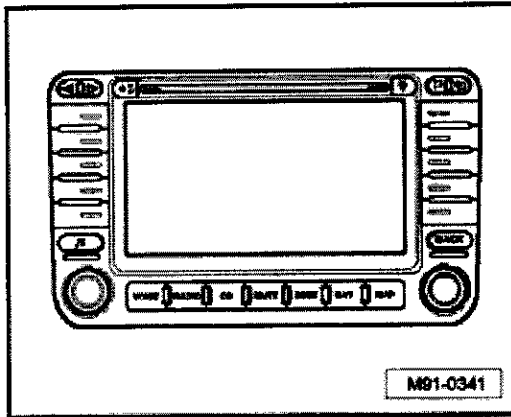# Radio - Navigation System

General information

Head unit "Radio - Navigation system"

Radio - Navigation system available as optional equipment from model year 2006.

Radio - Navigation system consists of radio head unit with integrated DVD based navigation system, Digital Sound System Control Module J525 , loudspeakers located in front/rear doors, diversity antenna system integrated in rear window and roof-mounted GPS antenna.

Radio system consists of the radio head unit with integrated 6-disc CD changer,

Radio - Navigation head unit includes:

RDS radio receiver

6.5 inch color liquid crystal display in 16:9 format

Navigation system with GPS satellite receiver

DVD drive for navigation system

Additional features:

External CD changer

Satellite Radio capability (owner must subscribe to satellite radio service)

Loudspeaker system and Digital Sound System Control Module J525 same as "Premium Sound System" ⇒ 91-2, General information

Dual diversity radio antenna system same as "Premium Sound System" and additional GPS antenna ⇒ 91-2, General information

Note:

Radio - Navigation System head unit has Electronic anti-theft coding. Deactivating electronic anti-theft system, ⇒ 91-3, Electronic anti-theft system .

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 roof antenna and compass module. Before proceeding with any diagnosis of the roof antenna or 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 standard or optional radio system. Always read the owners manual and review applicable system functions.

Note:

Additional information:

⇒ *Owners Manual*

⇒ *Self Study Program - Course Number 89103 "The 2005 new Jetta New Model Introduction"*

⇒ *Self Study Program - Course Number 873403 "The 2005 new Jetta - Electrical System"*

⇒ *Wiring Diagrams Component Locations*

Warning!

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 in

⇒ *Repair Manual, Electrical Equipment, Repair Group 27, Battery, disconnecting and reconnecting*

.

On Board Diagnostic (OBD), functions

"Radio - Navigation System" has On Board Diagnostic (OBD) capability. If malfunctions occur in monitored components, Diagnostic Trouble Codes (DTC) will be stored in memory.

Troubleshoot radio and navigation system malfunctions by performing OBD program using Vehicle Diagnosis, Testing and Information System VAS 5051/5052/5052 in operating mode "Guided Fault Finding" .

"Radio - Navigation system" , component overview

M91-0319
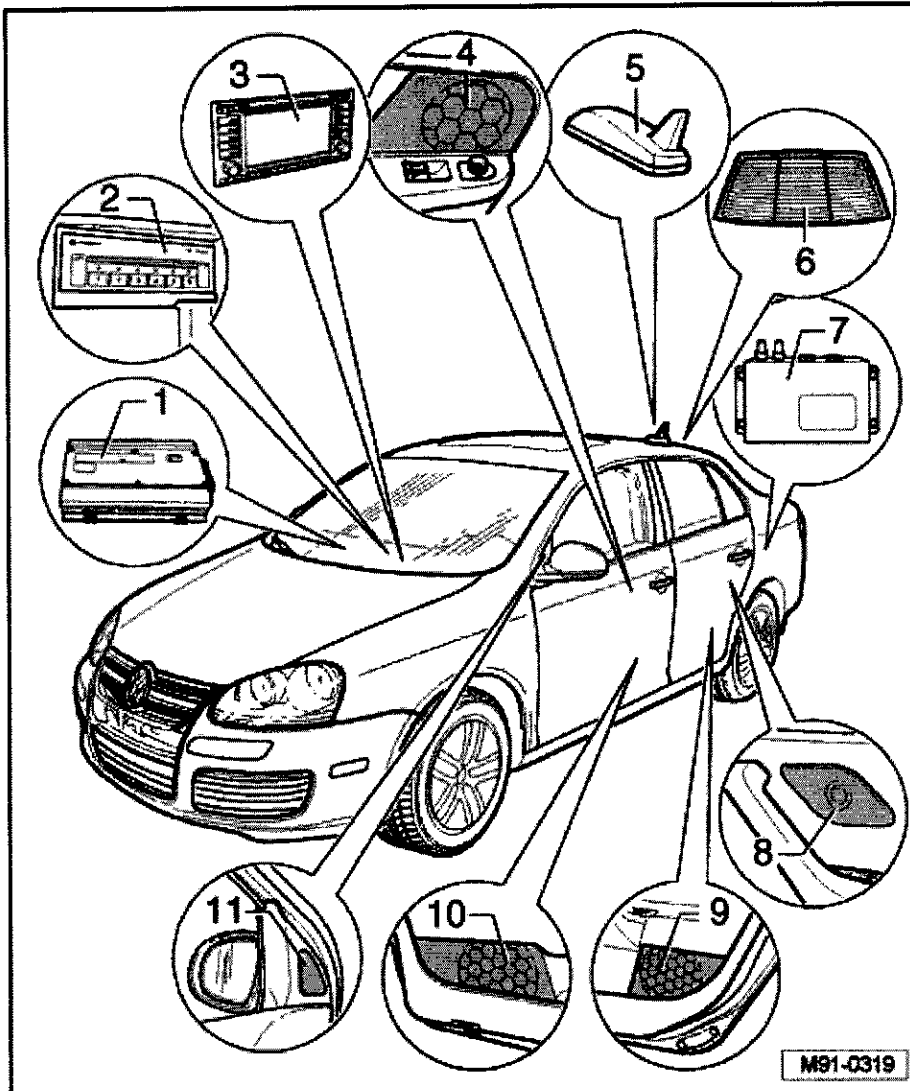
1. **Digital Sound System Control Module J525**

   o Installed under drivers seat

   o Additional information, ⇒ 91-5, Digital Sound System Control Module

2. **CD Changer R41**

   o 6 disc CD changer

   o Installed under foldable center armrest

   o Additional information, ⇒ 91-6, CD Changer

3. Radio/Navigation Display Control Module J503

- Removing and installing ⇒ 91-3, Radio/Navigation Display Control Module J503 , removing and installing

- Overview of electrical connections, ⇒ 91-3, Multi-pin connector assignments

4. Right Front Midrange Speaker R104 and Left Front Midrange Speaker R103

- Installed in left and right front door trim

5. Satellite Tuner Antenna R172

- Installed at rear on roof

- Additional information, ⇒ 91-8, Antenna systems

6. Antenna R11 and Radio Antenna 2 R93 and Navigation System Antenna R50

- Installed in rear window

- Diversity antenna for radio

- Additional information, ⇒ 91-8, Antenna systems

7. Satellite Radio R146

- Installed under rear parcel shelf in luggage compartment

- Additional information, ⇒ 91-4, Satellite Radio

8. Right Rear Treble Speaker R16 and Left Rear Treble Speaker R14

- o Installed in left and right rear door trim

9. **Right Rear Bass Speaker R17 and Left Rear Bass Speaker R15**

   - o Installed in left and right rear door trim

10. **Right Front Bass Speaker R23 and Left Front Bass Speaker R21**

    - o Installed in left and right front door trim

11. **Right Front Treble Speaker R22 and Left Front Treble Speaker R20**

   - o Installed in both front door mirror triangles

Radio/Navigation Display Control Module J503 , removing and installing

Note:

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 owners manual) or, ⇒ 91-3, Electronic anti-theft system . Give new code number to 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.

3409

W00-0016
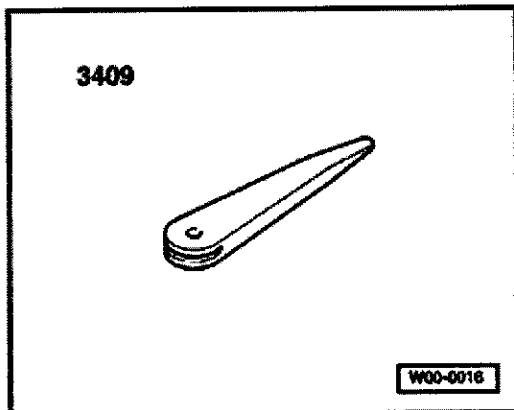
Special tools, testers and auxiliary items required

Trim removal wedge 3409

Removing:

Warning!

*Before beginning repairs on electrical system*

Switch off all electrical consumers.

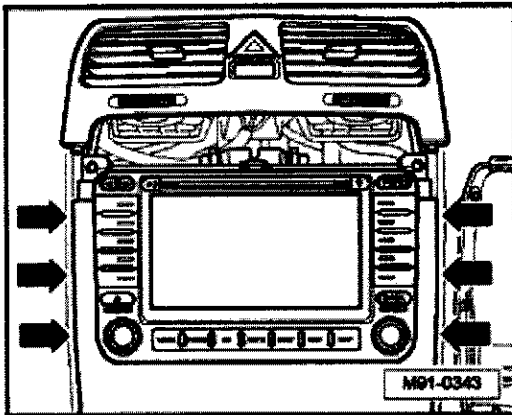*Switch ignition off and remove ignition key.*

Remove any DVDs which may have been left in Navigation drive ⇒ Owners Manual .

- Remove center instrument panel trim with air outlets so that radio panel screws are accessible,
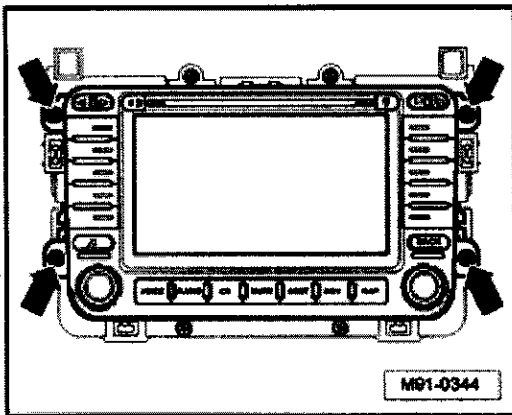
⇒ *Repair Manual, Body Interior, Repair Group 68, Storage compartments, covers and panels*
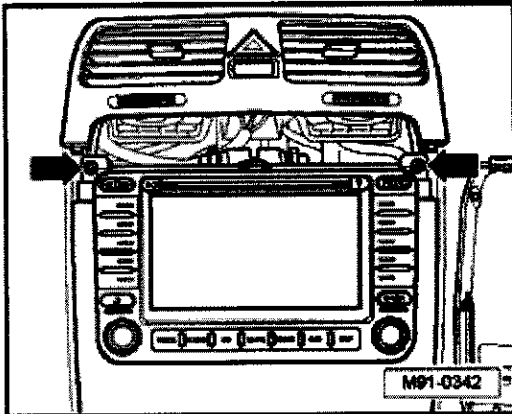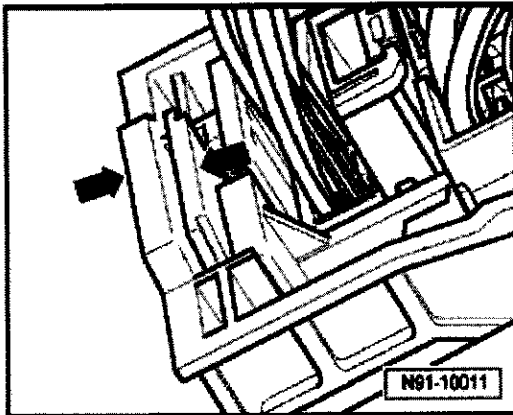
- Remove screws - **arrows** - .

- Use trim removal wedge 3409 to carefully pry off center instrument panel trim in area of - **arrows** - and remove.
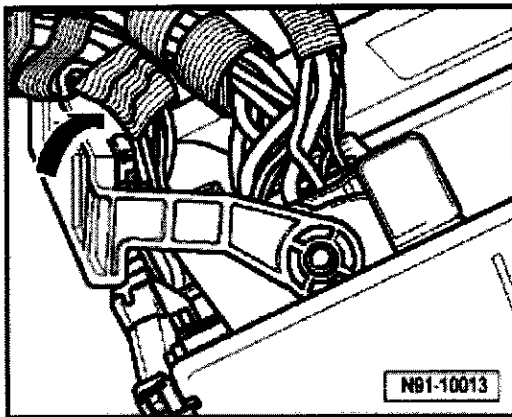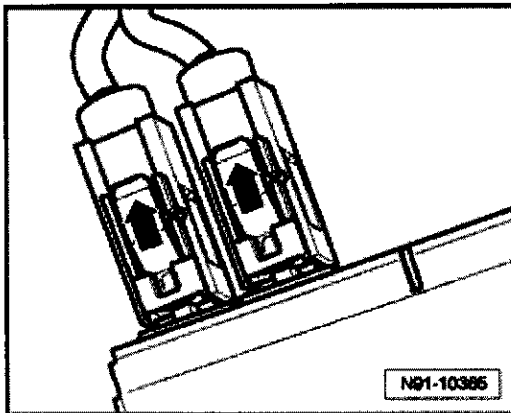

- Remove screws - **arrows** - .

- Pull unit from opening until electrical connections on rear of unit are accessible.

N91-10011

- Disengage electrical connection lock - **arrows** - .

N91-10013

- Rotate mounting bracket up - **arrow** - and disconnect electrical connection.

N91-10385

- Disengage antenna cable electrical connection lock - **arrows** - and disconnect.

Installing:

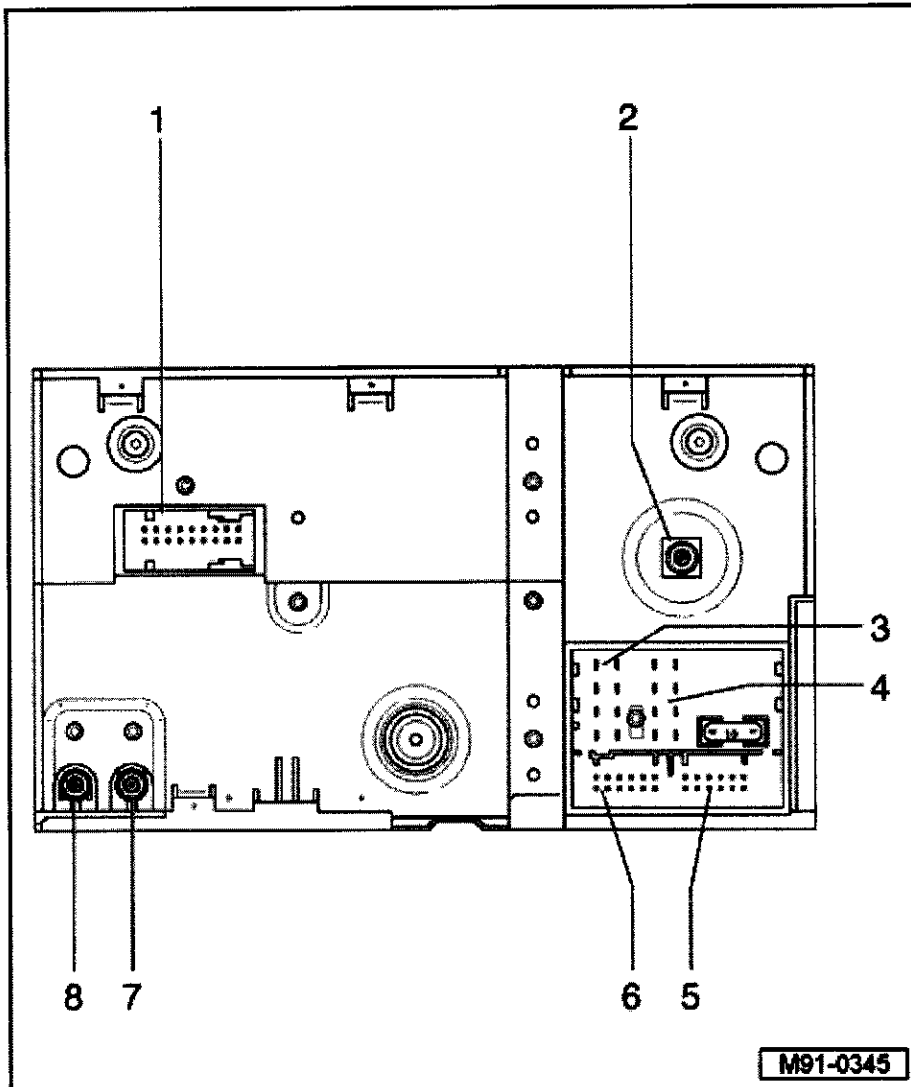- Reconnect electrical/antenna connections and lock into position.

Warning!

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. Damage will result.

- Slide unit straight into instrument panel opening until it engages in assembly frame.
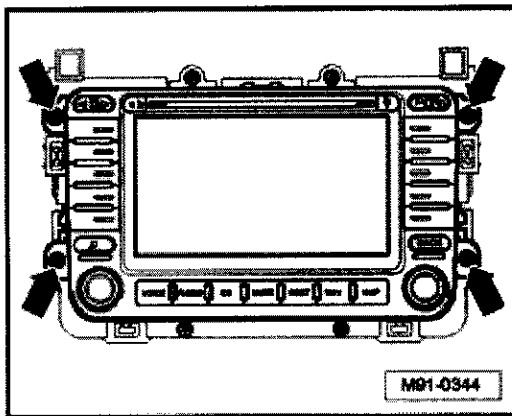
- Install screws - **arrows** - .

- Reinstall center instrument panel trim.

- If necessary, deactivate anti-theft coding, ⇒ 91-3, Electronic anti-theft system .

- Check radio and navigation system coding, recode if necessary.

- Radio coding, ⇒ 91-3, Radio system components, adapting .

- Navigation system coding, ⇒ 91-3, Navigation system components, adapting .

Multi-pin connector assignments

M91-0345

1 - 18-pin multi-pin electrical connection 1

Terminal assignment, ⇒ 91-3, 18-pin multi-pin electrical connection 1, for video and LF-input (not applicable to USA/CDN)

2 - Multi-pin electrical connection 2

Connection for navigation system antenna

Terminal assignment, ⇒ 91-3, Multi-pin electrical connection 2

3 - 8-pin multi-pin electrical connection 3

Terminal assignment, ⇒ 91-3, 8-pin multi-pin electrical connection 3, for loudspeaker outputs

4 - 8-pin multi-pin electrical connection 4

Terminal assignment, ⇒ 91-3, 8-pin multi-pin electrical connection 4, power supply and CAN-Bus

5 - 12-pin multi-pin electrical connection 5

Terminal assignment, ⇒ 91-3, 12-pin multi-pin electrical connection 5, for telephone signals and pre-amplifier output signals (where applicable)

6 - 12-pin multi-pin electrical connection 6

Terminal assignment, ⇒ 91-3, 12-pin multi-pin electrical connection 6, for CD changer control, CD audio input signals and satellite radio
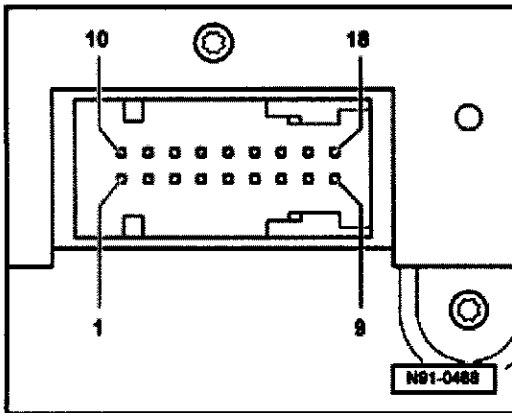
7 - electrical connection 7

Antenna connection for terrestrial radio reception

Terminal assignment, ⇒ 91-3, Electrical connections 7 and 8, antenna connections

8 - electrical connection 8

Antenna connection for terrestrial radio reception

Terminal assignment, ⇒ 91-3, Electrical connections 7 and 8, antenna connections
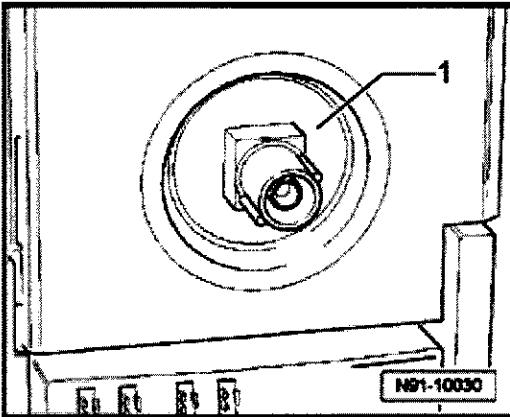
18-pin multi-pin electrical connection 1, for video and LF-input (not applicable to USA/CDN)
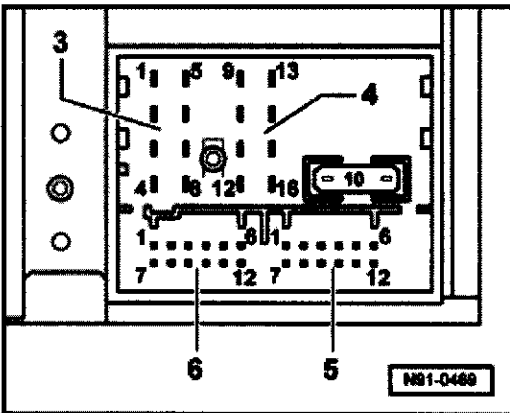
Note:

Electrical connection for TV Tuner not applicable to USA/CDN.

1 - Not assigned

2 - Audio signal Ground (GND)

3 - Audio signal Ground (GND)

4 - Shielding Ground (GND)

5 - Video signal Ground (GND)

6 - Video switching signal

7 - Video signal Ground (GND)

8 - Video signal Ground (GND)

9 - Video signal Ground (GND)

10 - Not assigned

11 - Left audio signal, input

12 - Right audio signal, input

13 - Shielding Ground (GND)

14 - Synchronization of vertical and horizontal picture signals

15 - 50 Hertz/ 60 Hertz

16 - Signal input for picture signal blue

17 - Signal input for picture signal green

18 - Signal input for picture signal red

Multi-pin electrical connection 2

1 - Blue colored connection for antenna input signal
Navigation

8-pin multi-pin electrical connection 3, for loudspeaker outputs

Note:

Radio - Navigation head unit loudspeaker outputs are uses as input signals to Digital Sound System Control Module J525 .

1 - Right rear loudspeaker, plus

2 - Right front loudspeaker, plus

3 - Left front loudspeaker, plus

4 - Left rear loudspeaker, plus

5 - Right rear loudspeaker, minus

6 - Right front loudspeaker, minus

7 - Left front loudspeaker, minus

8 - Left rear loudspeaker, minus
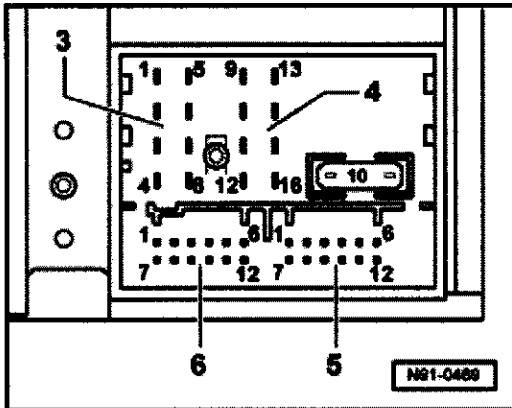
8-pin multi-pin electrical connection 4, power supply and CAN-Bus

9 - CAN-Bus, plus

10 - CAN-Bus, minus

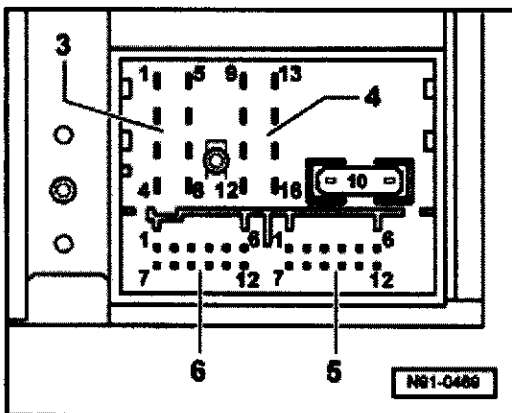11 - Radio muting (during telephone use)

12 - Ground (Terminal 31)

13 - Radio on, control wire and booster

14 - Not assigned

15 - Plus connection (Terminal 30 B+)

16 - Control signal for anti-theft system, SAFE, terminal 30

12-pin multi-pin electrical connection 5, for telephone signals and pre-amplifier output signals (where applicable)

Note:

Electrical connection where applicable.

1 - Not assigned

2 - Not assigned

3 - Line Out, left

4 - Not assigned

5 - Navigation language, plus

6 - Telephone audio input signal, TEL, minus

7 - Not assigned

8 - Line out, ground

9 - Line Out, right

10 - Not assigned

11 - Navigation language, minus

12 - Telephone audio input signal, TEL, plus
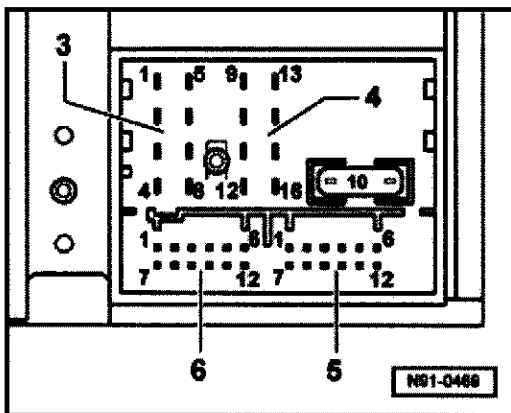
12-pin multi-pin electrical connection 6, for CD changer control, CD audio input signals and satellite radio

1 - Satellite Radio input, audio left

2 - CD changer, left and right port, audio Ground (GND)

3 - Satellite Radio input, audio Ground (GND)

4 - CD changer, power supply, plus, terminal 30

5 - Satellite Radio input, continuous plus, terminal 30

6 - CD changer, DATA OUT (data exchange for CD changer control from radio navigation system to CD changer)

7 - Satellite Radio input, audio right

8 - CD changer, left port audio, CD/L

9 - CD changer, right port audio, CD/R

10 - CD Changer, control signal

11 - CD changer, DATA IN (data exchange for CD changer control from CD changer to radio navigation system)

12 - CD changer, CLOCK (internal test protocol for monitoring data flow)
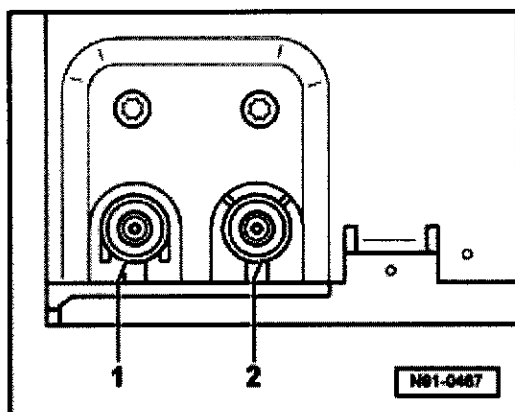
Electrical connections 7 and 8, antenna connections

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

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

Note:

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

Electronic anti-theft system

Radio - Navigation System is equipped with an electronic Comfort anti-theft system which operates in conjunction with radio unit identification data stored in the instrument cluster.

When an existing radio - navigation unit is removed (power supply disconnected) and reinstalled in the same vehicle, it is not necessary to input the anti-theft security code.

Electronic anti-theft system, function

After first activation of electronic anti-theft system, a numeric code is stored in both the radio - navigation unit and instrument cluster. When the unit power supply is restored (e.g. after removing and installing unit or battery), a data exchange takes place between the radio - navigation unit and instrument cluster.

The data exchange compares the numeric code of the unit to the numeric code stored in the instrument cluster. If numeric code is identical, the instrument cluster recognizes that the radio - navigation unit "belongs to the vehicle" and is ready for operation.

Should a radio - navigation unit be replaced, the anti-theft code must be entered.

Deactivating electronic anti-theft system, ⇒ 91-3, Electronic anti-theft system, deactivating .

Next, when the ignition key is inserted into the ignition switch ("S-contact" activated), the data exchange between the replacement radio - navigation unit and instrument cluster take place automatically.

The data exchange lasts about 5 seconds. During this time a VAS 5051/5052/5052 must not be connected or remain connected.

After successful data exchange, the replacement unit is ready for operation without renewed input of anti-theft code (should power supply subsequently be disconnected and reconnected).

The electronic anti-theft system is activated and will lock the radio - navigation unit as soon as:

radio - navigation unit is installed in a different vehicle

instrument cluster is replaced

A radio - navigation unit which has been locked by the electronic anti-theft system will show "SAFE" and "1000" on display when switched on.

To cancel the lock, deactivate the electronic anti-theft warning system, ⇒ 91-3, Electronic anti-theft system, deactivating .

Electronic anti-theft system, deactivating

Reactivating a locked radio navigation system is only possible by entering correct code number for electronic anti-theft system.

Note:

Code number for electronic anti-theft system is listed along with radio serial number on radio card, ⇒ operating instructions .

For security reasons, radio card should not be stored in the vehicle. Obtain the code number from the customer, if necessary.

If a radio navigation system is replaced, code number from replacement unit must be used.

Inform the customer that the code number has changed.

- Obtain radio code.

- Switch on radio navigation system.

The word "SAFE" and the number row "0000" appear in the display.

- Enter the code number listed on the radio card, do this by selecting and confirming characters on the selection screen for letters and numbers in succession.

Note:

With the entry of the first character, the number row "0000" is overwritten.

- Confirm code by pressing the right rotary press button.

- When the anti-theft code has been entered, confirm with Taste   located next to the word "OK" on the display.
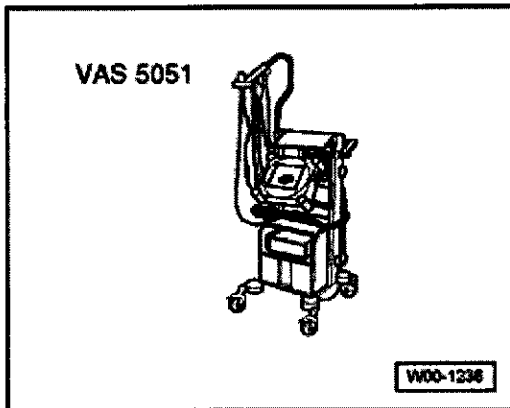
The unit is enabled and ready for operation.

Note:

If the anti-theft code has been entered incorrectly, it can be corrected immediately in two subsequent attempts. If anti-theft code is entered incorrectly three times, then the radio navigation system is locked for an hour. Radio navigation

system can then be switched on and insert ignition key in ignition lock. After one hour, then the procedure for deactivating the electronic anti-theft system can be repeated. Remember: Always three attempts to input code, after that the radio navigation system is locked for one hour.

Navigation system components, adapting

Special tools, testers and auxiliary items required

Vehicle Diagnostic Testing and Information System VAS 5051/5052

Diagnostic cable VAS5051/5a or VAS5051/6a or VAS5052/3

- Select operating mode "Guided Functions" and follow tester prompts

or

- Select operating mode "Guided Fault Finding"

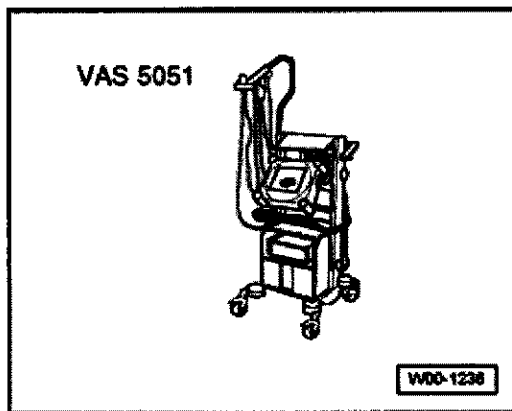- Enter information as prompted and press ">" to confirm.

After the DTC memory of all control modules has been checked:

- Press "Go to" button.

- Select "Function/component selection"

- Select "Body (Repair Group 01; 27; 50-97)"

- Select "Electrical system int/ext (Repair Group 01; 27' 90-

97)"

- Select "01 - Self diagnosis"

- Select "Radio - Navigation system"

- Select "Functions" .

- Select appropriate option

- Press ">" to confirm

- Follow tester prompts

Radio system components, adapting

Special tools, testers and auxiliary items required

Vehicle Diagnostic Testing and Information System VAS 5051/5052

Diagnostic cable VAS5051/5a or VAS5051/6a or VAS5052/3

- Select operating mode "Guided Functions" and follow tester prompts

or

- Select operating mode "Guided Fault Finding"

- Enter information as prompted and press ">" to confirm.

After the DTC memory of all control modules has been checked:

- Press "Go to" button.

- Select "Function/component selection"

- Select "Body (Repair Group 01; 27; 50-97)"

- Select "Electrical system int/ext (Repair Group 01; 27' 90-97)"

- Select "01 - Self diagnosis"

- Select "Radio - Navigation system"

- Select "Functions" .

- Select appropriate option

- Press ">" to confirm

- Follow tester prompts