



Self-study Programme 444

The Polo 2010



The new Polo, which is now the fifth generation, communicates particularly high value and quality, which, together with unlimited everyday usability and great economy, sets the benchmark in this class.

The new design is shaped by a unique clarity and straightforwardness. Its form and lines convey the precision and quality for which Volkswagen stands.

The ESP electronic stability programme with hill start assist will come as standard in many European countries.

The combined head-thorax airbags in conjunction with the driver and front passenger airbags have been added to the standard equipment and ensure a high level of passive safety.

The new turbo diesel engines using common rail technology, the TSI engines and the 7-speed dual clutch gearbox all allow dramatic cuts in consumption and emissions values across the output levels.

The new Polo 2010 — high-quality and dynamic — the standard in its class.



S444_005

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.





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The Polo 2010 from Volkswagen

The illustration shows important standard and optional features for the basic version of the Polo. These may vary from country to country.

- Combined head-thorax airbags for driver and front passenger, integrated in the front-seat backrests
- Multimedia Device Interface box (MDI), optional
- Multifunction display and tyre pressure monitor, optional
- 7-speed dual clutch gearbox, optional
- Daytime running lights, optional
- Fog lights and static cornering lights, optional
- ESP with hill start assist





- “Climatic” and “Climatronic” air-conditioning systems, optional

- Rear bench with optimised folding angle to create flat load floor



- Variable load floor in two levels, optional

- Tyre mobility set

- Three head restraints in rear

- Three 3-point automatic seat belts in rear

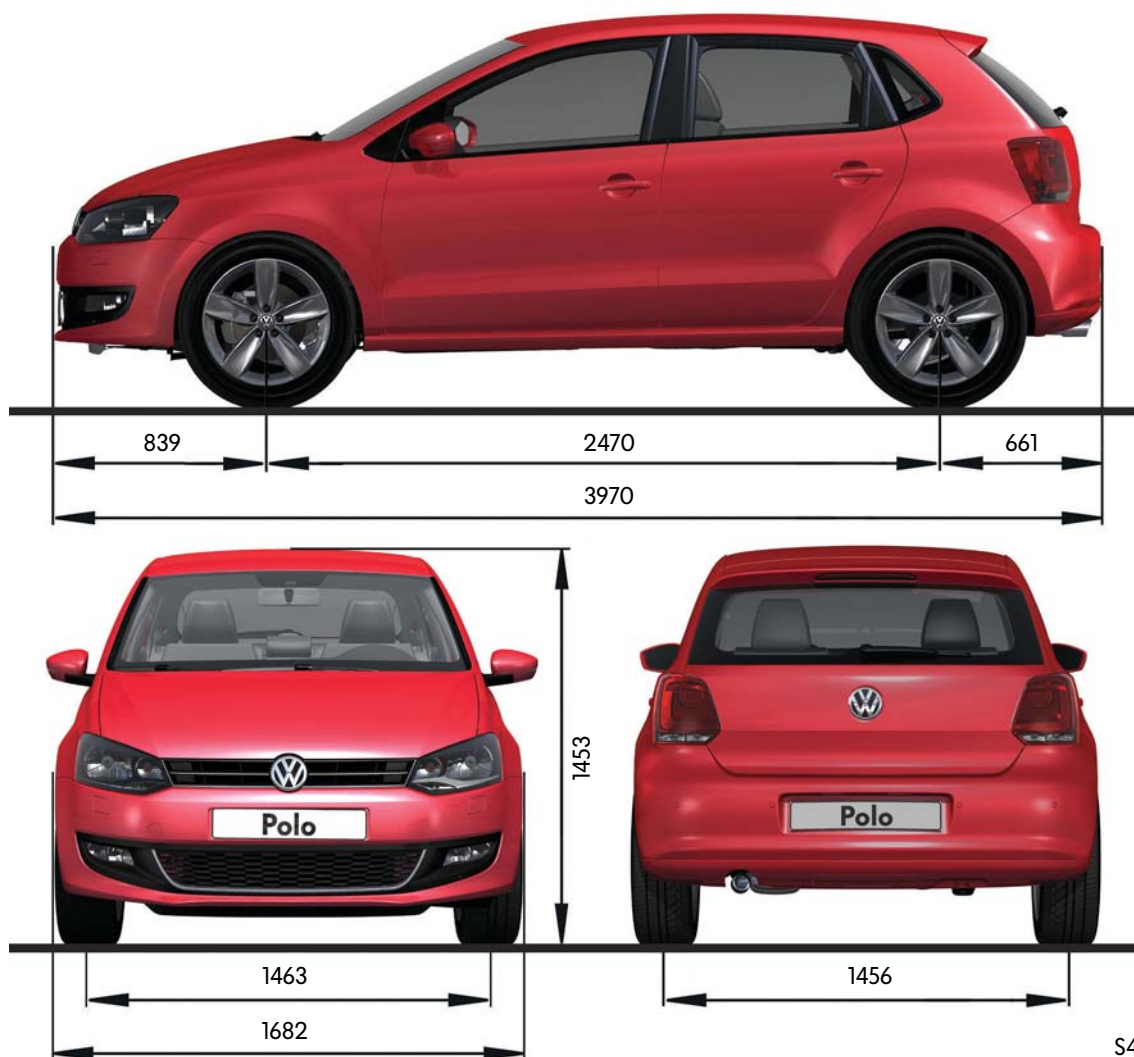
S444_002

- 3-spoke steering wheel



Technical data

Exterior dimensions and weights



S444_001

Exterior dimensions

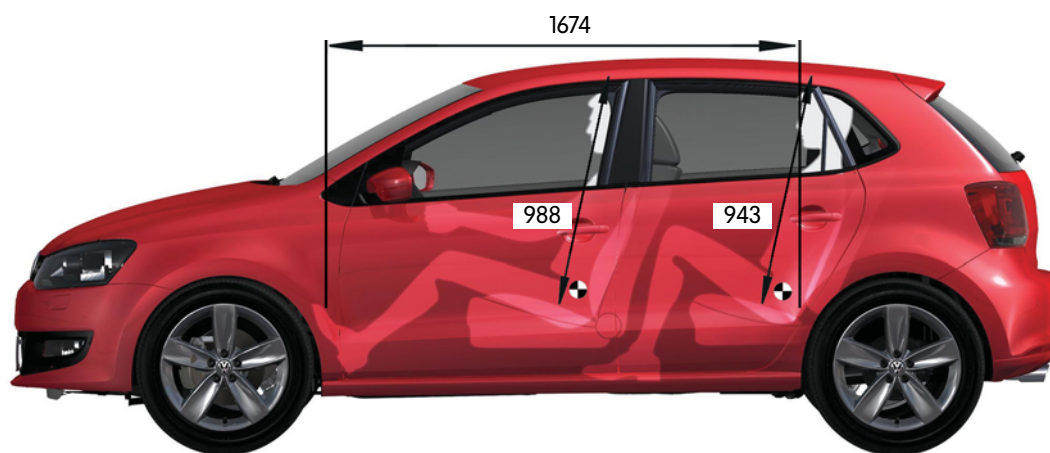
	Polo 2010	Polo 2006
Length	3970 mm	3916 mm
Width	1682 mm	1650 mm
Height	1453 mm	1467 mm
Wheelbase	2470 mm	2466 mm
Track width at front	1463 mm	1434 mm
Track width at rear	1456 mm	1426 mm

Weights/further data

	Polo 2010	Polo 2006
Maximum weight	1550 kg*	1570 kg*
Kerb weight without driver	993 kg*	1018 kg*
Tank capacity	45 l	45 l
Drag coefficient	0.32	0.32

* 1.2l 51kW engine with MQ200, 3-door, standard equipment

Interior dimensions



S444_003



S444_004

Interior dimensions and volumes

	Polo 2010	Polo 2006
Interior length	1674 mm	1666 mm
Boot volume	280 l	270 l
Luggage compartment volume with rear seat backrest folded down	967 l	1030 l

	Polo 2010	Polo 2006
Front headroom	988 mm	974 mm
Rear headroom	943 mm	958 mm
Shoulder space in front	1372 mm	1350 mm
Shoulder space in rear	1327 mm	1332 mm

Body

Body structure



S444_109

High- and ultra-high-strength steels are used to meet the requirements for a stable vehicle structure. For the first time, the B-pillar on the Polo is made from die-quenched steel as it is on the Golf, for example. This has increased the strength of the passenger cell without gaining weight. The passenger cell represents the survival space for the occupants.

Frontal crash

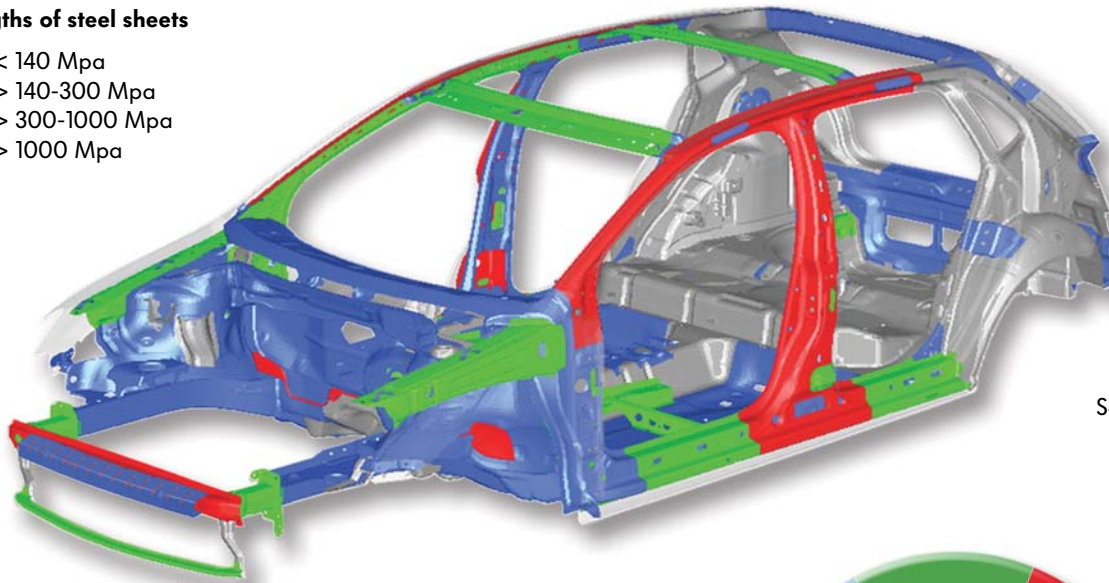
The impact cross member is made from die-quenched steel to achieve a stable connection between the front longitudinal members. As a result, both longitudinal members absorb the energy in a front collision.

Pedestrian protection

Deformation elements in the area of the impact cross member ensure pedestrian protection.

Strengths of steel sheets

- < 140 Mpa
- > 140-300 Mpa
- > 300-1000 Mpa
- > 1000 Mpa



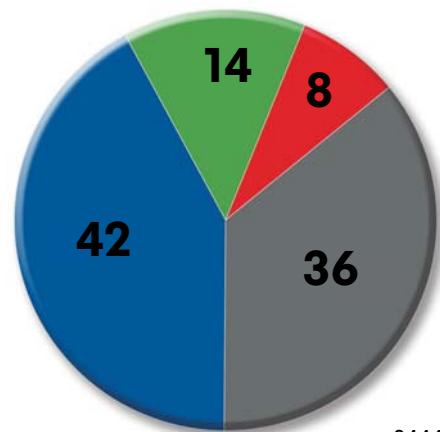
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Side collision

In a side collision, the B-pillar and the doors are the most important structural components which together absorb the main load in a side collision.

Die-quenched steels are used to obtain an efficient construction in terms of weight and component size. This allows the highest level of occupant protection without additional reinforcements. Being the central load distributor, the B-pillar transfers the forces acting on the sill and roof frame. The seat cross member ensures additional stability in the passenger cell by providing support against the opposite side of the vehicle. In conjunction with the doors, which are reinforced with diagonal impact members, the crash energy is reduced at an extremely high force level.

In this way, both low penetration speeds and also small penetrations into the passenger compartment are achieved.



S444_014

Rear-end collision

The rear-end crash requirements for the vehicle relate to the stability of the passenger cell and the rear-end structure.

The rear-axle geometry, the shape of the tank filler neck and the position of the tank in front of the rear-axle mounting protect the fuel system in a rear-end collision.



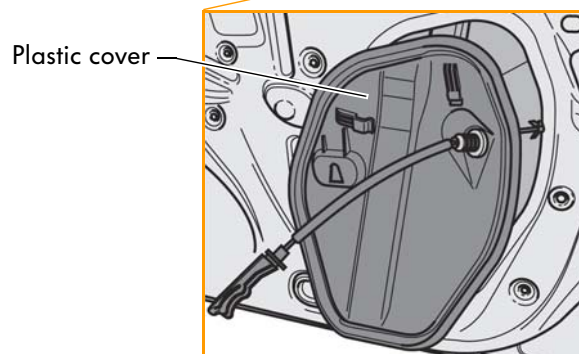
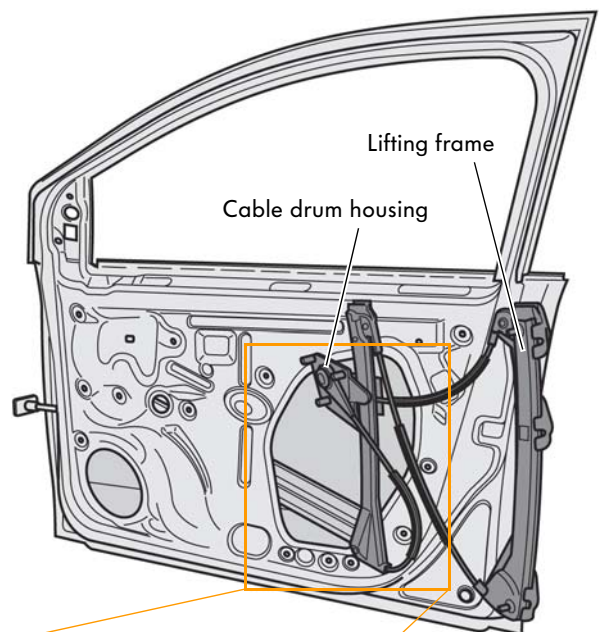
Body

Doors



The basic door unit has been designed as a single part.
Impact members are fitted in the doors.

The window regulator can be accessed once a plastic cover is removed.



Front light concept



S444_125



S444_118



Right-hand headlight module

S444_119



Right-hand additional front light module

The front light concept of the Polo 2010 has two light modules on each side of the vehicle:

- The headlight module and
- an additional front light module in the front spoiler.

The headlight module contains the turn signal, side light, dipped beam light and main beam light.

The additional front light module contains the fog light and the optional daytime running light.

H7 headlight module



The headlights on the Polo 2010 can be removed with the vehicle's tool set. This is necessary as the bulbs can only be replaced when the unit is removed.

H4 headlights are included in the standard equipment. An H7 headlight with separate reflectors for dipped beam and full beam is available as an option. In Comfortline and above, the H7 headlights come as standard.

Functions of the H7 headlight

Side lights



S444_044

When the side lights are on, only the side light bulb is illuminated.

Dipped beam



S444_043

When the dipped beam is switched on, the dipped beam bulb and the side light bulb are illuminated.

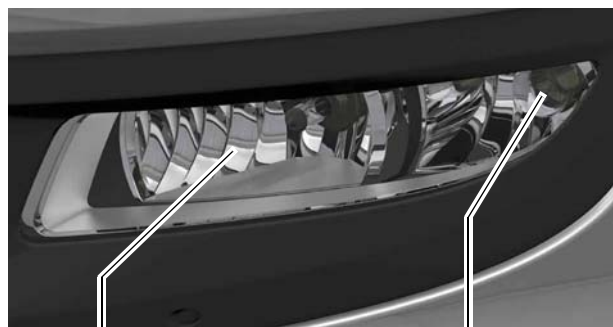
Main beam



S444_045

When the full beam is switched on, the full beam bulb, the dipped beam bulb and the side light bulb are illuminated.

Additional front light module



Fog light with optional cornering light

Daytime running lights

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In the additional front light module, the following lights can be fitted:

- Fog light with optional cornering light
- Daytime running lights



Rear lights

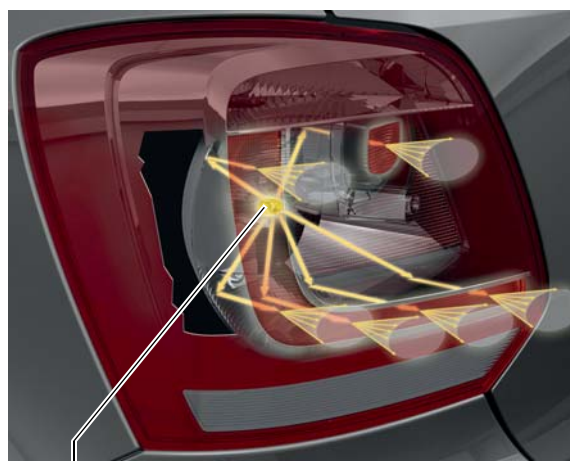
The rear lights on the Polo 2010 have been designed as one unit. The tail light, brake light, turn signal, rear fog light, reversing light and reflector are integrated in this unit. The rear fog light is in the left-hand rear light and the reversing light is in the right-hand rear light.

On the tail light, the light beams from a 5W bulb are aligned parallel via a reflector and diffused widthways by a vertical tubular-look pattern on the inside of the intermediate lens.



S444_008

Beam path of tail light



5W bulb

S444_142

You remove the complete tail light to replace the bulbs. It is secured by a central nut on the side.

Interior



S444_126

The front seats

Three types of seat with form-fitting cushions are available for the new Polo depending on the equipment line. The Trendline, Comfortline and Highline variants are distinguished by the cushion contours, the seat cover materials and the stitching types and patterns.

In the Comfort and Highline versions, pockets on the back of the front seats and height-adjustable front seats come as standard. Drawers under the seat base are standard in the Highline versions.

An optional two-level seat heating system, which responds very quickly, can be ordered for the front seats.

From Comfortline, an easy-entry system with memory function comes as standard on 2-door models.

Rear seats

The Polo 2010 has a non-split and folding rear seat bench as standard. There is an optional 40% / 60% split version.

In conjunction with a variable load floor, both rear seat systems can be folded down to form a flat load floor thanks to a raised pivoting point.



S444_105

Luggage compartment

A variable load floor is available as an option. The lower position allows the maximum stowage volume. The upper position creates a flat load floor including an additional facility for storing a range of items under the load floor.



S444_110



S444_015

Storage compartment for warning vests

A fold-out compartment is provided on the passenger-side in the lower area of the A-pillar panelling for storing warning vests.

Occupant Protection

Safety equipment

Airbag system basic equipment



S444_106

The Polo 2010 comes with the following safety features as standard:

- Driver airbag
- Front-passenger airbag, which can be deactivated
- Combined head-thorax airbags in front
- Belt tensioners with belt force limiters for the front seats
- Three-point belts for the rear seats



Curtain airbags are an available option for the front and rear seats. If this option is chosen, conventional side airbags are fitted in the front seats and no combined head-thorax airbags.

Airbag system optional extras



S444_127

In the Polo, the Seat Belt Reminder system (SBR) is used to monitor the belt lock information from the front seats as standard. The occupancy status of the front passenger seat is linked to this.

If, at speeds above 25km/h, the driver's belt lock is recognised as not engaged or the front passenger seat is occupied, but the occupant is not belted in, a warning tone and warning light is activated in the dash panel insert.

The airbag trigger system consists of an airbag control unit in the front area of the frame tunnel with three internal acceleration sensors (two sensors in longitudinal direction and one in transverse direction) and four external sensors for recognising side collisions. The sensors are fitted as follows:

- Pressure sensors in the front doors
- Lateral acceleration sensors in C-pillar area

Engines

Engine and gearbox combinations

Petrol engines

Engines Gearbox	1.2 44kW engine	1.2 51kW engine	1.4 63kW engine	1.2 77kW TSI engine
5-speed manual gearbox MQ200-5F 02T				
6-speed manual gearbox MQ200-6F 02U				
5-speed manual gearbox MQ250-5F 02R				
7-speed dual clutch gearbox DQ200-7F 0AM				

Diesel engines

Engines Gearbox	1.6 l 55kW diesel engine	1.6 l 66kW diesel engine	1.6 l 77kW diesel engine
			
5-speed manual gearbox MQ200-5F 02T			
6-speed manual gearbox MQ200-6F 02U			
5-speed manual gearbox MQ250-5F 02R			
7-speed dual clutch gearbox DQ200-7F 0AM			



1.2 I 44kW/51kW engine with multi-point injection

This 1.2 I engine in two output versions is the entry-level engine for the new Polo. The engine mechanics are identical in both engines. The output is determined exclusively by the software.



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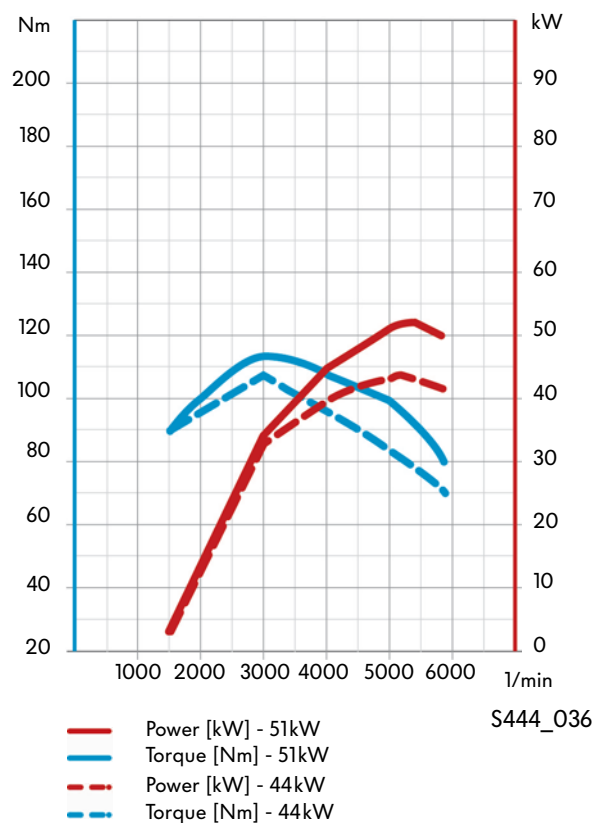
Technical features

- Air filter in wheel housing
- Chain-driven camshaft
- Split cylinder block
- Crankshaft drive with balancer shaft
- Cross-flow cooling in cylinder head
- Standing oil filter
- Non-return fuel system
- Crankcase breather and ventilation system
- Single-spark ignition coils with integrated output stage

Technical data

Engine codes	CHFA	CGPA
Type	3-cylinder in-line engine	
Displacement	1198 cm ³	
Bore	76.5 mm	
Stroke	86.9 mm	
Valves per cylinder	4	
Compression ratio	10.3 : 1	10.5 : 1
Maximum output	44kW at 5200 rpm	51kW at 5400 rpm
Maximum torque	108Nm at 3000 rpm	112Nm at 3000 rpm
Engine management	Simos 9	
Fuel	Super unleaded RON 95 (normal unleaded RON 91 with reduction in performance)	
Exhaust gas treatment	Three-way catalytic converters with Lambda control	
Emissions standard	EU5	

Power and torque development graph



1.4 l 63kW engine with multi-point injection

This engine has been fitted in various models since model year 2007. The output has been increased from 59kW to 63kW.

Technical features

- Toothed belt pulley on crankshaft with elliptic shape to reduce toothed belt vibrations
- Coated toothed belt
- Intake pipe with modular design
- Crankcase breather and ventilation system with diaphragm valve to regulate pressure in cylinder block



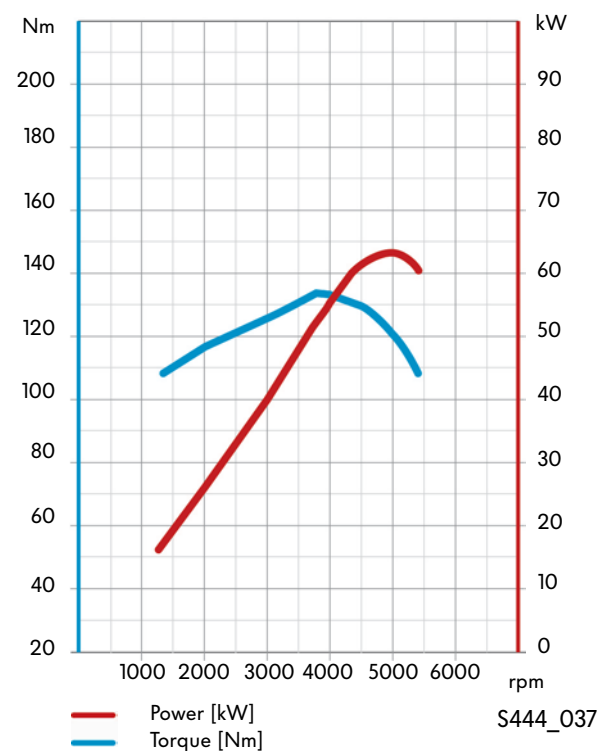
S444_034

- Pre-warming for crankcase ventilation integrated in cooling system
- Exhaust manifold and three-way catalytic converter are combined in one module

Technical data

Engine codes	CGGB
Type	4-cylinder in-line engine
Displacement	1390 cm ³
Bore	76.5 mm
Stroke	75.6 mm
Valves per cylinder	4
Compression ratio	10.5 : 1
Maximum output	63kW at 5000 rpm
Maximum torque	132Nm at 3800 rpm
Engine Management	Magneti Marelli 4HV
Fuel	Super unleaded RON 95 (normal unleaded RON 91 with reduction in performance)
Exhaust gas treatment	Starter and main catalytic converters with Lambda control
Emissions standard	EU5

Power and torque development graph



1.2 l 77kW engine with turbocharger

This engine with 4 cylinders, 2 valves and turbocharger sees Volkswagen continue its downsizing strategy.

Technical features

- Diecast aluminium cylinder block with new grey cast cylinder liners
- Steel crankshaft with connecting rod and main bearing diameter reduced to 42mm
- Low-friction lightweight pistons with ring set with reduced tangential forces
- Oil system with reduced oil throughput and oil pump with optimised efficiency
- Turbocharger module with electrically operated waste gate flap control
- Split, service-friendly lightweight timing chain case with covers made from plastic and magnesium



S444_039

- Crankcase breather and ventilation system with oil separation facility integrated in cylinder block and cylinder head

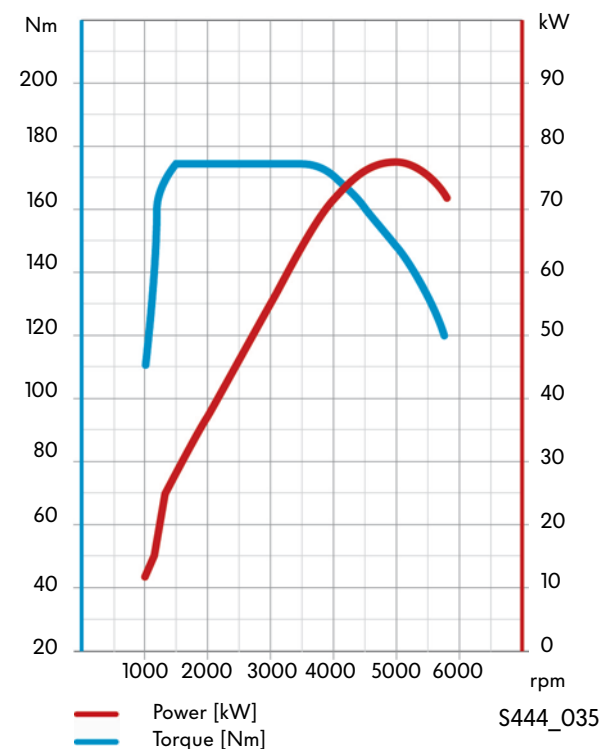


You will find further information on this engine in self-study programme no. 443 "The 1.2 l 77kW TSI Engine with Turbocharger".

Technical data

Engine codes	CBZB
Type	4-cylinder in-line engine
Displacement	1197cm ³
Bore	71mm
Stroke	75.6mm
Valves per cylinder	2
Compression ratio	10 : 1
Maximum output	77kW at 5000 rpm
Maximum torque	175Nm at 1500 - 3500 rpm
Engine management	Simos 10
Fuel	Super unleaded RON 95
Exhaust gas treatment	Three-way catalytic converter with upstream broadband Lambda probe and downstream step-type Lambda probe
Emissions standard	EU5

Power and torque development graph



S444_035

1.6 I 55kW TDI engine

The 1.6 I TDI engine with common rail injection system and 4-valve technology is based on the 2.0 I 103kW TDI engine with common rail injection system. Thanks to continued further development of the proven technology and a new common rail injection system from Continental, this engine fulfils the EU5 emissions standard.

Technical features

- Common rail injection system with piezo injectors and maximum injection pressure of 1600bar
- Adjustable turbocharger
- Exhaust gas recirculation module consisting of exhaust gas recirculation with exhaust gas recirculation valve and exhaust gas recirculation cooler
- Diesel particulate filter with oxidation catalytic converter
- Plastic intake manifold



S444_029

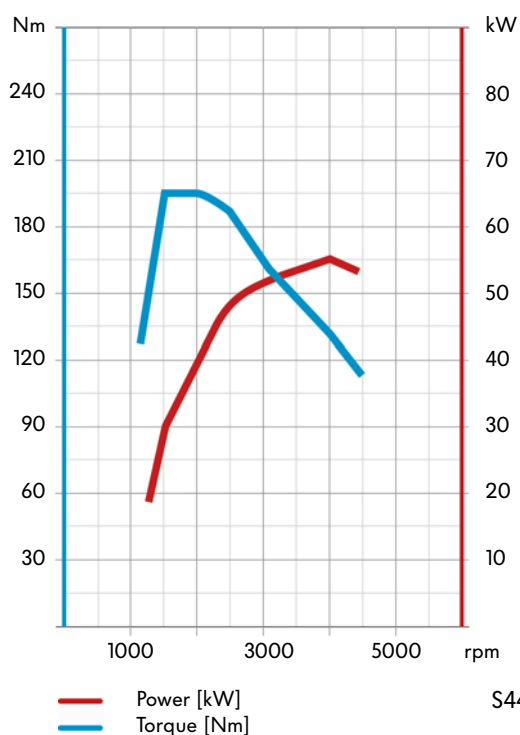


You will find further information on this engine in self-study programme no. 442 "The 1.6 ltr. TDI Engine with Common Rail Injection System".

Technical data

Engine code	CAYA
Type	4-cylinder in-line engine
Displacement	1598 cm ³
Bore	79.5mm
Stroke	80.5mm
Valves per cylinder	4
Compression ratio	16.5:1
Maximum output	55kW at 4000 rpm
Maximum torque	195Nm at 1500-2000 rpm
Engine management	Simos PCR2
Fuel	Diesel complying with DIN EN590
Exhaust gas treatment	Exhaust gas recirculation, oxidation catalytic converter and diesel particulate filter
Emissions standard	EU5/EU3
CO2 emissions	109g/km (Polo 2010)

Power and torque development graph



S444_030

Engines

1.6 l 66kW TDI engine

The 1.6 l 66kW TDI engine is based on the 1.6l 55kW TDI engine.

The software in the engine control unit has been adapted to the higher output.



S444_029

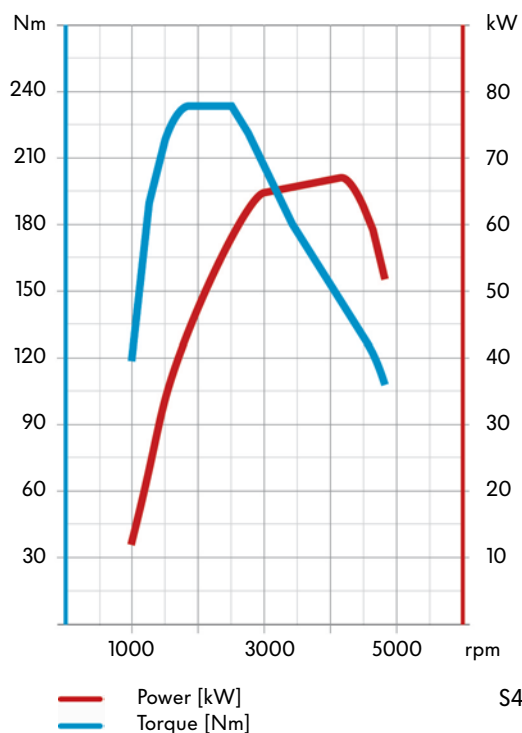


You will find further information on this engine in self-study programme no. 442 “The 1.6 ltr. TDI Engine with Common Rail Injection System”.

Technical data

Engine code	CAYB
Type	4-cylinder in-line engine
Displacement	1598 cm ³
Bore	79.5 mm
Stroke	80.5 mm
Valves per cylinder	4
Compression ratio	16.5:1
Maximum output	66 kW at 4200 rpm
Maximum torque	230 Nm at 1750-2500 rpm
Engine management	Simos PCR2
Fuel	Diesel complying with DIN EN590
Exhaust gas treatment	Exhaust gas recirculation, oxidation catalytic converter and diesel particulate filter
Emissions standard	EU5/EU3
CO2 emissions	118 g/km (Golf 2009)

Power and torque development graph



S444_031

1.6 | 77 kW TDI engine

The 1.6 | 77 kW TDI engine is based on the 1.6 | 55 kW TDI engine.

The software in the engine control unit has been adapted to the higher output.



S444_029

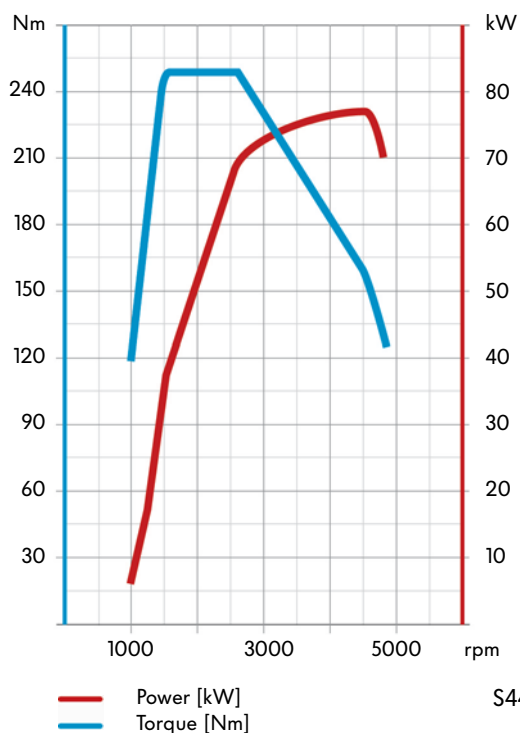


You will find further information on this engine in self-study programme no. 442 “The 1.6 ltr. TDI Engine with Common Rail Injection System”.

Technical data

Engine code	CAYC
Type	4-cylinder in-line engine
Displacement	1598 cm ³
Bore	79.5 mm
Stroke	80.5 mm
Valves per cylinder	4
Compression ratio	16.5:1
Maximum output	77 kW at 4400 rpm
Maximum torque	250 Nm at 1900-2500 rpm
Engine management	Simos PCR2
Fuel	Diesel complying with DIN EN590
Exhaust gas treatment	Exhaust gas recirculation, oxidation catalytic converter and diesel particulate filter
Emissions standard	EU5/EU3
CO ₂ emissions	118 g/km (Golf 2009)

Power and torque development graph



S444_032

Gearboxes

Manual gearboxes

Gearbox type	Technical features	Further information
5-speed manual gearbox MQ200-5F 02T 	● Low weight ● Without speedometer sender G22 ● Start/stop version also available ● CO₂-optimised ratio ● Constant mesh teeth are partially ground (5th gear and shaft splines) ● Torque capacity up to 170 Nm	
6-speed manual gearbox MQ200-6F 02U 	● Low weight ● Without speedometer sender G22 ● Start/stop version also available ● CO₂-optimised ratio ● Sheet metal bearing mounting replaced by reinforced bearing mounting ● Constant mesh teeth are partially ground (1st/2nd/6th gear and shaft splines) ● Torque capacity up to 175 Nm	SSP 306
5-speed manual gearbox MQ250-5F 02R 	● Developed from 02J gearbox ● Without speedometer sender G22 ● Start/stop version also available ● CO₂-optimised ratio ● Torque capacity up to 250 Nm ● Shortened gearshift travel (58 mm)	

Dual clutch gearbox

Gearbox type	Technical features	Further information
7-speed dual clutch gearbox DQ200-7F 0AM 	• Further development of 6-speed dual clutch gearbox 02E • Dry double clutch with separate oil circuits for gearbox and mechatronics • On-demand control of hydraulic pump motor V401 Explanation: The hydraulic pump only starts to deliver once the hydraulic oil pressure in the mechatronics falls below a defined threshold value. The mechatronic functions are guaranteed in this way without the pump having to deliver constantly.	SSP 390



Chassis

Overview of chassis

The chassis of the Polo 2010 is essentially based on the chassis of the Polo 2004. It has a 30mm greater track width compared with the previous model. The Polo can be equipped with normal or sports suspension.

There are new features in the areas:

- Front axle
 - Steering column
 - Brake servo
- ESP Bosch 8.2 with integrated sensor cluster
- 
- McPherson strut front suspension
- Electro-hydraulic power steering system
- 
- 10" brake servo for left-hand drive vehicles
7"/8" tandem brake servo for right-hand drive vehicles

S444_100



- Tyre mobility set (standard)



- Torsion beam rear axle

- New steering column concept (sheet metal steering column)

Chassis

Front axle

The front axle uses McPherson strut suspension with improved kinematics for the new Polo.

The track width has been increased by 30mm compared with the predecessor thus improving the driving dynamics potential. Shifting the wheels 5mm to the front gives a larger caster angle and an increased caster offset. The result is greater straight-line stability.

By optimising the manufacturing technology and the selection of material for the subframe and transverse link, it was possible to reduce weight, but maintain the same axle load.



S444_103



Rear axle

The design principle of the torsion beam axle has been taken from the previous model.

The track width has been increased 30mm by increasing the offset of the semi-trailing arm.



S444_131

Semi-trailing arm

Steering



S444_136

The Polo 2010 is equipped with electrohydraulic power steering like its predecessor. This has been adapted to the new front axle.



You will find further information on the electrohydraulic power steering in self-study programme no. 259 - "EPHS – Electrically Powered Hydraulic Steering".

Steering column



S444_104

A new steering column has been developed to increase the crash safety and score 5 stars in Euro NCAP.

The new steering column has the following features:

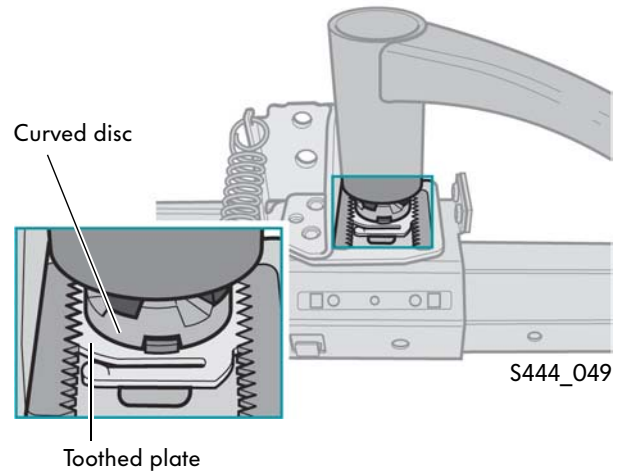
- Console and various other parts made from steel sheet
- Side adjusting lever
- Infinite reach adjustment with an adjustment range of 45mm
- Height adjustment using teeth (12 adjustment positions) with an adjustment range of 45mm



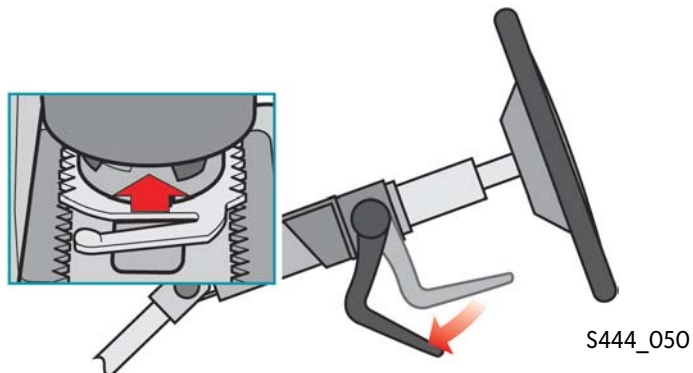
Adjustment mechanism

The steering column is clamped in position by a curved disc. There is a spring-loaded toothed plate under the curved disc. This design always guarantees tooth-in-tooth locking when you clamp the steering column in position.

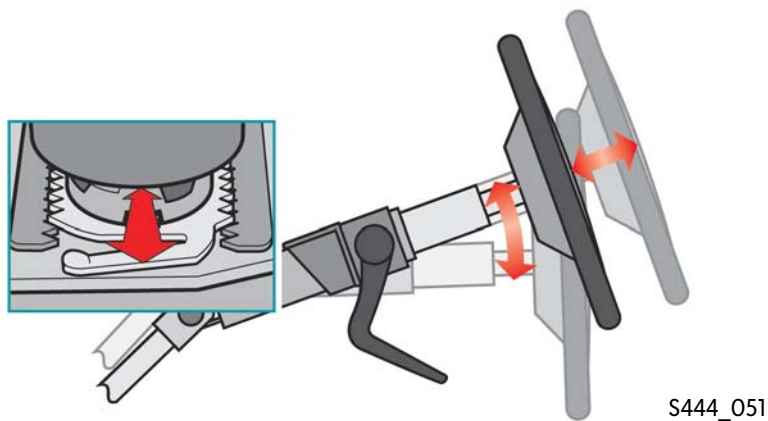
In the starting position, the lever is at the top and the teeth are engaged.



If you move the lever downwards, the toothed plate is disengaged by the pressure of the spring.



You can now adjust the steering wheel position.



If you move the lever upwards, the teeth mesh into each other again and lock the steering wheel in the desired position.

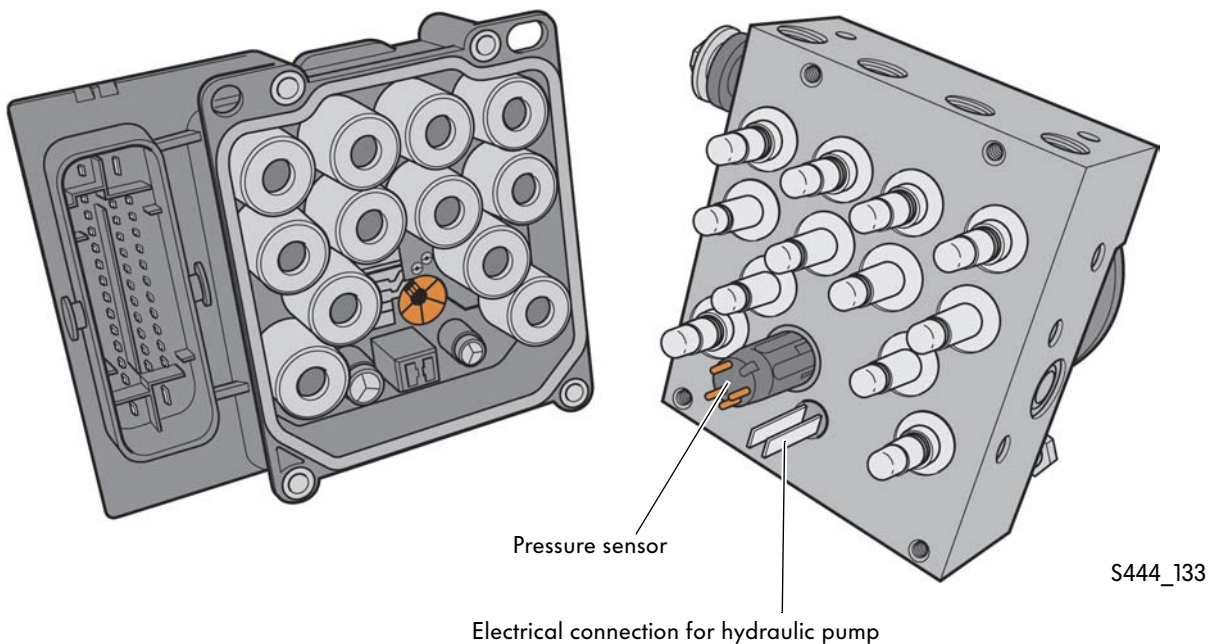
Brakes

ESP system

The ESP system from Bosch 8.2 is used for the first time in the Polo.

Except for the familiar systems like ABS, ESP, EDS and ASR, the control unit also has the following functions:

- Hill start assist
- Hydraulic brake assist system
- Tyre pressure monitor, TPM (optional)
- Electronic differential lock EDL (optional)



ESP unit

A pressure sensor is contained in the new ESP unit.

The sensor cluster, which contains the yaw rate sensor as well as the longitudinal and lateral acceleration sensors, is not needed. These sensors are now integrated on the circuit board in the ABS/ESP control unit.



Heating and Air Conditioning

The Polo 2010 uses the same heating and air-conditioning concept as the previous model.

Three variants are used:

- The manual heater and ventilation system
- The semi-automatic Climatic air conditioning
- The fully automatic Climatronic air conditioning

Each variant has its own operating unit. The control units for the heating and ventilation system as well as for the Climatic are available with or without chrome trim depending on the vehicle equipment.

All temperature and ventilation-related controls as well as the air conditioning system control unit are combined in one operating unit.

Feedback LEDs for recirculation mode on the manual heating and ventilation system and on the Climatic semi-automatic air-conditioning system are new on the Polo 2010.

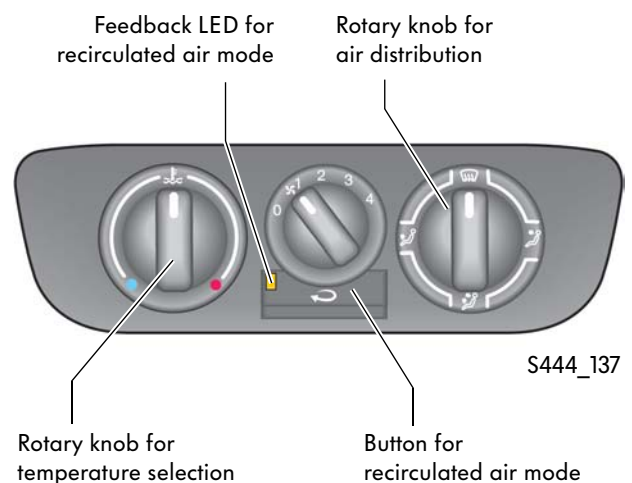
Manual heating and ventilation system

The temperature flap and the flaps for the air distribution are adjusted with the rotary knobs on the operating unit. The adjustment is transferred to the flap mechanism on the heater unit via a flexible shaft.

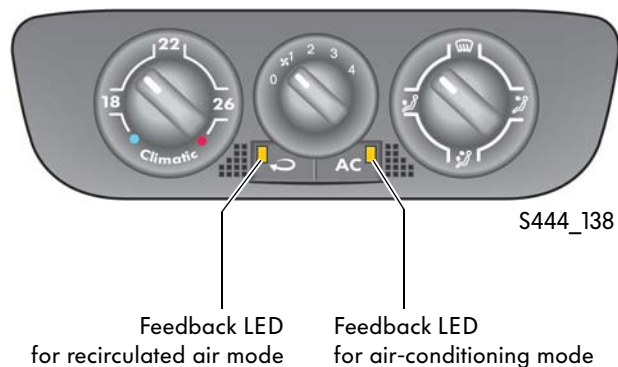
The recirculation flap is closed and opened with the recirculation flap button. The recirculation flap is operated with a control motor.

When the recirculation flap is open, this is indicated by the feedback LED.

On vehicles with a diesel engine, the auxiliary air heater element Z35 ensures fast heating of the interior. The auxiliary air heater element button is operated by a microswitch located inside the operating unit. The switch is activated when at least 90% of the heating power is selected on the temperature knob.



The “Climatic” manual air-conditioning system

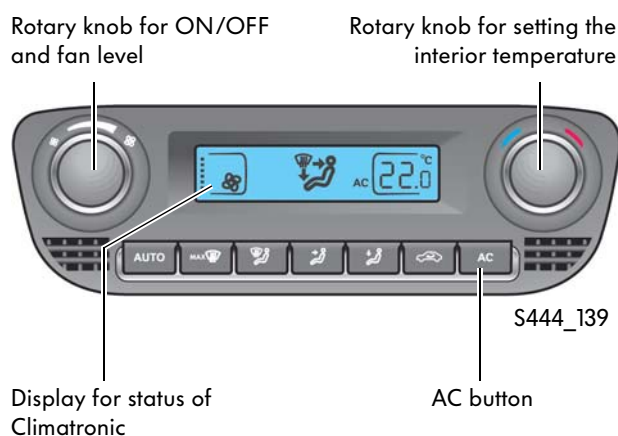


The air conditioning system control unit J301 is located behind the air-conditioning controls.

All signals from the sensors and actuators are sent to the control unit and evaluated to regulate the interior temperature.

The temperature flap is adjusted by an electric motor. The central flap, footwell flap and defrost flap are adjusted with the air distribution knob via a flexible shaft.

“Climatronic” fully automatic air conditioning



All functions are controlled fully automatically on the “Climatronic” air-conditioning system.

The Climatronic controls have been revised in some areas:

- The “ECON” button has been replaced with the “AC” button
- Changed button symbols
- Ambient temperature indicator omitted
- “Spanner” symbol for diagnosis mode omitted



You will find further information on the heating and air-conditioning systems in self-study programme no. 263 “Polo Model Year 2002”.



Electrical System

Fuse boxes and relay locations in the onboard supply

Locations

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



- Main fuse box, on minus pole of battery.





- Onboard supply control unit, on left underneath dash panel

S444_101



- Fuse holder, under steering column

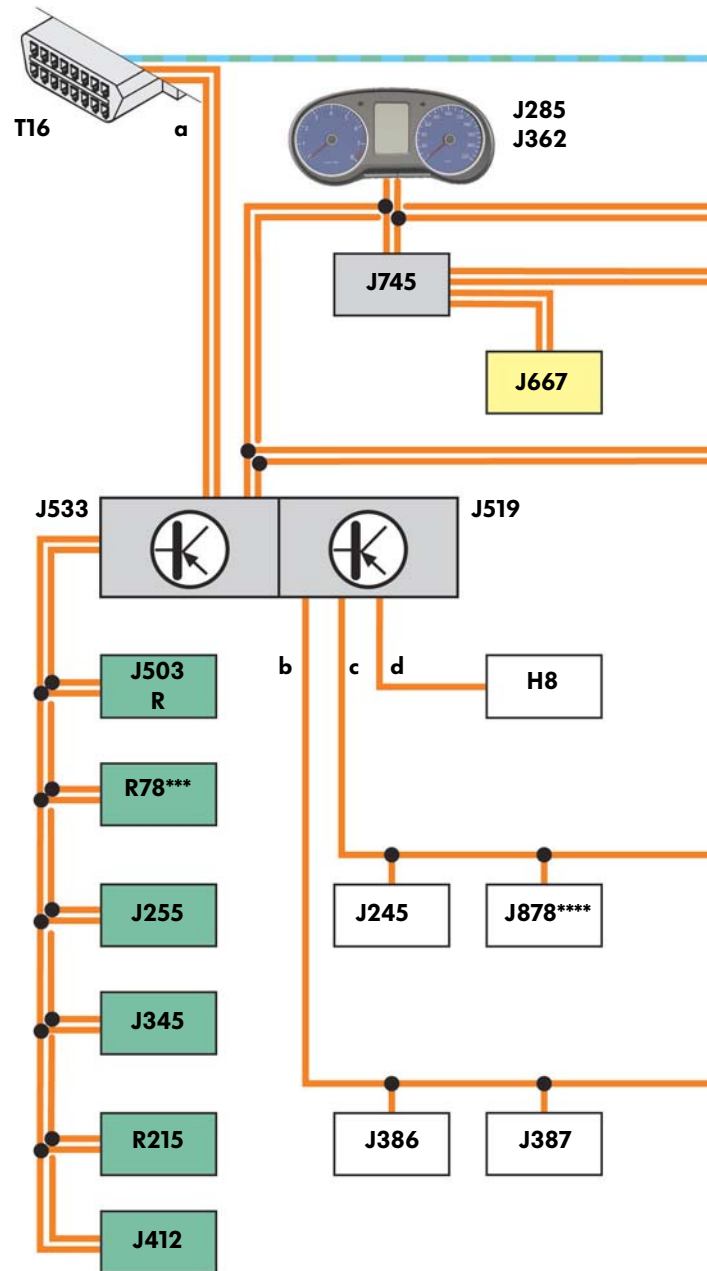


Electrical System

Networking concept

The data bus diagnostic interface J533 (gateway) acts as the interface for communication between the following data bus systems:

- Powertrain CAN data bus
- Convenience/infotainment CAN data bus
- Diagnosis CAN data bus



The two convenience and infotainment CAN data bus systems have been combined for the first time.

Transfer speeds

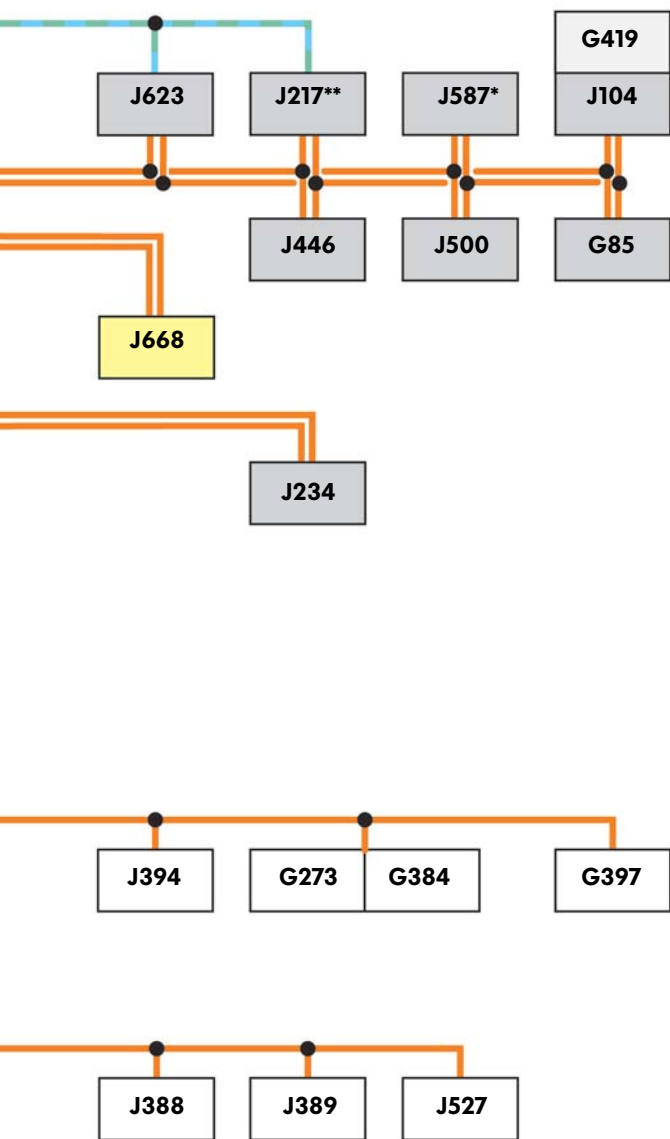
Powertrain CAN data bus: 500kbit/s
 Convenience/infotainment CAN data bus: 100kbit/s
 Diagnosis CAN data bus: 500kbit/s
 Cornering light CAN data bus: 500kbit/s

LIN data buses: 19.2kbit/s

Legend

- Powertrain CAN data bus
- Convenience/infotainment CAN data bus
- Sensor CAN data bus

- a** Diagnosis CAN data bus
- b** Door LIN data bus
- c** Roof LIN data bus
- d** Anti-theft alarm LIN data bus



S444_038

List of abbreviations

G85	Steering angle sender
G273	Interior monitoring sensor
G384	Vehicle inclination sender
G397	Rain and light sensor
G419	ESP sensor unit
H8	Anti-theft alarm system horn
J104	ABS control unit
J217**	Automatic gearbox control unit
J234	Airbag control unit
J245	Sliding sunroof adjustment control unit
J255	Climatronic control unit
J285	Control unit in dash panel insert
J345	Trailer detector control unit
J362	Immobilizer control unit
J386	Driver door control unit
J387	Front passenger door control unit
J388	Rear left door control unit
J389	Rear right door control unit
J394	Sunroof roller blind control unit
J412	Mobile telephone operating electronics control unit
J446	Parking aid control unit
J500	Power steering control unit
J503	Control unit with display for radio and navigation
J519	Onboard supply control unit
J527	Steering column electronics control unit
J533	Data bus diagnostic interface
J587*	Selector lever sensors control unit
J623	Engine control unit
J667	Power output module for left headlight
J668	Power output module for right headlight
J745	Cornering light and headlight range control unit
J878****	Control unit for tilting roof
R	Radio
R78***	TV tuner
R215	Interface for external multimedia devices
T16	Diagnosis connector

- * DSG only
- ** Automatic gearbox only
- *** Japan only
- **** Later introduction



Radio, Navigation and Telephone

Radios and radio/navigation systems

	
Technical data	RCD 210 S444_021
Monochrome display	122 x 36 pixels
Colour display, touch sensitive	
FM, TP and RDS reception (single tuner)	●
FM twin-tuner for FM, TP and RDS reception with phase diversity	
AM reception	●
Integrated DAB tuner (digital radio)	
SDARS tuner (SAT radio)	
TP button	●
RadioDataSystem (RDS)	●
TMC function and TMC background reception	
Autostore function/memory spaces	●/24
Integrated CD drive	●
Integrated SD memory card reader	
Media support	CD and MP3 audio data
Audio input interface (AUX-IN)	●
Telephone interface for telephone hands-free system	● (only mono channel)
Interface for connecting a reversing camera	
Loudspeaker output stages with 20 watt output (2 or 4 loudspeakers can be connected)	●
Treble, bass and balance sound adjustments	●
Fader adjustment (only with four loudspeakers)	●
Speed-dependent volume control	●
Brightness of display illumination can be controlled separately from vehicle interior lighting	●
Driving school function	●
Self-diagnosis and loudspeaker diagnosis	●
Service test mode	●
Optical parking system (OPS)	
BAP-compatible/display of vehicle functions	
Navigation function with map, integrated direction symbols and speech	
SD card upload/download	
CD/SD navigation	
Further information in self-study programme	No. 404



					
RCD 310	S444_022	RCD 510	S444_023	RNS 310	S444_020
302 x 45 pixels		6.5", 400 x 240 pixels		5.5", 400 x 240 pixels	
●		●		●	
●		●		●	
Depending on equipment		Depending on equipment			
●		●			
●		●			
●		●		●	
●/24		●/24		●/24	
●		6-disc CD changer		●	
		●		●	
CD, MP3 and WMA audio data		CD, MP3 and WMA audio data		CD, MP3 and WMA audio data Navigation data	
●		●		●	
●		●		●	
		●			
●		●		●	
●		●		●	
●		●		●	
●		●		●	
●		●		●	
●		●		●	
● OPS, air conditioning		● OPS, air conditioning		● OPS, air conditioning	
				● Map display (2.5D)	
		Audio		Audio, satnav/navigation data	
				●	
No. 417		No. 423		No. 423	



Radio, Navigation and Telephone

Aerial concept in Polo

The aerials for radio (AM, FM and DAB), navigation (GPS) and telephone (GSM/UMTS) are accommodated in the roof aerial. A short-mast aerial is used instead of a long-mast aerial.

The short-mast aerial comes in two versions:

- for **AM/FM** and **DAB**
- for **AM/FM, DAB, GPS** and **telephone**



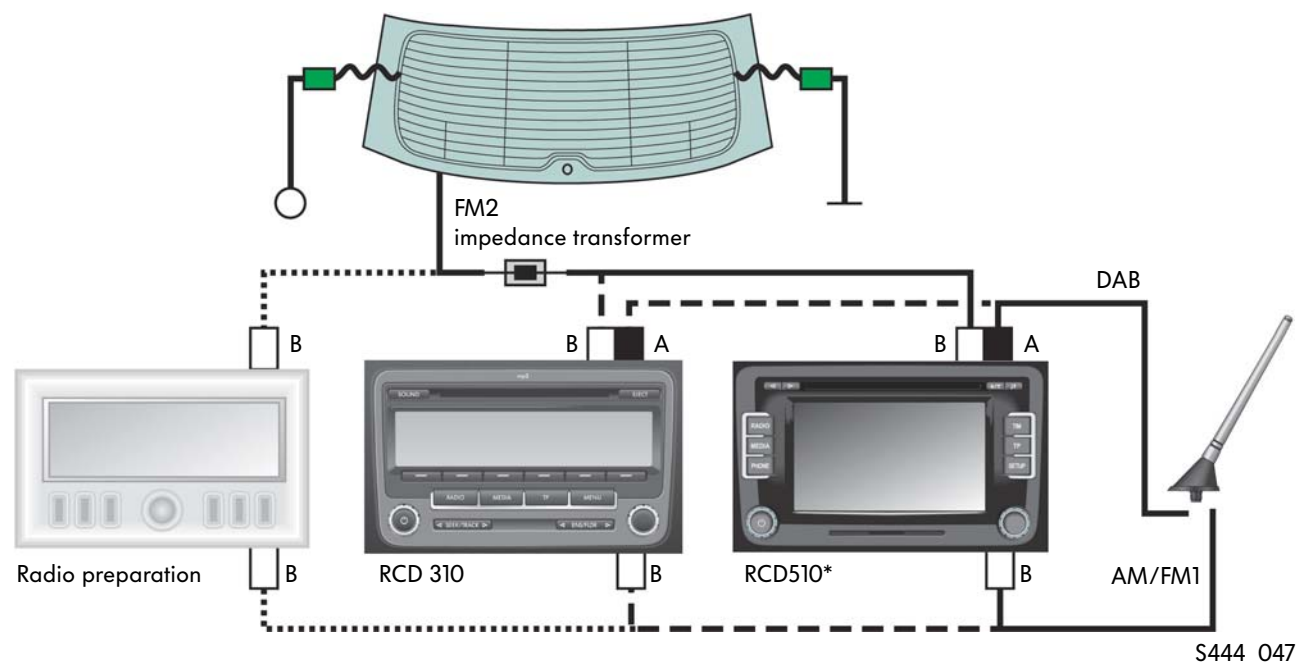
In addition to the previously presented radios and the radio/navigation system, two versions of the radio preparation are available for the Polo depending on the country, one version for radios with single-tuner and one for radios with dual-tuner diversity receiver.

Radio preparation/radio with single-tuner

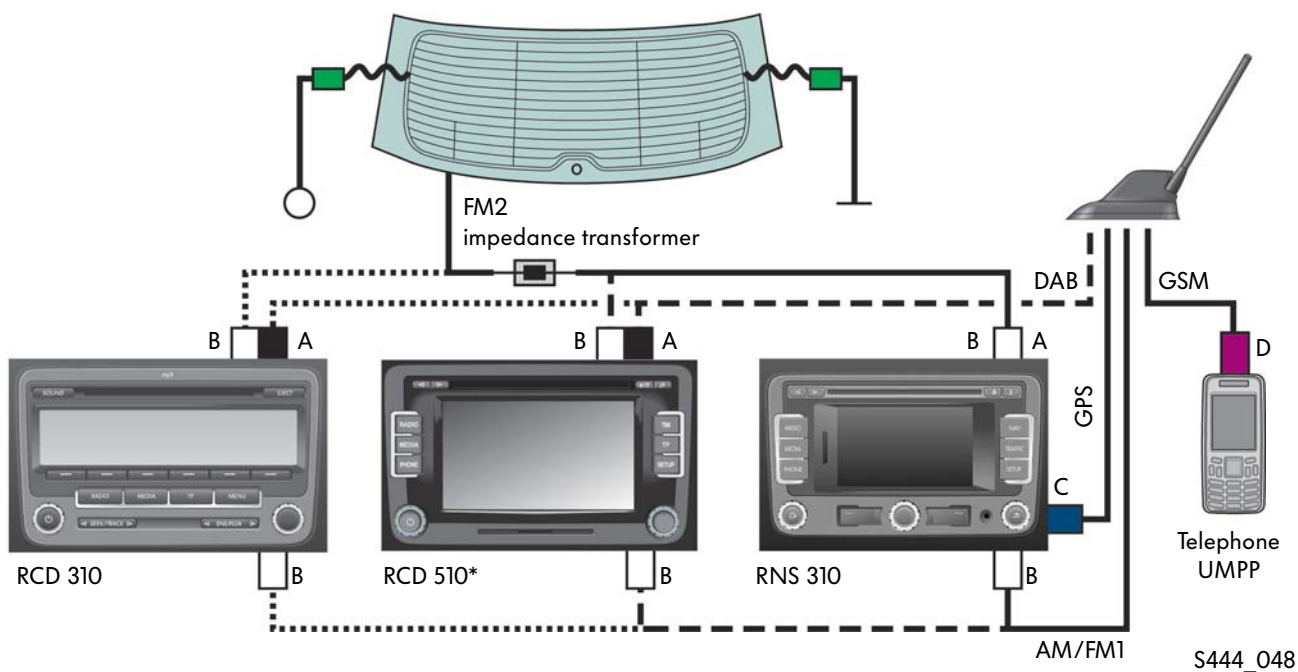


Radio preparation/radio with diversity aerial and DAB

An additional aerial is integrated in the rear window for the dual-tuner diversity receiver.



Radio/radio/navigation system with diversity aerial, telephone and DAB



* DAB – depends on country and version

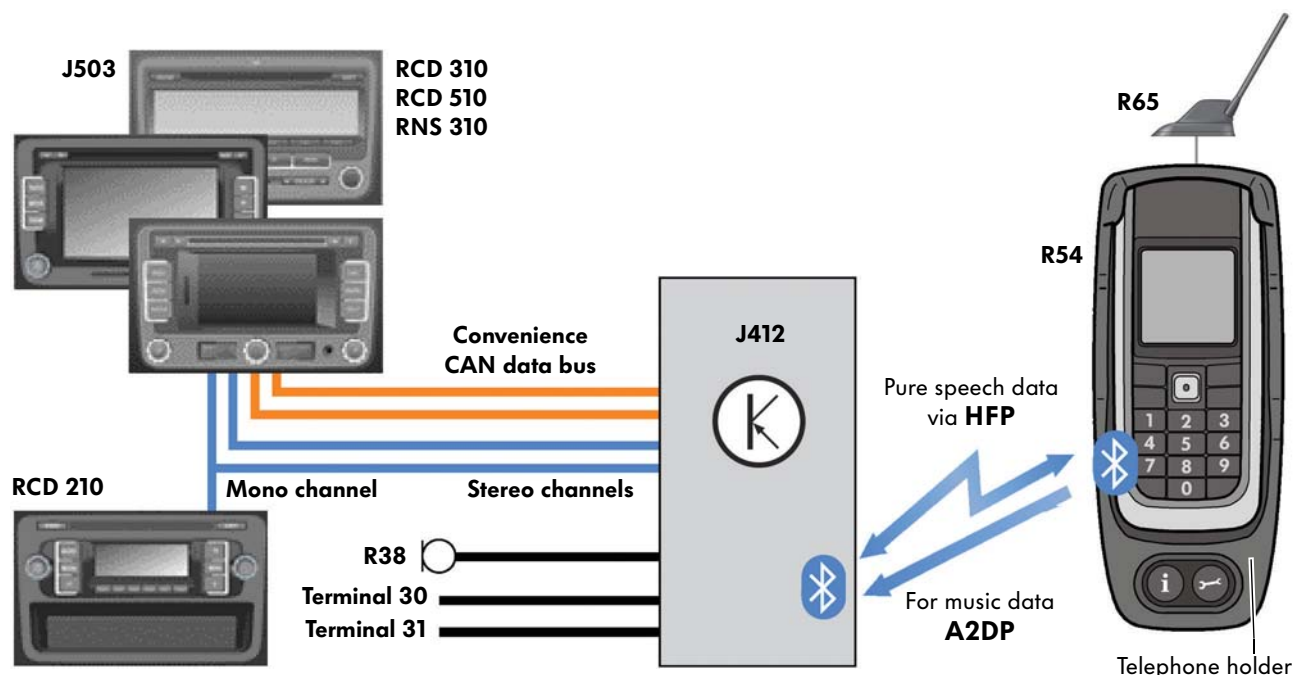
Radio, Navigation and Telephone

UMPP Low (Bluetooth™ only) with audio streaming

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

- HFP stands for Hands-Free Profile and is a Bluetooth™ profile for the telephone audio/speech channel. Only speech data is transferred with this profile.
 - The new Bluetooth™ profile A2DP audio streaming (Advanced Audio Distribution Profile) allows music files to be sent from the paired Bluetooth™ device to the UMPP control unit in stereo quality. Considerably higher data quantities are transferred than with pure speech data.
- Hands-free system and radio mute switching
 - Charge mobile phone in phone holder.
 - Info and breakdown buttons on the mobile phone holder
 - CAN data bus interface to convenience CAN data bus
 - Data is transferred between the mobile telephone and the mobile telephone operating electronics control unit via Bluetooth™.
 - UMPP is diagnosis compatible

Functions



S444_055

Legend

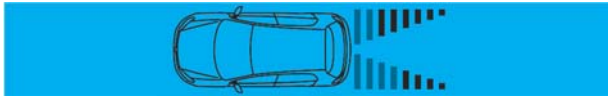
- J412 - Mobile telephone operating electronics control unit
J503 - Control unit with display for radio and navigation
R38 - Telephone microphone
R54 - Mobile telephone
R65 - Telephone aerial



A new telephone holder is required to charge Nokia telephones in the Polo 2010. You can check the availability of telephone holders at www.volkswagen-accessories.com.

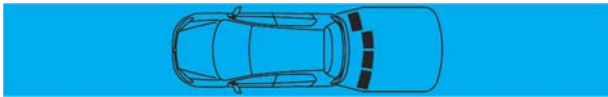
Optical parking system

Display of OPS picture on RCD 310



S444_059

Display of OPS picture on RCD 310 (from week 45/09)



S444_140

Display of OPS picture on RCD 510/RNS 510



S444_058

The optical parking system (OPS) is available for the Polo. The system was used for the first time in the Passat CC.

The optical parking system is a software extension of the parking aid system. The driver is supported not only acoustically, but also optically.

When equipped with parking distance warning system, the Polo has ultrasound sensors at the rear. The parking distance warning system therefore only detects objects that are behind the vehicle.

OPS is achieved by the parking aid control unit evaluating the distance information according to sector and transferring it to the screen. The BAP operating and display protocol is used on the CAN data bus for this.

The visual images are displayed on the screen built into the radio or navigation system. This is possible with the RCD 310/510 radios and the RNS 310 navigation system.

The advantages of the optical parking system:

- The position of obstacles is displayed in relation to the vehicle position.
- You can manoeuvre the car using the display.
- You can simply look at the screen to see the current state.



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



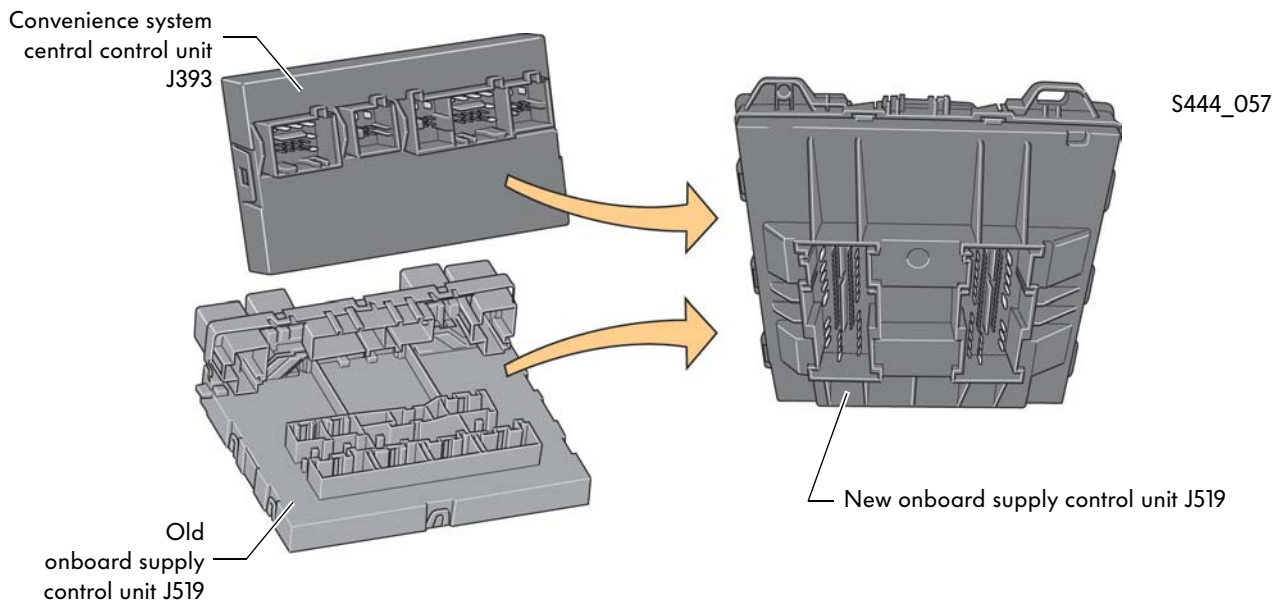
Onboard supply control unit

Like the onboard supply control unit in the Golf 2009, the onboard supply control unit in the Polo 2010 has been expanded to include numerous other functions. In addition to the functions of the convenience system central control unit J393, the function of the data bus diagnostic interface J533 (gateway) is now also integrated in the onboard supply control unit J519.

Even though a large number of functions have been combined in a single control unit and housing, the hardware scope has more or less stayed the same. The onboard supply control unit is connected via two 73-pole connectors.

There are currently four equipment-related versions:

- Basic +
- Medium +
- Medium ++
- High+



A large proportion of the bulb power is controlled by the onboard supply control unit using integrated semiconductor switches. In the current version of the onboard supply control unit, that is the turn signal, brake lights, side lights, tail lights and the reversing lights (automatic gearbox). Each function is switched by just one control unit output (1 PIN), e.g. all three left-hand turn signals.

On the Polo, there are, however, also bulbs that are controlled conventionally by mechanical switches, i.e. light switch E1, for example, dipped beam, full beam and daytime running lights.

The remote control aerial is integrated in the new onboard supply control unit. The radio aerial is not a separate wire aerial, instead it comes in the form of a circuit board aerial.

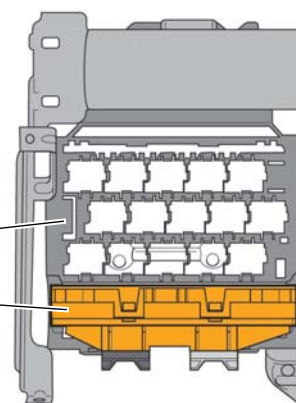
Integration in the onboard supply control unit also allows a reception range of 30 to 50 metres.

Location

The previous location under the left-hand side of the dash panel has been kept for the new onboard supply control unit.

Relay carrier above onboard supply control unit

Onboard supply control unit J519



S444_056

Functions

The scope of functions depends on the equipment. The higher equipment levels are expanded by the listed functions.

Equipment	Scope of onboard supply control unit functions
Basic +	- Terminal control - Load management - Control of brake lights, side lights, parking lights and interior light - Control of turn signal and hazard warning lights - Wiper control, front and rear - Control of horn - Control of rear window heating - Control of door control units - Boot lid release - Data bus diagnostic interface - Powertrain and diagnosis CAN
Medium +	- Central locking (control of locks, doors and flaps) - Enabling of seat heating and tilting sunroof - Control of windscreen washer system - Control of front windscreen heating - Control of door LIN data bus - Control of roof LIN data bus (rain sensor, interior monitoring, inclination sensor, panoramic sliding roof) - Exterior mirror heating - CAN convenience
Medium ++	- Remote control (aerial integrated in control unit)
High+	- Shiftlock, starter inhibitor - Cruise control - Control of anti-theft alarm LIN data bus - Control of reversing lights, static cornering lights, fog lights





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