

Service Training



Self-Study Programme 468

The Jetta 2011

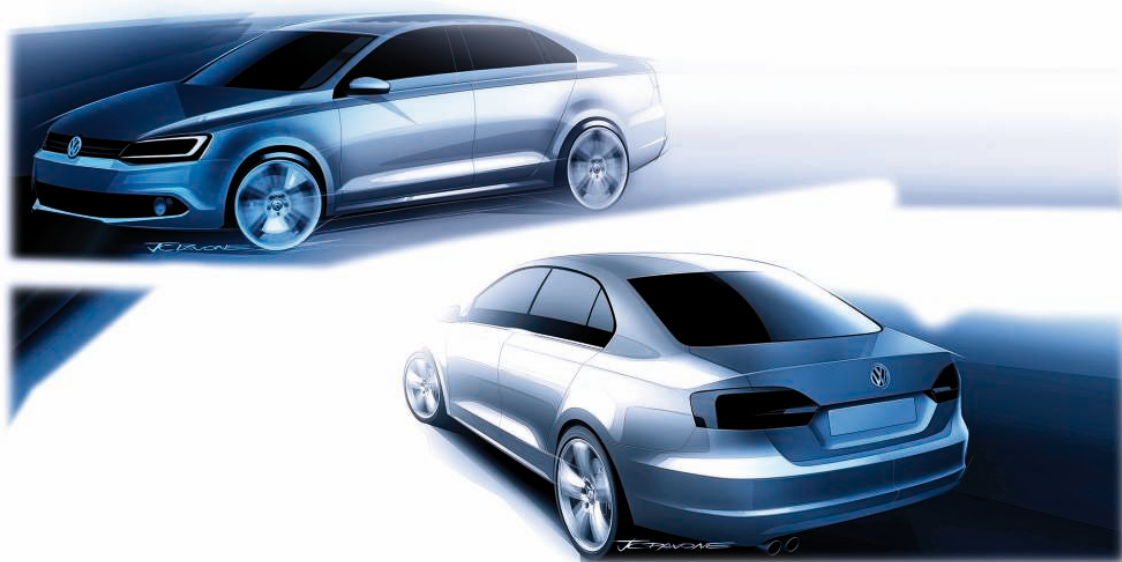


JETTA



The Jetta 2011 – Design – Technology – Comfort

The Jetta, model year 2011, will be launched first in the USA, Canada, Mexico and continues the success story of its predecessor. It successfully pursues the modern design style of the Volkswagen Group in combination with state-of-the-art technology and a high level of comfort. With its balanced relationship between technical equipment and convenience features, it is excellently equipped for a wide range of different market and customer requirements.



S468_002

The features of the new Jetta:

- Elegant design, for the new front and rear ends, with newly designed headlights and rear lights
- High quality level
- Good handling
- Optimised body structure
- Increased vehicle width and length and thus significantly larger and more spacious interior
- Excellent vehicle dynamics
- Newly optimised running gear



Separate self-study programmes are available on the following current topics:

- Self-study programme 308 “The Direct Shift Gearbox 02E”
- Self-study programme 403 “The 2.0 I /TDI Engine with Common Rail Injection System”

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

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



Attention Note



In brief	4
Body	10
Occupant protection	16
Engines	18
Power transmission	23
Running gear	24
Electrical system	34
Heating and air conditioning	42
Radio, telephone and navigation	44



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Where will the Jetta 2011 be produced?

The Jetta 2011 will be produced in Volkswagen's Puebla plant in Mexico.



S468_047



The Puebla plant

This plant started operation in 1964 with the production of the Volkswagen Beetle.

Around 14,000 staff members are currently employed in Puebla; amongst other vehicles, they produce the New Beetle and the Jetta.

These were joined by the new Golf Estate in 2007. In some markets, the Golf Estate will also be marketed under the name Jetta Sportwagen.

The above will now also be joined by the Jetta 2011, which will replace the previous model.



S468_049



S468_048

... Modern clocked assembly lines ...



S468_053

At the plant in Puebla with its highly modern equipment, a consistently high quality standard is ensured.

In Puebla, the engineers were thoroughly trained in both the preparation and development of the new Jetta and in the preparation of actual production.

A high product quality is ensured by modern clocked assembly lines in combination with a corresponding modular production strategy.

The plant is thus among Volkswagen's leading production plants.

The Jetta 2011 will be built on the production systems which are already in place for the Jetta's previous model.



S468_054





The Jetta 2011

The Jetta 2011 sets the standards in many areas of its class, e.g. in terms of:

- Safety
 - Design
 - Quality
 - Handling
 - Ride comfort
 - Spaciousness
 - Functionality
- Seat occupancy recognition on the front passenger seat* (capacitive principle)

- New headlight design

- Side marker lamps integrated in the headlights

- Optional driver seat with 2 position settings (manual)*

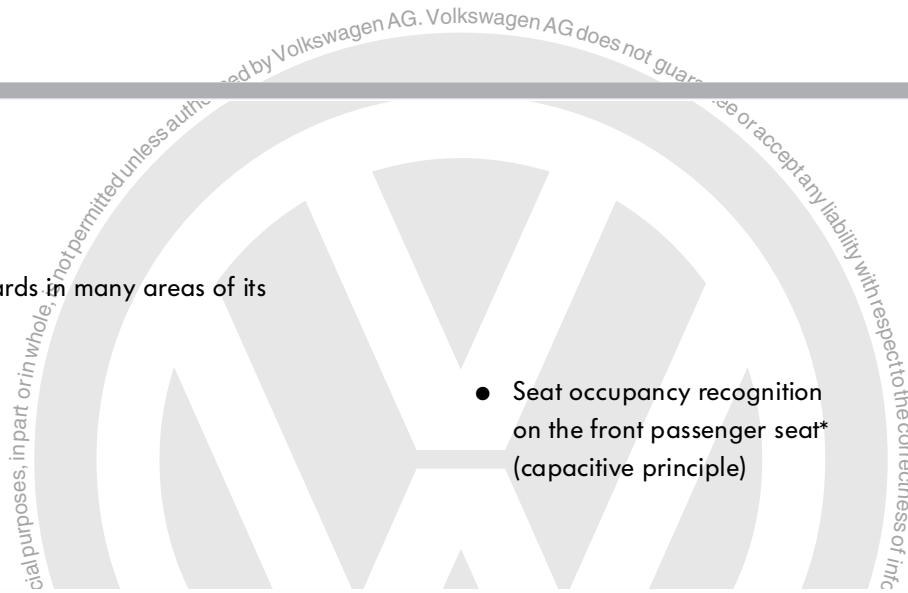
- Optimised front axle with subframe and wishbones made of steel

- Electronic stabilisation programme ESP MK60*

- Anti-lock brake system MK70

- New tyre pressure monitor*

- Hydraulic power steering or electromechanical power steering (depending on the model)





- Optionally equipped with the “Keyless Access” locking and start system – for starting with “Engine” start button*

- Aerial concept – radio aerials in the rear window, navigation system aerial (GPS) and aerial for satellite tuner (SAT) in the roof aerial

- Actuation of the central locking system also at the rear seats via switch at the end of the centre console

S468_055

- New rear light design

- Optional sound system*

- Rear axle as twist-beam rear axle

- Increased front and rear track widths ensure significantly better vehicle dynamics

- Equipped with heating*, with manual air conditioning* or with semi-automatic heating and “Climatic” air conditioner**

* for USA and Canada

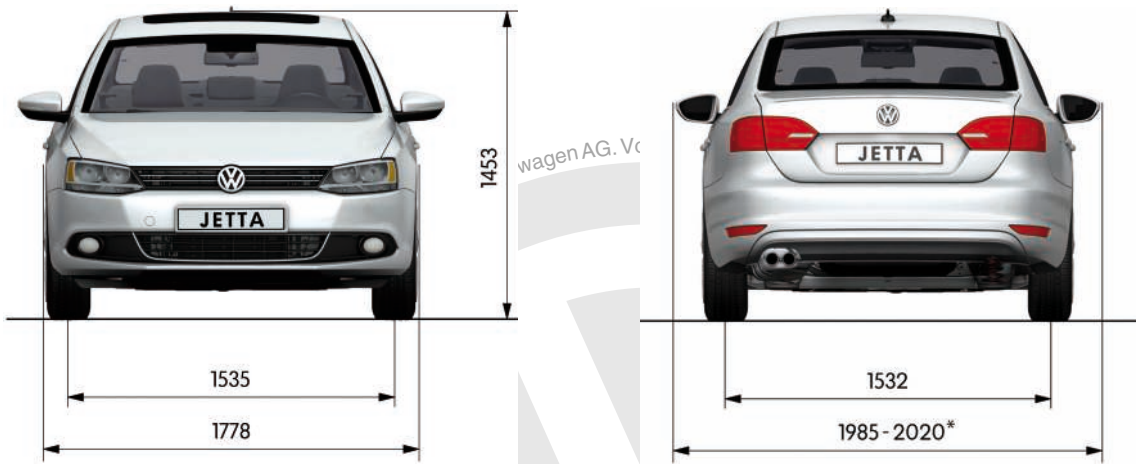
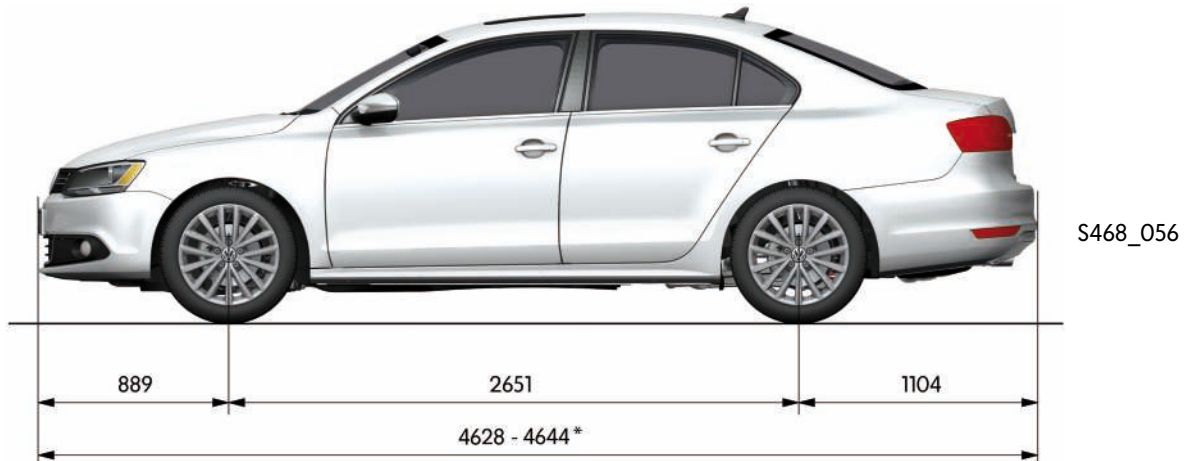
** for Mexico

In Brief



Technical data

Jetta 2011



The dimensions given in the pictures are in mm.

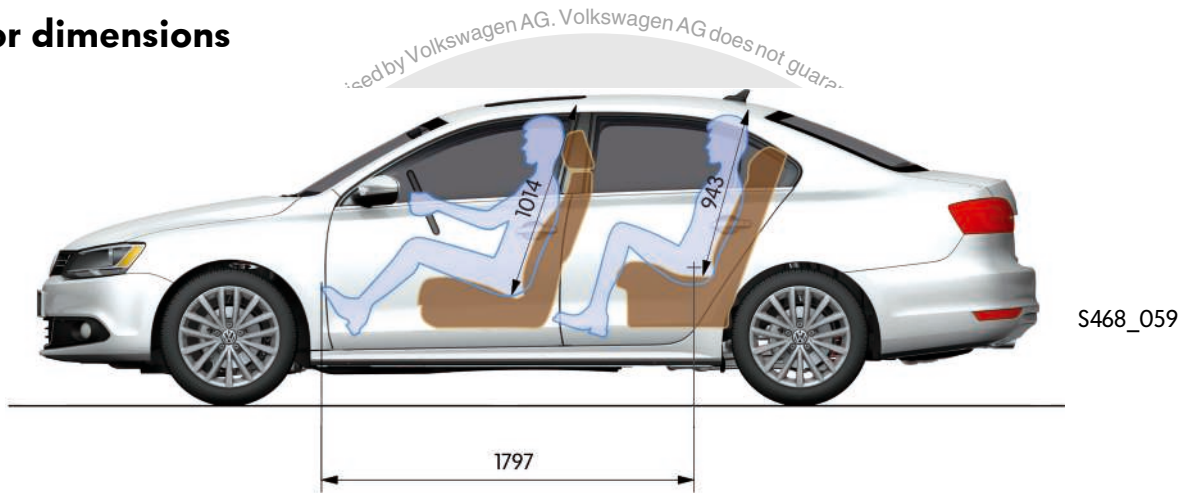
Length	4628–4644 mm*
Width	1778 mm
Width with exterior mirrors	1985–2020 mm*
Height	1453 mm
Wheelbase	2651 mm

Track width at front	1535 mm
Track width at rear	1532 mm
Kerb weight	1272–1464 kg*
Permissible gross vehicle weight	1820–1950 kg*
Drag coefficient	0.3 C _d

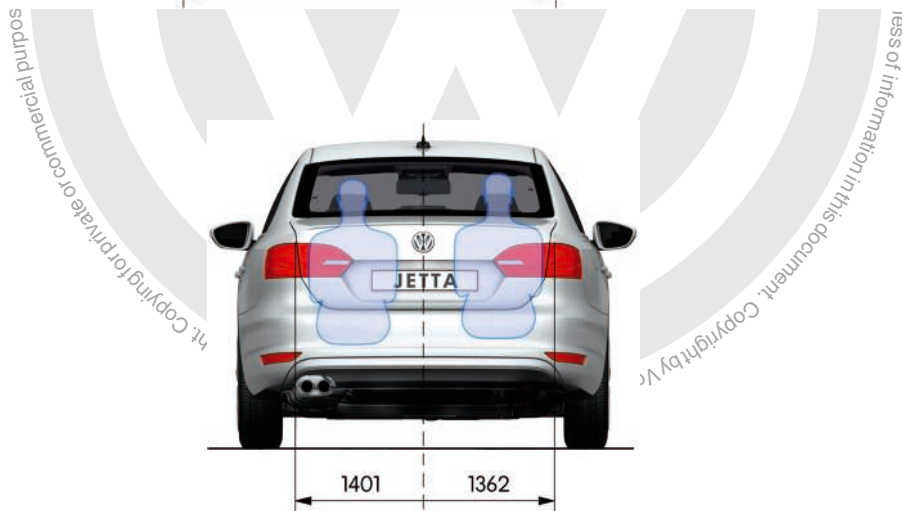
* may vary, depending on the model equipment



Interior dimensions



S468_059



S468_061

The dimensions given in the pictures are in mm.

Front headroom	1014 mm*
Rear headroom	943 mm*
Interior length	1797 mm
Driver width at shoulder height	1401 mm
Front passenger width at shoulder height	1362 mm

Tank capacity	55 litres
Luggage compartment volume	510 litres

* may vary, depending on the model equipment

Body structure

The body structure of the Jetta 2011 has been consistently developed – in particular in terms of the requirements concerning:

- Lightweight construction
- Vehicle safety
- Sportiness
- Comfort
- Quality

A significant reduction in weight has been achieved compared to the previous model. At the same time, the new body structure also offers a high degree of crash safety and a superior body rigidity compared to the competition. This new weight reduction supports the efforts of the Volkswagen Group to reduce CO₂ emissions.

Lightweight construction

The lightweight objectives were fulfilled due to:

- Optimum use of ultra-high-strength and hot-formed steel
- Reduction of the steel thickness
- Sophisticated design according to optimised calculation

The generally accepted trend that “large and comfortable vehicles are heavyweights” has been convincingly disproved.

The weight reduction measures can be split up into three groups:

- The main part of the reduction results from the extensive use of hot-formed parts in the floor structure, the B-pillar and the roof frame.
- Another important measure is the reduction in thickness of the material of body parts exposed to smaller loads, such as the body shell parts – without any loss of the performance characteristics.
- The third measure is the consistent implementation of the positive effects of weight reduction in the body design. For example, weight can be saved by clean profiles and minor reinforcements at the “correct points”.



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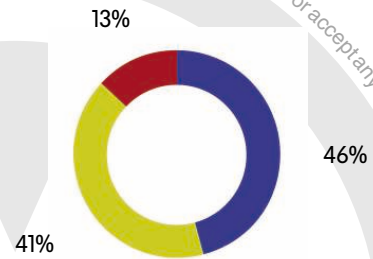


Material grades and their distribution in the body structure

Strength of the steel panels

- ≤ 220 MPa
- ≤ 420 MPa
- > 1000 MPa

Percentage of steel panels according to strength (see legend above)



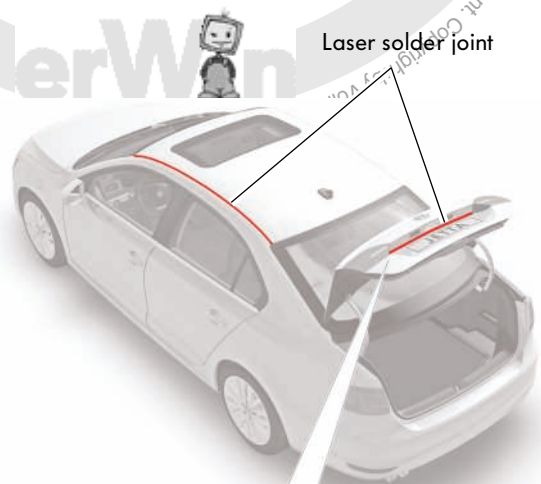
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Welding method

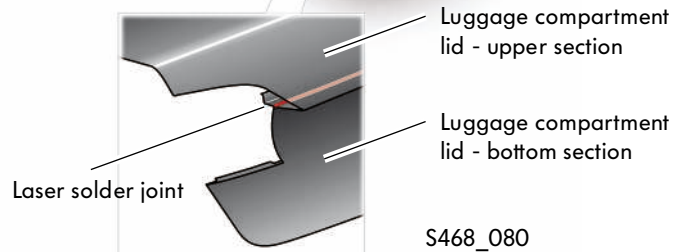
To join the body components, the established spot welding method is generally used.

Laser soldering

Laser soldering is applied on the roof to join the side parts to the roof and on the luggage compartment lid at the vertical panel of the rear end.



Laser solder joint



S468_080



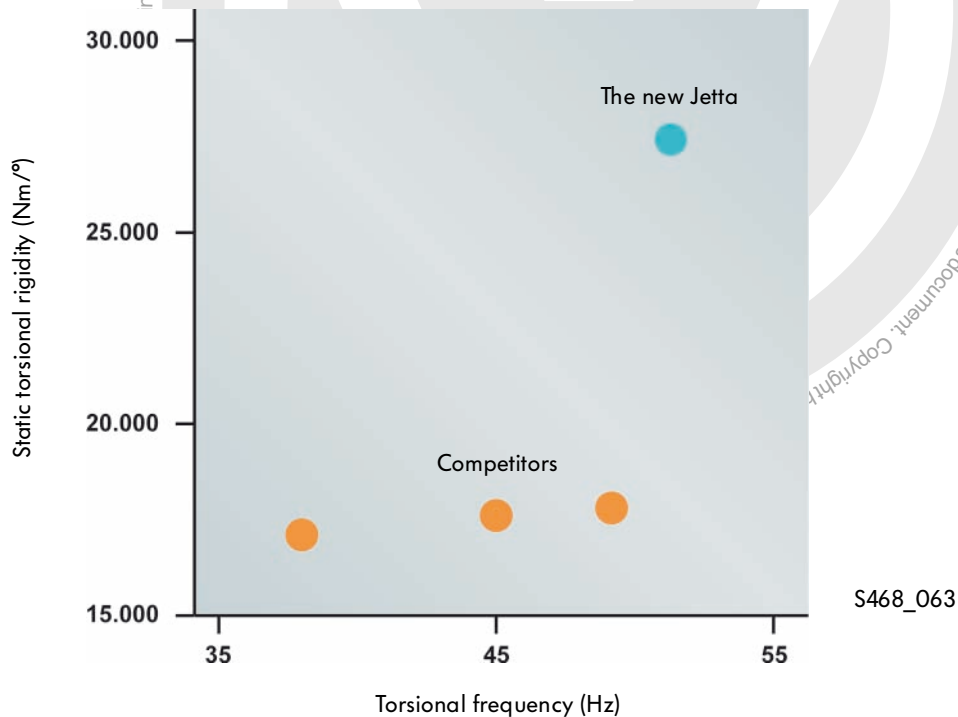
Body

Body rigidity

With its especially rigid body design, the body structure of the new Jetta 2011 meets the high demands in terms of acoustic and vibration performance.

This has been achieved by:

- The systematic design of the nodes and force transmission points
- Optimum use of the available installation space of the consistent three-part structure – the passenger compartment is thus enclosed by computer-optimised body profiles



The body structure of the Jetta 2011 is characterised by an outstanding static torsional rigidity – the same also applies to its dynamic rigidity.

The Jetta 2011 is thus far superior to its competitors in this context.

In particular, the acoustics, the vibration performance and the excellent ride comfort of the new Jetta benefit from this high body rigidity.

Crash-safe body design

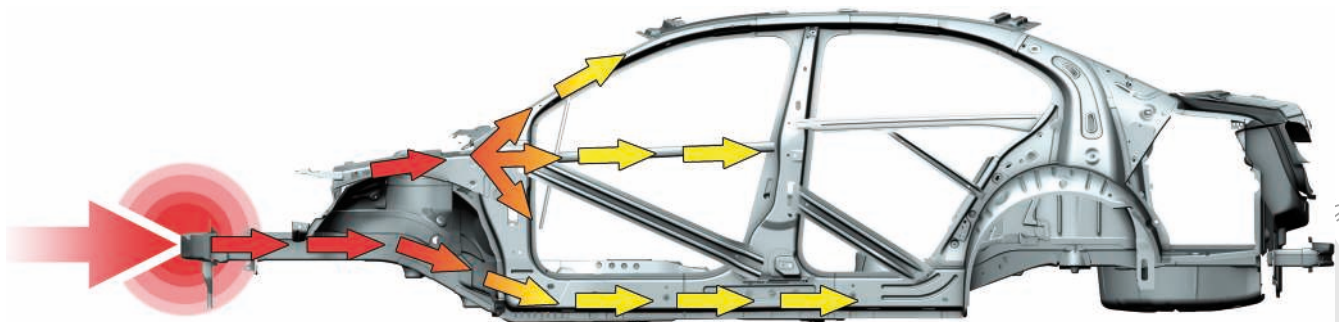
An important focus of development work was that the measures for increasing the body rigidity always also ensure a high degree of crash safety.

In combination with the lightweight design, a special mix of materials has been used. Materials with either a low or a high resistance to deformation are applied specifically to appropriate sections of the bodywork.

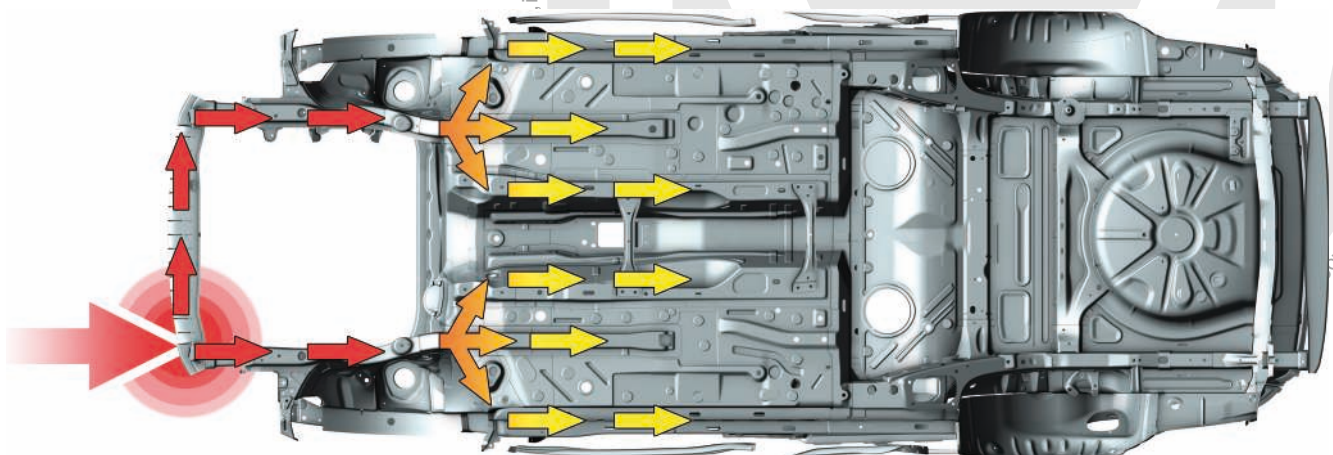
Specially coordinated force transmission paths and energy-absorbing deformation zones were created in the body design. This ensures targeted force transmission in the event of a crash.

The body has been designed in such a way as to ensure optimum force transmission in the event of front, side and rear impact.

The two figures illustrate the transmission of force in the event of a front impact.



S468_064



S468_065



Body

Features

The Jetta 2011 has a body with completely new outer contours that ideally meet market-specific requirements.

Front seats

The front seats are equipped with safety-optimised head restraints.
2-way lumbar support is available as an option.

Bonnet

The Bowden cable for opening the bonnet is installed in the engine compartment and protected from access.

Space concept

The larger vehicle interior offers a completely new sense of space – this is achieved by an increased vehicle length, larger wheelbase and increased interior widths.

The lowered beltline offers a more generous sense of space especially at the rear.

The luggage compartment has large dimensions – it has a lowered load sill and a wider loading area.

Headlights

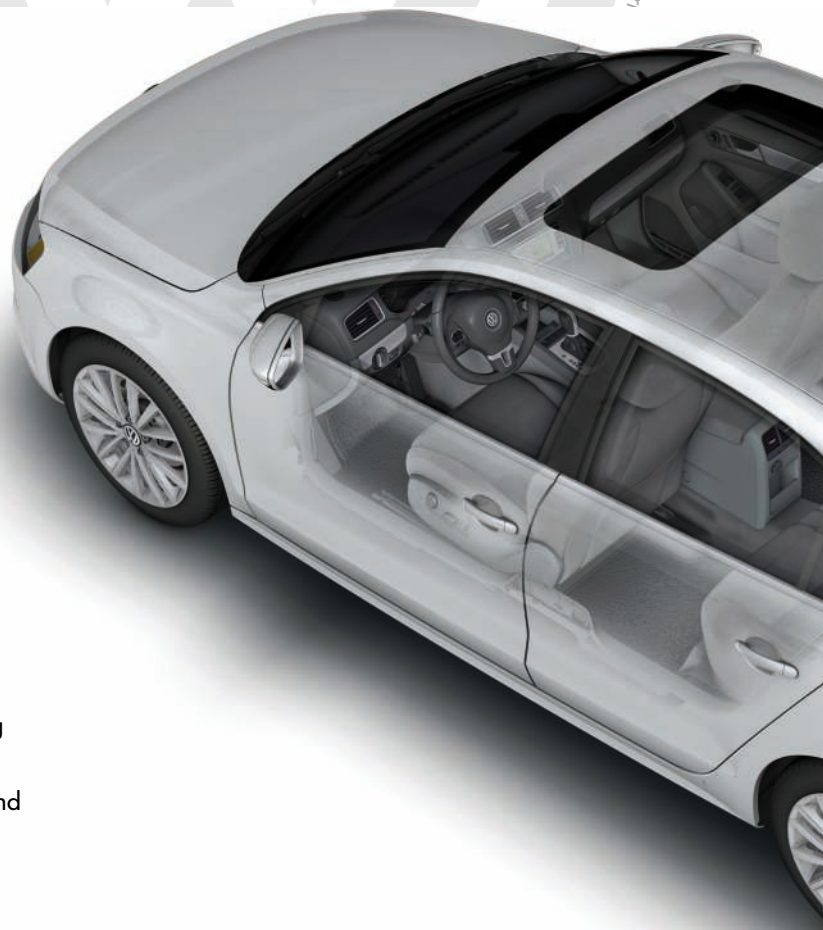
The headlights on the Jetta 2011 are designed using clear glass technology. Side marker lamps are integrated into the headlamps on the outside left and right. Daylight driving lights and indicators are still located under the dipped beam and main beam headlights.

Doors

The doors of the Jetta 2011 have a conventional design. A side impact bar is installed in each door.

Roof

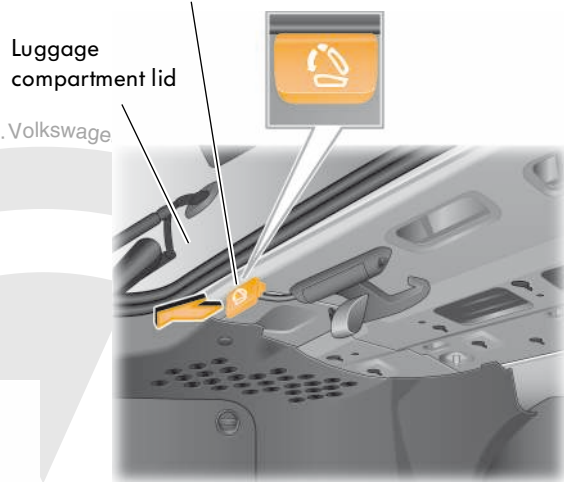
Depending on the equipment, a sliding sunroof is installed and the aerial for GPS (navigation system aerial) and for SAT (satellite tuner aerial) is mounted, at the rear end of the roof.



Rear seat bench

The rear seat bench is split 60 : 40 and can be folded. The release mechanism for folding down the two halves of the rear seat bench can be actuated at the rear, in the luggage compartment.

Actuation for releasing the rear seat bench (releasing of the left half of the rear seat bench is illustrated)



S468_041

Rear window

The aerials for radio reception are integrated into the rear window.

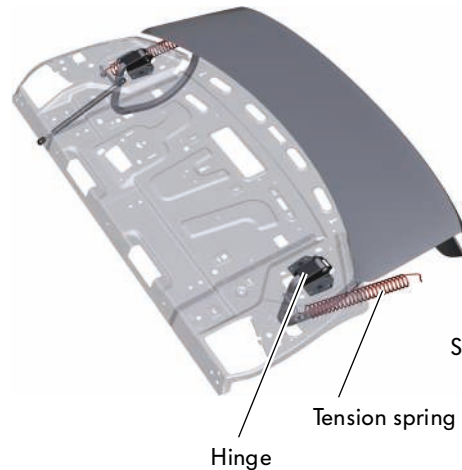


S468_066

Luggage compartment lid

The luggage compartment lid is opened from the outside using a micro button in the rear lid handle. The rear lid lock is equipped with an emergency release mechanism. It consists of a swivel plate that needs to be turned from the inside of the luggage compartment to open the rear lid.

The luggage compartment lid has a completely new hinge concept with a new hinge and tension springs at the sides. The automatic full opening of the luggage compartment lid is thus enabled with significantly reduced closing forces.



S468_082

Rear lights

The Jetta 2011 has two-piece rear lights.



Occupant protection

Safety equipment

The Jetta 2011 is fitted with the following primary safety equipment:

- Driver airbag
- Front passenger airbag
- Front side airbags
- Curtain airbags for front and rear occupants
- Belt tensioners and belt force limiters for the front seats



- Top Tether

Depending on the specific market, the Jetta 2011 is equipped with the Top Tether system.

The Top Tether system serves to secure a child seat more firmly by means of an additional upper belt on the child seat that is attached to corresponding retainers on the rear shelf.



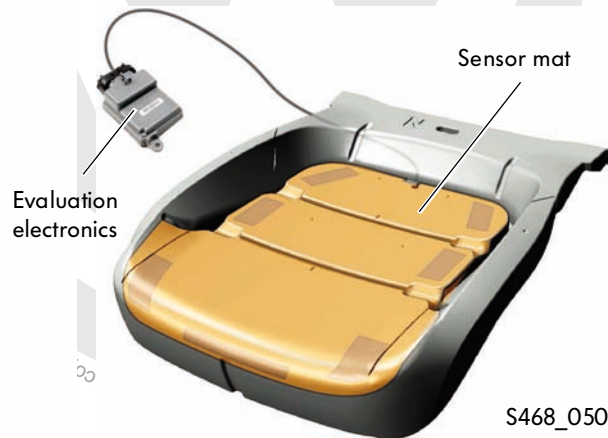
S468_033

- Sensors for front and side crash detection are mounted in the front end, in the front doors and in the vicinity of the C-pillar.

- Capacitive seat occupancy recognition (market-specific)

A new system will be installed in the Jetta 2011 for seat occupancy detection in the USA and in Canada. The system uses sensors based on a capacitive principle of operation.

The sensor system consists of a sensor mat with evaluation electronics.



S468_050

- The outer rear seats are equipped with Isofix attachment points

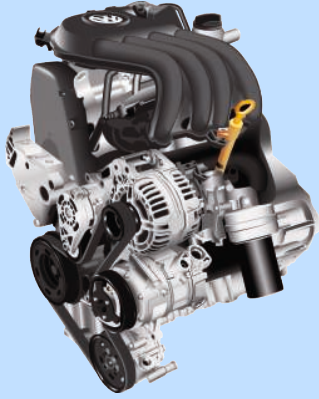
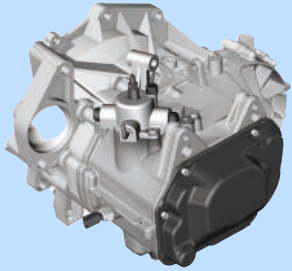

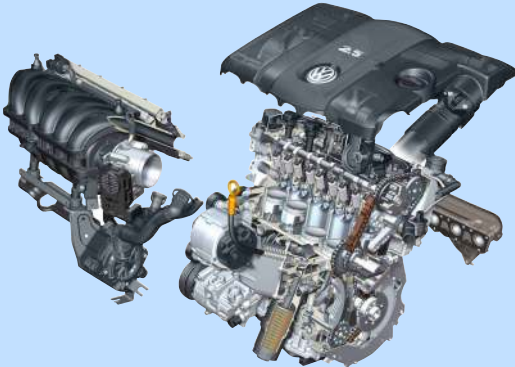
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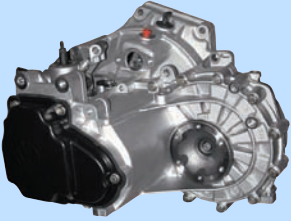



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Engines

Engine/gearbox combinations

Petrol engine	5-speed manual gearbox MQ200-5F 0AF
Diesel engine	
 <p>2.0 l / 85 kW petrol engine with 2-valve technology (engine for USA and Canada)</p>	
 <p>2.0 l / 103 kW TDI common rail engine</p>	
 <p>2.5 l / 125 kW petrol engine with 4-valve technology</p>	

5-speed manual gearbox MQ250-5F 0A4	6-speed manual gearbox MQ350-6F 02Q	6-speed automatic gearbox AQ250-6F 09G	6-speed dual clutch gearbox DQ250-6F DSG 02E
			
			
			

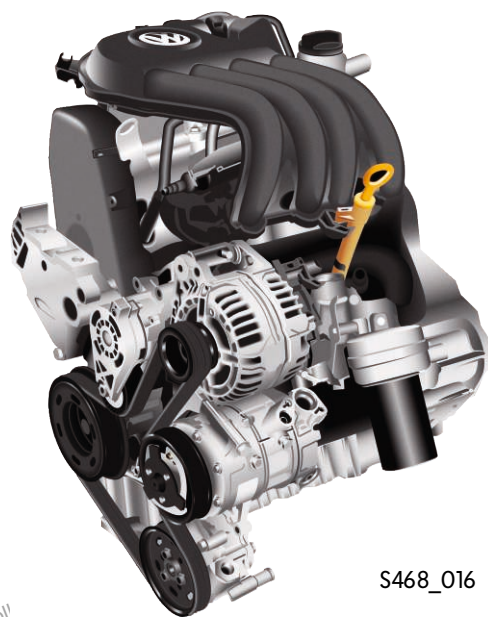


The 2.0 l / 85kW petrol engine

The 2.0 l / 85 kW petrol engine has been adapted according to the installation position for fitting in the Jetta 2011.

Technical features

- Single-piece plastic intake manifold, with integrated Volkswagen logo as design cover
- Ancillary drive for hydraulic power steering
- Pistons optimised to minimise oil consumption
- New throttle valve module generation
- Electrically heated crankcase breather

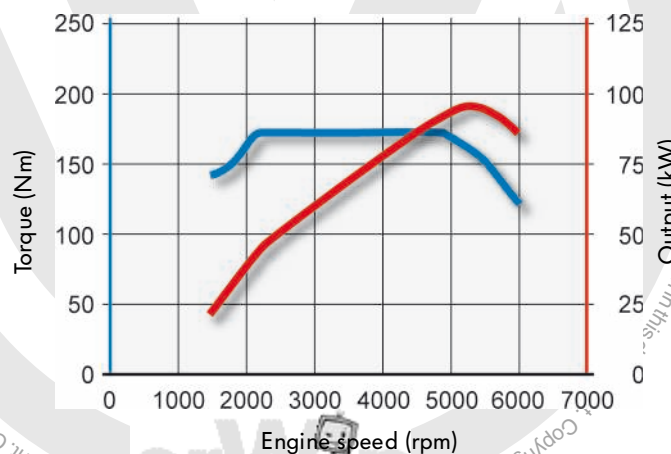


S468_016

Technical data

Engine code	CBPA
Type	4-cylinder in-line engine
Displacement	1981 cm ³
Bore	82.5 mm
Stroke	92.8 mm
Valves per cylinder	2
Compression ratio	10.3 : 1
Maximum output	85 kW at 5200 rpm
Maximum torque	170 Nm at 4000 rpm
Engine management	Bosch Motronic ME 17.5.6
Fuel	Premium unleaded RON 95 according to DIN EN 228
Exhaust gas aftertreatment	Probe before catalytic converter: linear lambda probe, probe after catalytic converter: transient probe
Emissions standard	BIN5/ULEV 2* EU4**

Torque and power diagram



S468_017

- * USA/Canada
- ** Argentina

The 2.0 l / 103kW CR TDI engine

The 2.0 l / 103kW CR TDI engine with common rail injection system was used for the first time in the Tiguan.

Technical features

- Common rail injection system with piezo injectors
- Diesel particulate filter with upstream oxidising catalytic converter
- Intake manifold with swirl flap adjustment
- Electric exhaust gas recirculation valve
- Adjustable turbocharger with travel feedback
- Low-temperature exhaust gas recirculation cooling



S468_018

* For the USA and Canada, this engine has been further developed to ensure compliance with the strict emissions limit values of emissions legislation BIN5/ULEV2. The engine has been internally adapted accordingly and an NO_x exhaust gas aftertreatment system has been added.

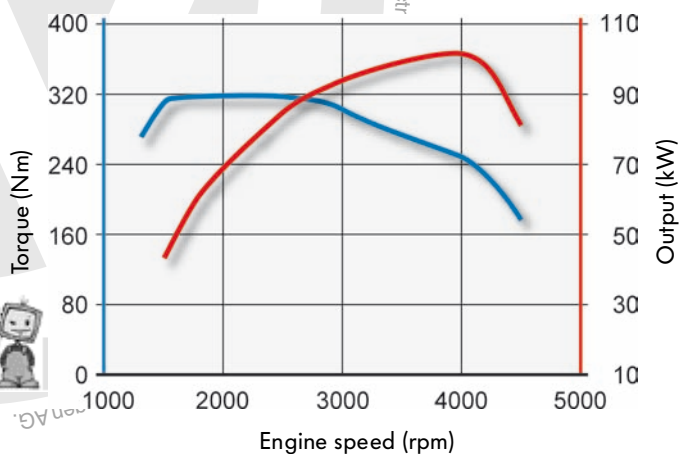


You will find further information on this engine in self-study programme No. 403 “The 2.0 l TDI Engine with Common Rail Injection System”.

Technical data

Engine codes	CJAA*, CLCB**
Type	4-cylinder in-line engine
Displacement	1968 cm ³
Bore	81 mm
Stroke	95.5 mm
Valves per cylinder	4
Compression ratio	16,5 : 1
Maximum output	103kW at 4200 rpm
Maximum torque	320 Nm at 1750 to 2500 rpm
Engine management	Bosch EDC 17
Fuel	Diesel, EN590, AST M D 975 standard***
Exhaust gas aftertreatment	Exhaust gas recirculation, oxidising catalytic converter and diesel particulate filter, NO _x exhaust gas aftertreatment*
Emissions standard	BIN5/ULEV2*, EU4 **

Torque and power diagram



S468_019

** Mexico/Argentina – the engines use an EU4 concept without DPF for these markets

*** with a sulphur content of less than 15 mg/kg diesel fuel

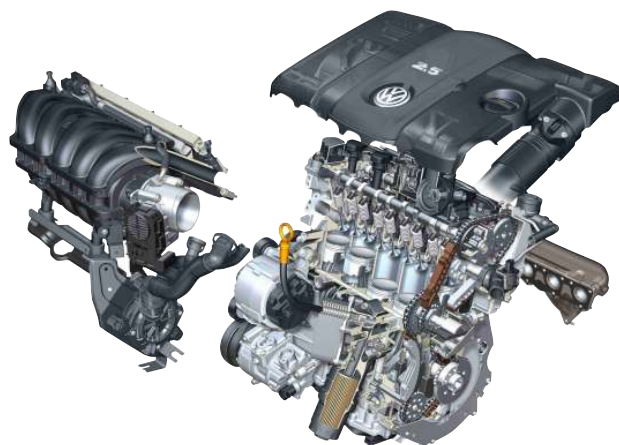


The 2.5 l / 125kW petrol engine

The 2.5 l /125kW petrol engine is already used in the Golf and Jetta for the North American market. It has been modified specifically for use in the Jetta 2011.

Technical features

- Governor oil pump with 2 pressure levels, controlled externally via engine control unit – for reducing fuel consumption
- New sensors for oil pressure for controlling the oil pump – low oil pressure signal sent directly to engine control unit, high oil pressure signal via dash panel insert (CAN)
- SULEV with secondary air system
- BIN5/TIER2 without secondary air system
- Modified torque and power curves
- Optimised 5-in-1 exhaust manifold (shell design) – one lambda probe in the exhaust manifold
- Single-mass flywheel in conjunction with OA4 gearbox (250)

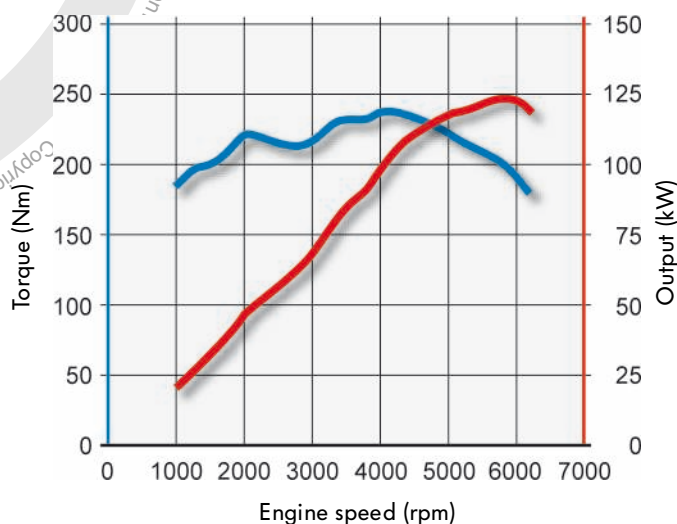


S468_020

Technical data

Engine codes	CBTA**, CBUA**, CCCA*/***
Type	5-cylinder in-line engine
Displacement	2480 cm ³
Bore	82.5 mm
Stroke	92.8 mm
Valves per cylinder	4
Compression ratio	9.5 : 1
Maximum output	125kW at 5700 rpm
Maximum torque	240 Nm at 4250 rpm
Engine management	Bosch Motronic ME 17.5.6
Fuel	Super unleaded RON 95
Exhaust gas aftertreatment	Primary and secondary catalytic converter lambda probes with constant lambda control
Emissions standard	EU4* BIN5/TIER2/SULEV** Norm 42 Standard B***


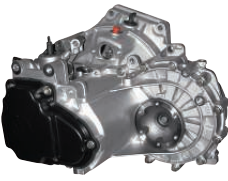



Torque and power diagram



S468_021

- * Argentina
- ** USA/Canada
- *** Mexico

Overview – Manual gearboxes – Automatic gearboxes

Manual gearbox	Technical features	see also ...
	<p>5-speed manual gearbox 0AF</p> <ul style="list-style-type: none"> • Developed from 02T gearbox • Housing reinforced, gearbox adapted to installation position • Without speedometer sender 	<p>Self-study programme 237</p>
	<p>5-speed manual gearbox 0A4</p> <ul style="list-style-type: none"> • Developed from 02J gearbox • Gearshift mechanism optimised, final drive reinforced, housing adapted • Without speedometer sender 	<p>Self-study programme 306</p>
	<p>6-speed manual gearbox 02Q</p> <ul style="list-style-type: none"> • Developed from 02M gearbox • Changes to selector shaft, selector forks with stops in housing, modified bearings • Without speedometer sender 	<p>Self-study programme 306</p>
Automatic gearbox	Technical features	see also ...
	<p>6-speed dual clutch gearbox 02E</p> <p>The 6-speed dual clutch gearbox 02E is equipped with a hydraulic dual clutch. It combines the advantages of a manual gearbox, such as high efficiency, robustness and sportiness, with the advantages of an automatic gearbox, such as high comfort, especially on changing gears. The Jetta already uses the 2nd generation gearbox with improved performance features – CO₂ emissions have also been reduced.</p>	<p>Self-study programme 308</p>
	<p>6-speed automatic gearbox 09G</p> <p>The 6-speed automatic gearbox 09G is a compact, lightweight, electronically controlled gearbox for transverse mounting.</p>	<p>Self-study programme 309</p>



Running gear

Running gear

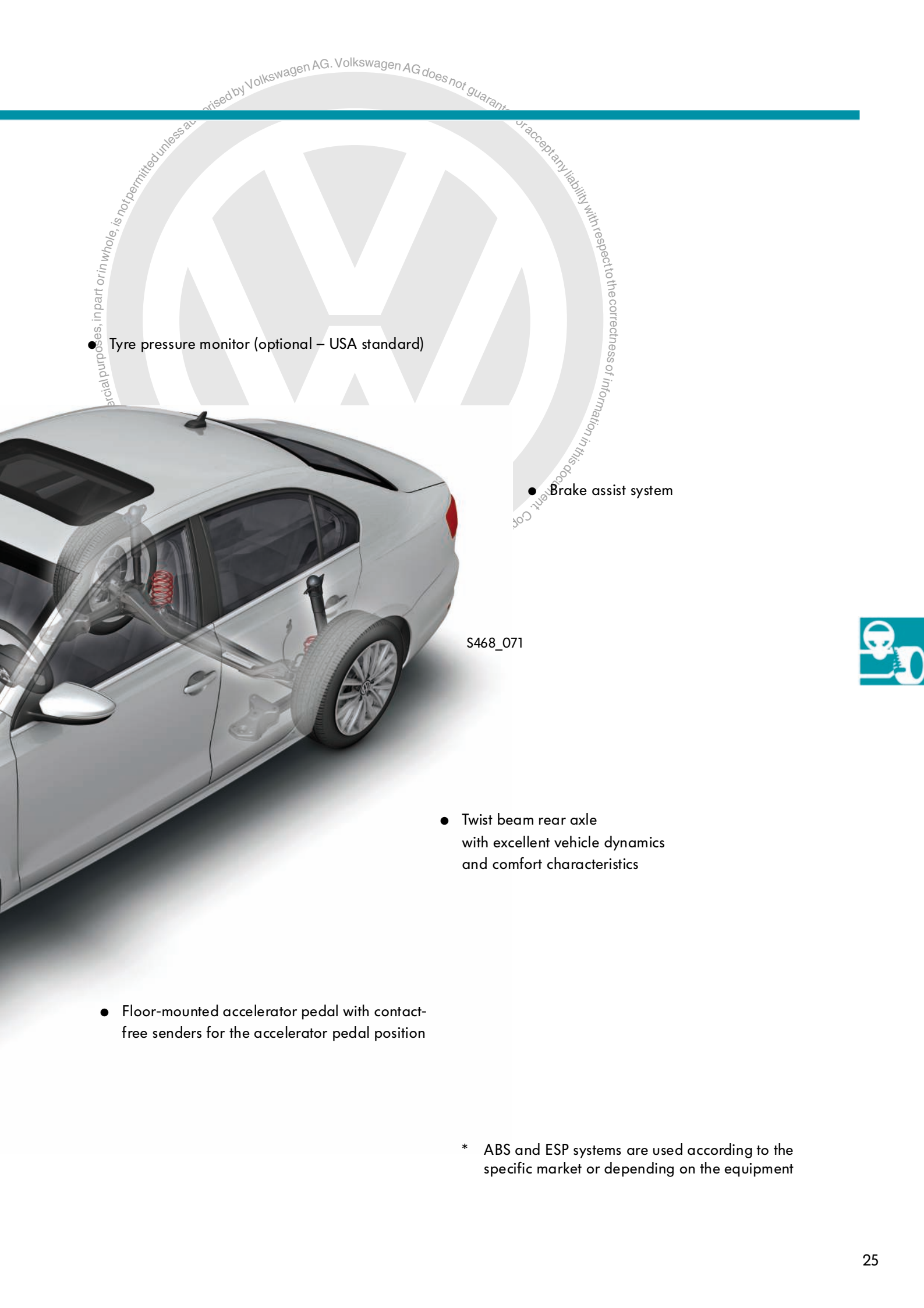
The running gear of the Jetta 2011 has been optimised, offering – like its predecessors – a high level of comfort and dynamics.

It has a modern McPherson strut front suspension.

The rear axle has been optimised and is designed as a twist beam axle.

- Anti-lock brake system based on the MK70 system from Continental Teves*
- Electronic stabilisation programme based on the MK60 system from Continental Teves*
- Electromechanical power steering for 2.0 l / 103 kW TDI engine
- Hydraulic power steering for 2.0 l / 85 kW engine
2.5 l / 125 kW engine for TDI engines
- Modern McPherson strut front suspension
- Brake servo with dual rate characteristic curve





- Tyre pressure monitor (optional – USA standard)

- Brake assist system

S468_071

- Floor-mounted accelerator pedal with contact-free senders for the accelerator pedal position

- Twist beam rear axle with excellent vehicle dynamics and comfort characteristics

* ABS and ESP systems are used according to the specific market or depending on the equipment

Running gear

Front axle

The structure of the front axle of the Jetta 2011 is identical to that of the front axle of the Golf 2009. Some details have been further developed and adapted for use in the Jetta 2011.

The technical features include:

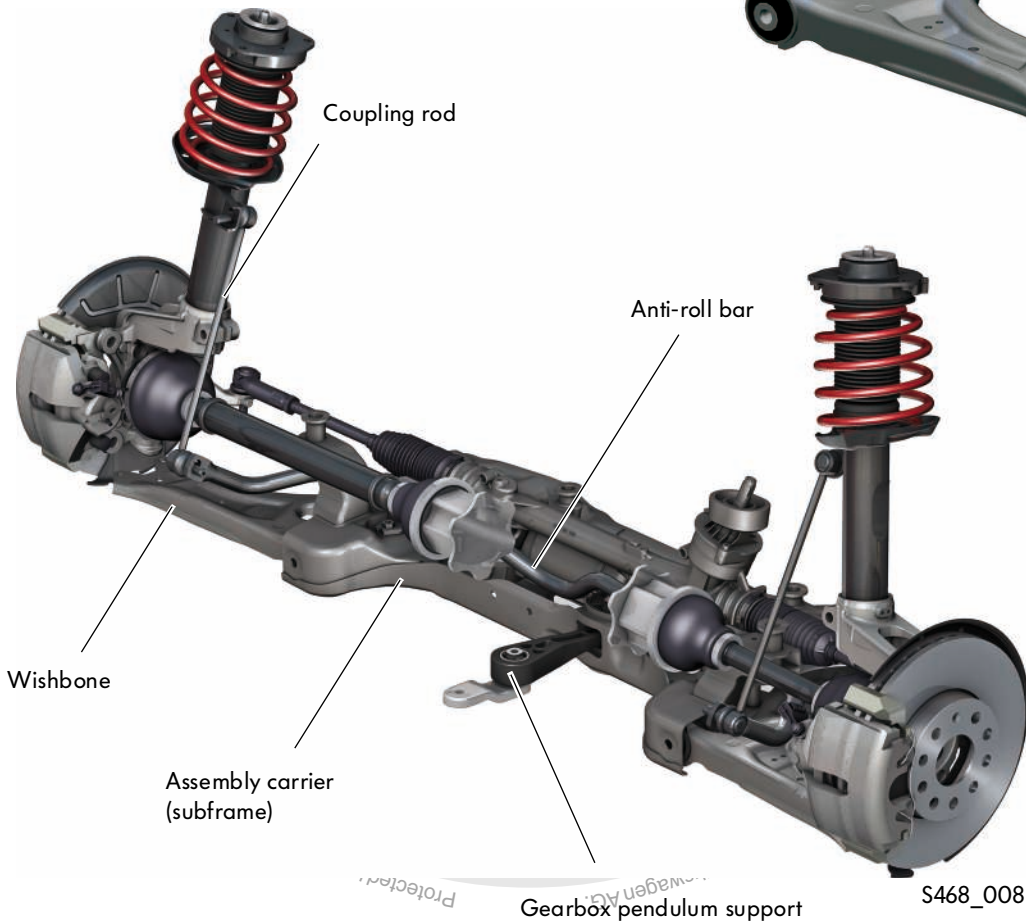
- Assembly carrier (subframe) made of sheet steel
- Wishbones, single shell, made of sheet steel
- Rear rubber-metal bearing with vertical axis

Wishbone, left (example)

Bonded rubber mounting
(vertical axis)



S468_081



S468_008

Front brakes

Disc brakes are used for the front axle.

Running gear

Steering

Two different steering systems are available in the Jetta 2011.

Hydraulic power steering

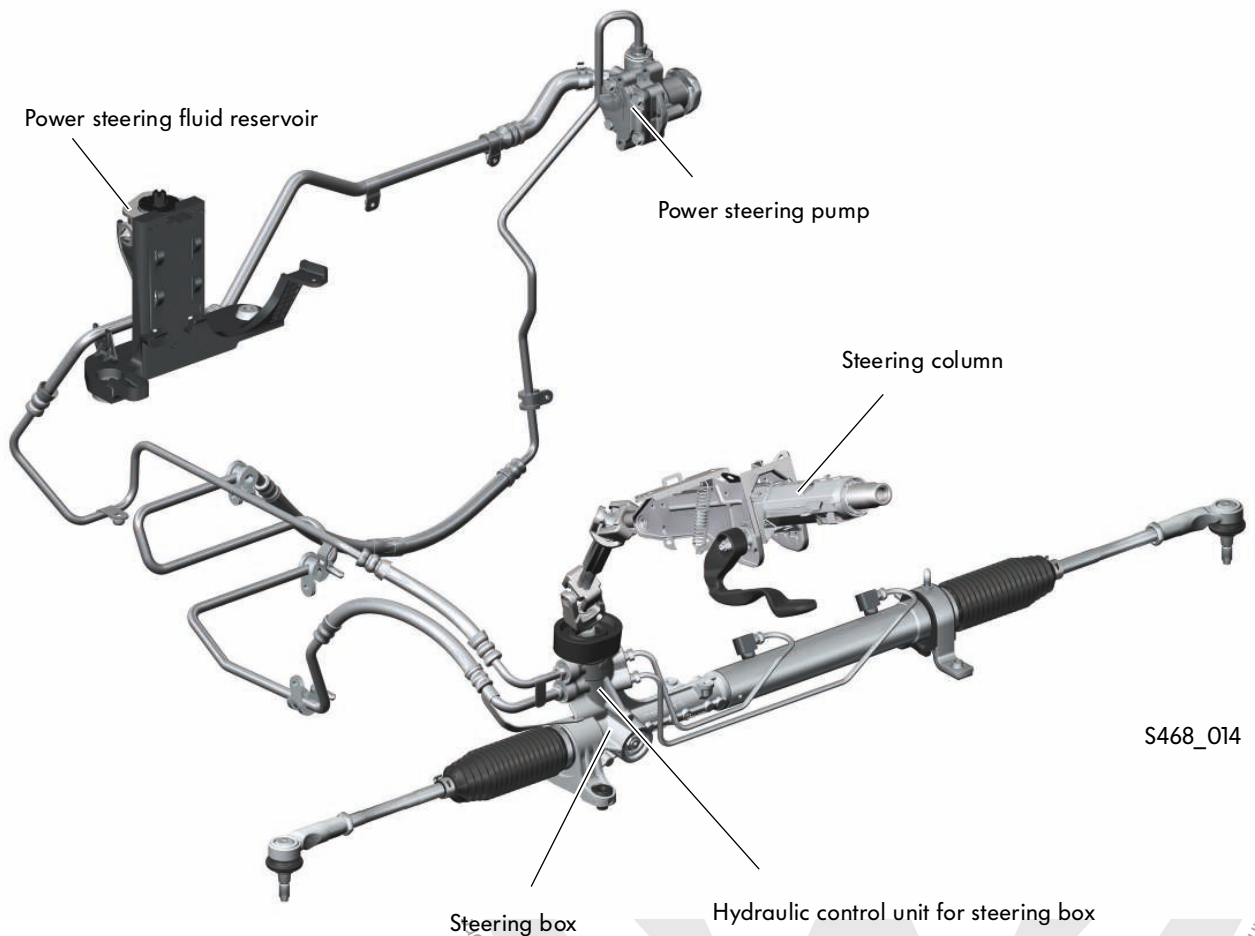
Available in combination with the 2.0 l / 85 kW and 2.5 l / 125 kW engines.

With this system, the steering assistance (servo effect) is generated by means of a hydraulic power steering pump mounted directly on the engine.

A power steering fluid reservoir is integrated into the power steering's hydraulic system.

The steering column is already used in the Golf 2009.

The steering system is installed specifically for each engine – the example illustrates a hydraulic power steering used with the 2.5 l / 125 kW engine.

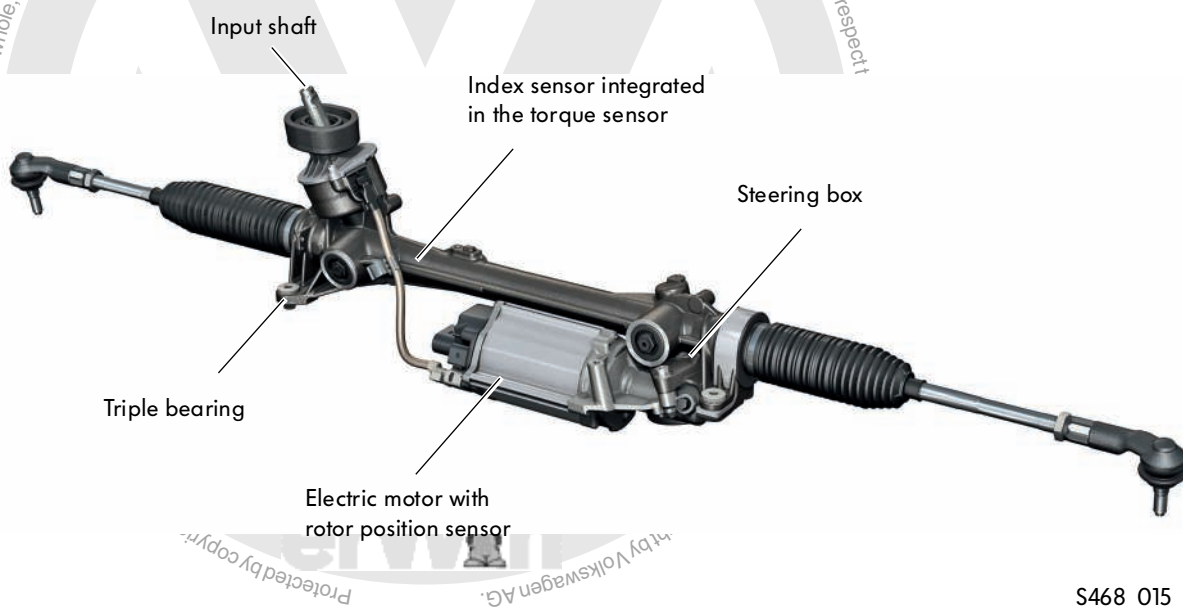


S468_014

Electromechanical power steering

Available in combination with the 2.0 l / 103 kW TDI engines.

The same steering column is used for the electromechanical power steering as for the hydraulic power steering.



The electromechanical power steering is already used in the Golf 2009.

It is an electromechanical power steering system with double pinions of the 3rd generation from ZF.

The essential features include:

- Integration of the steering angle sensor in the steering system – the steering angle sensor on the steering column control unit is thus no longer required
- Software expansion in the control unit, e.g. for steering angle sensor
- Triple bearing on the assembly carrier

Calculating the steering angle

With the 3rd generation electromechanical power steering, the vehicle's steering angle is calculated using the sensor signals recorded in the steering system from the rotor position sensor on the electric motor and from the index sensor.

This steering angle is used for the internal steering functions and also made available to other control units.



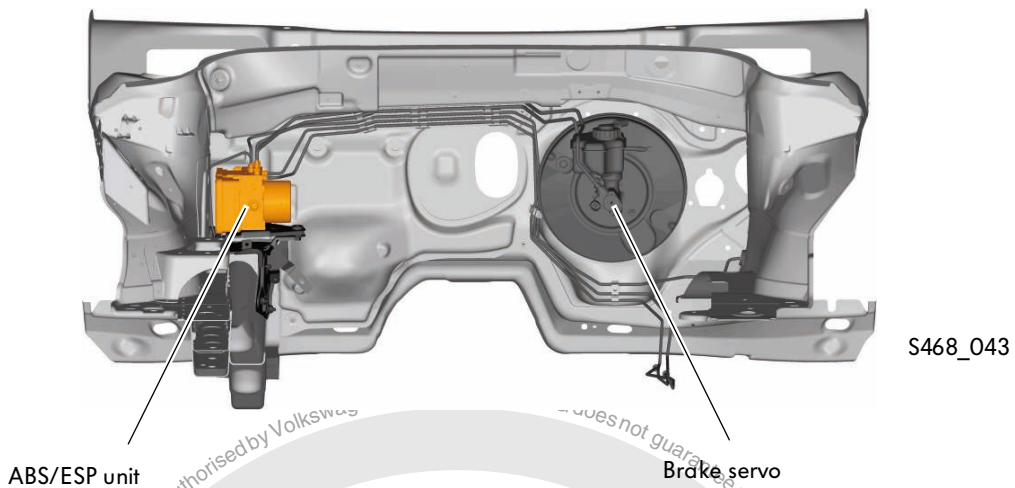
Running gear

Brakes

Different brake systems are used for the Mexico market and the USA and Canada market.

The brakes are installed in the vehicle in the same way – only the ABS/ESP units differ.

For the engines described in the self-study program, a 10" brake servo is used.

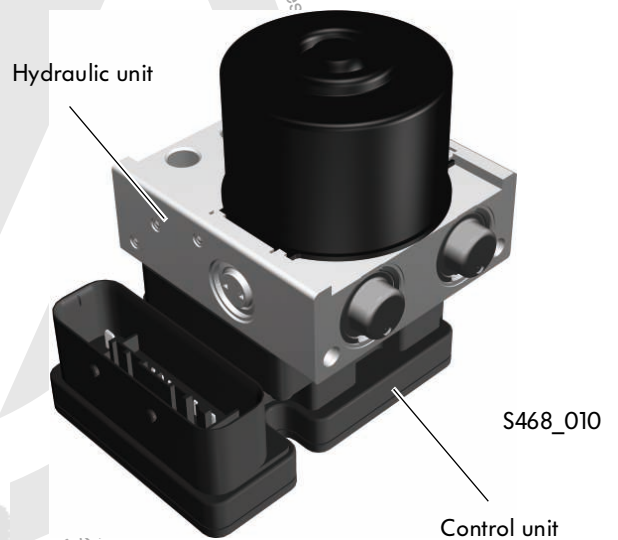


ABS system

The Jetta 2011 will be available in the Mexican market with ABS. The ABS unit MK70 is made by Continental Teves.

The ABS unit MK70 is characterised by the following features:

- Anti-lock brake system (ABS) with electronic brake pressure distribution (EBD)
- Traction control system (TCS)



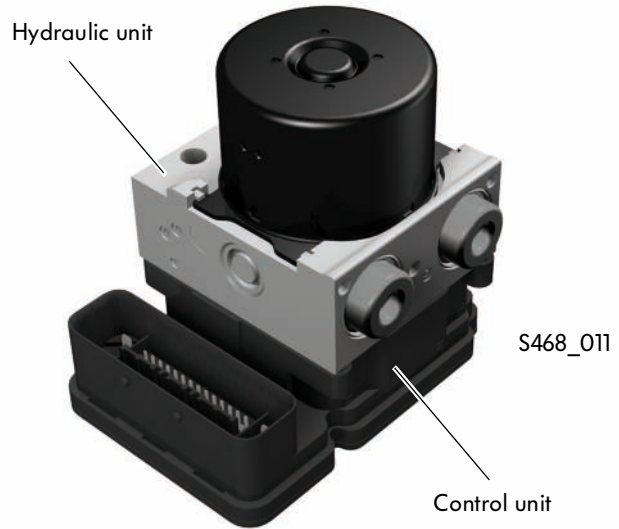
ESP system

The Jetta 2011 will be equipped with ESP for the USA and Canada. The ESP unit MK60 EC is already used in the Golf 2009. It is also made by Continental Teves.

The ESP unit MK60 EC is characterised by the following features compared to the MK70:

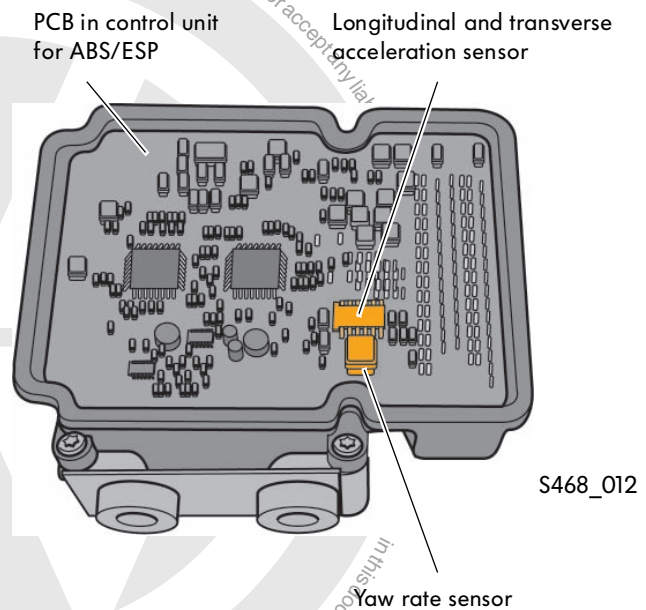
- Electronic stabilisation programme (ESP)
- Electronic differential lock (EDL)
- Brake assist system

The electronic stabilisation programme is switched on permanently.



The new feature of this ESP unit compared to the previous model, MK60, is that the previous sensor cluster with the yaw rate sensor and the longitudinal and transverse acceleration sensors are no longer required.

These sensors are now integrated in the printed circuit board in the control unit for ABS/ESP.



Running gear

Tyre pressure monitor (TPM)

The tyre pressure monitor, TPM, is a software module in the control unit for ABS/ESP that evaluates the wheel speed sensor data of the ABS/ESP unit to monitor the tyre inflation pressure.

A new tyre pressure monitor is used in the Jetta 2011 in specific markets, with an extended scope of functions compared to the previous version. It is used as the standard in the USA.



More detailed information on the tyre pressure monitor, TPM, is available in self-study programme No. 347 "Tyre Pressure Monitor Systems".

Function

A decreasing tyre inflation pressure reduces the rolling radius of the respective wheel, which rotates faster at the same vehicle speed.

The wheel speed sensors calculate the difference in speed, which is then evaluated in the control unit for ABS/ESP. A warning lamp in the dash panel insert and an acoustic signal inform the driver, requesting that the tyre inflation pressure be checked.

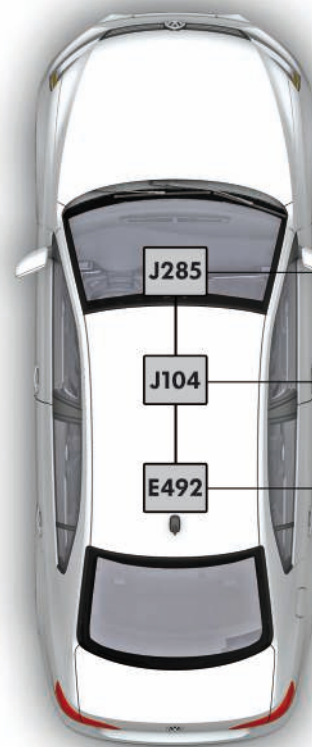
A resonance frequency is measured in addition to the speed. This results in a more precise assessment of the loss in pressure.

The tyre pressure monitor is capable of simultaneously detecting a gradual loss in air pressure for several wheels simultaneously.

Since the tyre characteristics of each individual tyre deviate, determination of the reference data requires the system to be calibrated with the currently fitted tyres and the pressure values stored in the system.

After a changing the tyre inflation pressure of one or more wheels, the system will also have to be recalibrated.

That also applies to a wheel change, after which the inflation pressure needs to be set to the required value and then the system recalibrated.



Control unit in dash panel insert

Control unit for ABS with integrated software for tyre pressure monitor (TPM)

Button for tyre pressure monitor

S468_027

Snow chain recognition – the system is not active if snow chains are detected.

Calibration

To calibrate, press the button for the tyre pressure monitor with the ignition switched on until a confirmation tone can be heard. That confirms that the tyre inflation pressure values determined during calibration have been saved to the tyre pressure monitoring system as the required tyre inflation values.

The button for the tyre pressure monitor is in the glove box at the top left.



S468_025

Monitor warning

If the value saved for the required tyre inflation pressure during calibration at any one wheel falls short by a certain value, the system warns the driver by a gong and the yellow warning lamp for the tyre pressure monitor in the dash panel insert.

The lamp stays on until the system has been recalibrated. As long as this has not been done, the gong will sound at each start.



S468_026



If a service is performed, the service staff must inform the driver that he or she is responsible for ensuring that the correct tyre inflation pressure is set. The tyre pressure monitor is an information system that emits a signal in the event of pressure loss in a tyre. It does not relieve the driver of the responsibility to check the tyre inflation pressures on his or her own at regular intervals.

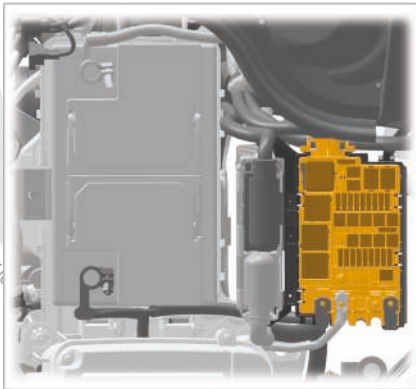


Electrical system

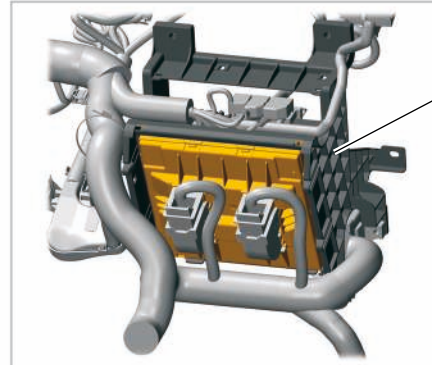
Vehicle electrical system

Installation locations in the vehicle electrical system

The installation locations of important electrical components in the Jetta 2011 have changed compared to the previous model. The adjacent illustration shows the installation locations.

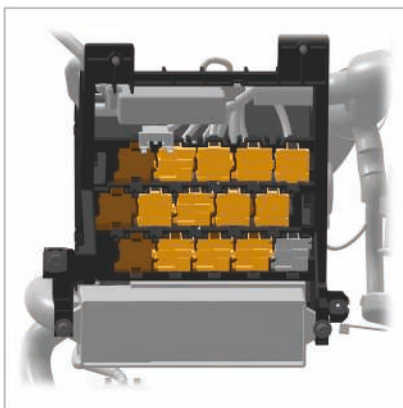


Electronics box on the left of the battery in the engine compartment



Plastic housing

Onboard supply control unit on the rear side of a plastic housing

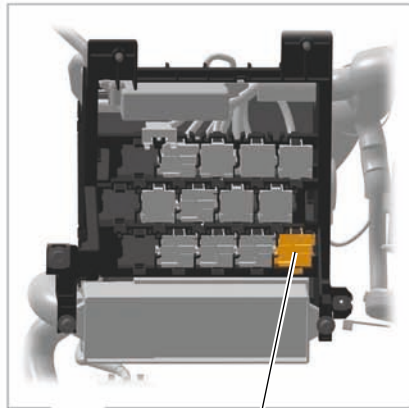


Relay carrier on the front side of the plastic housing – top

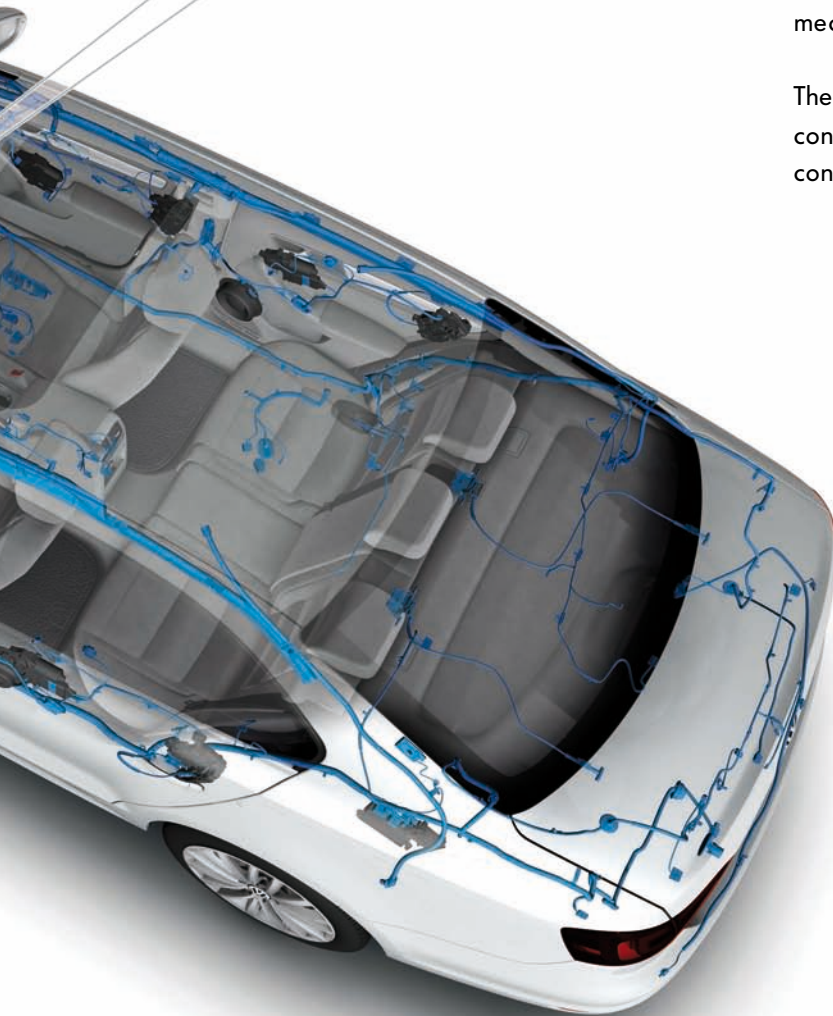


Fuse holder on the front side of the plastic housing – bottom





Converter box



Vehicle electrical system architecture

The Jetta 2011 is equipped with a modified electrical system that essentially is identical to the T5 2010 or of the Polo 2010. However, components are also used from the vehicle electrical system of the Golf 2010.

The relay carrier has a special converter box. It amplifies the control signals of the ignition lock, the electric steering column lock and onboard supply control unit, links them to other signals and actuates mechanical relays.

The ignition starter lock is also implemented via the converter box in combination with the onboard supply control unit.



Electrical system

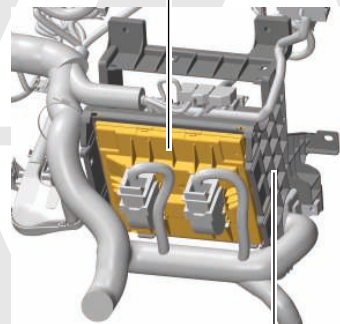
Onboard supply control unit

The Jetta 2011 has an onboard supply control unit that is already used in the T5 2010 or the Polo 2010.

It now also includes the functions of the central convenience system control unit J393. Furthermore, the diagnostic interface for data bus J533 is not a separate, independent control unit, but integrated into the onboard supply control unit. The new onboard supply control unit is only connected via two 2 connectors.

The onboard supply control unit is installed under the dash panel on the left, on the back of a housing with fuses and relays fitted on its front.

Onboard supply control unit J519 with 2 sockets



S468_035

Housing for relays, fuses and onboard supply control unit

The aerial for radio remote control is integrated into the onboard supply control unit.

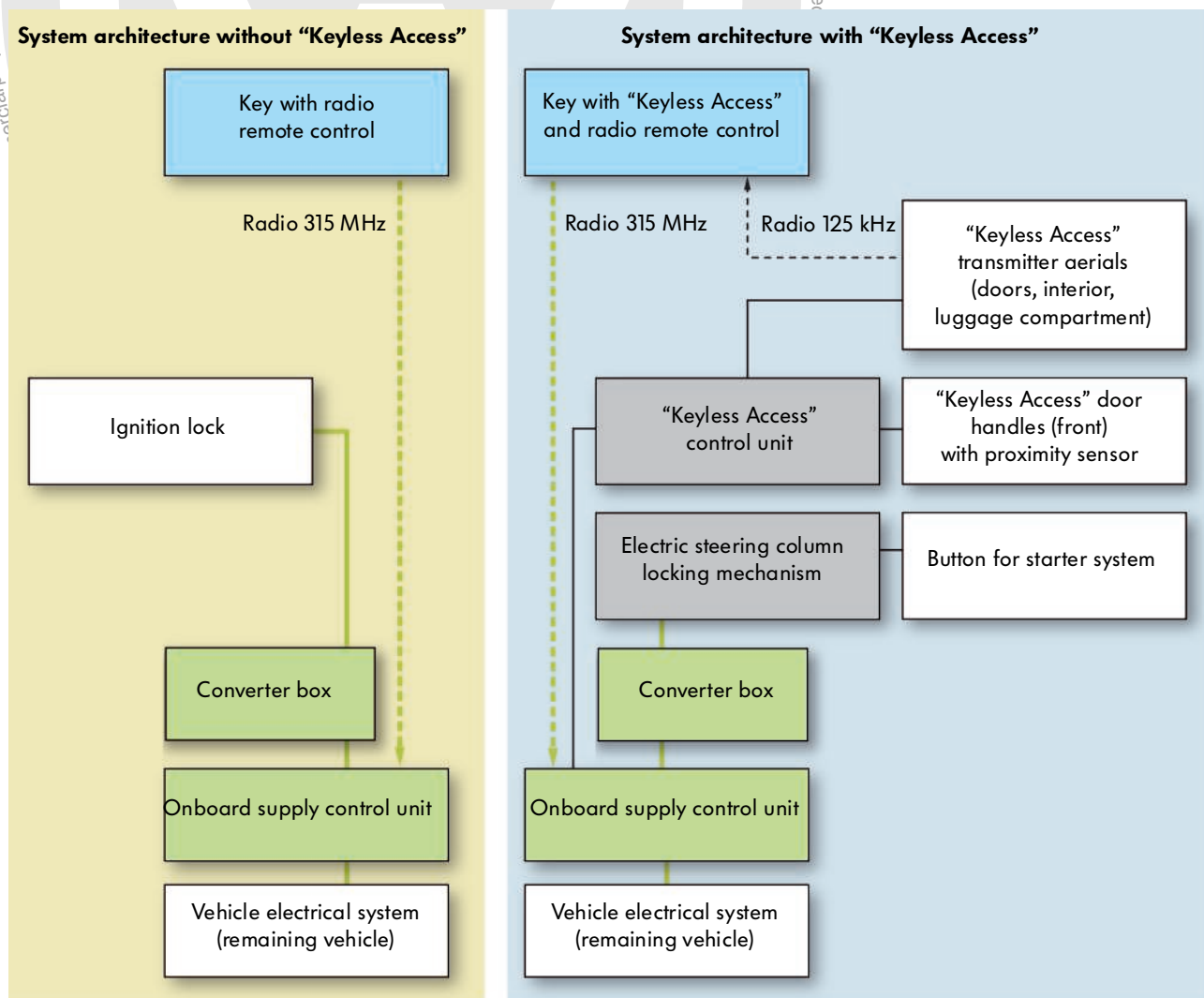
Functions of the onboard supply control unit	
Load management	Cruise control system
Actuation of fuel supply line for electric fuel pump	Brake light, indicator and hazard warning light actuation
Door contact actuation	Starter repeat lock
Exterior mirror heating actuation	Horn actuation
Seat heating release	Release and actuation of sliding/tilting roof
The information of the externally dimmed interior light is placed on the CAN data bus	Side light and parking light actuation
Reversing light	Rear window heating actuation
Fog light	Rear lid release actuation
Shift lock	Powertrain, convenience and diagnostics CAN data bus
Interlock	Data bus diagnostic interface (gateway)
Windscreen wipers stage I/II actuation	K-line
Windscreen wiper interval control	Radio remote control (315 MHz)
Convenience rear wiper actuation (belongs to the scope of functions – but is not used in the Jetta 2011)	Function block for “Keyless Access” locking and start system (Kessy)
Door LIN data bus (door control units/multifunction steering wheel)	Central locking
Roof LIN data bus (sliding/tilting roof)	Anti-theft alarm system

The “Keyless Access” locking and start system

The Jetta 2011 can be equipped with the “Keyless Access” locking and start system for specific markets. The system can be used to unlock and lock the vehicle without active use of the vehicle key and to start and shut down the engine using the button.

System architecture

The “Keyless Access” locking and start system is an optional equipment variant of the Jetta 2011. In the overview, the system architecture is compared with and without “Keyless Access” system.



Green = identical interfaces and control units

S468_076

Mechanical interfaces

A component worth mentioning in the “Keyless Access” locking and start system is the electric steering column locking mechanism (ESL), which replaces the mechanical steering column lock.



Electrical system

Electrical interfaces

As in a basic vehicle without “Keyless Access” locking and start system, the onboard supply control unit consists of the electronic module with high-frequency receiver (radio receiver) for the central locking system. The onboard supply control unit is integrated in the CAN data bus via which various configurations, information exchange etc. are implemented in the system. Additional components are the electrical steering column locking mechanism (ESL) with separate control unit, the entry and start authorisation control unit J518 (“Keyless Access”) including aerials and door handles and the vehicle key (ID sender).

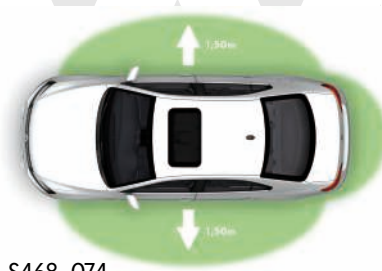
Driver interfaces

The “Keyless Access” locking and start system ensures the identification of the key inside and around the vehicle. The aerials fitted in the front door handles and in the vehicle interior are for connecting the vehicle key to the “Keyless Access” system. After the successful identification, the following functions are enabled:

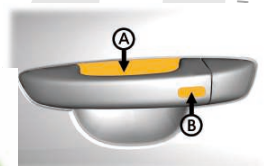
- Keyless entry – the handle of the driver or front passenger door is used to unlock the vehicle – clasp the handle [A]. The ID sender must be within the outside range on the corresponding vehicle side or in the vehicle’s rear end.
- Keyless go – start the engine and go – for this, there must be a valid ID sender in the vehicle. To start the vehicle, the button for the starter system and the clutch (for versions with manual gearbox) or the brake (for versions with automatic gearbox) need to be actuated.
- Keyless exit – to lock the vehicle on leaving it – the driver door must be closed – actuate the outer button in the handle of the driver or front passenger door [B]. If the vehicle is locked via the front passenger door, it must be closed. The ID sender must be within the outside range on the corresponding vehicle side or behind the vehicle.

- Outside range (detection range) – keyless access of the driver to the vehicle via the “Keyless Access” door handle (driver/front passenger side). To detect the vehicle unlocking request, capacitive sensors are fitted in the door handle. The “Keyless Access” transmitter aerials are used to detect the ID sender within the corresponding outside range.

Detection range of the Jetta with “Keyless Access”



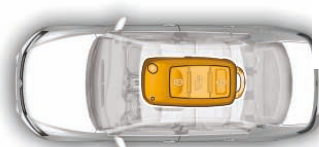
S468_074



S468_077

- Interior – while the vehicle key is inside the vehicle, the driver is able to start and stop the vehicle via the single-stage button for the starter system (to the left of the row of buttons, in front of the gearshift lever).

Interior of the Jetta with vehicle key

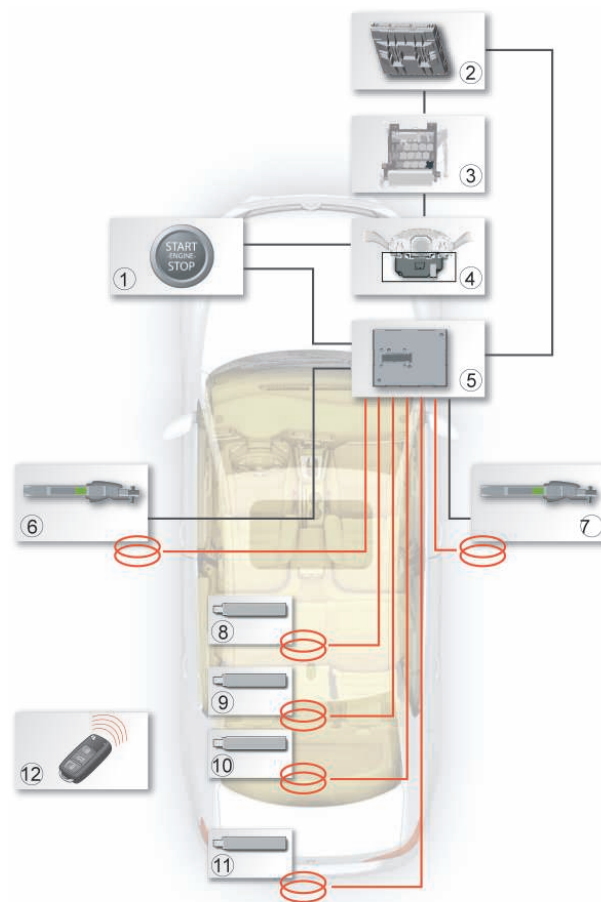


S468_075



S468_084

System overview



S468_078

Legend

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1 Starter button E378 | 8 Interior aerial 1 for entry and start authorisation beneath the centre console R138 |
| 2 Onboard supply control unit J519 | 9 Interior aerial 2 for entry and start authorisation R139 |
| 3 Converter box J935 | 10 Luggage compartment aerial for entry and start authorisation R137 |
| 4 Electronic steering column lock control unit J764, incl. transponder coil for emergency start (electrical steering column lock) | 11 Rear bumper aerial for entry and start authorisation R136 |
| 5 Entry and start authorisation control unit J518 | 12 Vehicle key |
| 6 Touch sensor for driver door exterior handle G415 and driver side aerial for entry and start authorisation R134 | |
| 7 Touch sensor for front passenger door exterior handle G416 and front passenger side aerial for entry and start authorisation R135 | |



For details on the operation of the “Keyless Access” locking and start system, please refer to the operating manual.



Electrical system

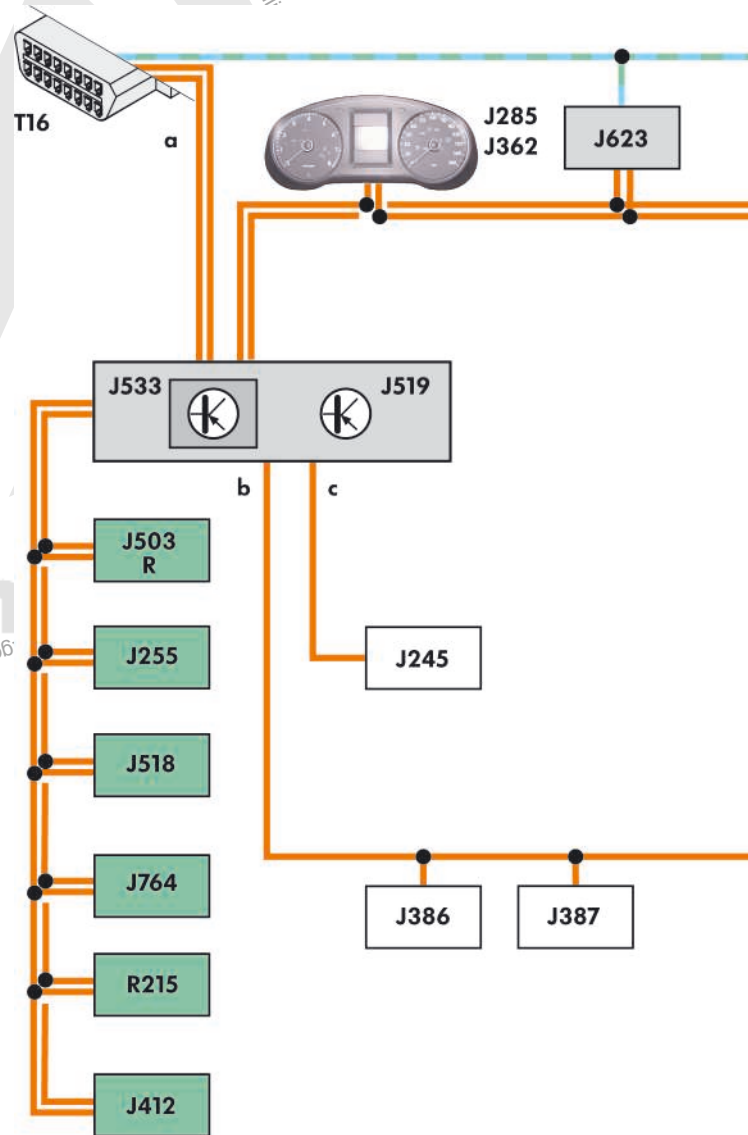
Networking concept

Overview of networked control units

To ensure flawless data exchange between the control units, these are networked via various data bus systems.

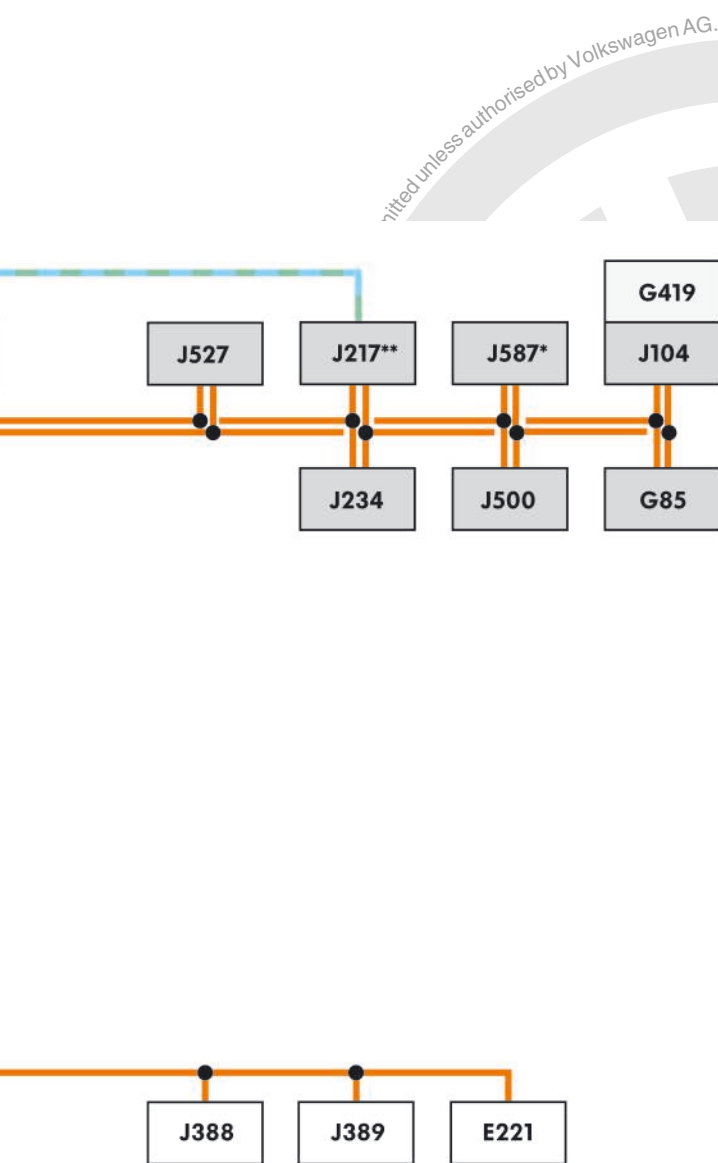
The data bus diagnostic interface J533 (gateway) is integrated into the onboard supply control unit J519 and acts as the interface for the following data bus systems:

- Powertrain CAN data bus
- Convenience/infotainment CAN data bus
- Diagnostics CAN data bus
- LIN data bus (2x)



Control units connected to

- Powertrain CAN data bus
- Convenience/infotainment CAN data bus
- Sensor CAN data bus
- Cornering light CAN data bus
- LIN data bus
- CAN data bus line
- LIN data bus line
- K line



Legend

- E221 Operating unit in steering wheel
- G85 Steering angle sender
- G419 ESP sensor unit
- J104 ABS control unit
- J217** Automatic gearbox control unit
- J234 Airbag control unit
- J245 Sliding sunroof control unit
- J255 Manual air conditioner control unit, Climatic and Climatronic
- J285 Control unit in dash panel insert
- J362 Immobiliser control unit (integrated in J285)
- J386 Driver door control unit
- J387 Front passenger door control unit
- J388 Rear left door control unit
- J389 Rear right door control unit
- J412 Mobile telephone operating electronics control unit
- J500 Power steering control unit
- J503 Control unit with display for radio and navigation system
- J518 Entry and start authorisation control unit
- J519 Onboard supply control unit
- J527 Steering column electronics control unit
- J533 Data bus diagnostic interface (integrated in J519)
- J587* Selector lever sensors control unit
- J623 Engine control unit
- J764 Electronic steering column lock control unit
- R Radio
- R215 interface for external multimedia devices
- T16 Diagnosis connector

S468_046

- a** - Diagnostics CAN data bus
- b** - Door LIN data bus
- c** - Roof LIN data bus

- * With dual clutch gearbox only
- ** With automatic gearbox only



Heating and air conditioning

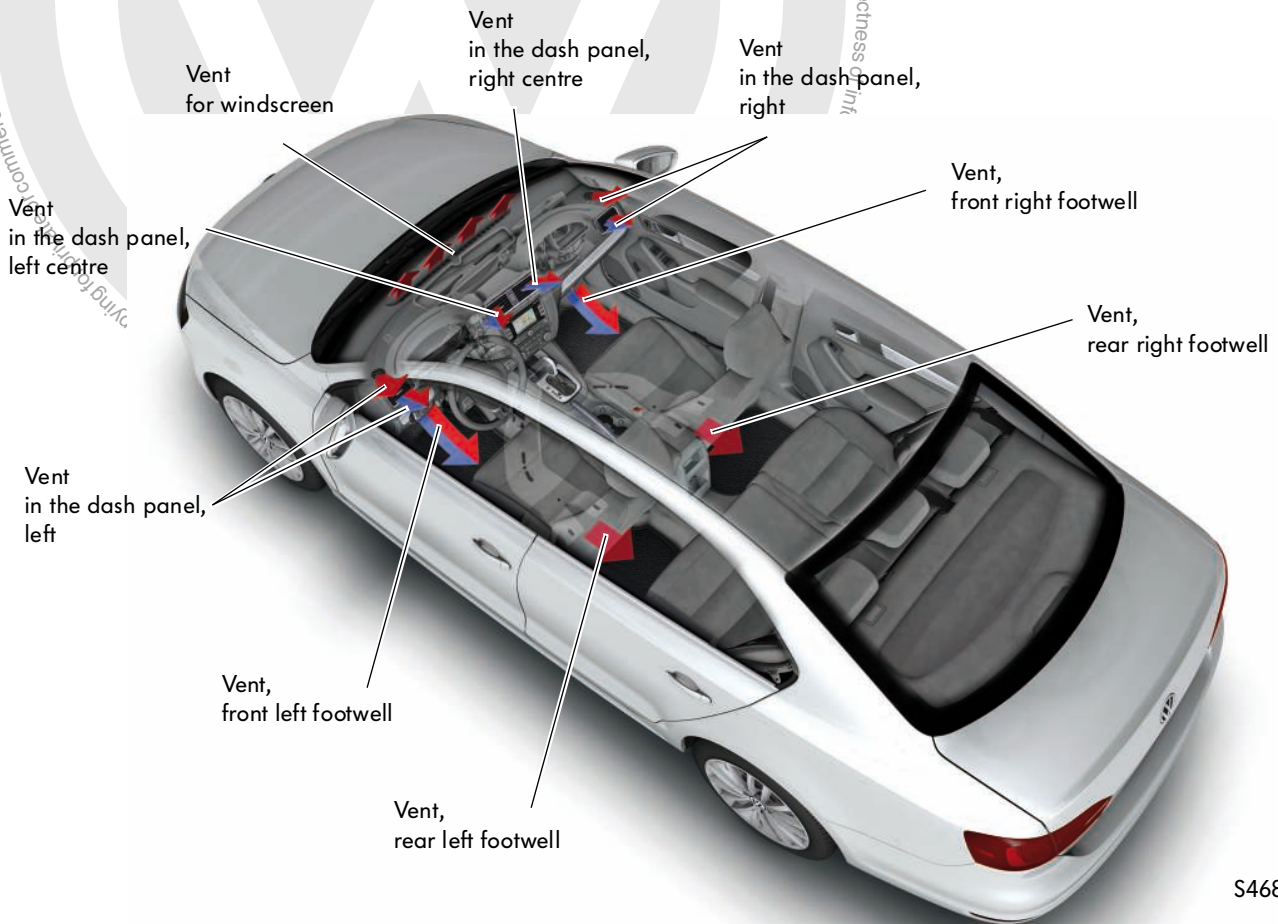
Air conditioning

Three different systems are available in the Jetta 2011:

- Heating system with blower and recirculated air circuit (USA/Canada)
- Manual air conditioner with blower and recirculated air circuit (USA/Canada)
- Semi-automatic "Climatic" air conditioner (Mexico)



For the operation of the heating and air conditioner, please refer to the operating manual.



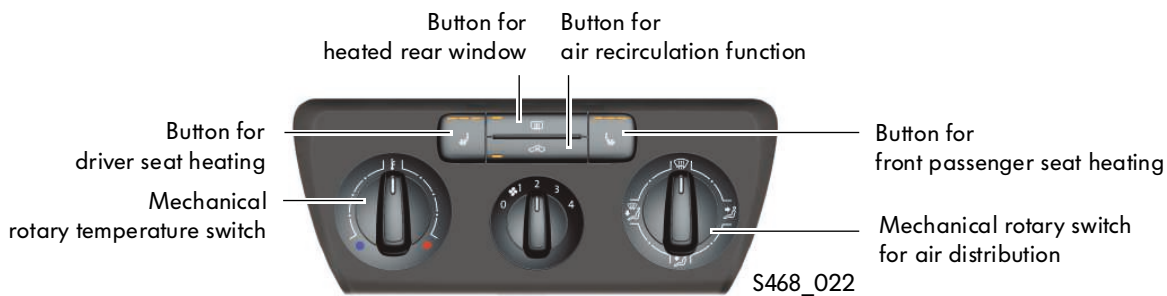
S468_073

The heater and the manual air conditioner provide the vehicle interior with cool and warm air via the vents at the front. The desired temperature is set at the mechanical rotary temperature actuator. The manual air conditioner can be switched on by pressing the AC button.

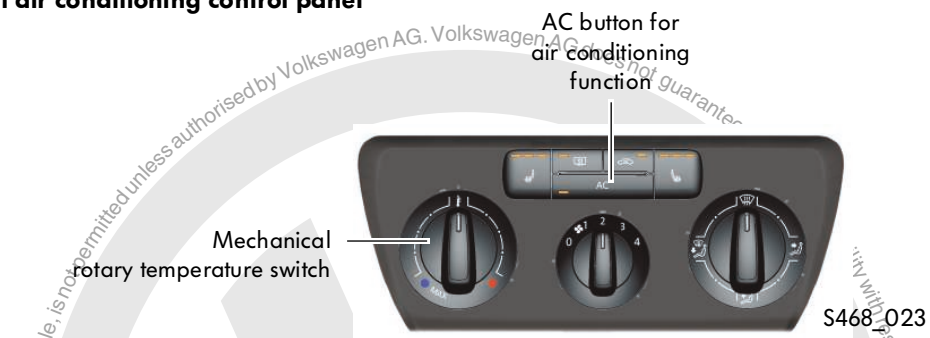
With Climatic, the desired temperature is set using an electronic rotary temperature knob.

Control panels for heater and air conditioner variants

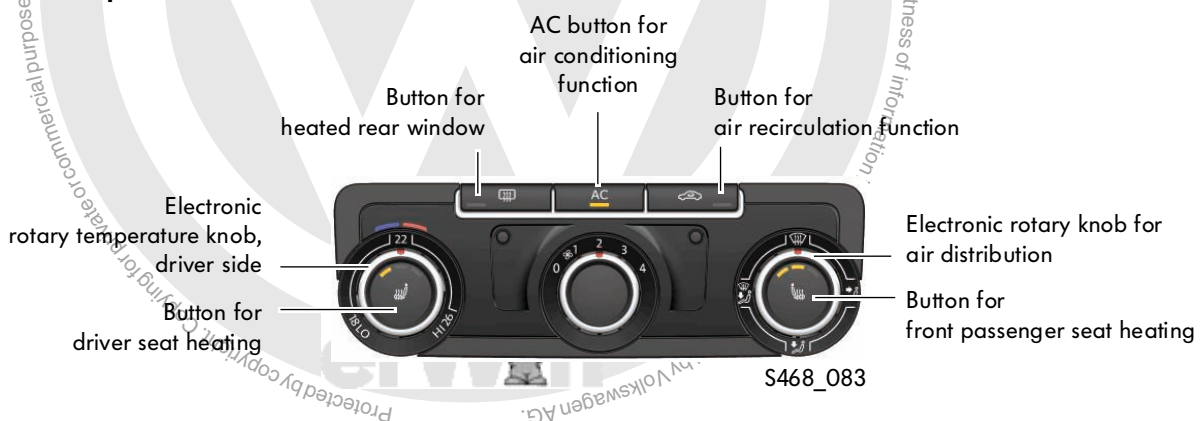
Heater control panel



Manual air conditioning control panel



Climatic control panel



Radio, telephone and navigation

Radio systems in the Jetta 2011

RCD 310 radio

The RCD 310 radio is characterised by the following equipment features:



S468_004



Depending on the vehicle equipment, the equipment features may vary.

Equipment features	
FSTN monochrome display: with a resolution of 302 x 45 pixels (FSTN = Film-Super-Twisted-Nematic, stands for liquid crystal screen)	RBDS FM radio (Radio Broadcast Data System)
2 or 4 loudspeaker channels (20 W each)	AUX-IN (audio input interface) in centre console
Phase diversity (2 tuners)	Control of external amplifier
AM/FM aerial splitter	Control via multifunction steering wheel (MFW) and multifunction display (MFD)
CD drive	GALA (speed-dependant volume control)
External CD changer connection (without MP3)	Bluetooth audio (in combination with UHV with Bluetooth)
Media support for MP3 and WMA audio data (with ID3 tag)	SDARS tuner (satellite radio – Sirius), optional
Also works in combination with mobile phone preparation	BAP-compatible (BAP = operating and display protocol)
Media Device Interface (MDI)	Convenience encoding
Information on the air conditioning	Capable of self-diagnosis, incl. loudspeaker diagnosis

The next two radios are based on one basic module and essentially have the same appearance, apart from the different button labels. The radios are configured according to specific market requirements. Therefore, their functions differ accordingly – see table at the bottom. The image shows a Premium 8 radio as an example.

Premium 8 radio

The Premium 8 radio is used for USA and Canada and is thus adapted specifically to SDARS, for example.

RCD 510 is used as the radio for Mexico, e.g. with accordingly adapted frequency bands and without SDARS.



Depending on the vehicle equipment, the equipment features may vary.



S468_005

Equipment features	
Touch-sensitive 6.5" TFT colour display with a resolution of 400 x 240 pixels	Information on the air conditioning
2 or 4 loudspeaker channels (20 W each)	RBDS FM/AM radio (Radio Broadcast Data System)
Phase diversity (2 tuners)	AUX-IN (audio input interface) in centre console
Configurable tuner (band limits, frequency grid, deemphasis)	Control of external amplifier
SDARS (satellite radio – Sirius)*	Can be combined with sound system*
Integrated 6-CD changer	GALA (speed-dependant volume control)
External CD changer connection (without MP3)	Control via multifunction steering wheel (MFW) and multifunction display (MFD)
SD card reader	BAP-compatible (BAP = operating and display protocol)
Media support for MP3 and WMA audio data (with ID3 tag)	Convenience encoding
Also works in combination with mobile phone preparation (low)	Capable of self-diagnosis, incl. loudspeaker diagnosis
Media Device Interface (MDI)	

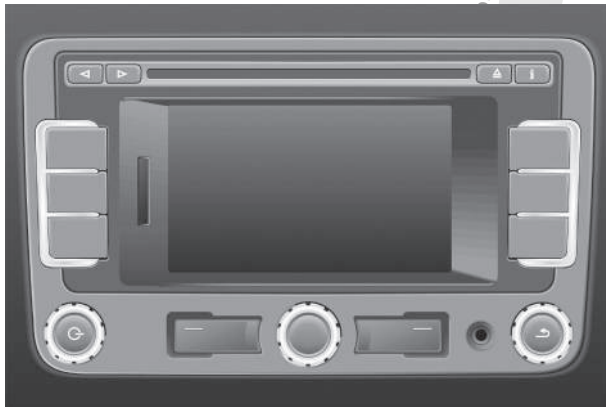
* With Premium 8 only



Radio, telephone and navigation

RNS 315 radio navigation system

The RNS 315 radio navigation system is characterised by the following equipment features.



S468_006



Depending on the vehicle equipment, the equipment features may vary.

Equipment features	
Touch-sensitive 5" TFT colour display with a resolution of 400 x 240 pixels	Navigation function via 3D map and voice control
2 or 4 loudspeaker channels (20 W each)	Navigation map data in the internal flash memory, map update via SD
Phase diversity (2 tuners)	AUX-IN (audio input interface)
RBDS FM/AM radio (Radio Broadcast Data System) with diversity and TMC (Traffic Message Channel)	Control via multifunction steering wheel (MFW) and multifunction display (MFD)
CD drive	Control of external amplifier
SD card reader	Can be combined with sound system
MP3 playback functions	Integrated Bluetooth module
Also works in combination with mobile phone preparation	BAP-compatible (BAP = operating and display protocol)
Media Device Interface (MDI)	Convenience encoding
Information on the air conditioning	Capable of self-diagnosis, incl. loudspeaker diagnosis



RNS 510 radio navigation system

The RNS 510 radio navigation system is characterised by the following equipment features.



Depending on the vehicle equipment, the equipment features may vary.



S468_007

Equipment features	
Touch-sensitive 6.5" colour display with a resolution of 800 x 480 pixels	Media Device Interface (MDI)
2 or 4 loudspeaker channels (20 W each)	Video and audio inputs
Integrated hard disc for navigation and MP3	Also works in combination with mobile phone preparation
RBDS FM/AM radio (Radio Broadcast Data System)	Offroad function
FM 3-tuner diversity with two aerials	Control via multifunction steering wheel (MFW)
Sirius satellite radio with Traffic Flow	Can be combined with sound system
DVD drive	Picture navigation
SD card reader	BAP-compatible (BAP = operating and display protocol), optional
Audio/video/MP3 playback function	Convenience encoding
Navigation functions map, splitscreen, voice control	Self-diagnosis, incl. loudspeaker diagnosis



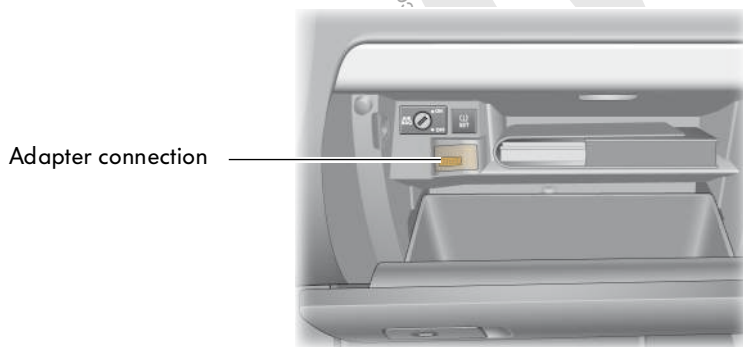
Radio, telephone and navigation

The Media-Device-Interface box

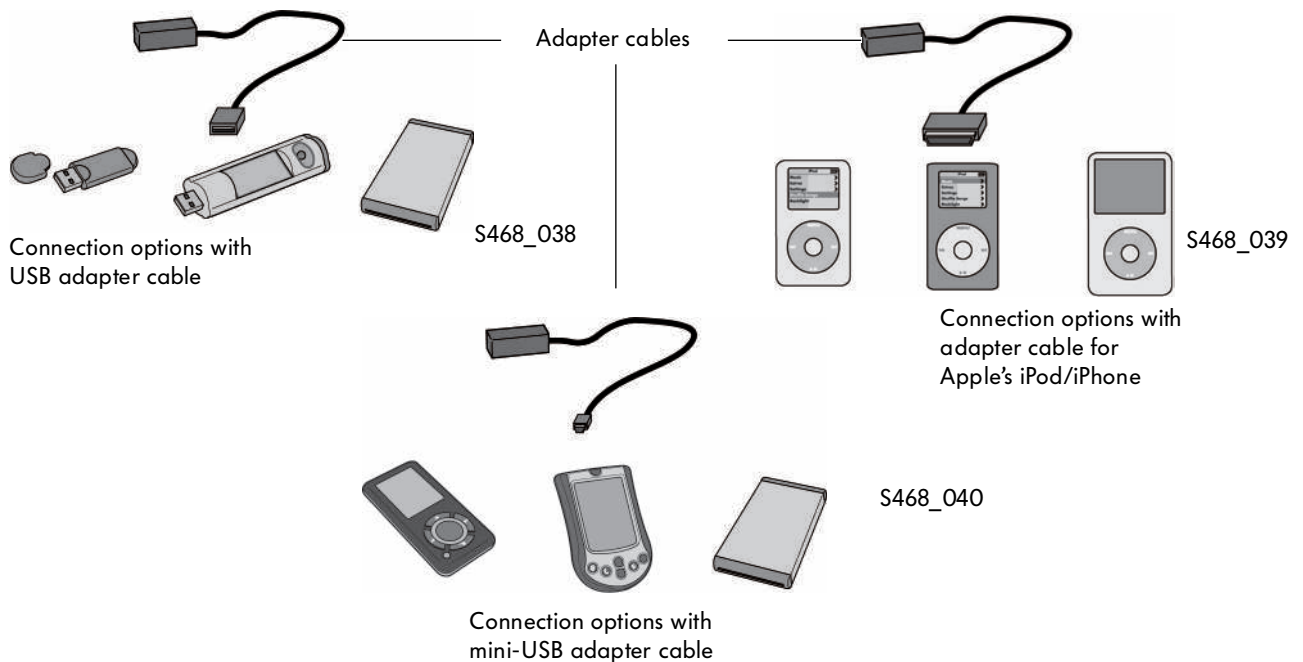
The Jetta 2011 is equipped with the Media-Device-Interface box -in short MDI- as an option.

The MDI allows mobile audio or multimedia devices to be connected to the infotainment system and to display, operate and play their audio contents via the vehicle's speaker system and/or the infotainment display units.

The MDI control unit is installed in a housing on the left in the glove box, under the switch for switching off the front passenger airbag, behind the rear panel of the glove box.



S468_037



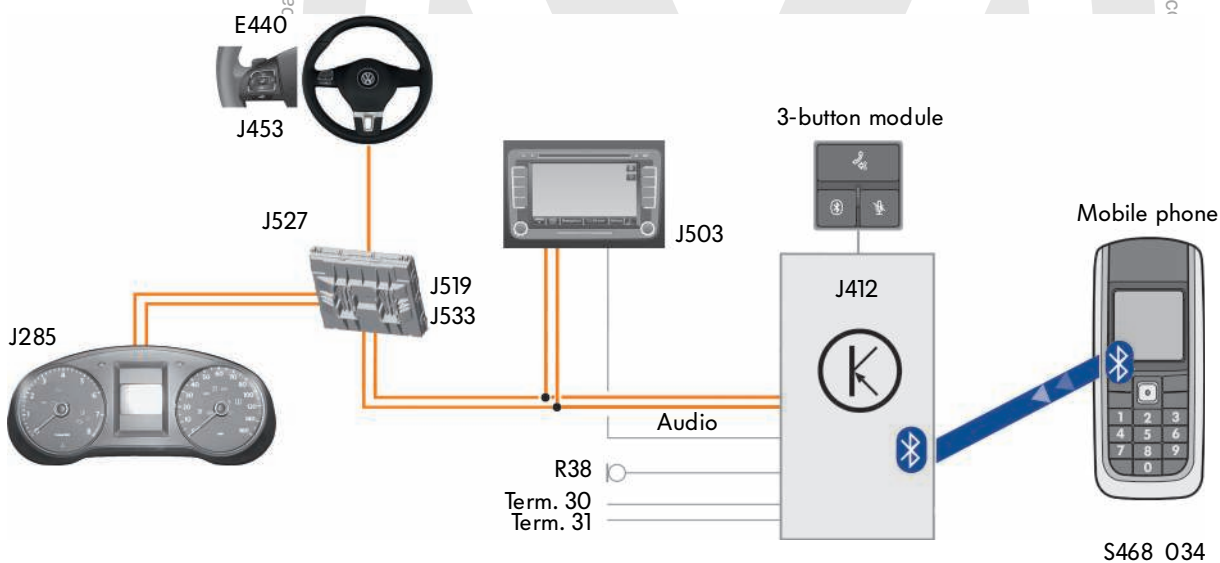
Connection options

Depending on the device, the mobile device is connected via special adapter cables, which can be connected to the adapter port that acts as a central interface. The following audio formats are currently supported and can thus be played: MP3, AAC, WMA and OGG Vorbis.

Mobile telephone preparation

Functions

- Operation via buttons on multifunction steering wheel (optional)
- Operation via touchscreen devices, e.g. with RCD 510, RNS 315, RNS 510 (optional)
- Telephone data transfer and mobile link via Bluetooth™ transfer
- Voice control
- Hands-free system and audio mute
- Separate 3-button module in the roof lining
- The mobile phone preparation is capable of diagnosis
- SIM data incl. telephone book available in mobile phone preparation



Legend

- E440 Multifunction buttons on left in steering wheel (optional)
- J285 Control unit in dash panel insert
- J412 Mobile telephone operating electronics control unit
- J453 Multifunction steering wheel control unit (optional)
- J503 Control unit with display for radio and navigation system

- J519 Onboard supply control unit, with integrated diagnostic interface for data bus J533
- R38 Telephone microphone

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



Radio, telephone and navigation

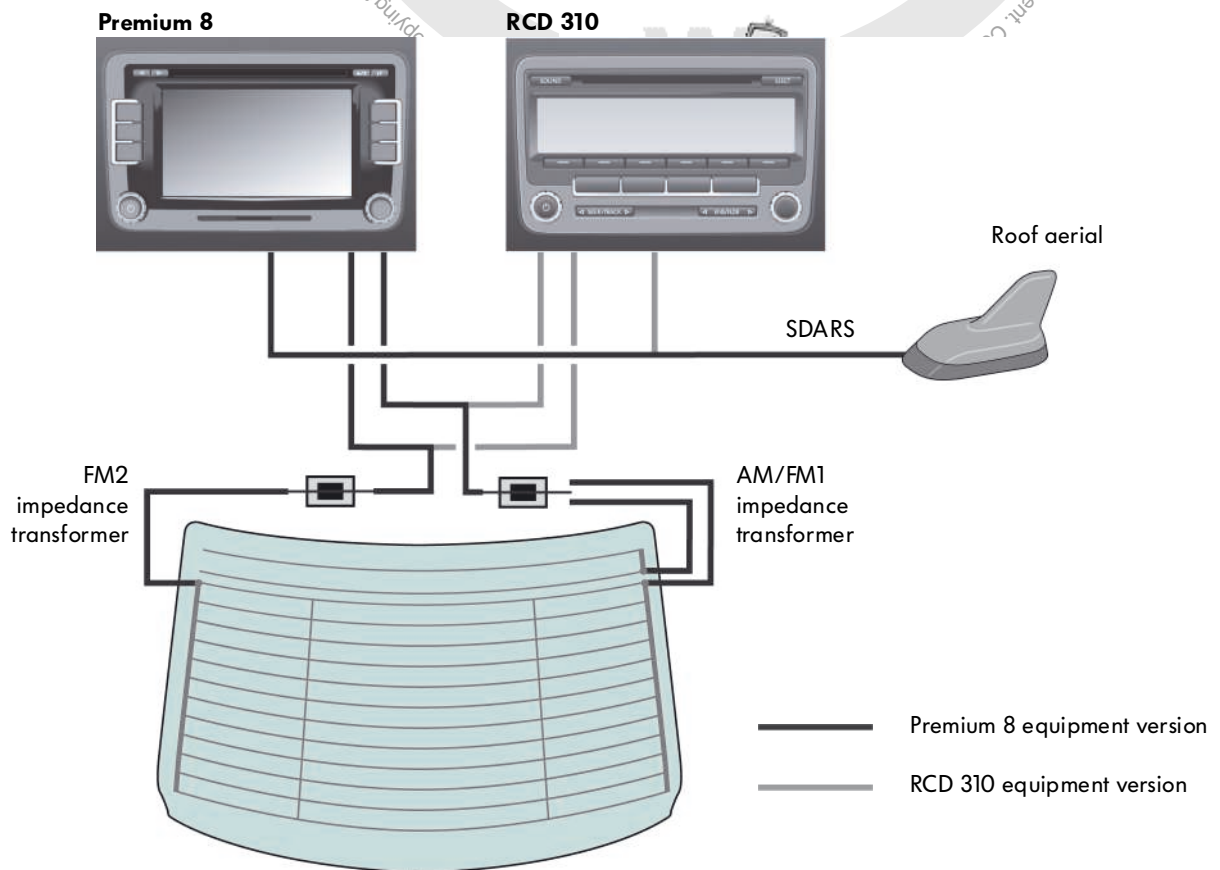
Aerial concept

Several aerials (AM, FM1 and FM2) are integrated in the rear window of the Jetta 2011. The aerials for navigation (GPS) and satellite reception (SDARS) are integrated in the separate roof aerial. The FM impedance transformers are installed at the side of the rear window, in the centre of the C-pillar.

Radio systems RCD 310 and Premium 8

The RCD 310 and Premium 8 radio systems require two aerials in the rear window for the internal dual-tuner diversity receiver to receive radio signals.

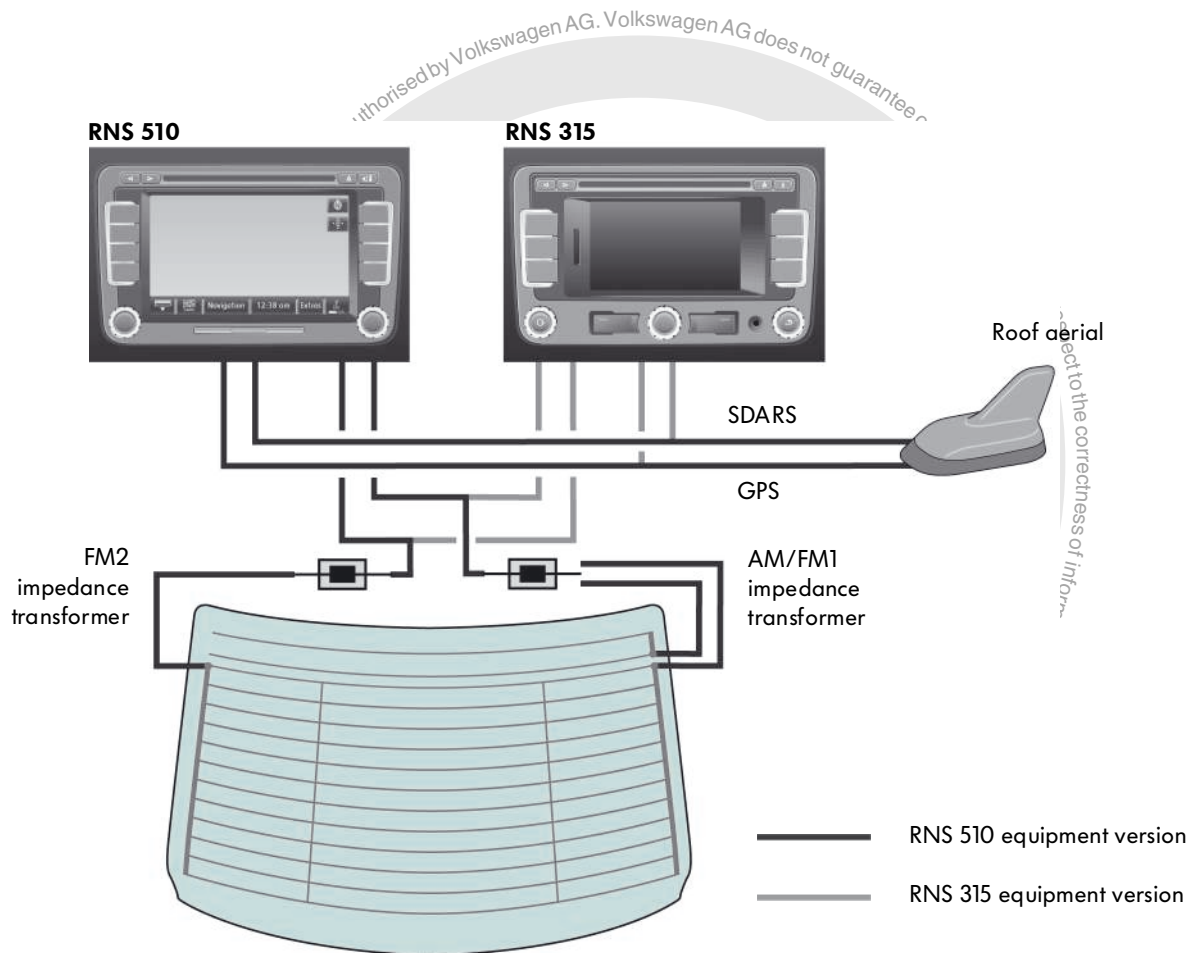
The signals for reception of the satellite radio versions (SDARS) are received via the separate roof aerial.



S468_044

Radio navigation systems RNS 315 and RNS 510

The two radio navigation systems, RCD 315 and RCD 510, also use the two aerials in the rear window already described for receiving the radio signals for the internal dual-tuner diversity receiver. The signals for satellite reception of the radio navigation systems (SDARS) and for navigation (GPS) are received via the separate roof aerial.



S468_045





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