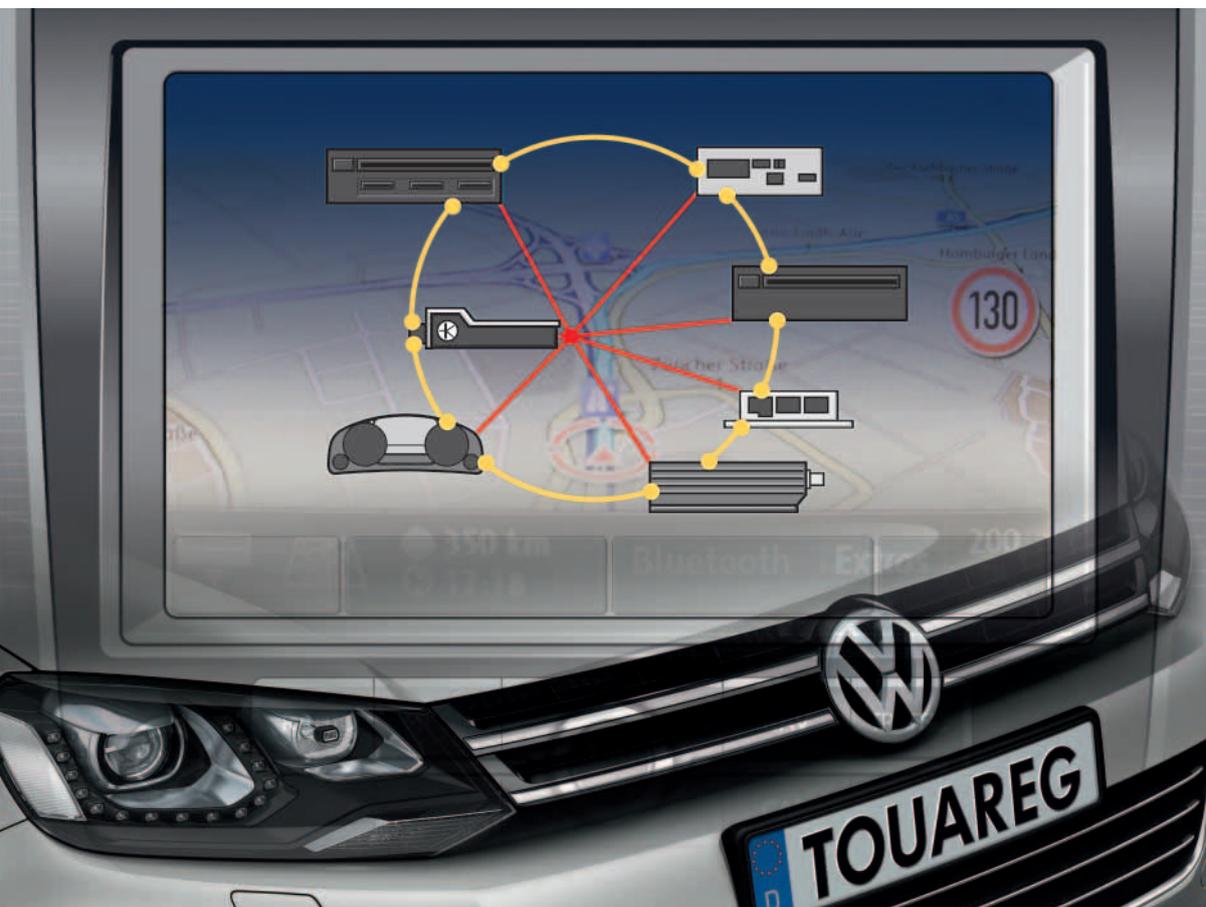




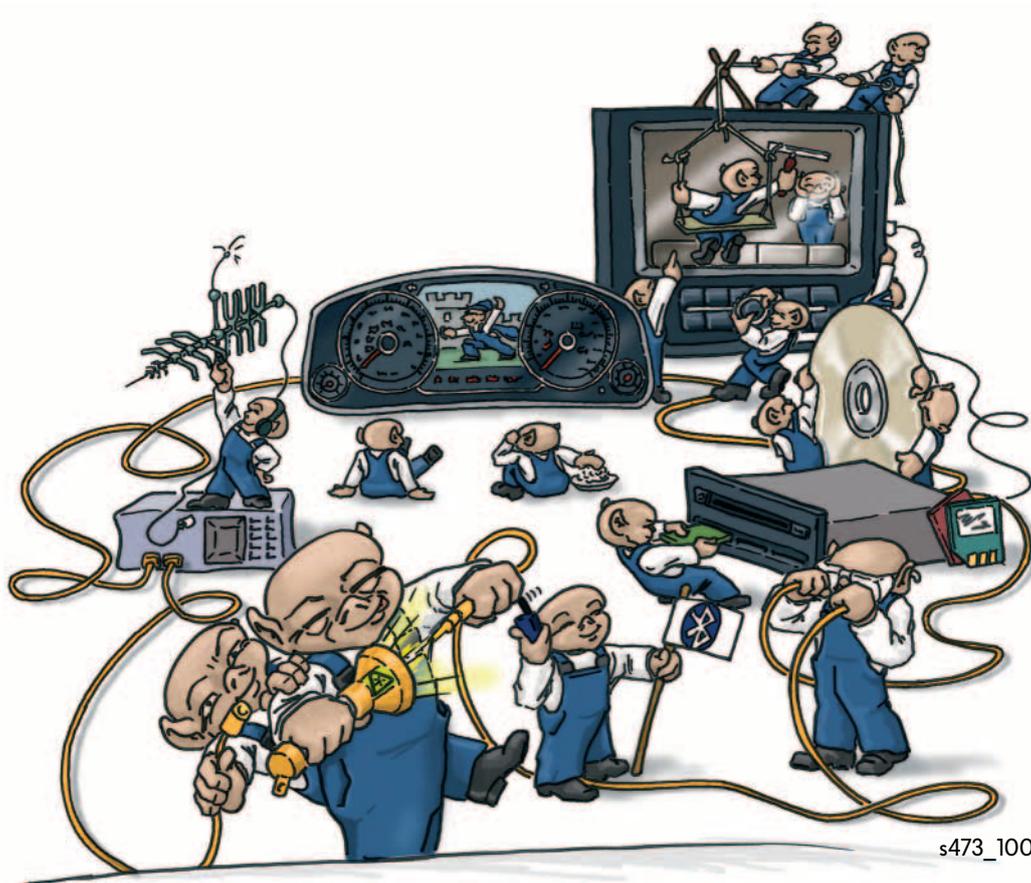
Self-study Programme 473

Infotainment in the Touareg 2011

Design and Function



In addition to the traditional medium of radio, other media like television, video and telephone systems have also been popular in cars for some time now. In order to achieve, among other things, a very high level of user friendliness, these media have been combined in a single infotainment system, which can also incorporate other vehicle functions, for example, controls for air conditioning and driver assistance systems. Increasingly large amounts of data need to be transferred even faster, in particular to allow high-quality visual reproduction of data. For this reason, we have given the Touareg 2011 an infotainment system that links the different playback devices, for example, the media player, radio tuner and TV tuner, with a fibre-optic cable for data transfer (MOST data bus).



You will find the latest information on the compatibility of infotainment components and data formats at the Volkswagen Accessories website.

The self-study programme portrays the design and function of new developments. The contents will not be updated.

For current testing, adjustment and repair instructions, refer to the relevant service literature.



Attention Note



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Introduction



At launch, the Touareg can be equipped with an infotainment system based on the RNS 850 radio and navigation system. An infotainment system based on the RCD 550 radio is planned for a later date. The functions and information in this book therefore refer only to the system combined with the RNS 850.

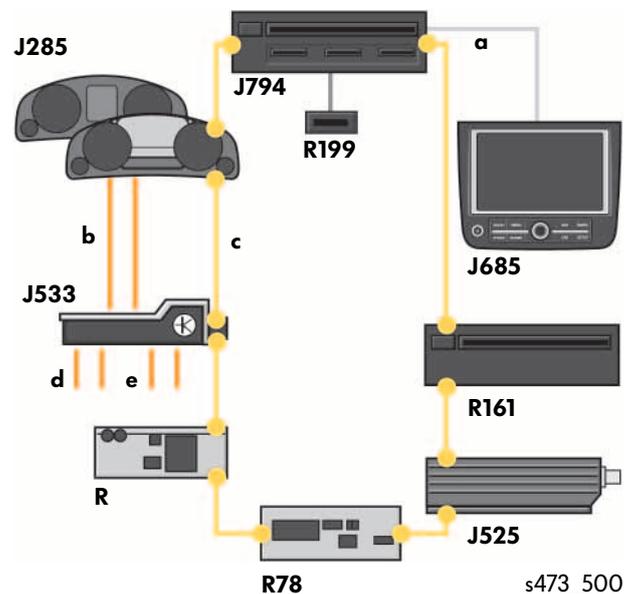
Overview of infotainment system

The central element is the control unit 1 for information electronics J794 for the RNS 850 in the versions with and without integrated GSM telephone module. The J794 communicates with most infotainment components via the MOST data bus.

Further components could be, for example:

- the radio R
(radio unit in the “Basic” and “DAB” versions)
- the DVD changer R161
- the TV tuner R78
(TV/DVB-T tuner; depending on country in variants analogue/digital and purely digital)
- the digital sound package control unit J525
(DynAudio sound package)

In the Medium and Premium versions, the displays in the centre console (infotainment unit for front information display and operating unit control unit J685) and in the dash panel insert (control unit in dash panel insert J285) are connected to the infotainment system via different interfaces.



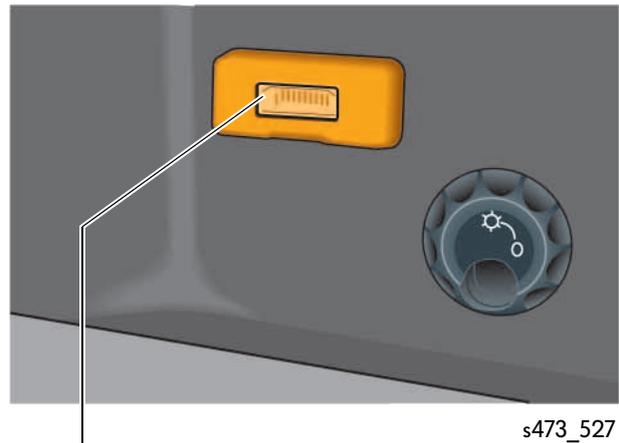
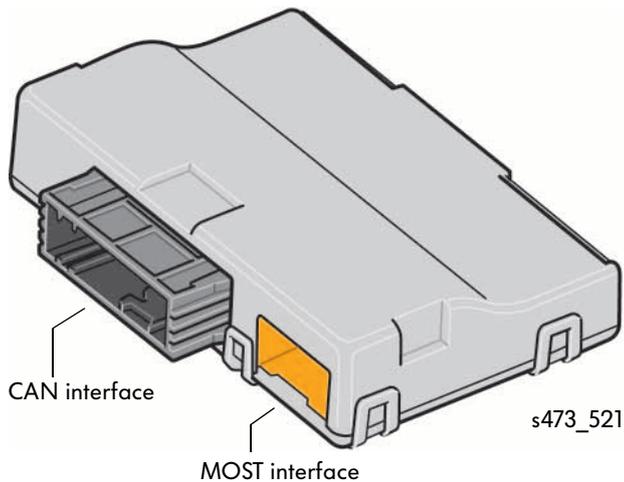
- Legend**
- J285 Control unit in dash panel insert
 - J525 Digital sound package control unit
 - J533 Data bus diagnostic interface
 - J685 Display unit for front information display and operating unit control unit
 - J794 Control unit 1 for information electronics
 - R Radio
 - R78 TV tuner
 - R161 CD changer
 - R199 Connection for external audio sources
-
- a LVDS connection (200Mbit/s)
 - b Display and operation CAN data bus (500kbit/s)
 - c MOST data bus (21Mbit/s)
 - d Powertrain CAN data bus (500kbit/s)
 - e Extended CAN data bus (500kbit/s)



Infotainment interfaces

There are two types of electrical connection:

1. Interfaces to other vehicle system components or control units for the on-board electronics
2. Interfaces for using external devices or storage media.



Media-in interface
(connection for external audio sources R199)

Interfaces for on-board electronics

The infotainment system can exchange information with other data bus subscribers via the data bus diagnostic interface J533, for example, with the Climatronic control unit via the convenience CAN data bus. It also processes the signal from the multi-purpose camera in the wing mirror via the extended CAN data bus.

Some devices use several interfaces to exchange information within the infotainment system. For example, the Premium dash panel insert uses the MOST data bus and the display CAN data bus for this.

Interfaces for connecting external devices and storage media.

If they have the right technical configuration, external devices can be connected to the infotainment system either wirelessly via Bluetooth or by plugging an adapter cable into the media-in interface (optional) in the glove compartment, for example, via USB. The control unit 1 for information electronics J794 has two SD slots for memory cards and a SIM slot when combined with the GSM add-on.



You will find detailed information on functions and supported data formats in the description of components in the next chapter.

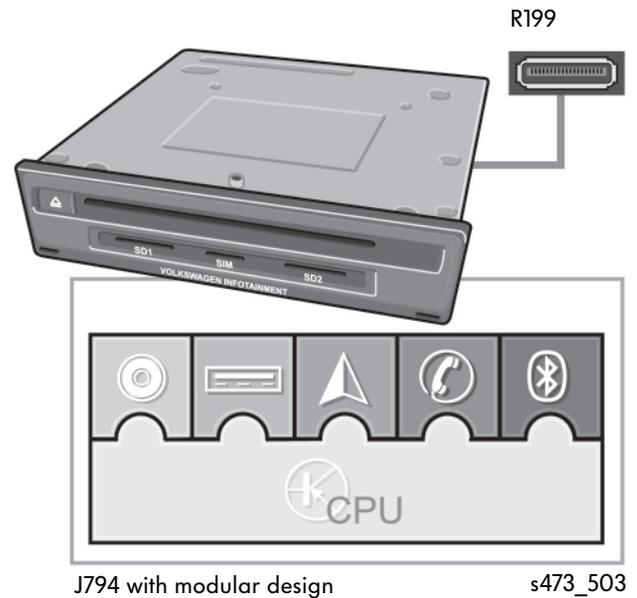
RNS 850 Radio and Navigation System

Control unit 1 for information electronics



This central component of the infotainment system is fitted in the glove compartment and consists of several function modules inside a single housing. The following modules have been integrated:

- the system module (CPU)
- the integrated DVD drive
- the media player
- the navigation module
- the GSM telephone module (option)
- the Bluetooth module (option)
e.g. for hands-free system



System module

Together with the hard drive and the processor (CPU - Central Processing Unit), this module forms the foundations for the control unit for information electronics. The integrated automotive hard drive has a storage capacity of 60 gigabytes, of which 18 gigabytes are reserved as a partition for the customer media library. The larger partition of 40 gigabytes is provided, for example, for navigation data, media databases, TMC folders or address books. Automotive hard drives are specifically developed for use in vehicles and are not as sensitive to vibrations as commercially available computer hard drives. The RAM (Random Access Memory) for the CPU has a memory capacity of 256MB and a flash memory area of 256MB for system updates.

The J794 is the master on the MOST data bus for the infotainment system and thus controls the other infotainment components. It regulates the network management for the infotainment system and the timing of the MOST data bus protocol.

The control unit J794 is connected to the connection for external audio sources R199 (media-in interface; also located in the glove compartment) to allow use of external audio and video sources.

Voice control

The system module of the control unit 1 for information electronics features a voice control system for the whole infotainment system.

Therefore it is not only possible to switch between the infotainment functions with spoken commands, but also to select address book entries or media titles. This means that a text passage, for example, made up of an album, artist and title when the media player is active or made up of a country, town, street and house number when entering a destination in the navigation function, is recognised as a complete text block. The entry must be spoken freely without pausing.

Furthermore the voice entry system can also set a reference to the desired song, for example, if it is an international music track and the title is pronounced in the user's language instead of in the original language of the track.

It is also possible to teach the user's pronunciation to the system to improve voice recognition. During voice training, the infotainment system learns how to correctly interpret the individual characteristics of the user's pronunciation.

Management of Gracenote data

Gracenote is an international database, in which data on millions of music tracks is managed using only text information. The album name, track and artist are stored in the database.

The data from Gracenote is stored on the system partition of J794. With MP3s for example, if the system recognises information like the title of the song, it can also display text indicating the artist or the album on which the track appeared.



Bluetooth module

This interface, which is optional at extra cost, can be used to pair a Bluetooth-compatible mobile phone for use with the hands-free system.

Furthermore address books can be transferred to the control unit 1 for information electronics or audio data can be played back in real time (A2DP).

The J794 can access the address books of four paired Bluetooth subscribers, however, only one at a time can be active and used.

RNS 850 Radio and Navigation System

Media player

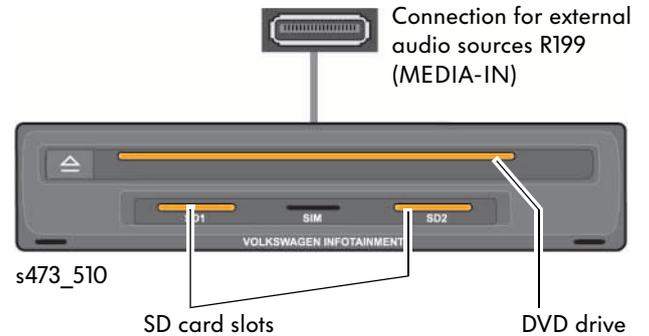
The media player is configured for playback of text, video and audio data.

Two SD card slots allow data to be imported from SD and SDHC cards.

Further playback devices or data storage devices like, for example, MP3 players, iPods, Walkmen or USB sticks, can be connected to the media player via the media-in interface (connection for external audio sources R199).

The following adapter cables are currently available:

- iPod adapter cable
- USB adapter cable
- Adapter cable with 3.5mm jack plug
- AV adapter cable with 3 cinch sockets



The following data formats for video and audio data are supported by the media player:

- AAC (iPod standard)
- ASF
- AVI
- DivX3 to DivX5
- DVD Video, DVD Data
- MOV
- MP3, MP4
- MPEG 1, MPEG 2, MPEG4
- M4A, M4B, M4V
- Playlists
- WMA, WMV



A compatible iPod adapter cable is required to connect an iPod to the infotainment system in the Touareg 2011. Other iPod adapter cables from other vehicles may not be suitable for use with the connection for external audio source R199 in the Touareg.



If you are not familiar with the abbreviations for the data formats, the glossary at the back of this book provides brief explanations of the abbreviations used.

Technical features

The data rate at which tracks are transferred for playback is 160kbit/s to 320kbit/s for audio data and 2000kbit/s for video data due to the larger quantity of data to be transferred.

The picture and video output uses a maximum resolution of up to 720x576 pixels.

Higher resolutions are not displayed.

If image files, for example, record covers, are contained on the data medium, they can be imported as smaller images and displayed by the infotainment system (max. size 800x800 pixels).

The following data media are suitable for playback on the infotainment system:

- Audio CDs with up to 80 minutes playing length
- Standard DVD videos
- DVD-compatible DVD audio
- CD-ROM, CD-R, CD-RW (audio data CD) up to max. 700MB using Joliet file system single- and multi-session
- DVD+, DVD-R, DVD-RW up to max. 4.7GB, dual-layer DVD up to max. 8.5GB using Joliet file system, only single session, UDF
- SD and MMC memory cards up to max. 2GB
- SDHC memory cards up to max. 32GB

The playability of stored audio and video data essentially depends, among other things, on whether the playback device uses the same codecs as were used to record the data. A codec is a method of digitally encoding, for example, a music track with simultaneous data compression. It is then decompressed and decoded upon playback. The codecs must be stored in the recording and playback devices. They are not transferred with the playback data. If therefore the recording device uses a codec that the playback device does not have, the data cannot be played on the playback device.

The J794 uses today's standard codecs.

Other codecs can cause problems with the playback of some data or may not play it even if the playback device supports the data format used.

Data structures with up to 1000 folders and a maximum of 4000 files can be managed by the J794.



Depending on the data format and codec used, the playback of certain music tracks or video data could be problematic.



The media player does not support the copying licence for data download from music or video databases (DRM).

RNS 850 Radio and Navigation System

Navigation module

This unit provides all functions for navigation and supplies the data for display on the infotainment unit in the centre console and in the dash panel insert. Existing address book entries from the telephone memory of telephones and SIM cards can be selected when you enter an address. A maximum of 5,000 address entries can be managed internally by the RNS 850.



Animated street view in the Premium dash panel insert s473_528

Navigation display

The navigation module has the following display modes:

- 2D map view
- 3D map view
- Elevation model (DTM — Digital Terrain Model)
- 3D city model
- 3D landmarks
- Display of compass and altimeter also for off-road navigation
- Transmission of the calculated driving times to the display unit in the dash panel insert

Functions

- Destination programming using postcode
- Select destination from address book
- Transfer of navigation data to assistance systems, for example, the lane recognition in the ACC (Adaptive Cruise Control)
- Display of traffic jam warnings and speed limits
- Read out of text-based traffic messages (TMC reading)
- Data transfer for an animated street view in the dash panel insert display (only Premium) via MOST data bus in real time
- Multilingual speech recognition
This means, for example, recognising city names if they are not pronounced in the system language set by the user.



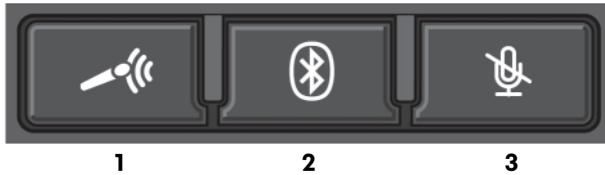
The navigation data can only be transferred from DVD onto the hard drive in the service workshop. Please note the information in the chapter "Service".

Telephone module



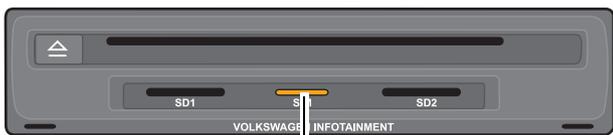
Telephone module without GSM s473_524

s473_518



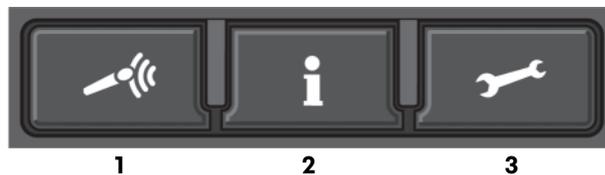
The button panel in the roof console has the following functions when the telephone module without GSM is installed:

- Voice control on/off (1)
- Bluetooth visibility activation (2)
- Additional mute for vehicle microphone (3)



SIM card slot
(only telephone module with GSM) s473_511

s473_517



The button panel in the roof console has the following functions when the telephone module with GSM is equipped:

- Voice control on/off (1)
- Information (2)
- Breakdown assistance call (3)

The control unit for information electronics is optionally available with or without a GSM telephone module.

The control unit 1 for information electronics J794 has a Bluetooth module in the basic version without GSM (PR number 9ZF).

It supports the following profiles:

- HFP
- A2DP
- AVRCP

It does not have a SIM card slot between the two SD card slots in the front panel of the control unit 1 for information electronics.

Telephone module with GSM

When combined with the GSM add-on, the J794 also has a slot for inserting a SIM card.

When a SIM card is inserted, the infotainment system is able to take on the role of a permanently installed telephone. It can then directly access other telephone and address books by copying all of the data on the SIM card into its own system.

The telephone module with GSM (PR number 9ZW) also supports the Bluetooth profile rSAP.

This variant has its own GSM aerial in the roof aerial module ("shark fin").



RNS 850 Radio and Navigation System

Information on Bluetooth pairing



If the control unit 1 for information electronics is equipped with GSM, it can access an extra fifth address data directory in addition to the four address data directories that can be paired via the integrated Bluetooth interface.

When you use Bluetooth pairing via rSAP, a complete copy of the SIM card inserted in the paired telephone is stored in the system memory of the telephone module. The paired telephone then logs itself out of the GSM network and the control unit 1 for information electronics logs itself onto the GSM network using the data from the paired telephone. All text messaging functions are available via the rSAP profile. Existing call lists are transferred via the HFP profile.



Stereo music files can be transferred via the Bluetooth interface using the A2DP profile no matter which HFP profile, rSAP profile or SIM card is currently active. The music is muted while a call is active, but will continue to play during the data transfer via A2DP. The A2DP profile needs to be enabled separately in the infotainment system via the "Setup" menu.

Distinguishing features of hands-free systems

Standard hands-free system

- Only access to the call lists (management of the call lists is only possible on the mobile telephone).
- No text messaging services available

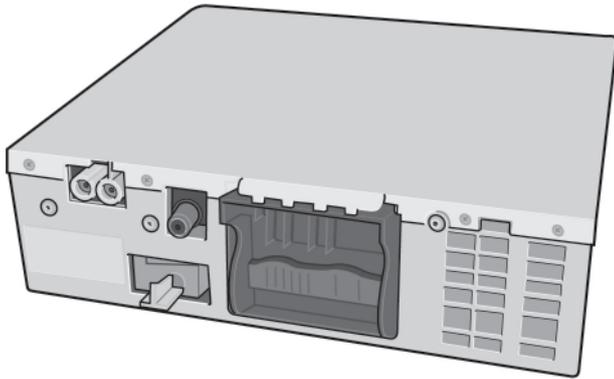
Premium hands-free system

- Creates a copy of the call list and stores it in J794 (the new lists stored in J794 are not exported back to the mobile telephone when the Bluetooth connection is ended).
- Text message services are limited to the templates in the telephone module.



Only one of the two telephone variants is available depending on the market (9ZF or 9ZW).

Radio (radio tuner)



s473_504

The radio tuner for the RNS 850 is fitted in the luggage compartment near to the rear right-hand wheel housing.

It comes in three versions:

- without DAB module (standard)
- with DAB module
- with SIRIUS satellite radio module (North America)

The functions in DAB operation allow pictures that are transmitted with the radio or audio signal, for example, station logos or CD covers, to be displayed. "Digital radio" (DAB) is transmitted via band III in the frequency range from 174MHz to 240MHz and via the L band in the frequency range from 1452 to 1492MHz.

The radio module allows vehicle loudspeakers to be connected to the four output stages of the device. It can also be combined with a DynAudio sound system.

All versions of the radio have the following characteristics and functions:

- 3 FM tuners with phase diversity
- 4 output stages delivering 20 watts
- AM reception with RDS
- TP reception
- Radio text display



RNS 850 Radio and Navigation System

TV tuner

The TV tuner allows the option of receiving and watching television stations on the infotainment system. For road safety reasons, it is only possible to display the television picture when the vehicle is stationary. You can, however, listen to the sound from the television station while the vehicle is moving. The TV tuner is fitted in the luggage compartment in the area above the right-hand wheel housing. Depending on the country of use three versions of the TV tuner are available:

1. DVB-T tuner
2. DTMB tuner (China)
3. ISDB-T tuner (Japan)

DVB-T tuner

This tuner can be used to view television stations that are broadcast digitally using DVB-T or analogue stations using PAL, NTSC or SECAM.

Further properties and functions include:

- Recognition and display of station names if they are transmitted by the station.
- Automatic switch-over between all digital and analogue signals with the same station name. The signal that provides the best picture quality is used.
- Teletext display
- Station guide (EPG; Electronic Programme Guide)
- Self-diagnosis capability



The feed of the video signal (CVBS) to the control unit 1 for information electronics differs depending on whether an external DVD changer is fitted in addition to the TV tuner. See the chapter “DVD changer” for further information.

DTMB tuner

This special tuner for China allows reception of the Chinese, digital DTMB signal as well as of analogue stations broadcast in PAL, NTSC or SECAM.

Further properties and functions include:

- Recognition and display of station names if they are transmitted by the station.
- Updating of station list with autostore
- Programme guide (EPG)
- Self-diagnosis capable

ISDB-T tuner

This purely digital tuner for Japan allows playback of Japanese digital television stations.

These consist of the so-called single-segment stations with low picture resolution and the 12-segment stations with TV-standard picture resolution. To receive the 12-segment stations, a Conditional Access System Card is required that is operated in an external card reader.

The card reader required for this is installed on the right of the TV tuner.

Further properties and functions include:

- Recognition and display of station names — if transmitted by the station.
- Automatic switch-over between the two programme segments if they have the same station name
- Updating of station list with autostore
- Programme guide (EPG)
- Reception and display of interactive data broadcasting
- Self-diagnosis capability
- Reception of Emergency Warning Information System (EWS), which transmits emergency warnings, for example, about earthquakes or tidal waves



Interactive data broadcasting

This term refers to data services that the user can use to make station-related searches, for example, for weather, news, food recipes, games or health tips.

RNS 850 Radio and Navigation System

DVD changer (external DVD drive)



In addition to the DVD drive integrated in the control unit 1 for information electronics, an additional, external DVD changer can be added to the infotainment system. It is installed in the luggage compartment in the area above the right-hand wheel housing, above the TV tuner, and is also optional.

If the infotainment system is equipped with both the TV tuner and the DVD changer, the video signal (CVBS) from the TV tuner is forwarded via the DVD changer to the control unit 1 for information electronics. If no DVD changer is fitted, but there is a TV tuner, the video signal runs directly to the control unit 1 for information electronics.



s473_526

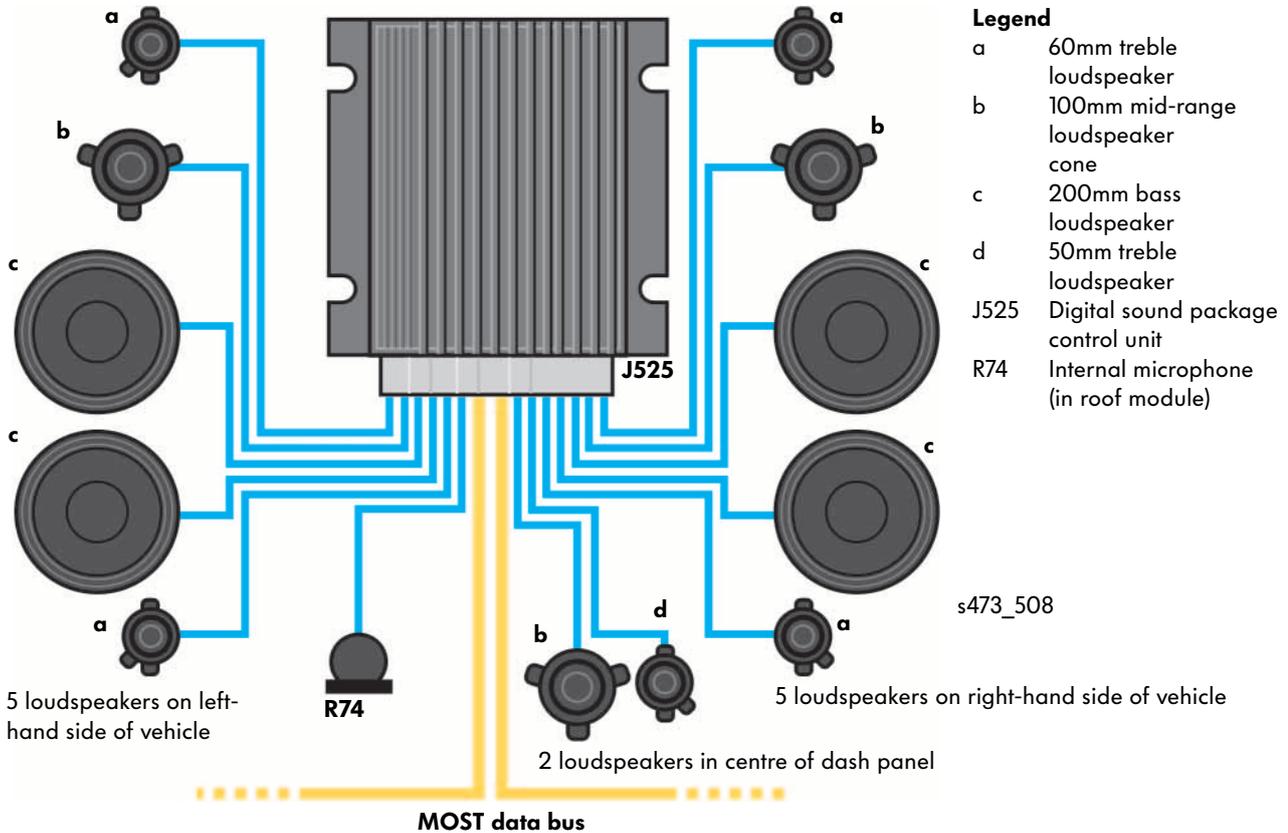


The navigation data can only be transferred from DVD onto the hard drive in the service workshop. Please note the information in the chapter “Service”.



When an external DVD changer is fitted, the playability of audio and video data again depends on the codecs stored in the unit. Therefore there may be differences in the playback performance of the internal drive in the control unit 1 for information electronics and the external DVD changer. Please refer to the chapter “Media player”.

DynAudio sound system



The central element of the DynAudio sound system is an amplifier delivering 620 watts with surround control (digital sound package control unit J525).

It is fitted in the luggage compartment near the left-hand wheel housing and has 10 output stages for connecting a maximum of 12 loudspeakers. The amplifier communicates with the infotainment system via the MOST data bus.

A microphone built into the roof module detects the noises in the interior. These noises are analysed by the amplifier electronics and the playback signal is then adjusted depending on the frequency and sound level. This process is called automatic playback signal adjustment.

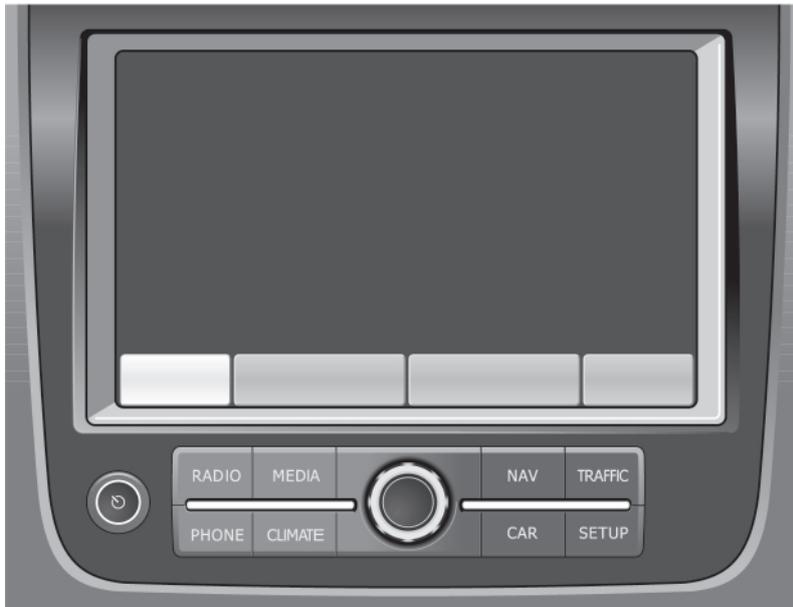
The surround control (Dolby 5.1, if supported by the data medium) allows you to set up an optimum surround sound, which faithfully reproduces, for example, concert hall acoustics, in relation to your position inside the vehicle.



RNS 850 Radio and Navigation System

Display units

Display unit for front information display and operating unit control unit J685



s473_507



s473_525

This display module has an 8"-TFT colour screen measuring 800x480 pixels.

A touch screen is connected in front of the TFT display.

The sensitive area measures 720x576 pixels.

It is connected to the control unit 1 for information electronics via a separate LVDS connection.

LVDS is the abbreviation for "Low Voltage Differential Signal" and refers to a high-speed data network for data transfer and the control of picture signals. In the Touareg 2011, it transfers data at a rate of 200Mbit/s.



You will find information on how touch screens work in self-study programme 397 "2007 Radio/Navigation Systems".

Display unit in dash panel insert

The infotainment system also allows you to display information in the dash panel insert.

In the Touareg 2011, two different versions of the dash panel insert are available when the vehicle is equipped with the infotainment system based on the RNS 850:

1. Dash panel insert “Premium”
2. Dash panel insert “Medium”



s473_501

“Premium” dash panel insert

This dash panel insert features a 7"-TFT display with 6-bit colour depth. That means 2^6 , i.e. 256 colours, can be displayed.

The display module for the dash panel insert consists of the screen glass, the activation electronics and the background lighting. The display is in 15:9 format.

The background lighting consists of several LED chains.

The activation electronics evaluate the information received via the MOST and CAN data buses and show it to the driver on demand in various display modes or set areas of the display.

The signals for the animated navigation view are transferred via the MOST data bus. The views for the other functions, for example, telephone or radio are controlled using the DDP protocol. However, messages, for example, from the ACC and suspension control units are transferred via the DAB protocol in the display and operation CAN data bus.



Examples of the display of infotainment content on the display of the “Medium” and “Premium” dash panel inserts are listed in the chapter “Display modes”.



RNS 850 Radio and Navigation System

Dash panel insert “Medium”

This dash panel insert is the basic version for the Touareg 2011.

It has a 5"-TFT monochrome display and the data for this dash panel insert is transferred exclusively via the display CAN data bus.

The display can show information on the following functions of the infotainment system:

- Multifunction display MFD
- Settings
- Assist systems
- Vehicle status
- Telephone
- Audio

The data is transferred in the display and operation CAN data bus using the BAP protocol.



s473_520

Infotainment system display modes

A large amount of information can be displayed on the infotainment system. The high-resolution screen is extremely variable and detailed. A complete and extensive description of all display options would fill the whole book. Therefore we shall look at just one example here to convey the quality of the display on the RNS 850 screen and in the “Premium” dash panel insert.



Display on the screen in the centre console s473_529

Display when navigation is active

When the navigation function is active, there are different possibilities for displaying the route guidance on the screen in the centre console and in the dash panel insert.

The example shows the map section in the 3D view on the display unit in the centre console. The surrounding area can also be seen on this screen.

The animated display of the navigation information for the same vehicle position in the dash panel insert shows the detailed situation on the road ahead of the driver. The realistic depiction of the lanes with their continued paths and the indication of the recommended route simplifies navigation of the calculated route particularly in complicated traffic situations.



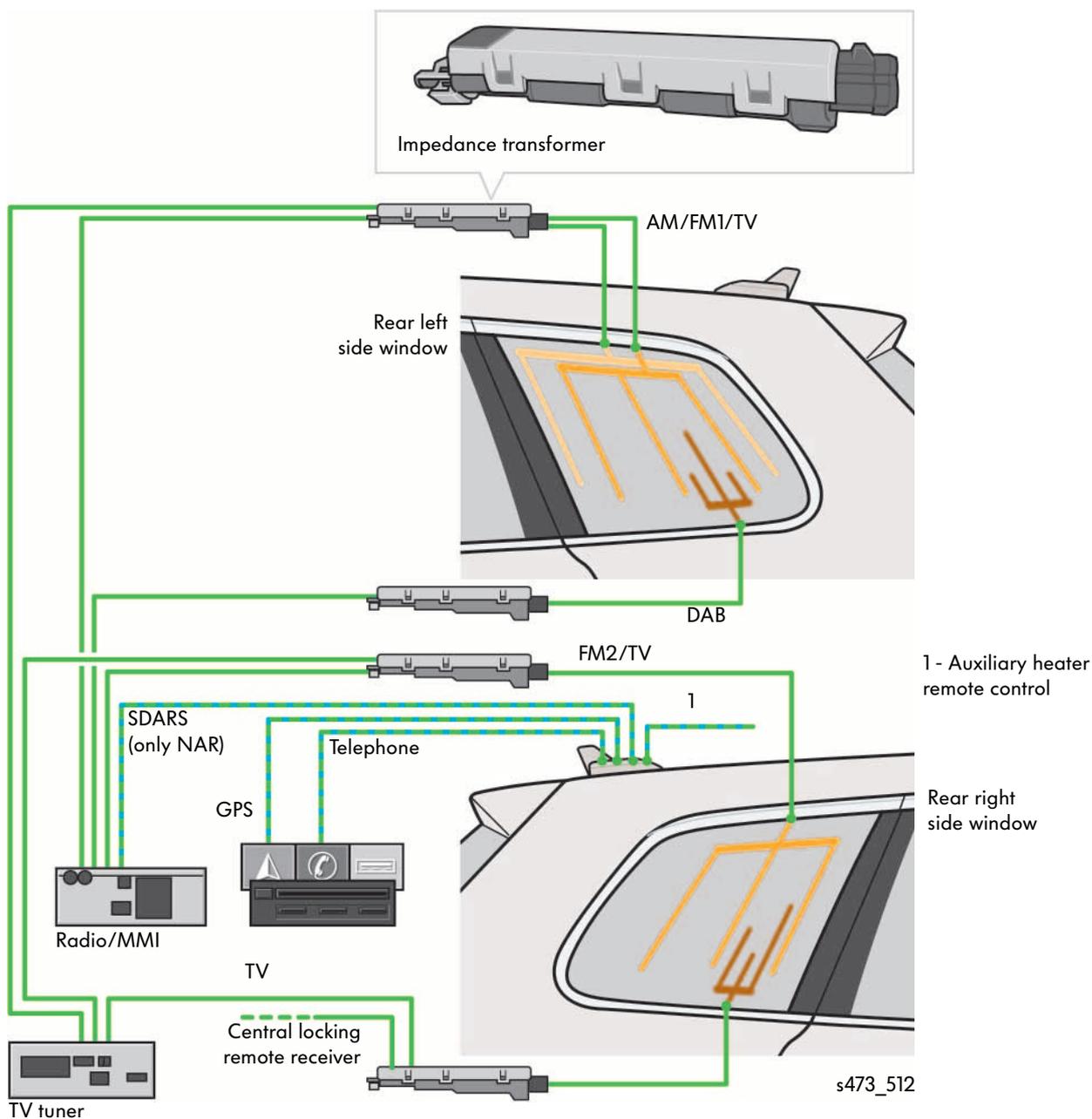
Display in the dash panel insert (Premium) s473_530



For further information on the display capabilities of the infotainment system, please refer to the respective manuals for the vehicle and the operating instructions for the infotainment components.

Aerial Systems

The aerial system for the Touareg comes in different configuration levels depending on the vehicle equipment. The top equipment level of the aerial system is used as an example here.



The SDARS signal received and amplified by the roof aerial (only North America) is also sent to the radio tuner and is processed there.

RCD 550 Radio System



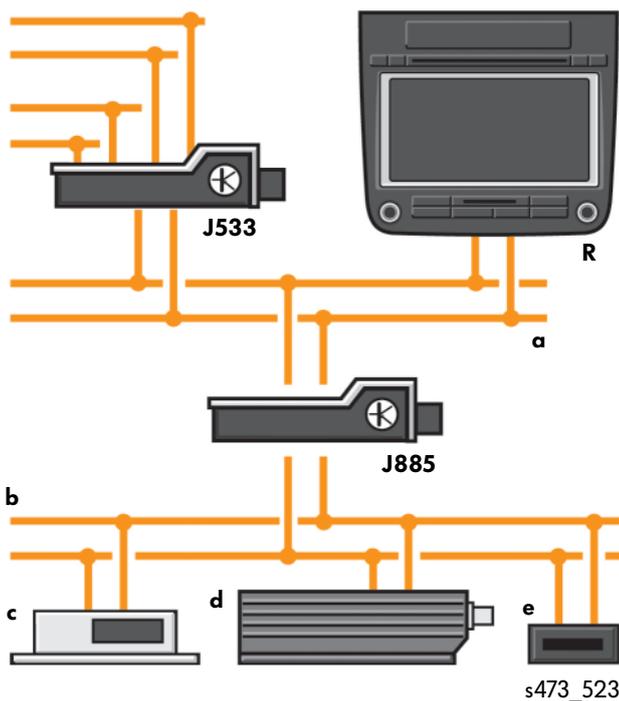
s473_513

Following the launch of the Touareg 2011 with the RNS 850, a version of the infotainment system with only a radio and no navigation functions will become available in the near future. This version will not use the MOST data bus. Instead it will communicate exclusively via the display and operation CAN data bus as well as the infotainment CAN data bus.

The central element of this infotainment version is the RCD 550 radio system. Depending on the country, it will be available in versions with and without DAB for Europe/ROW, with SDARS for North America and in a version for China.

The unit is expected to have the following features and functions:

- Colour display: TFT, touch screen, 6.5 inch
- Phase diversity (2 tuners)
- Integrated 6-CD changer
- SD memory card reader
- MP3/WMA/AAC with ID3 tag
- UMPP Low/Premium (stereo input)
- MDI (Mobile Device Interface)
- OPS (Optical Parking System)
- Interactive CAR menus
- Hybrid display
- Control of external amplifier
- FM AM reception
- AUX-IN
- MFW/MFD (via BAP)
- GALA
- Control of air-conditioning
- TP memo
- Display resolution: WVGA, 800x480 pixels
- 4 x 20-watt audio outputs
- Self-diagnosis, incl. loudspeaker diagnosis



s473_523

Legend

- J533 Data bus diagnostic interface
- J885 Interface for infotainment CAN bus
- R Radio (RCD 550)
- a Display and operation CAN data bus
- b Infotainment CAN data bus (100kbit/s)
- c Telephone (optional)
- d Sound package (optional)
- e Media Device Interface MDI (optional)



Ring break diagnosis wire

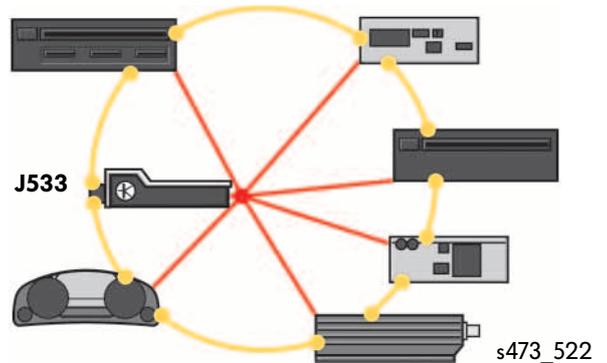
The infotainment system has a ring break diagnosis wire to simplify fault finding of the MOST data bus. It is a single-core wire that is connected to all control units on the MOST data bus. The ring break diagnosis wire starts from a node behind the data bus diagnostic interface J533 and runs in a star shape to the respective control units on the MOST data bus.

How it works

Ring break diagnosis is initiated by the VAS programme “Ring break diagnosis MOST bus” and has two test cycles.

In the first test cycle, the data bus diagnosis interface J533, which is the master for this function, sends a voltage signal to the connected control units via the ring break diagnosis wire. A constant 12-volt signal is connected to earth for 10 seconds for this purpose.

The control units on the MOST data bus then test their own voltage supply and check whether they receive a light signal via the fibre-optic cable from the preceding control unit on the MOST data bus. The result of this check is sent to the data bus diagnostic interface via the ring break diagnosis wire. Using the data received, the diagnosis interface can recognise whether there is a fault in one of the control units on the MOST data bus or whether there is a fault in the fibre-optic cable.



Ring break diagnosis wire on MOST data bus

A second test cycle is started if no fault is found. In this cycle, the data bus diagnostic interface instructs the control units on the MOST data bus to transmit the light signals with only half light output. This corresponds with a 3dB failure of the light signals. If this weakened signal is no longer received by a control unit, this indicates a failure and thus a damaged point in the fibre optic cable.

If a damaged point is suspected in the MOST data bus fibre-optic cable, the cable should be tested optically according to the specifications in ELSA. If a faulty control unit is suspected, the optical substitute control unit VAS 6186 should be used according to the instructions in ELSA.



Never look directly into the fibre-optic cable when working on the MOST data bus!
The connections on the fibre-optic cable may not come into contact with liquids or be touched with bare hands.

Updating navigation data

In contrast to previous procedures, now only the service workshop can transfer navigation data from DVD. In addition to the latest data DVD, the workshop requires an activation document that contains an activation code (PIN).

The vehicle needs to be connected to a VAS diagnosis unit for online activation. Due to the time needed to copy the data from the data DVD to the control unit 1 for information electronics J794 (approx. 1-2 hours), the vehicle should be connected to an external power supply for the update.

The activation code can only be used once and expires after activation and successful transfer of the data.

Depending on the region, different collections of navigation data are available to the service workshop on DVD (see glossary).

Customers no longer receive a navigation DVD when the vehicle is delivered nor can they order one.

Update process

If a customer wants his navigation system to be updated, the service advisor will check whether an activation document and the latest data DVD are available in the workshop. If so, the update can be performed immediately. If, for example, no activation document is available, it must be ordered by the workshop parts service using ETKA. A new appointment for updating the navigation system can be arranged with the customer depending on the delivery date.

The vehicle is connected to the VAS diagnosis unit (e.g. VAS 5051) to activate the data copied from the latest DVD. The workshop activation code must first be entered via the "Guided Function" menu.

Next you enter the activation code from the activation document on the tester. This activates the navigation data that is about to be activated online. After online activation, the data transfer from DVD to J794 (the tester does not necessarily have to be connected) and a function test, the vehicle can be handed back to the customer.

You can then tell the customer about the new features in the updated navigation system (e.g. modified route guidance etc.).

If a data update cannot be activated, this may be an indication that the activation code has already been used in another vehicle.



The exact instructions for performing the update will be provided in a separate technical product information document (TPI).

Glossary

AAC

Advanced Audio Coding:
An audio compression codec

AM

Amplitude modulation

ASF

Advanced Streaming Format or
Advanced Systems Format:
A digital audio and video format developed by
Microsoft

AUX

Auxiliary:
Additional connection channel for audio media

AVI

Audio Video Interleave:
A video format defined by Microsoft

AVRCP

Audio Video Remote Control Profile:
A Bluetooth profile for remote control of audio or
video equipment

A2DP

Advanced Audio Distribution Profile:
Industry-wide technology allowing stereo audio
signals to be transmitted wirelessly via Bluetooth in
one direction to a receiver

BAP

Operating and display protocol
A data transfer standard for display devices

Bluetooth

An industry standard developed by the Bluetooth
Special Interest Group (SIG) for wireless transmission
between devices over short distances

DAB

Digital Audio Broadcast:
Digital radio broadcasting

DivX3

A codec from DivXNetworks in the USA
(further codecs: DivX4, DivX5)

Dolby 5.1

Multi-channel sound system from Dolby:
The full channel equipment with 6 channels is called
5.1 sound since only the first five channels reproduce
the complete possible frequency spectrum of 20Hz to
20kHz; the sixth channel is limited to low frequency
effects between 20 and 120Hz

DRM

Digital Rights Management:
Standard for digital copyright

DVD

Digital Versatile/Video Disc:
Further development of optical storage media with a
capacity of 4.7GB;
on single-sided, single-layer DVDs (single-layer DVD,
DVD±R, DVD±RW) and 8.5GB;
on single-sided, double-layer DVDs (dual-/
double-layer, DVD±R-DL, DVD-RW±DL)

CVBS

Composite Video, Blanking and Sync:
Commonly known as “colour television”

FM

Frequency modulation

GPS

Global Positioning Satellite System:
Satellite-supported global navigation and positioning
system, originally for military usage

GSM

Global System for Mobile Communications:
Standard for digital mobile telecommunications
network

HFP

Hands-free profile:
Allows communication between a mobile telephone
and vehicle hands-free system.



Joliet

File system for CD-ROMs from Microsoft based on data structure of ISO9660

MDI

Media Device Interface: Universal interface for external playback devices and storage media

MMC

Multimedia Card: Standard for memory cards, similar to SD format

MOV

QuickTime Movie: A format for video data developed by Apple Macintosh

MP3

Motion Pictures Expert Group Layer 3 (MPEG Layer 3): Compression standard for video, audio and image formats

MP4

Motion Pictures Expert Group Layer 4 (MPEG Layer 4): Compression standard for video, audio and image formats

MPEG

Moving Picture Experts Group:
A group of experts, who work on the standardisation of formats for image, audio and video data

M4A

MPEG format for audio data
(AAC audio files or for proprietary codec Apple Lossless)

M4B

MPEG format for audio books
use of bookmarks possible

M4V

MPEG format for video data

Navigation data regions

Compilation of navigation data according to 12 coding tables, examples: Europe (EU), North America (NAR), South America (SAR), (AGCC), Korea, Japan, China, Asia/Pacific Region, South Africa, Australia/New Zealand, India, Taiwan.

NTSC

National Television Systems Committee:
A US institution

PAL

Phase Alternation Line system:
A colour transmission system for analogue television

Playlists

A list of songs or videos in playing order

RDS

Radio Data System:
A standard for additional radio information in car radios and mobile telephones, for example, station names, audio titles etc.

SD

Secure Digital Card:
Small and robust memory cards, e.g. for digital cameras, MP3 players etc.

SDHC

Secure Digital Card High Capacity:
Expansion of SD with storage capacity up to the maximum capacity of 32GB

rSAP

remote SIM Access Profile (also SAP):
Bluetooth data transfer protocol that allows the UMPP to read the SIM card.

SECAM

Séquentiel couleur à mémoire:
A television standard used in France and Eastern Europe for colour transmission of analogue television



Glossary

SDARS

Satellite Digital Audio Radio Services:

A digital radio standard for commercial satellite radio in North America

TFT display

Thin Film Transistor display:

Flat screen

TMC

Traffic Message Channel:

A digital service in radio for transmission of traffic messages

USB

Universal Serial Bus: Universal serial interface between different computers and peripheral devices

WMA

Windows Media Audio:

Special audio format under Microsoft Windows

WMV

Windows Media Video:

A video codec from Microsoft that is part of the Windows media platform

WVGA

Wide-VGA (Wide-Video Graphics Array):

Special monitor resolution for wide screens with an aspect ratio of 16:9 or 18:10



Which answers are correct?

One or several of the answers could be correct.

1. Which data bus does the control unit 1 for information electronics 1 J794 use to communicate with the TV tuner or the radio tuner in the infotainment system of the Touareg 2011?

- a) Infotainment CAN data bus
- b) Display and operation CAN data bus
- c) MOST data bus

2. The MOST data bus works ...

- a) with a high-speed carbon cable at 2048MB/s.
- b) with an optical cable.
- c) via the existing CAN data bus cables.

3. Which statement is correct?

- a) The display unit for front information display and operating unit control unit J685 is connected to the control unit 1 for information electronics J794 via an LVDS cable.
- b) The display unit for front information display and operating unit control unit J685 is connected to the data bus diagnostic interface J533 via an LVDS cable.
- c) The display unit for front information display and operating unit control unit J685 is connected to the control unit 1 for information electronics J794 via the display and operation CAN data bus.
- d) The display unit for front information display and operating unit control unit J685 communicates with the control unit 1 for information electronics J794 via Bluetooth.



Test Yourself

4. The control unit 1 for information electronics J794 in the Touareg 2011 contains among others the following modules:

- a) the radio module
- b) the GSM telephone module
- c) the DVD drive
- d) the media player
- e) the navigation module
- f) the DAB/FM aerial module

5. What is the purpose of ring break diagnosis?

- a) Ring break diagnosis allows faults in the display and operation CAN data bus to be found.
- b) Ring break diagnosis is used exclusively to find broken wires in the MOST data bus cable.
- c) Ring break diagnosis allows both faulty control units and faults in the fibre-optic cable of the MOST data bus to be diagnosed.

6. When does the activation code for updating the navigation data expire?

- a) The activation code expires when it is entered online for the first time. If the update cannot be completed, a new activation code is required.
- b) The activation code expires after online activation and successful copying of the data.
- c) The activation code expires if there is a delay between copying the data and online activation.





Answers
1. c); 2. b); 3. a); 4. b, c, d, e; 5. c); 6. b)



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