Interior, Repair Group 70](#)

- Unclip control module with bracket from roof support.
- Disconnect electrical connections.

Installing

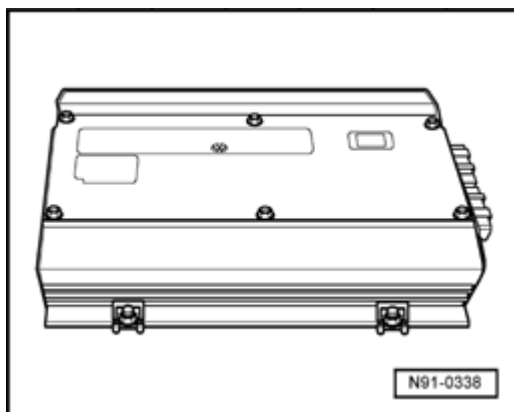
- Install in reverse order of removal.
- Calibrate compass system

⇒ *Owner's Manual*



Amplifier for Radio Systems "Sound I" & Sound II"

General information



Speakers for the optional radio system "Premium VI - Sound I" and Radio/Navigation system "Sound II" are powered by an external amplifier.

Amplifiers for "Sound I" and "Sound II" are specific to each system and cannot be interchanged.

"Sound I" amplifier: 8-channel - analog control between radio head unit and amplifier.

"Sound II" amplifier: 12 channel - digital control between radio head unit and amplifier via CAN Bus using Digital Sound Processing (DSP) technology.

Amplifier is installed in right rear luggage compartment behind access flap.

Amplifier, removing and installing ⇒
[Page 91-57](#) .

91-47



Before troubleshooting or servicing, technicians must be familiar with the functions and operation specifics of the Radio/amplifier system. Always read the owner's manual and review specific system functions.

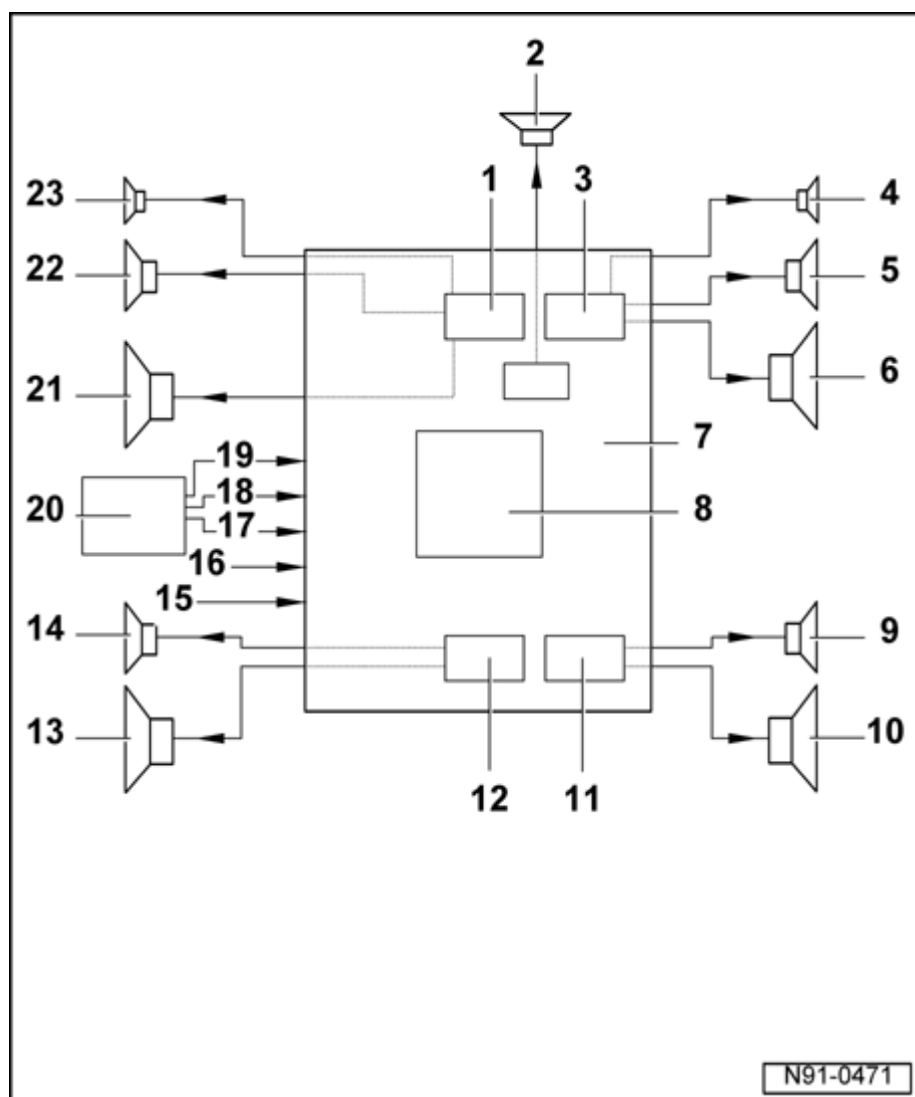
Additional information:

⇒ *Self-Study Program - Course Number 89E303 "The Touareg"*

⇒ *Self-Study Program - Course Number 89J303 "The Touareg Electrical System Design and Function"*

CAUTION!

When disconnecting and reconnecting battery terminals, observe all applicable Notes and torque specifications, as well as instructions on performing OBD program and electrical system function checks as specified ⇒ [Repair Manual, Electrical Equipment, Repair Group 27](#) .



Sound systems, layout

1 - Amplifier - Left front speaker end stage

2 - Center loudspeaker

◆ In instrument panel, center

◆ Functions as "center channel"

3 - Amplifier - Right front speaker end stage

4 - Right front treble speaker

5 - Right front DSP midrange speaker

6 - Right front bass speaker

7 - Amplifier

◆ "Premium VI - Sound I" pin assignments ⇒ [Page 91-51](#) .

◆ Radio/Navigation "Sound II" pin assignments ⇒ [Page 91-54](#) .

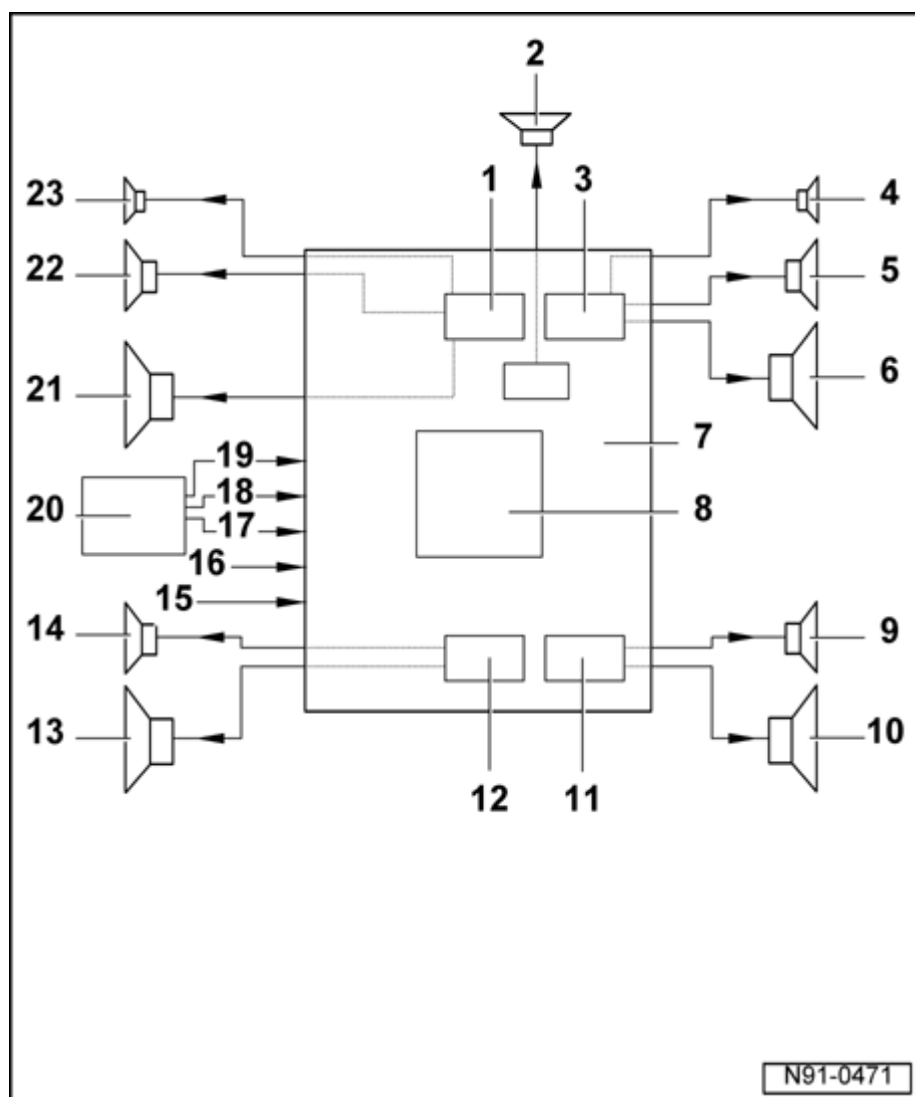
8 - Source mixer

◆ Volume, balance & fader

◆ High, midrange &

low
frequencies

91-49



9 - Right rear
DSP midrange
speaker

10 - Right rear
bass speaker

11 - Amplifier -
right rear
speaker end
stage

12 - Amplifier - left
rear speaker
end stage

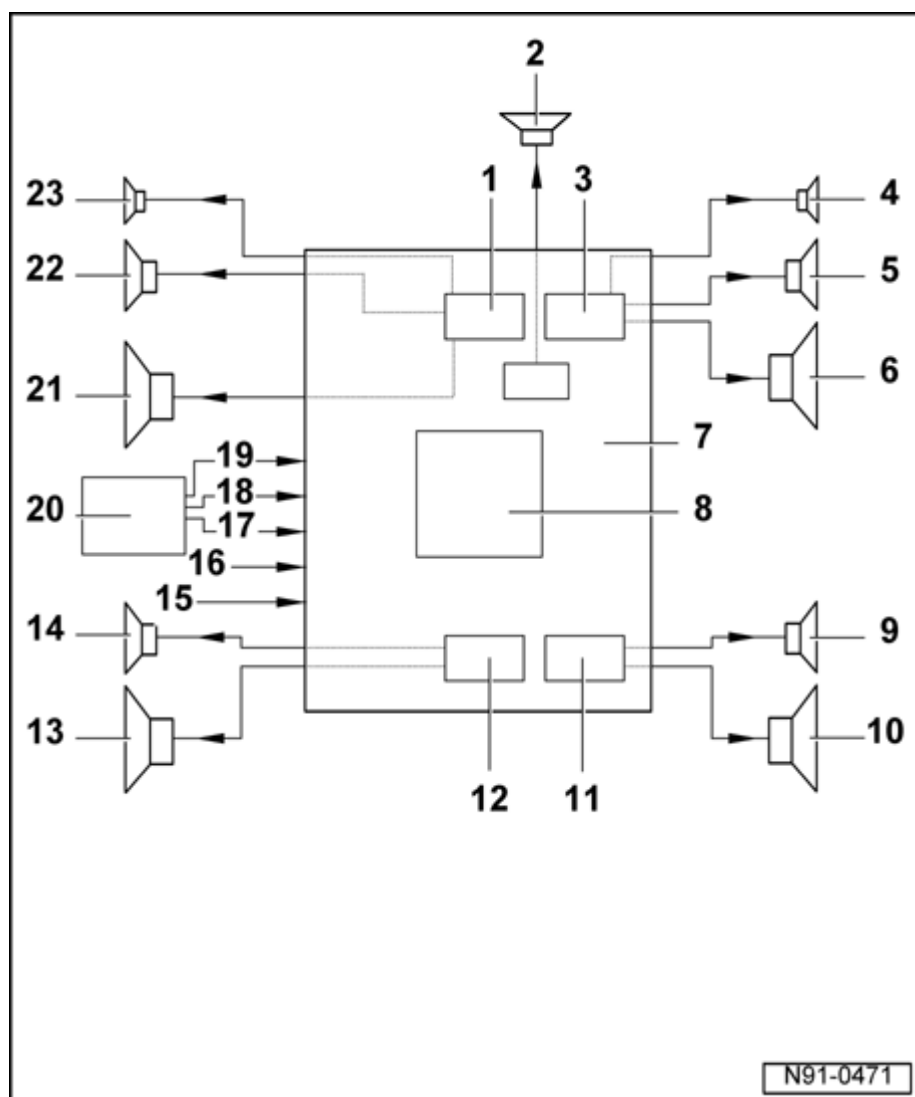
13 - Left rear bass
speaker

14 - Left rear DSP
midrange
speaker

15 - CAN Bus (for
OBD)

16 - Mono speech
input (for
Navigation -
where
applicable)

91-50



17 - Telephone
input (where
applicable)

18 - Audio input -
right

19 - Audio input -
left

20 Radio -
- Radio/Navigation
system

21 - Left front bass
speaker

22 - Left front DSP
midrange
speaker

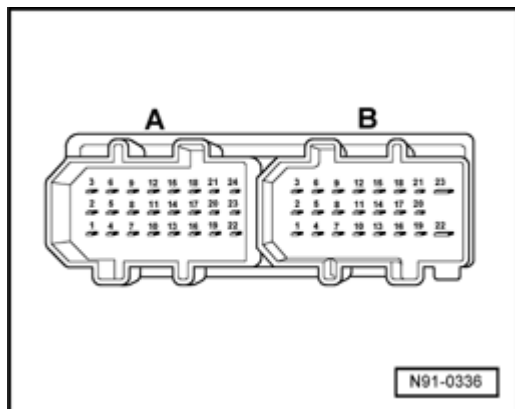
23 - Left front
treble speaker



Amplifier for "Sound I", multi-pin connector assignments

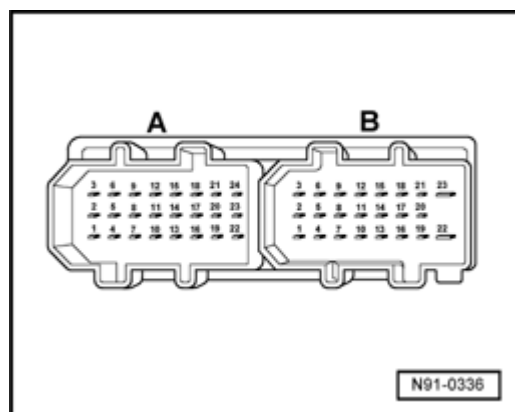


Multi-pin connector A, 24-pin

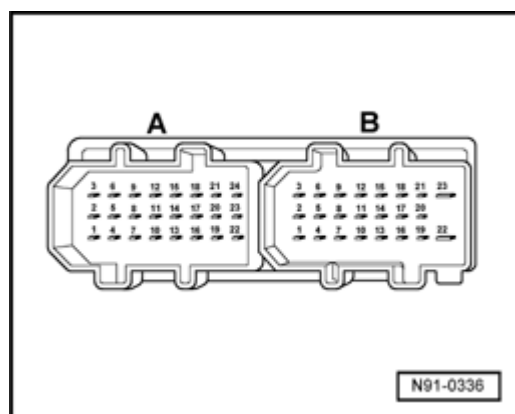


- 1 - Left rear midrange speaker +
- 2 - Right rear bass speaker +
- 3 - Right rear bass speaker -
- 4 - Left rear bass speaker +
- 5 - Right rear midrange speaker -
- 6 - Right rear midrange speaker +
- 7 - Left rear midrange speaker -
- 8 - not assigned
- 9 - not assigned
- 10 - Left rear bass speaker -
- 11 - Center speaker +
- 12 - Center speaker -

91-52



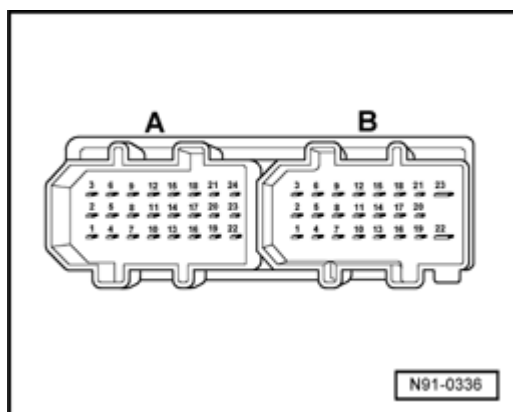
- 13 - not assigned
- 14 - Left rear audio input -
- 15 - Left rear audio input +
- 16 - not assigned
- 17 - Right rear audio input -
- 18 - Right rear audio input +
- 19 - Control in
- 20 - Left front audio input -
- 21 - Left front audio input +
- 22 - not assigned
- 23 - Right front audio input -
- 24 - Right front audio input +



Multi-pin connector B, 23-pin

- 1 - CAN Bus - Low
- 2 - Left front bass speaker -
- 3 - Left front bass speaker +
- 4 - CAN Bus - High
- 5 - Left front treble speaker -
- 6 - Left front midrange speaker +
- 7 - not assigned
- 8 - Left front treble speaker +
- 9 - Left front midrange speaker
- 10 - not assigned

91-53



- 11 - Right front bass speaker +
- 12 - Right front bass speaker -
- 13 - not assigned
- 14 - Right front treble speaker +
- 15 - Right front midrange speaker -
- 16 - Ground (GND) (terminal 31)
- 17 - Right front treble speaker -
- 18 - Right front midrange speaker +
- 19 - Ground (GND) (terminal 31)
- 20 - Power supply - Battery B+ (terminal 30)
- 21 - Power supply - Battery B+ (terminal 30)
- 22 - Ground (GND) (terminal 31)
- 23 - Power supply - Battery B+ (terminal 30)

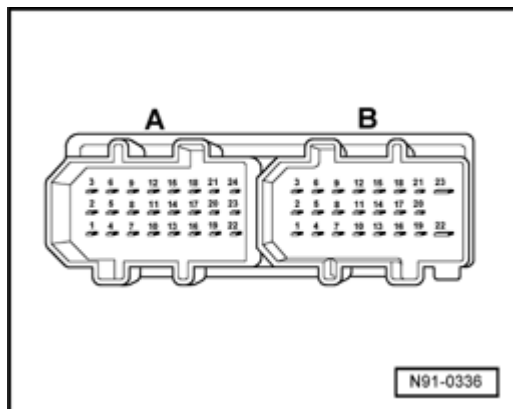
91-54



Amplifier for "Sound II", multi-pin connector assignments

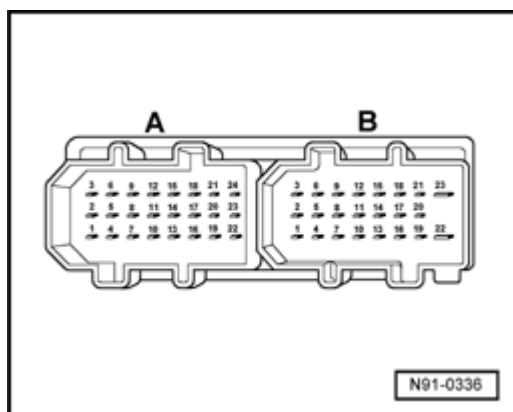


Multi-pin connector A, 24-pin

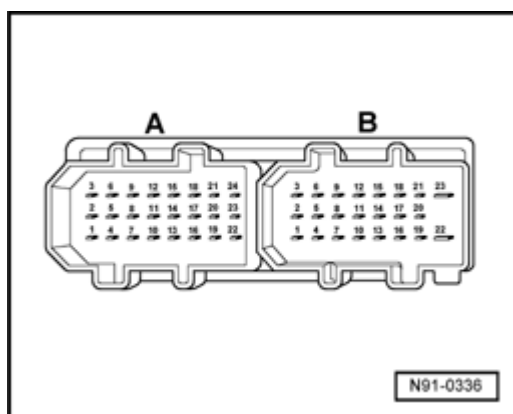


- 1 - Center speaker +
- 2 - Center speaker -
- 3 - not assigned
- 4 - Right rear midrange speaker -
- 5 - Right rear midrange speaker +
- 6 - not assigned
- 7 - Left rear midrange speaker -
- 8 - Left rear midrange speaker +
- 9 - Left front midrange speaker -
- 10 - Left audio input +
- 11 - Right audio input +
- 12 - Left front midrange speaker +

91-55



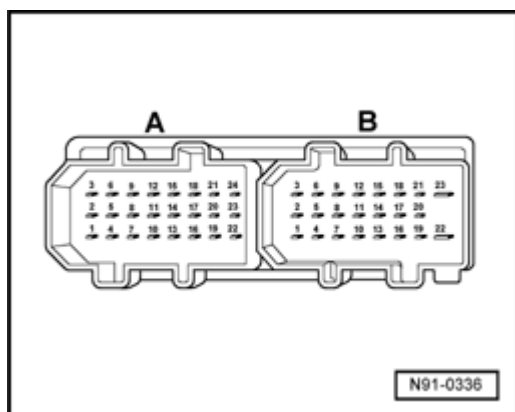
- 13 - Left/Right audio input (Ground)
- 14 - Audio input - Navigation -
- 15 - Right front midrange speaker -
- 16 - CAN Bus - High
- 17 - Audio input - Navigation +
- 18 - Right front midrange speaker +
- 19 - CAN Bus - Low
- 20 - not assigned
- 21 - Left front treble speaker +
- 22 - Right rear bass speaker -
- 23 - Right front treble speaker +
- 24 - Left front treble speaker -



Multi-pin connector B, 23-pin

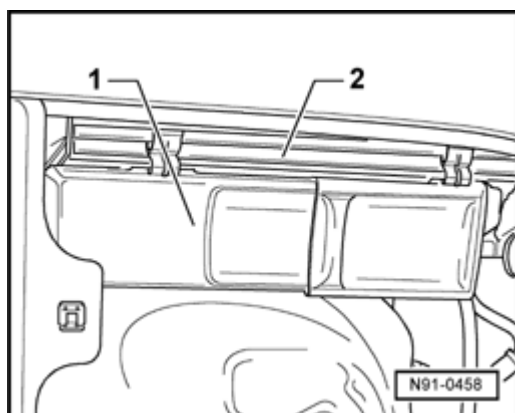
- 1 - Right rear bass speaker +
- 2 - Right front treble speaker -
- 3 - Left rear bass speaker -
- 4 - not assigned
- 5 - Telephone audio input - (where applicable)
- 6 - Left rear bass speaker +
- 7 - not assigned
- 8 - not assigned
- 9 - Right front bass speaker +
- 10 - not assigned

91-56



- 11 - not assigned
- 12 - Right front bass speaker -
- 13 - not assigned
- 14 - not assigned
- 15 - Left front bass speaker +
- 16 - Ground (GND) (terminal 31)
- 17 - not assigned
- 18 - Left front bass speaker -
- 19 - Ground (GND) (terminal 31)
- 20 - Power supply - Battery B+ (terminal 30)
- 21 - Power supply - Battery B+ (terminal 30)
- 22 - Ground (GND) (terminal 31)
- 23 - Power supply - Battery B+ (terminal 30)

91-57



Amplifier, removing and installing



Installation location: luggage compartment, right

1 - CD Changer

2 - Amplifier for sound system

Removing

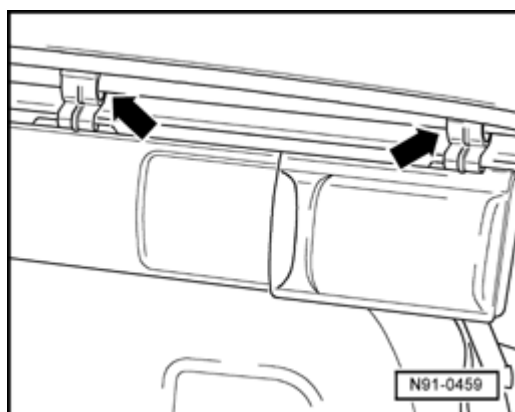
CAUTION!

Before beginning repairs on the electrical system:

- ♦ **Switch off all electrical consumers.**
- ♦ **Switch ignition off and remove ignition key.**

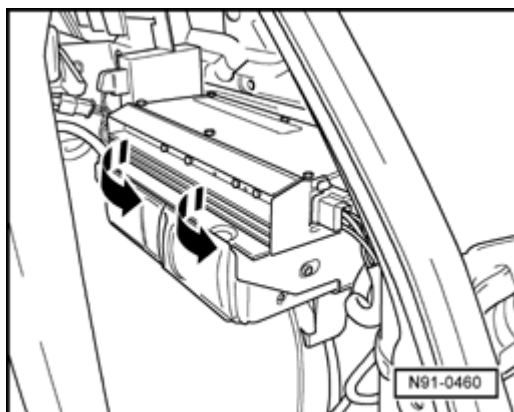
- Remove luggage compartment trim, right.

⇒ [Repair Manual, Body Interior; Repair Group 70](#)

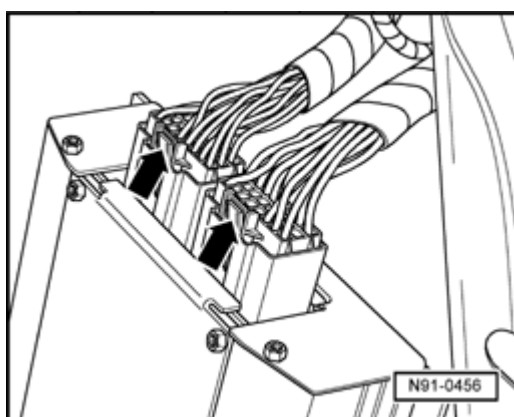


- Remove clips -arrows-.

91-58



- Pull out amplifier in direction of -arrow-.



- Unlock electrical connections -arrows- on amplifier and disconnect.

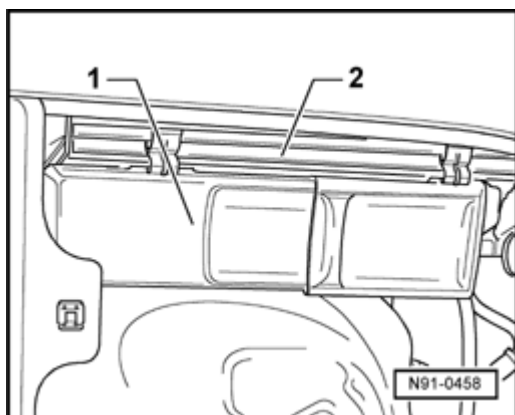
Installing

Install in reverse order of removal.



CD Changer

General information



Installation location: luggage compartment, right

1 - CD Changer

2 - Amplifier for sound system

Notes:

- ◆ If the CD Changer plays commercially available CDs, but not home recorded CDs, the CD Changer is not malfunctioning. Replacement/exchange of CD Changer is not warranted for this reason.
- ◆ Radio - Radio/Navigation control head must be coded in order to support CD changer functions. After installing new CD unit, input appropriate coding using adaptation function with VAS 5051 ⇒ [Page 91-5](#).

CD Changer, removing and installing ⇒ [Page 91-61](#).

CAUTION!

- ◆ Do not use 8 cm diameter "mini disks". Should a "mini disk be inserted, it will not eject and CD player damage will result.
- ◆ Do not use CDs that contain a mix of computer and music data.

91-60



Before troubleshooting or servicing, technicians must be familiar with the functions and operation specifics of the CD Changer system. Always read the owner's manual and review specific system functions.

Additional information:

⇒ *Self-Study Program - Course Number 89E303 "The Touareg"*

⇒ *Self-Study Program - Course Number 89J303 "The Touareg Electrical System Design and Function"*

CAUTION!

When disconnecting and reconnecting battery terminals, observe all applicable Notes and torque specifications, as well as instructions on performing OBD program and electrical system function checks as specified ⇒ [Repair Manual, Electrical Equipment, Repair Group 27](#) .

91-61



CD Changer, removing and installing

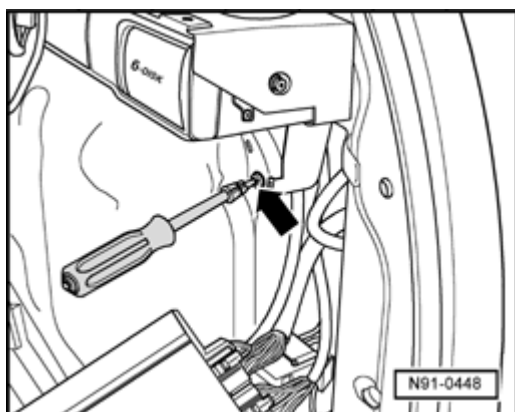
Removing

CAUTION!

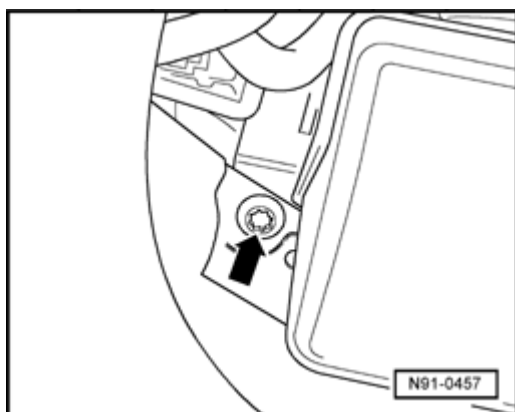
Before beginning repairs on the electrical system:

- ♦ **Switch off all electrical consumers.**
- ♦ **Switch ignition off and remove ignition key.**

- Open right luggage compartment storage compartment.

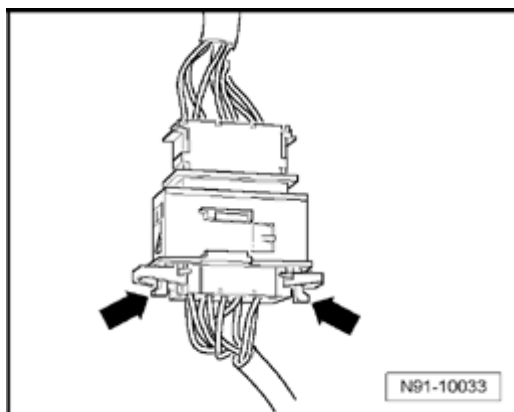


- Remove screw -arrow-.



- Remove screw -arrow-.

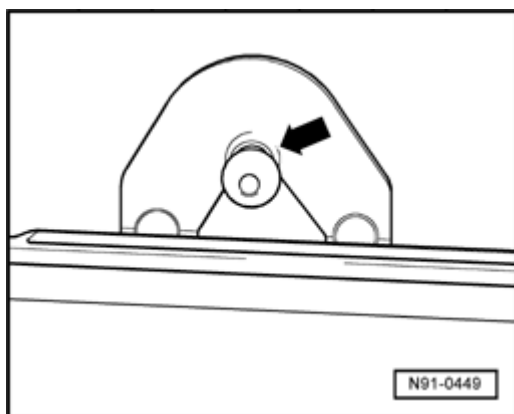
91-62



- Depress connector locking tabs -arrows- and separate electrical connection.
- Remove CD Changer complete with bracket
- Where necessary, remove CD Changer from bracket ⇒ [Page 91-63](#) .

Installing

- Reconnect electrical connection.



Ensure rear section of bracket is pushed onto guide -arrow-.

Remaining installation is in reverse order of removal.

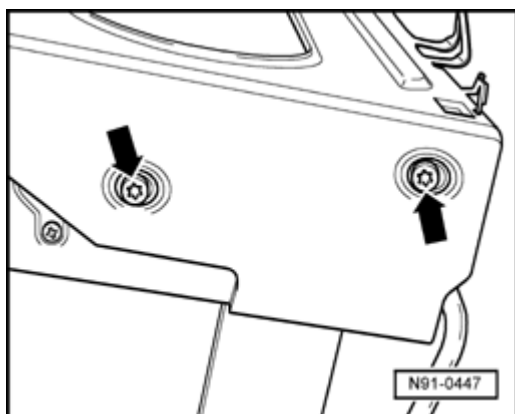
91-63



CD Changer, removing from bracket

Removing

With CD Changer and bracket removed from vehicle:



- Remove screws -arrows- from both sides of bracket.
- Remove CD Changer from bracket.

Installing

Install in reverse order of removal.



Loudspeaker system

General information

Notes:

- ◆ *The loudspeakers on the standard "Premium VI" radio systems are powered directly by the radio head unit.*
- ◆ *The loudspeakers on the optional "Premium VI - Sound I" and Radio/Navigation "Sound II" systems are powered by a separate high power amplifier, and are supplemented by an additional center loudspeaker.*
- ◆ *The loudspeaker system consists of a 3-way system with 3 speakers in each front door as well as a 2-way system with 2 speakers in each rear door.*
- ◆ *All loudspeakers are passive design.*

91-65



Before troubleshooting or servicing, technicians must be familiar with the functions and operation specifics of the Radio system. Always read the owner's manual and review specific system functions.

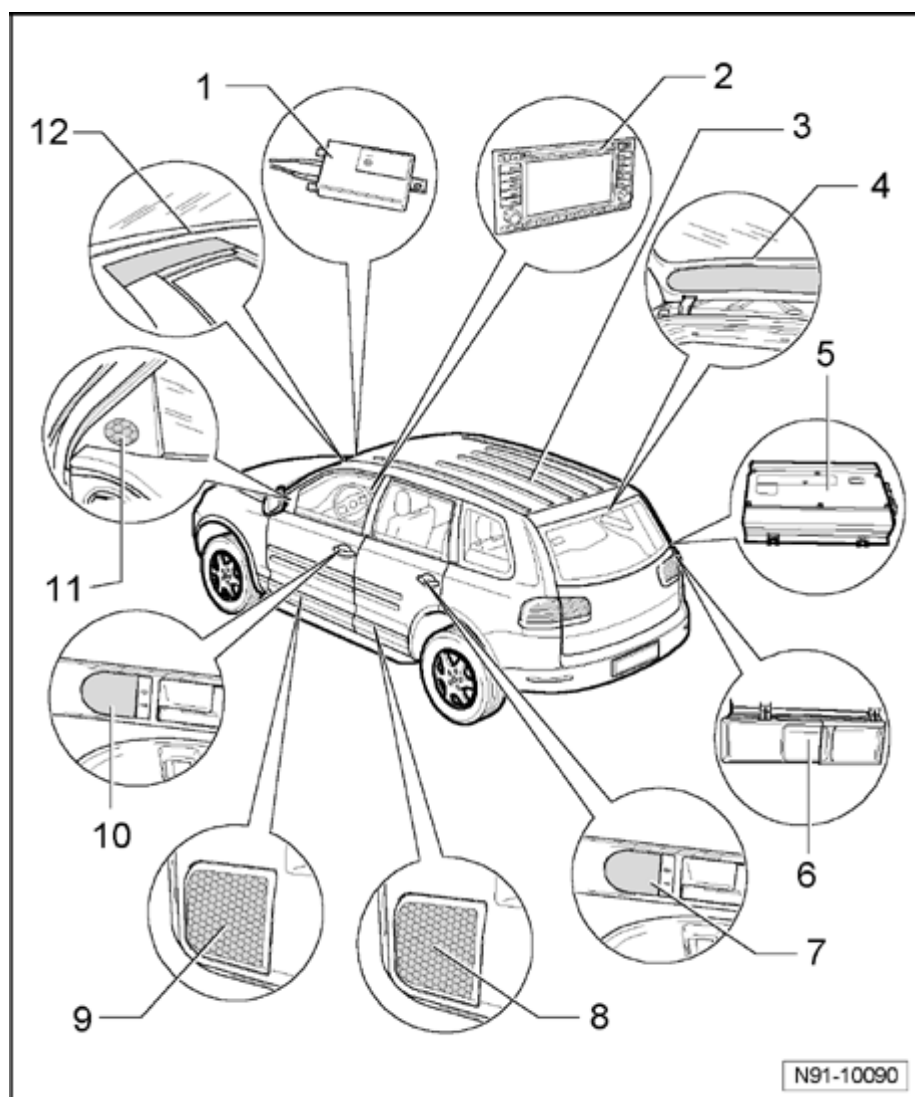
Additional information:

⇒ *Self-Study Program - Course Number 89E303 "The Touareg"*

⇒ *Self-Study Program - Course Number 89J303 "The Touareg Electrical System Design and Function"*

CAUTION!

When disconnecting and reconnecting battery terminals, observe all applicable Notes and torque specifications, as well as instructions on performing OBD program and electrical system function checks as specified ⇒ [Repair Manual, Electrical Equipment, Repair Group 27](#) .



Loudspeaker system, component overview

1 Antenna for
- Navigation System (GPS) - R50-,
Radio/Telephone Antenna -R51-,
Telephone/Radio Antenna Amplifier -R45-

- ◆ In right front fender above headlight assembly

2 Radio -R- or
- Radio/Navigation Display Control Module -J503-

- ◆ In center console.

3 - Antenna Selection Control Module -J515-

- ◆ Under rear molded headlining.

**4 - Antenna Amplifier 2 - R111-,
Antenna Amplifier 3 - R112-**

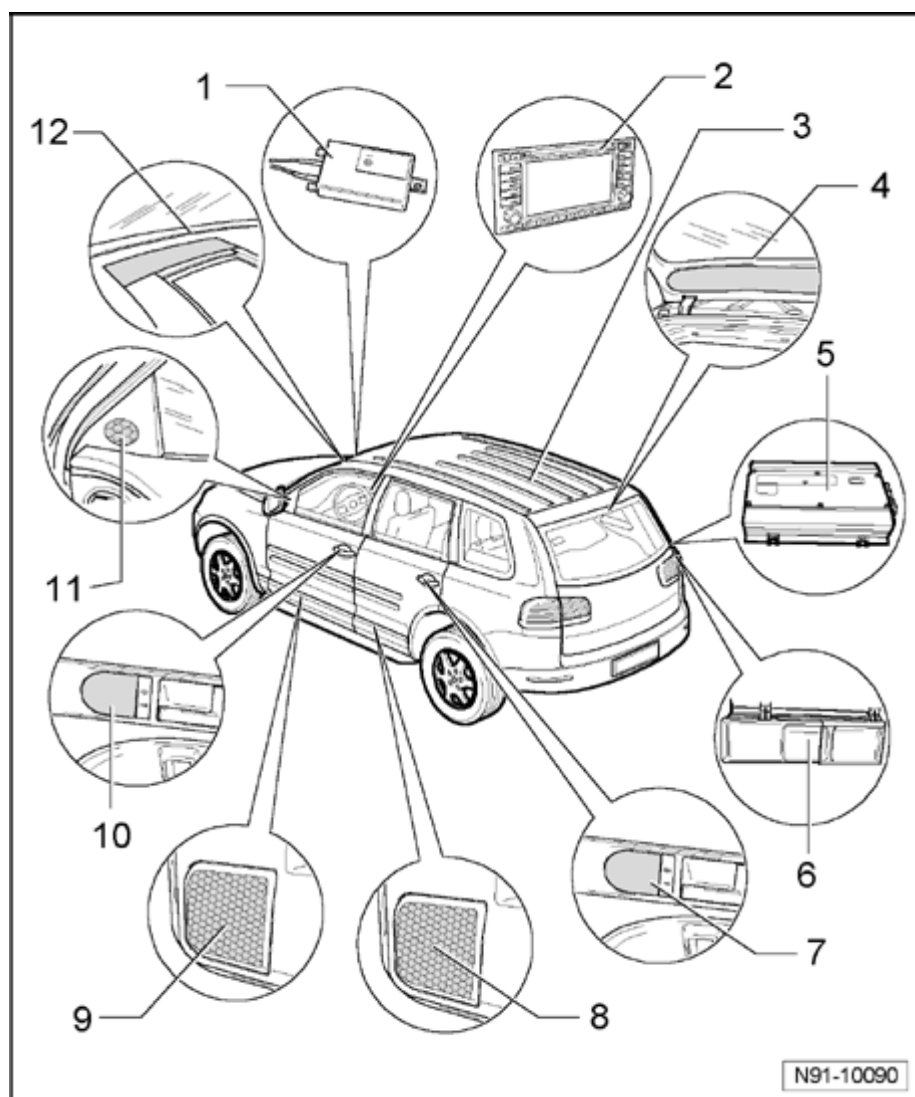
- ◆ In upper part of rear lid.

5 - Amplifier

- ◆ In right rear luggage compartment behind

access
panel.

- ◆ Removing
and installing
⇒ [Page 91-
57](#) .



6 - CD Changer - R41-

- ◆ In right rear luggage compartment behind access panel.

7 - Rear DSP Midrange Speakers - R105-, -R106-

- ◆ Diameter 60 mm
- ◆ Impedance 4 Ohm
- ◆ In rear doors by door handle trim.
- ◆ Removing and installing ⇒ [Page 91-75](#).

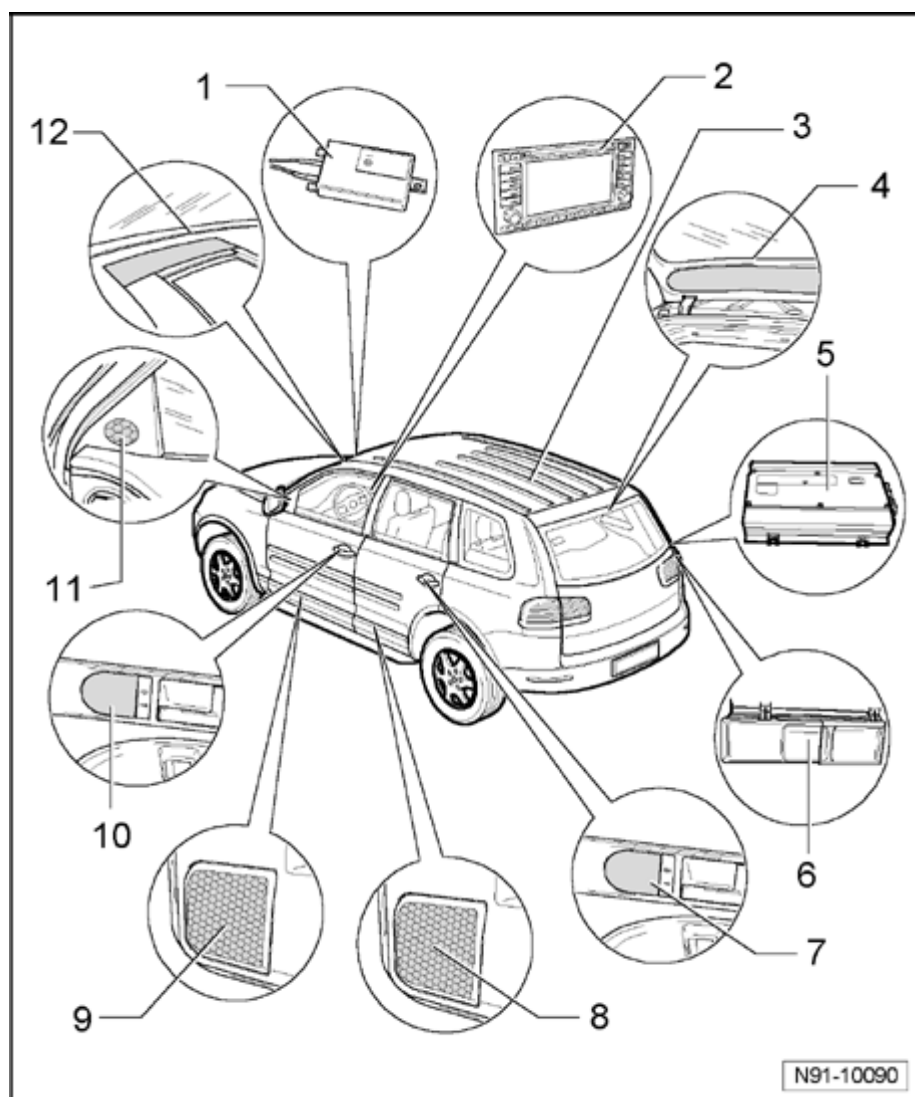
8 - Rear Bass Speakers - R15-, -R17-

- ◆ Diameter 168 mm
- ◆ Impedance 2 Ohm
- ◆ In lower rear door trim.
- ◆ Removing and installing ⇒ [Page 91-73](#).

9 - Front Bass Speakers - R21-, -R23-

- ◆ Diameter 220 mm

- ◆ Impedance 2 Ohm
- ◆ In lower front door trim.
- ◆ Removing and installing
⇒ [Page 91-69](#)



10 - Front DSP Midrange Speakers - R103-, -R104-

- ◆ Diameter 80 mm
- ◆ Impedance 4 Ohm
- ◆ In front door by door handle
- ◆ Removing and installing
⇒ [Page 91-71](#)

11 - Front Treble Speakers - R20-, -R22-

- ◆ Diameter 46 mm
- ◆ Impedance 4 Ohm
- ◆ In front door in mirror triangle
- ◆ Removing and installing
⇒ [Page 91-72](#)

12 - Center Mid/High Range Loudspeaker - R158-

- ◆ "Sound I" & "Sound II" systems only.
- ◆ In center of instrument panel.
- ◆ Diameter 60

mm

◆ Impedance 4
Ohm

◆ Removing
and installing
⇒ [Page 91-
76](#) .



Front Bass Loudspeakers -R21- & -R23-, removing and installing

Note:

Removal of left and right side speakers is the same.

Removing

CAUTION!

Before beginning repairs on the electrical system:

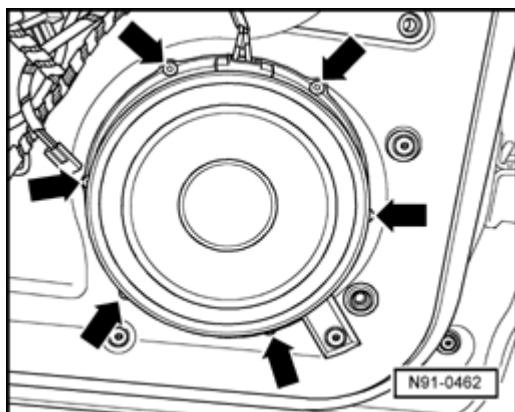
- ♦ ***Switch off all electrical consumers.***
- ♦ ***Switch ignition off and remove ignition key.***

- Remove left or right front door trim as applicable

⇒ [Repair Manual, Body Interior, Repair Group 70](#)

- Disconnect electrical connection at loudspeaker.
- Remove plastic ring from loudspeaker.

91-70



- Drill out rivets -arrows- and remove loudspeaker from door opening.

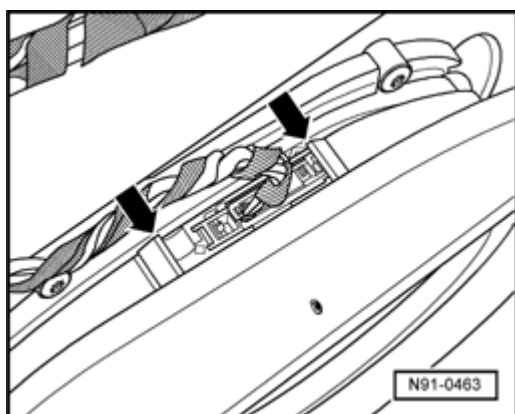
CAUTION!

- ♦ *To prevent corrosion, ensure that all metal particles from drilling are removed from inside the door.*
- ♦ *If paint on door frame is damaged during drilling, touch-up immediately.*

Installing

Install in reverse order of removal.

- Secure new loudspeaker with special pop rivets of suitable length and diameter ⇒ parts catalog.
- Ensure plastic ring between trim and loudspeaker is installed when reinstalling door trim, noting the following:

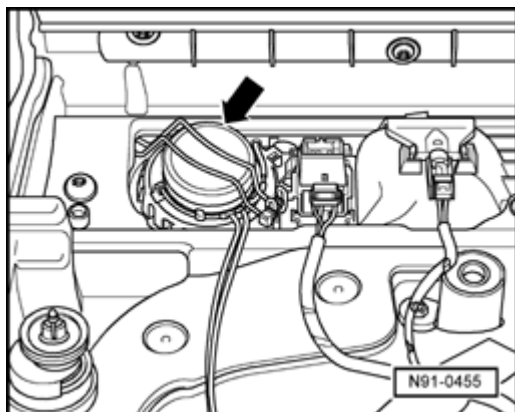


- Ensure correct orientation of plastic ring at cut-out -arrows- for loudspeaker electrical connection.

91-71



Front DSP Midrange Loudspeakers - R103- & R104-, removing and installing



- ✦ Installation location: in front door trim - arrow-.

Note:

Removal of left and right side speakers is the same.

Removing

CAUTION!

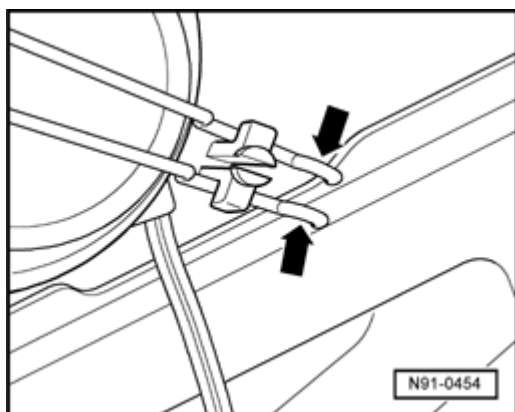
Before beginning repairs on the electrical system:

- ♦ **Switch off all electrical consumers.**
- ♦ **Switch ignition off and remove ignition key.**

- Remove left or right front door trim as applicable

⇒ [Repair Manual, Body Interior, Repair Group 70](#)

- Disconnect electrical connection at loudspeaker.



- ✦ - Release retainer spring clip -arrows- and remove loudspeaker.

Installing

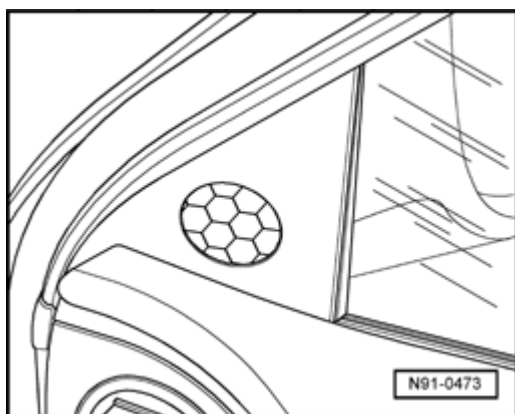
Install in reverse order of removal.



Front Treble Loudspeakers -R20- & -R22-, removing and installing

Notes:

- ◆ Removal of left and right side speakers is the same.
- ◆ This loudspeaker is installed in the triangular trim for the mirror.
- ◆ The loudspeaker is bonded to the triangular trim for the mirror. It can only be replaced together with the trim.



Installation location: in triangular shaped trim for mirror.

Removing

CAUTION!

Before beginning repairs on the electrical system:

- ◆ **Switch off all electrical consumers.**
- ◆ **Switch ignition off and remove ignition key.**
- Remove left or right front door trim as applicable
⇒ [Repair Manual, Body Interior, Repair Group 70](#)
- Disconnect electrical connection at loudspeaker
- Unclip triangular shaped trim cover for mirror.

Installing

Install in reverse order of removal.

91-73



Rear Bass Loudspeakers -R15- & -R17-, removing and installing

Note:

Removal of left and right side speakers is the same.

Removing

CAUTION!

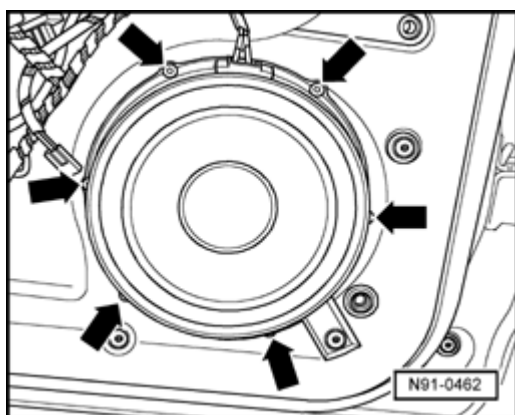
Before beginning repairs on the electrical system:

- ♦ ***Switch off all electrical consumers.***
- ♦ ***Switch ignition off and remove ignition key.***

- Remove left or right rear door trim as applicable

⇒ [Repair Manual, Body Interior, Repair Group 70](#)

- Disconnect electrical connection.
- Remove plastic ring from loudspeaker.
- ▲ - Drill out rivets -arrows- and remove loudspeaker from door opening.



CAUTION!

- ♦ ***To prevent corrosion, ensure that all metal particles from drilling are removed from inside the door.***
- ♦ ***If paint on door frame is damaged during drilling, touch-up immediately.***

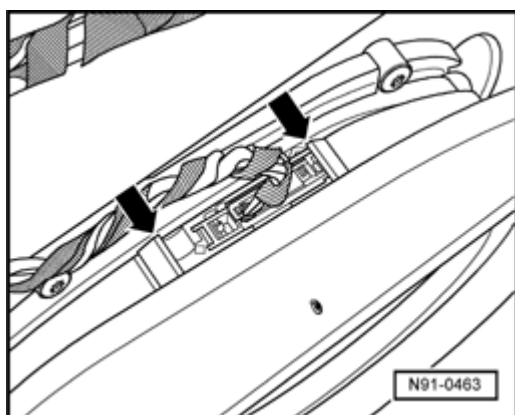
91-74



Installing

Install in reverse order of removal.

- Secure new loudspeaker with special pop rivets of suitable length and diameter ⇒ parts catalog.
- Ensure plastic ring between trim and loudspeaker is installed when reinstalling door trim, noting the following:



Ensure correct orientation of plastic ring at cut-out arrows- for loudspeaker electrical connection.

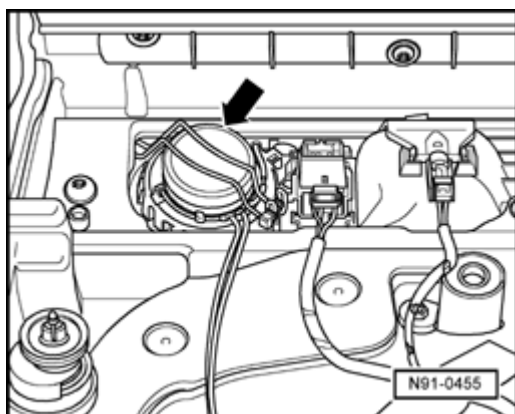
91-75



Rear DSP Midrange Loudspeakers - R105- &-R106-, removing and installing

Note:

Removal of left and right side speakers is the same.



Installation location: in rear door trim - arrow-.

Removing

CAUTION!

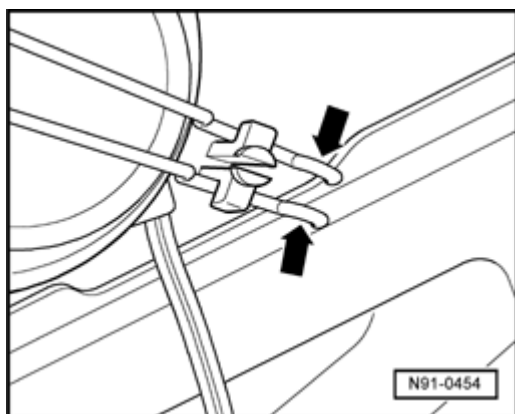
Before beginning repairs on the electrical system:

- ♦ **Switch off all electrical consumers.**
- ♦ **Switch ignition off and remove ignition key.**

- Remove left or right rear door trim as applicable

⇒ [Repair Manual, Body Interior, Repair Group 70](#)

- Disconnect electrical connection.



- Release retainer spring clip -arrows- and remove loudspeaker.

Installing

Install in reverse order of removal.

91-76



Center Mid/High Range Loudspeaker - R158-, removing and installing

Notes:

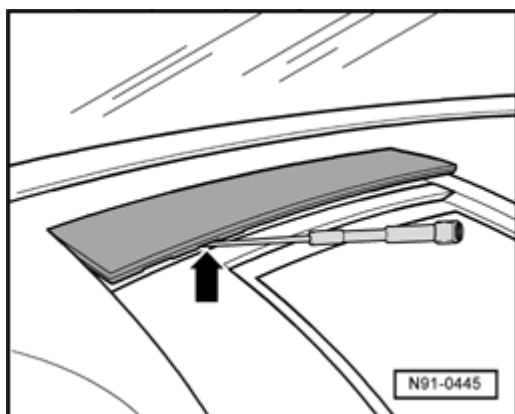
- ◆ *In center of instrument panel.*
- ◆ *Only in conjunction with "Sound I" & "Sound II" systems.*

Removing

CAUTION!

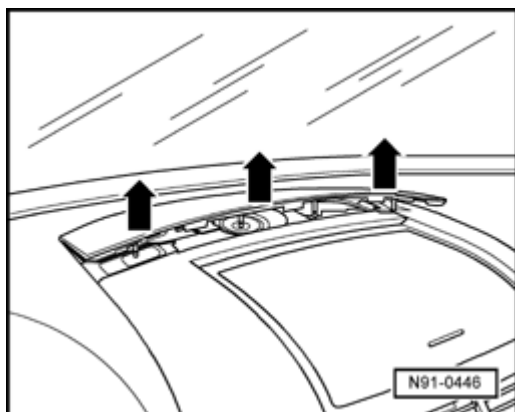
Before beginning repairs on the electrical system:

- ◆ ***Switch off all electrical consumers.***
- ◆ ***Switch ignition off and remove ignition key.***

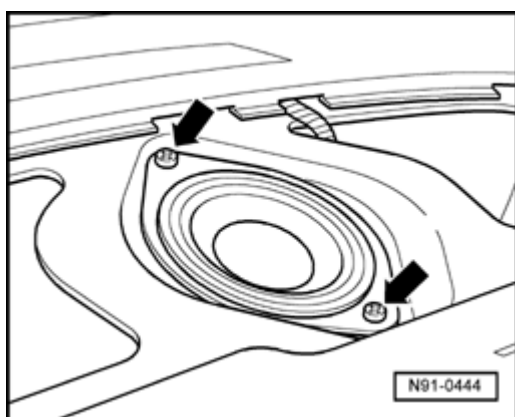


- Carefully pry up trim -arrow- using small screwdriver.

91-77



- Remove trim upwards -arrows-.



- Remove screws -arrows-.
- Remove loudspeaker from center of instrument panel.
- Disconnect electrical connection.

Installing

Install in reverse order of removal.



Antenna system

General information

All Touareg use a "Diversity antenna system" which consists of:

- ◆ A Radio or Radio/Navigation control head.
- ◆ Window antennas
- ◆ Antenna selection control module -J515-
- ◆ Four antenna amplifiers

The antenna system with diversity function improves and optimizes the overall radio reception in a vehicle.

The strength and quality of the amplified signals received by any of the three diversity system antennas is continuously monitored and evaluated by the radio unit. The evaluation of the antenna signal is output via an Intermediate Frequency (IF) to the Antenna Selection Control Module -J515- which routes the various antenna signals to the radio. The evaluation data is processed by -J515- and it actively selects the system antenna that provides the best reception under the existing conditions (diversity function).

The continuous, active switching between system antennas is not audible.

Models equipped with Telematics system use a separate GPS antenna mounted to the forward portion of the roof ⇒ [Page 91-110](#) .

**Note:**

In the event that devices (such as additional antennas) that use a magnetic mounting fixture are attached to the roof, the residual magnetization of the roof sheet metal will adversely affect the operation of the compass module. Before proceeding with any diagnosis of the compass module, ask customer if such a device is/was used.

Before troubleshooting or servicing, technicians must be familiar with the functions and operation specifics of the Radio system. Always read the owner's manual and review specific system functions.

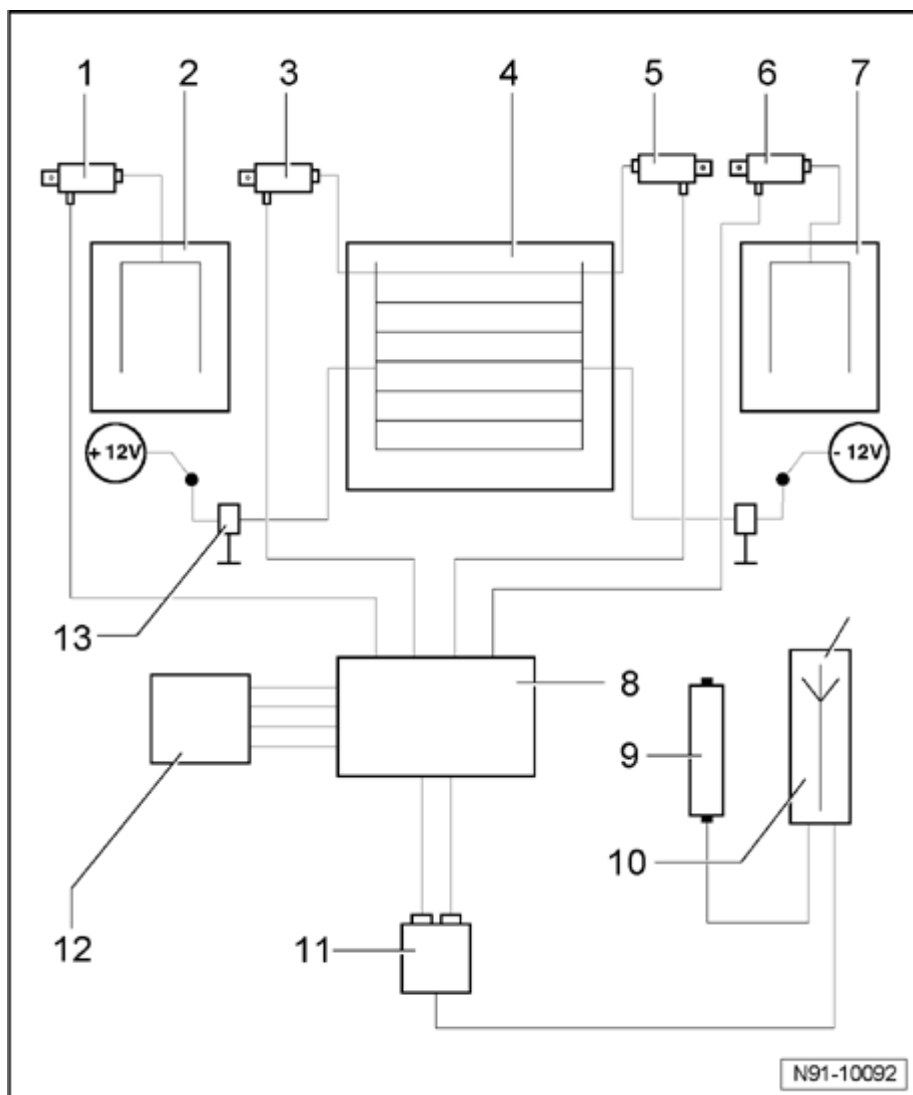
Additional information:

⇒ Self-Study Program - Course Number 89E303 "The Touareg"

⇒ Self-Study Program - Course Number 89J303 "The Touareg Electrical System Design and Function"

CAUTION!

When disconnecting and reconnecting battery terminals, observe all applicable Notes and torque specifications, as well as instructions on performing OBD program and electrical system function checks as specified ⇒ [Repair Manual, Electrical Equipment, Repair Group 27](#) .



Antenna system, layout

1 - Antenna Amplifier - R24-

- ◆ AM/FM reception
- ◆ Installed above the left side window
- ◆ Removing and installing ⇒ [Page 91-86](#).

2 - Antenna - R11-

- ◆ Installed in the left rear side window

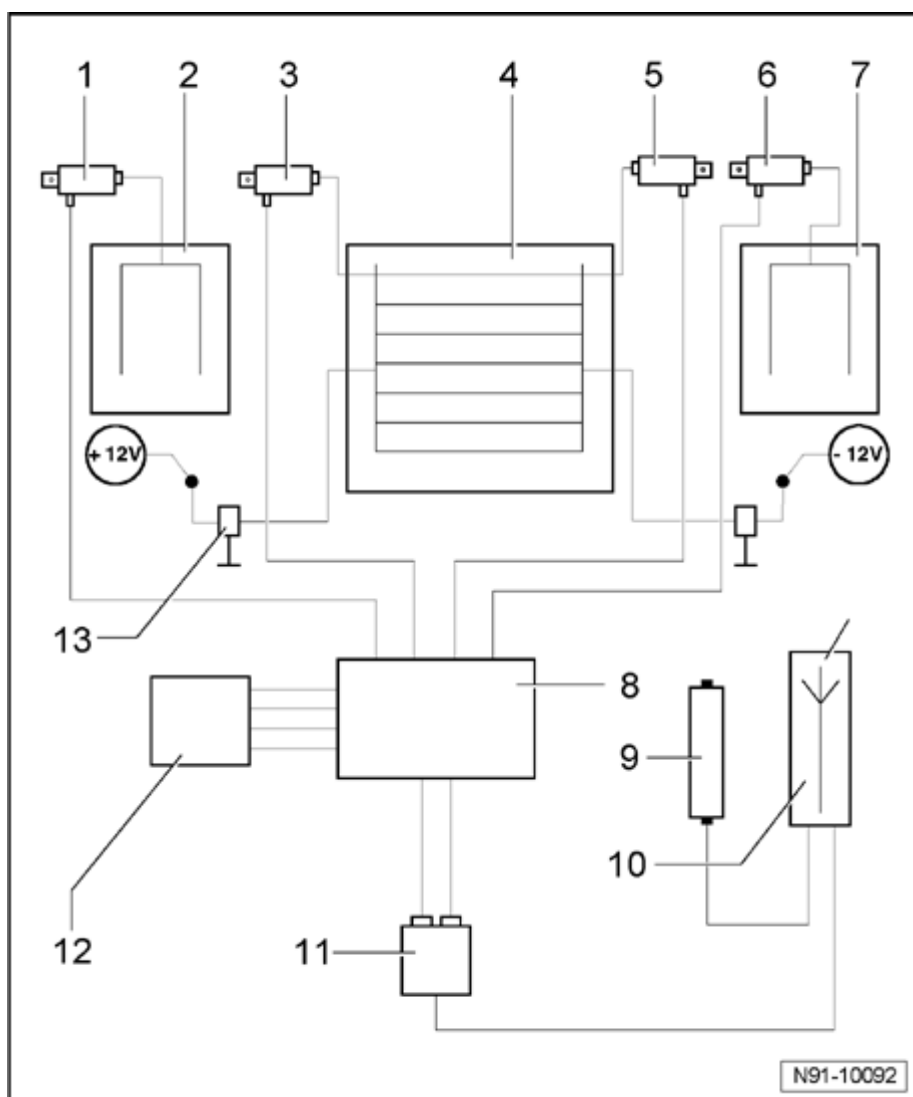
3 - Antenna Amplifier 2 - R111-

- ◆ For FM reception
- ◆ Installed in upper section of rear lid.
- ◆ Removing and installing ⇒ [Page 91-83](#)

4 - Rear Window Antenna 1 - R130- & Rear Window Antenna 2 - R131-

- ◆ Installed in rear window

91-81



5 - Antenna Amplifier 3 - R112-

- ◆ For FM reception
- ◆ Installed in upper section of rear lid.
- ◆ Removing and installing ⇒ [Page 91-83](#)

6 - Antenna Amplifier 4 - R113-

- ◆ For FM reception
- ◆ Installed above right side window
- ◆ Removing and installing ⇒ [Page 91-86](#) .

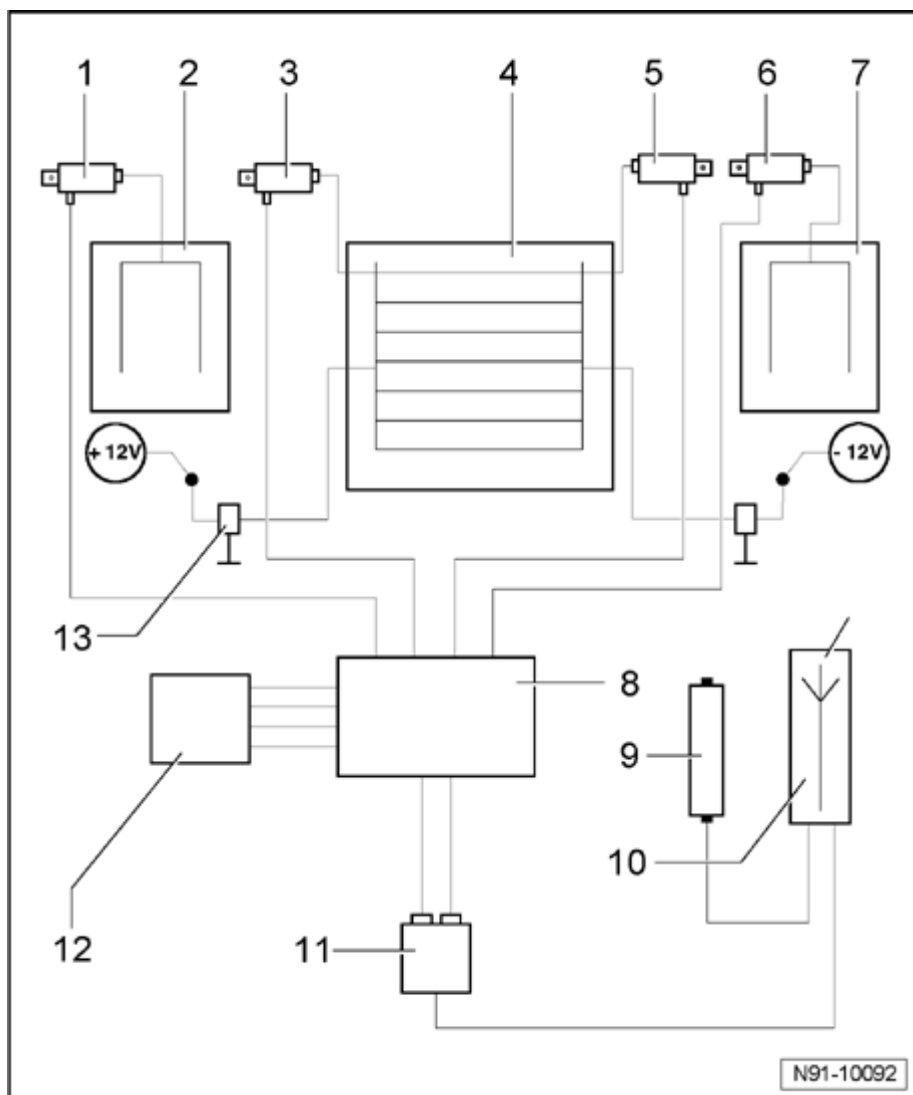
7 - Radio Antenna 2 - R93-

- ◆ Installed in right rear side window

8 - Antenna Selection Control Module -J515-

- ◆ Behind rear section of molded headlining.
- ◆ Removing and installing ⇒ [Page 91-](#)

91-82



9 - Operating Electronics and Telephone Control Module -J412-

- ◆ Not applicable to USA/CDN

10 Navigation - System (GPS) Antenna -R50- &Radio/Telephone Antenna -R51-

- ◆ Installed in right front fender above headlight assembly
- ◆ Removing and installing ⇒ [Page 91-90](#) .

11 - Radio -R- or Radio/Navigation Display Control Module -J503-

12 - Tuner for Navigation/TV - J415-

- ◆ Not applicable to USA/CDN

13 - Low pass filter

- ◆ Suppresses reception interference when rear window heater is switched on.
- ◆ Integrated with wiring harness.

91-83



Antenna amplifiers in rear lid, removing and installing

Removing

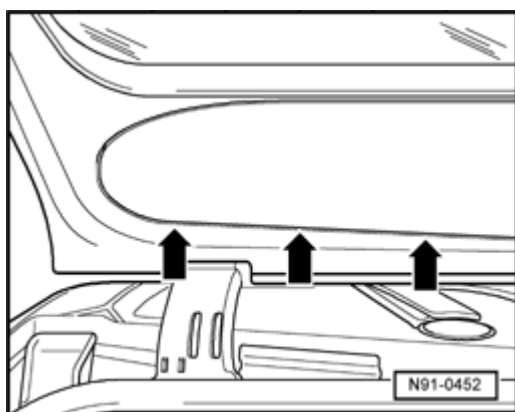
CAUTION!

Before beginning repairs on the electrical system:

♦ ***Switch off all electrical consumers.***

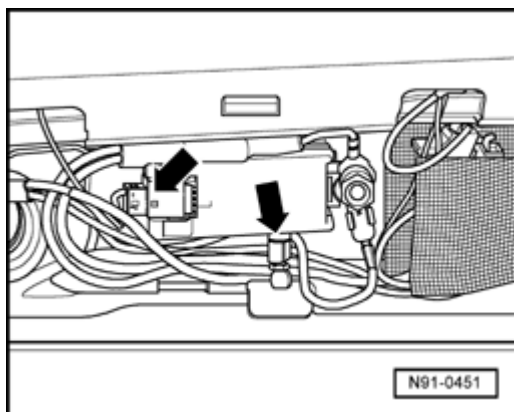
♦ ***Switch ignition off and remove ignition key.***

- With rear lid closed, open rear window.

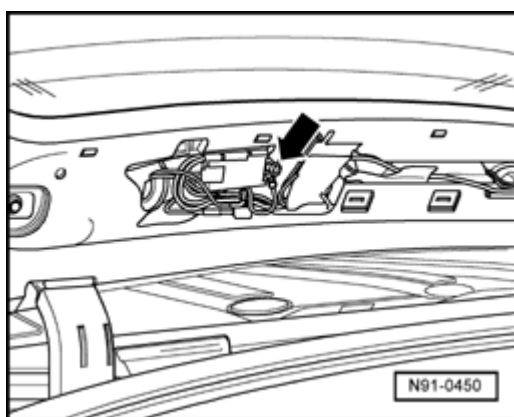


- Carefully unclip and remove trim -arrows- on rear window.

91-84



- Disconnect electrical and antenna connections -arrows-.



- Remove screw -arrow-.
- Remove antenna amplifier.

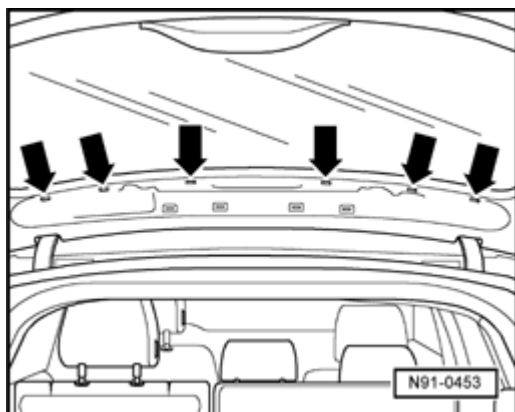
If more than one antenna amplifier is removed, note the installed position of each amplifiers.

Installing

Install in reverse order of removal, noting the following:

Ensure each amplifier is installed in the same position from which it was removed.

91-85



- Locate trim in cut-outs first -arrows-.
- Secure trim by carefully inserting clips.

CAUTION!

To prevent clip breakage, ensure proper alignment of clips and use care when installing trim.



Antenna amplifiers above rear side windows, removing and installing

Removing

CAUTION!

Before beginning repairs on the electrical system:

♦ **Switch off all electrical consumers.**

♦ **Switch ignition off and remove ignition key.**

- Remove molded headlining

⇒ [Repair Manual, Body Interior, Repair Group 70](#)

- Disconnect antenna connection.

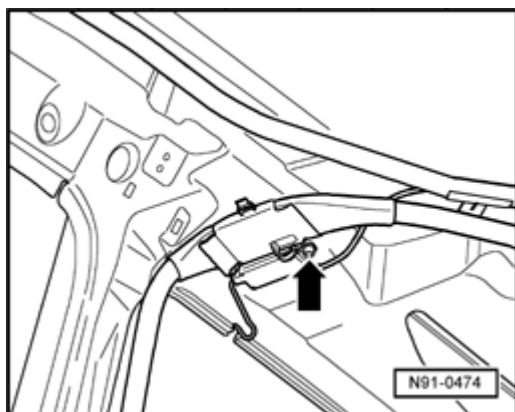
- Carefully disconnect separate electrical connection between amplifier and rear side window.

CAUTION!

♦ **Use care when disconnecting wiring connection to window.**

♦ **Should the wiring connection between antenna amplifier and side window be damaged, the window must be replaced. The wiring connection cannot be repaired.**

91-87



- Remove screw -arrow-.
- Remove antenna amplifier.

If more than one antenna amplifier is removed, note the installed position of each amplifiers.

Installing

Install in reverse order of removal, noting the following:

Ensure amplifier is installed in the same position from which it was removed.

91-88



Antenna Selection Control Module - J515-, removing and installing

Removing

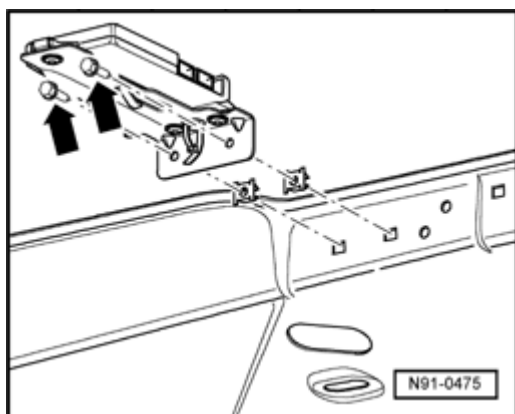
CAUTION!

Before beginning repairs on the electrical system:

- ♦ **Switch off all electrical consumers.**
- ♦ **Switch ignition off and remove ignition key.**

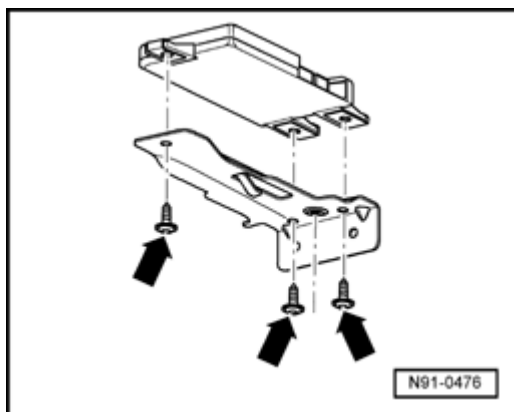
- Remove molded headlining

⇒ [Repair Manual, Body Interior, Repair Group 70](#)



- Remove screws -arrows- and remove module with bracket from roof reinforcement.
- Disconnect antenna and electrical connections.

91-89



- Remove screws -arrows- and separate control module from bracket.

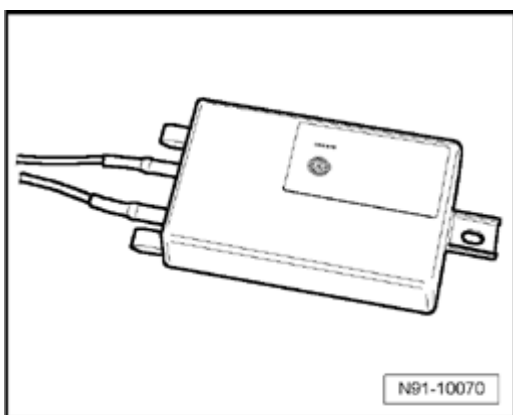
Installing

Install in reverse order of removal.



Navigation System (GPS) Antenna - R50- & Radio/Telephone Antenna - R51-, removing and installing

Note:



Integrated antennas -R50- & -R51- with antenna cable is in right front fender above headlight assembly. There are no serviceable antenna connections on the antenna unit. Antenna cable connections are only accessible from behind the center console in the passenger's footwell area. As such, the entire procedure to remove and install the antenna requires considerable effort.

Removing

CAUTION!

Before beginning repairs on the electrical system:

- ♦ **Switch off all electrical consumers.**
- ♦ **Switch ignition off and remove ignition key.**

- Remove front passenger's seat

⇒ [Repair Manual, Body Interior, Repair Group 72](#)

- Remove front passenger's seat base

⇒ [Repair Manual, Body Interior, Repair Group 72](#)

- Remove center console

⇒ [Repair Manual, Body Interior, Repair Group 68](#)

91-91



- Remove lower instrument panel trim (only)

⇒ [Repair Manual, Body Interior, Repair Group 70](#)

- Remove right front wheel housing cover

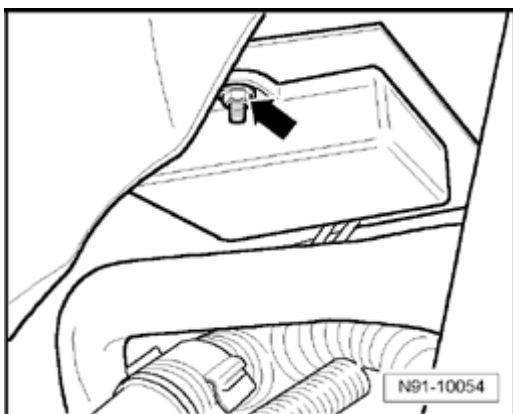
⇒ [Repair Manual, Body Exterior, Repair Group 66](#)

- Remove windshield washer fluid container from right fender

⇒ [Repair Manual, Electrical Equipment, Repair Group 92](#)

- Remove right headlight assembly

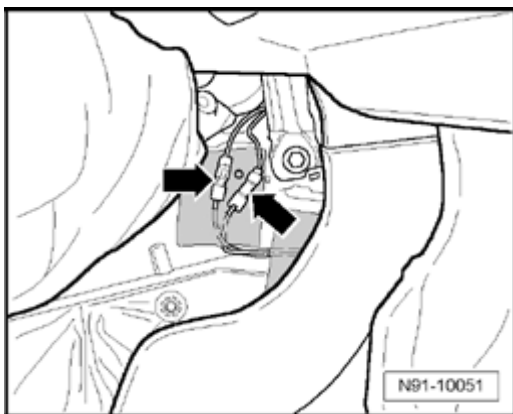
⇒ [Repair Manual, Electrical Equipment, Repair Group 94](#)



- Remove nut from antenna unit -arrow-.
- Lift right front passenger's carpet and sound dampener up and fold over center console to driver's side.

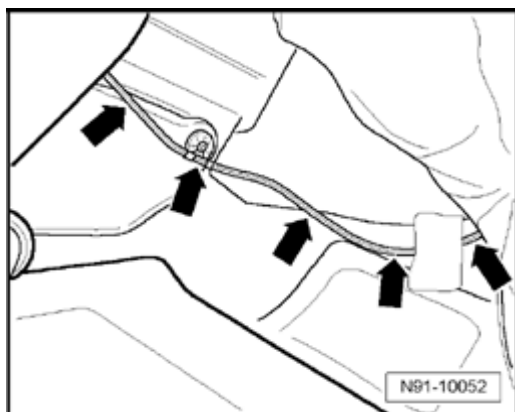
Note:

As the driver's and front passenger's carpet section is one piece, the entire carpet cannot be removed during this procedure.

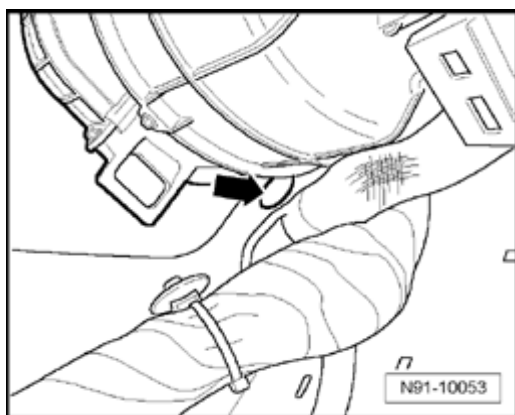


- Separate both antenna cable connections -arrows- at the side of the center console.

91-92

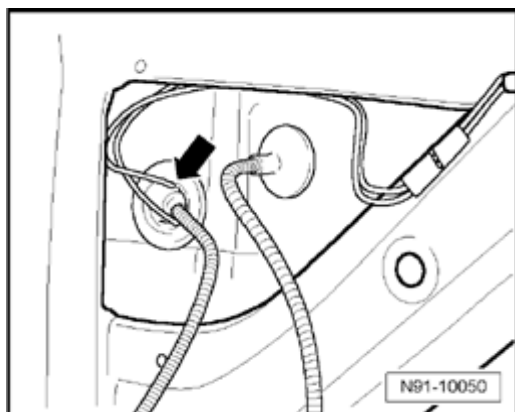


- Remove antenna cable from footwell - arrows-.



- Loosen antenna cable up to opening in A-pillar -arrow-.

91-93



- From wheel well side, pull antenna cable through opening in A-pillar -arrow-.
- Remove remaining antenna cable from clips in wheel well, and remove complete antenna unit with cable.

Installing

Install in reverse order of removal, noting the following.

CAUTION!

Ensure antenna cable is secured in the same clips where previously installed, and located in such a manner that it will not become damaged or cause rattles.

91-94



Antenna cables, servicing

For specific, detailed procedures for antenna cable repair and replacement

⇒ [*Repair Manual, Electrical Equipment, Repair Group 97*](#)



Suppression measures

All electrical consumers in the vehicle are self-suppressing.

This includes all sensors, actuators and all electric motors in the vehicle as well as controllers in Control Modules which might generate high-frequency interference.

To suppress interference, electrical parts, for example, condensers, coils and diodes are directly installed in electrical components.

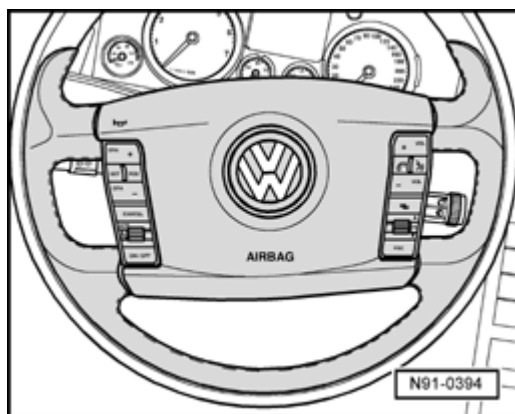
Components for interference suppression are installed in the connection housings of electrical consumers.

The Ground (GND) cable, formerly used for suppression, is no longer needed because suppression measures are employed as close to the source of interference as possible.



Multi-function steering wheel

General information



The multi-function steering wheel allows some functions of the Communication system to be operated from the steering wheel.

The control module for the multi-function steering wheel communicates only with the control module for steering column electronics where digital commands are prepared for system communications using the Convenience and Powertrain CAN Bus networks.

The multi-function steering wheel includes the following components:

- ◆ Operating unit with two sets of key pads and integrated electronics.
- ◆ A control module for the multi-function steering wheel.

91-97



Before troubleshooting or servicing, technicians must be familiar with the functions and operation specifics of the Multi-function steering wheel system. Always read the owner's manual and review specific system functions.

Additional information:

⇒ *Self-Study Program - Course Number 89E303 "The Touareg"*

⇒ *Self-Study Program - Course Number 89J303 "The Touareg Electrical System Design and Function"*

CAUTION!

When disconnecting and reconnecting battery terminals, observe all applicable Notes and torque specifications, as well as instructions on performing OBD program and electrical system function checks as specified ⇒ [Repair Manual, Electrical Equipment, Repair Group 27](#) .

91-98



On Board Diagnostic (OBD)

The Multi-function steering wheel has extensive On Board Diagnostic (OBD) capabilities.

In the event that malfunctions occur in the Multi0function steering wheel, troubleshooting is performed using the VAS 5051 Vehicle Diagnostic Testing and Information System or VAS 5052 Vehicle Diagnostic and Service System in operating mode "Guided Fault Finding".



Operating unit in steering wheel, removing and installing

Removing

CAUTION!

Before beginning repairs on the electrical system:

- ♦ ***Switch off all electrical consumers.***
- ♦ ***Switch ignition off and remove ignition key.***

WARNING!

- ♦ ***Special safety precautions apply to vehicles equipped with airbags. Refer to Repair Manual, Body-Interior, Airbag: CAUTIONS and WARNINGS, Repair Group 69.***
- ♦ ***Electrostatically discharge yourself before working on the airbag unit. This can be accomplished by touching an grounded metal object such as a water pipe, heater pipe or metal support.***

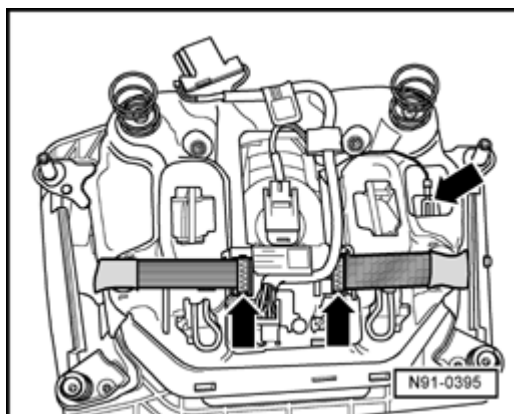
- Remove driver's airbag.

⇒ [Repair Manual, Body Interior, Repair Group 70](#)

- Remove securing plate for driver side airbag unit.

⇒ [Repair Manual, Body Interior, Repair Group 70](#)

91-100



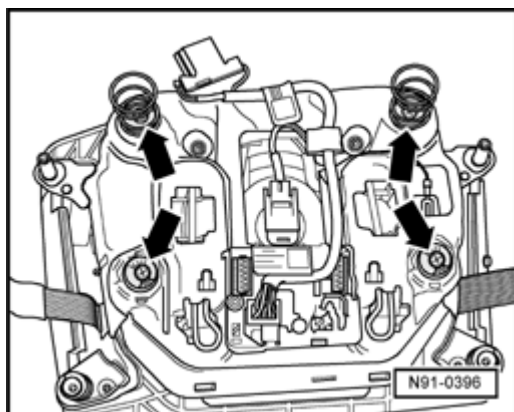
- Lay removed airbag unit on a soft surface with the upper side downwards (only valid for the following work).

- Release connector -arrows- and pull off.

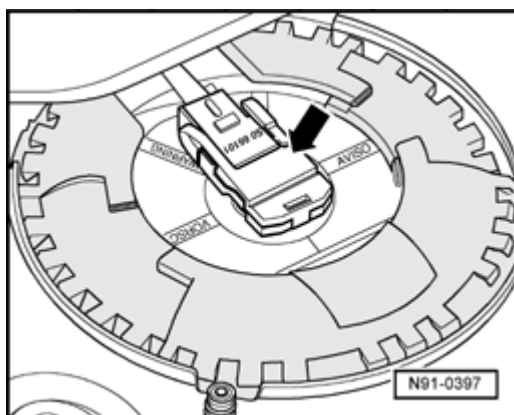
WARNING!

- ♦ *When setting aside airbag unit, ensure padded/front side faces upwards*
- ♦ *When working around the removed airbag unit, position it so that it is not directly within your field of vision.*

91-101

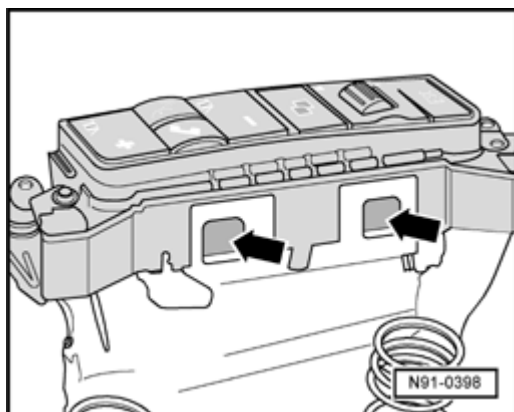


- Remove 4 securing bolts -arrows-.



- Release connectors for airbag unit and pull off -arrow-.

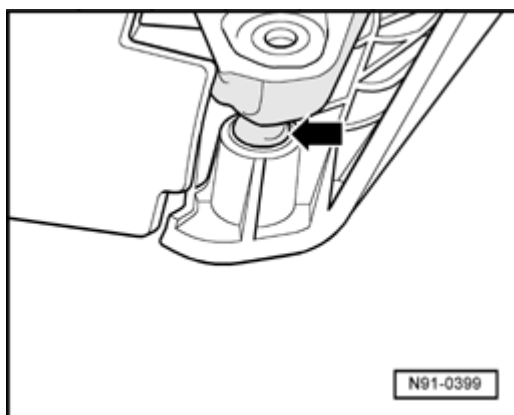
91-102



- Press securing lugs inwards -arrow- (horn plate bracket removed) and remove operating unit upwards.

Installing

Install in reverse order of removal, noting the following.



- During installation, ensure ball heads of operating unit -arrow- are guided into the mountings of the airbag unit.



Multi-function steering wheel control module, removing and installing

Removing

CAUTION!

Before beginning repairs on the electrical system:

- ♦ **Switch off all electrical consumers.**
- ♦ **Switch ignition off and remove ignition key.**

WARNING!

- ♦ **Special safety precautions apply to vehicles equipped with airbags. Refer to Repair Manual, Body-Interior, Airbag: CAUTIONS and WARNINGS, Repair Group 69.**
- ♦ **Electrostatically discharge yourself before working on the airbag unit. This can be accomplished by touching an grounded metal object such as a water pipe, heater pipe or metal support.**

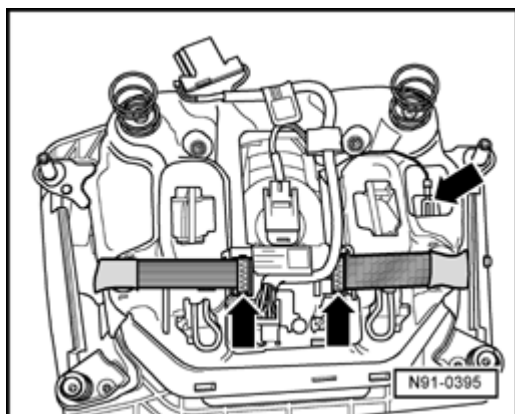
- Remove driver's airbag.

⇒ [Repair Manual, Body Interior, Repair Group 69](#)

- Remove securing plate for driver side airbag unit.

⇒ [Repair Manual, Body Interior, Repair Group 69](#)

91-104



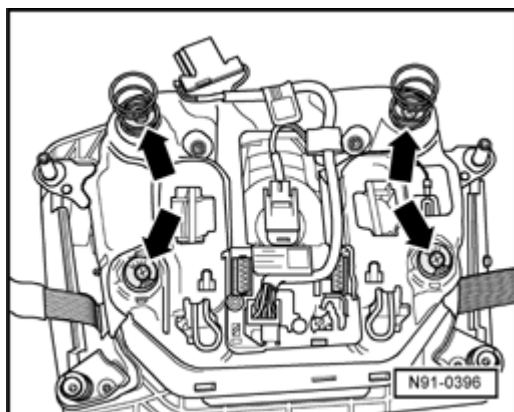
- Lay removed airbag unit on a soft surface with the upper side downwards (only valid for the following work).

- Release connector -arrows- and pull off.

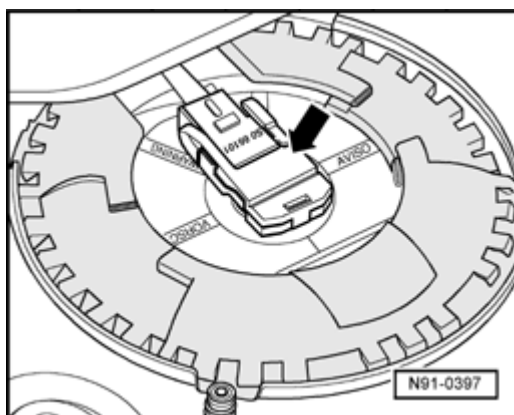
WARNING!

- ♦ *When setting aside airbag unit, ensure padded/front side faces upwards*
- ♦ *When working around the removed airbag unit, position it so that it is not directly within your field of vision.*

91-105

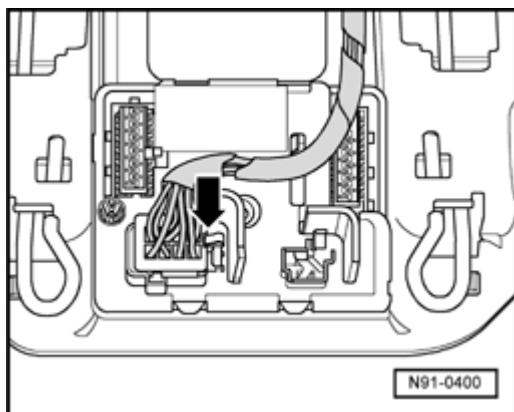


- Remove 4 securing bolts -arrows-.

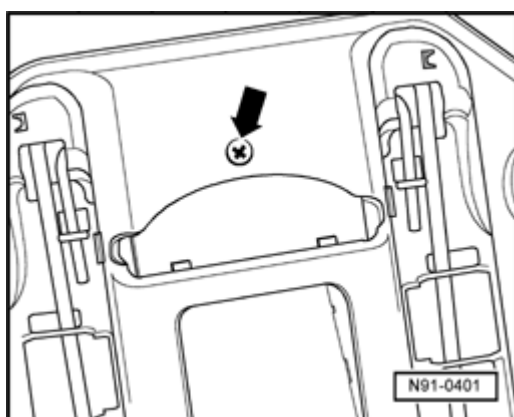


- Release connectors for airbag unit and pull off -arrow-.

91-106



- Release connector -arrow- and pull off.



- Remove screw -arrow- and remove control module.

Installing

Install in reverse order of removal.

- Ensure proper coding of steering column control module

⇒ Multi-function steering wheel components, adaptation ⇒ [Page 91-6](#) .



Telematics

General Information

Before troubleshooting or servicing, technicians must be familiar with all Telematics functions, operating specifics and the particular service plan which the customer subscribes to.

Refer to "Volkswagen Telematics by OnStar®" Self Study Program (SSP) and "Volkswagen Telematics by OnStar® Owner's Manual and/or OnStar® "Quick Reference Guide" to become familiar with applicable features and functions.

Telematics, technical features

Telematics is an in-vehicle communication system that uses cellular and Global Positioning System (GPS) technologies to provide the customer with safety, security and convenience services.

GPS is a "constellation" of 24 satellites that orbit the earth and constantly broadcast radio signals. The Telematics/Telephone Control Module receives GPS data, decodes it, and transmits the vehicle's location to the service provider's call center via the national cellular network.

Telematics services for Volkswagen customers are provided by OnStar® via a dedicated call center. Service plans may provide route directions and concierge services as well as emergency or vehicle repair services. For details ⇒ Volkswagen Telematics by OnStar® Owner's Manual.



Utilization of available Telematics services/features take place via customer's voice control ⇒ Volkswagen Telematics by OnStar® Owner's Manual.

Upon customer request, the Volkswagen Telematics by OnStar® call center can remotely perform or activate the following vehicle functions:

- ◆ Lock vehicle
- ◆ Unlock vehicle
- ◆ Activate Hazard Lights
- ◆ Activate horn

During events where the Airbag Control Module processes a crash signal, the vehicle hazard lights are activated and the doors are unlocked via the respective door control modules. In addition, the Telematics system automatically places an emergency call to the OnStar® call center.

Telematics hardware includes the driver operated Telematics control head (which contains the OnStar® control buttons and Telematics indicator lamp), microphone, roof mounted GPS/Cellular antenna and Telematics/Telephone Control Module (with supporting software) and related wiring.

All Telematics components are factory installed/integrated into the vehicle electrical system.

Telematics system/component overview ⇒ [Page 91-110](#) .

91-109

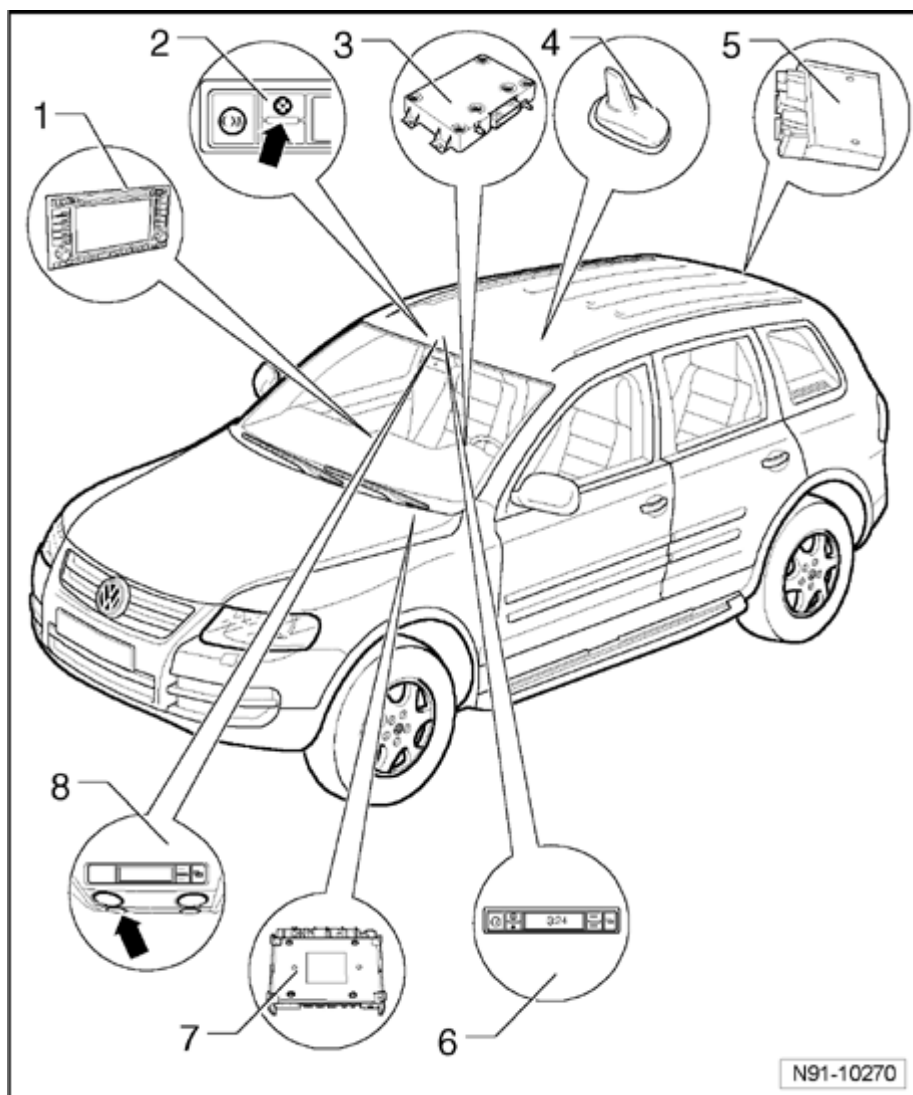


On Board Diagnostic (OBD)

The Telematics system has extensive On Board Diagnostic (OBD) capabilities.

The Telematics/Telephone Control Module has a Diagnostic Trouble Code (DTC) memory. If a malfunction occurs in one of the components or wires which is monitored by the system, a record of the type of malfunction is stored in DTC memory.

Telematics OBD program functions are performed using VAS 5051 Vehicle Diagnostic Testing and Information System or VAS 5052 Vehicle Diagnostic and Service System in mode "Guided Fault Finding".



Telematics system, component overview

1 Radio/Navigation - Display Control Module -J503-

2 - Telematics Indicator Lamp -K186-

- ◆ In Telematics Control Head.

- ◆ LED indicates Telematics system operational status.
Description ⇒ [Page 91-113](#).

- ◆ Telematics system, troubleshooting using Telematics indicator lamp
⇒ [Page 91-135](#).

3 - Telematics Control Module -J499-

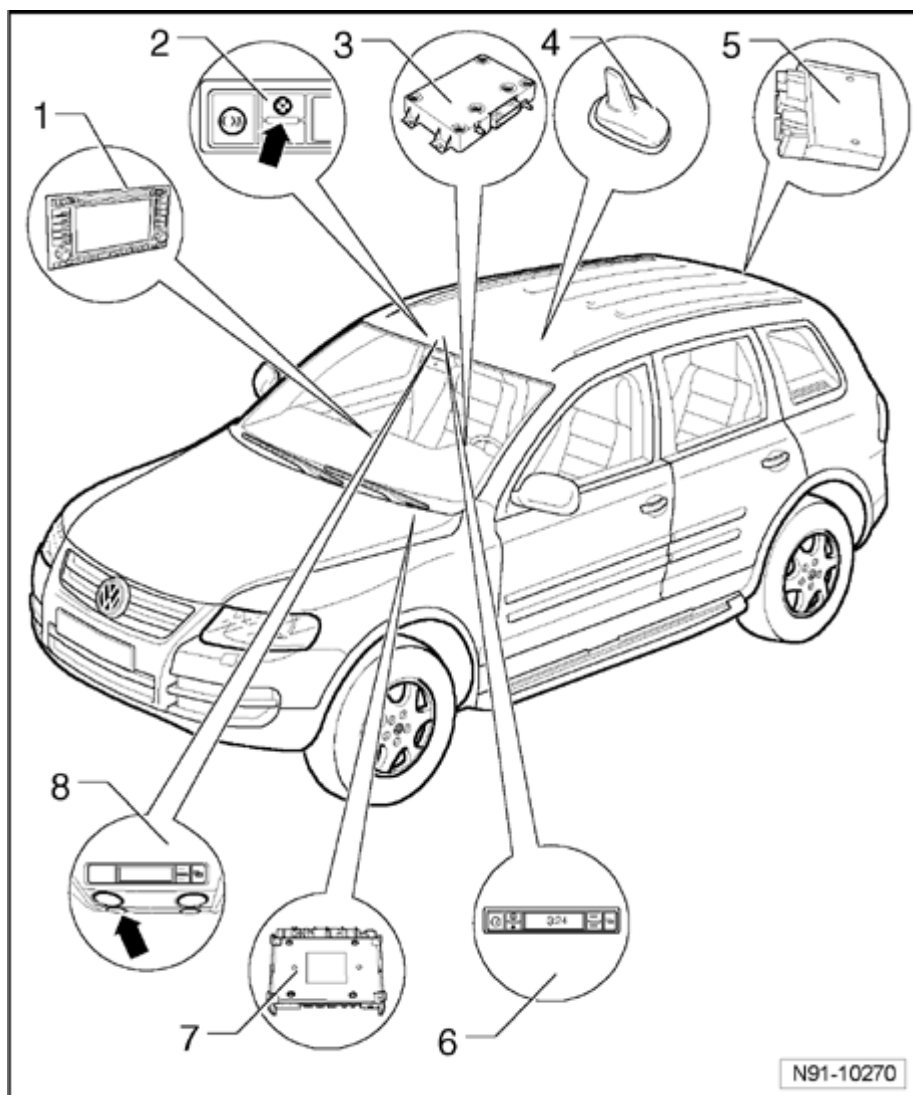
- ◆ Under front passenger's seat
- ◆ Removing and installing
⇒ [Page 91-117](#).
- ◆ Control module multi-pin

connector
terminal
assignments
⇒ [Page 91-121](#) .

**4 - Antenna -R11-
, Antenna
Amplifier -
R24- and
Navigation
System (GPS)
Antenna -R50-**

- ◆ On roof, front
- ◆ Removing
and
installing, ⇒
[Page 91-131](#) .

91-111



5 - Comfort System Central Control Module -J393-

- ◆ Controls vehicle lock and unlock functions as part of Telematics service.
- ◆ In right rear luggage compartment.

6 - Telematics Control Head -E264-

- ◆ In front headliner ahead of front interior light module.
- ◆ OnStar® buttons, description ⇒ [Page 91-112](#).
- ◆ Includes Telematics indicator lamp.
- ◆ Removing and installing ⇒ [Page 91-114](#).

7 - Vehicle Electrical System Control Module -J519-

- ◆ Controls emergency flashers and

horn as part
of
Telematics
service.

8 - Telephone Microphone - R38-

- ◆ Integrated
with front
interior light
module.
- ◆ Removing
and installing
⇒ [Page 91-
133](#) .



Telematics Control Head - OnStar® control buttons, description

The Telematics control head is in the front headliner ahead of the front interior light module. The control head contains three separate buttons as well as a system Telematics indicator lamp (LED).

The OnStar® ("On★") button is used to contact the OnStar® call center to request various convenience services. It is also used to initialize/activate the owner's subscription to OnStar® services and/or update the customer's account in the event that the Telephone/Telematics Control Module requires replacement.

The Emergency button is used to contact the OnStar® call center to request emergency services such as fire department, police etc.

The Communication ("DOT") button is used to end a call to the OnStar® call center, place or answer personal calls or cancel a call if one of the other buttons is accidentally pressed.

Note:

Use of certain OnStar® services requires a subscriber's Personal Identification Number(s) (PIN).

For complete system operation details ⇒ Volkswagen Telematics by OnStar® Owner's Manual.



Telematics Control Head - OnStar[®]

[®] Telematics indicator lamp, description

The Telematics indicator lamp is located between the OnStar[®] and Communication buttons. The green light comes on after a self-check routine is performed (approx. 10- 15 seconds after ignition is switched on)

Indications:

- ◆ Green: Indicates system has passed self-test and is ready to place or receive calls. Light remains on even in areas without cellular coverage.
- ◆ Blinking green: Indicates a call has been initiated or is in progress.
- ◆ Red: Indicates system has not passed self-test or indicates system malfunction.

Note:

Additional information and system troubleshooting using Telematics indicator lamp
⇒ [Page 91-135](#) .



Telematics Control Head -E264-, removing and installing

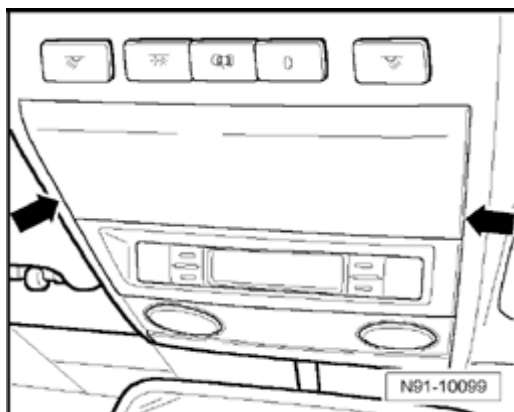
Removing

CAUTION!

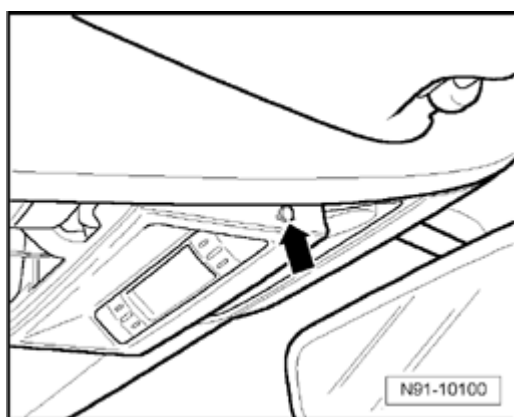
Before beginning repairs on the electrical system:

- ♦ **Switch off all electrical consumers.**
- ♦ **Switch ignition off and remove ignition key.**
- ♦ **Disconnect battery according to system installed in vehicle (single or dual battery system) ⇒ [Repair Manual, Electrical Equipment, Repair Group 27](#) .**
- ♦ **When disconnecting and reconnecting battery terminals, observe all applicable Notes and torque specifications, as well as instructions on performing OBD program and electrical system function checks as specified ⇒ [Repair Manual, Electrical Equipment, Repair Group 27](#) .**

91-115

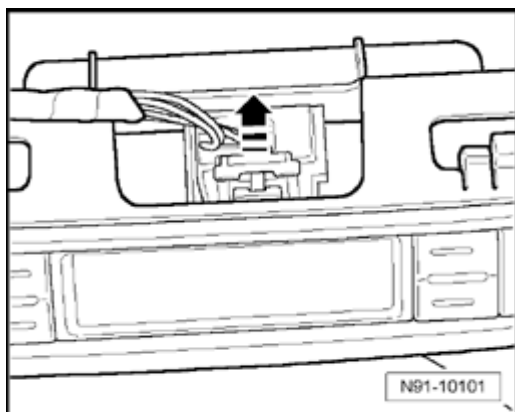


- Using appropriate screwdriver, carefully unclip rear portion of roof console trim from areas indicated with -arrows-.

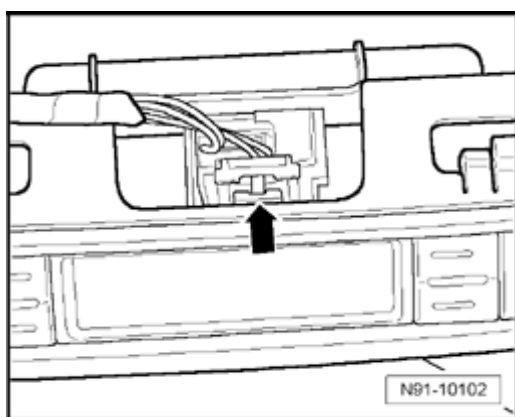


- Using appropriate screwdriver, carefully unclip both sides of display unit in area indicated with -arrow-.

91-116



- Unclip and pull up red connector lock in direction of -arrow-.



- Lift connector lock in direction of -arrow- and disconnect electrical connection.

CAUTION!

Telematics control head buttons cannot be removed, dismantled or serviced separately. Should malfunctions occur, replace complete control head.

Installing

Install in reverse order of removal.

- Check Telematics system coding and recode if necessary ⇒ [Page 91-124](#) .

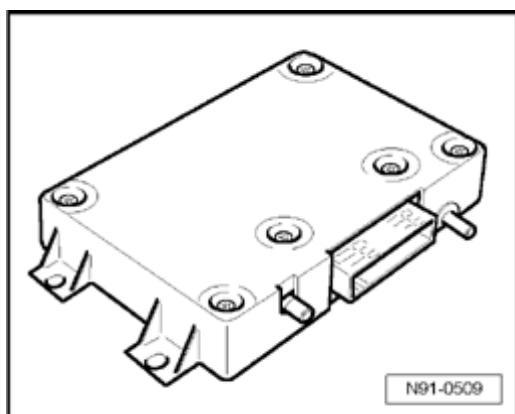
91-117



Telematics Control Module -J499-, removing and installing

Notes:

- ◆ If the Telematics control module is replaced, the OnStar[®] system needs to be reconfigured ⇒ [Page 91-126](#).
- ◆ DO NOT exchange Telephone/Telematics Control Modules between vehicles! Each module contains specific Station Identification (STID) and Electronic Serial Number (ESN) data unique to the VIN. This data is used by OnStar[®] and National Cellular Telephone Network to identify the vehicle and administer the customer's account.
- ◆ Using the VAS 5051 Vehicle Diagnostic Testing and Information System or VAS 5052 Vehicle Diagnostic and Service System in operating mode "Guided Fault Finding, and function "- J499- Telematics control module, replacing" it is possible to read the Telematics control module coding from the existing module before removal. Note code prior to removal in order input code into replacement control module.



91-118

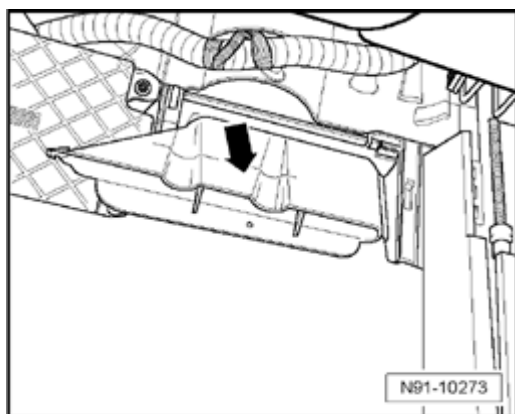


Removing

- Move front passenger's seat to highest and most forward position.

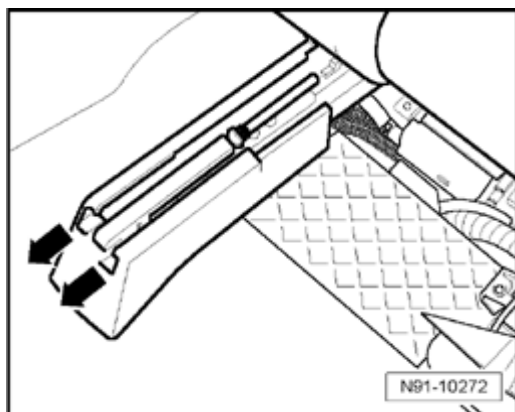
CAUTION!

- ♦ *Switch off all electrical consumers.*
- ♦ *Switch ignition off and remove ignition key.*
- ♦ *Disconnect battery according to system installed in vehicle (single or dual battery system) ⇒ [Repair Manual, Electrical Equipment, Repair Group 27](#) .*
- ♦ *When disconnecting and reconnecting battery terminals, observe all applicable Notes and torque specifications, as well as instructions on performing OBD program and electrical system function checks as specified ⇒ [Repair Manual, Electrical Equipment, Repair Group 27](#) .*

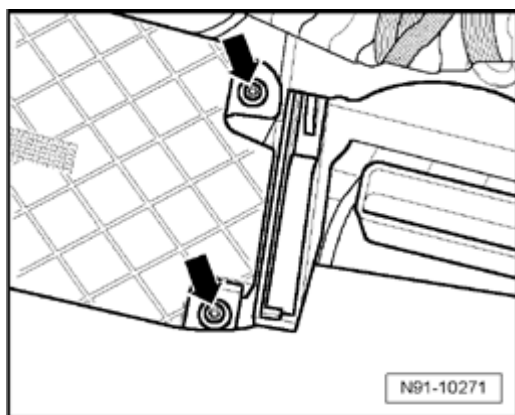


- Unclip air guide -arrow- under seat.

91-119

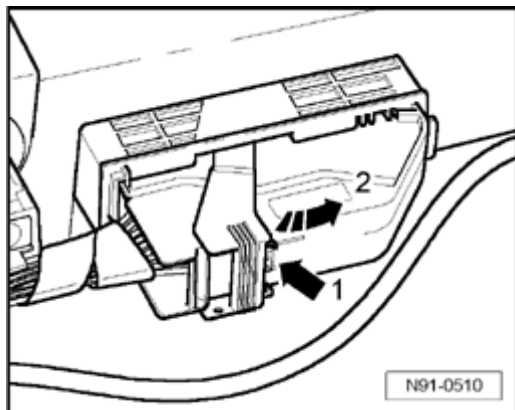


- Remove seat rail cover in direction of - arrow-.



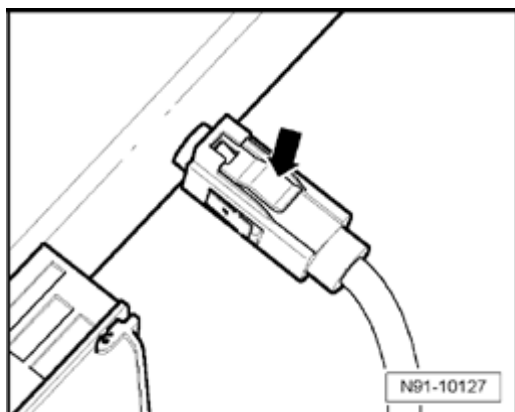
- Remove screws -arrows-.

91-120



- First disconnect 42-pin connection from control module, as follows:

- Depress clip -arrow1- and slide locking lever in direction of -arrow2-.



- Then disconnect both antenna cable connections from control module by depressing clip -arrow- and pulling out antenna connector.

Installing

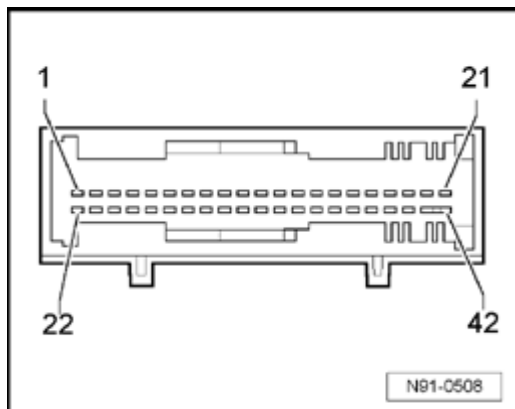
Install in reverse order of removal, noting the following:

If Telematics control module was replaced:

- Code Telematics control module ⇒ [Page 91-124](#) .
- Reconfigure Telematics system for OnStar® functions ⇒ [Page 91-126](#) .



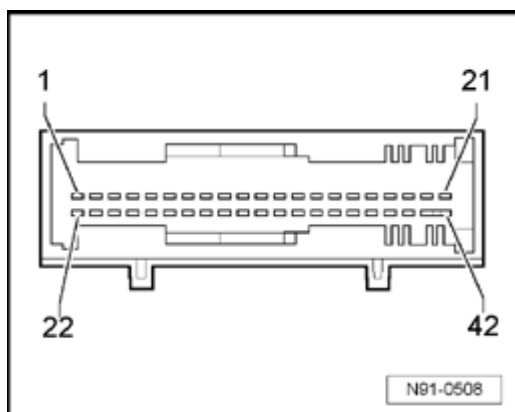
Telematics Control Module -J499- multi-pin connector assignments



42 pin multi-connector -T42-

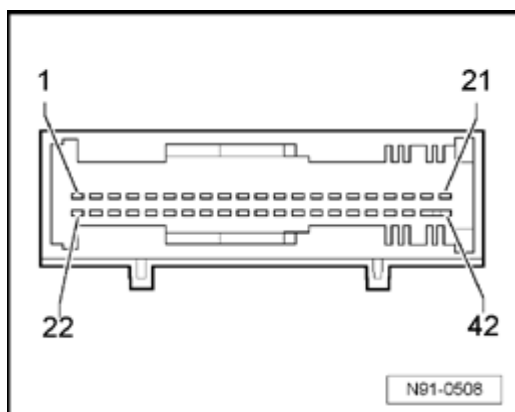
- 1 - Signal activation - Dual Horn Auxiliary Relay
- 2 - Signal activation - "lock vehicle"
- 3 - Cellular telephone connection -Audio in (not used)
- 4 - Cellular telephone connection - Battery Feedback (not used)
- 5 - Cellular telephone connection - Ground (GND)
- 6 - Cellular telephone connection - TXD-transfer (not used)
- 7 - Cellular telephone connection - RTS (not used)
- 8 - Cellular telephone connection - shielding Ground (GND) (not used)
- 9 - CAN Bus - High
- 10 - Line (+) Output to radio
- 11 - Auxiliary speaker (+) (not used)
- 12 - Telephone microphone (+)
- 13 - K-wire, Data Link Connector (DLC)
- 14 - Power supply - Terminal 15
- 15 - Telematics indicator LED "red" (in Telematics Control Head)
- 16 - Telematics indicator LED "green" (in Telematics Control Head)

91-122



- 17 - not used
- 18 - Ground (GND) (Terminal 31)
- 19 - Ground (GND) (Terminal 31)
- 20 - not used
- 21 - not used
- 22 - Signal activation - Auxiliary
Emergency Flasher Relay
- 23 - Signal activation - "unlock vehicle"
- 24 - Cellular telephone connection - Audio
out (not used)
- 25 - Cellular telephone connection - Audio
Ground (GND) (not used)
- 26 - Cellular telephone connection - power
supply (not used)
- 27 - Cellular telephone connection - RXD
(not used)
- 28 - Cellular telephone connection - RTS
(not used)
- 29 - Signal status - Telephone (not used)
- 30 - CAN Bus - Low
- 31 - Line (-) Output to radio

91-123



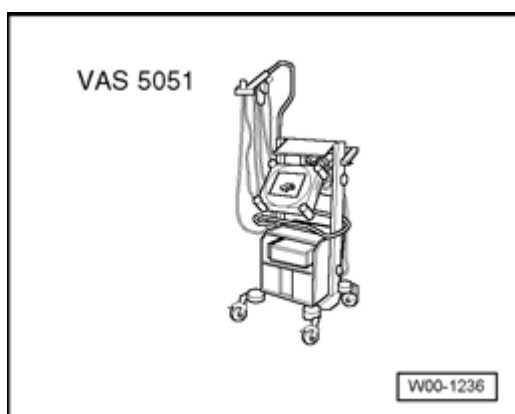
- 32 - Auxiliary speaker (-) (not used)
- 33 - Telephone microphone (-)
- 34 - Mute - Radio
- 35 - Input "SOS" from Telematics control head
- 36 - Input "Power" from Telematics control head
- 37 - (not used)
- 38 - Crash-Signal from airbag control module
- 39 - Terminal 30 (B+)
- 40 - Terminal 30 (B+)
- 41 - Emergency (backup) battery (+) (not used)
- 42 - Emergency (backup) battery (-) (not used)



Telematics Control Module -J499-, coding

After replacing the Telephone/Telematics Control Module, the control module must be coded and OnStar® system needs to be reconfigured.

Special tools, testers and auxiliary items needed



- ◆ VAS 5051 Vehicle Diagnostic Testing and Information System
- ◆ Optional: VAS 5052 Vehicle Diagnostic and Service System
- ◆ Cable adapter VAS 5051/5a or VAS 5051/6a

Notes:

- ◆ *DO NOT exchange Telephone/Telematics Control Modules between vehicles! Each module contains specific Station Identification (STID) and Electronic Serial Number (ESN) data unique to the VIN. This data is used by OnStar® and National Cellular Telephone Network to identify the vehicle and administer the customer's account.*
- ◆ *Using the VAS 5051 Vehicle Diagnostic Testing and Information System or VAS 5052 Vehicle Diagnostic and Service System in operating mode "Guided Fault Finding, and function "-J499-Telematics control module, replacing" it is possible to read the Telematics control module coding from the existing module before removal. Note code prior to removal in order input code into replacement control module.*
- Connect VAS VAS 5052 with adapter cable to Data Link Connector (DLC) and select mode "Guided Fault Finding"

91-125



- Enter appropriate model, equipment and model year information and press ">" to confirm.

After all Control Modules have been registered and DTC memories checked:

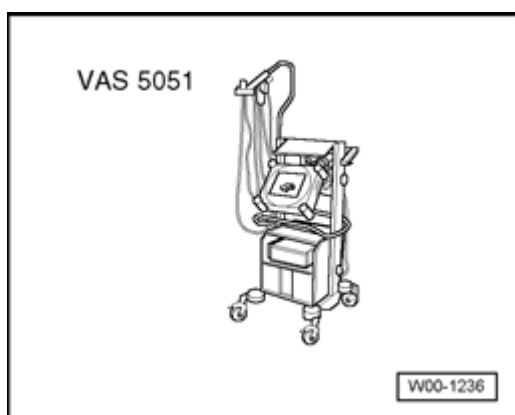
- Select "Go to"
- Select "Function / Component Selection"
- Select "Body (Repair Group 01; 27; 50 to 97)"
- Select "Electrical System (Repair Group 27; 90 to 97)"
- Select "01-Systems capable of self-diagnosis"
- Select "Telematic NAR"
- Select "Telematic NAR functions".
- Select "Coding Telematic control module"
- Follow testers prompts.



Telematics Control Module -J499-, reconfiguring

After replacing the Telephone/Telematics Control Module, the control module must be coded and OnStar® system needs to be reconfigured as described below. Have the VIN and customer details on hand.

Special tools, testers and auxiliary items needed



- ◆ VAS 5051 Vehicle Diagnostic Testing and Information System
- ◆ Optional: VAS 5052 Vehicle Diagnostic and Service System
- ◆ Cable adapter VAS 5051/5a or VAS 5051/6a

Notes:

- ◆ *DO NOT exchange Telephone/Telematics Control Modules between vehicles! Each module contains specific Station Identification (STID) and Electronic Serial Number (ESN) data unique to the VIN. This data is used by OnStar® and National Cellular Telephone Network to identify the vehicle and administer the customer's account.*
- ◆ *Failure to reconfigure the control module after replacement will prevent OnStar® services and features from functioning, and will result in a customer return for repair.*

Prerequisite

- ◆ Telematics control module is coded ⇒ [Page 91-124](#) .



- Where applicable, carefully record the 8 character Station Identification (STID) number and Electronic Serial Number (ESN) from labels on replacement module.
- Connect VAS VAS 5052 with adapter cable to Data Link Connector (DLC) and select mode "Guided Fault Finding"
- Enter appropriate model, equipment and model year information and press ">" to confirm.

After all Control Modules have been registered and DTC memories checked, see "Continued for all" ⇒ [Page 91-127](#) .

If the STID number and ESN DO NOT appear on labels on the new control module, proceed as follows:

- Select "Go to"
- Select "Function / Component Selection"
- Select "Body (Repair Group 01; 27; 50 to 97"
- Select "Electrical System (Repair Group 27; 90 to 97)"
- Select "01-Systems capable of self-diagnosis"
- Select "Telematic NAR"
- Select "Telematic NAR functions"
- Select "Check Telematic NAR control module version".
- Record ESN and STID number from appropriate display fields.

**Continued for all:**

- Select "Go to"
- Select "Function / Component Selection"
- Select "Body (Repair Group 01; 27; 50 to 97)"
- Select "Electrical System (Repair Group 27; 90 to 97)"
- Select "01-Systems capable of self-diagnosis"
- Select "Telematic NAR"
- Select "Telematic NAR functions"
- Select "Checking and erasing Telematics NAR DTC memory"
- Switch off ignition and wait a few moments.
- Switch on ignition.
- Enter address word 75 - "Telematics"
- Select "Go to"
- Select "Function / Component Selection"
- Select "Body (Repair Group 01; 27; 50 to 97)"
- Select "Electrical System (Repair Group 27; 90 to 97)"
- Select "01-Systems capable of self-diagnosis"

91-129



- Select "Telematic NAR"
- Select "Telematic NAR functions"
- Select "Checking and erasing Telematic NAR DTC memory"

No DTCs must be present.

- Check and confirm the green Telematics indicator lamp in Telematics Control Head is on.
- Exit operating mode "Guided Fault Finding".
- Disconnect tester from DLC.

Reconfiguration

- Drive vehicle outside to area away from tall buildings, and with no overhead obstructions (trees, bridges, etc.).
- Press the blue OnStar® ("On★") button. A recorded introduction will be heard.
- Press the "On★" button again at any time during the recording (it is not necessary to wait for the recording to finish).
- When an OnStar® call center advisor answers, identify yourself as an Volkswagen Technician, and that you have replaced the "Vehicle Communications Interface Unit (VCIM)".
- Supply advisor with STID number and ESN from new module. Supply the VIN and customer details if necessary. The advisor will guide you through the system reconfiguration and update of the customer's account.



- When reconfiguration is complete, end call by pressing the Communications ("DOT") button.
- Wait ten minutes and press the "On★" button again to verify system operation. Inform call center advisor you are an Volkswagen Technician performing a quality check after VCIM replacement/system reconfiguration.
- End call by pressing the Communications ("DOT") button.

Notes:

- ◆ *Normal connection time is 10 - 15 seconds. However, depending on local cellular/GPS conditions, making a connection could take up to three minutes. Be patient.*
- ◆ *If the message: "unable to contact OnStar" is heard, try relocating vehicle to a more elevated or open area and repeat connection attempts. Depending on the local cellular/GPS traffic conditions, several connection attempts may be necessary (and are normal).*
- ◆ *If the message: "OnStar request ended" is heard, the cellular connection was interrupted before the connection was completed. Wait for a short period of time before repeating connection attempt.*
- ◆ *If you are still unable to connect, call OnStar® Customer Care at 1-888-390-4050. The advisor will verify the customer's OnStar® account is active.*

91-131



Navigation System (GPS) Antenna - R50-, removing and installing

Removing

CAUTION!

Before beginning repairs on the electrical system:

♦ **Switch off all electrical consumers.**

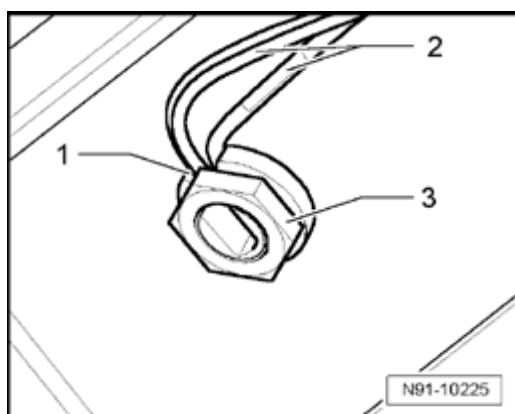
♦ **Switch ignition off and remove ignition key.**

- Remove console in molded headliner

⇒ [Repair Manual, Body Interior, Repair Group 68](#)

- Remove sunroof drive motor

⇒ [Repair Manual, Body Exterior, Repair Group 60](#)



- Remove nut -3-

Notes:

♦ Depending on antenna version, the number of antenna cables/connections - 2- will vary.

♦ Note orientation and routing of cable(s) - 1- in relation to nut -3- when removing.

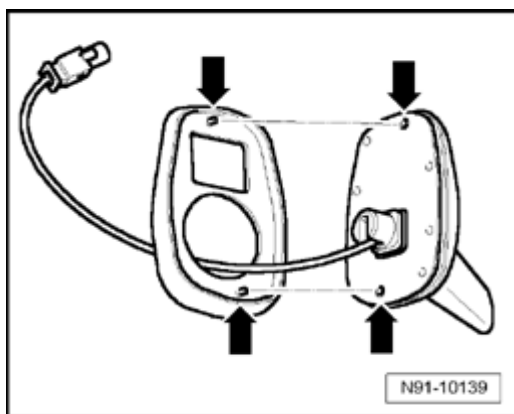
- Disconnect antenna cable connection(s).

91-132

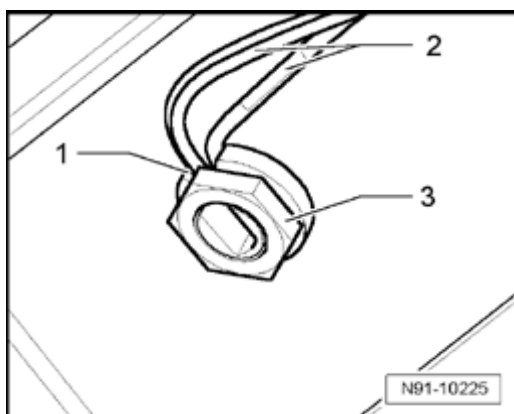


Installing

Install in reverse order of removal, noting the following:



- Ensure gasket is properly oriented in relation to relief areas -arrows- on antenna base.



- Note orientation and routing of cable(s) - 1- in relation to nut -3- when installing.

Note:

In the event that devices (such as additional antennas) that use a magnetic mounting fixture are attached to the roof, the residual magnetization of the roof sheet metal will adversely affect the operation of the GPS antenna. Before proceeding with any diagnosis of the GPS antenna related to Telematics functions, ask customer if such a device is/was used.

91-133



Telephone Microphone -R38-, removing and installing

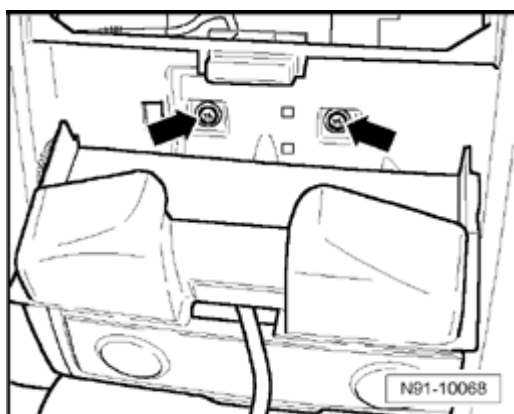
Telephone Microphone -R38- is integrated with front interior light module.

Removing

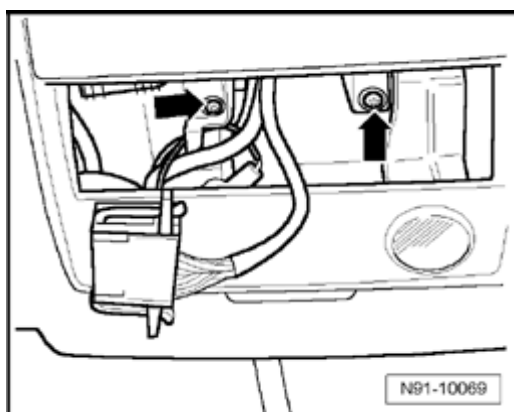
CAUTION!

Before beginning repairs on the electrical system:

- ♦ **Switch off all electrical consumers.**
- ♦ **Switch ignition off and remove ignition key.**

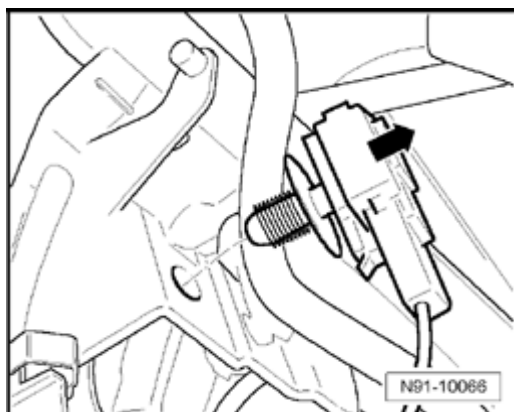


- ◀ - Where equipped, open sunglass storage and remove screws.
 - Remove front interior light module
- ⇒ [Repair Manual, Electrical Equipment., Repair Group 96.](#)

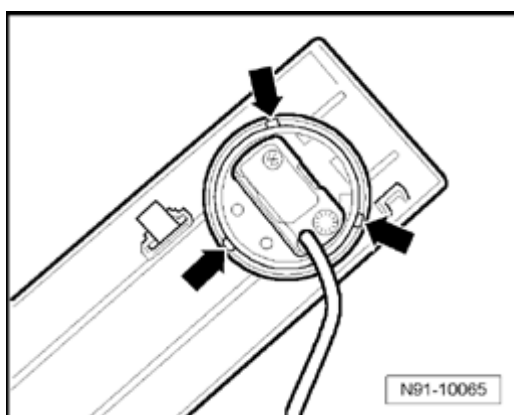


- ◀ - Remove screws -arrows-.
- Remove complete interior light unit.

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- Unclip connector from frame in direction of -arrow-
- Pull up connector lock -1- and disconnect electrical connection for microphone.



- Depress retainer clips -arrows- and remove microphone from frame.

Installing

Install in reverse order of removal.



Telematics system, troubleshooting using Telematics indicator lamp

The following allows technicians to perform an initial evaluation of Telematics system operation status for troubleshooting using the OnStar[®] Telematics indicator lamp (and pre-recorded system messages where applicable).

This serves only as an initial evaluation only and is not meant to supercede detailed OBD program procedures carried out with VAS 5051 Vehicle Diagnostic Testing and Information System in operating mode "Guided Fault Finding".

The Telematics indicator lamp LED is located in the Telematics control head. LED indications are red or green, lighting continuously, blinking slowly or quickly.

Telematics system status can be determined via the LED with the ignition switched on and referenced from the following table:



LED indication	System status:
Off	No connection, no malfunction
Red - continuously	No connection, malfunction in Telematics hardware
Green -continuously	After completion of self-test or when OBD program is performed
Red - blinking slowly	Establishing connection, malfunction in Telematics hardware
Red - blininking quickly	Connection active, malfunction in Telematics hardware
Green - blinking slowly	Establishing connection, no malfunction
Green - blinking quickly	Connection active, no malfunction

Indications, overview:

- ◆ LED is off when ignition is off.
- ◆ The green LED comes on after a self-check routine is performed (approx. 10 - 15 seconds after ignition is switched on). Sending or receiving voice communication with the OnStar[®] call center is now possible. LED remains on even in areas without cellular coverage.
- ◆ The green LED slowly blinking indicates a communication request has taken place and the system is in the process of establishing a cellular connection.
- ◆ The red LED indicates a malfunction in the Telematics hardware was determined during the self check.

**Note:**

After pressing either the OnStar® or Emergency button, a recorded message announces: "connecting to OnStar," followed by progression tones. Normal connection time is 10 - 15 seconds. However, due to local cellular/GPS conditions, making a connection could take up to three minutes. Be patient.

Condition - Telematics indicator lamp "green" plus:

- ◆ message "unable to contact OnStar®" and disconnect,
- ◆ message "OnStar® request ended",
- ◆ nothing happens,
- ◆ or a cellular message

indicates system cellular reception is affected.
Proceed as follows:

- Relocate vehicle to a more elevated or open area and repeat connection attempts. Depending on the local cellular/GPS traffic conditions, several connection attempts may be necessary (and are normal).
- Shortcomings in the vehicle's cellular/GPS antenna system also affects connectivity. Check all cellular/GPS antenna connections, and perform OBD program using VAS 5051 Vehicle Diagnostic Testing and Information System in mode "Guided Fault Finding". Check for DTCs related to antenna function.

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- If you are still unable to connect, record the VIN and customer details and call OnStar® Customer Care at 1-888-390-4050. Identify yourself to the advisor as an Volkswagen Technician. The advisor will verify the customer's OnStar® account is active. Further troubleshooting assistance may be given.

Condition - Telematics indicator lamp "red"

indicates system hardware (vehicle portion) is affected. Proceed as follows:

- Perform OBD using VAS 5051 Vehicle Diagnostic Testing and Information System in mode "Guided Fault Finding". Check/perform:
 - ◆ DTC memory (function 02)
 - ◆ Output DTM (function 03)
 - ◆ Read Measuring Value Block (function 08)

Note:

In the event any of the OnStar® control buttons are either inadvertently or deliberately pressed for longer than 15 seconds, the OBD program assumes a button is sticking. The red status light will come on and a DTC loads in memory. Perform OBD program using VAS 5051 Vehicle Diagnostic Testing and Information System in mode "Guided Fault Finding". Check DTC memory for DTC 01526 "mechanical malfunction". Inform customers accordingly.

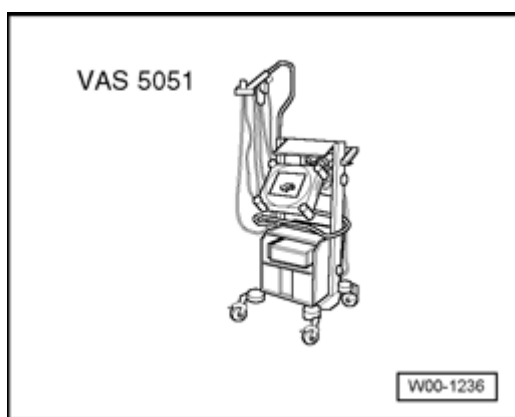


Transport Mode, deactivating

The Telematics system is disabled (switched-off) when Transport Mode is activated. This is necessary when vehicles are transported over long distances or stored for longer periods of time.

Volkswagen vehicles equipped with Telematics are initially delivered to dealerships with the system in Transport Mode, and must be deactivated using an OBD program function before delivery to the customer.

Special tools, testers and auxiliary items needed



- ◆ VAS 5051 Vehicle Diagnostic Testing and Information System
- ◆ Optional: VAS 5052 Vehicle Diagnostic and Service System
- ◆ Cable adapter VAS 5051/5a/6a or VAS 5052/3
- Connect VAS VAS 5052 with adapter cable to Data Link Connector (DLC) and select operating mode "Self Diagnosis"
- Select vehicle system (address word) "75 - Telematics"
- Select Function "10 - Adaptation" and press ">" to confirm
- Locate Channel 3
- Enter value "0" (Deactivate Transport Mode - Enable Telematics system)
- Remaining steps as prompted by tester.