



Self Study Program 895803

Volkswagen CC Overview



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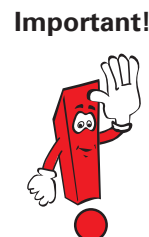
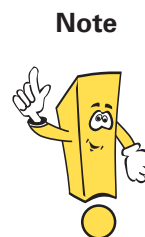
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This Self-Study Program provides information regarding the design and function of new models. This Self-Study Program is not a Repair Manual.

This information will not be updated. For maintenance and repair procedures, always refer to the latest electronic service information.



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Introduction

Volkswagen's first four-door coupé is based on the 2006 Passat. The new CC - Comfort Coupé - combines the dynamics of a sports car and the comfort of a sedan without making compromises.

This concept allows you to have all-around comfort with a sporty and elegant design. The CC is more than just a sporty saloon. It is a 4-door/4-seater with striking coupé looks and sporty engines.

The CC stands for:

- elegance & style,
- sportiness and
- dynamic presence.

It is aimed at two groups of buyers:

- The sedan drivers, who are fed up with normal plain sedans, but will not accept any loss of functionality,
- The coupé drivers, who do not understand why design and dynamics should not be functional and comfortable.



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Introduction

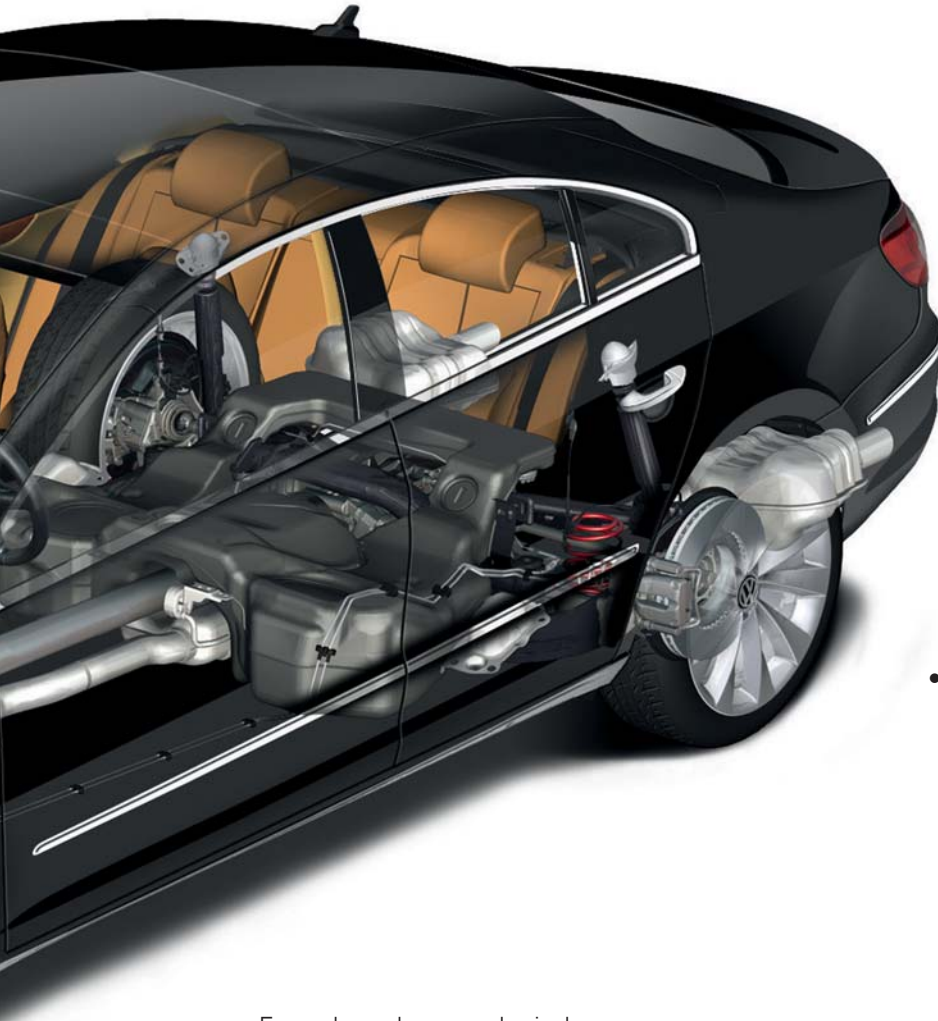
Volkswagen CC Features

- Multi-function steering wheel
- Media Device Interface box (MDI)



Introduction

- Tilting panorama sunroof



- Pivoted badge with mounting for reversing camera

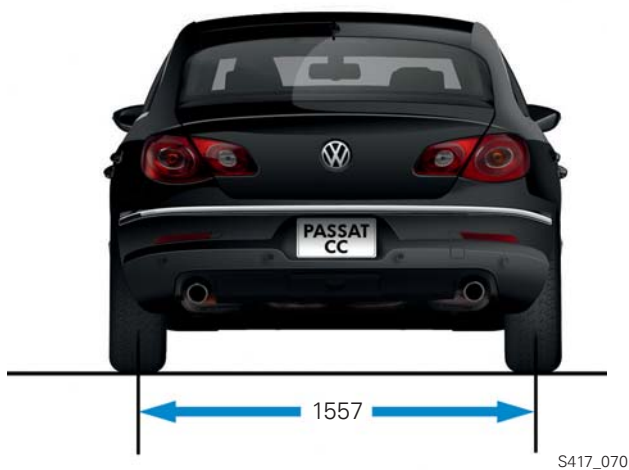
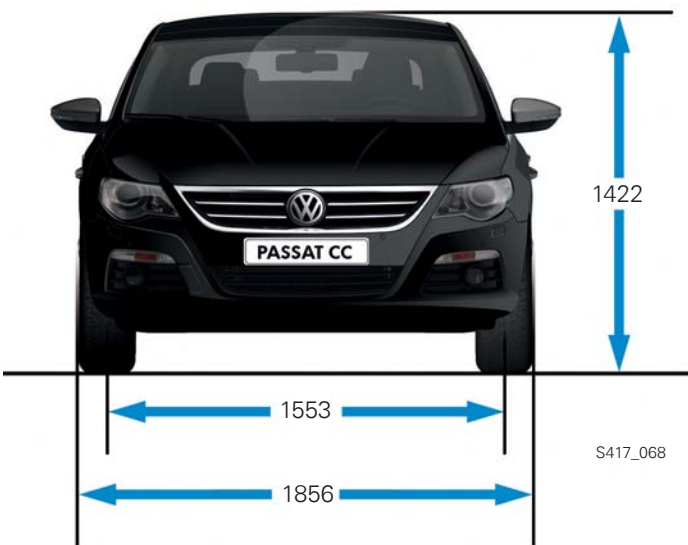
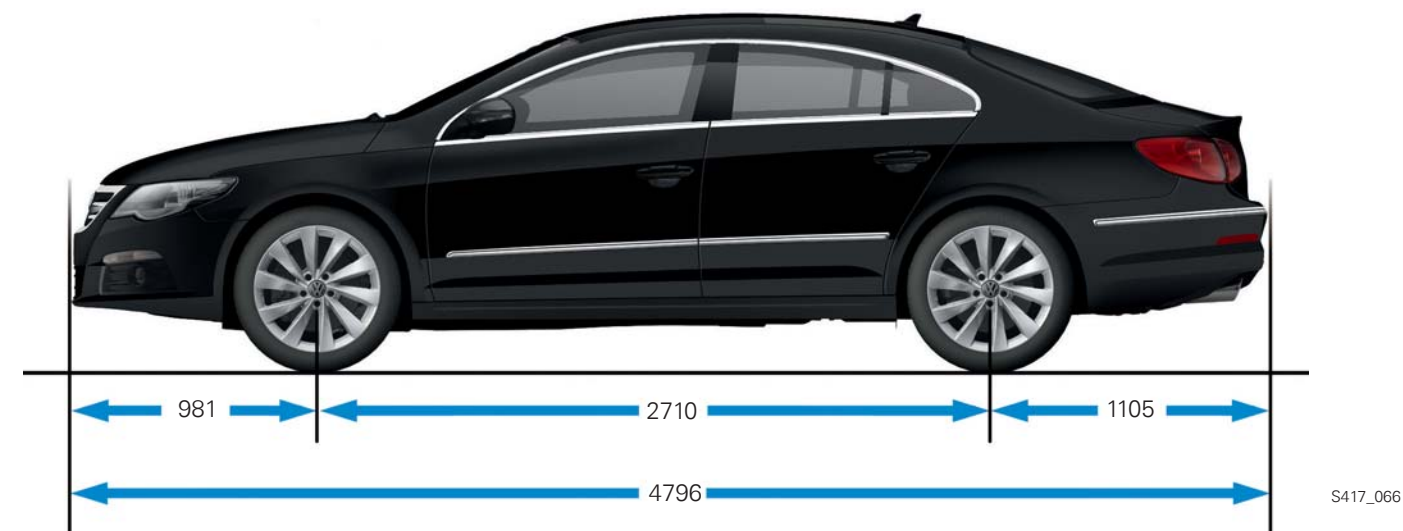
- Optical park assistant

- Frameless doors and windows

Introduction

Technical Data

Exterior Dimensions and Weight

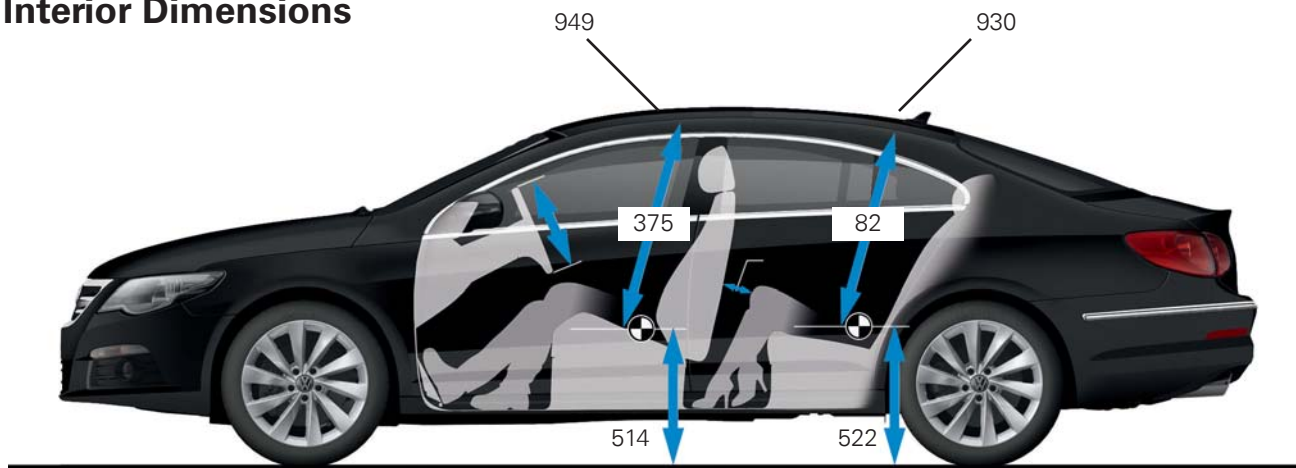


Exterior dimensions

Length	4799 mm (188.9 inches)
Width	1855 mm (73 inches)
Height	1418 mm (55.8 inches)
Wheelbase	2711 mm (106.7 inches)
Track width at front	1553 mm (61.1 inches)
Track width at rear	1559 mm (61.4 inches)

Curb weight without driver	1530 kg (3374 lb)
Tank capacity	70 liters (18.5 gallons)
Drag coefficient	0.297 cw

Interior Dimensions



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Interior dimensions and volumes

Interior length	1790 mm (70.5 inches)
Trunk Volume	0.4 meters ³ (13.0 ft ³)

Front headroom	949 mm (37.4 inches)
Rear headroom	930 mm (36.6 inches)
Front elbow room	1422 mm (56 inches)
Rear elbow room	1389 mm (54.7 inches)

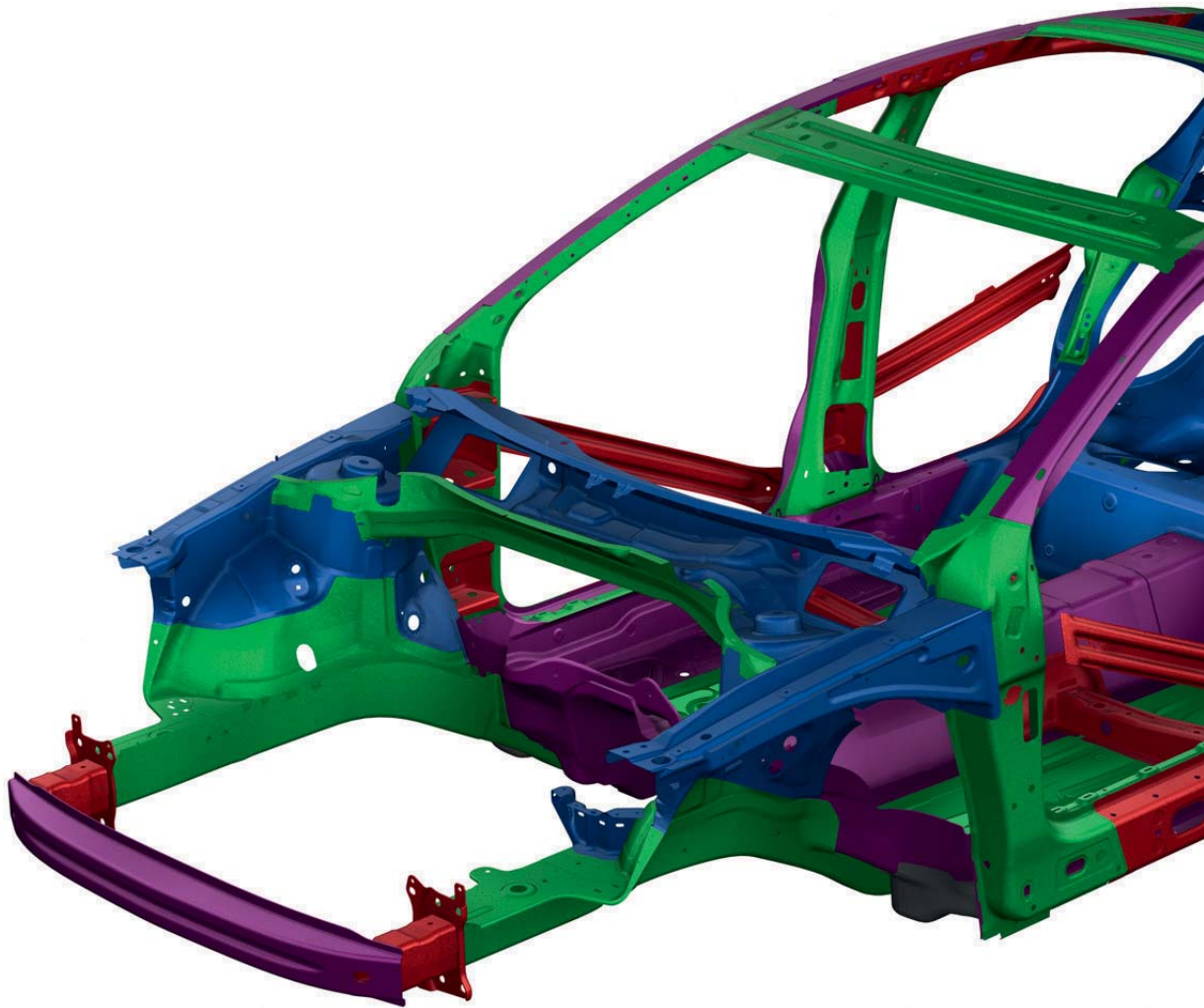
Body

Body Structure

The body structure of the Volkswagen CC is based on the body of the 2006 Passat sedan. Compared with the sedan, the Volkswagen CC is a few centimeters shorter, wider and longer. The roof stretches in a shallow radius from the A-pillar far beyond the C-pillar.

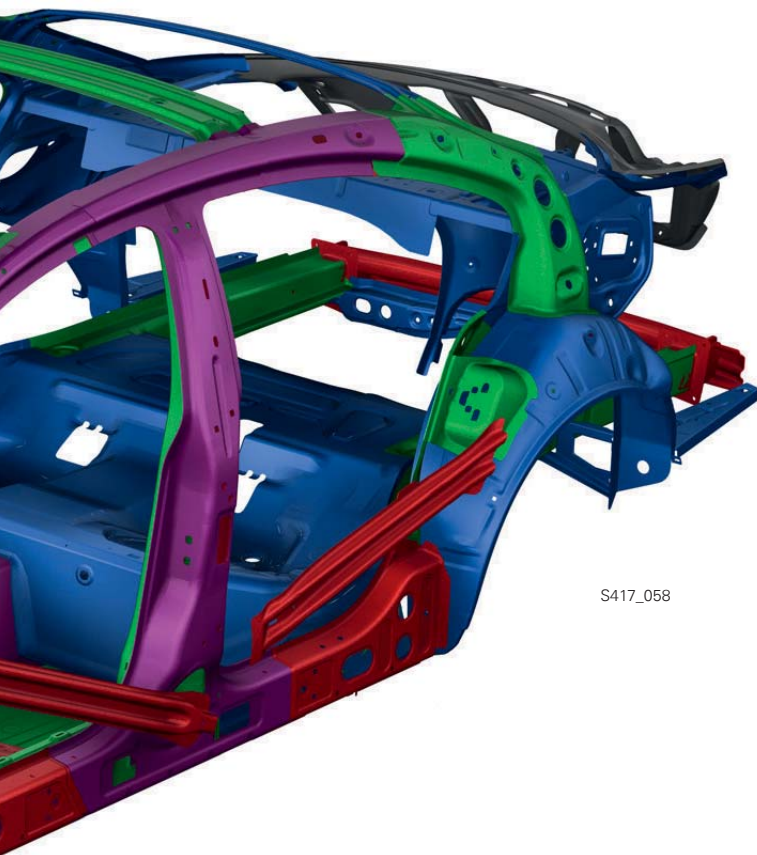
The following are new parts as compared to the 2006 Passat:

- the top left and right longitudinal members
- the window cross members
- the rear panel

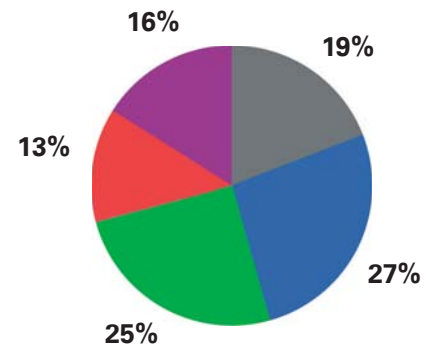


The types of steel sheet used in the Volkswagen CC are the same as the 2006 Passat. However, the Volkswagen CC uses more high to ultra-high strength thermoformed steel panels, allowing the body weight to be reduced without losing strength.

The pie chart shows the substantial proportion of higher strength and ultra-high-strength thermoformed steel panels as percentages.



Sheet quality distribution



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Legend

- Steel Panels up to 140 MPa
- High strength steel panels from 180 to 240 MPa
- Higher - strength steel panels from 360 to 320 MPa
- Ultra - high strength steel panels from 340 to 700 MPa
- Ultra-high-strength, thermoformed steel panels over 1000 MPa

Body

New Body Features

Tilting Panorama Sunroof

The optional tilting panorama sunroof consists of a large glass roof that is controlled by a roof control unit. The large glass roof is a single-piece glass lid driven by an electric motor. The roof controls are in a module mounted in the car headliner. Tinted glass and a fabric blind ensure a pleasant climate and good protection from the sun.



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Module Construction

The tilting panorama sunroof is assembled as a top-load system. This means a roof module is fitted or cemented to the body-in-white from above. This allows the glass areas to span a large section of the roof creating a fully glazed look.

This fully pre-assembled module with glass lid, blind system, guide rails, mechanism, mounting frame, electric motor drive and sealing system makes assembly easier and reduces the manufacturing costs. The mounting frame, which holds the whole system and guarantees vehicle stiffness, is made from fiberglass-reinforced plastic.

The front area of the roof between the front windscreen and the glass lid of the tilting panorama roof is integrated in the module and is gloss black. This color seems to extend the front window visually to behind the B-pillar and also contributes to the coupé-like looks of the Volkswagen CC.



S417_060

The sealing system of the module guarantees water drainage to the outside. A separate water drainage system with drainage hoses is not required.

Operation

The tilting panorama sunroof can be raised up to four centimeters (1.6 inches). The tilting panorama sunroof is operated using the two tilt position buttons that are operated by pulling or pushing the roof control. The buttons are connected directly to the tilting panorama sunroof control unit.



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Tap Mode

When tapping the switch, the tilting panorama roof is automatically moved to either the tilt position or zero position. The automatic run can be cancelled by pressing or pulling the button during operation.

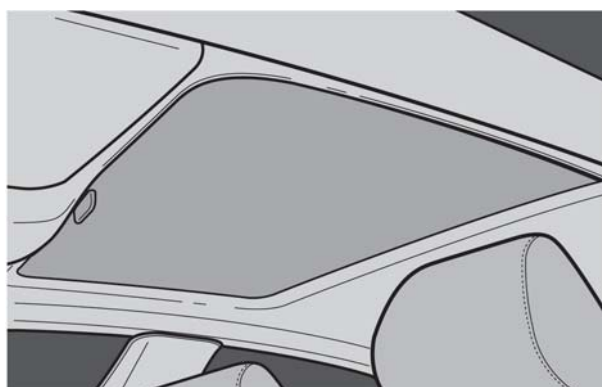
Hold Mode

The tilting panorama sunroof is opened or closed manually for the duration that the button is operated.

Sun Blind

The manual sunshade system on the tilting panorama sunroof is a complete and complex development compared to conventional sunshade systems:

- An opaque blind fabric is used to increase the level of shade.
- The blind system is infinitely variable regardless of the opening position and has an additional front blind latch.
- The blind system has steel tape guides at the side to ensure that the fabric is tensioned.
- The blind roller has been carefully adapted, i.e. it is arched crossways to ensure the necessary headroom



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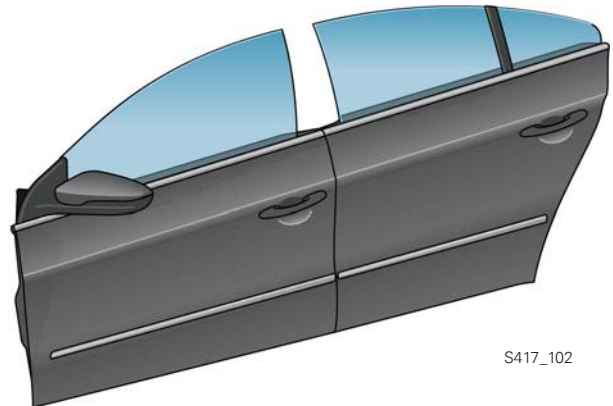
Body

Frameless Doors

The four doors are frameless. This allowed the roof to be lowered to create the coupé-like silhouette of the Volkswagen CC.

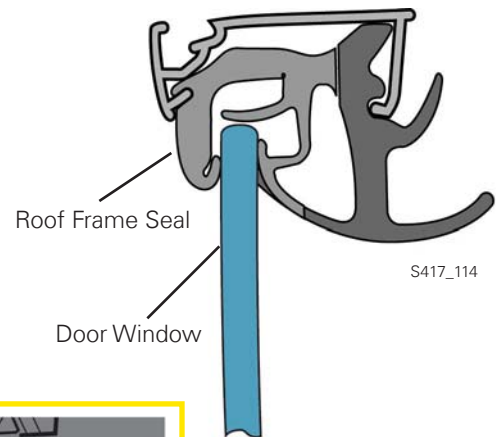
The door window fits into a 3-lip door-frame seal. The door window first needs to be lowered out of the seal before the door can be opened. Therefore, whenever the door handle is actuated, the glass is lowered slightly.

This function in the Volkswagen CC window regulator system is extremely fast. This is partially achieved with a microswitch in the outside door handle. The lowering is started as soon as the door handle is pulled.

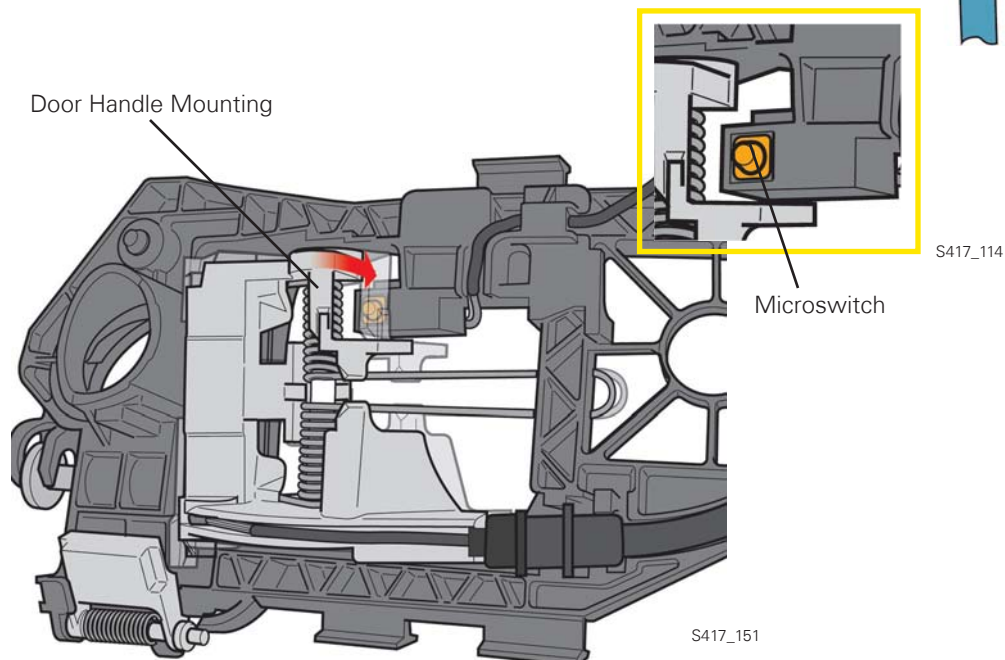


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Cross-section through the roof frame seal



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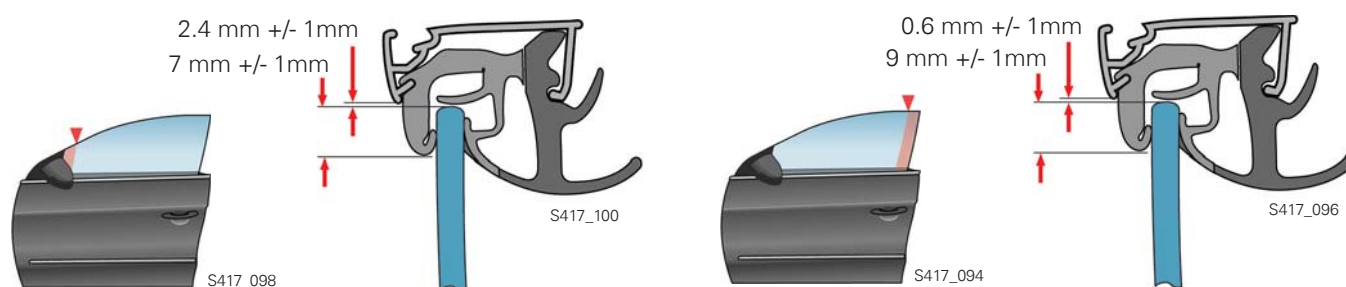
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Adjustment of the Door Windows

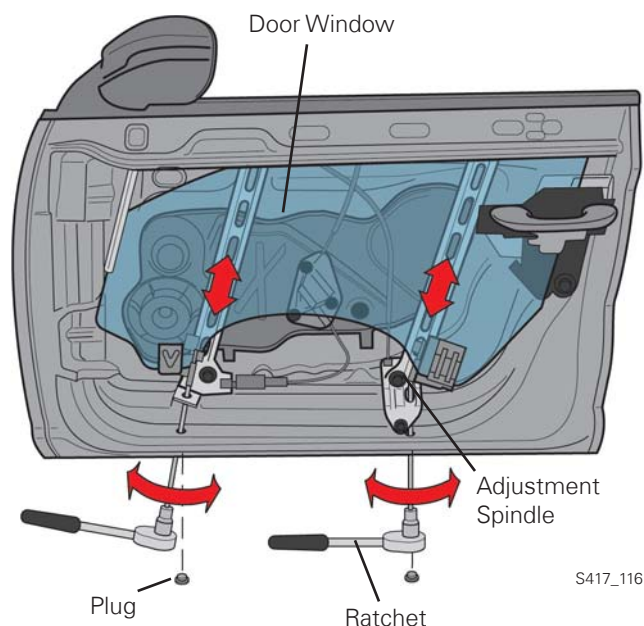
To ensure a perfect seal when the doors are closed, the longitudinal direction, tilt and height of the door windows all need to be set properly. These adjustments can only be made correctly when the vehicle is standing on all four wheels.

Adjusting the Height of the Front Door Window

Entry Depth at A-pillar



The height of the front door window needs to be adjusted if the entry depth of the window in the area of the A-pillar and in the area of the B-pillar does not match the correct measurements and if the window edge does not run parallel to the B-pillar panel.



Before adjusting the height, the door window needs to be lowered completely and the plugs removed. Now the tool (ratchet) can be inserted into the adjustment spindle through the adjustment openings on the left and right.

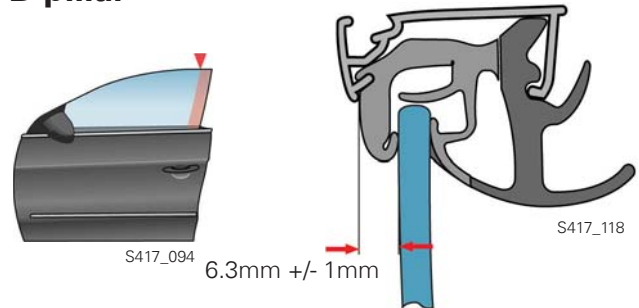
Turning clockwise moves the window downwards and turning counter-clockwise moves it upwards. One rotation corresponds with 1 millimeter. After adjustment, the plugs should be reinstalled and the door window raised .

Body

Adjusting the Tilt of the Front Door Window

If the tilt of the window at the B-pillar does not match the correct measurements, the door window needs to be adjusted at the rear. The tilt is adjusted first at the bottom and then at the top. The respective settings can only be made once the correct plug has been removed from the adjustment opening and the nut has been loosened. Following the adjustment, the nut needs to be tightened and the plug reinstalled.

Tilt of the Window in the Area of the B-pillar



Adjustment of Tilt at Top

The setting can be made by turning the tool left or right in the adjustment spindle. One rotation corresponds with 1.25 millimeters.

Adjustment of Tilt at Bottom:

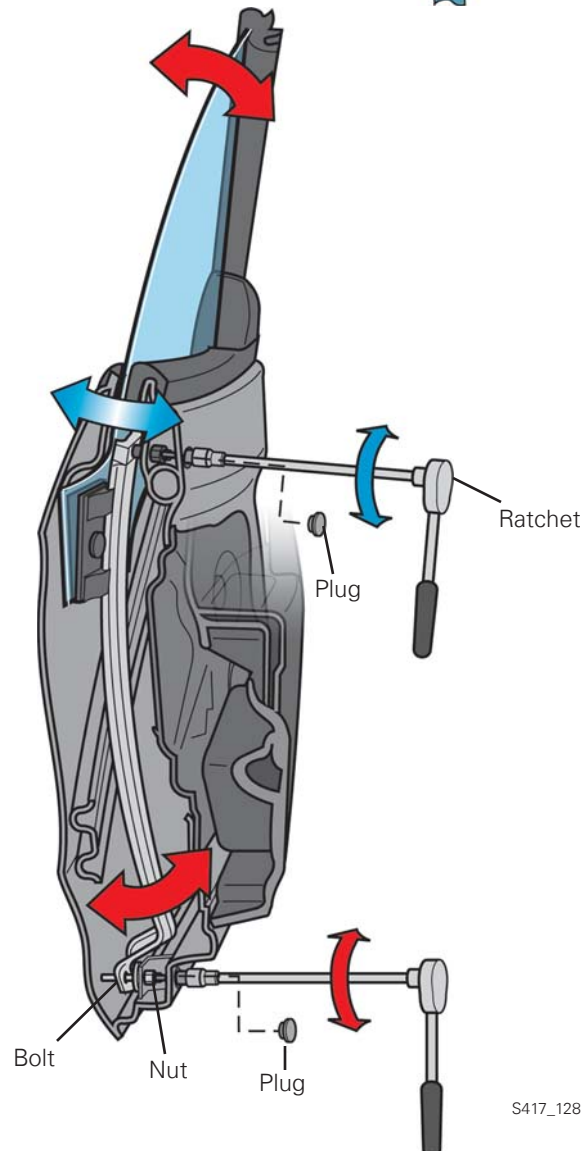
If you do not know the position of the adjustment spindle, first turn the bolt clockwise as far as it will go. The adjustment from the end position is then made with a maximum of 10 turns counter-clockwise. The assembly position is approx. 3 turns counter-clockwise from the end position



Adjustment of tilt at top

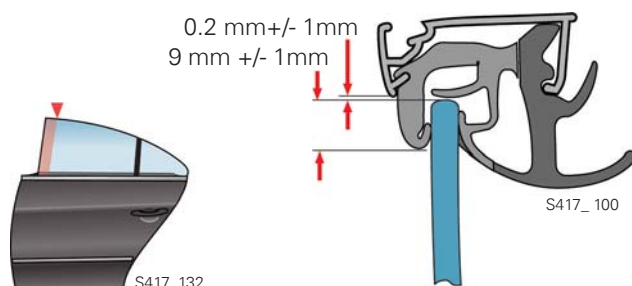


Adjustment of tilt at bottom

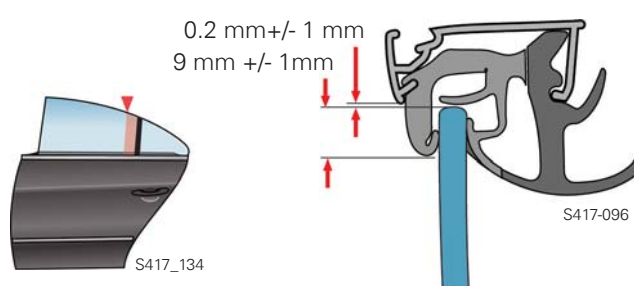


Adjusting the Tilt of the Rear Door Window

Entry Depth at B-pillar



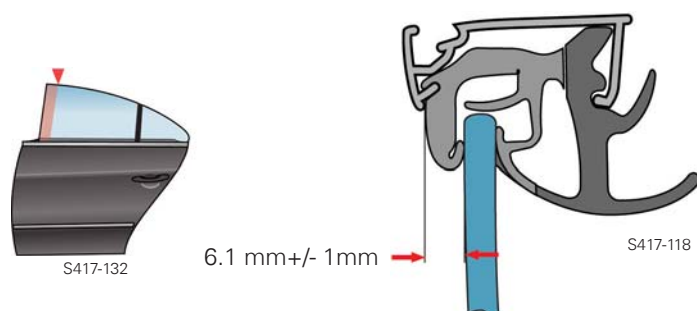
Entry Depth at C-pillar



The height of the rear door window needs to be adjusted if the entry depth of the window in the area of the B-pillar and in the area of the C-pillar does not match the correct measurements and the window edge does not run parallel to the B-pillar panel. The height of the rear door window is adjusted in the same way as the height of the front door window.

Adjusting the Tilt of the Rear Door Window

Tilt of the Window in the Area of the B-pillar

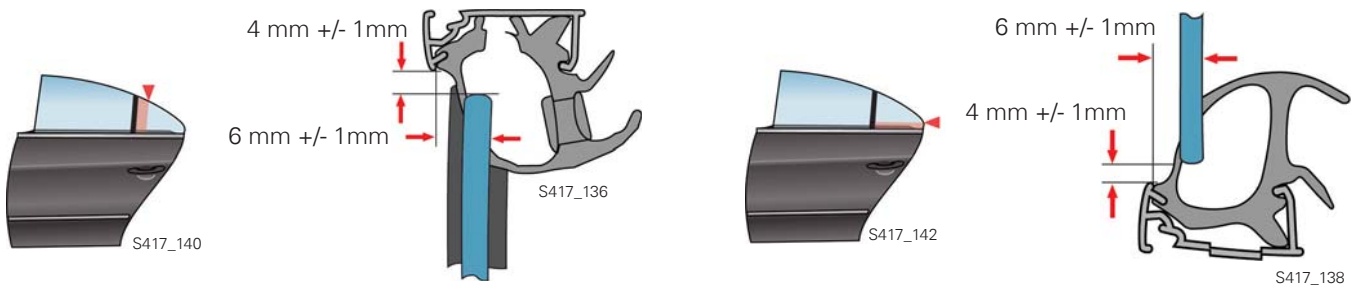


If the tilt of the window at the B-pillar does not match the correct measurements, the tilt of the rear door window needs to be adjusted. Here too, the tilt is adjusted first at the bottom and then at the top. The tilt of the rear door window is adjusted in the same way as the tilt of the front door window.

Body

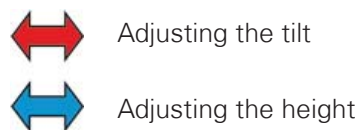
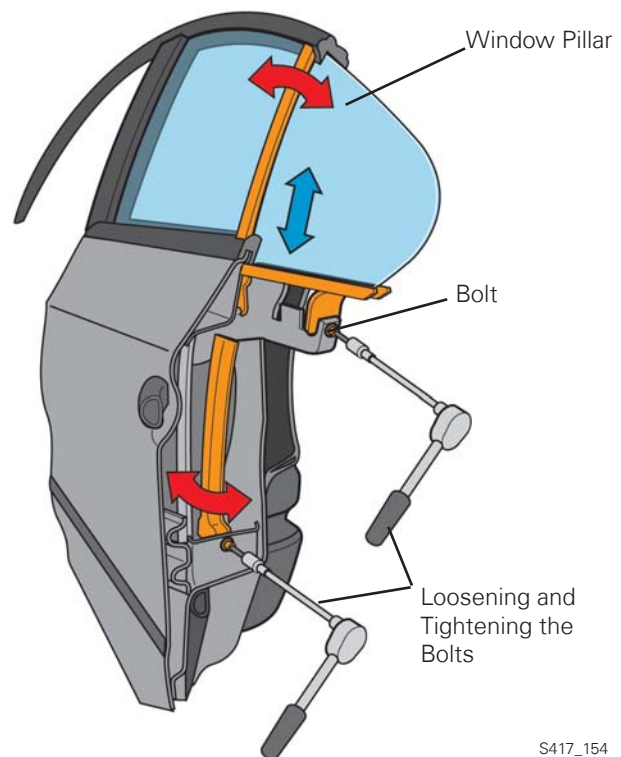
Adjusting the Height and Tilt of the Rear Window Pillar

Position of the Window Pillar



If the position of the window pillar does not match the correct measurements, the height and tilt needs to be adjusted. Before an adjustment is made, the plug and the panelling cap need to be removed and the bolts loosened. The height is adjusted by raising or lowering the window pillar. The tilt is adjusted by pivoting the window pillar.

Following the adjustment, the bolts need to be tightened and the plug or panelling cap reinstalled..

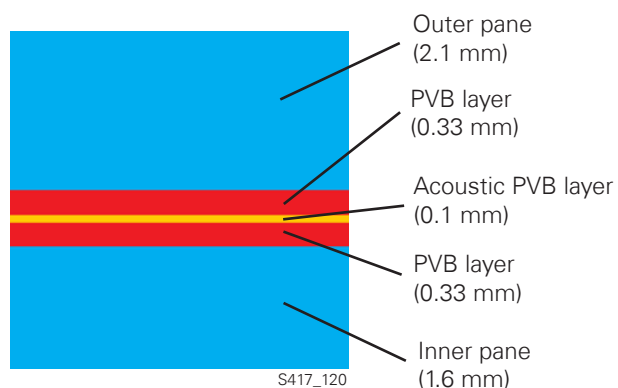


Acoustically Enhanced Front Windscreen

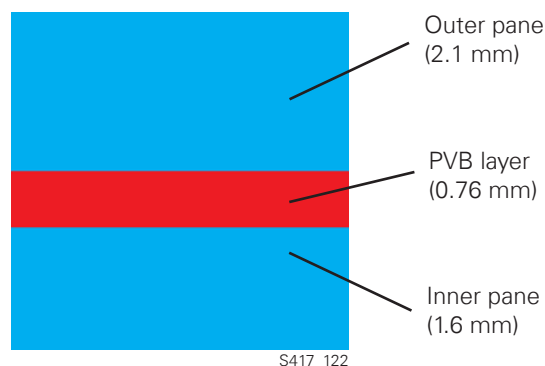
The Volkswagen CC has an acoustically enhanced front windscreen. This front windscreen allows the very good aero-acoustic values to be reduced further.

The total thickness of the windscreen with the acoustic enhancement is the same as the conventional front windscreen. An additional acoustic film has simply been used..

Acoustically enhanced front windscreen



Conventional front windscreen



The abbreviation PVB stands for polyvinyl butyral. PVB is a synthetic material.

Body

Rear Seats

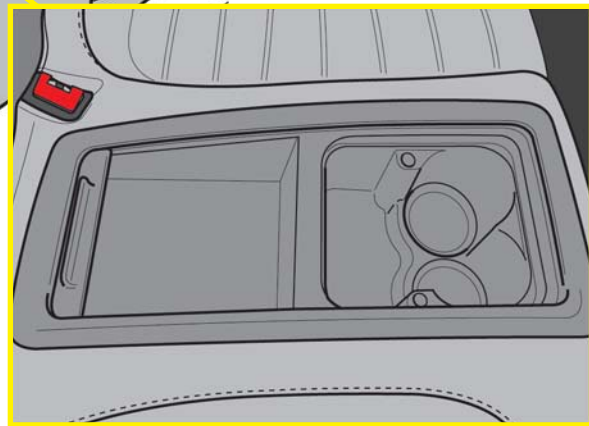


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The rear seats in the CC are a fixed full seat bench with two seats. A storage compartment has been integrated in the area between the seating surfaces.

The armrest also has a storage compartment.

A lockable through-load opening is available as an option



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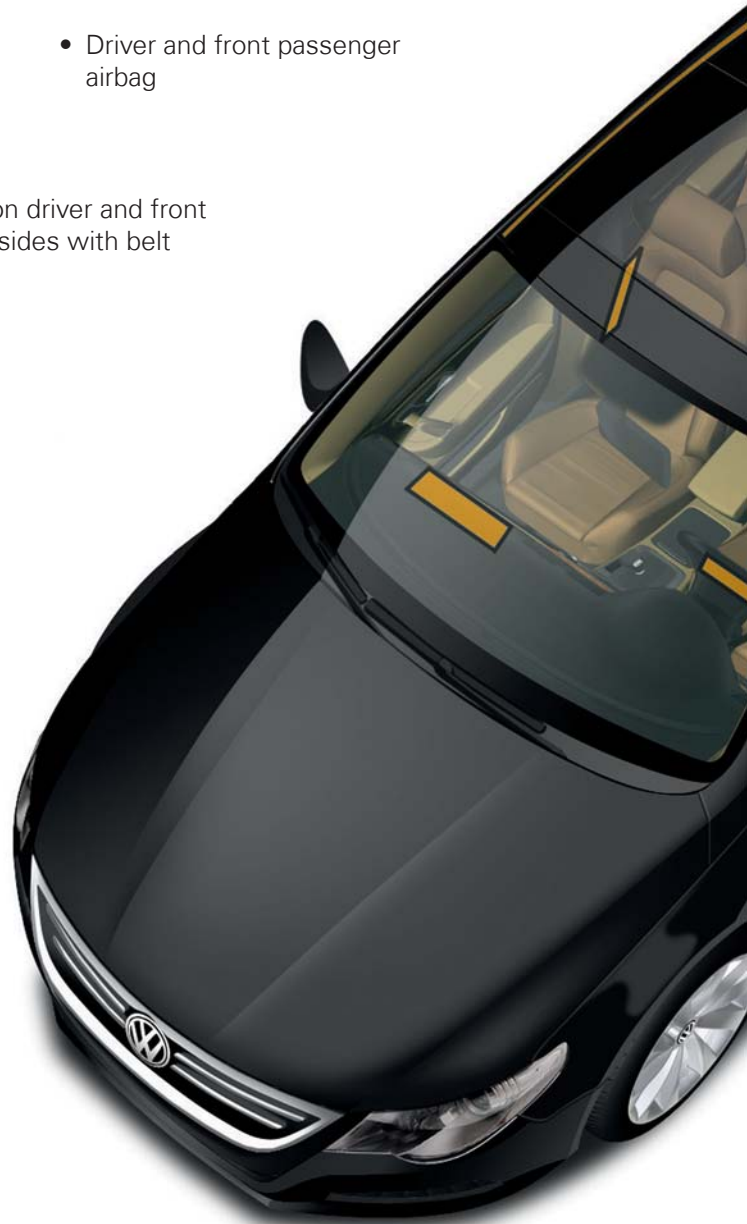
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Occupant Protection

Safety Equipment

The Volkswagen CC has the same equipment as the 2006 Passat with airbags, belts and belt tensioners. The airbags have simply been adapted to the new vehicle surfaces.

- Driver and front passenger airbag
- Belt locks on driver and front passenger sides with belt query
- Belt tensioners standard on the front seats, optional on rear seats
- Front and rear seats with belt tension limiters
- Optional rear side airbags
- Pressure sensors in the front doors for side crash detection



Occupant Protection

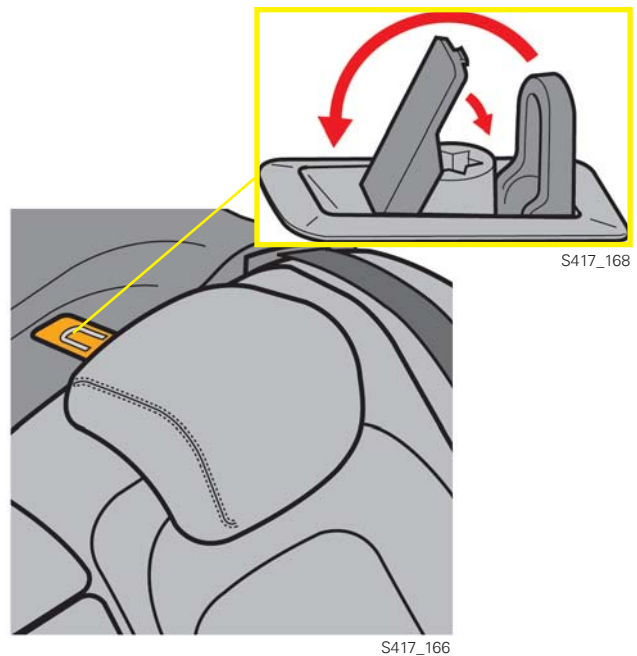


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- Side curtain airbags
- Two acceleration sensors in the vehicle longitudinal direction of the airbag control module, one acceleration sensor in vehicle crossways direction in airbag control module
- Two acceleration sensors for side crash detection in the C-Pillar area

Top Tether

The CC is equipped with a standard Top-Tether system. The Top-Tether system is used for additional child seat anchoring on the rear seat bench and is located in the rear parcel shelf.



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Engines

The Turbocharged 2.0L Engine with 4-Valve Technology

The 2.0L TSI engine has already been implemented in other Volkswagen vehicles. It is a turbocharged four-cylinder engine with direct fuel injection.

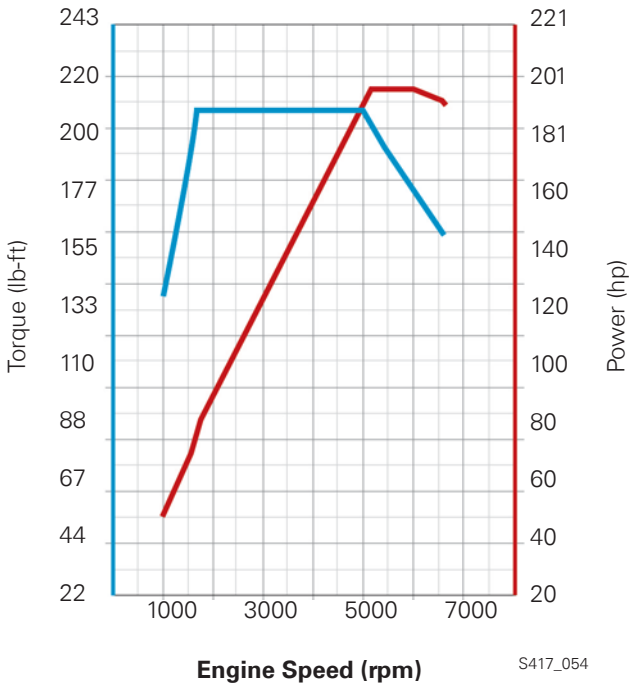
Technical Features

- Cast iron crankcase
- Balance shafts in crankcase
- Forged steel crankshaft
- 4-valve cylinder head
- Direct fuel injection into the cylinders



Technical Data

Engine	CCTA - CBFA
Type	4-cylinder in-line engine
Displacement	1984 cm ³ (121 in ³)
Bore	82.5 mm (3.2 in)
Stroke	92.8 mm (3.7 in)
Valves per cylinder	4
Compression ratio	9.6:1
Maximum output	200 hp (147 kW) at 5100 to 6000 rpm
Maximum Torque	200 lb-ft (280 Nm) at 1700 to 5000 rpm
Engine management	Bosch Motronic MED 17.5
Exhaust gas treatment	Starter catalytic converter close to engine, main catalytic converter, oxygen sensors
Emissions standard	ULEV (CCTA) SULEV (CBFA)



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The 3.6L FSI Engine with 4-Valve Technology

The 3.6L FSI engine with 4-valve technology comes from the VR engine range.

Technical Features

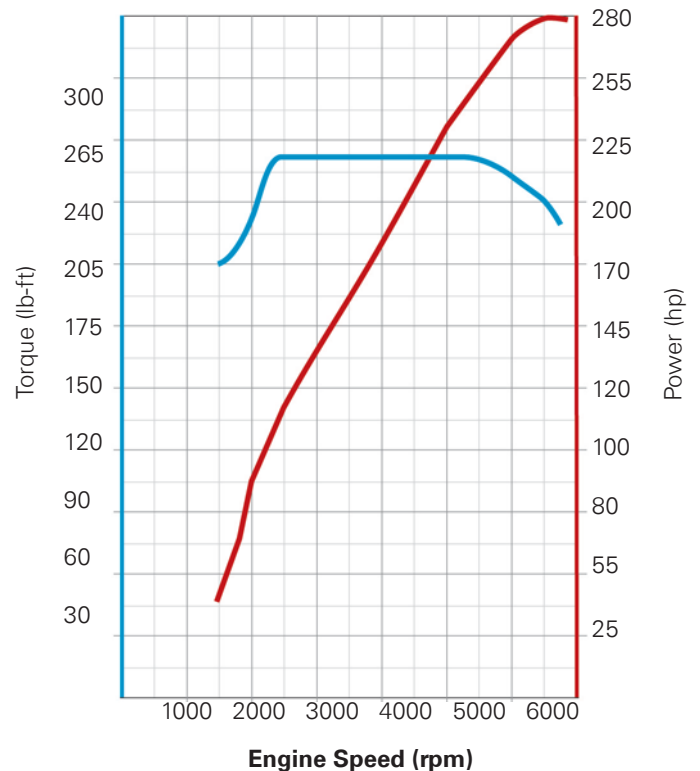
- Direct fuel injection into the cylinders
- Four-valve technology with roller rocker arms
- Internal exhaust gas recirculation
- Two-piece plastic variable intake manifold
- Lightweight crankcase made from grey cast iron
- Forged steel crankshaft and forged aluminium pistons
- Camshaft driving chain with integrated drive for high-pressure fuel and vacuum pump
- Continuous inlet and exhaust camshaft timing adjustment



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Technical Data

Type	6-cylinder VR engine
Displacement	3597 cm ³ (219.4 in ³)
Bore	89 mm (3.50 in)
Stroke	96.4 mm (3.80 in)
V angle	10.6 °
Valves per cylinder	4
Compression ratio	12.0 :1
Maximum output	280 hp (208 kW) at 6600 rpm
Maximum torque	265 lb-ft (359 Nm) at 2400 - 500 rpm
Engine Management	Motronic MED 9.1
Exhaust gas treatment	Two three-way catalytic converters with oxygen sensors
Emissions standard	LEV2



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Chassis

Overview of Chassis

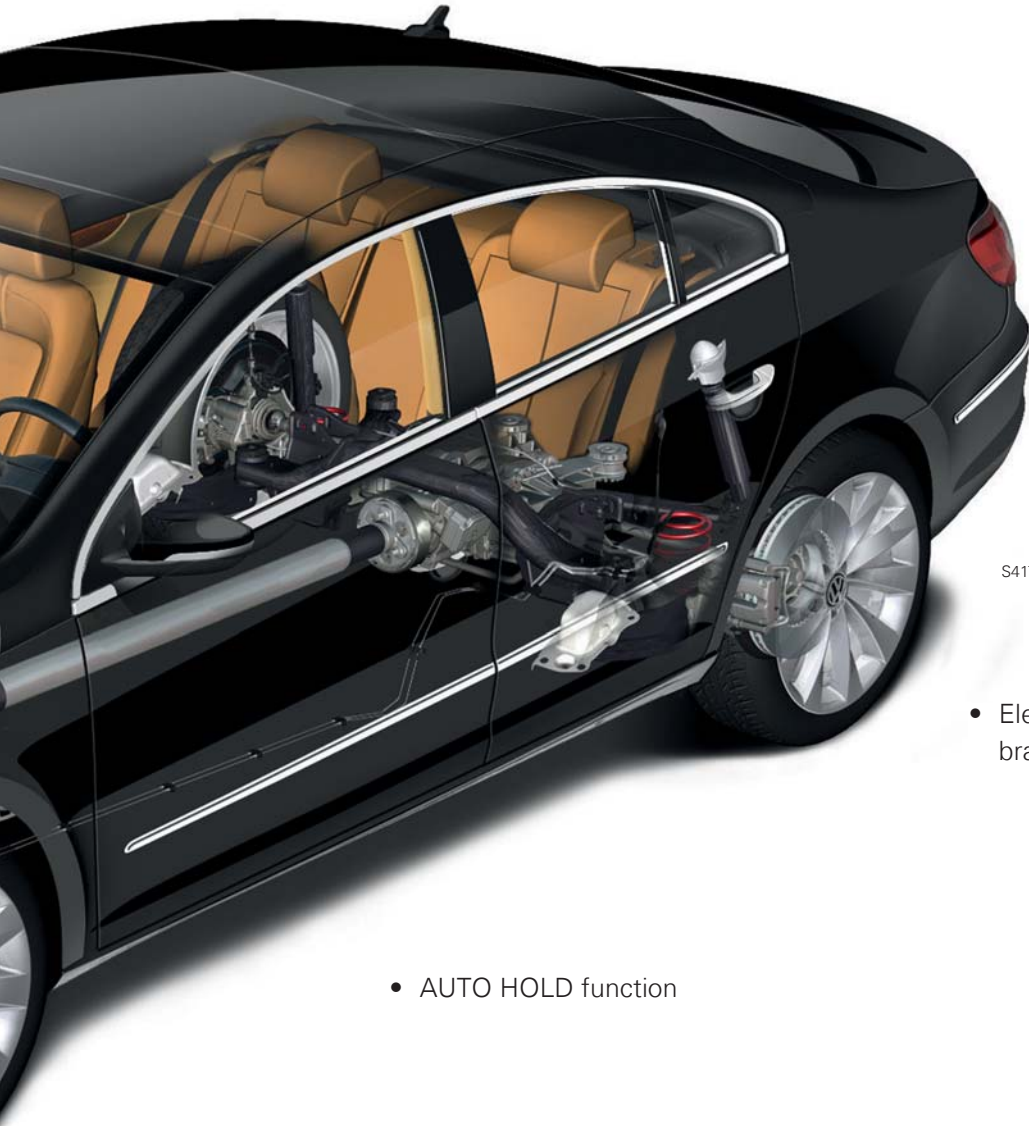
The chassis of the Volkswagen CC is essentially based on the chassis of the 2006 Passat. By using the modern McPherson strut front suspension, the four-link rear axle, the electromechanical steering with parallel-axis drive from the Tiguan and the electromechanical parking brake, this vehicle has thoroughly tested technology.

- ABS/ESP from TRW, EBC 440

- Lightweight strut front axle



- Four-link rear axle



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- Electromechanical parking brake with planetary gear
- AUTO HOLD function

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Reverse Camera

Two familiar systems have been combined on the Volkswagen CC in a very compact area. The pivoted badge that is used to open the trunk lid manually is also the mount for the reverse camera. The camera is well protected from rain, dirt and the elements due to a protective flap inside the pivoting badge.

When Reverse is selected, the camera swings out electromechanically, the protective flap and the badge fold out and the camera displays the area behind the vehicle with its wide-angle lens.

The trunk lid cannot be opened manually while the reverse camera is in use due to the camera electronics suppressing the Convenience Can-Bus signal to open the trunk lid. However, the button in the driver's door will still operate to open the trunk lid.

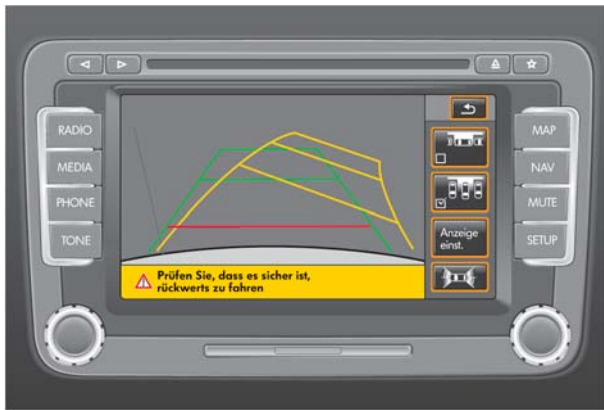
When moving the selector lever from Reverse into another gear, the reverse camera will fold back in after 9 seconds. The picture is still displayed on the screen during this time. If a different menu is required before the end of these 9 seconds, the screen can be switched on the respective radio unit.



S417_092

Reverse Camera System Control Unit

“Parking” Mode



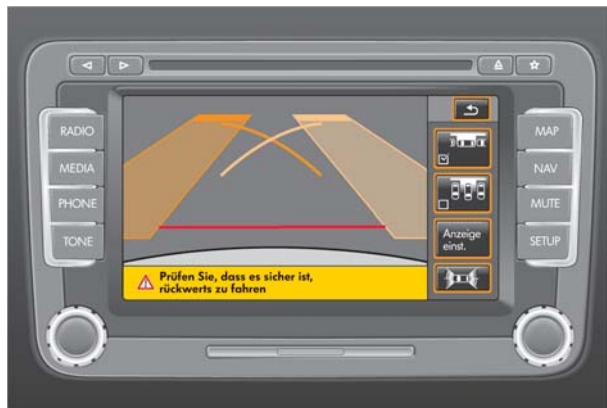
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The reverse camera system control unit has the task of processing the images supplied by the camera and preparing them for output on the display screen of the radio or radio/navigation system. This includes rectifying the supplied image and adding the static and dynamic helper lines that depict the vehicle with and without steering wheel turn. Two parking modes are available for the Volkswagen CC:

- reverse parking in “parking” mode and
- parallel parking in “parallel” mode.

The mode should be selected using the buttons on the corresponding radio or radio/navigation system before the parking procedure is started.

“Parallel Mode



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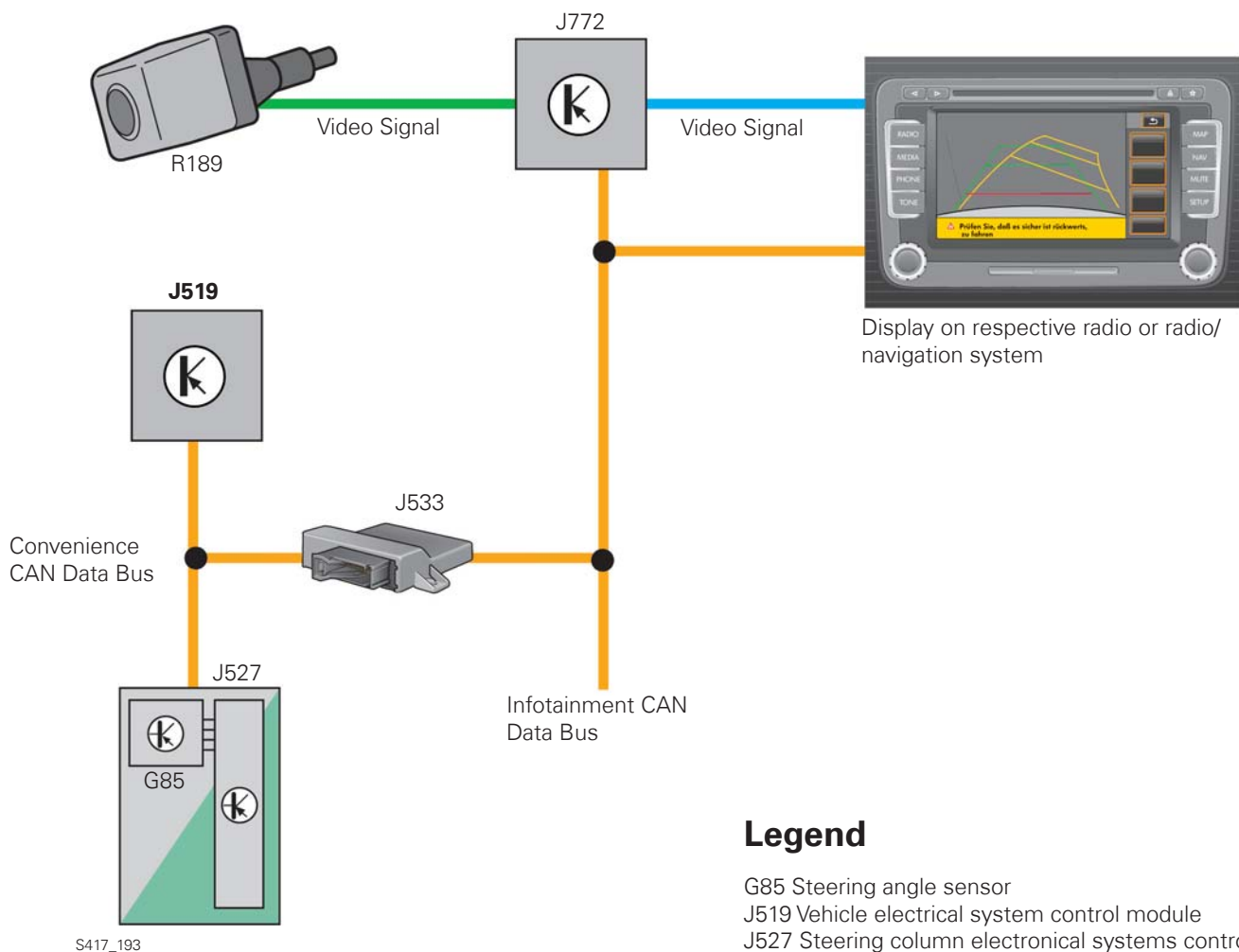
Reverse Camera System

The reverse camera system supports the driver while in Reverse by showing the driver the traffic situation behind the vehicle on a screen.

The reverse camera system consists of the following components:

- reverse camera,
- reverse camera system control unit and
- display screen (e.g. radio or radio/navigation system with reverse camera input).

Design



Legend

- G85 Steering angle sensor
- J519 Vehicle electrical system control module
- J527 Steering column electronic systems control Module
- J533 Data bus on board diagnostic interface
- J772 Rear view camera system control module
- R189 Rear view camera

Multifunction Steering Wheel

A new multifunction steering wheel is being used in the Volkswagen CC. The familiar horn button and the integrated driver airbag unit are located in the center of the multifunction steering wheel. There are now six instead of four multifunction buttons on each side to increase user-friendliness. Also, the back function can be accessed at any time with a new button.

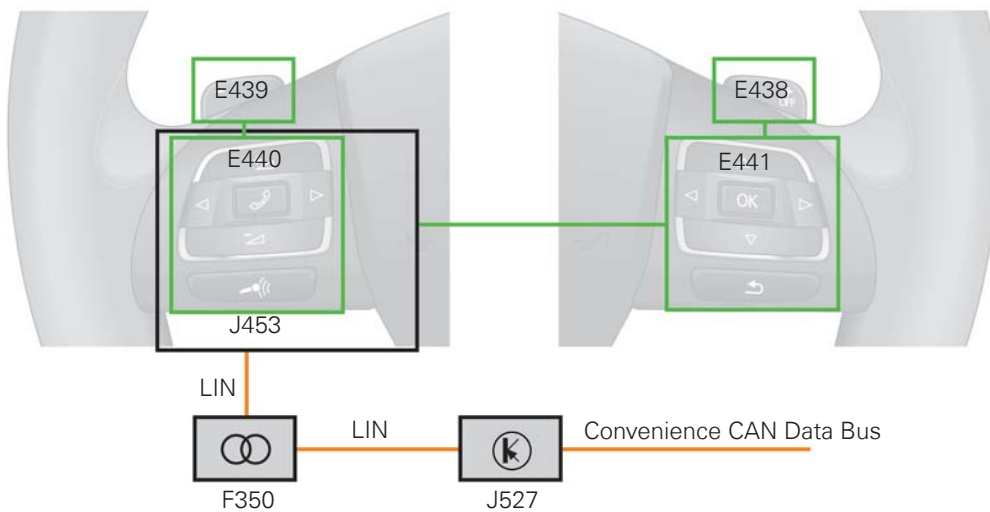
The 12 multi-function buttons are used to operate:

- the radio or navigation unit,
- the cruise control system



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There are two more controls on the back of the multi-function steering wheel in the form of paddles. If the car has an automatic or DSG gearbox, these buttons can be used to select the gear.



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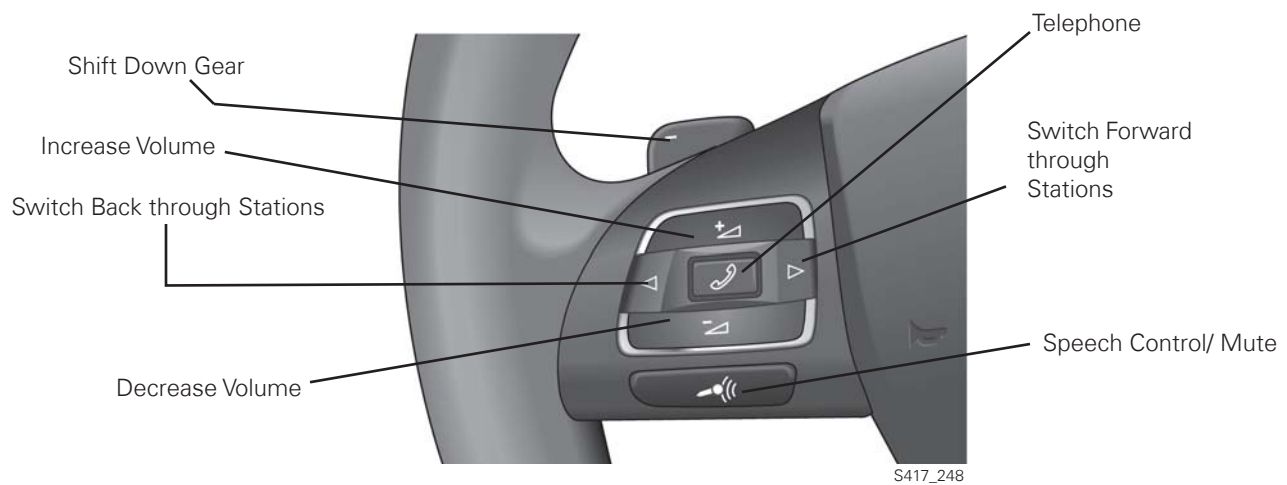
Legend

- E438 - Tiptronic upshift button (on steering wheel)
- E439 - Tiptronic downshift button (on steering wheel)
- E440 - Left multi-function button (on steering wheel)
- E441 - Right multi-function button (on steering wheel)
- F350 - Spiral spring
- J453 - Multi-function steering wheel control module
- J527 - Steering column electronic system control module

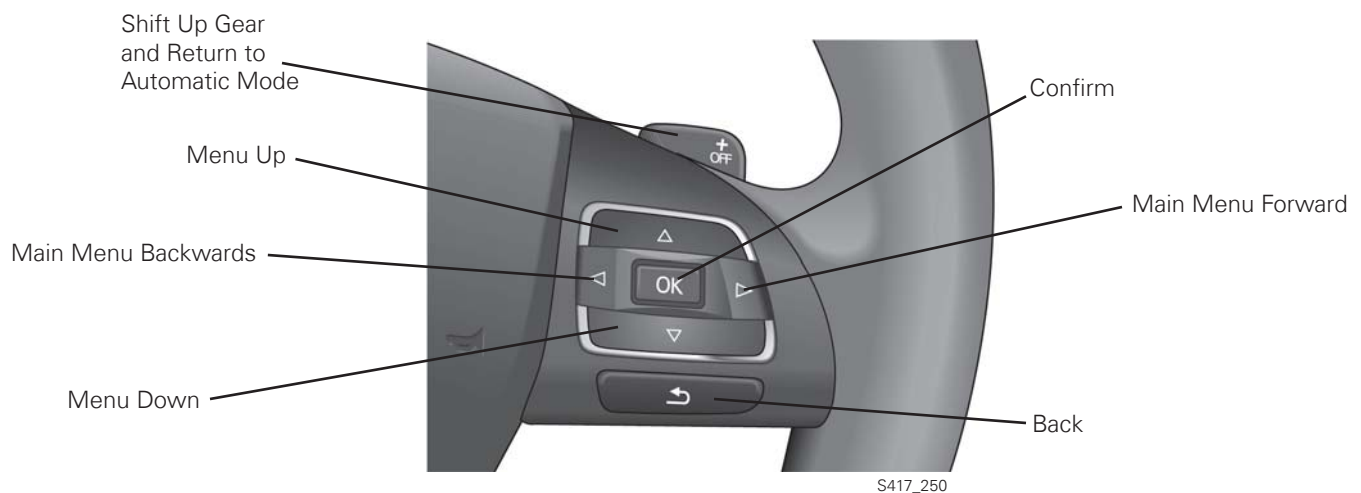
The electrical connection between the steering wheel electronics and the onboard supply is formed by a coil connector in the steering wheel. Data is transferred between the two components via the LIN data bus.

Button Assignment

Left Buttons



Right Buttons



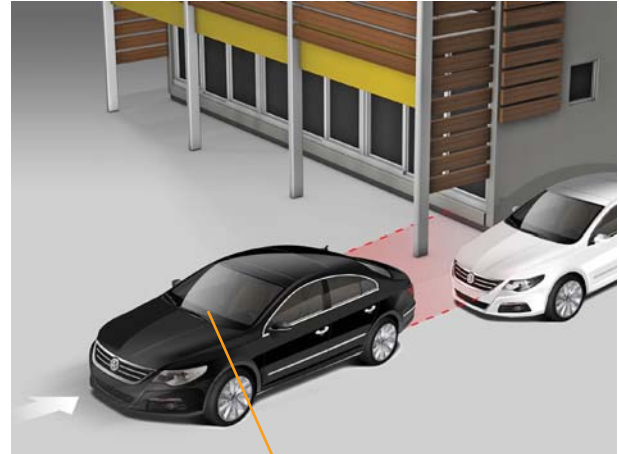
Electronics

Optical Parking System

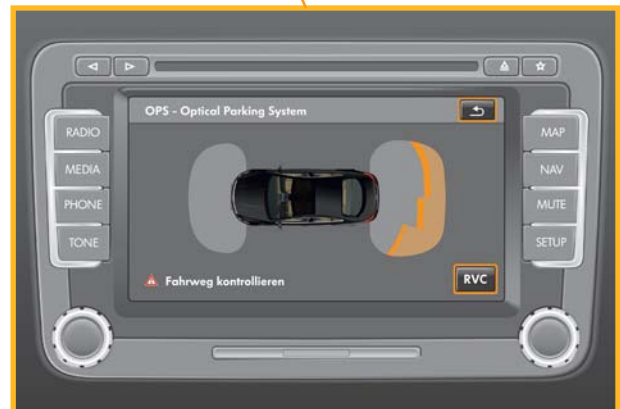
The optical parking system (OPS) is available for the Volkswagen CC. It is a software expansion for the parking aid system.

The park distance control system uses ultrasound sensors and an acoustic warning to help the driver determine the distance from other parked cars or obstacles. Only the warning from the sensor closest to the obstacle is supplied.

The optical parking system does not just detect obstacles in front of or behind the vehicle, but also detects its position in the scanning area. Now the driver is supported not only acoustically, but also optically. During the parking maneuver, OPS displays a diagram of the vehicle surrounded by colored areas on the radio or navigation system screen. These colored areas show the exact position and distance of obstacles for the driver. The OPS allows a low-cost graphic display to be provided without discrete display elements (e.g. LED bar). The driver can quickly detect the position of the obstacles and navigate more precisely. The picture is switched off above 15km/h (10 mph).



S417_179



S417_181

Function

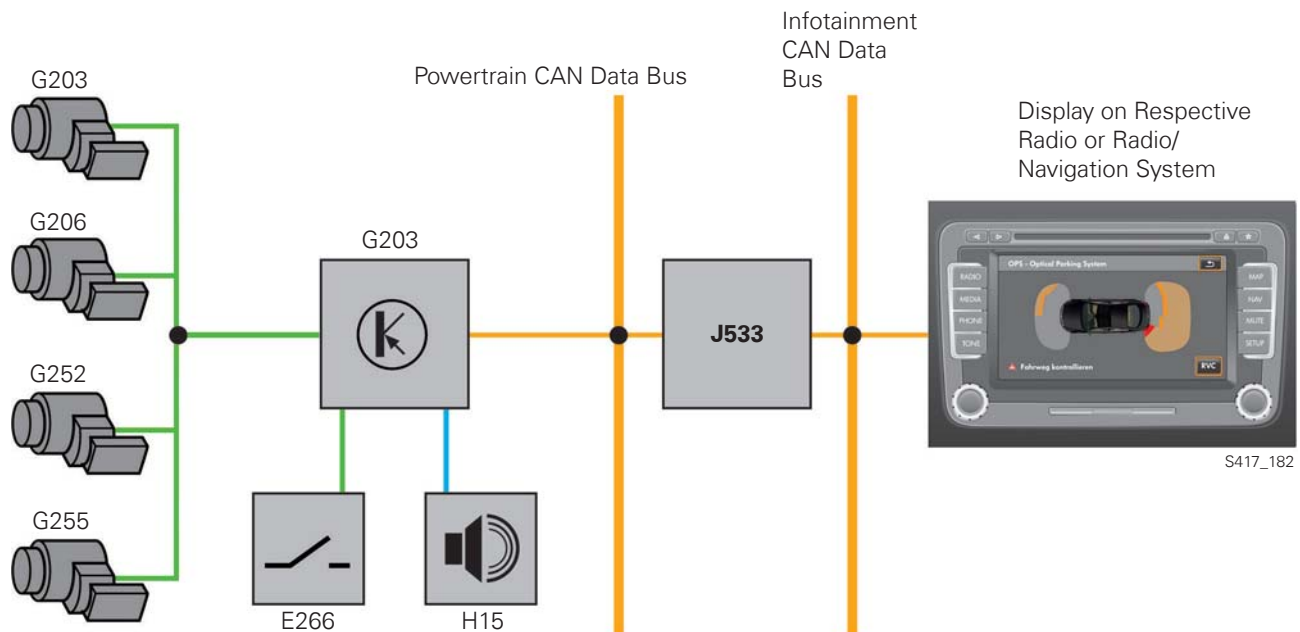
The optical parking system is activated using the parking aid button or by selecting reverse gear. Using the four ultrasound sensors that are located at the front and rear, the distance from an object in front of and behind the vehicle is determined by the parking aid control unit.

If the vehicle reaches a specific distance from this object, there is an acoustic warning from the rear parking aid warning buzzer.

OPS operation uses data from the parking aid control unit that evaluates the distance information according to sector and transfers it to the screen.

The BAP operating and display protocol is used on the CAN bus for this data transfer.

The received data is converted into a graphical display in the BAP-compatible **RCD 310/510 radio** or RNS 510 navigation system.



Legend

- E266 - Parking aid button
- G203- Left rear parking aid sender
- G206- Right rear parking aid sender
- G252 - Right front parking aid sender
- G255 - Left front parking aid sender
- H15 - Rear parking aid warning buzzer
- J446 - Parking aid control module
- J533 - Data bus on board diagnostic interface

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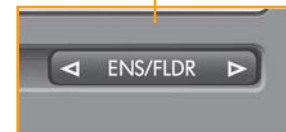
The Radio Systems in the Volkswagen CC

RCD 310 radio

- FSTN monochrome display, (FSTN=Film-Super-Twisted-Nematic, i.e. liquid crystal display)
- Twin tuner 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)
- Climate control information
- GALA speed-dependent volume control



S417_218



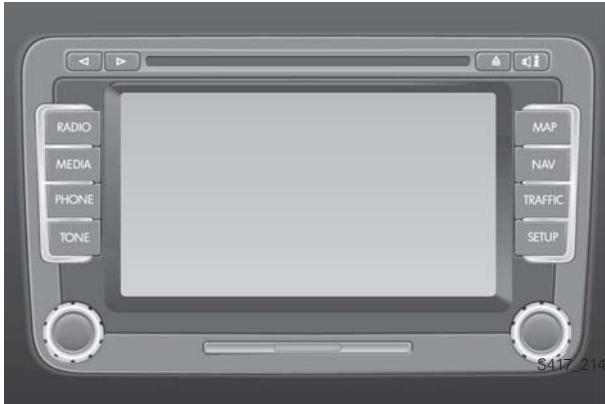
S417_184



The ID3 tag is additional information that can be contained in MP3 audio files. ID3 stands for "Identify an MP3". "Tag" is simply a label attached to the file. MP3 files can, but do not have to contain ID3 tags. The ID3 tag is part of the MP3 file. The most important content of the ID3 tag is the artist, the name of the album and the name of the music track.

Radio and Navigation

RNS 510 Radio/Navigation System



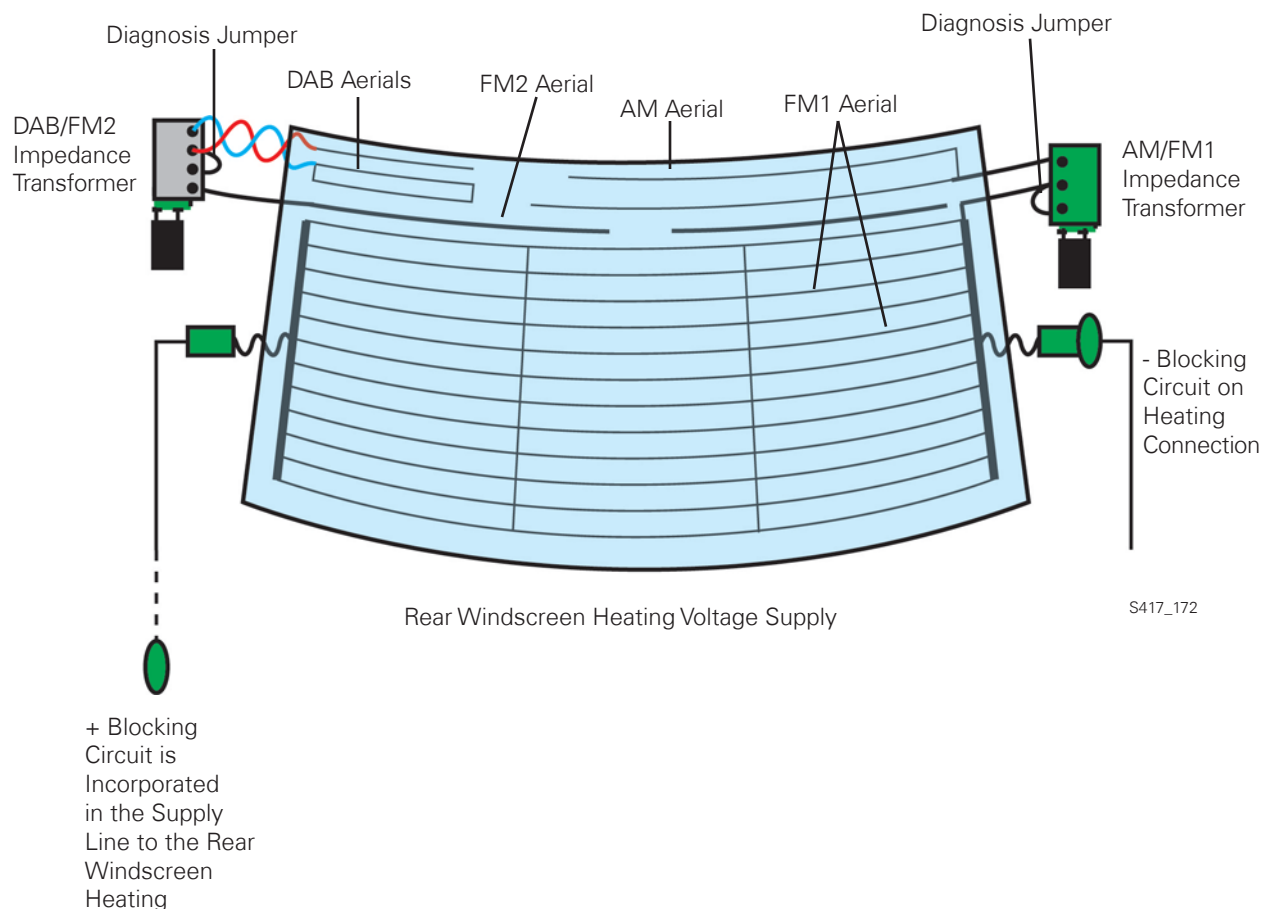
Combination and expansion possibilities

- Controllable via multifunction steering wheel
- Optionally available with Dynaudio
- Display of navigation symbols by the dash panel insert control unit (Highline)
- Video playback from external sources, e.g. DVD player, reversing camera
- Audio playback of external sources like, e.g. CD players, iPods
- Media Device Interface (MDI)
- Touch-sensitive 6.5" multi-color display (MFD) with a resolution of 800 x 480 pixels
- FM twin tuner with two aerials
- Integrated DAB tuner (digital radio) (depending on equipment)
- SDARS satellite radio tuner (depending on equipment)
- Integrated DVD drive for navigation, audio and video
- Integrated hard drive for storing navigation and audio data
- Integrated SD memory card reader
- Media support for MP3 and WMA audio and 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
- Display of climate control conditions (information displayed temporarily)
- Optical parking system (OPS)

Aerial Concept in Volkswagen CC

Several aerals are integrated in the rear window of the Volkswagen CC. The aerial for navigation (GPS) are integrated in a roof aerial.

The negative blocking circuit is connected directly to the negative connection of the rear windscreen heating (right). The positive blocking circuit is in the supply cable of the rear windscreen heating connection (left). As the aerial structure for AM does not have a connection to the heating structure, an AM blocking circuit is not required.



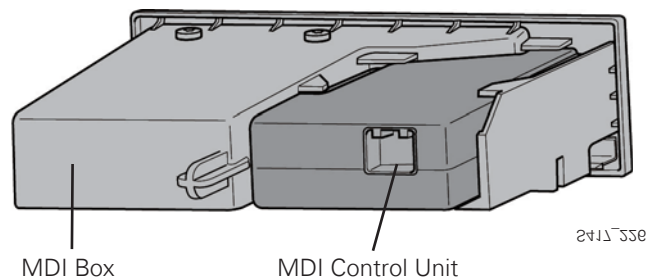
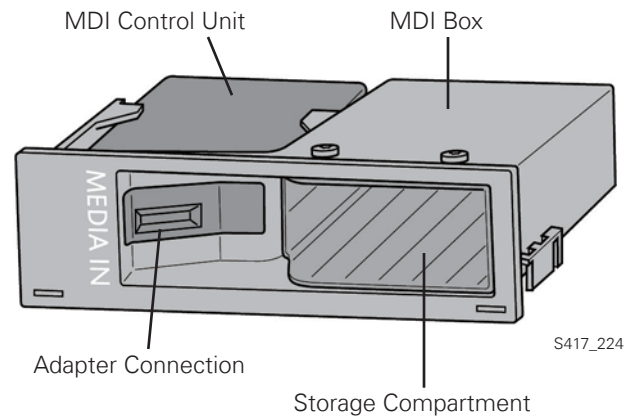
Radio and Navigation

Media Device Interface Box

The media device interface, or MDI for short, allows passengers in the Volkswagen CC to connect their mobile audio or multimedia devices (e.g. iPod, MP3 players or USB sticks) to the infotainment system and display, select and play the audio content over the vehicle speaker system or the infotainment monitors.

Location

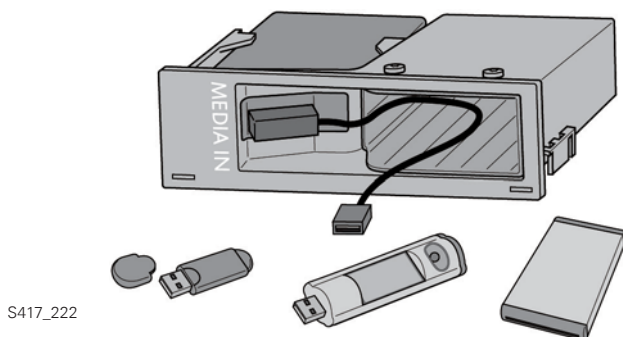
The MDI control unit is accommodated in a plastic case of the MDI box. The MDI box is DIN sized and has a safe anti-slip area to place the mobile multimedia device. The MDI box is fitted in space for the CD changer. .



Connection Possibilities

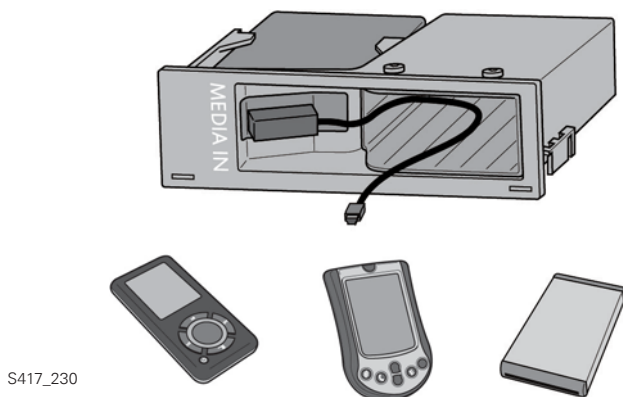
The mobile device is connected depending on the type with a special adapter cable that is connected to the central interface, the adapter connection. The following audio formats are currently supported and can be played back: MP3, WMA and OGG Vorbis (license-free audio data compression Codec). The AAC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

Connection possibilities with USB adapter cable



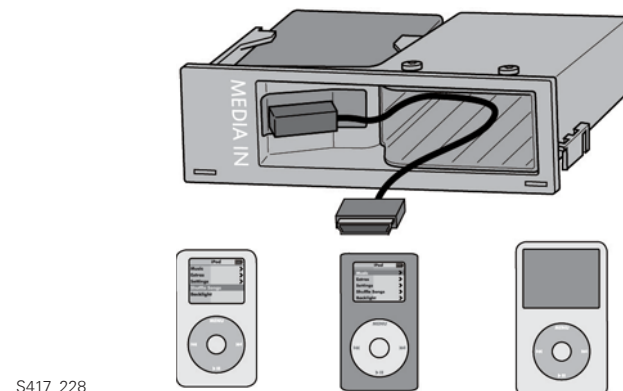
USB sticks, MP3 player and USB hard drives can be connected via the USB adapter cable.

Connection possibilities with mini USB adapter cable



MP3 players, telephone/communicators and Mini-USB hard drives can be connected via the mini USB adapter cable.

Connection possibilities with adapter cable for iPod



Different iPods can be connected via the adapter cable for iPod.

On the display unit, which has to support the operating and display protocol (BAP), the same audio playback lists are shown as on the iPod.

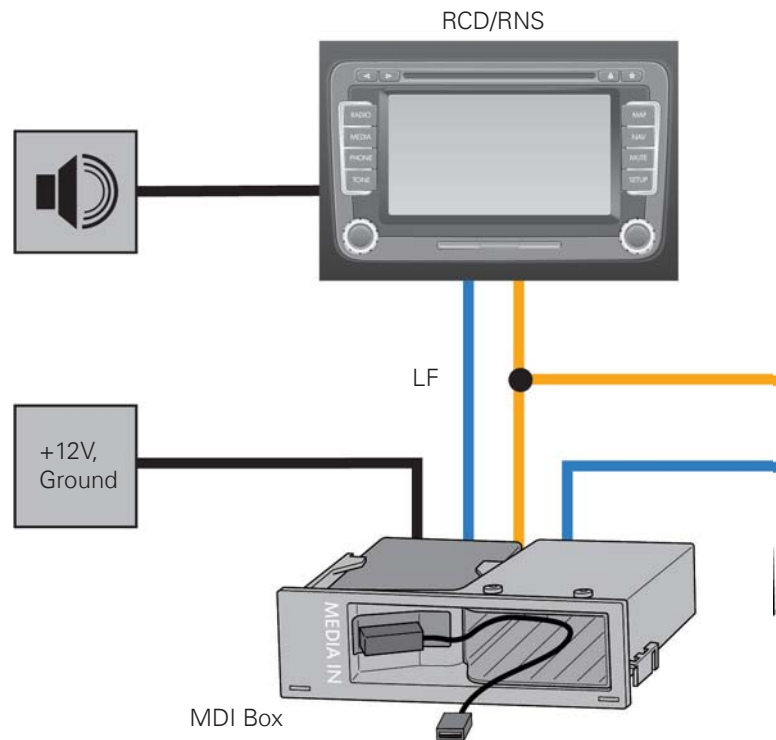
Radio and Navigation

Task

The Media Device Interface (MDI) is an interface control unit for connecting a wide range of media devices to the vehicle's infotainment network.

As an interface control unit, the MDI has to ensure that the media unit is adapted to the vehicle infotainment system both on the physical side (connector compatibility) and also by the software. Furthermore the infotainment system has to be informed by the MDI that a new data memory is available from which music can be read and played back.

Finally the MDI should allow the recognized unit to be controlled via the radio or radio/navigation system.



If only the AUX-IN socket is fitted in the vehicle, it is connected directly to the AUX input of the fitted RCD/RNS radio or navigation system. If the vehicle also has a Media-Device-Interface, the optional AUX-IN socket is connected to the MDI box as the AUX input of the radio is already occupied by the MDI.

Radio and Navigation

How it Works

The MDI box is connected to the vehicle data network via the infotainment CAN data bus and is connected directly to the 12-volt power supply. The connected media devices are also loaded automatically.

The adapter connection and an additional external audio input (AUX-IN) serve as inputs.

Using the MDI requires a display device with operating and display protocol (BAP) as it can only be controlled with this via the CAN bus. The MDI itself does not have a control facility. BAP-compatible devices are currently the RNS 510.

To tackle the many tasks, the MDI box has a range of internal software and hardware modules. In addition to a diagnosis and a CAN data bus interface to the vehicle system, the MDI has a separate decoding module for the MP3, WMA, OGG and AAC (Apple) audio formats.

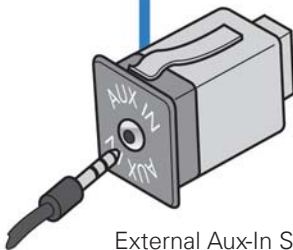
The MDI also has a control module to recognise the provided data, interpret the control signals for the connected devices like iPod or MP3 player and translate them for the infotainment controls like, for example, the touch screen of the RCD 510 and RNS 510.

On this user interface, the user can then navigate through the folders or playlists

Multifunction Steering Wheel



LF



External Aux-In Socket

S417_241

- Infotainment CAN data bus
- Low-frequency audio connection

Heating and Air Conditioning

Air Conditioning



S417_159

Two different types of air-conditioning system are available in the Volkswagen CC that have also already been used in the 2006 Passat:

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

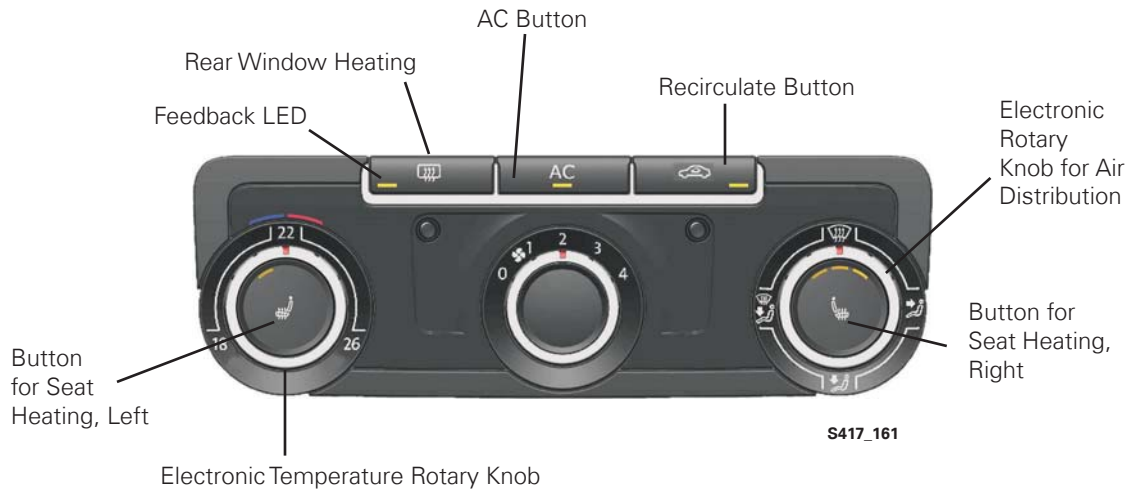
Operation

New controls are being used depending on the equipment fitted:

- with and without button for seat heating
- with or without button for heated rear window

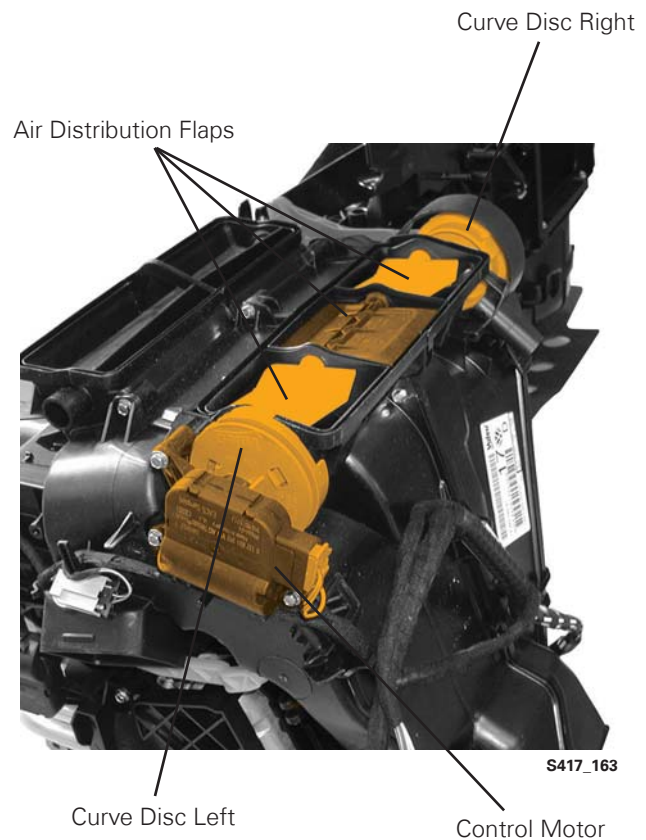
Heating and Air Conditioning

Climatic Controls



Air-Conditioning Unit

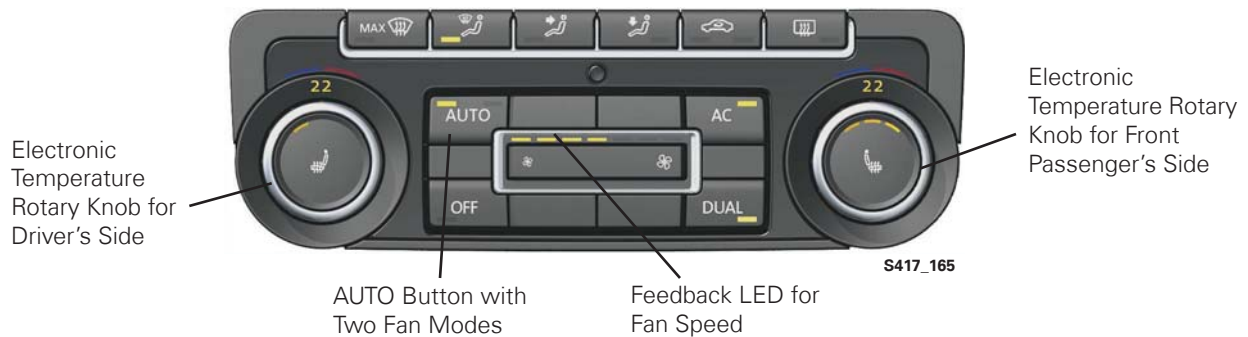
The flaps for air distribution are no longer adjusted via a flexible shaft, but via an electrically operated control motor.



Heating and Air Conditioning

Climatronic

Controls



Automatic Fresh Air Control

There are two modes, AUTO High and AUTO Low, for the automatic fresh air fan control. In these modes, not only the fan power is automatically controlled, but also the air distribution and temperature. The AUTO button switches between these two modes.

In the AUTO setting (= automatic mode), the air-conditioning control unit quickly regulates the interior temperature to the required level and keeps it constant even when outside conditions change.

AUTO High

The AUTO High mode is an automatic mode with greater quantities of air. The target temperature is reached as quickly as possible. AUTO High is configured especially for a high risk of fogging (high inside and/or outside humidity) and for ideal ventilation of the rear area. The right-hand LED in the AUTO button is illuminated in AUTO High mode. The fresh air fan runs in the standard characteristic curve.

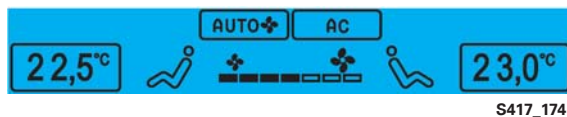
AUTO Low

The AUTO Low mode is an automatic mode with smaller quantities of air. The Climatronic gently regulates the preset interior temperature giving priority to acoustic comfort. The left-hand LED in the AUTO button is illuminated in AUTO Low mode. The fresh-air fan speed in AUTO Low mode is always one level lower than in AUTO High mode.

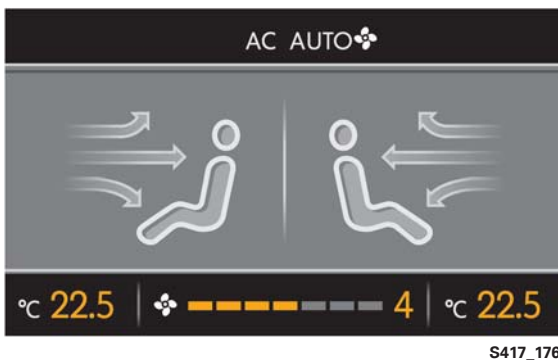
Heating and Air Conditioning

In automatic mode, the Climatronic system automatically adjusts the control motors for the air-distribution flaps of the air-conditioning/ heating system. The air flowing from the air-conditioning unit has the set temperature and is conducted towards the windscreen, footwell or air vents. The quantity of air is controlled steplessly via the fan speed depending on how much air is required to reach or maintain the comfortable temperature. The temperature of the air entering the vehicle is also continuously measured by the Climatronic system. By setting the target value on the two temperature rotary knobs, the occupants specify the level of the interior temperature to be set. Everything else is controlled automatically by the Climatronic system.

Display on RCD310



Display on RCD510, RN310 and RMS51-



Status Display

The LEDs in the control indicate that the respective function is activated. The radio or radio/navigation screen also shows information on the Climatronic system. For example, the temperature appears as a pop-up when you adjust the temperature.

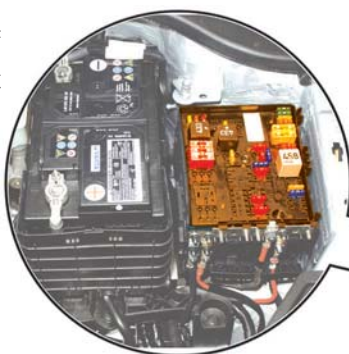
Electrical

Fuse Boxes and Relay Locations in the Onboard Supply

Locations

The battery is located on the left of the engine compartment or on the left of the luggage compartment depending on the equipment version.

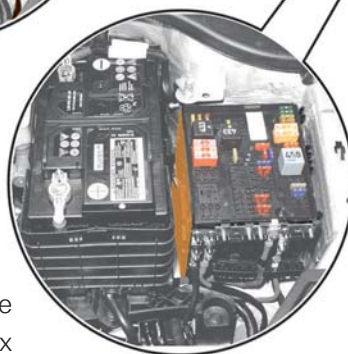
Fuse and relay box, left of engine compartment



Back-up fuse box on left of engine compartment



Additional relay carrier under the fuse and relay box





Networking Concept

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

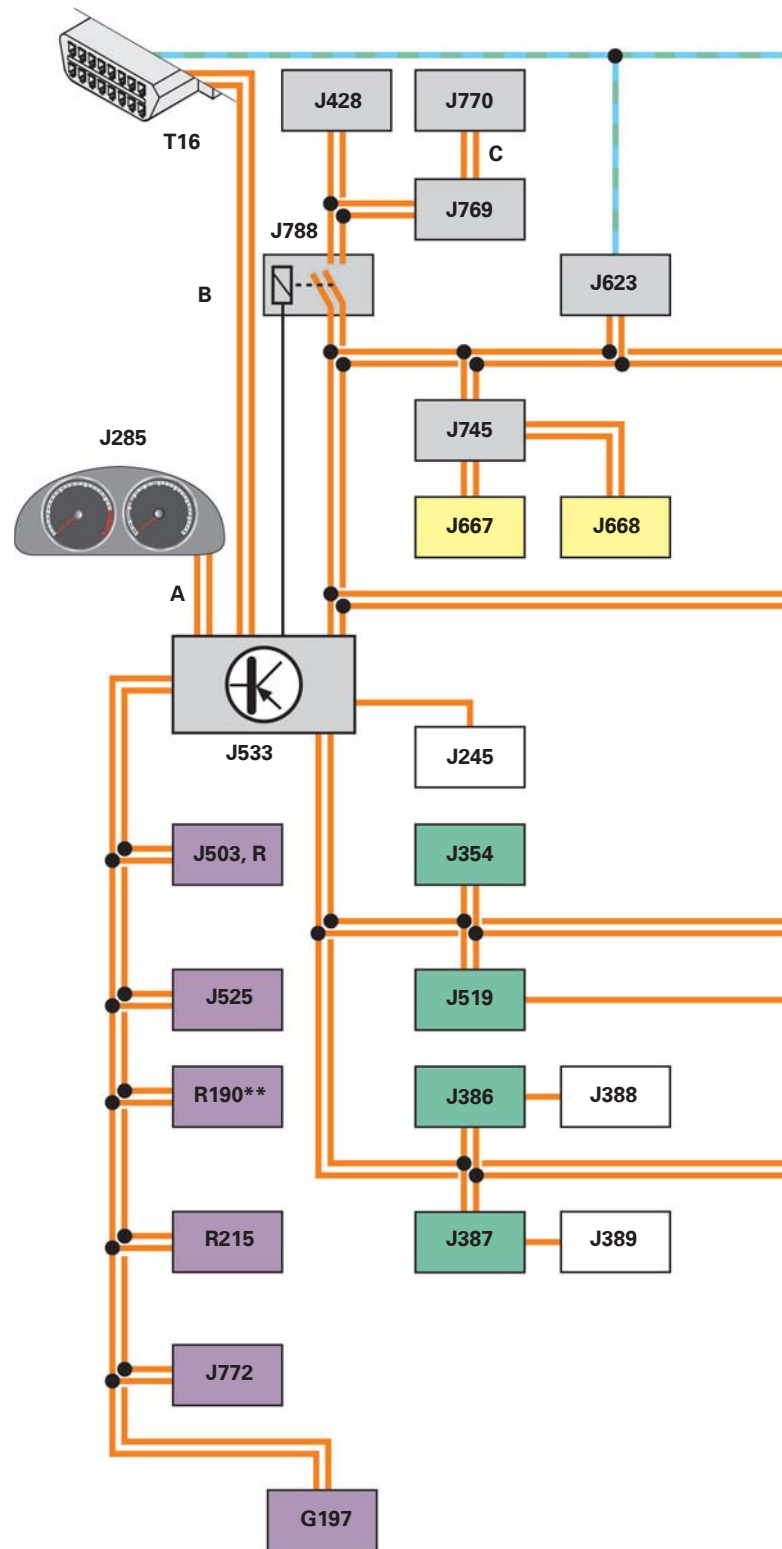
- Powertrain CAN data bus
- Convenience CAN data bus
- Infotainment CAN data bus
- Cluster CAN data bus
- Diagnostics CAN data bus

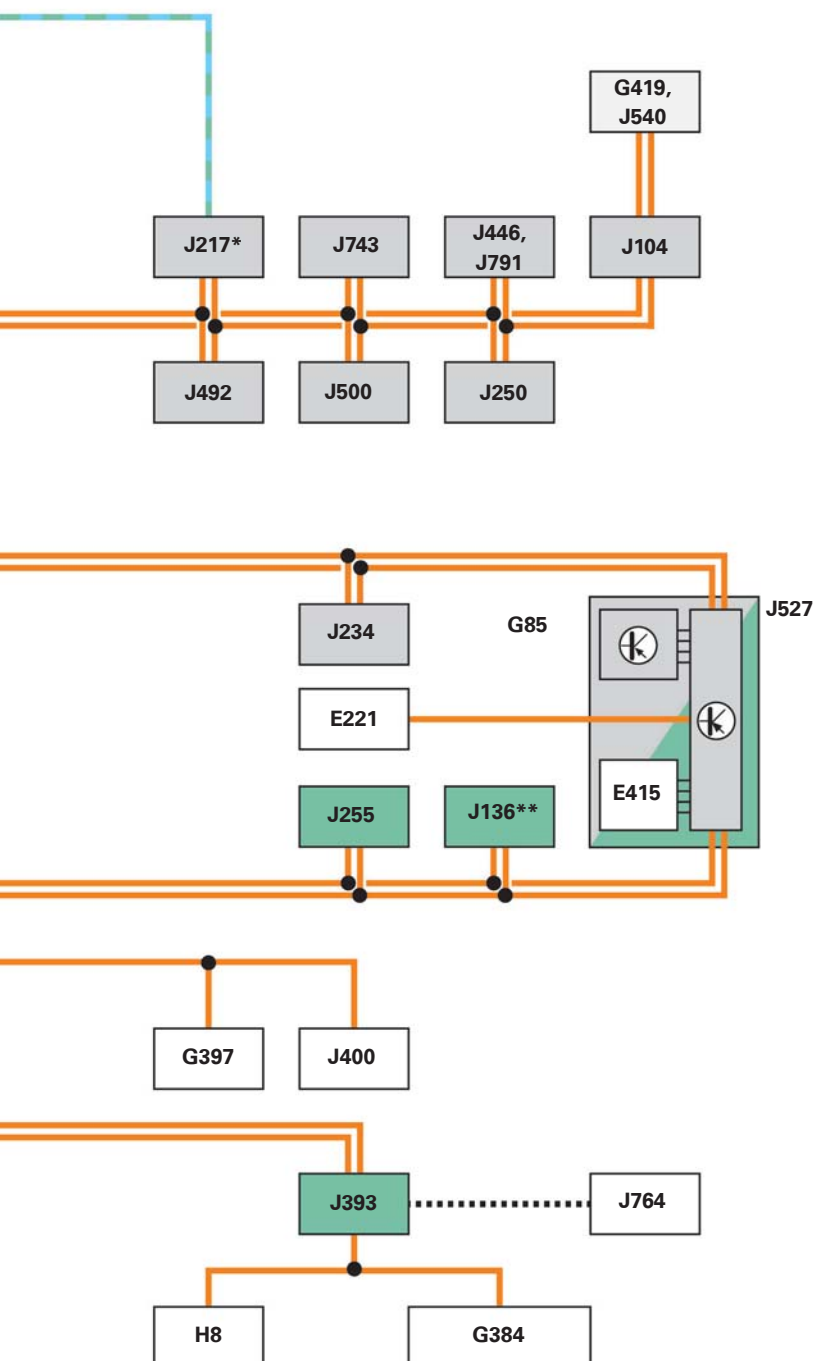
The following data bus systems are connected downstream of a CAN data bus system as sub-bus systems:

- LIN data buses
- Sensor CAN data bus
- Cornering light CAN data bus
- Lane change assist CAN data bus
- Serial data bus

Legend

	Powertrain CAN data bus
	Convenience CAN data bus
	Infotainment CAN data bus
	Sensor CAN data bus
A	Cluster CAN data bus
B	Diagnostics CAN data bus
C	Lane change assist CAN data bus
	Cornering light CAN data bus
	LIN data bus
	CAN data bus line
	LIN data bus line
	Communications line
	Serial data bus cable





Control Module List

E221 Control module in steering wheel
 E415 Access/start authorization switch
 G85 Steering angle sensor
 G197 Magnetic field sensor for compass
 G384 Vehicle inclination sensor
 G397 Rain/light recognition sensor
 G419 ESP sensor unit
 H8 Alarm horn
 J104 ABS control module
 J136** Memory seat/steering column adjustment control module
 J217* Transmission control module (TCM)
 J234 Airbag control module
 J245 Power sunroof control module
 J250 Electronic damping control module
 J255 Climatronic control module
 J285 Instrument cluster control module
 J345 Towing recognition control module
 J386 Driver door control module
 J387 Front passenger door control module
 J388 Left rear door control module
 J389 Right rear door control module
 J393 Comfort system central control module
 J400 Wiper motor control module
 J428 Distance regulation control module
 J446 Parking aid control module
 J492 All-wheel drive control module
 J500 Power steering control module
 J503 Radio/Navigation display unit control module
 J519 Vehicle electrical system control module
 J525 Digital sound system control module
 J527 Steering column electronic systems control module
 J533 Data bus on board diagnostic interface
 J540 Electro-mechanical parking brake control module
 J623 Engine control module (EDM)
 J667 Left headlamp power output stage
 J668 Right headlamp power output stage
 J743 Direct shift gearbox (DSG) mechatronic
 J745 Headlamp range/cornering lamp control module
 J764 Electronic steering column lock control module
 J769 Lane change assistance control module
 J770 Lane change assistance control module 2
 J772 Rear view camera system control module
 J788 Powertrain CAN-bus cut-off relay
 J791 Parallel parking assistance control module
 R Radio
 R190 Digital satellite radio tuner**
 R215 External multimedia device interface
 T16 16 pin connector

* With automatic gearbox only

**Only North American region (NAR)

Glossary

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 and 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).

MP3

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

NAR

North American Region

LF

Low frequency

RDS

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

SD

Secure Digital card
Small and robust memory cards, e.g. for digital photo, 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

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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Knowledge Assessment

An on-line Knowledge Assessment (exam) is available for this Self-Study Program.

The Knowledge Assessment may or may not be required for Certification.

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For Assistance, please call:

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Certification Program Headquarters

1-877-491-4838

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Volkswagen Group of America
2200 Ferdinand Porsche Drive
Herndon, VA 20171
October, 2008

