Service Training

Self-study Programme 356

The Passat Estate 2006

The Passat Estate 2006 – Functional and Comfortable

S356_035

The Passat Estate — the group's most successful estate for years now — is set to continue its excellent record with the 2006 model. The car combines a high level of functionality and also very good comfort.
In terms of quality, safety and design, it is on luxury class level. However, it does still offer the economy of the traditional midrange. Like the saloon, the Passat Estate 2006 uses the new drive concept with a transverse mounted engine.

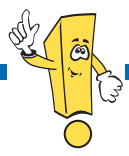
Compared with the Passat saloon, the following new product characteristics for the Passat estate, model year 2006, are worth mentioning:

- Large cargo area
- New cargo area concept with rails and securing system
- Electrically operated tailgate
- Power latching system

The following self-study programmes also contain information on the Passat 2006 and some of the technology used:

- SSP 339 The Passat 2006
- SSP 340 The Passat 2006 Electrical System
- SSP 346 The Electromechanical Parking Brake
- SSP 347 Tyre Pressure Monitoring Systems
- SSP 357 The Nivomat

NEW



Important Note

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

For current testing, adjustment and repair instructions, please refer to the customer service literature intended for this purpose.

Contents

The Passat Estate 2006

The Passat Estate 2006 is innovative in many areas, for example:

- Design
- Driving dynamics
- Drive technology
- Functionality
- Spaciousness
- Safety
- Quality

- Driving light assist
- Transverse mounted engine
- Bluetooth™ Premium mobile phone preparation
- Cornering light system with Bi-Xenon
- Adaptive cruise control
- Convenient key concept
- 230 V socket
- Tyre pressure monitoring systems

- High-end sound system

- Taillights using LED technology
- Large cargo area

S356_036

- Simple rail and anchoring system for securing cargo
- Tailgate opens and closes with electrical assistance and has a power latching system
- Multi-link rear axle
- Nivomat automatic level control
- Electromechanical parking brake

Technical data

Passat Estate 2006

S356_087

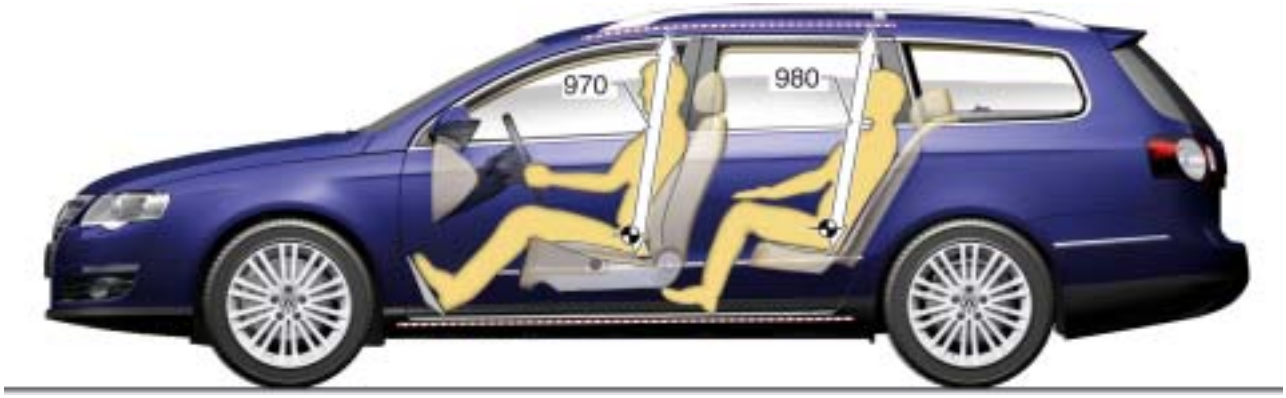
S356_088

S356_089

The dimensions given in the pictures are in mm.

Length	4,774 mm
Width	1,820 mm
Height with roof rails	1,517 mm
Wheelbase	2,709 mm
Roof load	100 kg
Braked towing capacity	1,300 kg

Track width at front	1,552 mm
Track width at rear	1,551 mm
Maximum weight	1,950 kg
Curb weight without driver	1,391 kg
Drag coefficient	0.297 C_d
Tank capacity	70 litres



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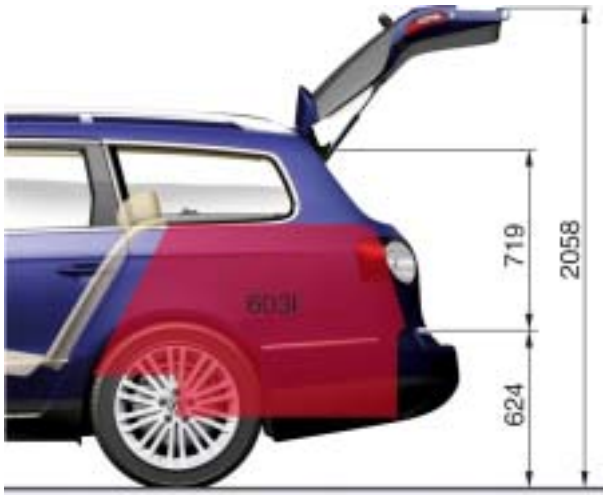

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S356_092

The dimensions given in the pictures are in mm.

Front headroom	970 mm
Rear headroom	980 mm
Height of tailgate	2,058 mm
Cargo area height	719 mm
Cargo area width	1,000 mm

Height of load sill	624 mm
Boot volume, including 90 l storage compartment under the floor	603 litres

Body

Body structure

The body of the new Passat estate has been optimised in the following main areas:

- Passive safety
- Lightweight construction
- Comfort
- Pedestrian safety

This was achieved by using high-strength, highest-strength and thermoformed sheet metal.
The sheet thicknesses were also optimised for the respective loads.

The following components are made from thermoformed sheets:

- Front bumper cross member
- Cross member in footwell area
- Centre tunnel
- A-pillar/roof frame area
- B-pillar

The following components are made from highest-strength sheets:

- Inner A-pillar
- Seat consoles
- Sills
- Rear longitudinal members

Strengths of sheets used:

- Normal sheets up to 140 N/mm^2
- Strong sheets from 180 to 240 N/mm^2
- High-strength sheets from 260 to 300 N/mm^2
- Highest-strength sheets from 300 to 420 N/mm^2
- Thermoformed sheets over 1000 N/mm^2

S356_071

Legend:

Red	side crash area
Yellow	passenger cell
Blue	frame structure

Using thermoformed sheets has allowed us to reduce the weight of the body by approx. 20 kg without affecting the strength.

Electrically opening and closing tailgate

The Passat Estate 2006 can be equipped with an optional electrically opening and closing tailgate.

It is operated with the rear lid remote release button E233 in the driver's door panel, the button to close rear lid in the luggage compartment E406 or using the ignition key.

The system is made up of the following components:

- Rear lid remote release button E233
- One drive motor on each side
- Power latching system in the lock carrier
- Button to close rear lid in luggage compartment E406

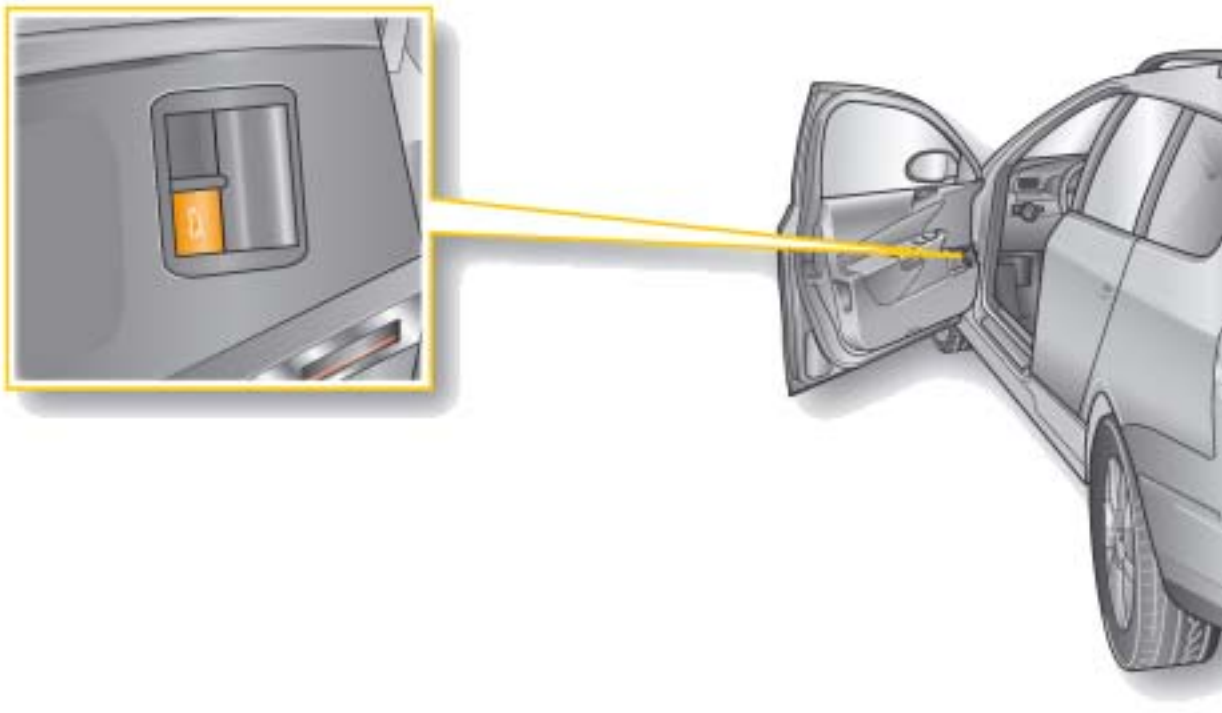
How it works:

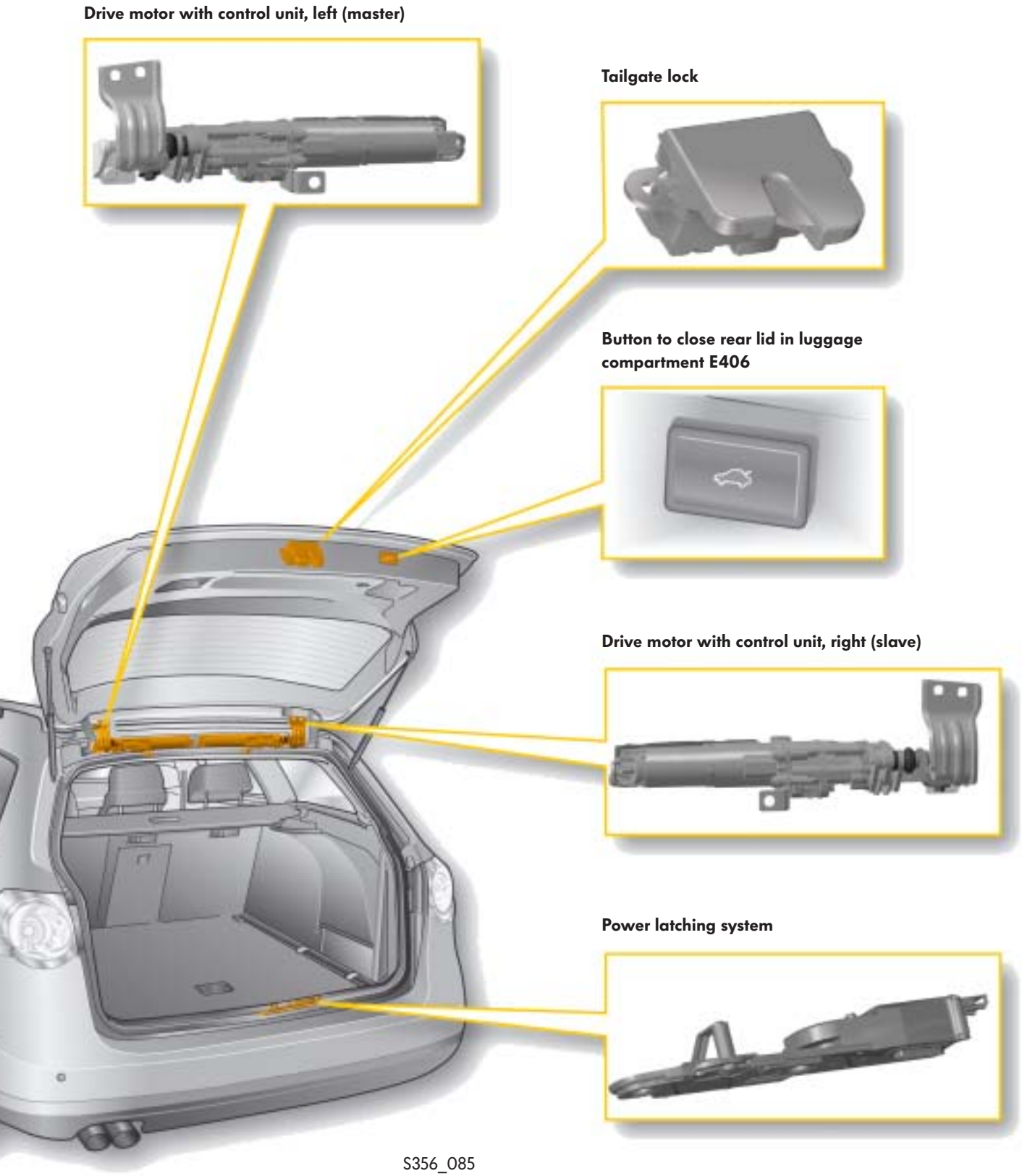
When the E233 is pressed, the tailgate lock is released electrically.
Next the two drive motors on the left and right are powered and the tailgate opens. Finally the power latch system is extended.

When closing, the tailgate moves until the tailgate lock clicks into the power latching system. The power latching system is then activated and the tailgate is pulled into the final position and locked.

If the tailgate hits an obstacle while opening, it is stopped immediately.
If it hits an obstacle while closing, it is immediately opened slightly.

Rear lid remote release button E233




Drive motor with control unit, left (master)
Tailgate lock
Button to close rear lid in luggage compartment E406
Drive motor with control unit, right (slave)
Power latching system

S356_085

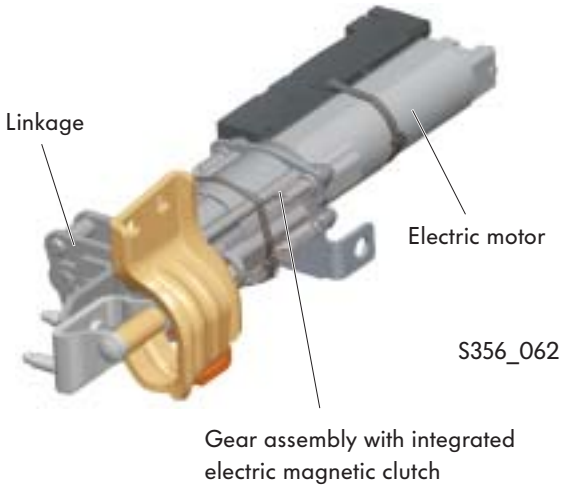
Drives

Arrangement and operation

The drives are made up of the electric motor, gears with integrated electrical magnetic clutch and the linkage.

The drive lever is screwed to the tailgate hinge.

The swing movement of the drive lever moves the tailgate hinge and thus also the tailgate.



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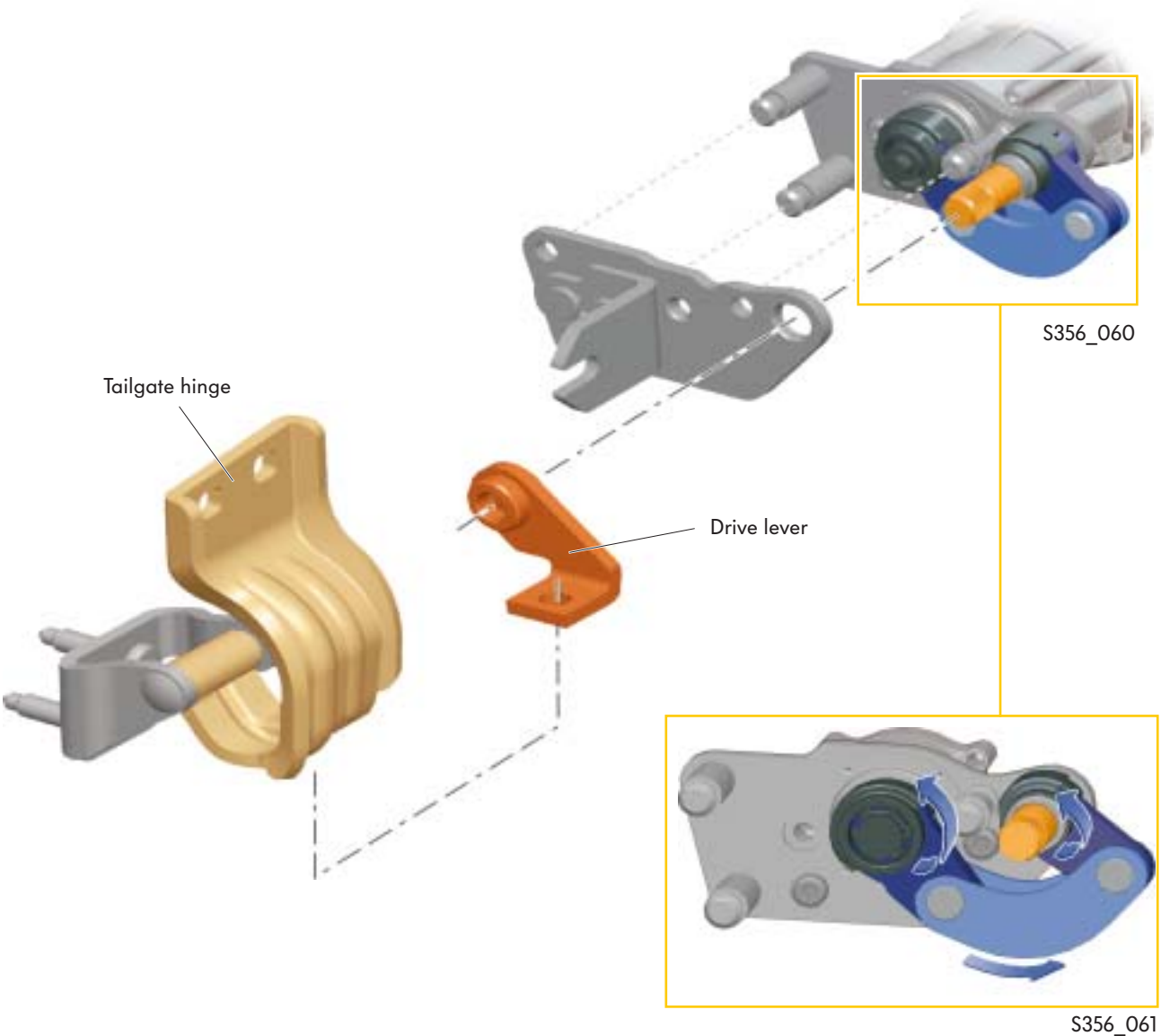


S356_060

S356_061

Power latching system

Arrangement and operation

The electric motor moves the rack with the toothed gearing. The rack and the connecting rod transfer this movement to the deflector lever. This moves the striker in the direction of the arrow.

S356_084

S356_068

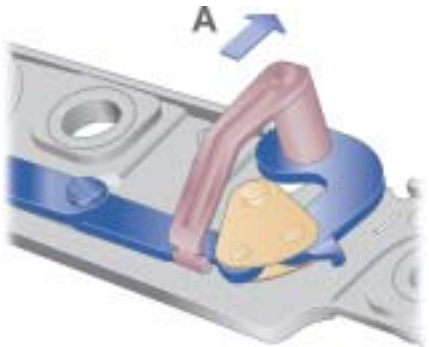
How it works:

Open

The tailgate lock is released electrically. The tailgate opens slightly. The striker then moves in the direction of arrow **A**.

Close

As soon as the tailgate lock engages fully in the striker during the closing procedure, it will move in the direction of arrow **B**. The tailgate is then closed fully up to the end position.



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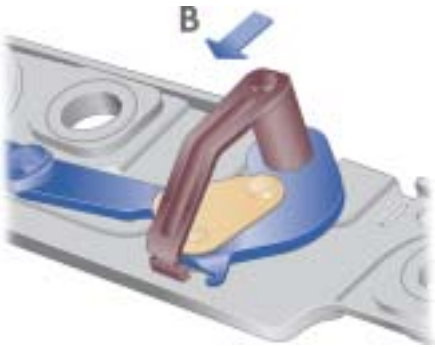


S356_075

Electrical operation

Both motors in the rear lid control units V375 and V376 are integrated in the rear lid control units J605 and J756. The rear lid control unit J605 is incorporated in the convenience CAN data bus and controls the opening and closing of the tailgate as the master.

The rear lid control unit 2 J756 is incorporated as a slave via a bi-directional cable. The J756 is also responsible for controlling the power latching system. It controls the power latching motor V329 and also evaluates the power latching system limit switches F332 and F333.

Information from other control units is also evaluated via the convenience CAN data bus:

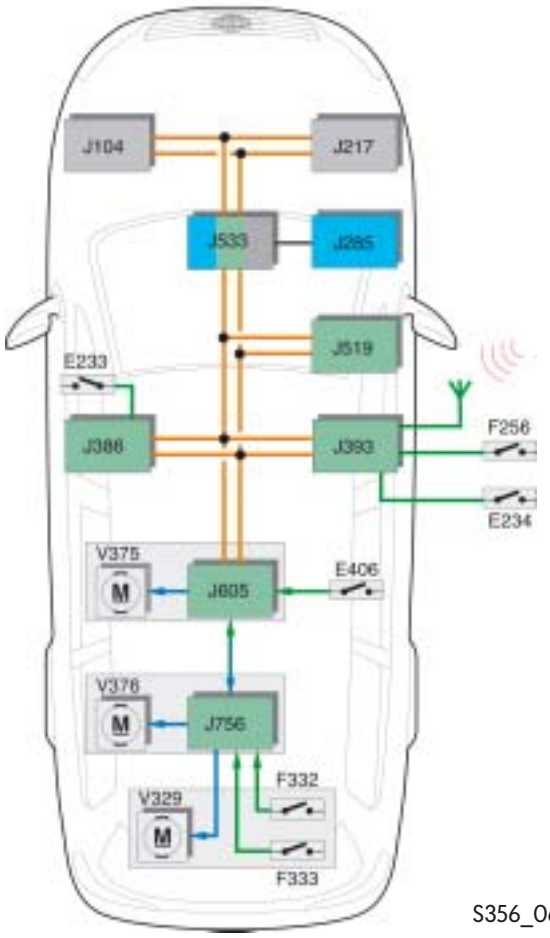
- The driver door control unit J386 evaluates the operation of the rear lid remote release button E233 in the driver's door.
- The convenience system central control unit J393 evaluates the operation of the external handle button on the tailgate and the tailgate main catch. Furthermore this control unit processes the incoming signals when the tailgate remote button is pressed.
- The onboard supply control unit, for example, activates the hazard warning lights using the tailgate inside button when intermediate positions are programmed.
- The ABS control unit J104 signals whether the speed is 0 km/h.
- The automatic gearbox control unit J217 signals whether the selector lever is in the "P" position.
- The control unit in dash panel insert J285 indicates whether the tailgate is open or closed.

Manual operation

If you move the tailgate from a stopped intermediate position by hand, the zero-current holding torque will be overridden. This manual movement is recognised by a Hall sensor and the control units then power the clutches in the "freewheel" direction. If the movement stops, the power to the clutches is stopped after approx. one second and the tailgate stops again automatically in its position.

A second possibility for manual operation is opening the closed tailgate using the handle button. The clutches are then also powered in the "freewheel" direction. This state is maintained for approx. half a second after you release the handle button. If during this phase no manual operation is recognised, the clutches are powered in the direction "Open" and the tailgate opens automatically.

Functional diagram
(electrical operation)



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Legend

- Drive CAN data bus
- Convenience CAN data bus
- Combi CAN data bus
- CAN data bus cable
- Bi-directional cable
- Input
- Output
- Tailgate remote button on ignition key

Legend

E233	Rear lid remote release button
E234	Rear lid handle release button
E406	Button to close rear lid in luggage compartment
F256	Rear lid lock unit
F332	Power latching system limit switch, luggage compartment unlocked
F333	Power latching system limit switch, luggage compartment locked
J104	ABS control unit
J217	Automatic gearbox control unit
J285	Control unit with display in dash panel insert
J386	Driver door control unit
J393	Convenience system central control unit
J519	Onboard supply control unit
J533	Data bus diagnostic interface
J605	Rear lid control unit
J756	Rear lid control unit 2
V329	Power latching motor
V375	Motor in rear lid control unit
V376	Motor in rear lid control unit 2

Luggage compartment

Rails run lengthways along the luggage compartment floor in the Passat Estate 2006.

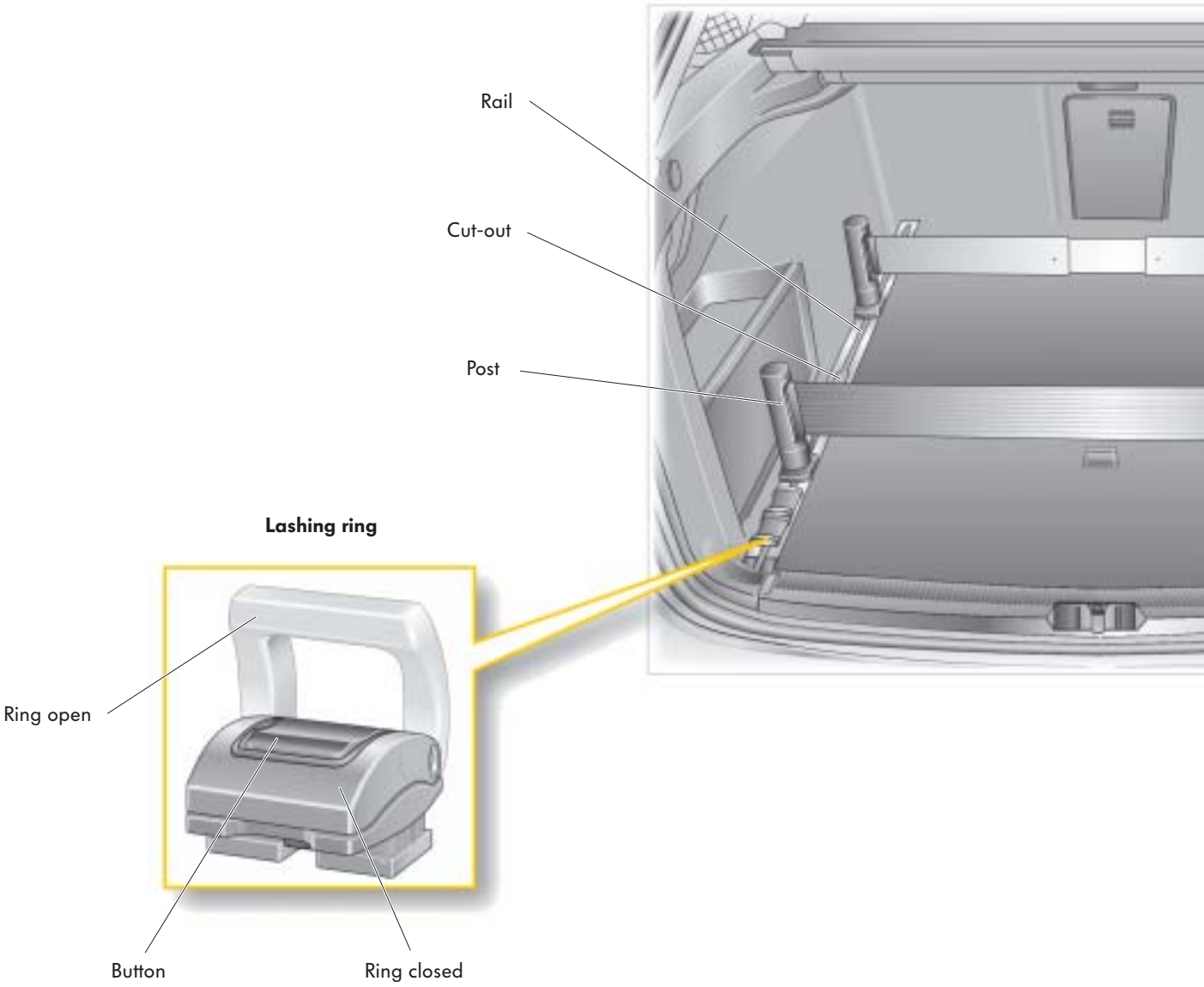
Straps, a telescopic rod and lashing rings can be fitted and moved to various positions.

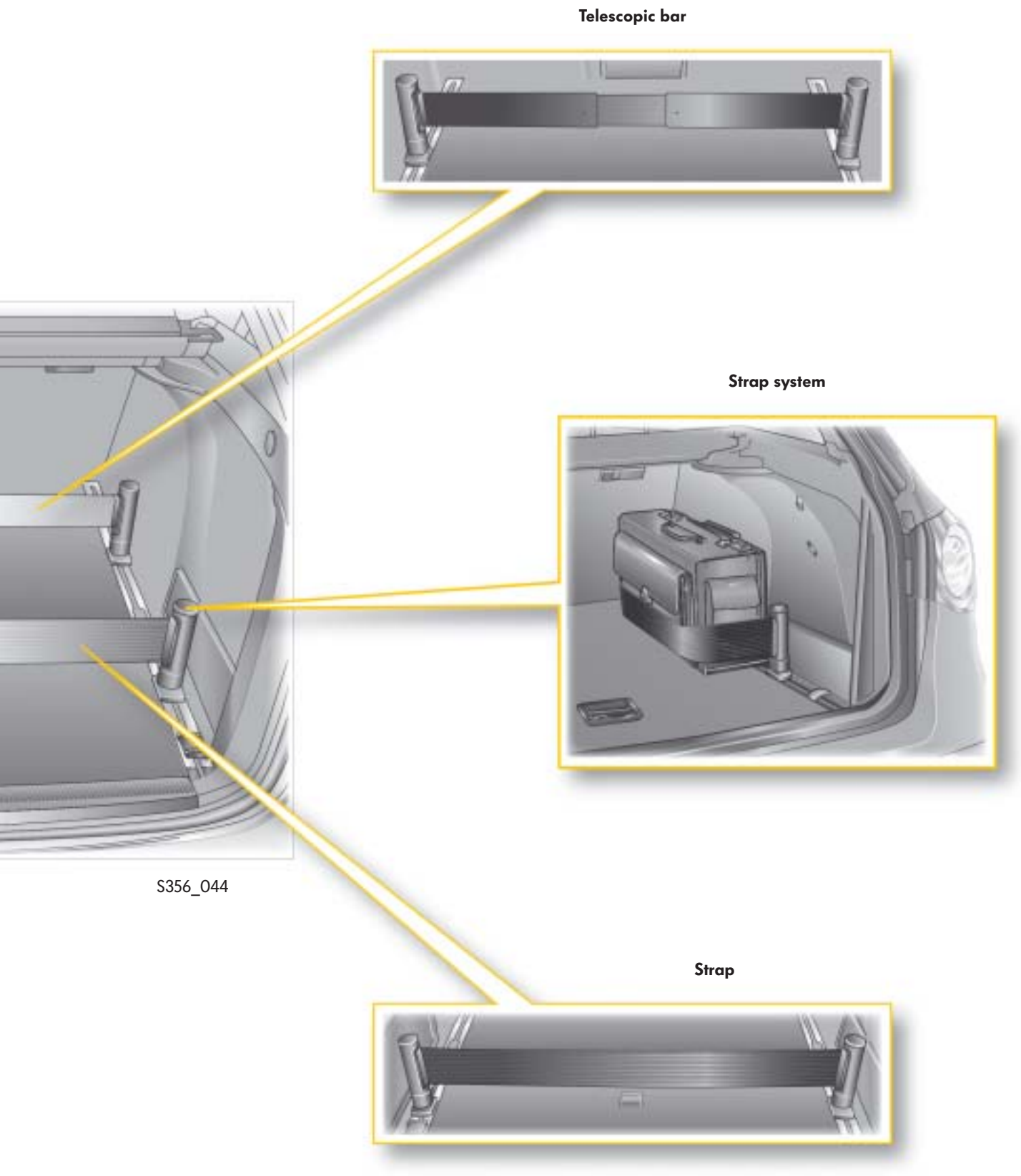
There is a cut-out in each rail to insert these parts.

The straps and telescopic bars are released by pressing the posts, the lashing rings are released by pressing the button.

Once they are unlocked, you can move them along the rail.

They lock automatically when you release the posts or the button.





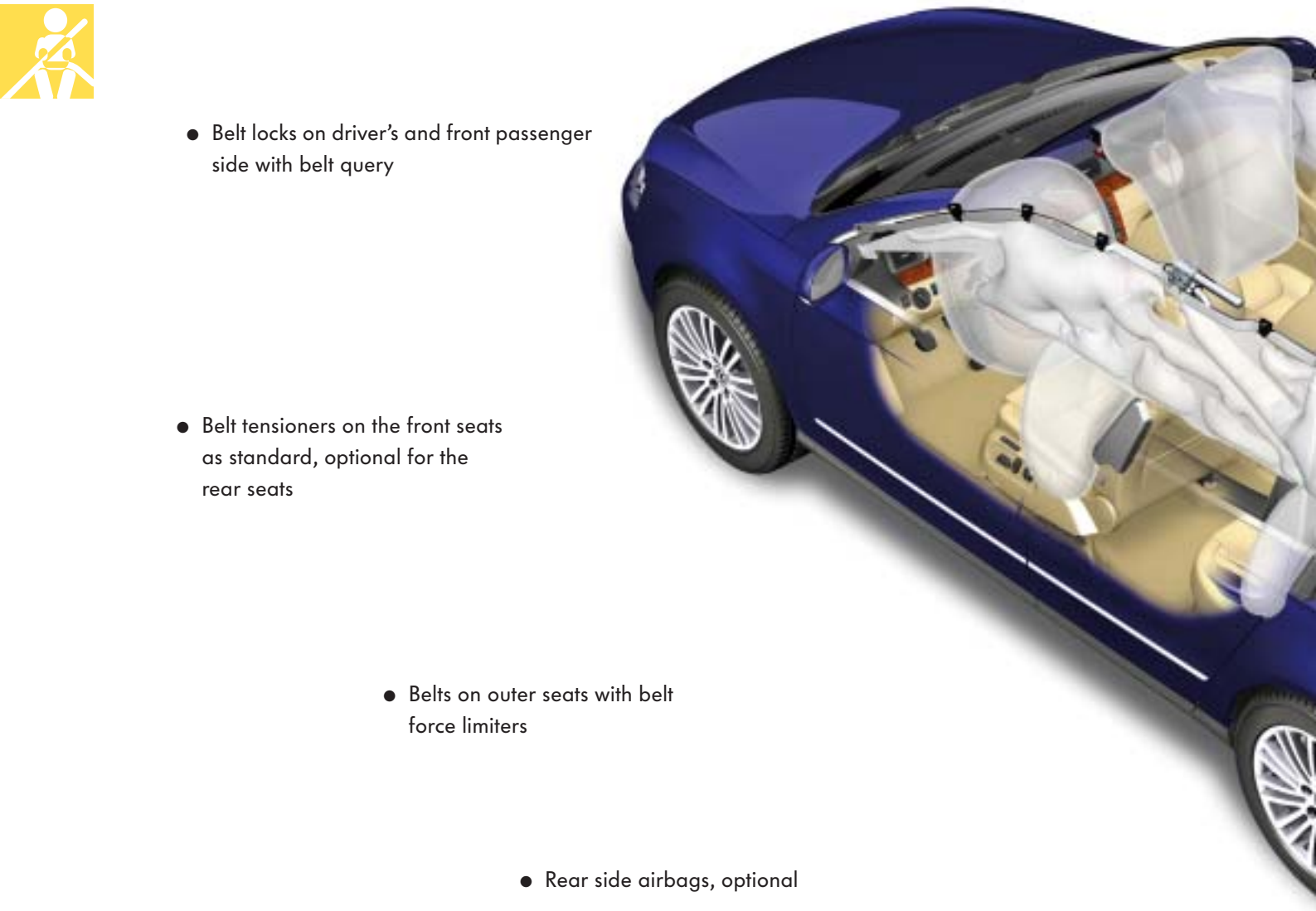
S356_044

Occupant Protection

Occupant protection

The Passat Estate 2006 has the same equipment as the Passat saloon with airbags, belts and belt tensioners.

- Driver's and front passenger airbags



- Belt locks on driver's and front passenger side with belt query
- Belt tensioners on the front seats as standard, optional for the rear seats
- Belts on outer seats with belt force limiters
- Rear side airbags, optional
- 2 pressure sensors for side crash detection, in the front doors

- Head airbags for the outer seats

- Front passenger airbag can be deactivated using a key switch in the glove compartment

- 2 acceleration sensors for lengthways direction in airbag control unit, 1 acceleration sensor for crossways direction in airbag control unit

S356_070

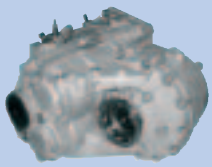
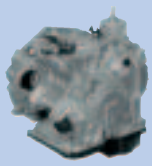
- 2 acceleration sensors for side crash detection, in C-pillar area

You will find detailed information on occupant protection in self-study programme 339 “The Passat 2006”.

Engines

Engine/gearbox combinations

Petrol engine / Diesel engine		5-speed manual gearbox 0AH	5-speed manual gearbox 0A4
	**1.6l/75 kW** **Petrol engine with 2-valve technology** BSE		
	**1.6l/85 kW** **FSI engine** BLF		
	**2.0l/110 kW** **FSI engine** BLR		
	**2.0l/147 kW** **Turbocharged FSI engine** AXX		
	**1.9l/77 kW** **TDI engine with 2-valve technology** BKC		
	**2.0l/103 kW 4V** **TDI engine with 4-valve technology** BKP		
	**2.0l/103 kW 2V** **TDI engine with 2-valve technology and diesel particulate filter** BMP		

6-speed manual gearbox 0AJ	6-speed manual gearbox 02S	6-speed manual gearbox 02Q	Direct shift gearbox 02E	6-speed automatic gearbox 09G
				
				
				
				
				

The 1.6l/75 kW engine with 2-valve technology

The 1.6l/75 kW engine is based on the familiar 1.6 l/75 kW engine with the code BGU, as used in the Golf 2004.

S356_004

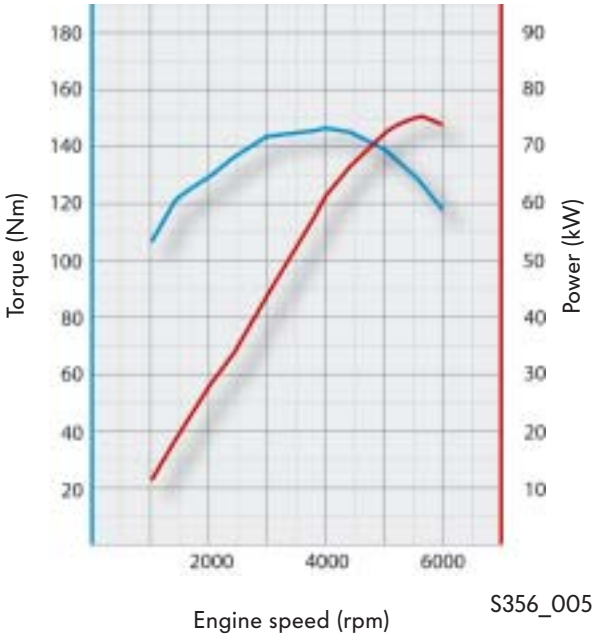
Technical features

- 2-valve roller rocker arm
- Aluminium engine block with ribbed sump
- Secondary air system
- Plastic variable intake manifold
- Pressure sensor system, previously hot-film air mass meter (HFM)
- No crankcase breather, venting only via the cylinder head
- No exhaust gas recirculation system.

Technical data

Engine code	BSE
Type	4-cylinder in-line engine
Displacement	1,595 cm^3
Bore	81 mm
Stroke	77.4 mm
Valves per cylinder	2
Compression ratio	10.3 : 1
Maximum output	75 kW at 5600 rpm
Maximum torque	148 Nm at 3800 rpm
Engine management	Simos 7.2
Fuel	Super unleaded RON 95 (normal unleaded at RON 91 with reduction in performance)
Exhaust gas treatment	Probe before catalytic converter: Linear Lambda probe Probe after catalytic converter: Step-type Lambda probe
Emissions standard	EU 4

Torque and power diagram



S356_005

The 1.6l/85 kW FSI engine

The 1.6l/85 kW FSI engine has been taken from the Passat Saloon 2006.

Technical features

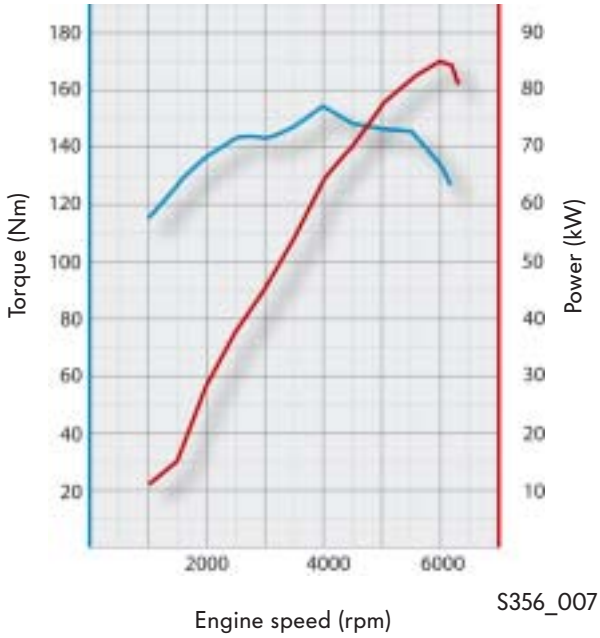
- Camshaft driven by timing chain
- Continuous camshaft timing adjustment
- Dual-circuit cooling system
- Regulated oil pump
- Direct petrol injection MED 9.5.10
- Lambda-1 operation (homogeneous operation)
- Fuel system regulated according to requirements

S356_006

Technical data

Engine code	BLF
Type	4-cylinder in-line engine
Displacement	1,598 cm^3
Bore	76.5 mm
Stroke	86.9 mm
Valves per cylinder	4
Compression ratio	12 : 1
Maximum output	85 kW at 6000 rpm
Maximum torque	155 Nm at 4000 rpm
Engine management	Bosch Motronic MED 9.5.10
Fuel	Super unleaded RON 95 (torque increase in mid rev range when Super Plus unleaded RON 98 is used)
Exhaust gas treatment	Starter catalytic converter, main catalytic converter, Lambda control
Emissions standard	EU 4

Torque and power diagram



S356_007

Do not run the car with Normal unleaded RON 91 because the ignition retardation will reach its control limit.

The 2.0l/110 kW FSI engine

The 2.0l/110 kW FSI engine does not use stratification nor the NO_x sensor system. The abbreviation FSI has been kept.

Technical features

- Ethanol-resistant Hitachi high-pressure pump
- Two overhead camshafts with continuous camshaft timing adjustment
- Roller rocker arm with hydraulic support
- Balancer shaft gear assembly
- Plastic variable intake manifold with change-over barrel
- Continuously adjustable charge-air flaps
- Water-cooled exhaust gas recirculation
- Homogeneous fuel injection

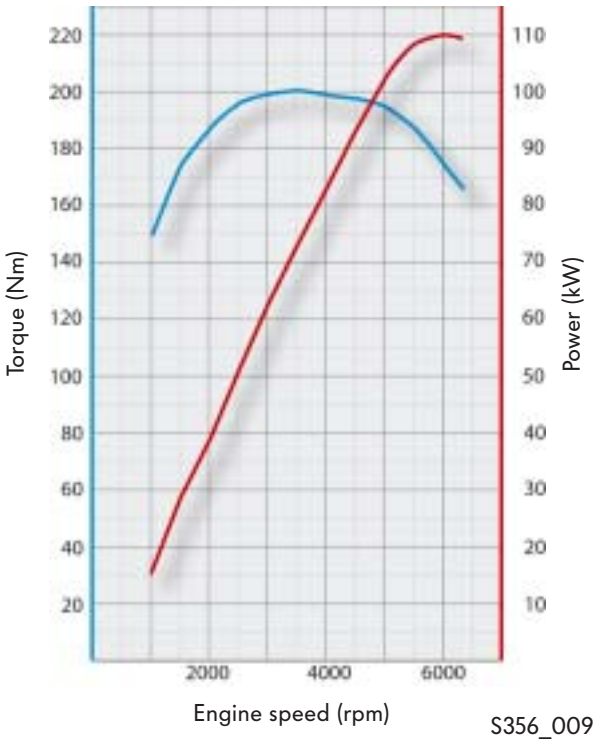
S356_008

You will find further information on this engine in self-study programme 322 “The 2.0 l FSI Engine with 4-valve Design”.

Technical data

Engine code	BLR
Type	4-cylinder in-line engine
Displacement	1,984 cm^3
Bore	82.5 mm
Stroke	92.8 mm
Valves per cylinder	4
Compression ratio	11.5 : 1
Maximum output	110 kW at 6000 rpm
Maximum torque	200 Nm at 3500 rpm
Engine management	Bosch Motronic MED 9.5.10
Fuel	Super Plus unleaded at RON 98 (Super unleaded at RON 95 with reduction in performance)
Exhaust gas treatment	Two starter catalytic converters and a three-way catalytic converter with Lambda control
Emissions standard	EU 4

Torque and power diagram



S356_009

The 2.0l/147 kW Turbo FSI engine

We have developed a turbocharged FSI engine on the basis of the 2.0l/110 kW engine.
This engine was used for the first time in 2004 in the Audi A3 Sportback and in the Golf GTI.

Technical features

- Single-pipe exhaust system with starter and underbody catalytic converter mounted near engine
- Ethanol-resistant Hitachi high-pressure pump
- Non-return fuel system
- Homogeneous fuel injection
- Decoupled drive chain wheel in the balancer shaft assembly
- Elliptical toothed belt pulley on crankshaft
- Mechanical brake servo pump
- Continuously adjustable charge-air flaps

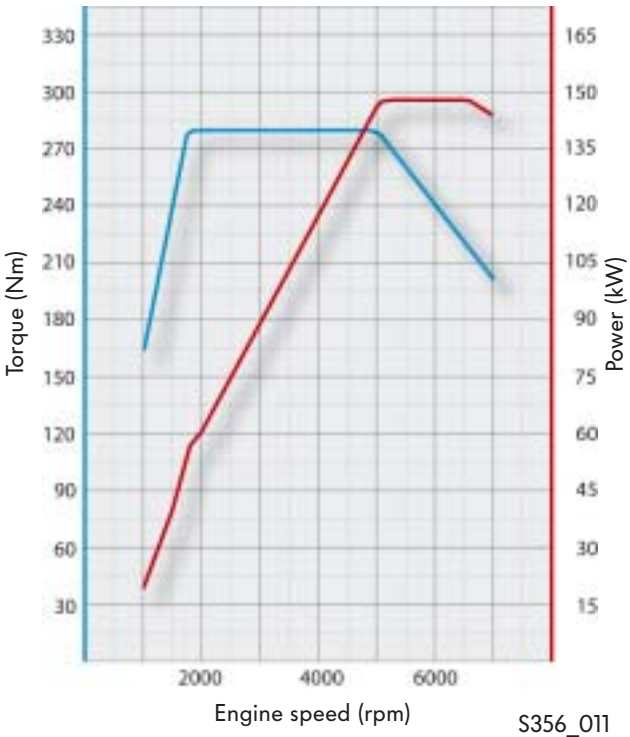
S356_010

You will find further information on this engine in self-study programme 337 “The 2.0 l FSI Engine with Turbocharger”.

Technical data

Engine code	AXX
Type	4-cylinder in-line engine
Displacement	1,984 cm^3
Bore	82.5 mm
Stroke	92.8 mm
Compression ratio	10.5 : 1
Maximum output	147 kW at 5100 to 6600 rpm
Maximum torque	280 Nm at 1800 – 4700 rpm
Engine management	Bosch Motronic MED 9.1
Camshaft timing adjustment	42° crank angle
Fuel	Super Plus unleaded at RON 98 (Super unleaded at RON 95 with reduction in performance)
Exhaust gas treatment	Two three-way catalytic converters with Lambda control
Emissions standard	EU 4

Torque and power diagram



S356_011

The 1.9l/77 kW TDI engine with 2-valve technology

This proven 1.9l/77 kW TDI engine is also used in the latest Golf model as well as in other Volkswagen models. It has been modified and adapted to the new vehicle for use in the Passat Estate 2006.

Technical features

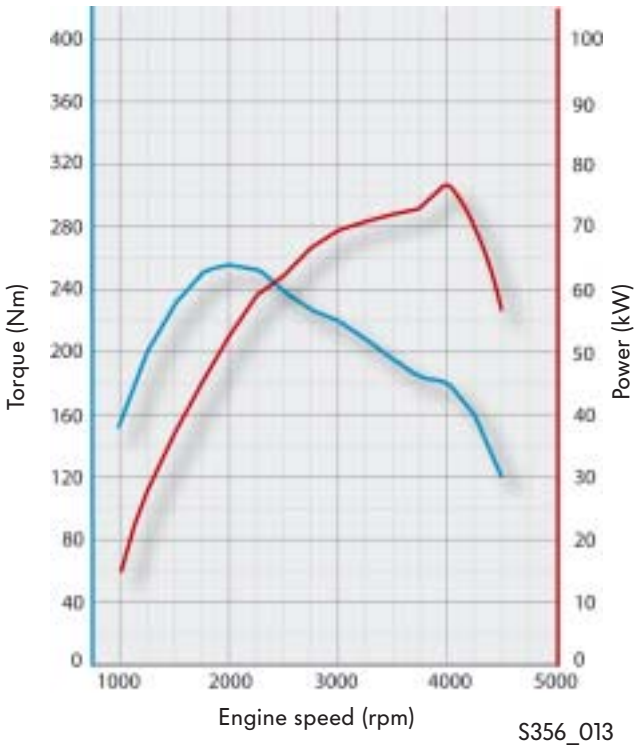
- Switchable cooler for exhaust gas recirculation
- Crankshaft sealing flange with integrated sender wheel for engine speed
- Accelerator pedal module with contact-free senders for the accelerator pedal position
- Contact-free clutch pedal switch

S356_012

Technical data

Engine code	BKC
Type	4-cylinder in-line engine
Displacement	1,896 cm^3
Bore	79.5 mm
Stroke	95.5 mm
Valves per cylinder	2
Compression ratio	19 : 1
Maximum output	77 kW at 4000 rpm
Maximum torque	250 Nm at 1900 rpm
Engine management	Bosch EDC 16
Fuel	Diesel, min. 51 CN
Exhaust gas treatment	Exhaust gas recirculation and oxidation catalytic converter
Emissions standard	EU 4

Torque and power diagram



S356_013

The 2.0l/103 kW TDI engine with 4-valve technology

Based on the 2.0l/103 kW 4V TDI engine from the Golf 2004 and Touran, the engine has been further developed for the Passat 2006.
Vibrations and noise emissions have been reduced by a balancer shaft module and new unit injectors with Piezo valves.

Technical features

- Unit injectors with Piezo valves
- Balancer shaft module

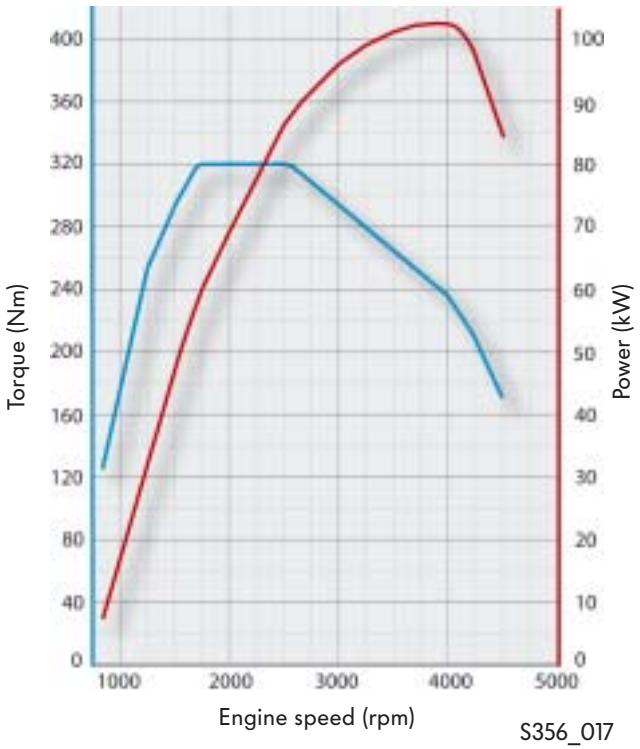
S356_016

You will find detailed information on the unit injectors with Piezo valve in self-study programme 352 “Unit Injectors with Piezo Valves”.

Technical data

Engine code	BKP
Type	4-cylinder in-line engine
Displacement	1,968 cm^3
Bore	81 mm
Stroke	95.5 mm
Valves per cylinder	4
Compression ratio	18 : 1
Maximum output	103 kW at 4000 rpm
Maximum torque	320 Nm at 1750 rpm to 2500 rpm
Engine management	Simos PPD 1
Fuel	Diesel, min. 51 CN
Exhaust gas treatment	Exhaust gas recirculation and oxidation catalytic converter
Emissions standard	EU 4

Torque and power diagram



S356_017

The 2.0l/103 kW FSI engine with 2-valve technology and diesel particulate filter

The 2.0l/103 kW TDI engine has been developed from the 1.9l/96 kW engine.

It was already used in the Passat model year 2001.

Technical features

Compared with the 2.0l engine in the Passat 2001, this engine has the following special features:

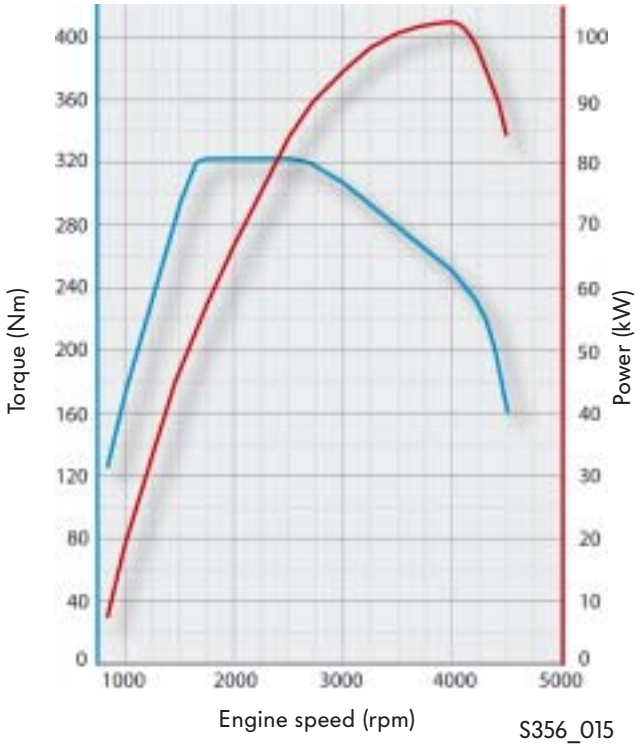
- Diesel particulate filter
- High-mounted turbocharger turned 180°. This mounting position gives the turbocharger better response and allows the charge-air volume to be reduced.
- Balancer shaft module
- Ceramic glow plugs

S356_014

Technical data

Engine code	BMP
Type	4-cylinder in-line engine
Displacement	1,968 cm^3
Bore	81 mm
Stroke	95.5 mm
Valves per cylinder	2
Compression ratio	18.5 : 1
Maximum output	103 kW at 4000 rpm
Maximum torque	320 Nm at 1750 rpm to 2500 rpm
Engine management	Bosch EDC 16
Fuel	Diesel, min. 51 CN
Exhaust gas treatment	Exhaust gas recirculation and diesel particulate filter
Emissions standard	EU 4

Torque and power diagram



S356_015

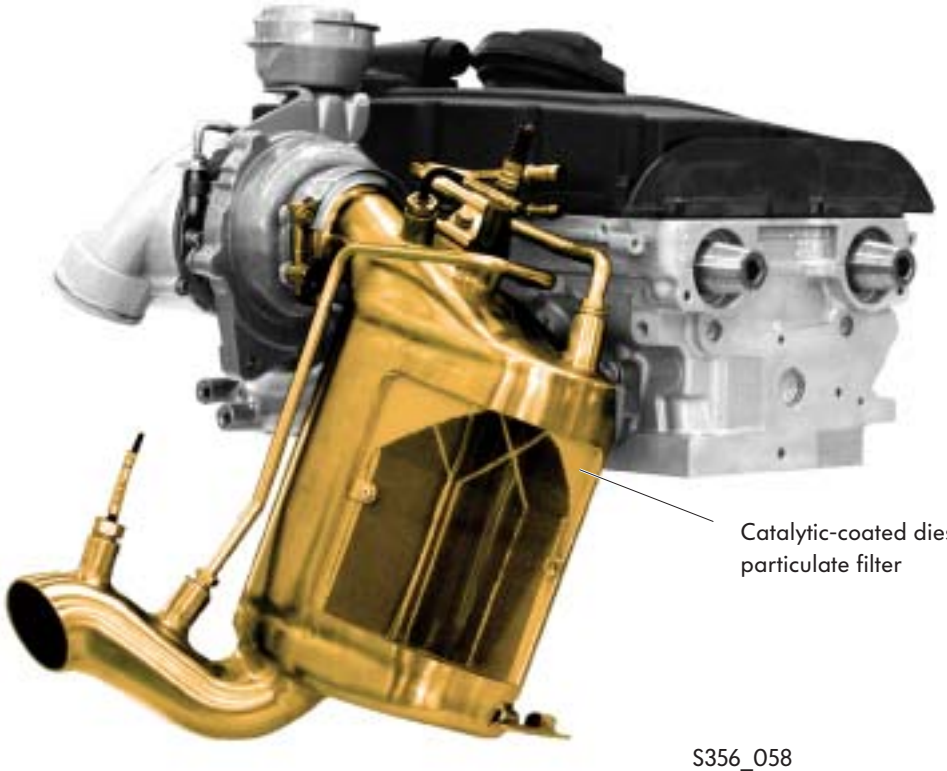
Diesel particulate filter

All diesel engines for the new Passat Estate 2006 meet the EU 4 emissions regulations.

If the customer prefers, cars with diesel engines can be equipped with a new generation particulate filter system.

This new system combines the oxidation catalytic converter and the particulate filter in one component — the catalytic-coated diesel particulate filter.

No fuel additive is required to burn the collected soot as the filter is located near the engine. The diesel particulate filters are completely maintenance-free when used with a new engine oil.



S356_058

You will find information on these diesel particulate filters in self-study programme 336 “The Catalytic-coated Diesel Particulate Filter”.

Ceramic Glow Plugs

A new glow plug with ceramic heating elements is used in diesel engines with diesel particulate filters. Two different sizes are used for the different diesel engines. There is a slim version with M8 thread for the 4-valve diesel engines and a short version with M10 thread for the 2-valve diesel engines.

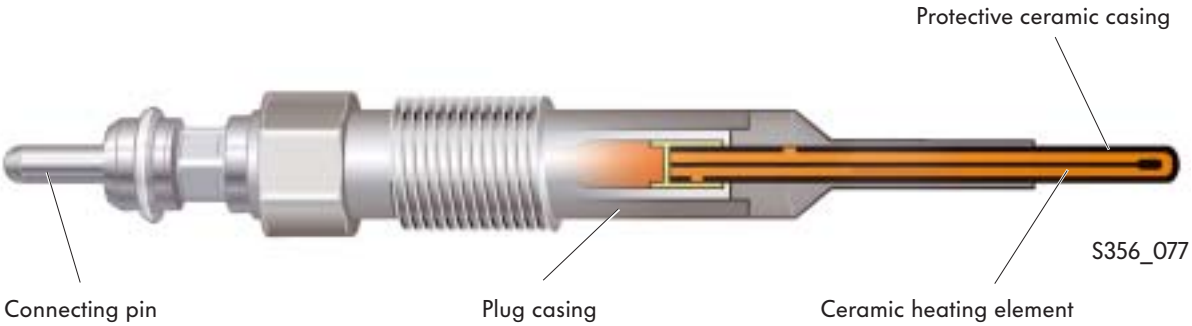
S356_076

2V diesel engines

4V diesel engines

Advantages of ceramic glow plugs

- Better cold start performance due to higher pre-start and post-start glow temperatures
- Improved emissions values due to overall higher glow temperatures
- Fewer ageing problems



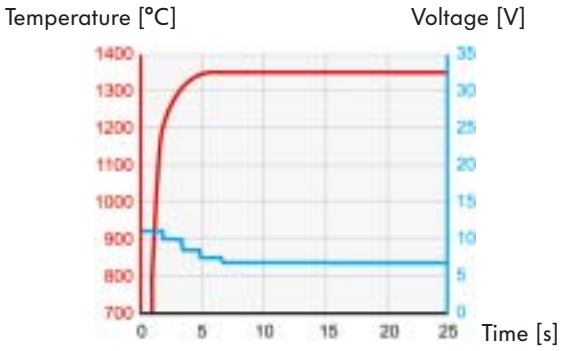
The ceramic glow plugs are made up of the connecting pin, the plug casing and the ceramic heating element. The heating element is made up of an insulating protective ceramic casing and an inner conductive ceramic heating element that performs the tasks of the regulating and heating coils in metal glow plugs.
The ceramic glow plug has a nominal voltage of 7 volts.

Preheat

At outside temperatures below 14 °C, the glow plug system is switched on once the ignition is turned on. For a maximum of 2 seconds, a voltage of 11.5 V is applied for fast heating.

The voltage from the engine control unit is then regulated by the automatic glow period control unit depending on the engine operating conditions.

Ceramic glow plug



S356_079

Metal glow plug

S356_080

Post-start glow phase

To reduce combustion noise and carbon hydride emissions, the glow plug operation continues for a maximum of 5 minutes after the engine has been started up to a coolant temperature of 20 °C.

The post-start glow phase has been improved by the higher post-start glow temperature of up to 1350 °C (metal glow plug: 1100 °C).

Intermediate glow phase

There is an intermediate glow phase to regenerate diesel particulate filters. The intermediate glow phase improves the combustion conditions during the regeneration process.

As the ceramic material does not age so fast, the additional loading from the intermediate glow period for the regeneration phases of a diesel particulate filter does not create any additional requirement for the ceramic glow plug.

The ceramic glow plugs are sensitive to bumps and may not be bent.
Please note the information in the repair guide.

Transmission

6-speed direct shift gearbox 02E

The 6-speed direct shift gearbox 02E combines the advantages of a manual gearbox, like high efficiency, robustness and sportiness, with the advantages of an automatic gearbox, like a high level of convenience, especially with gear changes.

Technical data

- Weight — approx. 94 kg, front-wheel drive
- Torque — max. 350 Nm
- Clutch — Two multi-plate wet clutches
- Operating mode — Automatic and Tiptronic
- Oil volume — 7.2l DSG oil G 052 182

S356_002

The 6-speed automatic gearbox 09G

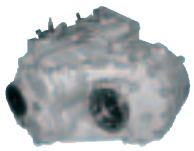
The 6-speed automatic gearbox 09G is a compact, light, electronically controlled gearbox for transverse mounting.

Technical data

- Weight — approx. 82 kg, front-wheel drive
- Torque — 09G – 280 Nm
- Clutch — Torque converter
- Operating mode — Automatic and Tiptronic
- Oil volume — 7.0l G 052 025 A2 lifetime

S356_003

Manual gearboxes – Overview

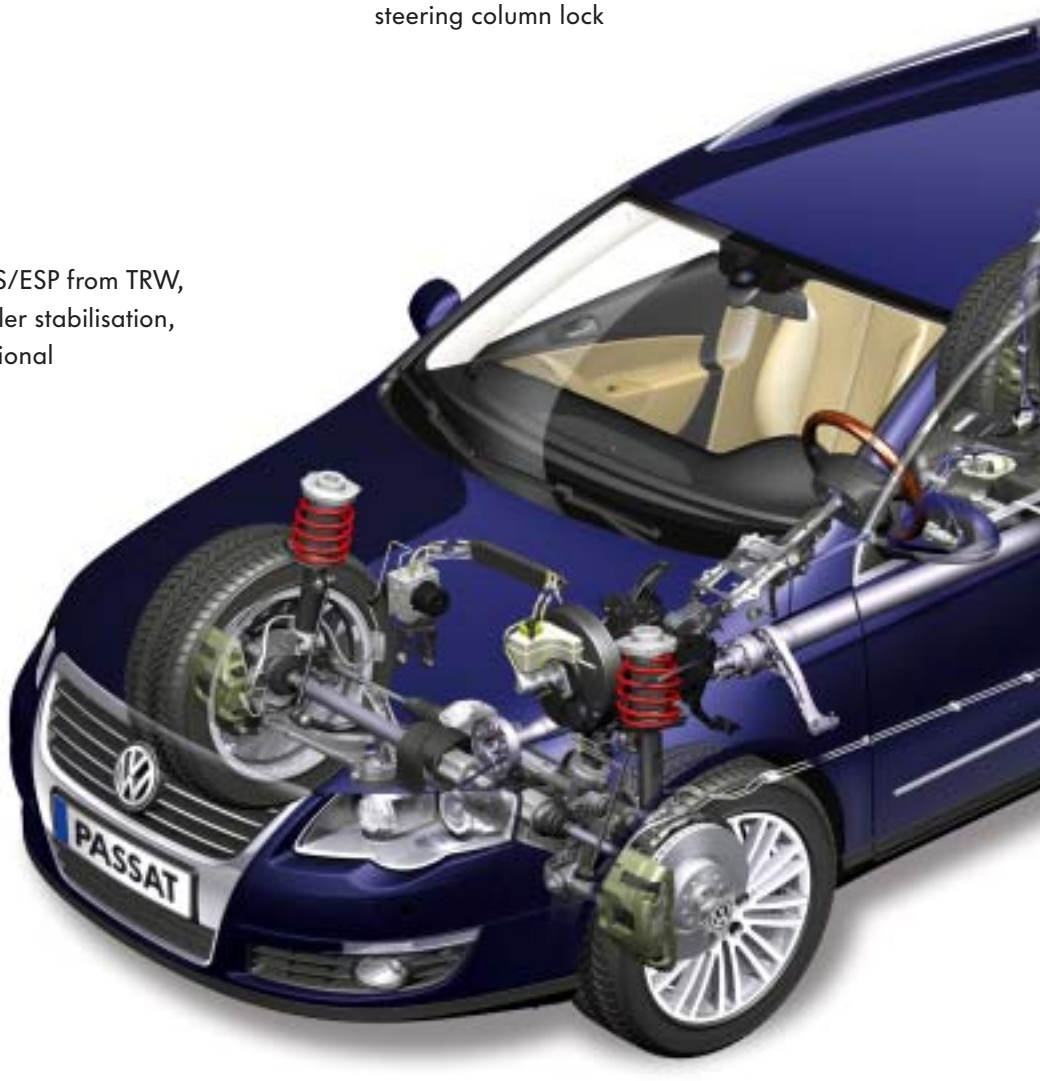
Manual gearbox	Already used in:	Technical features	See also self-study programme no.:
 **5-speed manual 0AH**	Caddy	• Developed from 02T gearbox • Shaft spacing increased, axle drive reinforced, casing adapted • Without speedometer sender	328
 **5-speed manual 0A4**	Golf Caddy	• Developed from 02J gearbox • Shaft spacing increased, axle drive reinforced, casing adapted • Without speedometer sender	328
 **6-speed manual 0AJ**	Touran	• Developed from 02U gearbox • Longer shafts, additional gear pair, new housing lid • Without speedometer sender	306
 **6-speed manual 02S**	Golf Touran	• Developed from 02J gearbox • Longer shafts with additional bearings, additional gear pair, new longer aluminium housing lid • Without speedometer sender	306
 **6-speed manual 02Q**	Golf Touran	• Developed from 02M gearbox • Changes to selector shaft, selector fork with stops in housing, new bearings • Without speedometer sender	306

These manual gearboxes are already used in the group and have simply been adapted for use in the new Passat. These gearboxes are only listed in this table with a brief description as they are already described in detail in other self-study programmes.

Chassis

The complete chassis from the saloon has been taken for the Passat Estate 2006. The spring/damper configurations have been adapted for higher axle loads.

- Safety steering column with electrical steering column lock
- ABS/ESP from TRW, trailer stabilisation, optional
- Electromechanical power steering
- Lightweight strut front axle
- Self-supporting tyres, optional
- Tyre pressure monitor, optional



You will find further information on the chassis in self-study programme 339 “The Passat 2006”.

- Nivomat automatic level control, optional

- Four-link rear axle

S356_072

- Electromechanical parking brake

- AUTO HOLD function, optional

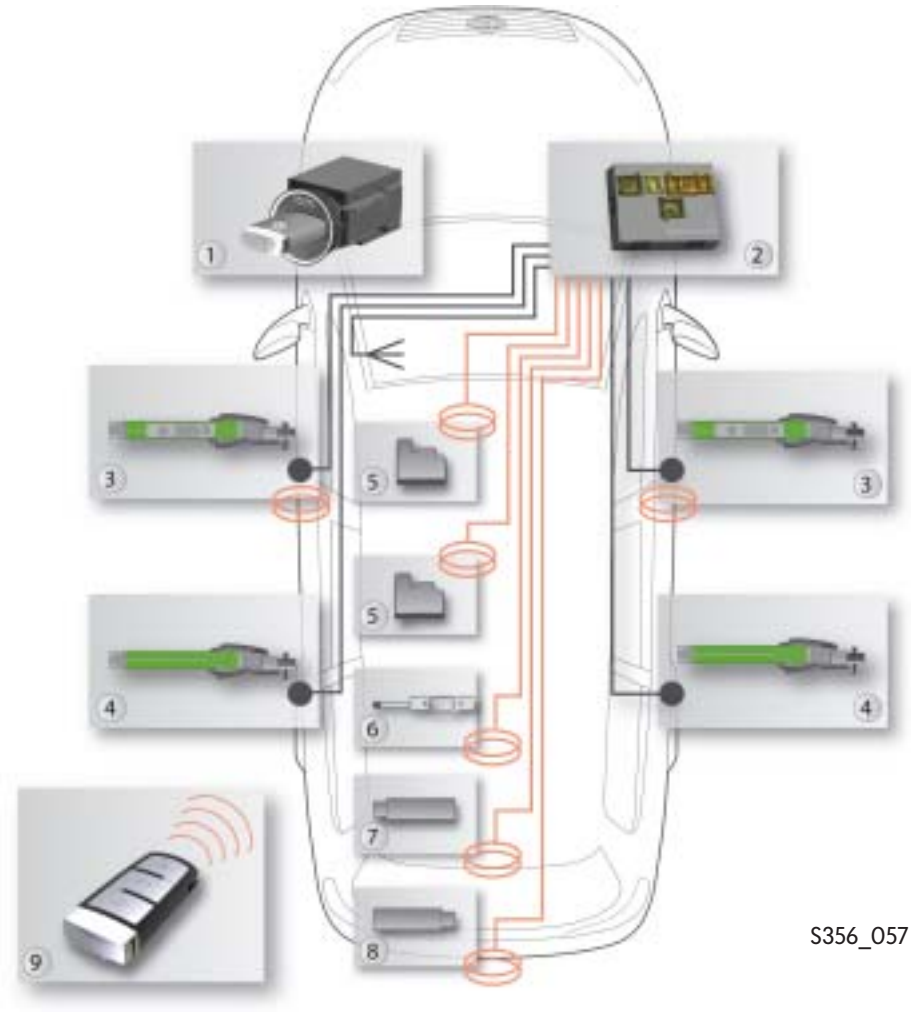
- Dynamic auto release

- Tyre pressure monitoring system, optional

You will find details on specific chassis areas in the following self-study programmes:
SSP 347 “Tyre Pressure Monitoring Systems”
SSP 346 “The Electromechanical Parking Brake”
SSP 357 “The Nivomat”

Entry and start authorisation system

The convenience function of the **Ke**yless **S**tart **S**top S**y**stem (also called Kessy) allows you unlock and lock the car as well as start and turn off the engine without actively using the ignition key.
This system for access and start authorisation will also be used in the Passat saloon at the same time.



S356_057

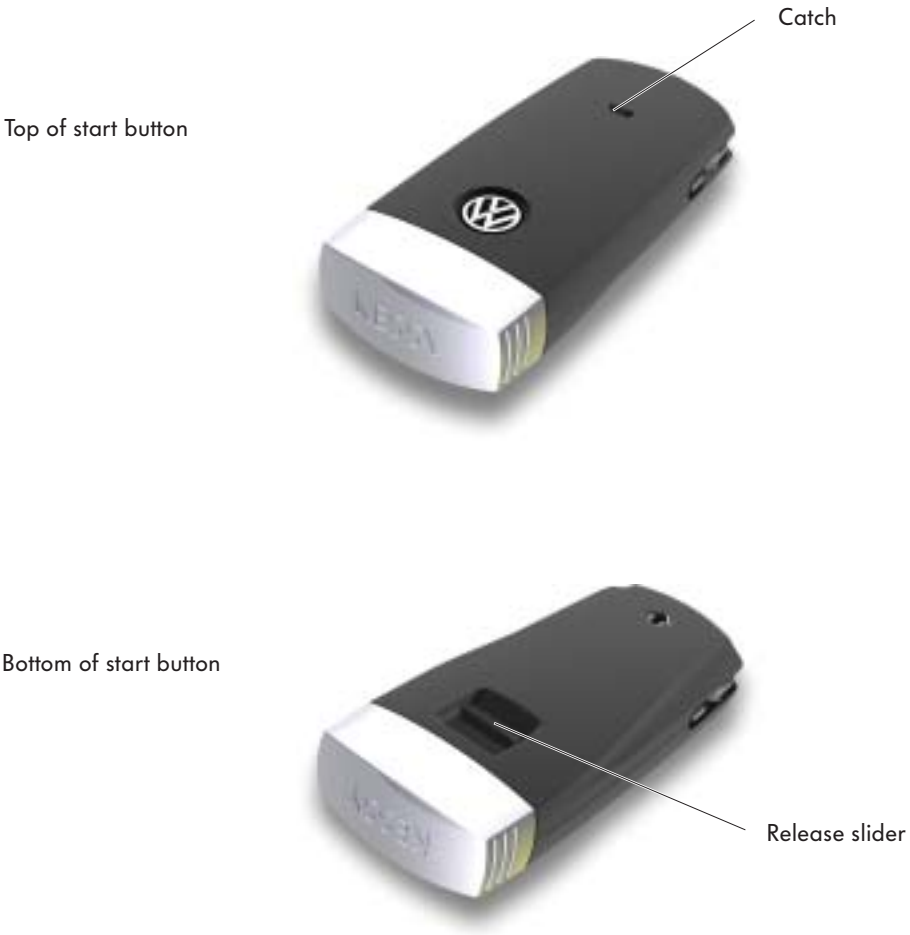
1 - Entry and start authorisation switch E415
2 - Convenience system central control unit J393
3 - Driver door exterior handle touch sensor G415 with driver side aerial for entry and start authorisation R134 and front passenger door exterior handle touch sensor G416 with front passenger side aerial for entry and start authorisation R135
4 - Rear left door exterior handle touch sensor G417 and rear right door exterior door handle touch sensor G418
5 - Interior aerial 1 for entry and start authorisation R138 and interior aerial 2 for entry and start authorisation R139
6 - Entry and start authorisation aerial 3 in interior R154
7 - Luggage compartment aerial for entry and start authorisation R137
8 - Rear bumper aerial for entry and start authorisation R136
9 - Ignition key

Start button

The start button is a simple contact switch and does not contain any electronics or transponder technology.

This button replaces the ignition key. A catch prevents it being pulled out accidentally. It can be left in the ignition lock.

When you want to remove the start button from the entry and start authorisation switch, you need to pull the release slider back to pull in the catch.



S356_051

You will find more information on access and start authorisation in self-study programme 273 “Phaeton – Convenience and Safety Electronics”.

Convenience System Central Control Unit J393

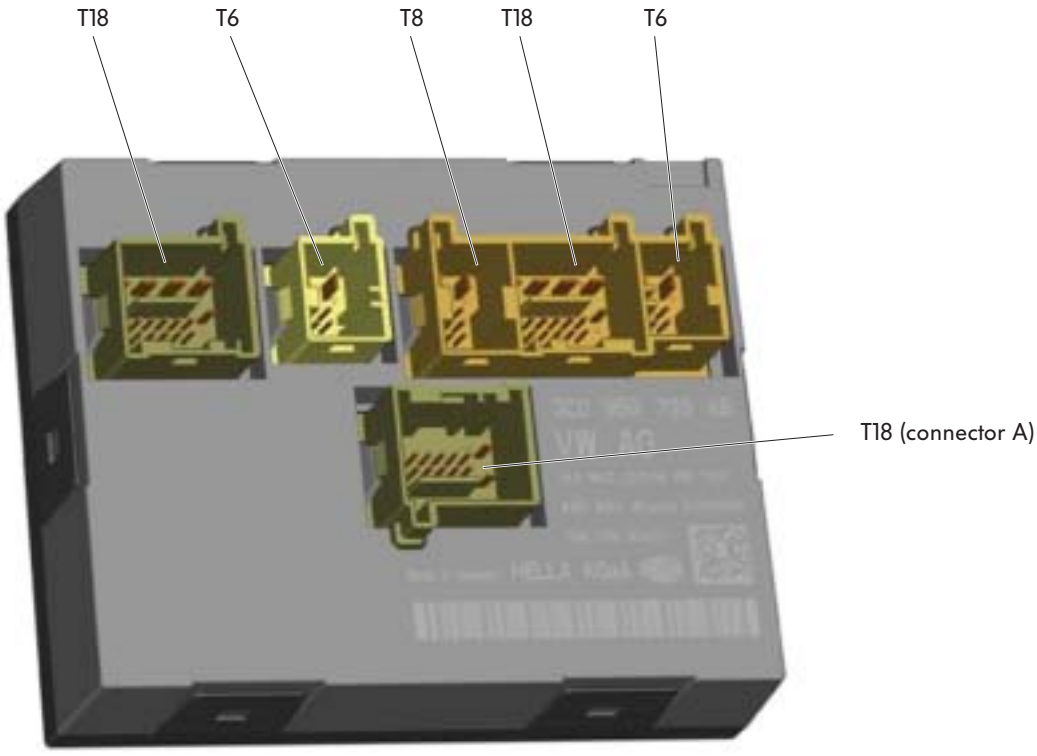
The convenience system central control unit J393 has the functions

- Central locking/remote control
- Immobilizer
- Anti-theft alarm
- Tyre pressure monitor
- Window regulators
- Access and start authorisation

The access and start authorisation function is a new addition.

Another connector is needed for this (connector A).

The location of the control is still under the glove compartment, however, the dimensions are slightly larger.



S356_049

Legend

T6	Connector, 6-pin
T8	Connector, 8-pin
T18	Connector, 18-pin

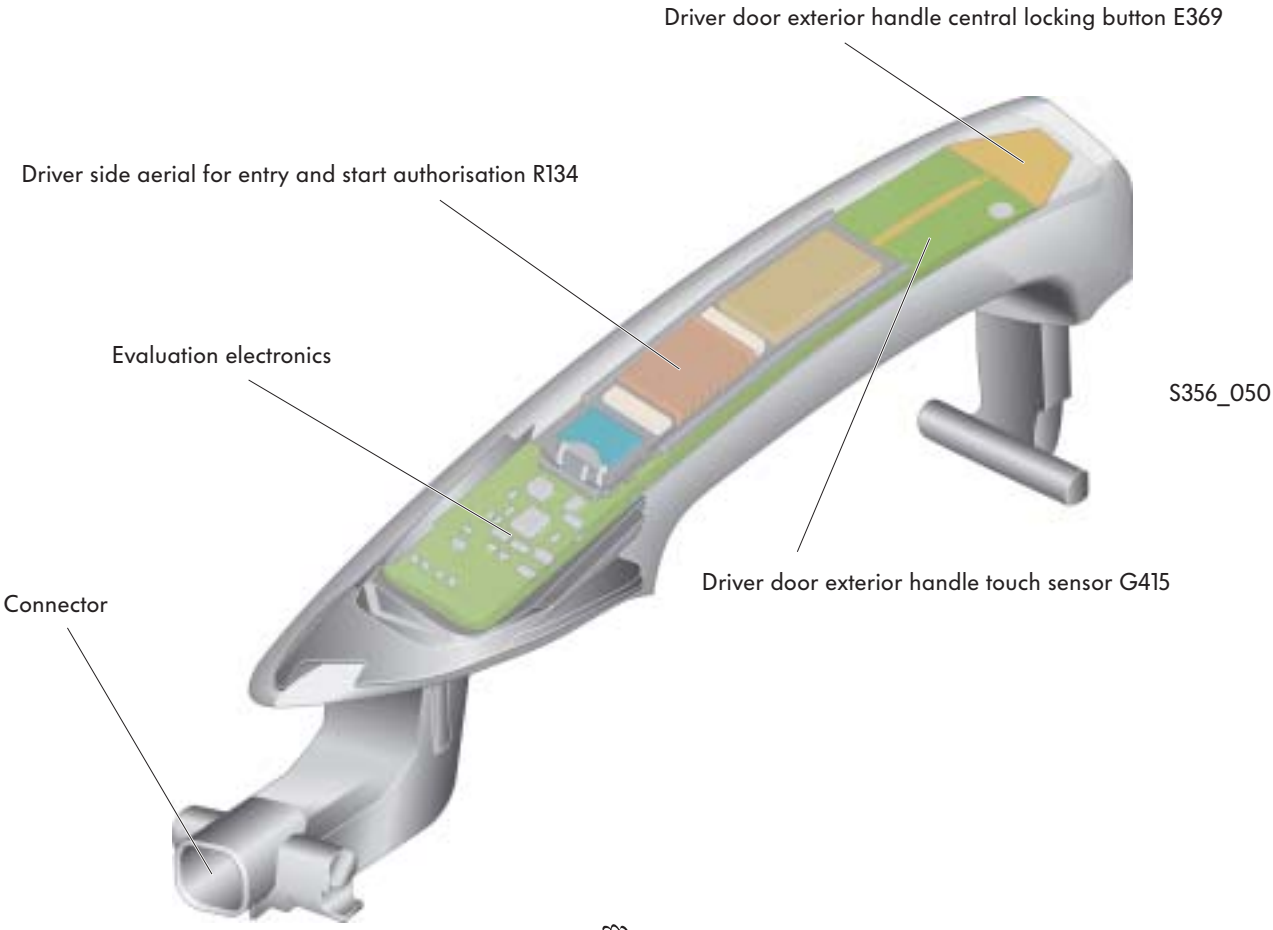
Front and rear door handles

The door handles have two-stage proximity sensors (G415 to G418). Approx. 2 cm in front of the door handles, the capacitive proximity sensor detects someone approaching and activates the convenience system central control unit J393. Now there is a query via the aerial R134/R135 to check whether an authorised key has been recognised. As soon as there is an unlock request (hand on door handle changes the capacity), the car can be unlocked immediately.

The front car doors have integrated aerial modules (R134 and R135) to establish whether an authorised key is in the vicinity.

The lock sensor also recognises by means of capacitive change that you want to lock the car and informs the convenience system central control unit J393.

If the sensor is touched for longer than 2 seconds, the window convenience close function will be activated.



The diagram shows the handle for the front left door. There are no access and start authorisation aerials for the rear door handles.

Interior aerials

Engine start

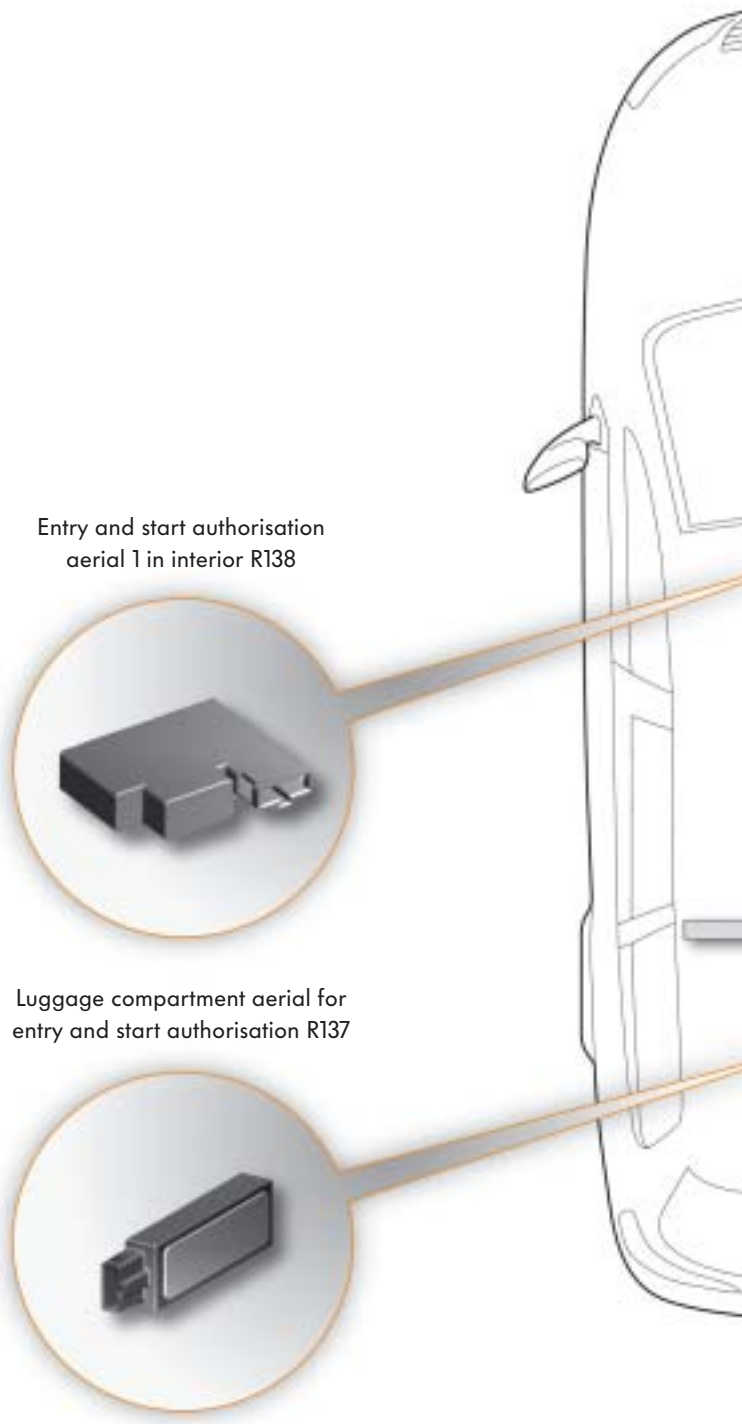
The aerials issue a signal and the authorised key measures the field strength of the signal. This signal is transferred to the immobilizer. Next the start procedure is permitted via the immobilizer.

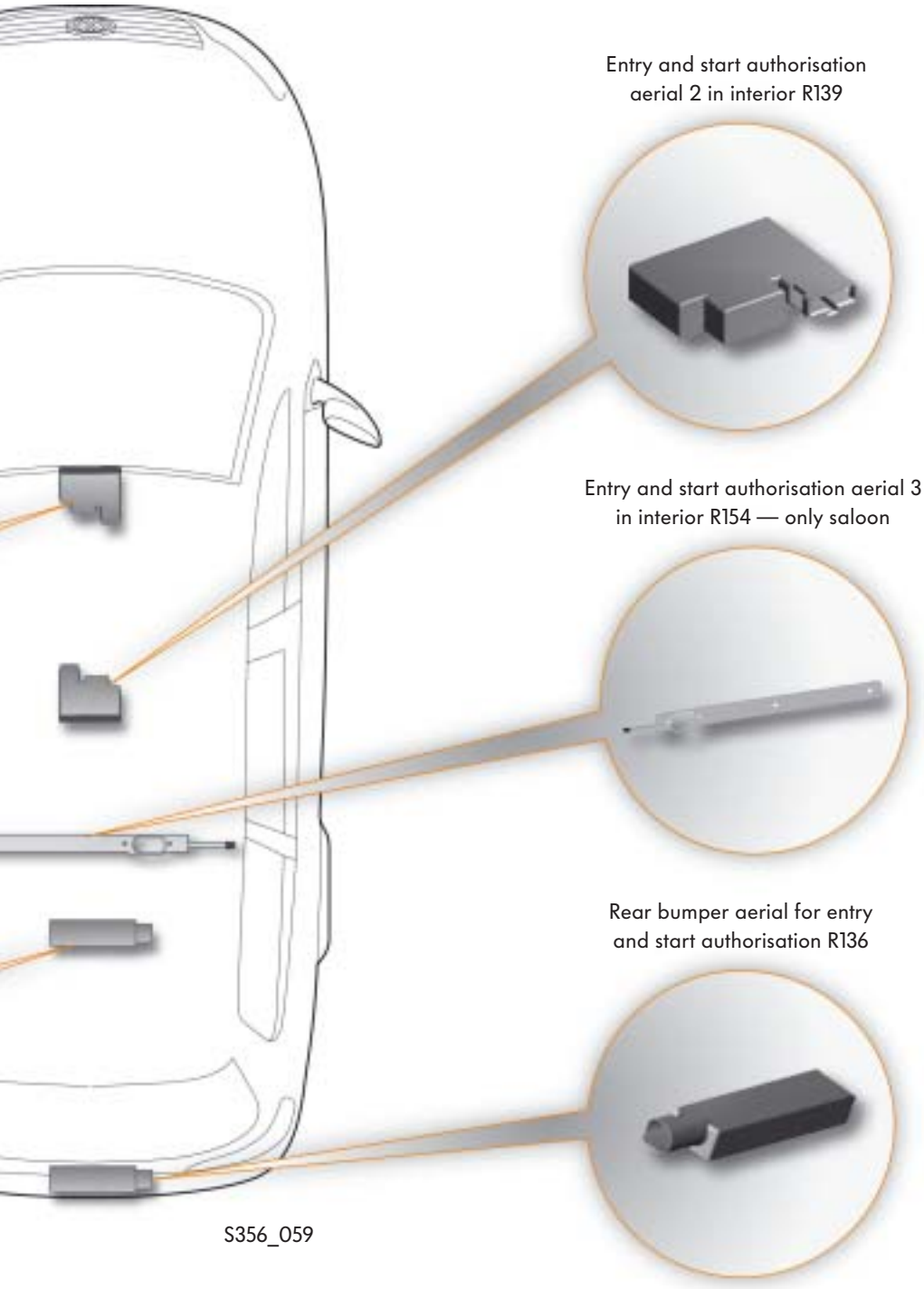
Once an authorised key is detected in the interior or boot, the start procedure for the Passat Estate 2006 is cleared.
In the saloon, the key needs to be in the passenger compartment.

Locking

If a key is detected in the interior, but you still want to lock the car, another authorised key has to be recognised outside the car.

After locking, a message will be issued in the dash panel insert informing you that there is another key in the car/luggage compartment.
The car will not be locked if a key is not detected outside.





The rear bumper aerial for entry and start authorisation R136 monitors the rear area. If an authorised key is recognised, the tailgate can be opened or closed.

Adaptive cruise control

The adaptive cruise control is an extension of the conventional cruise control system. This driver assistance system is also featured in the Passat saloon.

Control unit with display in dash panel insert J285

Cut-off relay for CAN powertrain bus J788

Adaptive cruise control unit J428 with sensor for automatic distance control G550

Function limits

The upper speed limit for the adaptive cruise control is 210 km/h.

The target speed can be set at any actual speed, however, activation only starts at the minimum actual speed of 30 km/h.

Speed limits
from 30 km/h to 210 km/h

S356_054

S356_073

Operating lever with adaptive cruise control functions

You will find further information on the adaptive cruise control system in SSP 276 “The Phaeton – Automatic Proximity Control (APC)”.

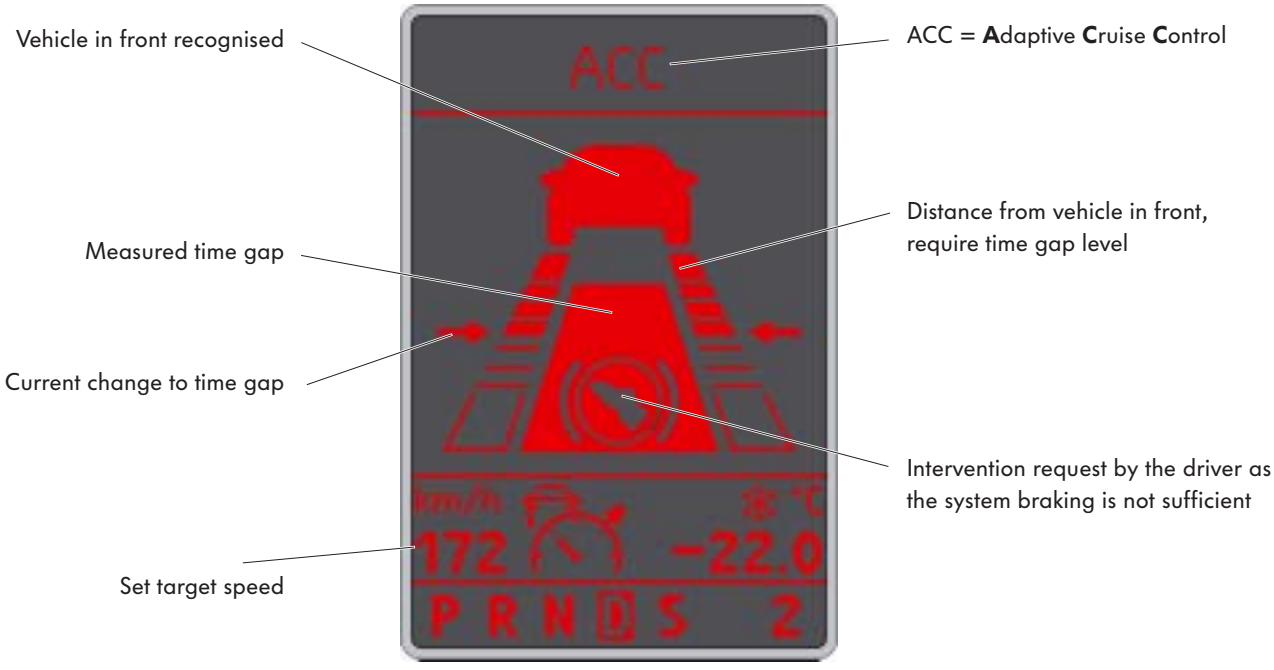
Driver information in dash panel insert

Information on the system states (active, passive and ACC in background) is displayed in the dash panel insert for the driver.

Also the following are displayed and indicated acoustically:
- the set target speed,
- a possible vehicle in front,
- the distance from the vehicle in front and
- a possible intervention request for the driver.

The two arrows on the road depicted indicate that the required distance from the vehicle in front (time gap) is being changed on the new steering column switch.

Oncoming and parked vehicles or objects are recognised, but not taken into consideration in the calculation.



S356_048

Display of system states

“Active”	-	Indicated by filled in road lines
“Passive”	-	Outline of road displayed
“ACC in background”	-	The outline of the vehicle in front is displayed and the target speed is in a smaller font

Using the adaptive cruise control system

The adaptive cruise control system is operated exclusively with a third steering column stalk.

The last value set with the slider switch is stored in the adaptive cruise control unit.

S356_047

The main controls are:

1. On/Off	Switch adaptive cruise control system on and off
2. Set	Activate the adaptive cruise control with the current speed as the target speed
3. Cancel	Switch off cruise control temporarily
4. Resume	Resume cruise control
5. + – Speed	Increase/reduce the set target speed
6. + – Dist	Increase/reduce the set distance

For more information on operation of the adaptive cruise control, please refer to the operating manual.

Adaptive cruise control unit J428 and sensor for automatic distance control G550

The adaptive cruise control unit J428 and the sensor for automatic distance control G550 are integrated in one component and mounted behind the VW badge. The badge is made from plastic with an indium coating with a maximum attenuation of 2.5 dB.

Transmission frequency	=	76.5 GHz
Range	=	150 m
Horizontal opening angle	=	12°
Vertical opening angle	=	± 4°
Speed range	=	30 ... 210 km/h
Min. curve radius	=	500 m

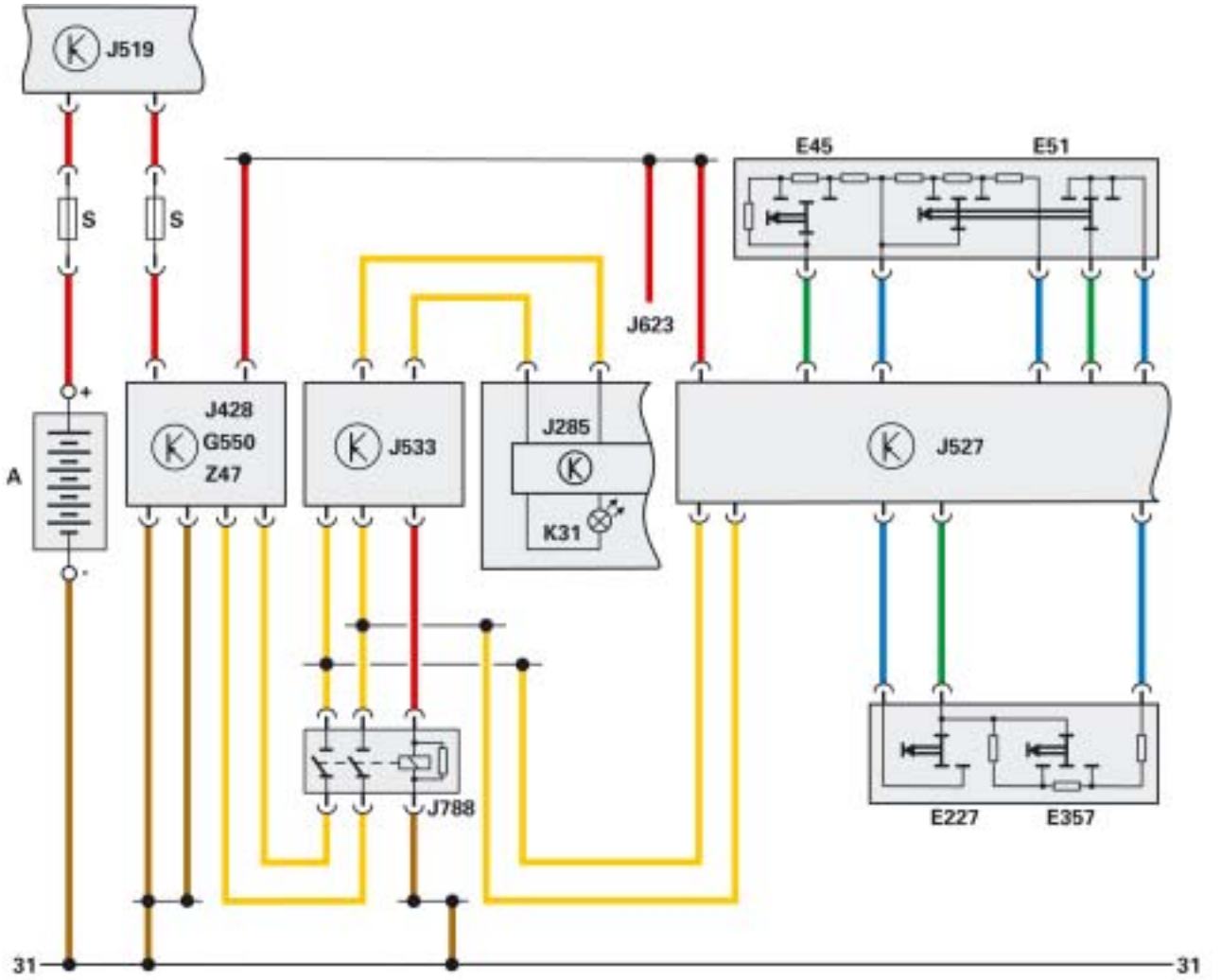
Adaptive cruise control unit J428 with sensor for automatic distance control G550

S356_052

Cut-off relay for CAN powertrain bus J788

For anti-theft protection and for reasons of CAN stability in crashes, the bus connection is not direct, but can be deactivated via a cut-off relay for CAN powertrain bus J788.
This cut-off relay is located on a separate carrier for 8 relays above the onboard supply control unit.

Functional diagram



S356_078

A	Battery		J623	Engine control unit	
E45	Cruise control system switch		J788	Cut-off relay for CAN powertrain bus	
E51	Cruise control system master switch		K31	Cruise control system warning lamp	
E227	Cruise control system (CCS) SET button		S	Fuse	
E357	Adaptive cruise control regulation button		Z47	Sensor heater for adaptive cruise control system	
G550	Sensor for automatic distance control				
J285	Control unit with display in dash panel insert			=	Input signal
J428	Adaptive cruise control unit			=	Output signal
J519	Onboard supply control unit			=	Positive
J527	Steering column electronics control unit			=	Earth
J533	Data bus diagnostic interface			=	CAN data bus

Heating and Air Conditioning

Air conditioning

The Passat Estate 2006 uses the same concept as the Passat Saloon 2006. This concept was already used in the Golf 2004.

Two different systems are used:

- Climatic semiautomatic heating and air conditioning
- 2C-Climatronic heating and air-conditioning system

Both systems use the same air-conditioning unit that has been adapted to the respective equipment.

The basic difference is the air distribution. In addition, the 2C-Climatronic has an automatic and stepless heating fan and a sunlight sensor.

The whole interior forms one climate zone with Climatic.
The interior can be split into two climate zones with 2C-Climatronic. A fresh air flow flap is also fitted.

2C-Climatronic is equipped with indirect ventilation which allows the air to be distributed between the vents in the centre of the dash panel and indirect ventilation.

Indirect ventilation

S356_067

You will find further information on the air-conditioning systems in self-study programmes 339 “The Passat 2006” and 318 “The Golf 2004”.

S356_064

Semiautomatic heating and air conditioning
Climatic control unit

S356_065

Heating and air conditioning
2C-Climatronic control unit

S356_066

Universal mobile phone preparation

Premium phone preparation with Bluetooth™

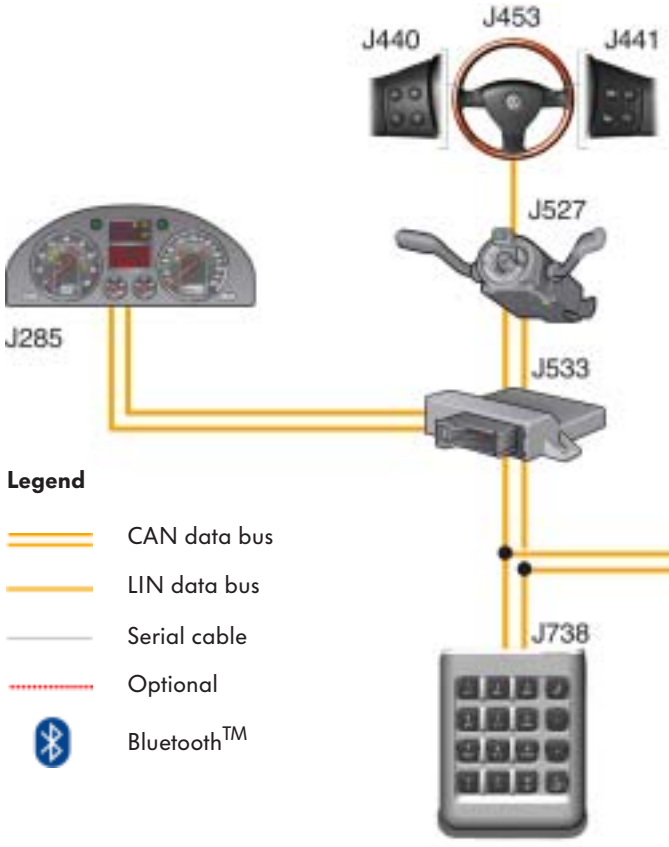
In the Passat Estate 2006, a new generation of hands-free system is used that no longer requires a specific hardware type — the premium universal telephone preparation.
At the same time, the Bluetooth™ transfer technology is being introduced to VW cars. This is a global standard interface.

Your telephone needs to support RSAP (Remote-SIM-Access-Profile) via Bluetooth™ so that the software can interact with the universal mobile phone preparation unit.
This is required to transfer all of the SIM data from the telephone to the universal telephone preparation. The control unit takes care of all processes in the GSM network and therefore works like a built-in telephone.

Functions

- Operation via the multifunction steering wheel and the keypad on the instrument panel
- Display of telephone information in the Highline dash panel insert display
- Telephone data transfer and mobile link via Bluetooth™ transfer
- Hands-free system and audio mute
- GSM aerial directly on universal preparation amplifier module
- SIM data incl. telephone book available in universal mobile preparation
- Separate button module for information and breakdown calls
- The phone holder can be connected for charging purposes
- Follow-up time can be set to up to 60 minutes
- Self-diagnosis

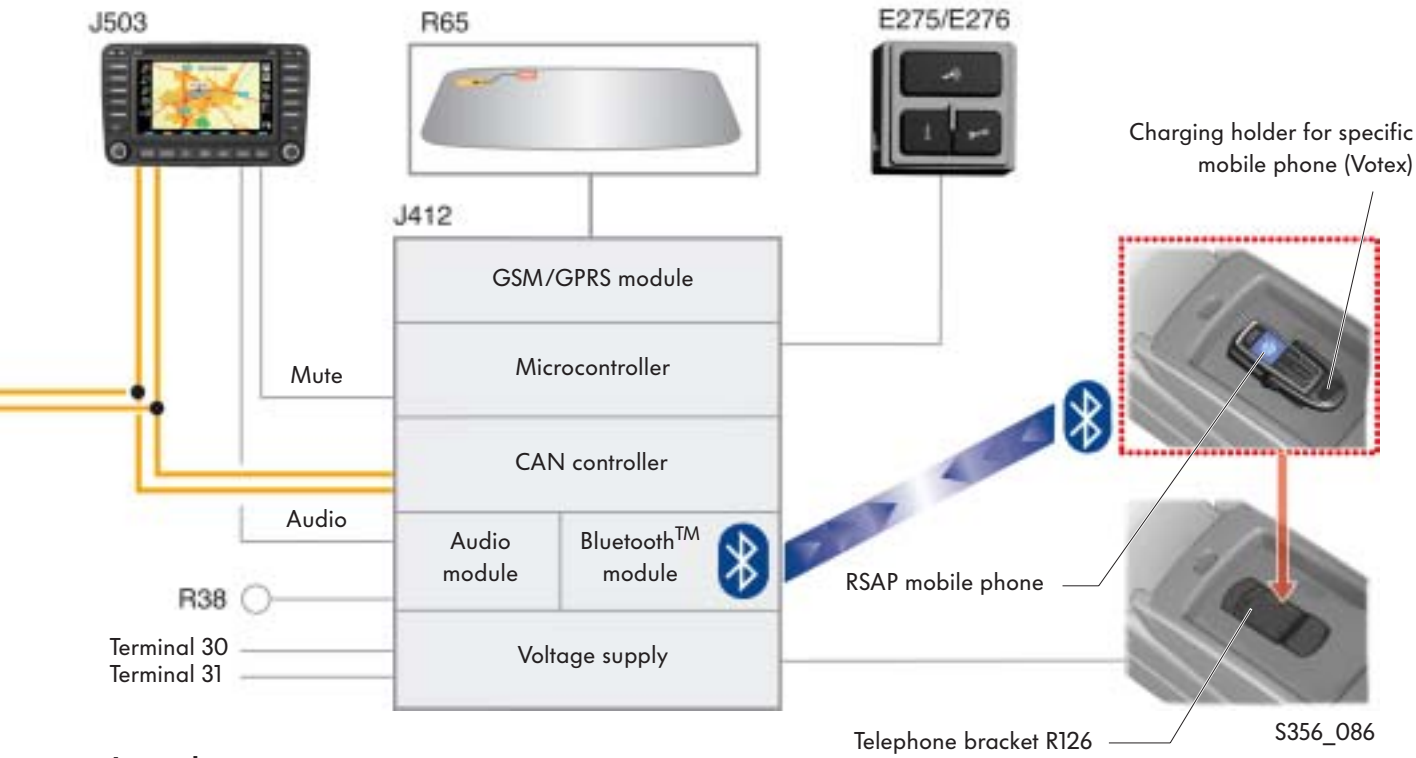
You will find more detailed information on the universal telephone preparation in self-study programme 345 “Universal Telephone Preparation”.



You will find a list of compatible charging holders in the latest Votex information.

Essential technical and functional features:

- Wireless phone integration
  You can leave your phone in your jacket pocket
- The mobile phone itself does not transmit via GSM. Only Bluetooth™ remains active
- Greater reception and transmission power due to separate GSM module in universal telephone preparation control unit.
- No separate SIM card (twin card) needed for universal telephone preparation operation
- The mobile phone needs to be programmed to use the phone system control unit before you use the system for the first time (Bluetooth™ link).



Legend

E275	Breakdown assistance call button
E276	Emergency assistance call button
E440	Multifunction buttons on left in steering wheel
E441	Multifunction buttons on right in steering wheel
J285	Control unit with display in dash panel insert
J412	Mobile telephone operating electronics control unit
J453	Multifunction steering wheel control unit
J503	Control unit with display for radio and navigation
J527	Steering column electronics control unit
J533	Data bus diagnostic interface
J738	Telephone controls control unit
R38	Telephone microphone
R65	Telephone aerial
R126	Telephone bracket

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PASSAT

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Volkswagen AG
Service Training VK-21
Brieffach 1995
38436 Wolfsburg