

Service Training



Self-study Programme 518

The Infotainment System in the Golf 2013 Part I

Design and function



There have been rapid advances in electronic development since the introduction of the first infotainment systems. Vehicle systems are increasingly interconnected and, as a result, new forms of information and assistance functions have been made possible. Commercial entertainment and information media have also undergone further development and provide an increasing range of services and information. It is simply the next logical step in this development that users should now expect to access these services using vehicle electronics.

The role of infotainment has therefore assumed an ever greater importance as the interface between these external information sources and data services, such as the internet, the vehicle system and vehicle passengers. The basic requirement for achieving this role is effective data bus systems, which allow the required information to be exchanged between the systems. Intuitive user guidance for operating the infotainment system is already familiar from the world of smartphones. This approach is now providing further potential for developments in infotainment system operation.

This booklet on the infotainment system in the Golf 2013 can therefore only provide a snapshot of how things currently stand.

New functions and display options will emerge and the Golf's range of infotainment functions will continue to expand.



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You will find further information on infotainment in the Golf 2013 in the self-study programme no. 519 "The Infotainment System in the Golf 2013, Part II."



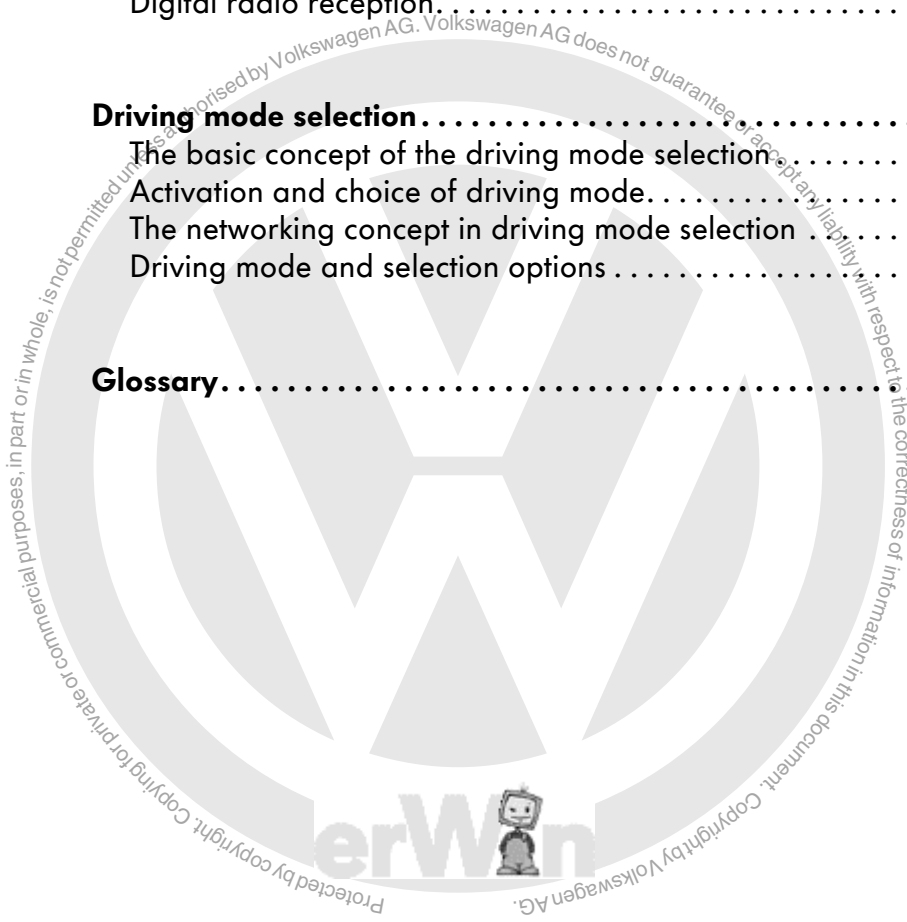
**Important
note**

**The self-study programme presents the design and function of new developments!
The content will not be updated.**

Current testing, setting and repair instructions can be found in the provided service literature.



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Introduction

The development of infotainment

The term infotainment was first used during the development of the first Phaeton. The basic idea here was to be able to control various multimedia functions such as the radio and navigation system, phone connection or display of vehicle data from a central operating and display unit in the cockpit.

Today this concept has become mainstream. Now, infotainment systems not only exist in the Phaeton or Passat, but on all Volkswagen platforms - and of course in the Golf 2013.



The first infotainment system in the Phaeton

The development of vehicle electronics has undergone a huge advance since the introduction of the Phaeton, particularly in the area of assistance and information systems.

There has been a sharp increase in the degree to which the various functions and systems in the vehicle are networked through the data bus.

This increased networking makes new assistance systems possible which integrate the widest variety of vehicle functions.

These vehicle functions provide the driver with information and make life easier for the driver in equal measure. They also allow the driver to configure vehicle settings, such as with the new driving mode selection. All these new types of systems require a communication interface with the driver. This interface is an infotainment system equipped with a touchscreen. All information converges here, and can be accessed and managed by the driver.



Infotainment in the Golf 2013

What's new?

The main features of the infotainment system in the Golf 2013 are:

- the uniform design of the radio and navigation systems
- a touch-sensitive screen (touchscreen)
- easier function selection
- improved display quality
- expanded media display in radio mode
- new driving mode function
- expanded car function (on-board computer)
- an optimised CAN data bus architecture
- increased number of usable data formats and range of communication interfaces
- proximity sensors

The following user devices are offered with the modular infotainment system MIB:

- series display
- Composition Touch
- Composition Colour
- Composition Media
- Discover Media
- Discover Pro

These devices are described from page 10 onwards.



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Please refer to the other booklets available for the Golf 2013:

- Self-study Programme no. 513 "The Golf 2013"
- Self-study Programme no. 515 "The Golf 2013 Running Gear and Four-wheel Drive Concept"
- Self-study Programme no. 516 "The Golf 2013 Driver Assist Systems"
- Self-study Programme no. 517 "The Golf 2013 Electrical System"
- Self-study Programme no. 519 "The Infotainment System in the Golf 2013 Part II"

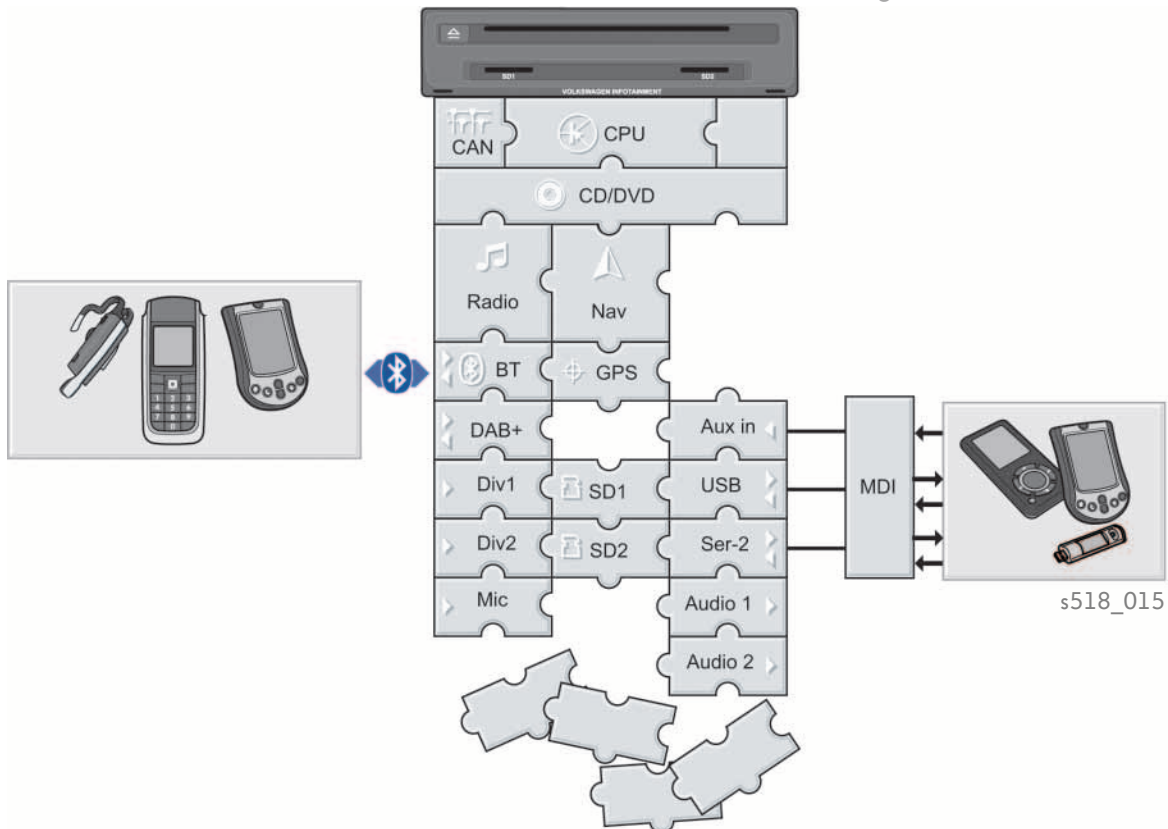
Modular Infotainment System MIB

The basic idea behind the MIB

The key point of this modular concept is the development of a uniform system architecture for the radio and navigation systems and the various functions they provide. This means all versions of the infotainment system feature an identical system and functional design. This makes it possible for the manufacturer to enhance the functions of either the radio or the navigation system. To put it very simply, all systems speak the same language.

The aim was also to incorporate the latest electronic developments in personal entertainment, multimedia and telecommunication electronics into the module architecture, and ensure the end user enjoys the full benefits. So, for example, radio station broadcaster logos can be transmitted and displayed or, depending on the version, the device features a USB port or interface for SD cards or iPods.

In addition to this, all devices are equipped with a touchscreen. Thanks to the innovative user interface, the operation of the device remains both intuitive and safe during the journey.



The infotainment touchscreen

A touchscreen offers many advantages: if you wish to access information in the display, no buttons need to be found and pressed and no dials need to be operated. Instead, information can be selected directly by touching the screen. Furthermore, a touchscreen provides far more options for accessing functions and menus, as a whole range of interactive buttons can be displayed. This allows the actual number of physical buttons on the device to be kept to a minimum.

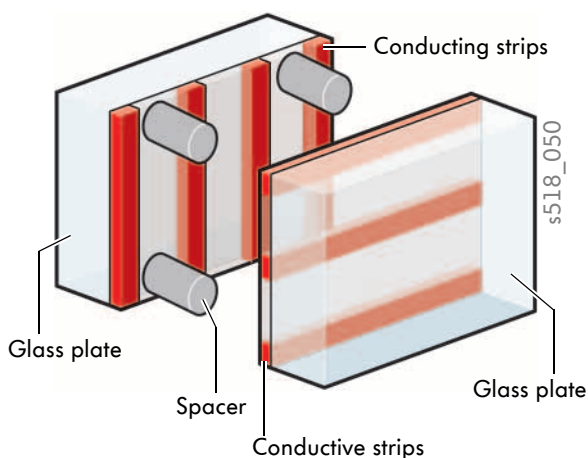
The only drawback: some force was required when touching the pressure-sensitive part of the screen, for example to use one of the button functions on the touchscreen. This was due to one of the screen operating principles. Until now, this technology has been based upon the resistive structure of the touch-sensitive layer.



You will find information on how resistive touchscreens work in Self-study Programme 397, "2007 Radio/Navigation Systems".

Design and function of a capacitive touchscreen

The main application for capacitive touchscreens has, to date, been in smartphones. The display reacts to the touch of a finger, instead of only reacting to pressure applied to the screen, as in the case of a resistive touchscreen.



Design

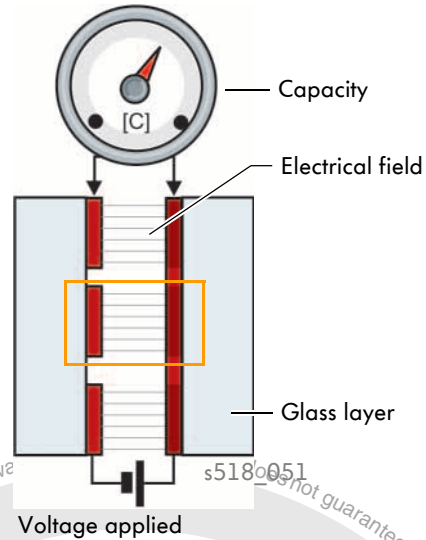
The surface of a capacitive touchscreen consists of two glass layers on top of one another. They are strips coated in a transparent metal oxide which act as conductors. The glass plates are arranged with the coated sides facing each other, with the strips forming a grid. The non-conductive spacer prevents the coated surfaces from coming into contact with each other.

Modular Infotainment System MIB

Function

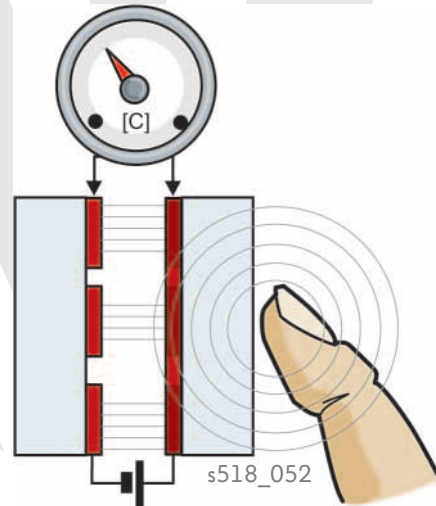
Each intersection on the grid acts as a capacitor, as the metal oxide strips line up exactly opposite the capacitor layer. An electrical field is created between them whenever an electrical voltage is applied to the layers.

The grid points then have, just like a capacitor, a specified electrical capacity.



The opposing strips each form a capacitor at the point where they cross.

For example, when a finger touches the surface, the electrical field at the intersection and, therefore its capacity, is affected by the user's electrical charge. This leads to a change in the charge at the ends of the conducting strips. The evaluation electronics determine the coordinates of the point touched on the touchscreen.



A touch of the finger affects the electrical field at the points of intersection through the glass layer.

Advantages

The electronics can recognise several separate touch events. It reacts more quickly. It is not necessary to calibrate the touchscreen.



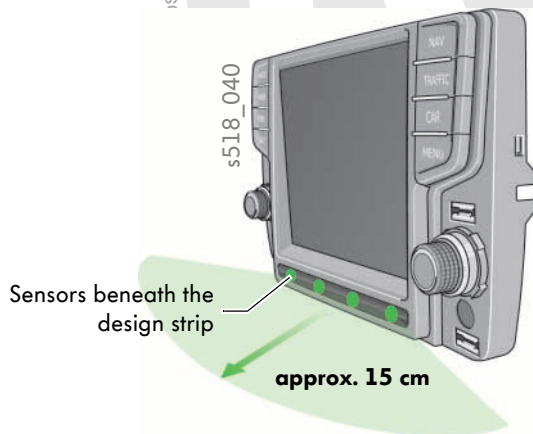
Capacitive touchscreens do not react when touched by pens, thick gloves or artificial limbs.

The touchscreen with proximity recognition



Buttons become larger

The touchscreen features a proximity recognition system when "Composition Media" or higher is installed. When the sensor detects a hand approaching screen, then the virtual operating buttons in the display become larger, making a selection easier. If no button is pressed, then the display quickly reverts to a normal virtual button size.



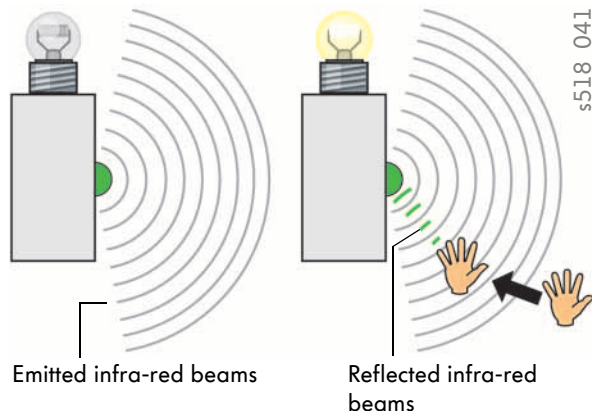
Sensors beneath the design strip

approx. 15 cm

Design

There is a black shiny design strip below the touchscreen. There are four infrared sensors behind this design strip. They do not function as self-contained electrical components, instead they are part of the "display unit for front information display and operating unit control unit J685". The sensors emit a weak infrared beam across a detection area with a radius of around 15 cm.

The detection area has been designed so that the proximity sensor system functions both for the driver and for the passenger.



Emitted infra-red beams

Reflected infra-red beams

Function

When a hand moves into the detection area of the sensor strip, then the beams emitted by the sensors are reflected by the hand and are sent back to the sensor strip. These reflected beams are picked up by the infrared sensors.

The sensor strip then sends a signal for the virtual buttons on the infotainment display area to be enlarged.



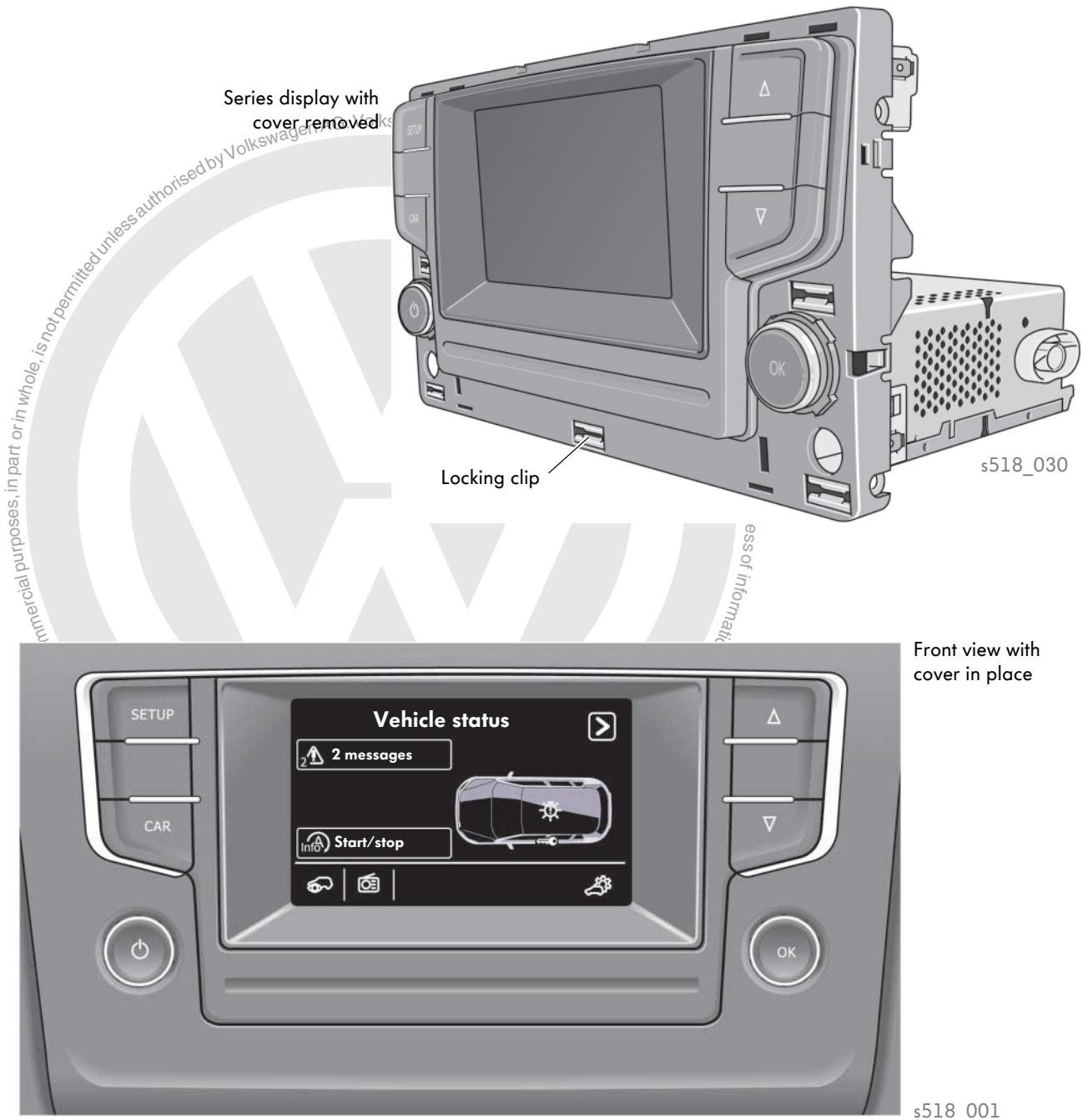
Modular Infotainment System MIB

The operating and display unit for the MIB

The following gives you a brief overview of the range of functions for the individual devices.



Series display

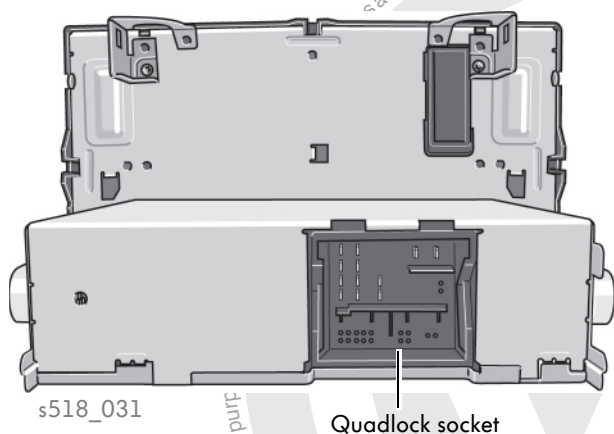


Operating and display unit with integrated control module

This device is standard equipment for the Golf 2013. The operating and display units, along with the control unit for the range of functions in this device, are combined in one single housing. Radio mode and playback of external audio sources are not available with this version.

Features

- Monochrome 5" TFT display
- Standby clock (time is displayed when the device is switched off)
- Vehicle status display
- Function for setting the language and light dimming function
- Car menu function



Electrical connections

The connectors for the vehicle electronics are situated on the rear side of the housing. They are only accessible once the device has been removed from the centre console.

The following polarity-protected connection sockets have been installed:

- Quadlock socket

Detailed information

Car menus

The car menu function consists of the following display modes for the multifunction display MFD 1, 2 and 3:

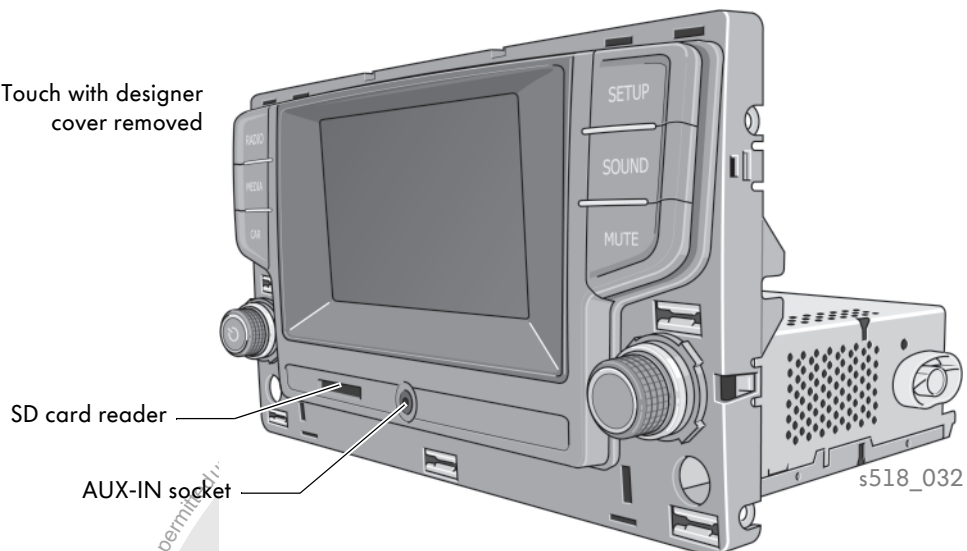
- MFD 1: Since starting
- MFD 2: Long term
- MFD 3: Since refuelling

When the vehicle has been refuelled with at least four litres of fuel, the indicator in the multifunction display will be reset to "Since refuelling".

Modular Infotainment System MIB

Composition Touch

Composition Touch with designer cover removed



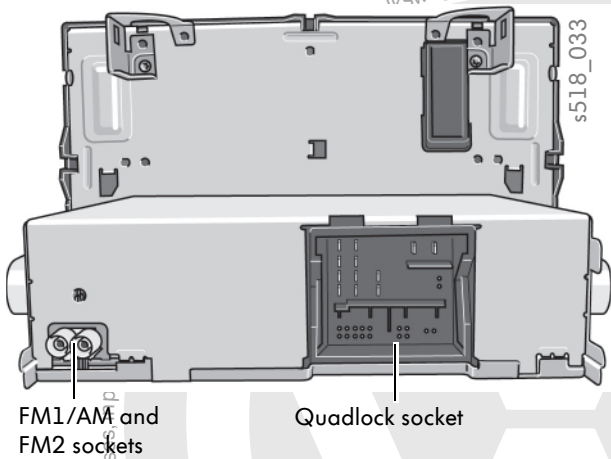
Operating and display unit with integrated control module

The display, control and electronics for this device are combined in one housing. An SD card reader and a AUX-IN socket can be found on the front, left under the touchscreen.

In addition, all radio and radio navigation systems are able to read SD cards up to a theoretical storage capacity of 2 TB (terabytes; 1 TB = 1024 GB).

Features

- Pressure-sensitive monochrome 5" TFT display
- Two 20 W output stages
- Tone control, car specific sound, GALA
- Single FM antenna switch
- FM radio reception (Germany only; RoW: FM/AM)
- MP3, WMA
- AUX-IN
- Telephone mute only/LF-in (muting)
- FM phase diversity (outside Germany)
- SD card reader
- Integrated into component protection



Electrical connections

Composition Touch also features connectors for connection to the vehicle electronics, which are installed in the rear side of the housing. They are only accessible once the device has been removed from the centre console.

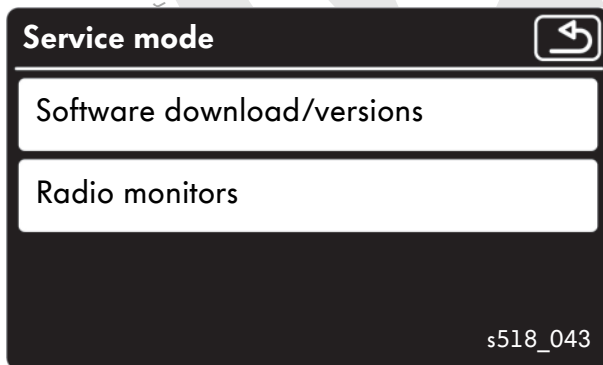
The following polarity-protected connection sockets have been installed:

- Quadlock socket
- FM1/AM socket
- FM2 socket

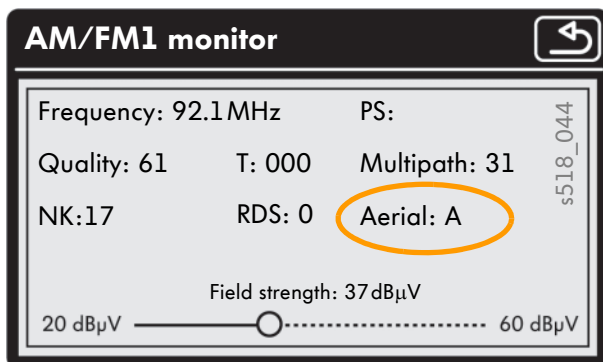


Detailed information

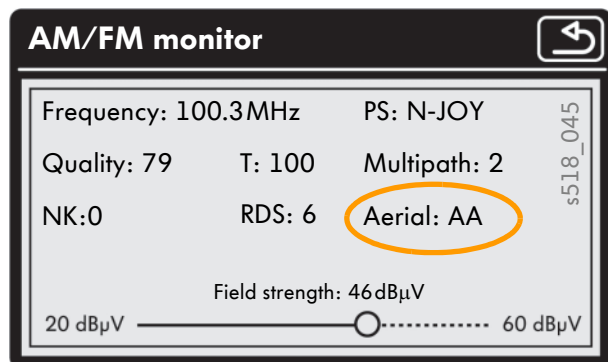
Only the FM aerial specific to the market concerned can be connected to the Composition Touch. The radio signal connects to the internal tuner (FM1/FM2) using an electronic switch (single aerial switch). Composition Touch can identify this by itself, and displays it as aerial "A" in the "FM monitor" menu. "AA" will appear in the display when two FM aerials are fitted, as is the case in other markets. You can enter service mode by pressing and holding the SETUP button for more than 3 seconds.



Selection of the "radio monitors" under the "service mode" function



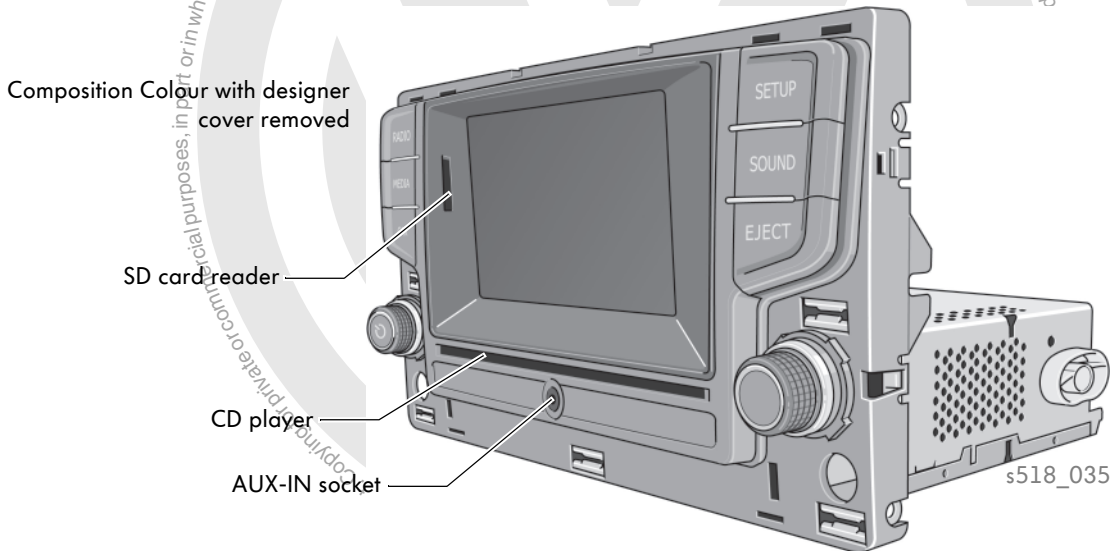
Display when equipped with one FM aerial



Display when equipped with two FM aerials

Modular Infotainment System MIB

Composition Colour

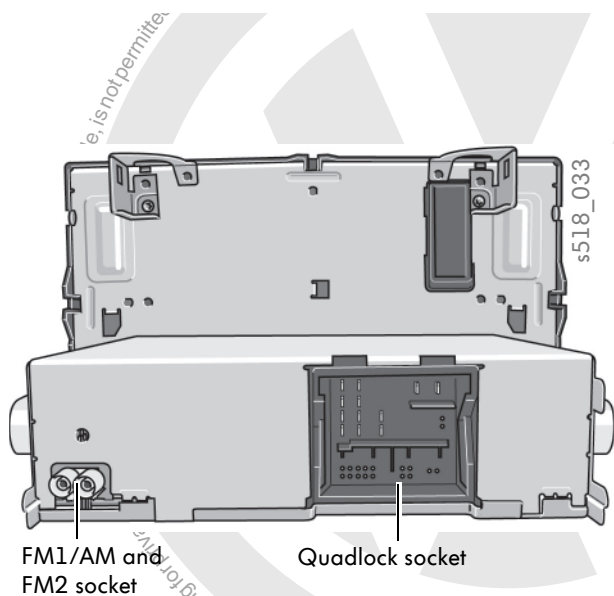


Operating and display unit with integrated control unit

This is the third device in which the display and operating unit, along with the device electronics which implement the functions, are combined in one single housing. The slot for the CD player, as well as a AUX IN socket, are located directly under the display. The SD card reader has been placed to the left of the display, due to the CD drive.

Features

- Pressure-sensitive 5" TFT colour display with 65,000 colours
- CD drive for audio CDs
- 4 x 20W
- Tone control, car specific sound, GALA
- FM phase diversity
- FM and AM radio reception
- MP3, WMA
- AUX-IN
- Telephone mute only/LF-in (muting)
- SD card reader
- Integrated into component protection



Electrical connections

Just like the Composition Touch system, the connectors featured by the Composition Colour and used to connect the device to the vehicle electronics are also installed at the rear of the housing. They are only accessible once the device has been removed from the centre console.

The following polarity-protected connection sockets have been installed:

- Quadlock socket
- FM1/AM socket
- FM2 socket

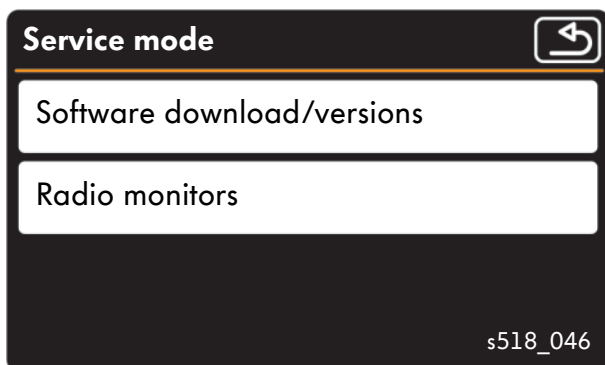


Detailed information

Service mode can be accessed by pressing and holding the SETUP button for more than 3 seconds. Software downloads, versions and radio monitors can be accessed as sub-items in the menu.

Composition Colour has four output stages, each with a 20 watt output level. The Composition Touch hardware, in comparison, has two output stages.

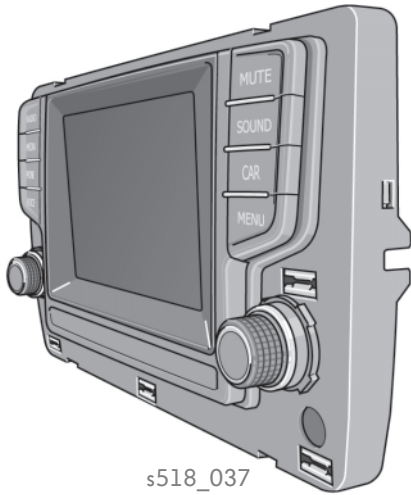
The Series display, the Composition Touch and the Composition Colour come with a 2 DIN assembly slot in the front area of the centre console. However there is only one single 1 DIN assembly slot in the centre console.



The "Service mode" function for Composition Colour

Modular Infotainment System MIB

Composition Media



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Front view with designer cover in place

Composition Media operating and display unit with designer cover removed.



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Infrared proximity sensor behind the operating and display unit panel

Operating and display unit

The operating and display unit, along with the control unit with the electronics for implementing the device functions, have been designed with separate housings. The ultra-flat operating and display unit is installed in the centre console, while the control module for the information electronics is located in the glove compartment. The two components are connected by the MIB CAN bus and a LVDS cable.

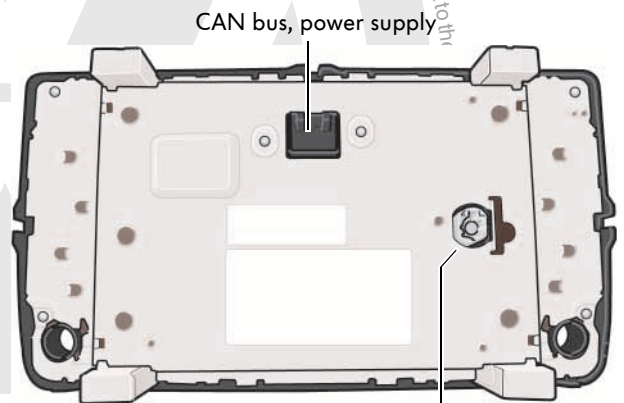
Electrical connections

The following polarity-protected connection sockets have been installed:

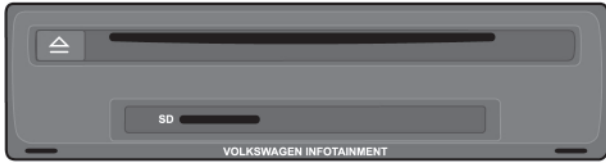
- LVDS connection to the control unit 1 for information electronics J794 (FAKRA socket)
- CAN bus connection, power supply

Features

- Touch-sensitive 5.8" TFT colour display
- Proximity sensor
- The SD card reader and the CD drive are not integrated into the operating and display unit, instead being integrated into the control unit for the information electronics in the glove compartment.



Connection to control unit 1 for information s518_029



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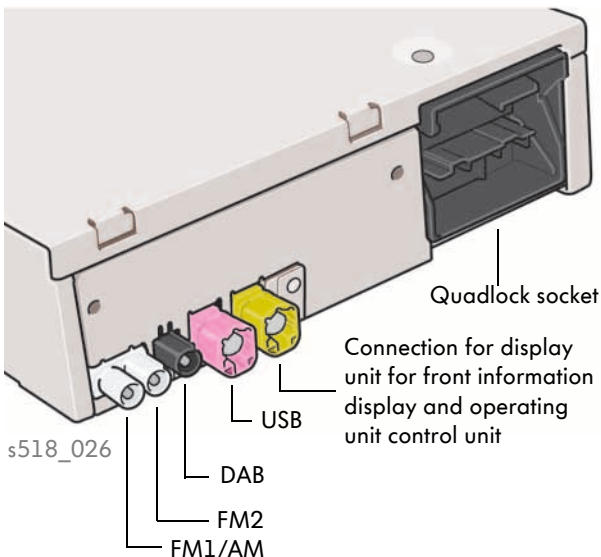
Control unit for information electronics

The control unit for the information electronics also features a modular design. This means that depending on the scope of functions required, the corresponding electronic components have been combined in one single housing. All versions are installed in the glove compartment.



Features

- CD drive/CD audio
- SD card reader
- 4 x 20W
- FM1/AM/FM2
- Tone control, car specific sound
- FM phase diversity, DAB audio/data services Basic, TP memo
- FM and AM radio reception
- GALA, GADK
- MP3, WMA, AAC
- AUX-IN, USB, iPod support
- Bluetooth phone module (HFP, A2DP, AVRCP)
- Telephone mute only/LF in
- Car menu function with larger selection of languages
- Control unit for information electronics (central computer) is integrated into component protection



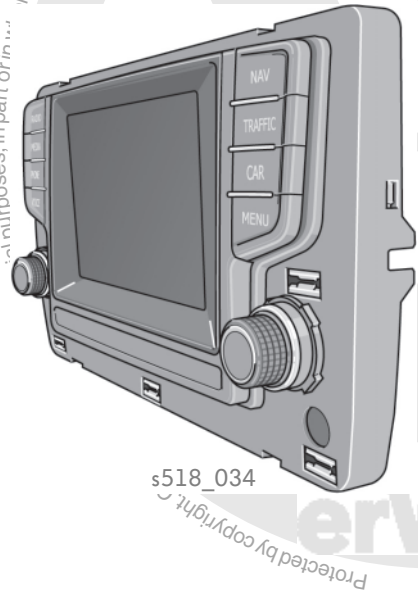
Electrical connections

The following polarity-protected connection sockets have been installed:

- FM1/AM/FM2
- DAB (optional)
- USB
- Connection to display unit for front information display and operating unit control unit
- Quadlock

Modular Infotainment System MIB

Discover Media



Discover Media operating and display unit with designer cover removed



Front view with designer cover in place

Infrared proximity sensor behind the operating and display unit panel

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Operating and display unit

Even though the operating and display units for Discover Media and Composition Media are similar, a number of physical and virtual buttons feature are in a specific assignment, and can therefore only be used in this radio navigation system.

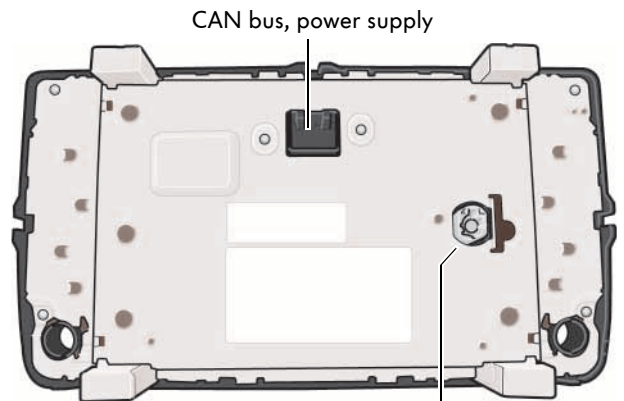
Features

- Touch-sensitive 5.8" TFT colour display
- Proximity sensor
- The SD card reader and the CD drive are not integrated into the operating and display unit, and are instead integrated into the control unit for the information electronics in the glove compartment.

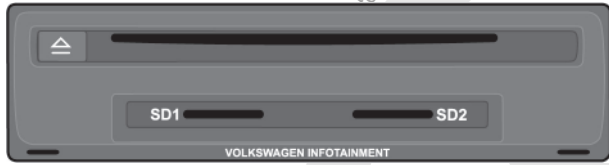
Electrical connections

The following polarity-protected connection sockets have been installed:

- LVDS connection to the control unit 1 for information electronics J794 (FAKRA socket)
- CAN bus connection, power supply



Connection to control unit 1 for information s518_029

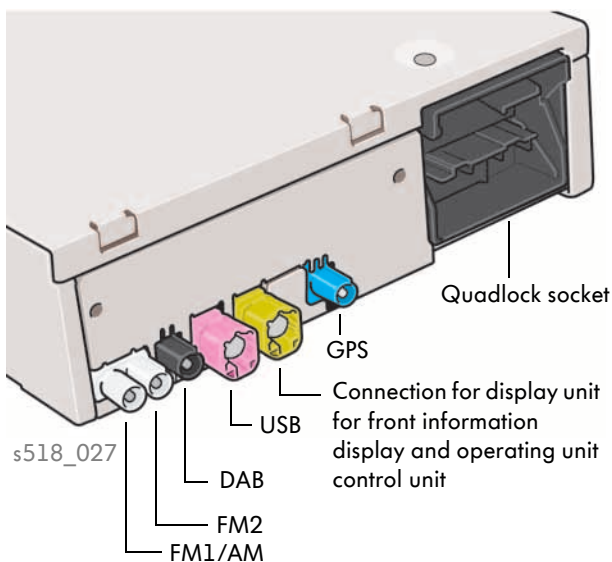


Control unit for information electronics

The control unit for the information electronics in Discover Media can be identified from the front by the second SD card reader. The second card reader is required because the navigation function will only work when the SD card with the navigation data base has been inserted. You are free to choose which SD card reader is used for the navigation function. The second SD card reader can be used for audio playback. Discover Media also has an audio/CD drive.

Features

- Adapted TMC, separate FM/TMC tuner
- SD database for navigation system, 2nd SD card reader for navigation system
- 2D Extended Lane Guidance, 2D detail map, 2.5D bird's eye view
- Compass function
- Map destination entry, Multi Route Guidance
- ADAS/PSD, TTS Sign Post Guidance
- Ready for Nav
- Basic travel guide
- Central computer - integrated into component protection.
- Bluetooth phone module (HFP, A2DP, AVRCP)



Electrical connections

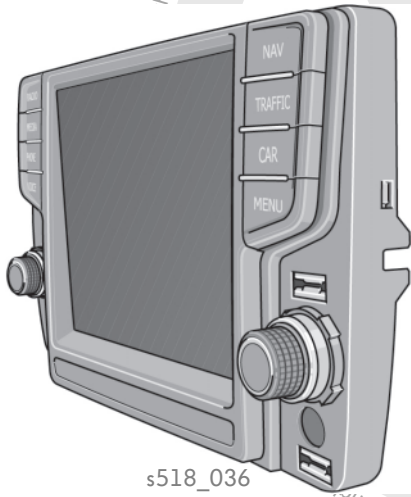
The following polarity-protected connection sockets have been installed:

- FM1/AM/FM2
- DAB (optional)
- USB
- Connection to display unit for front information display and operating unit control unit
- GPS
- Quadlock



Modular Infotainment System MIB

Discover Pro



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Front view with designer cover in place

Discover Pro operating and display unit with designer cover removed



s518_058

Infrared proximity sensor behind the operating and display unit panel

Operating and display unit

Discover Pro currently represents the most sophisticated Modular Infotainment System in terms of the range of functions and variety of display options. This device provides the following features in addition to those already described for Discover Media:

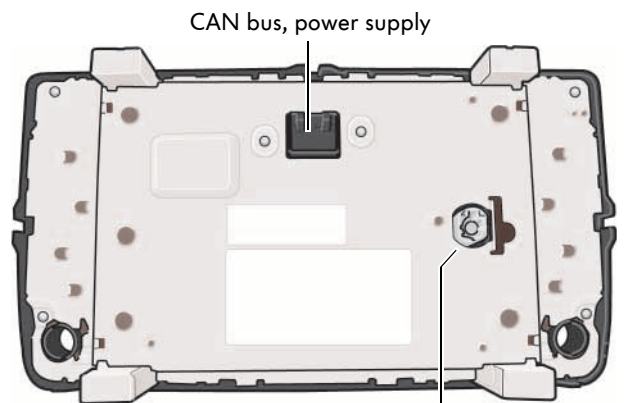
Features

- Touch-sensitive 8" TFT colour display
- Proximity sensor
- Neither the SD card reader nor the DC drive are integrated into the operating and display unit, instead being installed in the control unit for the information electronics in the glove compartment.

Electrical connections

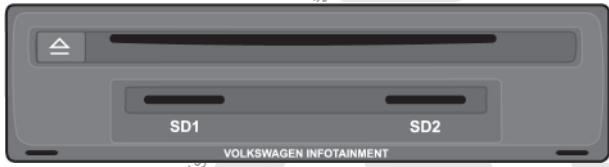
The following polarity-protected connection sockets have been installed:

- LVDS connection to the control unit 1 for information electronics J794 (FAKRA socket)
- CAN bus connection, power supply



Connection to control unit 1 for information s518_029

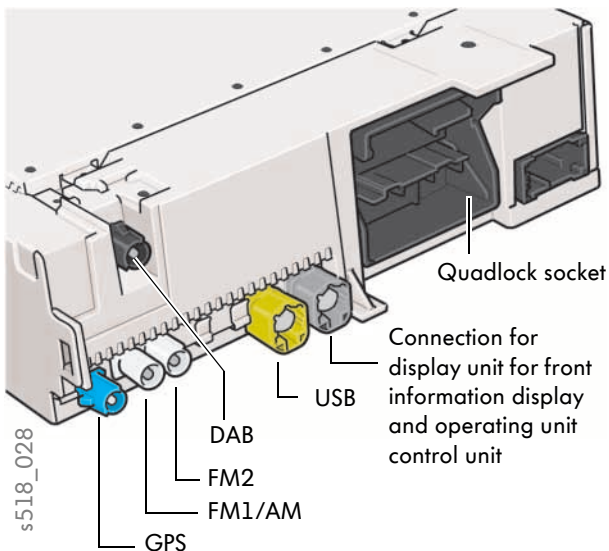
Control unit for information electronics



Discover Pro comes with a 64 GB internal SSD card installed. The device software, the Gracenote database and the navigation data are stored on this card. The available storage capacity for multimedia files is around 11 GB.

Features

- FM1/AM/FM2
- 2 SD card readers
- Dual DAB tuner, podcast
- Dolby Surround/multichannel capability
- AV out, ext. Hybrid TV (Japan only), Video file display
- SSD 64 GB
- Memory/Jukebox music recommendation/MLT
- 3D detail map, 3D map supplements, 3D landmarks, 3D city model
- POI online search, satellite maps, multiple maps
- Gracenote database
- Maps in 3D topographic presentation (bird's eye view) with buildings depicted
- Navigation data stored in the internal memory
- Points of interest, featuring pictures, accessed using the SD card
- Telephone contact/address data can be used for entering destinations in navigation system.
- Traffic sign display
- Dynamic route guidance via separate RDS-TMC and RDS tuner
- Picture viewer (JPEG viewer)
- Bluetooth telephone module (HFP, A2DP, AVRCP)



Electrical connections

The following polarity-protected connection sockets have been installed:

- GPS
- FM1/AM/FM2
- Optional DAB
- USB
- Connection to display unit for front information display and operating unit control unit J685
- Quadlock

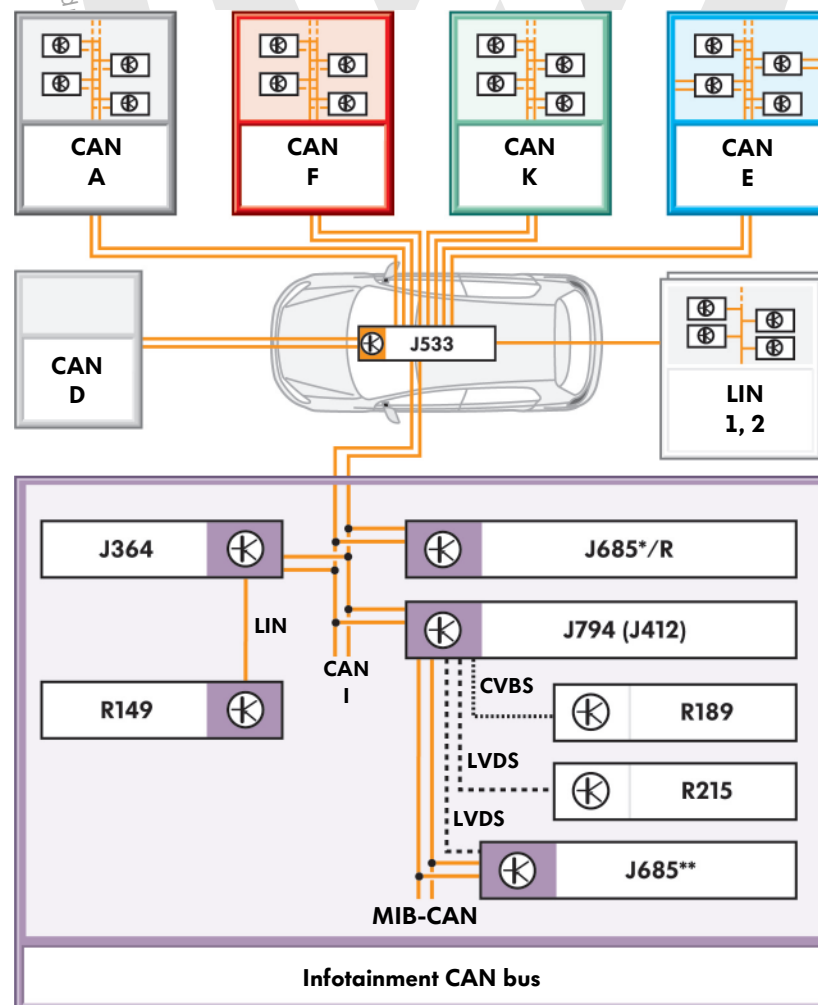


Networking concept

The MIB in the Golf 2013 data bus

The MIB is connected to the other CAN data bus networks via the data bus diagnostic interface J533. This allows data required to display diverse information and to implement the various functions to be exchanged with the running gear CAN bus (e.g. when selecting the driving mode) or the extended CAN bus, for example.

The MIB CAN bus has been added as a sub-bus within the infotainment CAN bus, which is provided at this device level for communication between the operating and display unit and the control unit for the information electronics (Composition Media and higher).



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CAN bus MIB CAN

The control signals and operating commands are exchanged between the control unit 1 for information electronics J794 and the display unit for front information display and operating unit control unit J685 using the CAN bus MIB CAN (Modular Infotainment System). Picture, audio and information data is communicated between these two control units via the LVDS wire.

LVDS

LVDS is the abbreviation for Low Voltage Differential Signalling. This is the term for the standard interface for high speed data transfer. It describes the physical processing of data for data transfer. It is not, however, purely a transfer protocol, such as the file transfer protocol (FTP).

Legend

CAN A	Powertrain CAN bus
CAN F	Running gear CAN bus
CAN K	Convenience CAN data bus
CAN I	Infotainment CAN bus
CAN D	Diagnosis CAN data bus
CAN E	Extended CAN bus
LIN	LIN data bus 1,2, etc.
J364	Auxiliary heater system control unit
J412	Mobile telephone operating electronics control unit
J533	Data bus diagnosis interface (Gateway)
J685*	Display unit for front information display and operating unit control unit
J794	Control unit 1 for information electronics
R	Radio

CVBS

If the vehicle is fitted with a reversing camera, this is connected to the infotainment system with an CVBS wire.

CVBS is the abbreviation for Colour Video Blanking Sync signal.

C stands for colour signal.

This contains the colour information and is transmitted at the start of a scan line. The three screen colours, red, green and blue are combined to produce a signal.

V stands for video signal.

The brightness of a point is determined by the voltage (white = 100%, black = 30%)

B stands for blanking signal.

This defines the line and vertical response at a voltage of 0 volts.

S stands for synchronisation.

This ensures coordination between sender and receiver. The synchronisation signal is sent during a blanking interval.

R149	Remote control receiver for auxiliary coolant heater
R189	Reversing camera
R215	Interface for external multimedia unit
MIB-CAN	Modular Infotainment system CAN bus
CVBS	Colour Video Blanking Sync signal; "Colour TV wire"
LVDS	Low voltage differential signalling; standard interface for high speed data transmission
*	When radio is installed
**	When J794 is installed



Aerial systems

The aerial system using Europe as an example

The system illustrated shows the maximum level of equipment features for the Discover Pro.

The FM/AM radio, and DAB, aerials are located in the rear window of the Golf 2013.

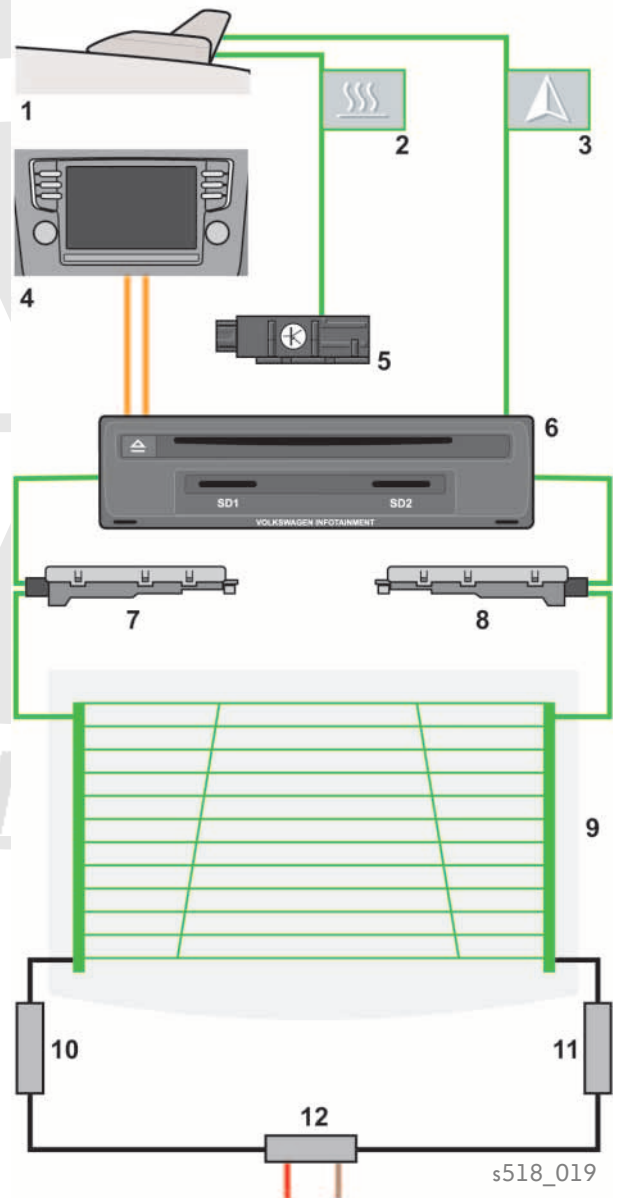
The aerials for the auxiliary heater remote control, the GPS position finder and the navigation unit are located in the “shark fin-shaped” roof aerial.

The design of the aerial system has also been integrated into the modular transverse matrix MQB. The roof aerial is therefore a component which is uniform across the MQB. The impedance transformers are adapted to the specific vehicles and can only be used in the associated vehicle.

The roof aerial is not connected with a fixed cable, instead it has a connection socket of its own. The connecting sockets are located at the base of the aerial.



The impedance transformers function using an operating voltage of 8.5 volts. If higher voltages are applied to the impedance transformers, the electronics in the impedance transformer will be destroyed.



Example: Aerial connections for a vehicle equipped with the Discover Pro Infotainment system in the German market. The design of the aerial system can vary depending on the market and the equipment installed.

Legend

- | | | | |
|---|--|----|------------------------------|
| 1 | Roof aerial | 7 | Impedance transformer FM/DAB |
| 2 | Aerial for auxiliary heater remote control | 8 | Impedance transformer FM/AM |
| 3 | GPS aerial/navigation | 9 | FM/AM/DAB aerial structure |
| 4 | Operating and display unit | 10 | FM trap (+) |
| 5 | Remote control receiver for auxiliary coolant heater | 11 | FM trap (-) |
| 6 | Control unit for information electronics | 12 | AM trap (-) |

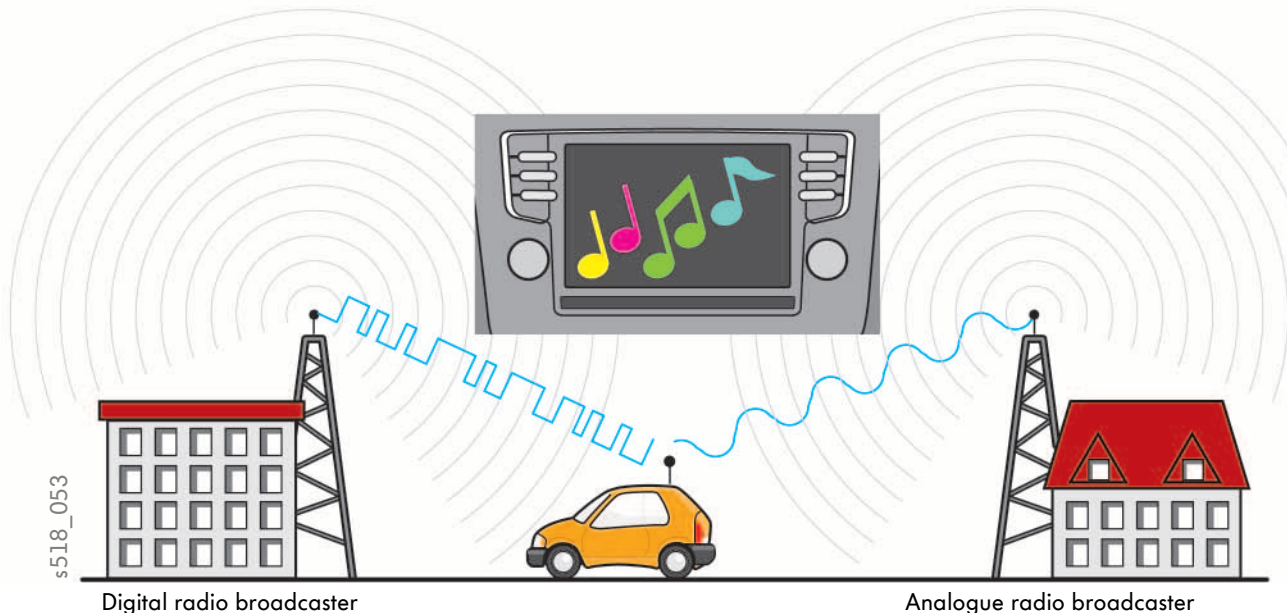
Digital radio reception

Along with the navigation system and the phone, the radio is the most frequently used function in the infotainment system. Progress has led to the introduction of digital radio. As well as the actual music, broadcasters now also transmit song titles, for example, and the names of artists, album covers and even the broadcaster's name in the form of a picture.

All this additional information (known as meta information or TAGS) can be used and displayed by the modular infotainment system depending on the particular version of the end user device. Along with the digital broadcasting standard, Digital Audio Broadcasting (DAB), the enhanced standard DAB+ and Digital Multimedia Broadcasting (DMB) are also supported.

The following Information and data services can be transmitted via DAB:

- Text and image information to accompany a title (e.g. artist, title and album,...)
- Text and image information to accompany the broadcaster (e.g. broadcaster name)
- TMC/TPEG traffic information (see the glossary for an explanation of TMC/TPEG)
TMC = Traffic Message Channel
TPEG = Transport Protocol Experts Group
- News, weather, sports results
- Location-specific information such as parking information



Digital radio reception is available when Composition Media or higher has been installed as the reception device for the infotainment system.

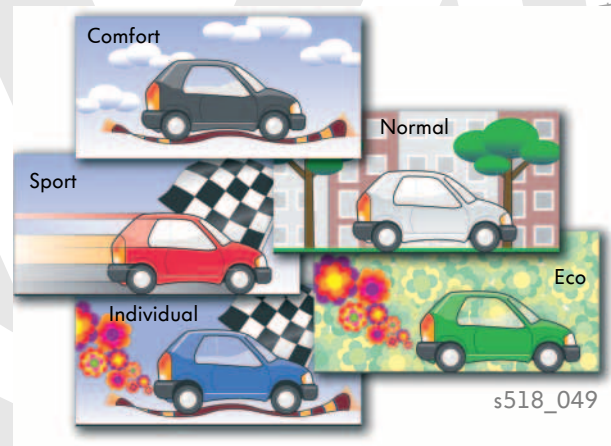
Driving mode selection

The basic concept of the driving mode selection

The close relationship between the Modular Transverse Matrix MQB and the Modular Infotainment System MIB is clearly demonstrated by the new driving mode selection function. To implement this function, comprehensive data exchange is required between the MIB and the engine management system, gearbox management system, the running gear management system and other systems (e.g. air conditioning and steering).

The basic idea of the driving mode selection is to allow the driver to make vehicle settings according to the driver's preferences. Some drivers prefer a more immediate engine response when they wish to accelerate, and harder suspension. Others prefer to drive more economically or favour a more comfortable, softer running gear design. Others may like a more sporty response from their vehicle over short distances, but prefer a more comfortable driving sensation on longer journeys.

This is where the driving mode selection function is used.



Individual driving pleasure with the new driving mode selection. The five modes are Comfort, Normal, Sport, Eco and Individual

Preset driving modes

Depending on the equipment installed in the vehicle, the driver can select the following preset modes using the MIB end user device:

- Comfort
- Normal
- Sport
- Eco
- Individual



Why do so many vehicle functions have to be taken into account for the driving mode selection?

Functions such as the light assistance function and power steering need to be integrated because the various running gear settings involve a variety of different vehicle responses. The adaptive cruise control function and a retractable belt tensioner are important because different speed ranges need to be factored into the various engine and gearbox settings (in particular, between Eco and Sport).

Higher speeds can be expected with the more sporty driving style. ACC and passenger protection also need to be factored in.

Integrating the air conditioning system as well as the engine and gearbox management system are important when the driving style aims to save fuel.

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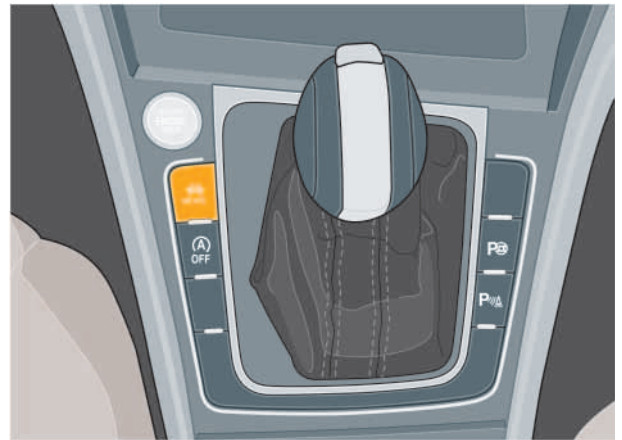


Driving mode selection

Activation and choice of driving mode

The driving mode selection function is activated using the switch module for driving mode selection E592. In the Golf 2013, this is the first button on the button panel on the left side next to the selector lever. It is integrated into the system via the onboard supply control unit J519.

When the function is deactivated, then the vehicle set-up corresponds to the factory settings (Normal driving mode) and the switch module E592 does not light up. When an alternative driving mode is selected, the switch module lights up as feedback for the driver. The master for the driving mode function is the data bus diagnostic interface J533.



s518_022

When the function is activated using the switch module, then "Driving Mode Selection" appears in the infotainment display and operating unit. Depending on the vehicle equipment, up to five buttons appear on the touchscreen to allow the preferred driving mode to be selected.

The mode is selected by touching the button shown on the display, and the vehicle is set up accordingly.



s518_714

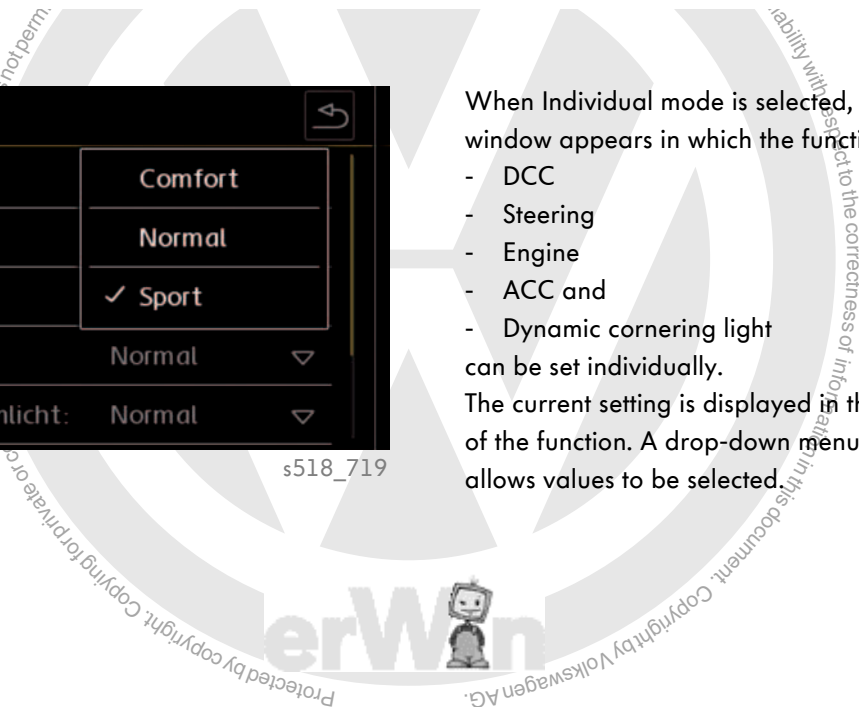


s518_719

When Individual mode is selected, an additional window appears in which the functions:

- DCC
- Steering
- Engine
- ACC and
- Dynamic cornering light

can be set individually. The current setting is displayed in the line to the right of the function. A drop-down menu for each function allows values to be selected.

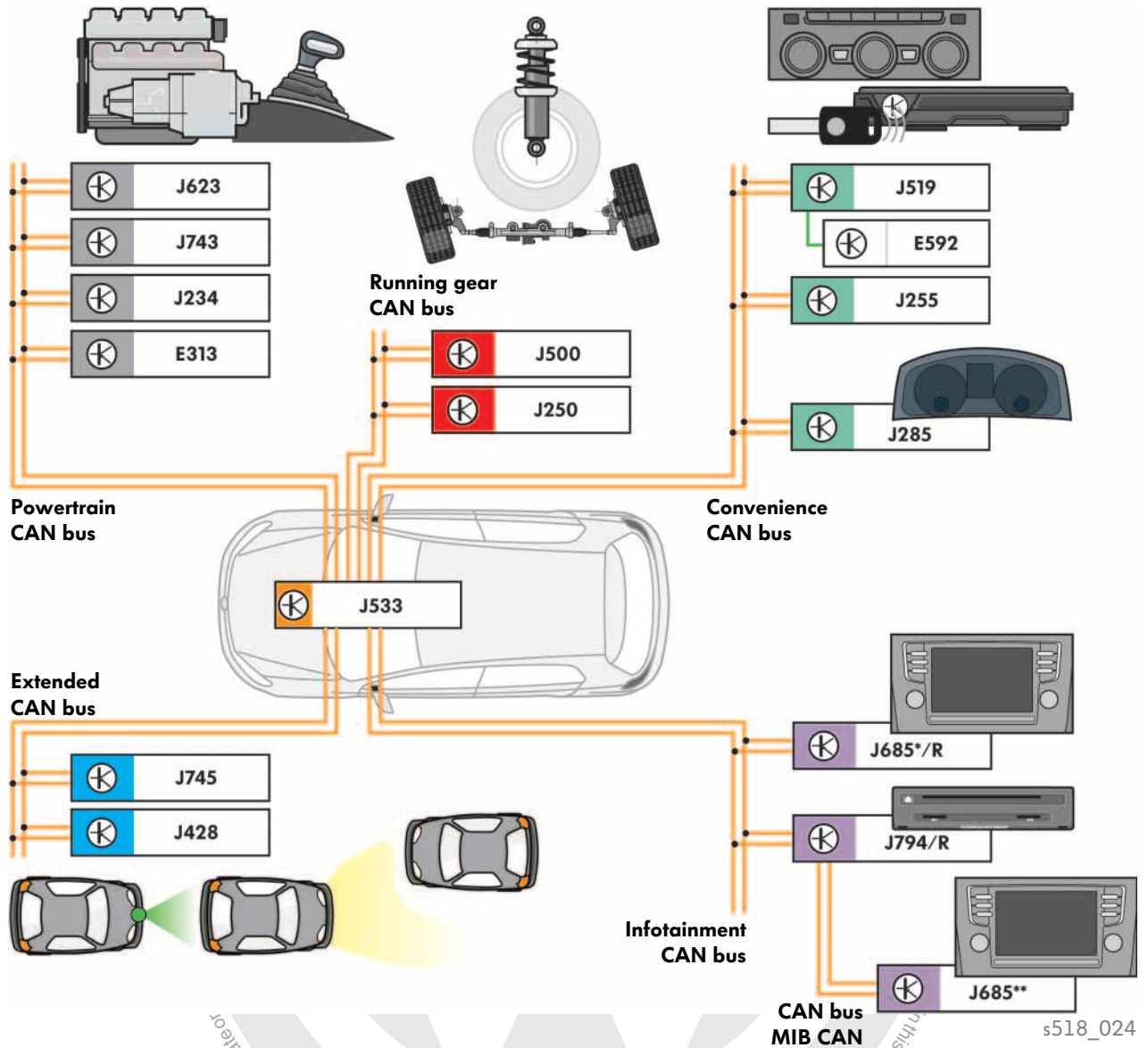


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The current driving mode is displayed in the status line at the top left side of the Infotainment display. The driving mode selected is linked to the current key profile. Otherwise the Infotainment system adopts the setting from the previous journey. A driving mode will remain active until it is changed by the driver, or a different vehicle key with different key profile is used.

Driving mode selection

The networking concept in driving mode selection



Legend

J743	Mechatronic unit for dual clutch gearbox	J685	Display unit for front information display and operating unit control unit
J234	Airbag control unit	J745	Control unit for cornering light and headlight range control
J250	Electronically controlled damping control unit	J794	Control unit 1 for information electronics
J255	Climatronic control unit	E313	Selector lever
J285	Control unit in dash panel insert	E592	Switch module driving mode selection
J428	Adaptive cruise control unit	R	Radio (connected to J794)
J500	Power steering control unit	*	When radio is installed
J519	Onboard supply control unit	**	When J794 is installed
J533	Data bus diagnostic interface		
J623	Engine control unit		

Driving mode and selection options

Each driving profile accesses all the functions and subfunctions in the CAN data bus system which are listed in the table below. The various driving modes are generated according to the effect of the individual properties. The individual driving modes are described in more detail on the following pages.



s518_713

“Comfort” driving mode

This mode allows relaxed driving and a comfortable driving experience, for example during long journeys on the motorway. A key feature here is the soft running gear set-up. The Comfort driving mode is only used in combination with the adaptive chassis control DCC.

Function	Subfunction	Characteristic
Engine management	Gearshift points and engine performance	Basic setting
	Load change function	Basic setting
	Gearshift indicator	Basic setting
	Cruise control system CCS	Basic setting
Gearbox management	Gear	D
Adaptive cruise control ACC	Acceleration gradient	Normal
Freewheel	Gliding	Deactivated
Start/stop system	Start/stop system coordinator	Activated
Engine sound		Quiet
Running gear damping control		Soft setting
Power steering		Basic setting
Air conditioning management	Start/stop system	Normal
	Auxiliary heater operation	Normal
	Innovative Thermal Management ITM	Normal
Headlight control AFS	Headlight range control HRC	Normal
	Dynamic cornering light	Normal
	Static cornering light	Normal
	Dynamic high beam control	Normal
Seat belt tensioner control	Partial tensioning	Activated



Driving mode selection

“Normal” driving mode

This driving mode is the factory setting. It provides a compromise between a comfortable and a dynamic, sportive driving experience. In this driving mode, the vehicle can be returned to its original setting at any time.



s518_714

Function	Subfunction	Characteristic
Engine management	Gearshift points and engine performance	Basic setting
	Load change function	Basic setting
	Gearshift indicator	Basic setting
	Cruise control system CCS	Basic setting
Gearbox management	Gear	D
Adaptive cruise control ACC	Acceleration gradient	Normal
Freewheel	Gliding	Deactivated
Start/stop system	Start/stop system coordinator	Activated
Engine sound		Basic setting
Running gear damping control		Basic setting
Power steering		Basic setting
Air conditioning management	Start/stop system	Normal
	Auxiliary heater operation	Normal
	Innovative Thermal Management ITM	Normal
Headlight control AFS	Headlight range control HRC	Normal
	Dynamic cornering light	Normal
	Static cornering light	Normal
	Dynamic high beam control	Normal
Seat belt tensioner control	Partial tensioning	Activated

“Sport” driving mode



This mode adapts the vehicle to the driver's demand for a sportier response and is suitable for a sporty driving style.

Among other things, the load shift function in the engine management system is varied, and the amount of steering torque is adapted to the vehicle speed.

Function	Subfunction	Characteristic
Engine management	Gearshift points and engine performance	Basic setting
	Load change function	Sport characteristics
	Gearshift indicator	Basic setting
	Cruise control system CCS	Basic setting
Gearbox management	Gear	S
Adaptive cruise control ACC	Acceleration gradient	Increased
Freewheel	Gliding	Deactivated
Start/stop system	Start/stop system coordinator	Activated
Engine sound		Noisy
Running gear damping control		Hard setting
Power steering		Streamlined characteristics
Air conditioning management	Start/stop system	Normal
	Auxiliary heater operation	Normal
	Innovative Thermal Management ITM	Normal
Headlight control AFS	Headlight range control HRC	Fast
	Dynamic cornering light	Fast
	Static cornering light	Fast
	Dynamic high beam control	Fast
Seat belt tensioner control	Partial tensioning	Activated



Driving mode selection

“Eco” driving mode

This driving mode allows fuel-efficient and environmentally friendly driving. The main difference to the other modes is a change in the engine speed when gears are changed. The air conditioning system is also adjusted for more economic use in terms of thermal management, blowers and auxiliary heater operations.



s518_716

Function	Subfunction	Characteristic
Engine management	Gearshift points and engine performance	Limited
	Load change function	Basic setting
	Gearshift indicator	Also at higher loads
	Cruise control system CCS	Reduced
Gearbox management	Gear	E
Adaptive cruise control ACC	Acceleration gradient	Reduced
Freewheel	Gliding	Activated
Start/stop system	Start/stop system coordinator	Enhanced limits
Engine sound		Quiet
Running gear damping control		Basic setting
Power steering		Basic setting
Air conditioning management	Start/stop system	Enhanced limits
	Auxiliary heater operation	Consumption-optimised
	Innovative Thermal Management ITM	Consumption-optimised
Headlight control AFS	Headlight range control HRC	Normal
	Dynamic cornering light	Off
	Static cornering light	Off
	Dynamic high beam control	Off
Seat belt tensioner control	Partial tensioning	Activated

“Individual” driving mode



s518_717

The driver can create a customised profile in this driving mode. However, the driver is not free to determine the values of each of the subfunctions, and is instead given a limited choice of functions based on the preset values for the other modes.

Function	Subfunction	Characteristic
Engine management	Gearshift points and engine performance	Applied from Normal, Sport or Eco (limited)
	Load change function	
	Gearshift indicator	
	Cruise control system CCS	
Gearbox management	Gear	D
Adaptive cruise control ACC	Acceleration gradient	Applied from Normal, Sport or Eco (limited)
Freewheel	Gliding	Deactivated
Start/stop system	Start/stop system coordinator	Activated
Engine sound		Medium
Running gear damping control		Applied from Normal, Sport or Comfort
Power steering		Applied from Normal or Sport
Air conditioning management	Start/stop system	Normal
	Auxiliary heater operation	Normal
	Innovative Thermal Management ITM	Normal
Headlight control / AFS	Headlight range control HRC	Applied from Normal, Sport or Eco
	Dynamic cornering light	
	Static cornering light	
	Dynamic high beam control	
Seat belt tensioner control	Partial tensioning	Activated



Glossary

AAC

Advanced Audio Coding (AAC) is an audio data compression method developed by the Moving Picture Experts Group that is used in the MP2 standard (MPEG layer 2).

ADAS

(Advanced Driver Assistance Systems)

Selected maps and route data are provided by the navigation system of other control units.

Example: more detailed information which is stored in the navigation system memory (e.g. mountains, sharp bends etc.) is used by other control units. The automatic gearbox can shift down in time for a mountain, or the vehicle electronics are warned if the speed is too high when approaching a sharp bend.

AUX-IN

Signal input for external audio devices.

AVRCP

(Audio Video Remote Control Profile)

Bluetooth-profile for remote control of audio and video devices.

A2DP

(Advanced Audio Distribution Profile)

A technology used by many manufacturers which allows wireless transmission of stereo audio signals to a corresponding receiver via Bluetooth.

CAN

(Controller Area Network)

Standardised digital twin-wire data network used in vehicle electronics.

Car function

Menu function in the Infotainment system which allows the various vehicle and operating data to be accessed and displayed.

Car specific sound

Equalizer filter settings developed especially for audio playback inside the car.

DAB

(Digital Audio Broadcasting)

Radio channel broadcast digitally by radio stations.

DAB+

An enhancement of digital radio which was introduced in Germany in 2011 with the name DAB+.

DMB

(Digital Multimedia Broadcasting)

Digital transmission system used for a range of mobile devices (e. g. mobile, smartphone, tablet PC, and laptop). DMB differentiates between transmission via satellite (S-DMB) and terrestrial transmission (T-DMB).

Dual DAB tuner

Dual digital tuner for the parallel reception of two broadcasters using digital radio DAB (Digital Audio Broadcasting).

FAKRA

(German automotive standard)

Specific high frequency electrical connector for automobile construction.

FM phase diversity

This function is required in radio and navigation systems to allow dual tuner operation.



CVBS

(Colour video blanking synchronisation signal)
A signal standard for transmitting colour video images.

GALA

(Speed-dependent volume control)
Specific function of the audio system which adapts the playback volume to the level of vehicle noise as the vehicle speed increases.

GADK

(Speed dependent dynamic compression)
The different volume levels of instruments in a piece of music, for example, are harmonised with each other in accordance with speed of the vehicle. The louder instruments are made quieter and the quieter ones become correspondingly louder.

HFP

(Hands-free profile)
Bluetooth Standard for hands-free system.

Gracenote

A data base owned by the Gracenote company containing information relating to all audio CDs on the market (music genre, artists, titles and track lengths).

Jukebox

Internal storage medium in the MIB, especially for Discover Pro.

LVDS

(Low voltage differential signalling)
Standard interface for high speed data transmission.

MIB

(Modular Infotainment System)
Designation for a modular system used by many brands and models for the vehicle's Infotainment components.

MLT

More Like This.

MP3

Abbreviation for MPEG Layer3 (Motion Picture Experts Group Layer 3); standard compression for audio data formats.

MQB

(Modular Transverse Matrix)
Designation for a modular system used by many brands and models in vehicle development and production.

Multiple maps

The ability to have several maps displayed simultaneously next to each other in the navigation display.

LF In

(Low frequency input)
By applying a voltage to the mute wire in the radio, the radio is switched to mute in order to allow the incoming telephone conversation to be heard through the vehicle's loudspeakers. Customer benefit: retrofit option for telephone systems without CAN, or for after-market systems.

PRD

(Predictive Route Data)
Foreseeable, oncoming, calculable, predictive route data.

Glossary

Podcast

(Podcasting)

An option for subscribing to audio and video recordings available by subscription over the internet.

POI online search

(POI = Point of Interest)

Information relating to an interesting navigational item within the navigation system and route planning.

Preset EQ

(EQ = equaliser)

Preset function for an equaliser.

Quadlock

A specific multi-pin connector for connecting car radios or Infotainment components.

RDS

(Radio Data System)

A standardised system for transmitting additional radio data information such as the name of a broadcaster, audio title etc.

Single FM aerial switch

Use of dual tuner technology with a built-in aerial.

An internal switch allows the single aerial for the first tuner to be used for all other internal tuners. FM phase diversity is not possible with a built-in aerial.

SD card

(Secure Digital Card)

Small and robust memory cards, e.g. for digital cameras.

SSD

(Solid State Drive)

Storage medium without mechanically moving parts.

TAG

A TAG (information technology) is a label for a data pool that provides additional information and is used for categorisation.

TFT display

(Thin Film Transistor Display)

Flat screen.

TMC

(Traffic Message Channel)

A digital radio service for transmitting traffic announcements.

TPEG

(Transport Protocol Experts Group)

Digital standard for the transmission of traffic information independent of language.

TP

(Traffic Program)

Specific radio function which gives priority to playing traffic announcements, for example CD audio playback will be paused in order for traffic announcements to be issued.

TTS Signpost Guidance

(TTS = Text-to-Speech)

Text information issued in the form of speech.

UMTS

(Universal Mobile Telecommunications System)

A third generation mobile radio standard enabling significantly higher transfer rates.

USB

(Universal Serial Bus)

A standardised interface between various electronic devices such as computers, printers, scanners and televisions etc.



WMA

(Windows Media Audio)

Specific Microsoft Windows audio format.

X-Band EQ

(EQ = equaliser; X-Band-Equaliser)

With this equaliser every frequency band that can be affected is allocated an individual control. It has 26 to 33 frequency bands, typically 31, each with a bandwidth of 1/3 octave. The response of the frequency correction is shown „graphically” by the controller. This type of equaliser is also called an X-Band-Equaliser. The X stands for the number of controllers (a 31 band equaliser means 31 controllers).

2.5D bird's eye view

A term which describes the transition from two-dimensional data (referring to a 2D plane) to data structured in three dimensions (3D plane). The term is used in a number of areas, including geoinformation systems.

3D Map Supplement

Additional information (e.g about locations) in the navigation system's 3D navigation maps.



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