



Direct-shift gearbox– Overview

Direct-shift gearbox	Technical features	See also SSP no.:
6-speed direct-shift gearbox DQ250-6F DSG 02E 	<p>The 02E 6-speed direct-shift gearbox has a hydraulic dual clutch. It combines the advantages of a manual gearbox, for instance, high level of efficiency, robustness and sportiness, with the advantages of an automatic gearbox like user-friendliness, above all when changing gear.</p>	308
7-speed DSG direct-shift gearbox DQ-200-7F 0AM 	<p>The 0AM 7-speed direct-shift gearbox is a further development of the 02E 6-speed direct-shift gearbox. In contrast to the 02E, it works with a dry dual clutch and with separated oil systems for gearbox and mechatronics.</p> <p>The electric oil pump for the hydraulics is only operated by the control unit on demand unlike the 02E.</p> <p>This happens if the hydraulic pressure in the mechatronic unit falls below a certain value and the pressure therefore needs to be increased again to ensure functioning of the mechatronic unit.</p>	390



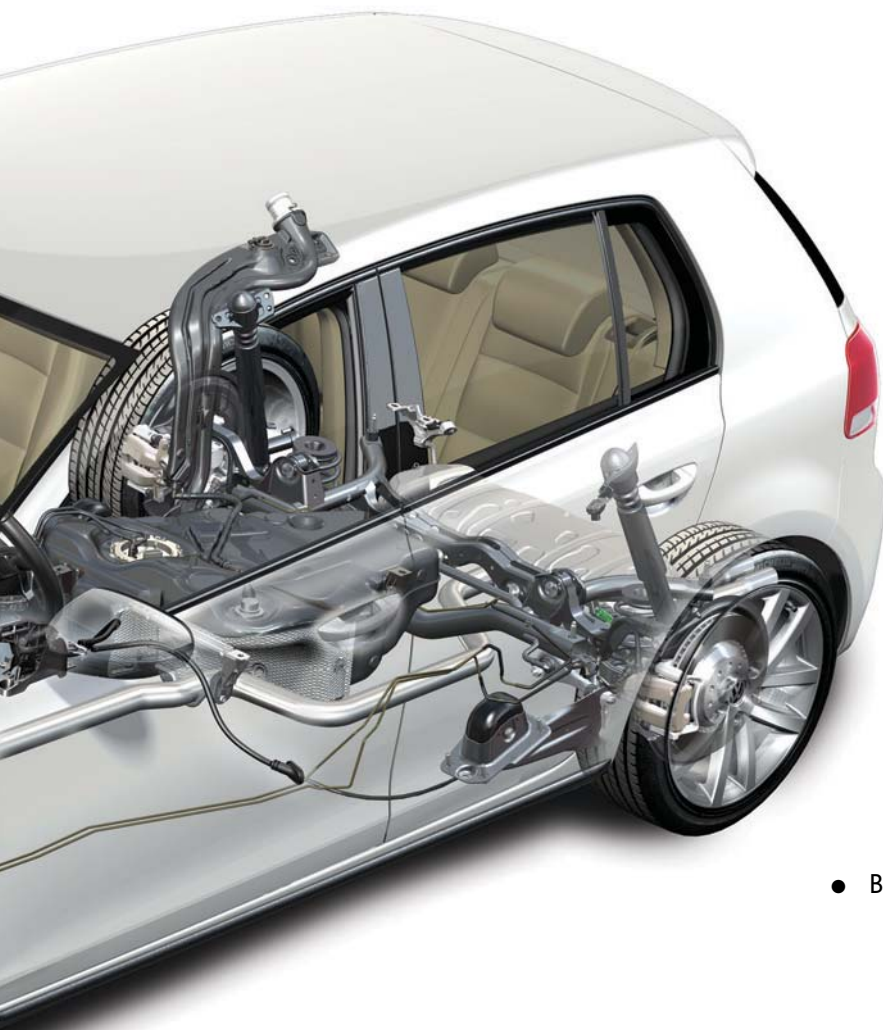
Overview of chassis

The Golf 2009 chassis is based to a great extent on the chassis of the Golf 2004. The Golf can be equipped with standard suspension, sports suspension, heavy-duty suspension or with the Adaptive Chassis Control (ACC).

- New steering column concept (sheet metal steering column)
- Lightweight strut front axle using the McPherson principle
- Adaptive Chassis Control ACC
- Electromechanical power steering with double pinion, 3rd generation, with integrated steering angle sender
- Standing accelerator pedal, crash-optimised



- Four-link rear axle



S423_187

- Breakdown set (Tire fit), standard

- New ESP generation MK60-EC system from Continental Teves with integrated sensor cluster



You will find further information on the Adaptive Chassis Control (ACC) in self-study programme SSP 406 “DCC Adaptive Chassis Control”.



ACC Adaptive Chassis Control

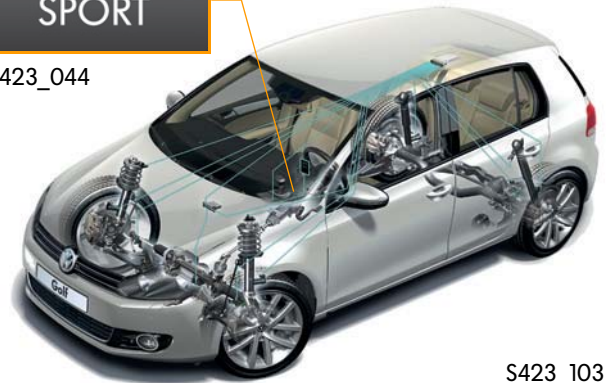
The Adaptive Chassis Control ACC adjusts the suspension to the road conditions and thus offers optimum ride comfort at all times.

Depending on the customer's requirements, the control programmes "Normal", "Sport" and "Comfort" can be selected using the ACC button in the centre console.

The damping is automatically adapted depending on the driving situation to stop the car pitching and rolling. In the "Sport" control programme, the steering is also given a more sporty feel.

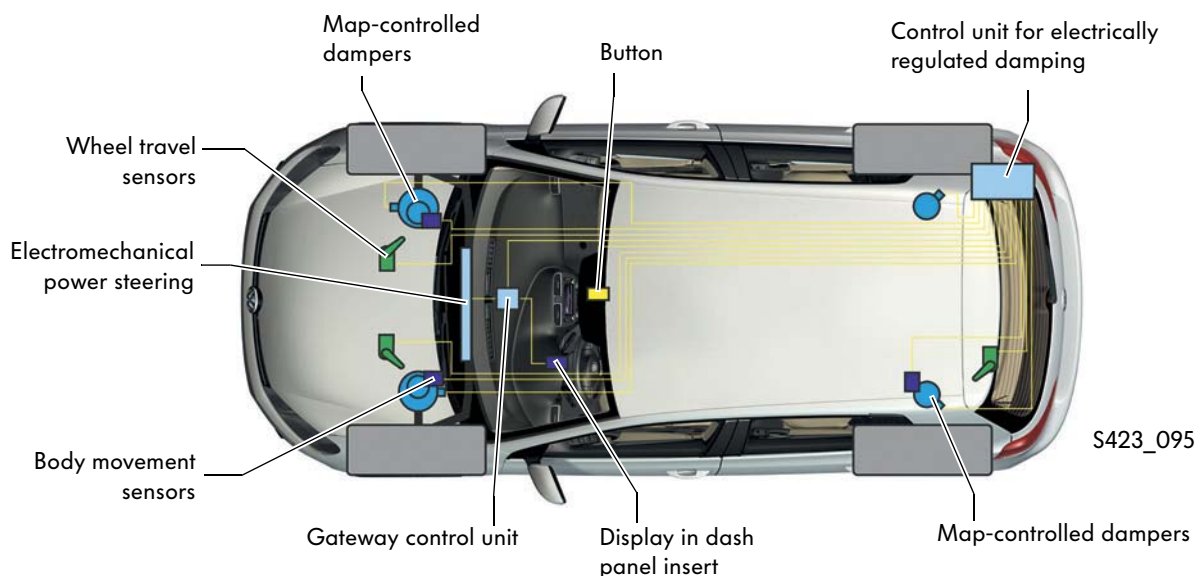


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The components of the ACC Adaptive Chassis Control include four map-controlled dampers, a gateway control unit as an interface to the CAN data bus systems of the Golf, the control unit for electrically controlled damping, three sensors for measuring the wheel travel and three sensors for measuring the body movement. The "Normal", "Sport" and "Comfort" modes are indicated in the dash panel insert.

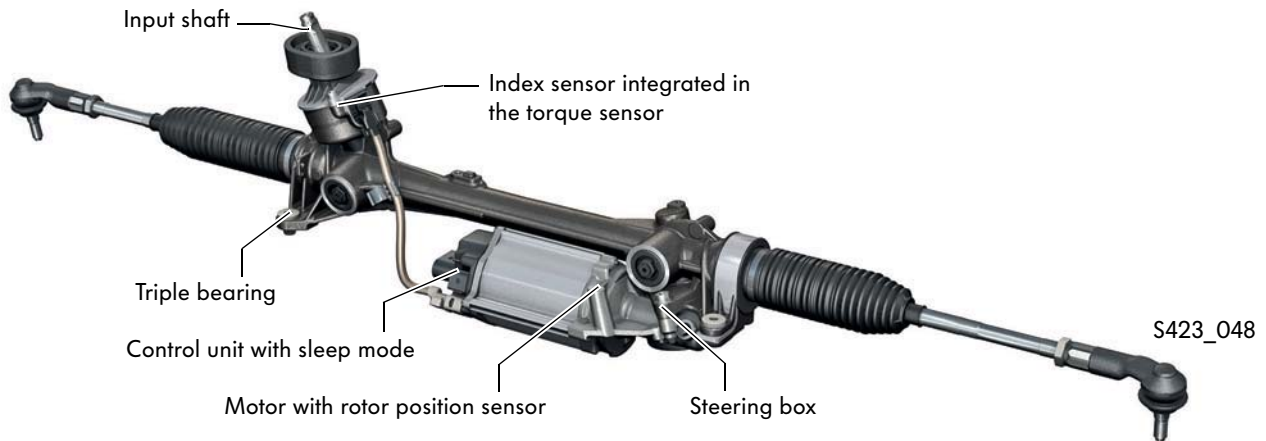


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You will find detailed information on the Adaptive Chassis Control (ACC) in self-study programme SSP 406 "DCC Adaptive Chassis Control".

Electromechanical power steering



The Golf uses the 3rd generation of the electromechanical power steering with double pinion from manufacturer ZF. The basic new features are:

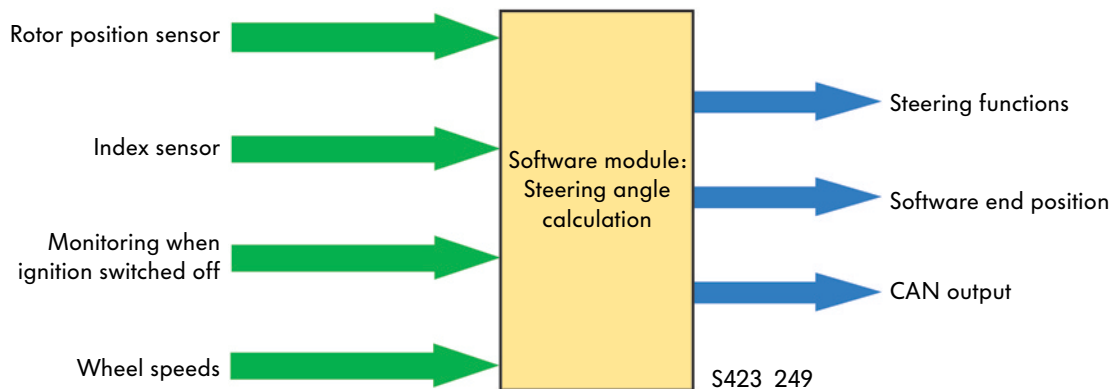
- Integration of the steering angle sensor in the steering so that the steering angle sensor on the steering column is not required
- Software expansion in control unit for steering angle sensor and Lane Assist, for example
- Triple bearing on the assembly carrier



Determining the steering angle

In the third generation of the electromechanical power steering, the sensor signals obtained in the steering from the rotor position sensor and the index sensor are used to calculate the steering angle of the vehicle.

The steering angle determined is used for the internal steering functions and is also provided to other control units.

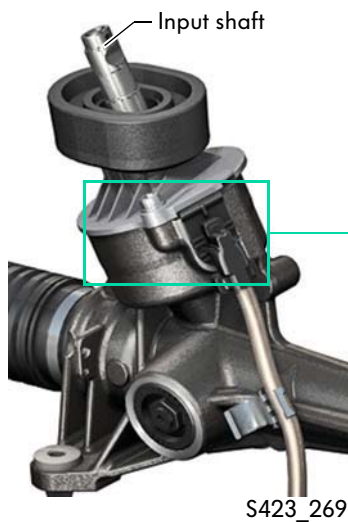


Integrated steering angle sensor

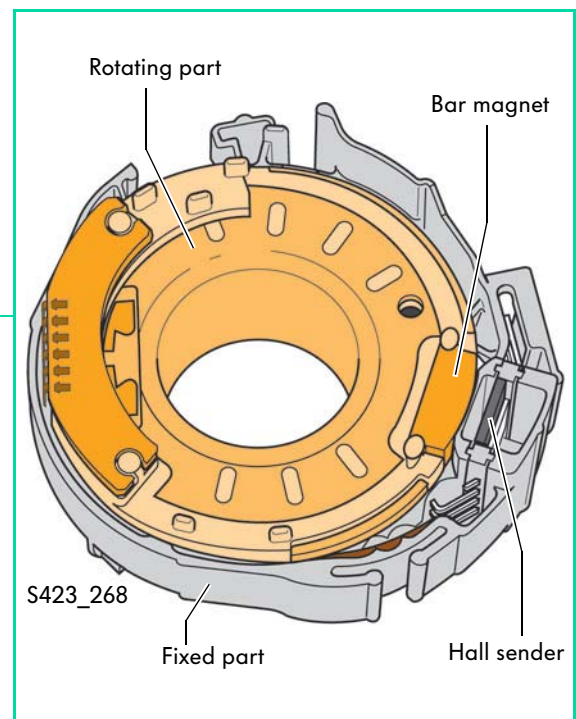
On the input shaft, the index sensor (integrated steering angle sensor) is set at a defined angle as part of the torque sensor.

A bar magnet is fixed to a rotating part of the volute spring cassette. When the steering spindle rotates, it passes the scanning range of a Hall sensor, which is located on the part of the volute spring cassette that is fixed to the housing, once per steering wheel turn. The signal of the Hall sensor is triggered by the straight-ahead position of the steering wheel.

The index sensor is triggered three times as the steering spindle turns approx. 3.7 revolutions over the total steering angle range. The centre position of the steering wheel can thus be determined with this sensor, but not the clear centre position of the steering or straight-ahead running of the vehicle. This is determined by the high-resolution rotor position sensor and is made plausible by the wheel speeds.



Index sensor



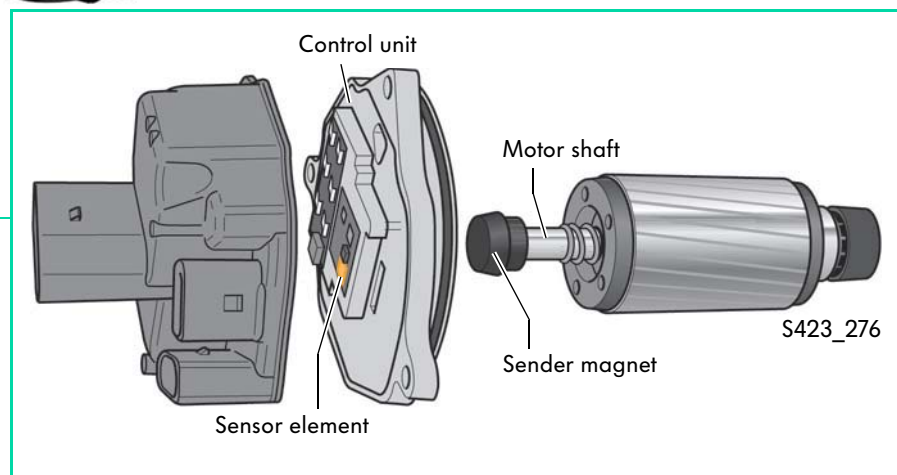
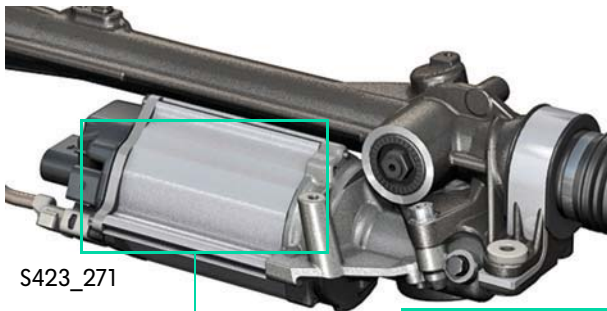
Rotor position sensor

The rotor position sensor measures the position of the contact less free rotor every 180°.

The sensor element is in the control unit. The corresponding sender magnet is a magnetic disc and is at the end of the motor shaft.

The rotor position sensor detects the whole steering movement (right/left). The centre position of the steering and straight running of the vehicle is clearly established using the rotor position sensor, an index mark that is detected by the index sensor and using the information from the wheel speeds.

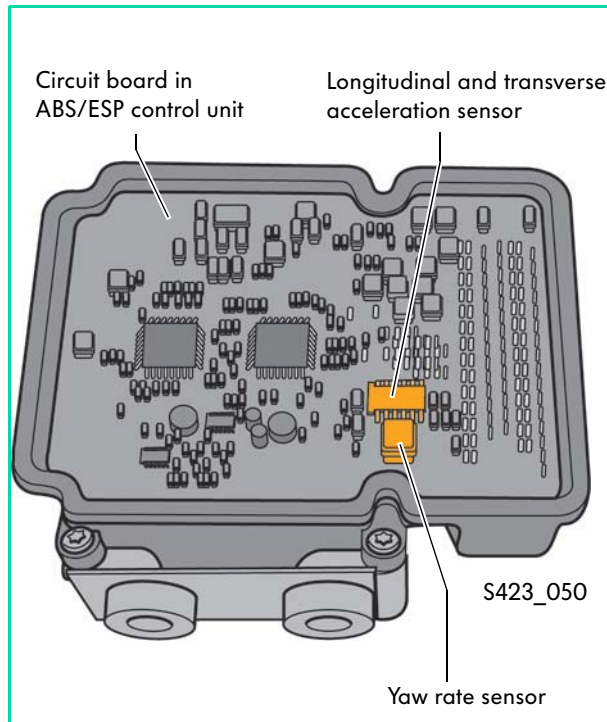
The requirements for immediate availability of the absolute steering angle information as well as the lowest possible stand-by current when the ignition is switched off (sleep mode) demand that the rotor position sensor is constantly monitored. A counting mechanism is integrated into the control unit that also constantly monitors the rotor position sensors when the ignition is switched off and automatically counts any turning movements detected (sleep mode counter). When you switch on the ignition, the counter is read out and the absolute steering angle is available again.



If the battery is replaced, the steering will need to be re-taught the centre position by being turned past the index mark and evaluating the wheel speeds.



ABS/ESP Mark 60 EC



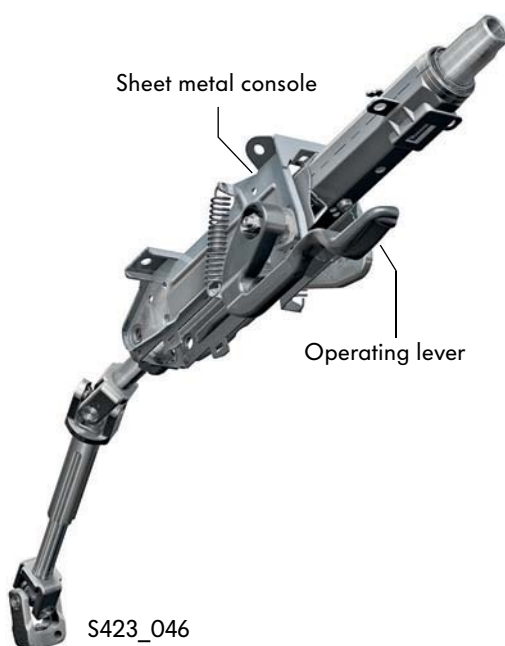
S423_189

The Golf has a new ESP unit from the MK 60 EC product range.

The new feature is that the previous sensor cluster that contains the yaw rate sensor as well as the longitudinal and transverse acceleration sensor is omitted. These sensors are now integrated on the circuit board in the ABS/ESP control unit.



The steering column



The Golf has a new steering column that was used for the first time in the Scirocco.

The new steering column has the following features:

- Console and adjusting lever made from sheet metal
- Weight, cost and crash safety optimised
- Side adjusting lever
- Stepless longitudinal adjustment
- Height adjustment with 12-step teeth

Multifunction steering wheel

A new multifunction steering wheel is used in the Golf 2009. The centre of the multifunction steering wheel (MFW) contains the familiar horn button and the integrated driver airbag unit. To the left and right of it, there are now 6 instead of 4 multifunction buttons. This has increased the user-friendliness. The Back option can be selected directly with a new button.

The new multifunction steering wheel has 12 multifunction buttons. You can use these buttons to control among other things:

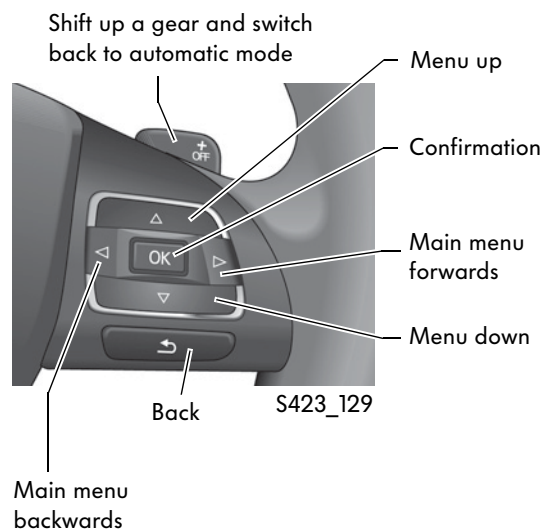
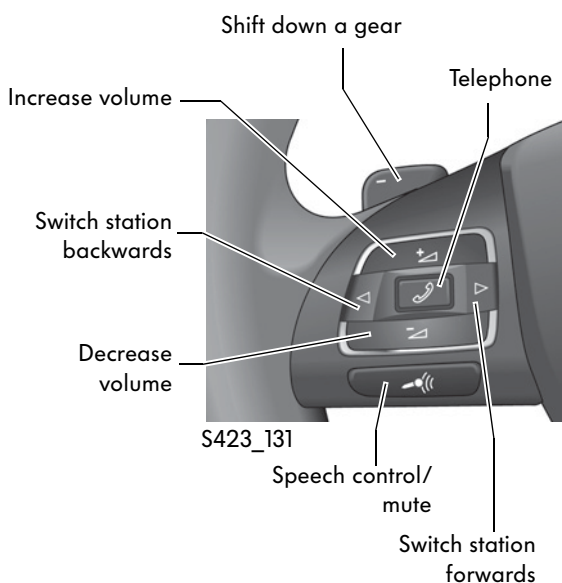
- The radio or navigation unit and
- the telephone



S423_141

There is also the option of two extra controls in the form of shift paddles on the back of the multifunction steering wheel.

These paddles can be used to select specific gears on an automatic or DSG gearbox.



You will find more information on the multifunction steering wheel in self-study programme no. 417 "The Passat CC 2009".

Reversing camera system

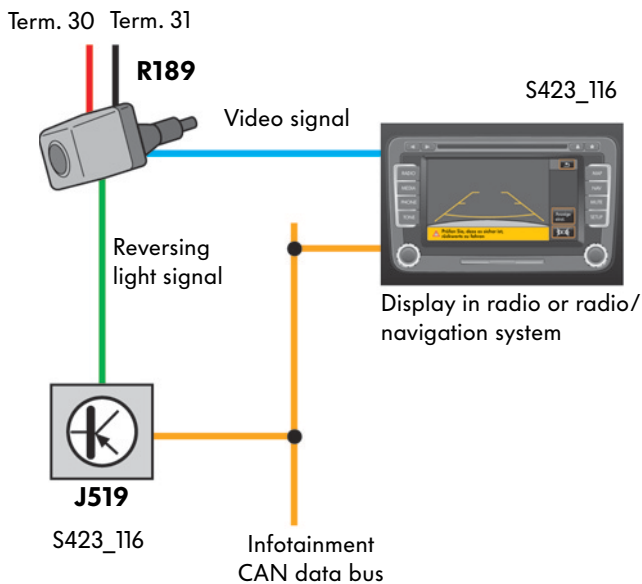
The reversing camera system supports the driver while reversing by displaying obstacles behind the vehicle on a screen.

The reversing camera system in the Golf consists of a reversing camera and a monitor screen (e.g. radio or radio/navigation system with reversing camera input). It is set up without a separate control unit.

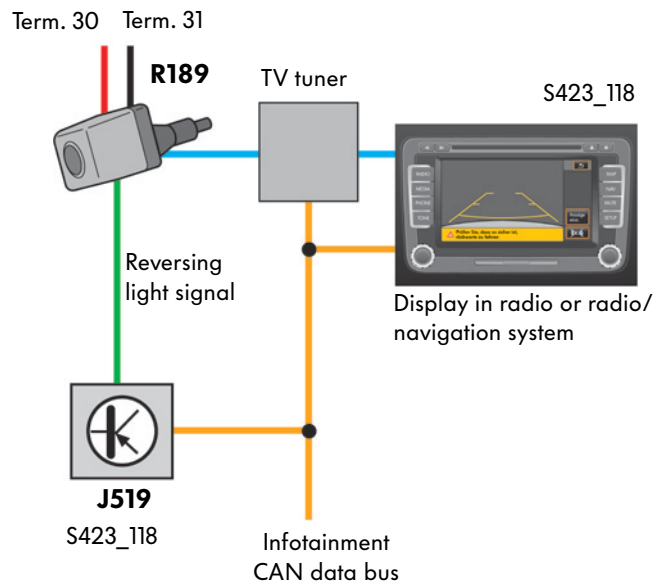
Depending on the equipment, there are two versions for transfer of the video signal from the reversing camera:

1. The reversing camera is connected directly to the radio or radio/navigation system.
2. If the car is equipped with a TV tuner (currently only for Japan), the camera is connected to one of the two analogue video inputs on the tuners and the camera signal is forwarded from their signal to the display device.

Set-up without TV tuner



Set-up with TV tuner



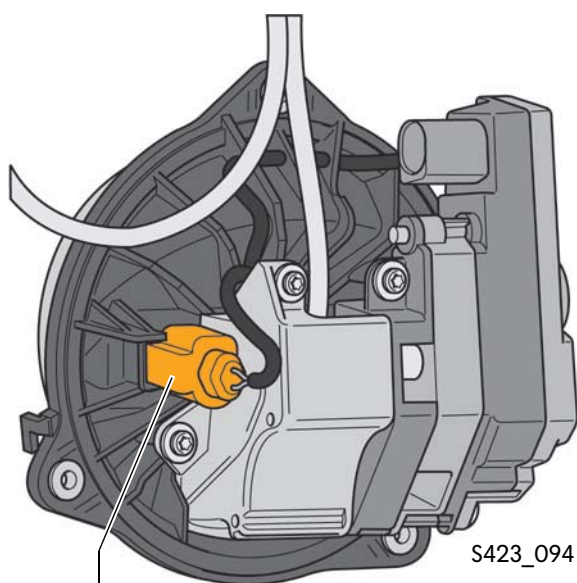
Legend

- J519 Onboard supply control unit
R189 Reversing camera

Reversing camera



S423_139



Connector for
microswitch

S423_094

On the Golf 2009, the reversing camera is in the pivoting badge as on the Passat CC.

The pivoting badge, which is used to manually open the tailgate, is also the mounting for the reversing camera.

The camera is well protected against rain, dirt and tampering behind a protective cap inside the pivoting badge when reverse gear is disengaged.

When you select reverse gear, the camera is folded out electromechanically and the protective cap and the badge are opened. The camera covers the area behind the vehicle with its wide-angle lens.

When the reversing camera is extended, you cannot open the tailgate. This is prevented by the signal from the "Tailgate Open" microswitch being forwarded to the onboard supply control unit which deactivates this in this case (reverse gear selected).

If reverse gear is deselected, the reversing camera is retracted after 9 seconds.

The picture also remains on the screen during this period. If you require a different menu during these 9 seconds, it is possible to switch the screen over on the radio or radio/navigation system.

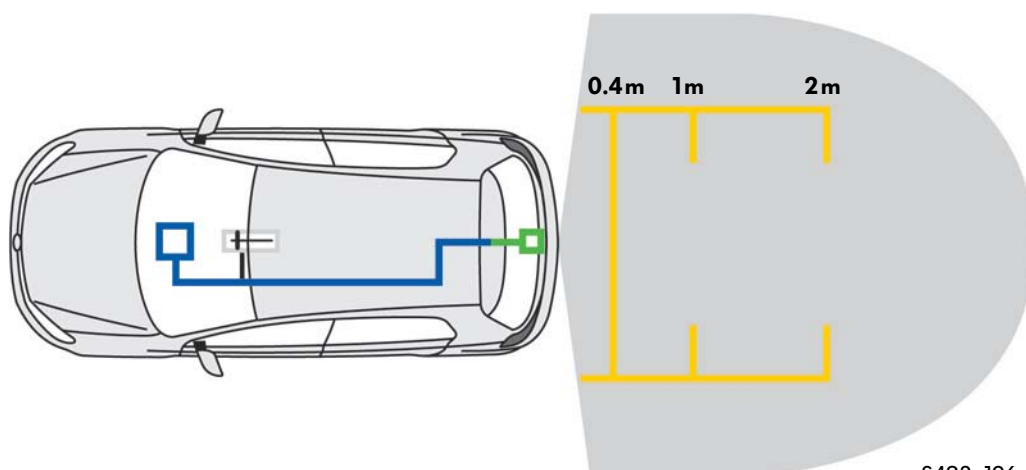


Convenience Electronics

Output on display unit

This version of the reversing camera system places only the static helper lines over the real camera picture.

The helper lines that run vertically to the direction of travel indicate the distances 0.4 metres, 1 metre and 2 metres.



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The RCD 510 radio and the RNS 510 radio/navigation system are available for the Golf as display devices.



S423_113

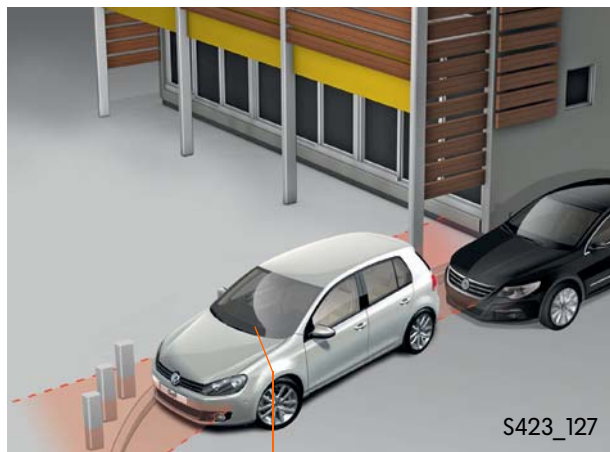


The camera is a wide-angle camera without image rectification. The picture of the area displayed on the display device is therefore distorted. The camera picture is mirrored so that it roughly corresponds with the view through the rear-view mirror.

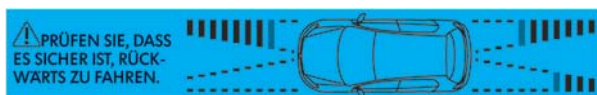


You will find further information on the design and function of the reversing camera system in self-study programme no. 407 "Reversing Camera System".

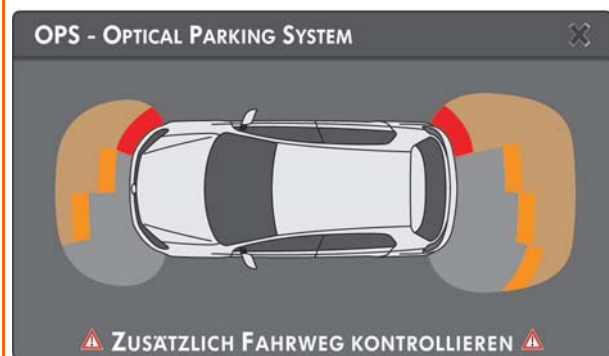
Optical parking system



Display of OPS image on RCD 310



Display of OPS image on RCD 510, RNS 310 and RNS 510



The optical parking system (OPS) is a software extension of the parking aid. The driver is not just supported acoustically, but also optically. For the first time with the Golf 2009, the optical parking system is being used with 8 channels in the A-class segment.

The Golf has ultrasound sensors located around the front and rear when equipped with a Park Distance Control system.

This distance warning system warns you about objects in front of and behind the vehicle.

OPS is activated with the Park Distance Control (PDC). The parking aid control unit (PDC control unit) calculates the distance information according to sector and transfers it to the display device. The BAP operating and display protocol is used on the CAN data bus for this.

The scanning range is 120cm at the front, 160cm at the rear and 60cm at each side. A red segment (not RCD 310) symbolises a distance less than or equal to 30cm. OPS is supported by the RCD 310/510 radios and the RNS 310/510 radio/navigation systems.



The advantages of the optical parking system are:

- The position of the obstacles are displayed in relation to the vehicle position.
- It is possible to manoeuvre using the display.
- You can simply determine the current situation by looking at the display.



You will find more information on the optical parking system in self-study programme no. 417 "The Passat CC 2009".

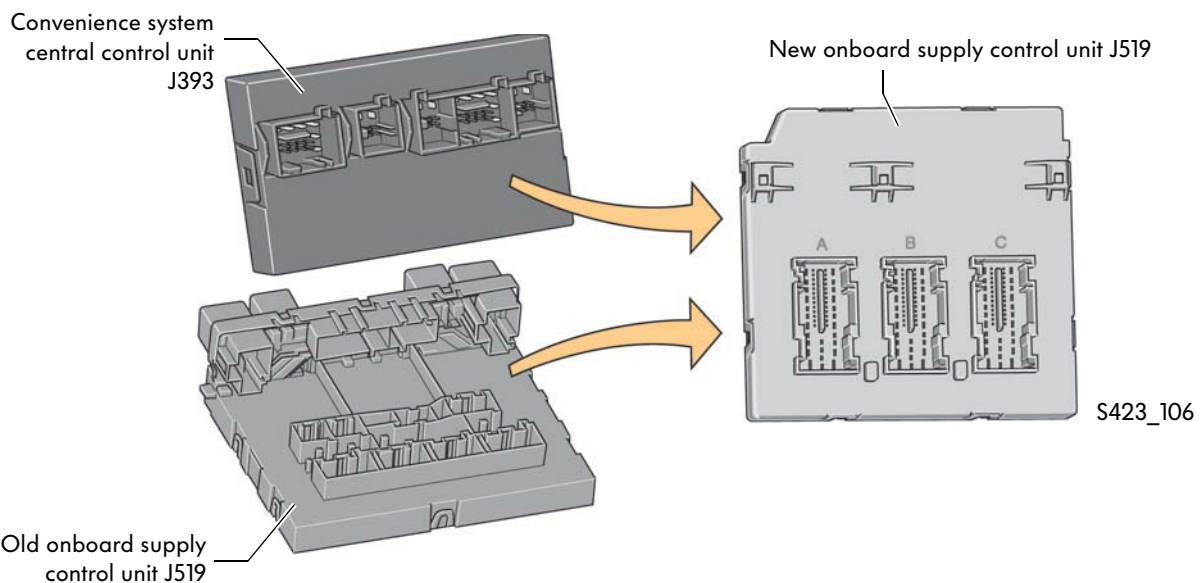
The new onboard supply control unit

The newly developed onboard supply control unit J519 is being used for the first time in the Golf 2009.

The functions from the convenience system central control unit J393 have been added to the scope of this control unit. This includes the separate software module for the tyre pressure monitor (TPM) previously contained in the convenience system central control unit.

The control unit address is still 09.

The old control unit with 12 connections and the convenience system central control unit with 6 connections are thus no longer required. The new onboard supply unit is connected with just 3 connectors.

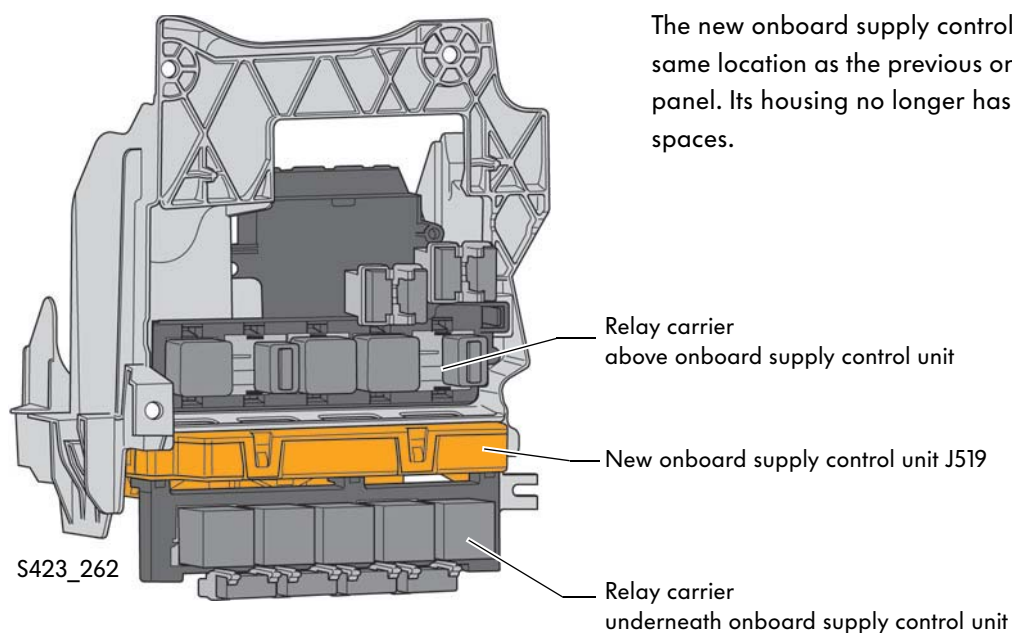


The new onboard supply control unit controls all bulbs via individual pulse-width modulated channels. It controls light loads of 600W.

Motor loads (closing doors, central locking, safe motors etc.) of up to 250W are possible.

The remote control aerial is integrated in the new onboard power supply control unit. It also receives the tyre pressure signals (tyre pressure monitor). The radio aerial is not a separate wire aerial, instead it is in the form of a circuit board aerial. Integration in the onboard power supply control unit also allows reception ranges of 30 - 50 metres.

Location



The new onboard supply control unit is in the same location as the previous one: on left under dash panel. Its housing no longer has any relay plug-in spaces.

Functions

In addition to taking over functions from the convenience system central control unit and the old onboard supply control unit, the new onboard supply control unit also has some new functions:



Functions of old onboard supply control unit	Functions of convenience system central control unit	New functions
<ul style="list-style-type: none"> - Terminal control - Light control - Load management - Wiper control (via LIN) - Rain-light sensor control - Horn control - Control of front and rear windscreen heating - Customisation 	<ul style="list-style-type: none"> - Control of interior monitoring, of inclination sensor and anti-theft alarm - Convenience close/open - Remote control (integrated aerial) - Central locking (control of locks, doors and tailgate) - Tyre pressure monitor (separate software module with diagnosis address) - Control of door control units 	<ul style="list-style-type: none"> - Daylight driving lights - Turn-off light

Radio, Navigation and Telephone

The radio systems in the Golf 2009

The RCD 210, RCD 310 and RCD 510 radios as well as the RNS 310 and RNS 510 radio/navigation systems are available for the Golf.

RCD 210 radio

Technical features

- Monochrome display with a resolution of 122 x 36 pixels
- FM, TP and RDS reception via a single tuner
- TP button; stations that do not broadcast TP information will be displayed with "No TP".
- AM reception
- 24 memory slots for AM and FM stations each on two memory levels with 6 slots
- The autostore function fills the currently selected memory level with the 6 stations with the strongest reception
- "Initial Autostore" fills all 24 memory levels with receivable FM and AM stations
- Two or four loudspeakers with up to 20 watt output can be connected
- Treble, bass and balance sound adjustments
- Fader adjustment is only available with four loudspeakers
- Integrated CD drive
- Brightness of display backlight can be controlled independently of the dim signal for the vehicle interior lighting
- Driving school function with speed and turn signal display
- Service test mode



S423_143

Combination and expansion possibilities

- UMPP telephone preparation (mono playback only)
- Compatible telephone hands-free systems from third-party manufacturers
- Volume reduction when vehicle is equipped with Park Distance Control
- Can be operated via multifunction steering wheel and displayed in dash panel insert
- VW CD changer or VW Individual iPod adapter or USB adapter
- Audio input interface (Aux-In)



Further information on the RCD 210 radio can be found in self-study programme no. 404 "The 2008 Tiguan".

RCD 310 radio

Technical features

- FSTN monochrome display with a resolution of 302 x 45 pixels (FSTN=Film-Super-Twisted-Nematic, a type of liquid crystal display)
- Twin-tuner for FM, TP and RDS reception with phase diversity
- Integrated DAB tuner (digital radio) (depending on equipment)
- Integrated CD drive
- Media support for MP3 and WMA audio data (with ID3 tag)
- Optical parking system (OPS)
- Air-conditioning system information
- RDS FM/AM Europe radio
- Two or four loudspeakers with up to 20 watt output can be connected
- GALA speed-dependent volume control
- Self-diagnosis and loudspeaker diagnosis
- TP button; stations that do not broadcast TP information will be displayed with "No TP".
- BAP operating and display protocol



S423_145

Combination and expansion possibilities

- UMPP telephone preparation
- Volume reduction when vehicle is equipped with Park Distance Control
- Support of display in dash panel insert via the BAP operating and display protocol as well as the DDP display data protocol
- External sound amplifier, Dynaudio
- Control via multifunction steering wheel (MFW) and multifunction display (MFD)
- External CD changer (without MP3 support)
- Audio input interface (AUX-IN)
- Media Device Interface (MDI)



Further information on the RCD 310 radio can be found in self-study programme no. 417 "The Passat CC 2009".



Radio, Navigation and Telephone

RCD 510 radio

Technical features

- Touch-sensitive 6.5" TFT colour display with a resolution of 400 x 240 pixels
- Twin-tuner for FM, TP and RDS reception with phase diversity
- AM reception
- Two or four loudspeakers with up to 20 watt output can be connected
- Integrated 6-CD changer
- Integrated memory for TIM information (depending on equipment)
- Integrated DAB tuner (digital radio) (depending on equipment)
- SDARS tuner (SAT radio) (depending on equipment)
- Integrated SD memory card reader (SD=Secure Digital)
- Media support for MP3 and WMA audio data
- Audio input interface (AUX-IN)
- Interface for connecting a reversing camera on RCD 510 RVC (Rear View Camera) version
- Self-diagnosis and loudspeaker diagnosis
- Display of climate conditions (temporarily displayed information)
- Optical parking system (OPS)



S423_147

Combination and expansion possibilities

- External sound amplifier, Dynaudio
- Volume reduction when vehicle is equipped with Park Distance Control
- Support of display in dash panel insert via the BAP operating and display protocol as well as the DDP display data protocol
- UMPP telephone preparation
- Compatible, external telematics units
- Control via multifunction steering wheel
- External CD changer (without MP3 support)
- Media Device Interface (MDI)



Further information can be found on the RCD 510 radio in self-study programme no. 404 "The 2008 Tiguan".

RNS 310 radio/navigation system

Technical features

- 5" colour display (TFT) with a resolution of 400 x 240 pixels
- Operation via touch screen and rotary press knob
- Two or four loudspeakers with up to 20 watt output can be connected
- Twin-tuner for FM, TP and RDS reception with phase diversity
- Integrated CD drive for navigation, audio
- Media support for MP3 and audio CD
- Playback with display of title (mp3)
- Integrated SD memory card reader
- Map display in 2.5D in driver perspective
- Navigation function with map, integrated direction symbols and speech
- CD/SD navigation (European roads/motorways)
- SD navigation without inserted navigation CD
- Copy navigation data from CD to SD
- Linking of several countries on an SD card
- TMC function & TMC background reception (the current traffic messages are stored)
- Display of vehicle functions (clock, air conditioning and optical parking system)



S423_195

Combination and expansion possibilities

- Volume reduction when vehicle is equipped with Park Distance Control
- Controllable via multifunction steering wheel
- Audio input interface (Aux-In) on front of unit
- Support of display in dash panel insert via the BAP operating and display protocol as well as the DDP display data protocol
- Optionally combinable with Volkswagen sound and
- external sound amplifier, Dynaudio
- Audio playback from external sources, for example, CD players, iPods
- UMPP telephone preparation
- Media Device Interface (MDI)



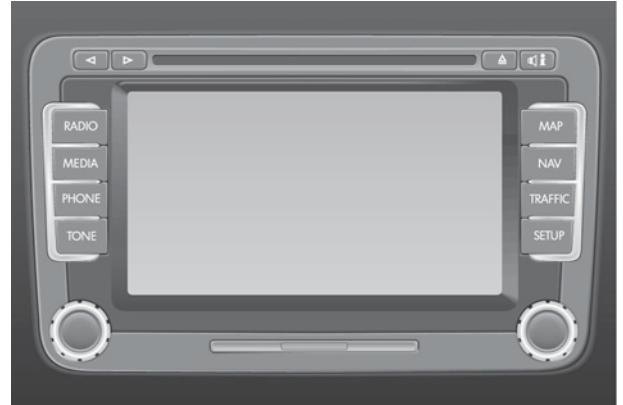
The RNS 310 radio/navigation system is being used in the Golf 2009 for the first time.

Radio, Navigation and Telephone

RNS 510 radio/navigation system

Technical features

- Touch-sensitive 6.5" multi-colour display (MFD) with a resolution of 800 x 480 pixels
- Two or four loudspeakers with up to 20 watt output can be connected
- RDS, FM and AM Europe radio
- Twin-tuner for FM, TP and RDS reception with phase diversity
- SDARS tuner (depending on equipment)
- Integrated DVD drive for navigation, audio and video
- Integrated drive hard for storing navigation and audio data
- Integrated SD memory card reader
- Media support for MP3 and WMA audio data as well as video data
- Map display in 2D, 3D bird's eye view and topographical view
- Navigation function with map, split screen and speech
- TMC function (the current traffic messages are stored), dynamic navigation (Europe, North America)
- Off-road functions
- 3 user interfaces (styles) can be programmed, encoded at factory depending on model
- Display of climate conditions (temporarily displayed information)
- Optical parking system (OPS)



S423_151

Combination and expansion possibilities

- Controllable via multifunction steering wheel
- Volume reduction when vehicle is equipped with Park Distance Control
- Support of display in dash panel insert via the BAP operating and display protocol as well as the DDP display data protocol
- Optionally combinable with Volkswagen sound and DYNAUDIO as well as Volkswagen TV tuner
- Output of navigation symbols by the control unit in dash panel insert (Highline)
- Video or TV playback from external sources, for example, DVD player, reversing camera
- Decoupling of video signals for external display devices, for example, rear-seat entertainment (RSE)
- Audio playback from external sources, for example, CD players, iPods
- UMPP telephone preparation
- Media Device Interface (MDI)



You will find detailed information on the RNS 510 radio/navigation system in self-study programme no. 397 "2007 Radio/Navigation Systems".



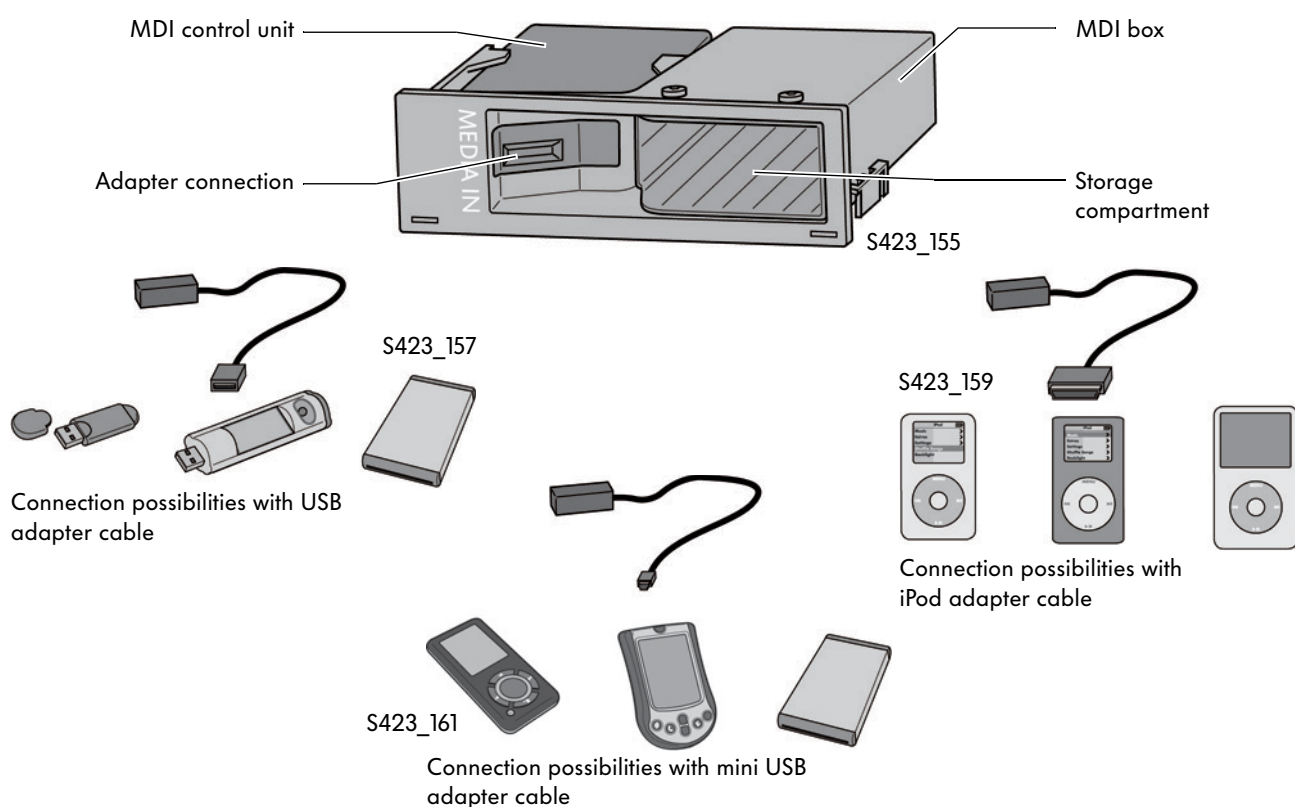
All radios and radio/navigation systems used by the Volkswagen brand use the convenience code.

Media Device Interface

The Golf can be optionally equipped with the Media Device Interface box. The media device interface, or MDI for short, was fitted for the first time in the Passat CC.

The MDI enables you to connect mobile audio or multimedia devices to the infotainment system and display, control and playback their audio content over the vehicle loudspeaker system and infotainment monitors.

The MDI control unit is located in a plastic housing of the MDI box. The MDI box has space to hold your mobile multimedia devices safely without sliding around and it is the size of a single DIN slot. The MDI box fits into the compartment for the CD changer. They therefore cannot be combined as equipment options.



Connection possibilities

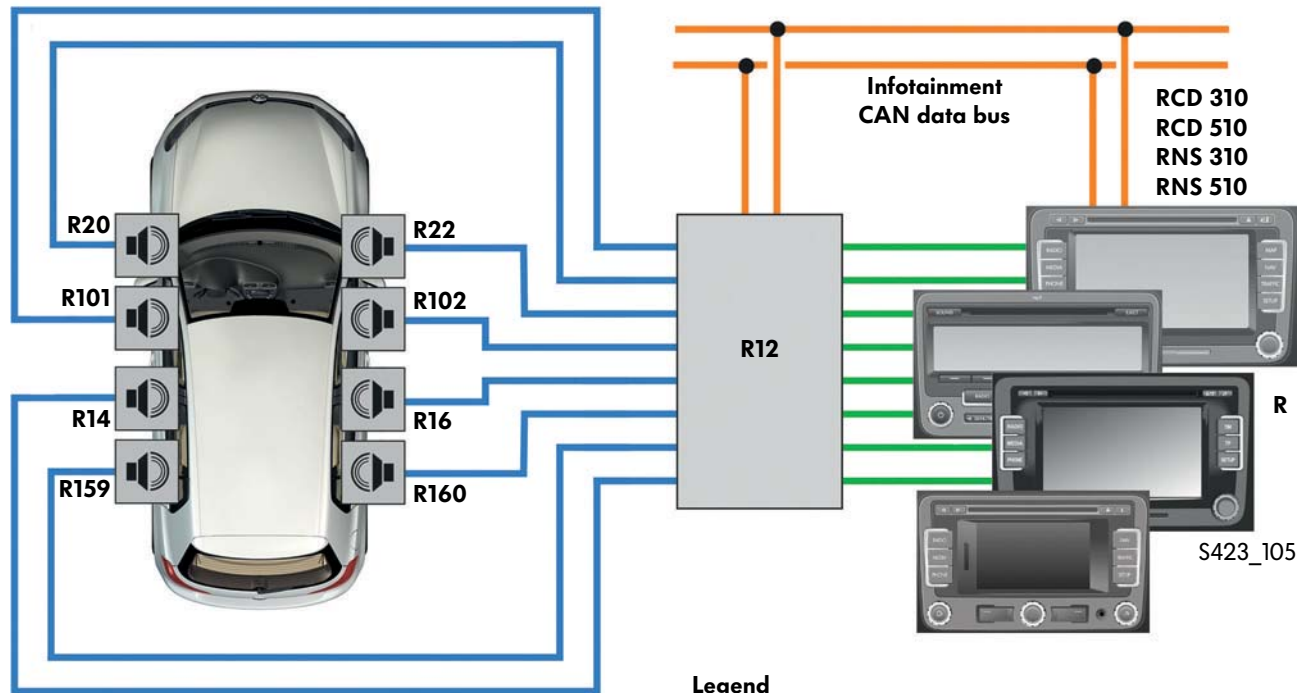
The mobile device is connected, depending on the type, with special adapter cables that are connected to the central interface, i.e. the adapter connection. The following audio formats are currently supported and can thus be played back: MP3, WMA and OGG Vorbis (licence-free audio data compression codec). The AAC format that is also supported is the licensed format from Apple.



Radio, Navigation and Telephone

High-end sound system from DYNAUDIO

The DYNAUDIO brand is a guarantee of high-quality sound. This sound system was used for the first time in the A class segment in the new Scirocco and is now also available as an optional extra for the new Golf.



The high-end DYNAUDIO sound system consists of four bass loudspeakers (mid-range and bass loudspeakers), which ensure precise and powerful bass with high pulse fidelity, and four treble loudspeakers, which ensure authentic music playback, transparency and precision.

The loudspeaker system is operated by a 300-watt digital power amplifier.

The system can be combined with the RCD 310 and RCD 510 radios and the RNS 310 and RNS 510 radio/navigation systems.



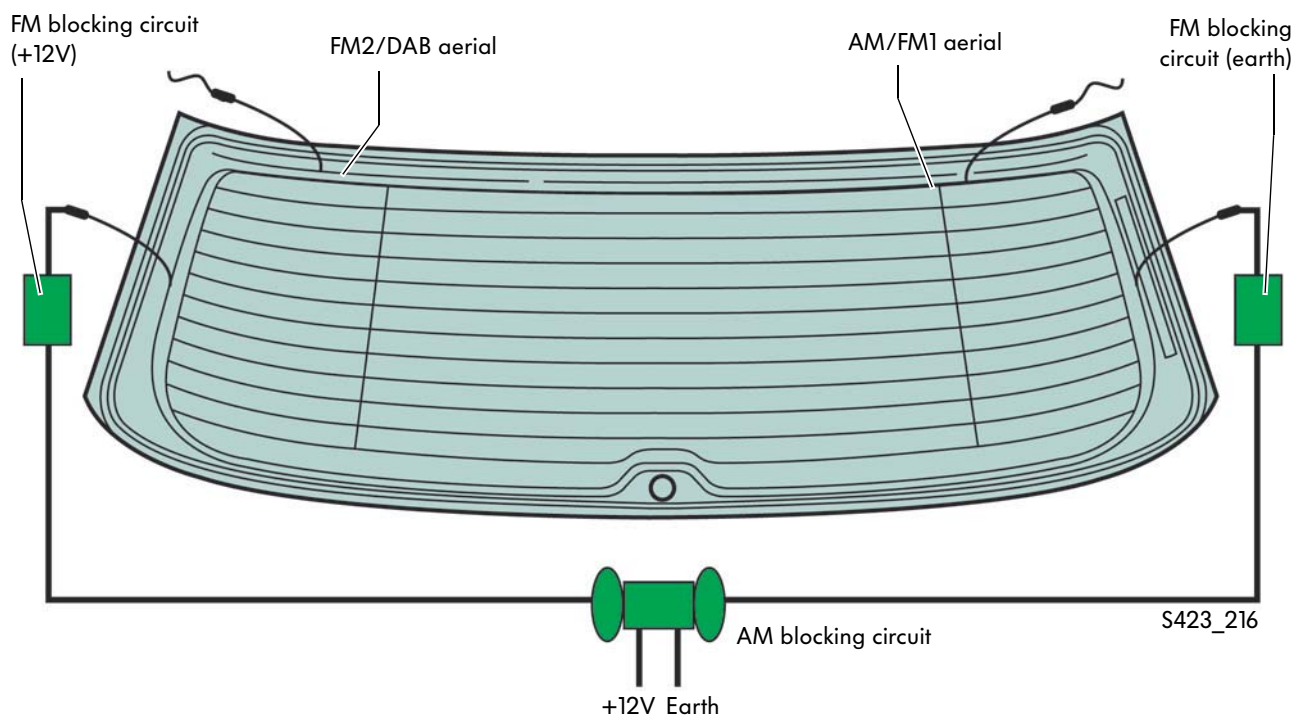
You will find more information on the DYNAUDIO sound system in the self-study programmes no. 342 "Radio systems 2006" and no. 419 "The Scirocco 2009".

The aerial system in the Golf 2009

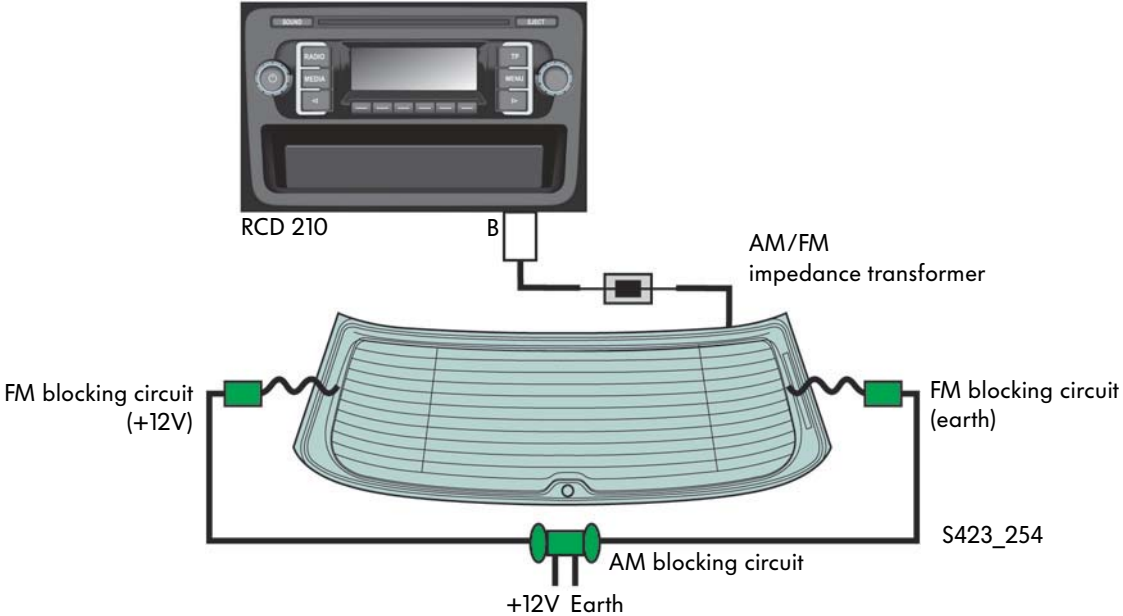
On the new Golf, several aerals (AM, FM1, FM2 und DAB) are integrated in the rear windscreen.

The aerals for navigation (GPS), telephone (GSM/UMTS), auxiliary heating (FFB) and SDARS are located in the roof aerial.

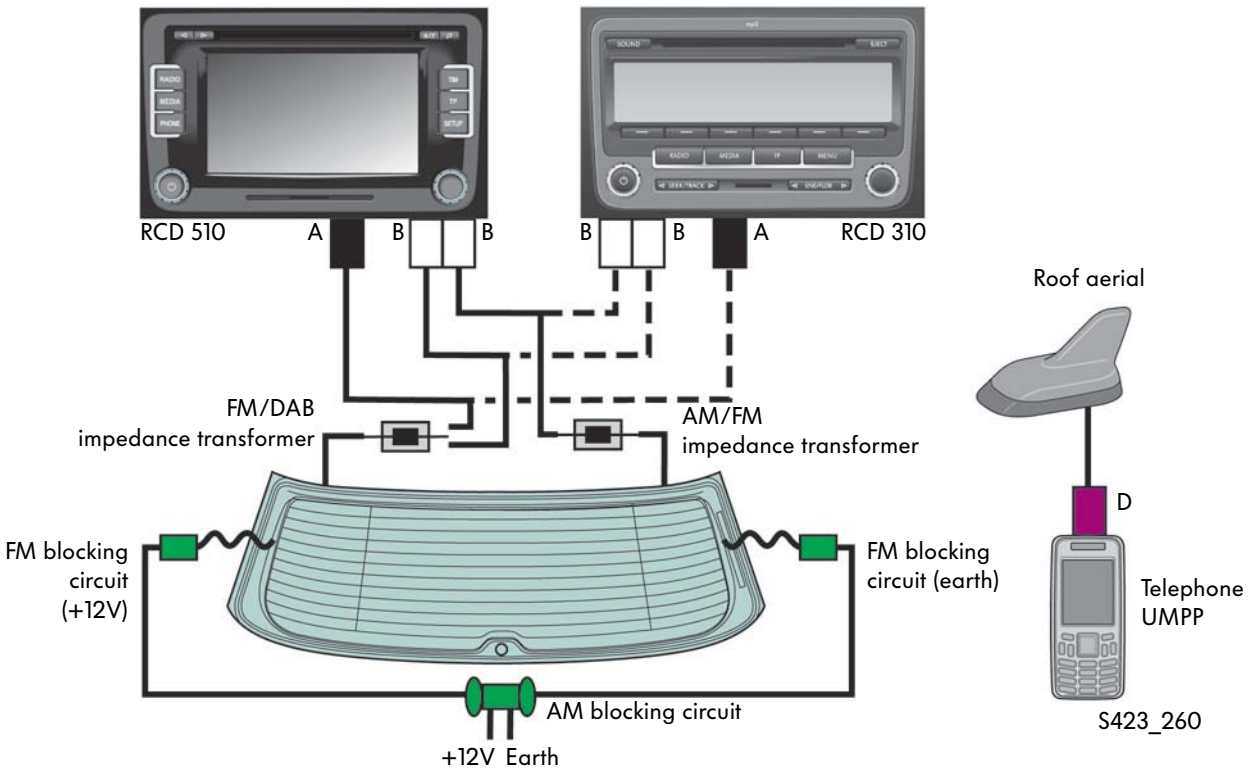
The connections to the aerial amplifiers are adapted to the vehicle equipment. Only the connections that are actually required by the infotainment components (radio with single or dual tuner, DAB) are available at the window. These different radio/tuner principles lead to different FM aerial systems being fitted in the vehicle. The FM blocking circuits are mounted at the side of the rear windscreen in the centre of the frame. The AM blocking circuit is under the rear windscreen next to the pivoting badge.



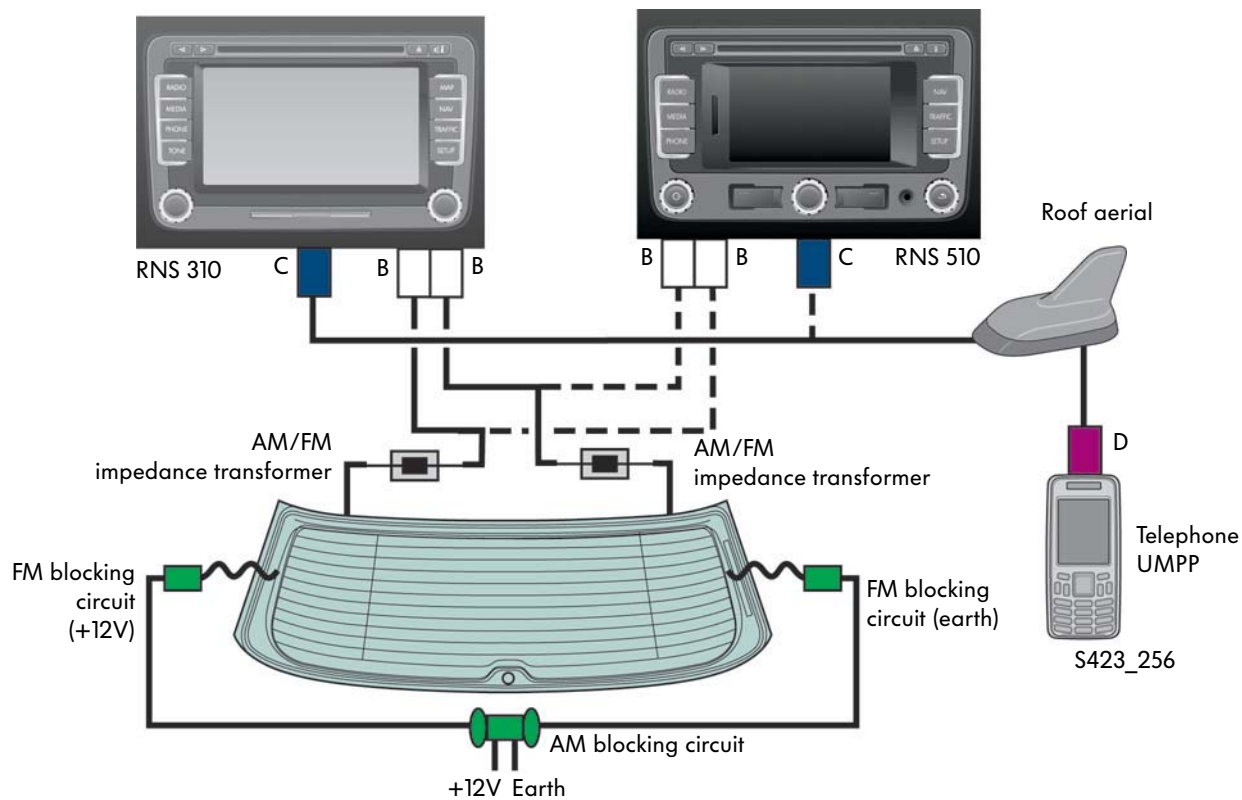
Radio with single aerial



Diversity aerial with telephone and DAB



Radio/navigation system with diversity aerial and telephone



Radio, Navigation and Telephone

UMPP telephone preparation

Two telephone preparations are used in the Golf 2009: UMPP with audio streaming and UMPP premium.

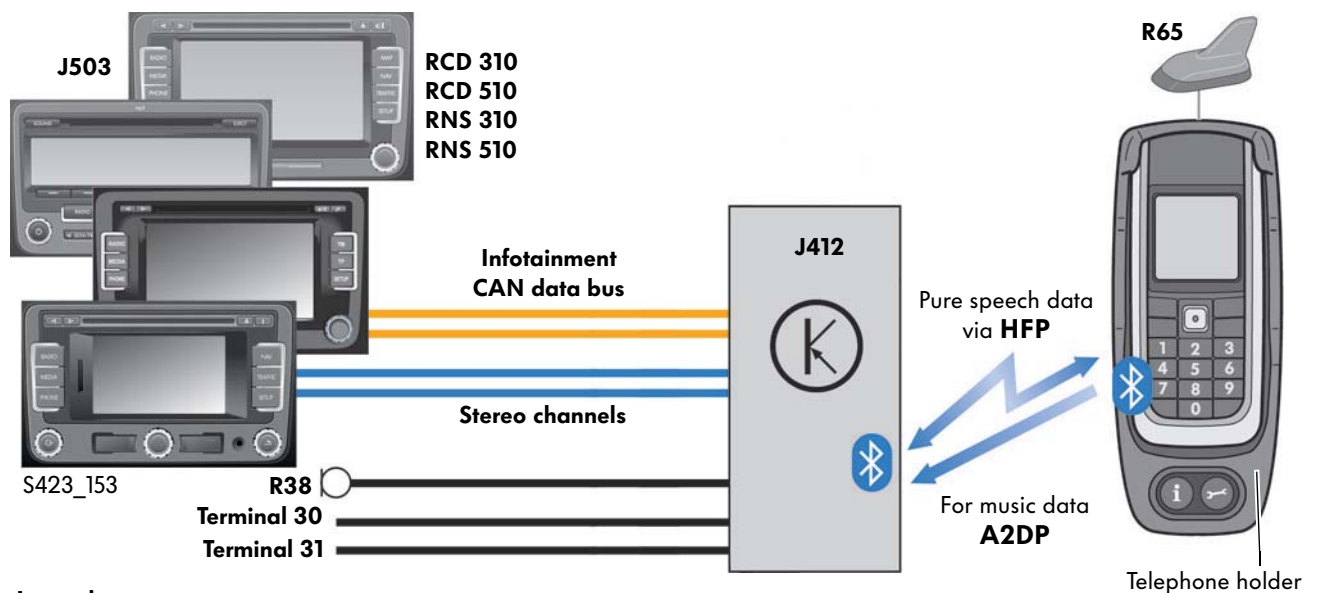
UMPP (Bluetooth™ only) with audio streaming

Two Bluetooth™ profiles are used for the UMPP with audio streaming:

- HFP stands for hands-free profile and is a Bluetooth™ profile for the telephone audio/speech channel. It transfers speech data exclusively.
- The new Bluetooth™ A2DP audio streaming profile (Advanced Audio Distribution Profile) is used to transmit music files from the paired Bluetooth™ device in stereoquality to the UMPP control unit. Considerably higher quantities of data are transferred than with pure speech data.

Functions

- Control and display on mobile telephone
- Hands-free facility and radio mute
- Mobile phone is charged via the telephone holder (only when ignition is switched on)
- Info and breakdown buttons on the mobile phone holder
- CAN data bus interface to the infotainment CAN data bus
- Data is transferred between the mobile telephone and the mobile telephone operating electronics control unit via Bluetooth™
- UMPP is diagnosis-capable
- Follow-up time only when radio or radio/navigation system is switched



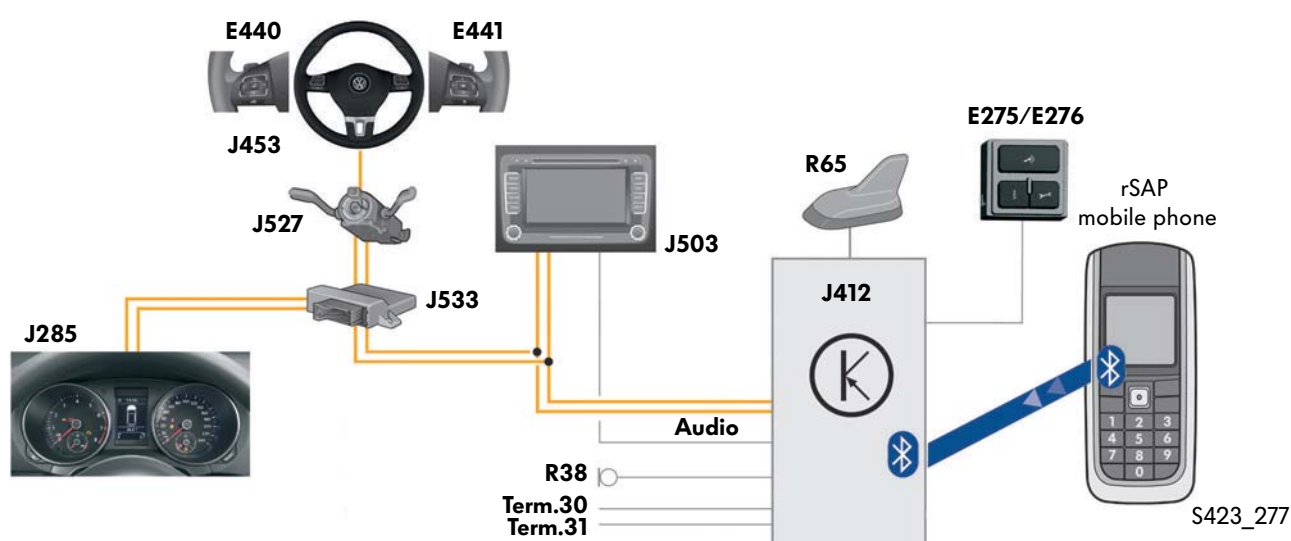
Legend

- J412 - Mobile telephone operating electronics control unit
- J503 - Control unit with display for radio and navigation
- R38 - Telephone microphone
- R54 - Mobile telephone
- R65 - Telephone aerial

Premium phone preparation with Bluetooth™(rSAP)

Functions

- Control via the multifunction steering wheel
- Display of telephone information in the Highline dash panel insert display
- Telephone data transfer and mobile link via Bluetooth™ transfer
- Hands-free system and audio mute
- GSM aerial directly on GSM telephone module
- UMPP is diagnosis-capable
- SIM data incl. telephone book available in universal mobile preparation
- Separate button module for information and breakdown calls as well as speech control
- Charging is only possible with a separate charging adapter using the 12V socket
- Follow-up time can be set to up to 60 minutes
- Exclusive support of mobile phones with rSAP Bluetooth profile
- Optional operation via touch screen devices like RNS 510 and RCD 510



Legend

- E275 - Breakdown assistance call button
- E276 - Emergency assistance call button
- E440 - Multifunction buttons on left in steering wheel
- E441 - Multifunction buttons on right in steering wheel
- J285 - Control unit with display in dash panel insert
- J412 - Mobile telephone operating electronics control unit
- J453 - Multifunction steering wheel control unit
- J503 - Control unit with display for radio and navigation

- J527 - Steering column electronics control unit
- J533 - Data bus diagnostic interface
- R38 - Telephone microphone
- R65 - Telephone aerial

- CAN data bus
- LIN data bus
- Serial cable
- Bluetooth™



Heating and Air Conditioning

Air conditioning

Two different types of air-conditioning system are fitted in the Golf that have also already been used in the Golf 2004:

- The standard semi-automatic heater and air conditioner "Climatic"
- The fully automatic "2C-Climatronic" heating and air-conditioning system



S423_191

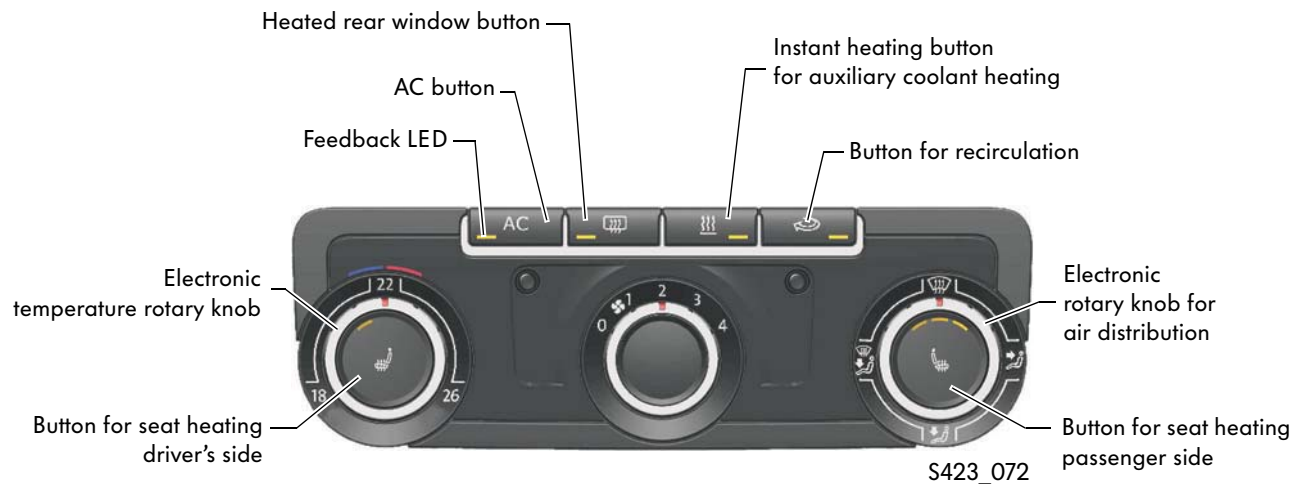
The Climatic system

The vehicle interior forms one climate zone with Climatic.

The desired temperature is set on the electronic temperature rotary knob. The desired temperature is reached by adjustment of the temperature flap. Climatic is able to control the pre-set temperature by monitoring the vent and interior temperature. The air conditioning is switched on and off with the AC button.



S423_097

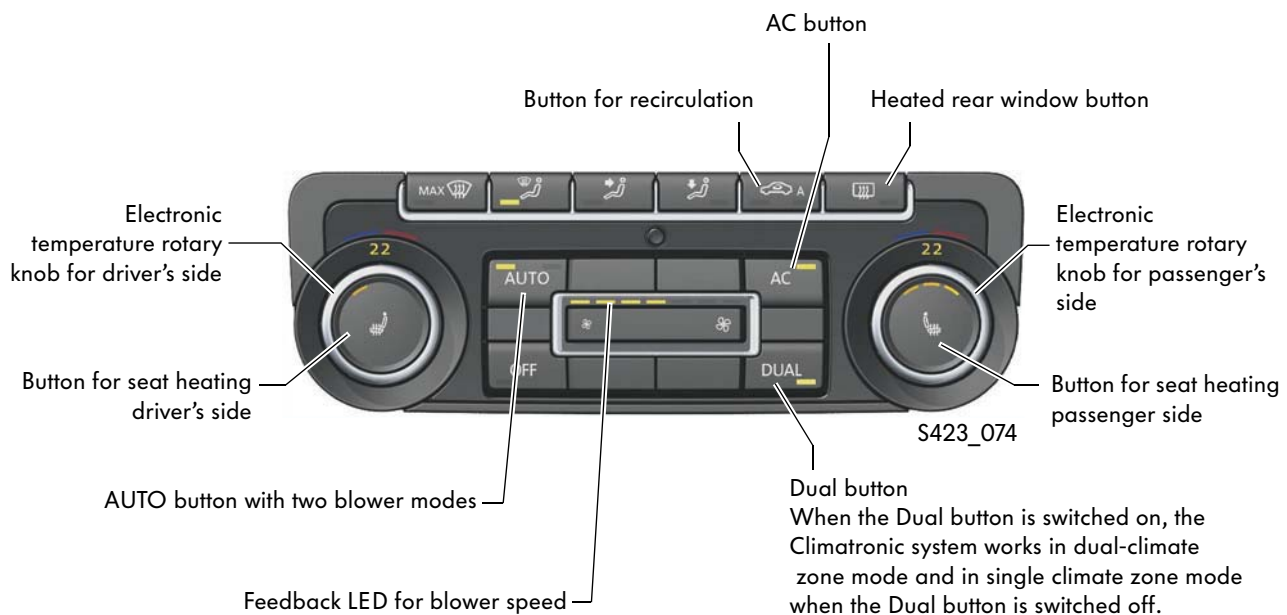


The 2C-Climatronic system



S423_099

In the 2C-Climatronic system, the interior is sub-divided into two climatic zones. This means temperature preferences in a range from 18°C to 26°C can be set for the driver's and front passenger's side independently of one another. You should remember that the temperature difference between the climate zones may be up to a maximum of 4 degrees.



You will find further information on Climatic and Climatronic in self-study programmes no. 318 "The Golf 2004" and no. 339 "The Passat 2006".



The Golf 2009 is equipped with new elements for controlling the climate.



Heating and Air Conditioning

Automatic fresh-air blower control

You can choose between the two modes AUTO High and AUTO Low for the automatic fresh-air blower control. In these modes, not just the blower power is regulated automatically, but also the air distribution and temperature. You can switch between the modes by pressing the AUTO button.

In position AUTO = automatic mode, the air-conditioning control unit regulates the interior temperature using all input information quickly and comfortably to the required level and then holds it constant even when the external conditions change.

AUTO High	AUTO Low
The AUTO High mode is an automatic mode with greater quantities of air. The target temperature should be reached as quickly as possible. AUTO High is configured especially when there is high risk of misting (high interior and/or external humidity) and for optimum ventilation of the rear passenger compartment. The right-hand LED of the AUTO button is illuminated in the AUTO High mode. The fresh air blower runs in the standard curve.	The AUTO Low mode is an automatic mode with smaller quantities of air. The Climatronic system gently regulates the preset interior temperature with acoustic comfort having priority. The left-hand LED of the AUTO button is illuminated in the AUTO Low mode. In AUTO Low mode, the fresh air blower speed is always a step lower than in AUTO High mode.

Automatic mode



In automatic mode, Climatronic automatically adjusts the control motors of the air distribution flaps on the air-conditioning/heating system. The air flowing from the air-conditioning system has the set temperature and is directed to the windscreen, footwell or vents. The amount of air is controlled steplessly via the blower speed depending on whether a lot or little air is required to reach or maintain the comfortable temperature. The temperature of the air entering the vehicle is also measured continuously by the Climatronic system. The occupants use the value on both temperature knobs to set the level of the interior temperature to be regulated. Everything else is controlled automatically by the Climatronic system.

Status display

The air-conditioning modules allow simple operation and a new kind of visualisation via the “climate control pop-ups”.

The temperature, air distribution and fan level are displayed on the screen of the RCD 310, RCD 510, RNS 310 and RNS 510 radio or radio-navigation systems.

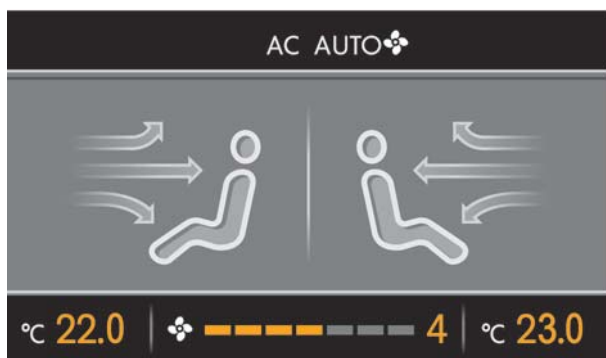
Display on RCD 310



S423_121

The LEDs in the control indicate that the respective function is active.

Display on RCD 510, RNS 310 and RNS 510



S423_119

In addition, the radio or radio/navigation system screen displays information on the Climatronic system. Therefore the temperature is displayed, for example, as a pop-up when you adjust the temperature.



Electrical System

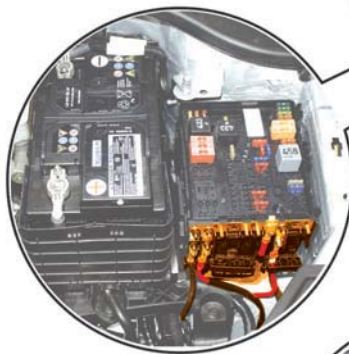
The fuse boxes and relay positions in the vehicle electrical system

The installation locations

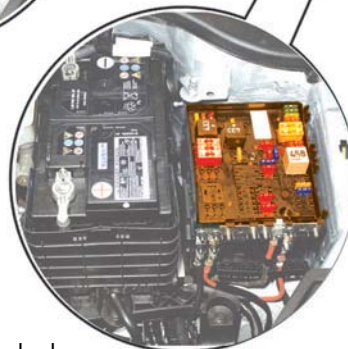
The battery is on the left-hand side of the engine compartment.



Fuse and relay box, left of engine compartment



Multi-fuse back-up fuse box, left of engine compartment



Additional relay carrier, under the fuse and relay box

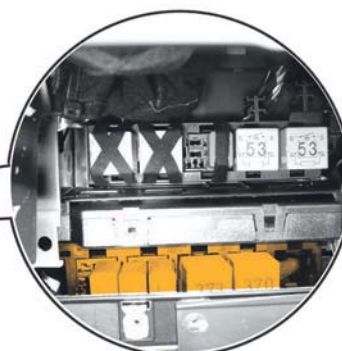
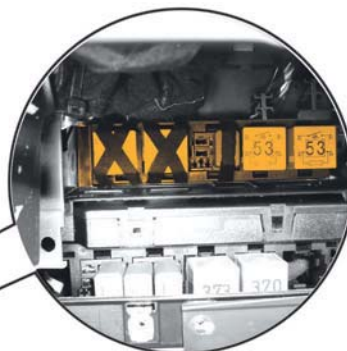


S423_253

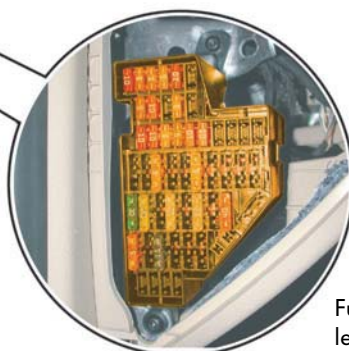




Relay carrier
above onboard supply control unit



Relay carrier
underneath onboard supply control unit



Fuse box on,
left of dash panel



Networking concept

The data bus diagnostic interface J533 forms the interface for communication between the following data bus systems:

- Powertrain CAN data bus
- Convenience CAN data bus
- Infotainment CAN data bus
- Combi CAN data bus
- Diagnostics CAN data bus

The following data bus system is connected downstream of the CAN data bus system as a sub-bus system:

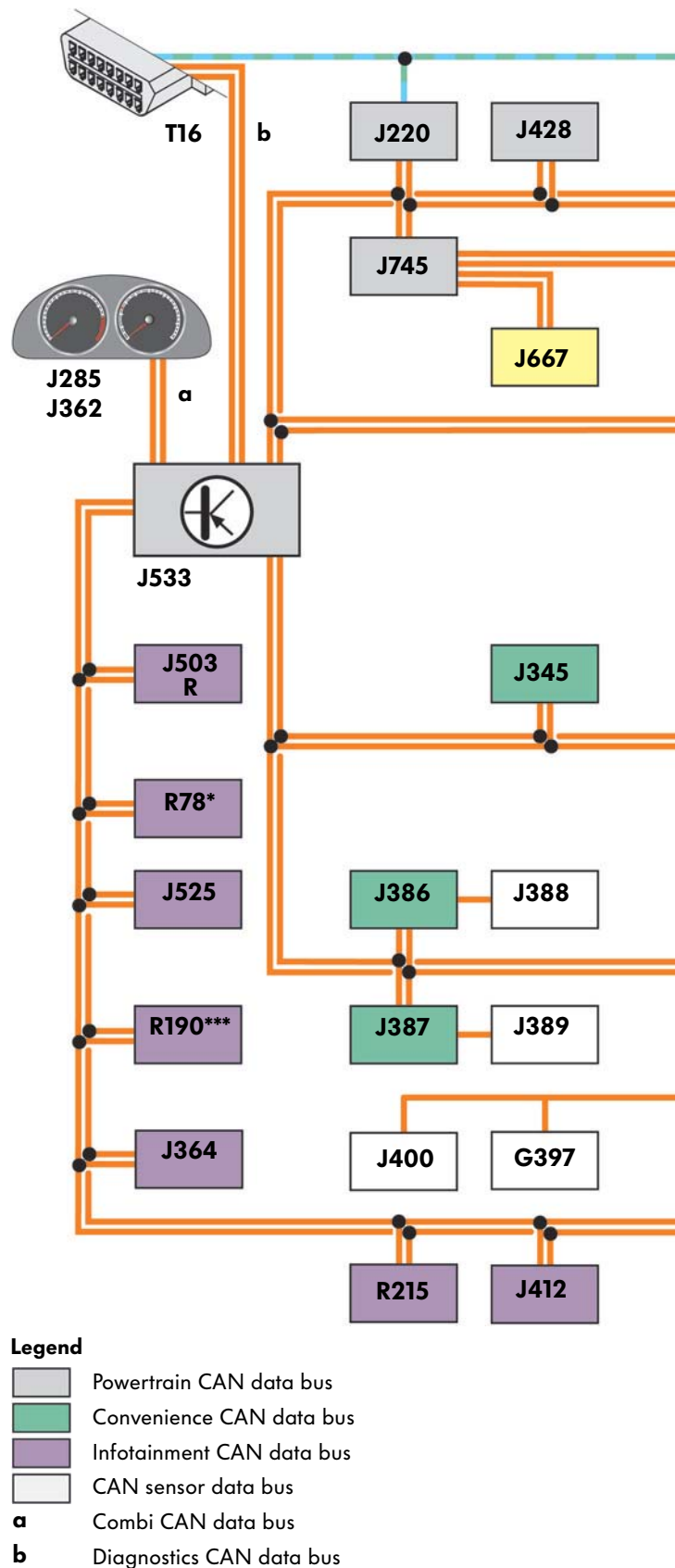
- LIN data buses
- Cornering light CAN data bus

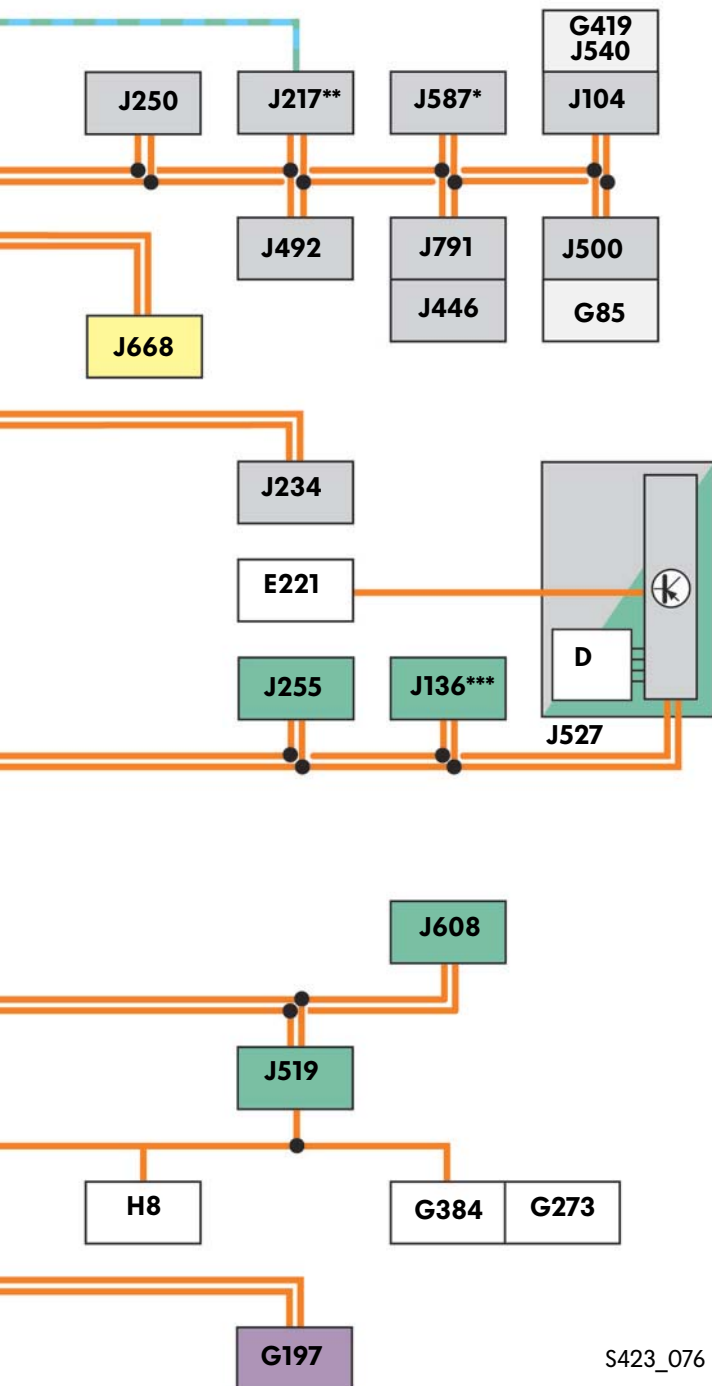


For the first time in the new Golf, the functions of the convenience system central control unit J393 have been taken over by the newly developed onboard supply control unit J519. The control unit address is still 09.

Transfer speeds

Powertrain CAN data bus:	500kbit/s
Convenience CAN data bus:	100kbit/s
Infotainment CAN data bus:	100kbit/s
Combi CAN data bus:	500kbit/s
Diagnosis CAN data bus:	500kbit/s
Cornering light CAN data bus:	500kbit/s
LIN data buses:	19.2kbit/s





Legend

D	Ignition/starter switch
E221	Operating unit in steering wheel (multifunction steering wheel)
G85	Steering angle sender
G197	Magnetic field sender for compass
G273	Interior monitoring sensor
G384	Vehicle inclination sender
G397	Rain and light sensor
G419	ESP sensor unit
H8	Anti-theft alarm system horn
J104	ABS control unit
J136***	Seat and steering column adjustment control unit with memory
J217**	Automatic gearbox control unit
J220	Motronic control unit
J234	Airbag control unit
J250	Control unit for electrically regulated damping
J255	Climatronic (and Climatic) control unit
J285	Control unit in dash panel insert
J345	Trailer detector control unit
J362	Immobilizer control unit
J364	Auxiliary heater control unit
J386	Driver door control unit
J387	Front passenger door control unit
J388	Rear left door control unit
J389	Rear right door control unit
J400	Wiper motor control unit
J412	Mobile telephone operating electronics control unit
J428	Adaptive cruise control unit
J446	Parking aid control unit
J492	Four-wheel drive control unit
J500	Power steering control unit
J503	Control unit with display for radio and navigation
J519	Onboard supply control unit
J525	Digital sound package control unit
J527	Steering column electronics control unit
J533	Data bus diagnostic interface
J540	Electromechanical parking brake control unit
J587*	Selector lever sensor control unit
J608	Special vehicle control unit
J667	Power output module for left headlight
J668	Power output module for right headlight
J745	Cornering light and headlight range control unit
J791	Control unit for parallel parking assist
R	Radio
R78	TV tuner
R190	Digital radio satellite receiver***
R215	Interface for external multimedia devices
T16	Diagnostic connection

- * Only Japan
- ** With automatic gearbox only
- *** Only North American region (NAR)

- Cornering light CAN data bus
- LIN data bus
- CAN data bus line
- LIN data bus line
- Communications line

S423_076



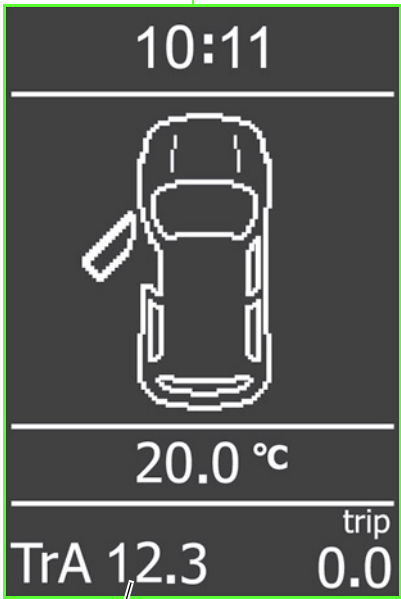
Display of battery voltage in transport mode

The use of the new onboard supply control unit in the Golf allows the current battery voltage to be displayed in a simple manner.

The measuring point is directly on the battery pole clamps.

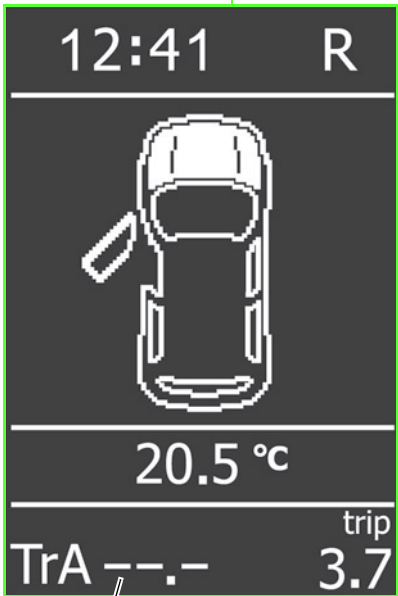


S423_169



S423_264

Display of battery voltage (12.3V)



S423_266

Display when there is a fault

When transport mode is still active, the battery voltage is displayed without a measuring unit in two digits with one decimal place instead of the total mileage.

If the measured value is not transferred correctly, if it is not plausible or if there is another error related to this, only placeholders will be displayed.



AM

Amplitude modulation, electromagnetic wave used to transmit messages. In amplitude modulation, the amplitude of the high frequency is varied.

BAP

The BAP operating and display protocol is used for communication between function control units and operating or display control units. BAP specifically separates the function from the display and the control.

FM

Frequency modulation, electromagnetic wave used to transmit messages.
In frequency modulation, the frequency of the carrier wave varies in step with the information signal. The amplitude remains constant.

GPS

Global Positioning System, a satellite system set up by the US Department of Defense that aids navigation.

GSM

Global System for Mobile communications
Standard for digital mobile telecommunications networks that is also used for data transfer as well as text messages (SMS).

Impedance transformer

An impedance transformer is an electronic amplifier that adjusts the impedance, i.e. the alternating current resistance of a source, for example, an aerial, to that of a consumer, for example, a radio.

Pulse fidelity

Pulse fidelity is the property of a loudspeaker to follow a pulse-shaped output signal from an amplifier with as few delays, losses or distortion as possible and thus allow optimum reproduction.

Convenience code

If the radio unit has been removed or the car battery disconnected, the anti-theft code does not need to be entered manually as the code number was stored after the first time it was entered in the car. However, if the vehicle and radio code numbers do not match up, for example, because the radio has been fitted in another vehicle, the electronic lock will have to be removed manually.

MP3

Motion Pictures expert group layer 3 (MPEG Layer 3)
Compression standards for video, audio and image formats.

NAR

North American Region.



Glossary

LF

Low frequency

RDS

Radio Data System

Standardised system for transferring non-audio additional information for radio e.g. station names, audio titles etc.

rSAP

Remote SIM Access Profile

This profile allows the premium version of the mobile telephone operating electronics control unit to access the data on the GSM card of a mobile phone and to log onto the GSM network in its place.

RSE

Rear Seat Entertainment provides multimedia entertainment for rear passengers. The main components are screens, a DVD player, an additional control unit, headphone connections and an additional video and audio input to which an external source, for example, a games console, can be connected. The DVD sound can also be played back over the radio system loudspeakers. To allow the driver and other passengers to listen to the radio while a DVD is playing, the rear seat entertainment and radio can, however, be operated independently of each other.

SD

Secure Digital card

Small and robust memory cards, e.g. for digital cameras, MP3 players etc.

SDARS

Satellite Digital Audio Radio Services

A digital radio standard for commercial satellite radio in North America

TFT

Thin Film Transistor display

(TFT display = flat screen).

TMC

Traffic Message Channel

A digital service in radio for transmission of traffic messages

UMPP

Universal mobile phone preparation.

UMTS

Universal Mobile Telecommunications System is the third generation (3G) of mobile telecommunications standard with which considerably higher data transfer rates (384 kbit/s to 7.2 Mbit/s) are possible than with the GSM standard (9.6 kbit/s to 220 kbit/s). The fast data transmission forms the basis for countless new applications. Above all, it makes mobile use of the Internet possible.



USB

Universal Serial Bus

Universal serial interface between different computers and peripheral devices

WMA

Windows Media Audio

Special audio format under Microsoft Windows.





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