

Service.



Self-Study Programme 263

Polo Model Year 2002



The visual appearance of the new Polo features the 4-eyed face with round headlights and the hatchback.

The new Polo again sets new standards in its class by offering improved spatial comfort, innovative state-of-the-art technology and all-round safety. It also meets high quality standards.

In this Self-Study Programme, we will present the new technical features and innovations of the new Polo.



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The following Self-Study Programmes relating to the Polo 2002 are also available:

SSP 259 "Electro-hydraulic Power Steering"

SSP 260 "1.2-litre 3-cylinder Petrol Engines"

SSP 264 "Brake Assistant System (BAS)"

SSP 265 "Vehicle Electrical System in Polo Model Year 2002"

New



**Important
Note**



This Self-Study Programme explains the design and function of new developments! The contents are not updated.

Please always refer to the relevant Service Literature for current inspection, adjustment and repair instructions.



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Summary



The Polo Model Year 2002 is available in 2-door and 4-door body versions.

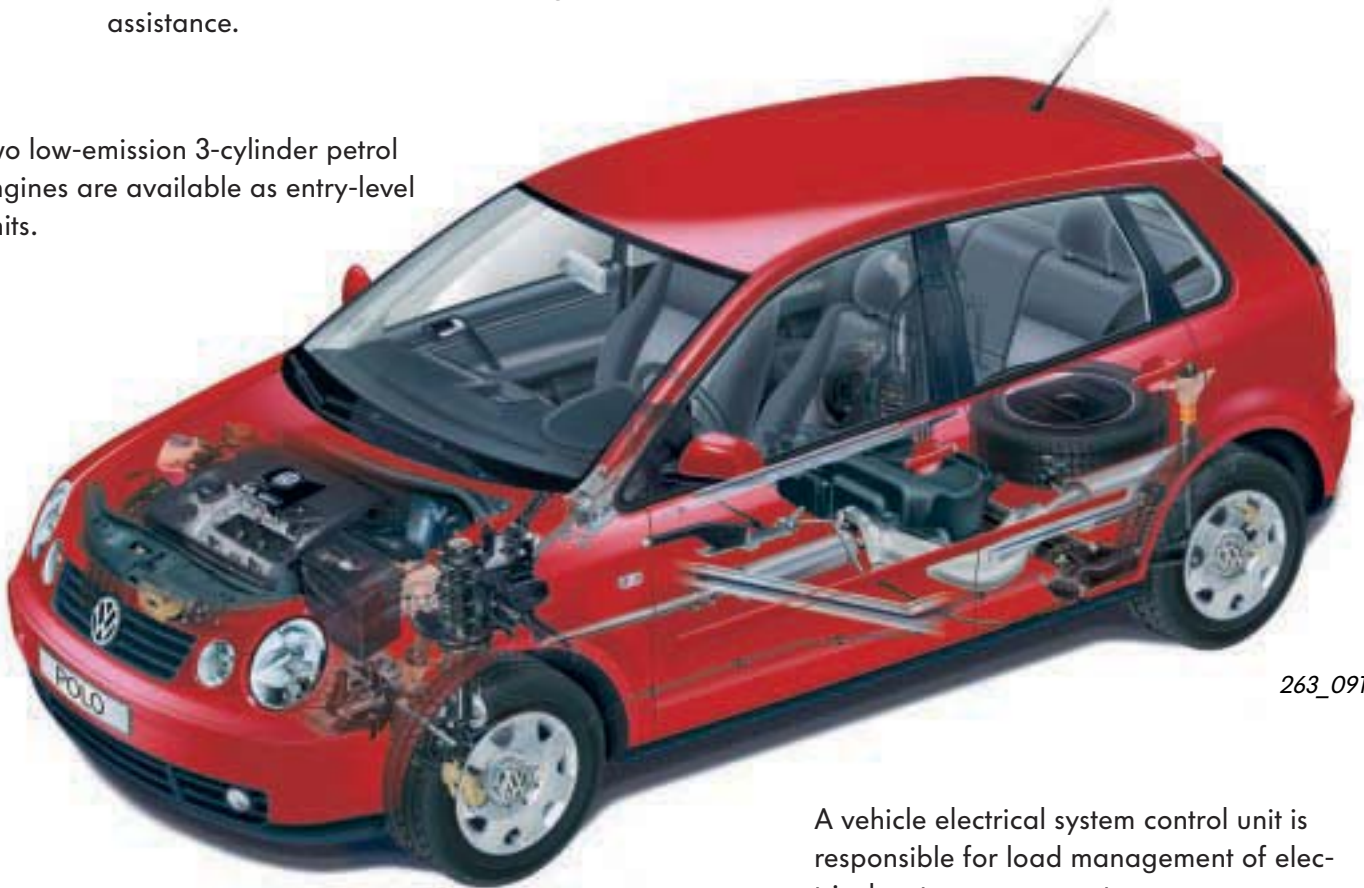
The vehicle is at the cutting edge with regard to safety, quality, performance, running gear and equipment.

A semi-automatic air conditioning system - Climatic - ensures a pleasant climate inside the passenger cabin.

An electro-hydraulic power steering system provides needs-oriented steering assistance.

Easy entry seats with memory function facilitate access to the rear seats.

Two low-emission 3-cylinder petrol engines are available as entry-level units.



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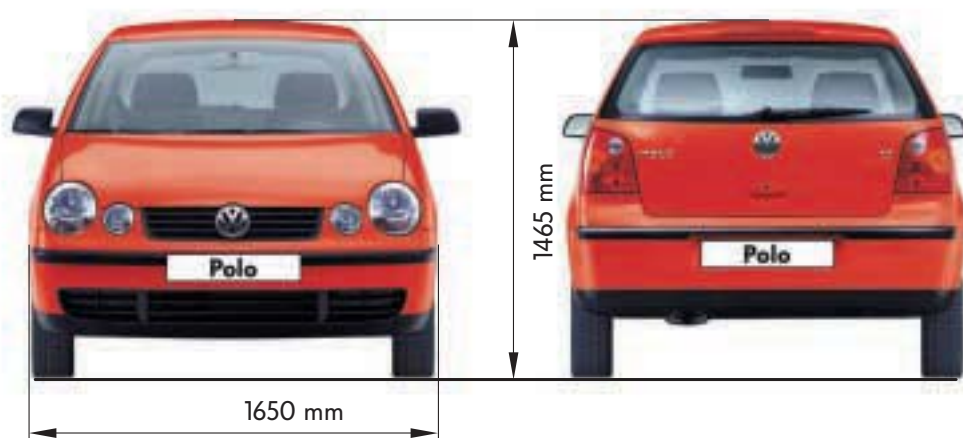
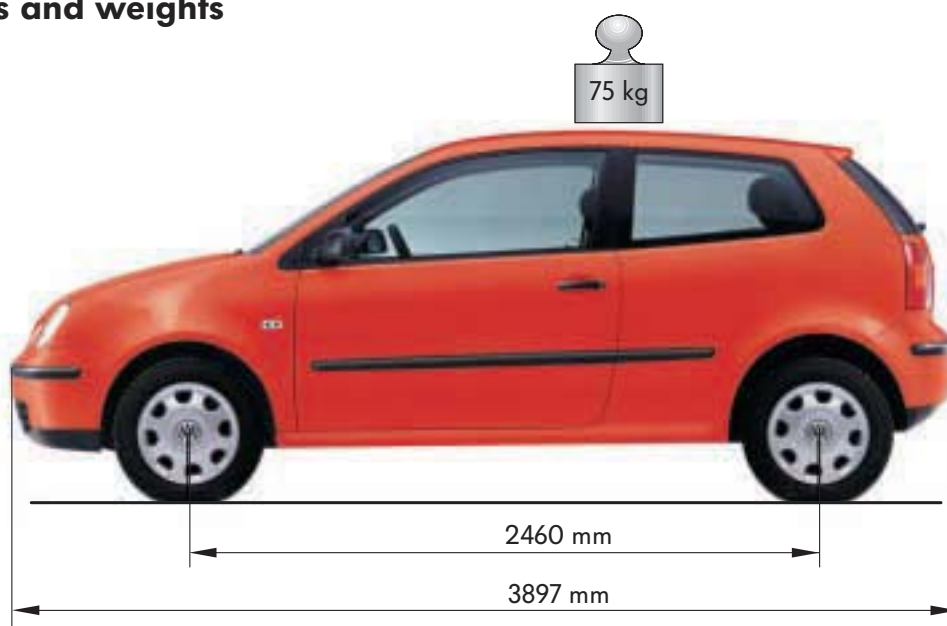
The front end obtains a certain friendly appearance from the round front headlights.

A vehicle electrical system control unit is responsible for load management of electrical system components.

It monitors automotive components not integrated in the two CAN bus systems.

A hydraulic brake assistant system (BAS) assists the driver with braking in hazardous situations.

Dimensions and weights



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Length	3897 mm
Width	1650 mm
Height	1465 mm
Wheelbase	2460 mm
Turning circle	10,6 m
Tank capacity	45 l

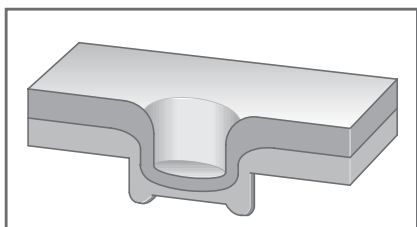
Front track width	1435 mm
Rear track width	1425 mm
Max. permissible gross weight	1560 kg*
Kerb weight	1025 kg*
Max. permissible roof load	75 kg
Drag coefficient c_d	0,32

* Specifications refer to a 2-door Polo with 1.4-litre 55 kW engine and manual gearbox

Body

Body

The body of the Polo is fully galvanised and partly consists of high-strength panels. The front and rear side members, the B pillars and the front left and right floor pans are made of high-strength sheet metal. By increasing body rigidity, the shutlines of the doors and flaps have been reduced still further.



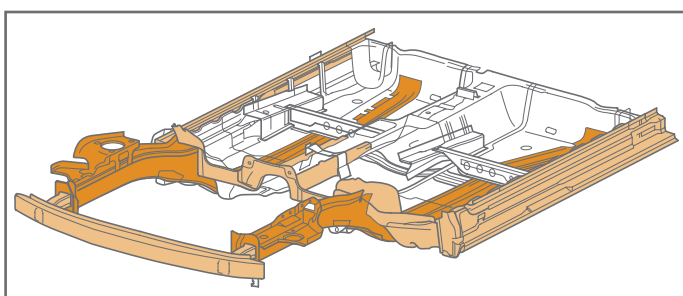
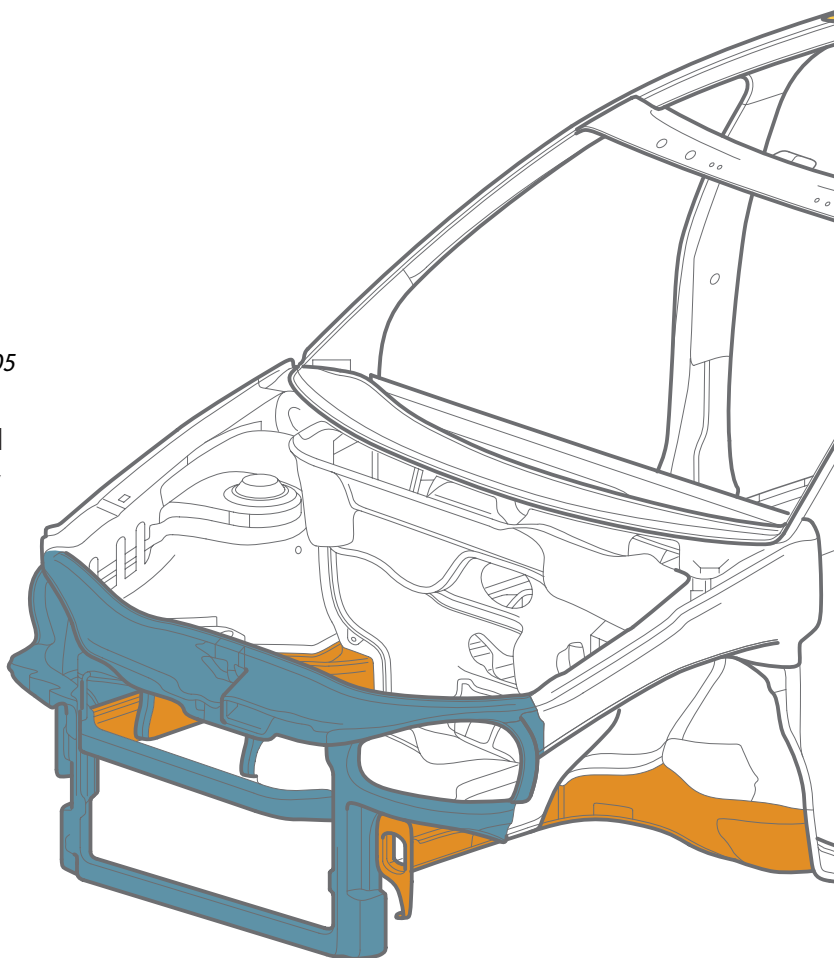
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A new technique is used to join the bonnet and tailgate. The sheet-metal panels are joined by clinching.

Advantages:

- Uniform appearance
- Low-cost method

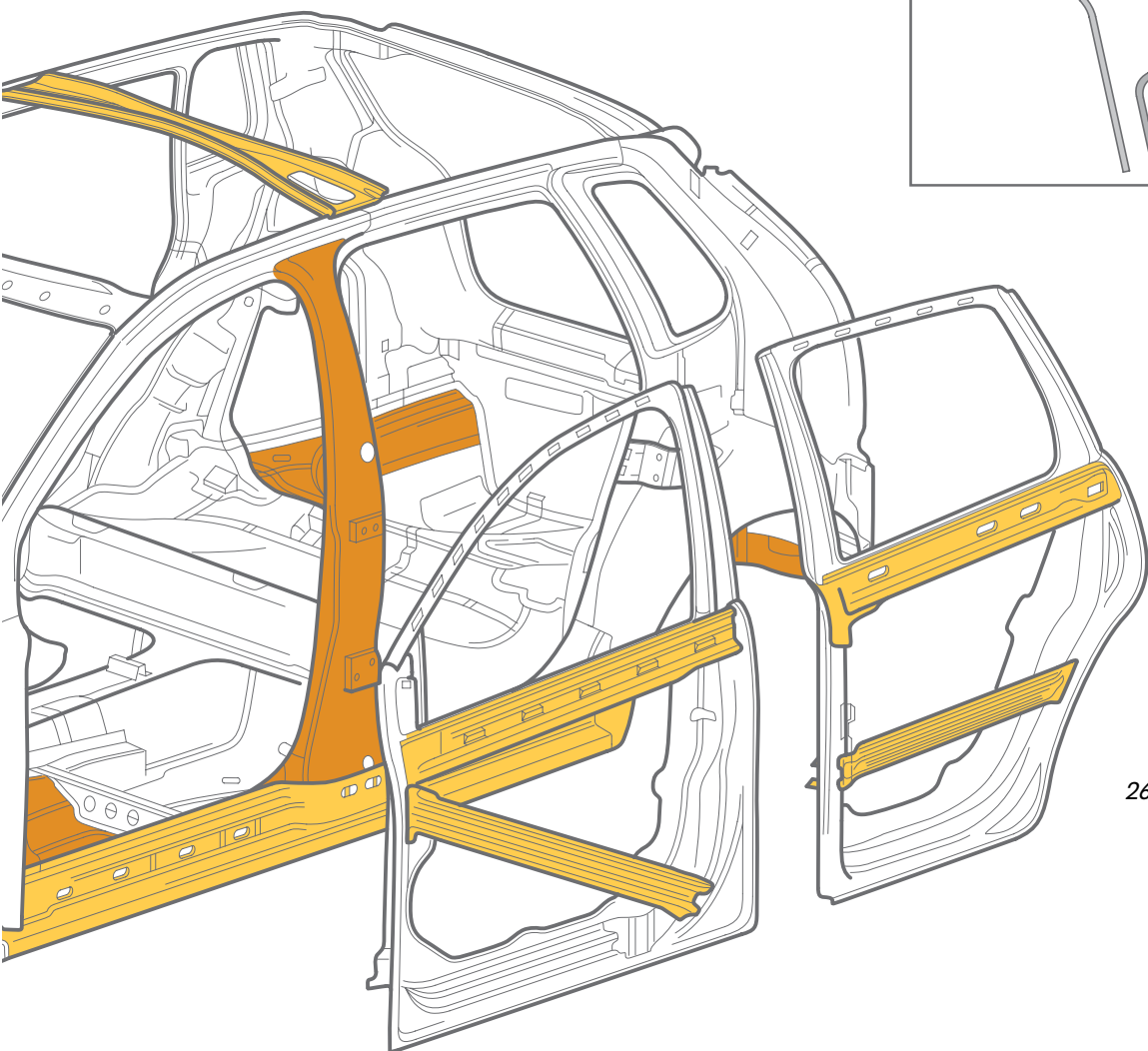
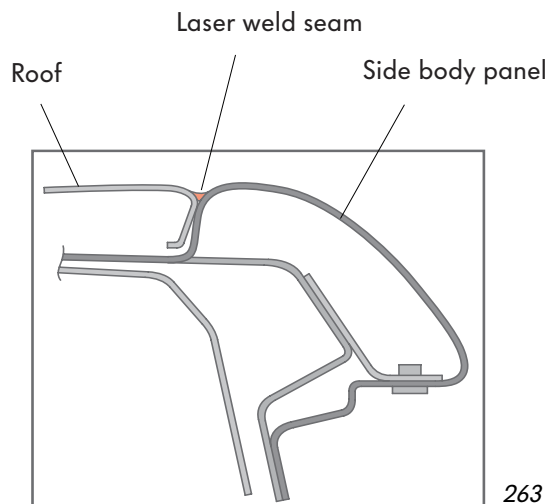
Clinching entails press-fitting metal sheets together by means of a mould and a plunger.



By optimising the design of the front, rear and lateral crash areas, occupant safety has again been increased.

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The body side panels and the roof are joined together by a laser-welded seam. This does away with the sealing work otherwise required after spot welding

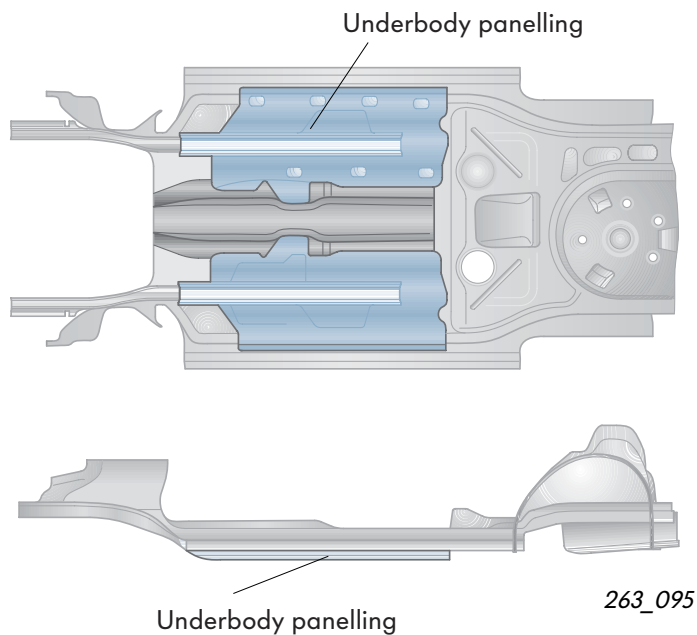


The doors and lids of the new Polo are made of Bonazink panels. Bonazink is a trade name for a type of sheet metal with a thin-film coating. The thin-film coating is based on a zinc-pigmented epoxy resin system. This allows us to reduce the use of PVC for fine seam sealing.

Body

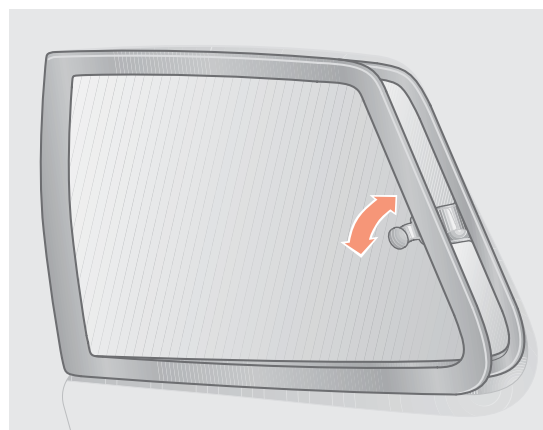
Underbody panelling

This is made of plastic and protects the rear end of the vehicle underbody. Because of its special shape, the underbody panelling keeps flying stone chips away from the body. There is no longer any need for a PVC coating in the rear underbody area.



Hinged (rear) windows

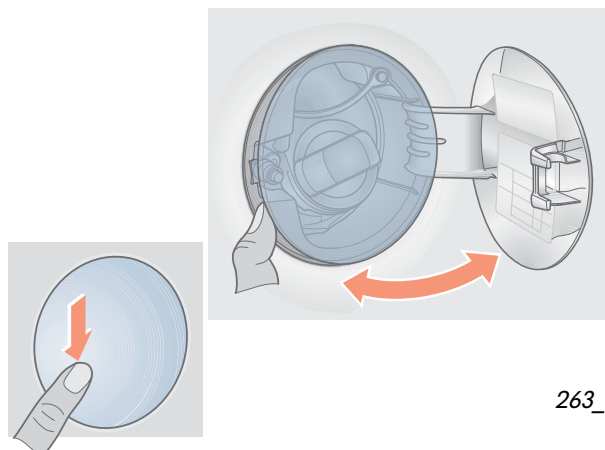
The rear side windows for the 2-door Polo are available as hinged windows.



Fuel filler flap

It is operated in the same way as a push-button.

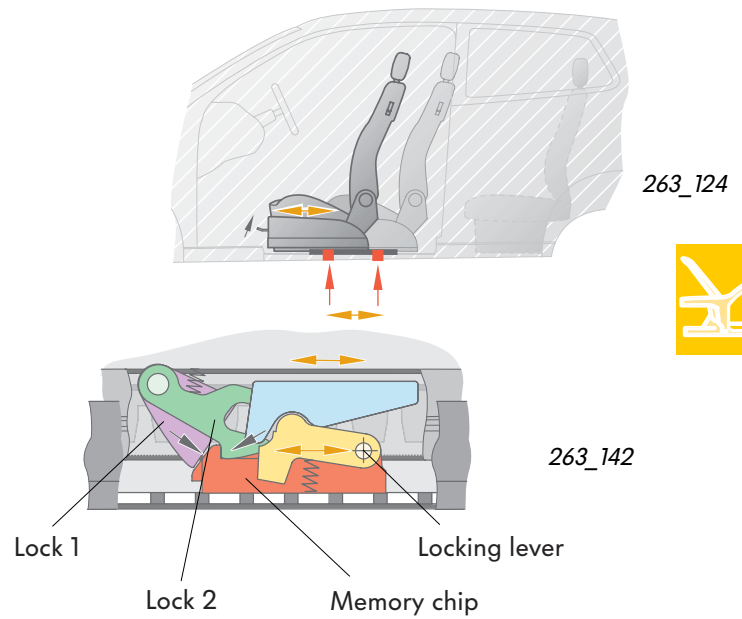
- To open, press the fuel filler flap
- To close, push back the fuel filler flap until it snaps into place.



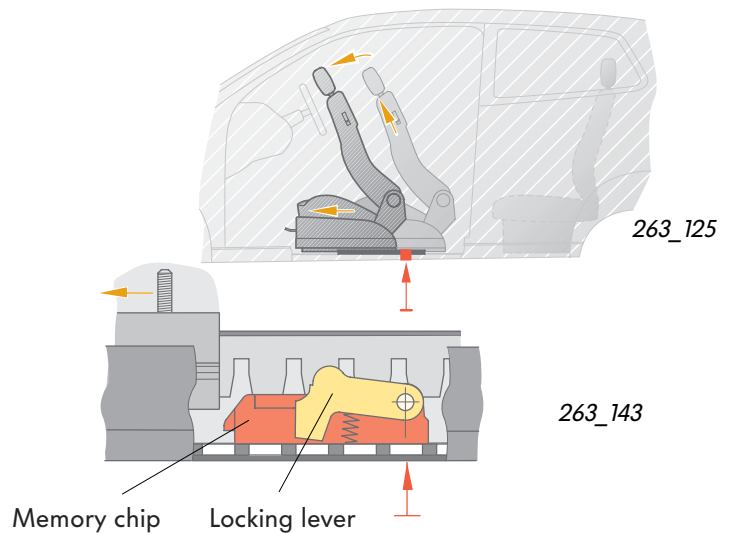
Front seats

The front seats for the 2-door Polo are available optionally with an easy entry facility and a manual memory function.

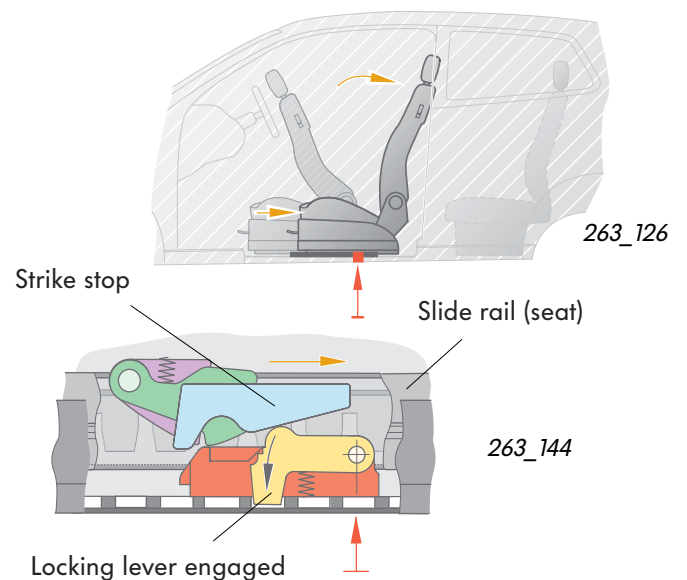
Integrated in the sill-side rail is a so-called memory block which moves back and forth together with the seat when the longitudinal adjustment is released by locks 1 and 2.



The rear seats can be accessed by unlocking the front seat backrest and folding it forwards as usual. The seat can be pulled forward at the same time for easier access to the rear seats (easy entry function). The memory chip remains in position (memory position) as the locks in the longitudinal follower are released when the backrest is folded forward.



The seat can be pulled back to its initial position (memory position) after the backrest is folded back. The seat then locks automatically due to the memory chip, the locking lever and the strike stop on the slide rail (seat).

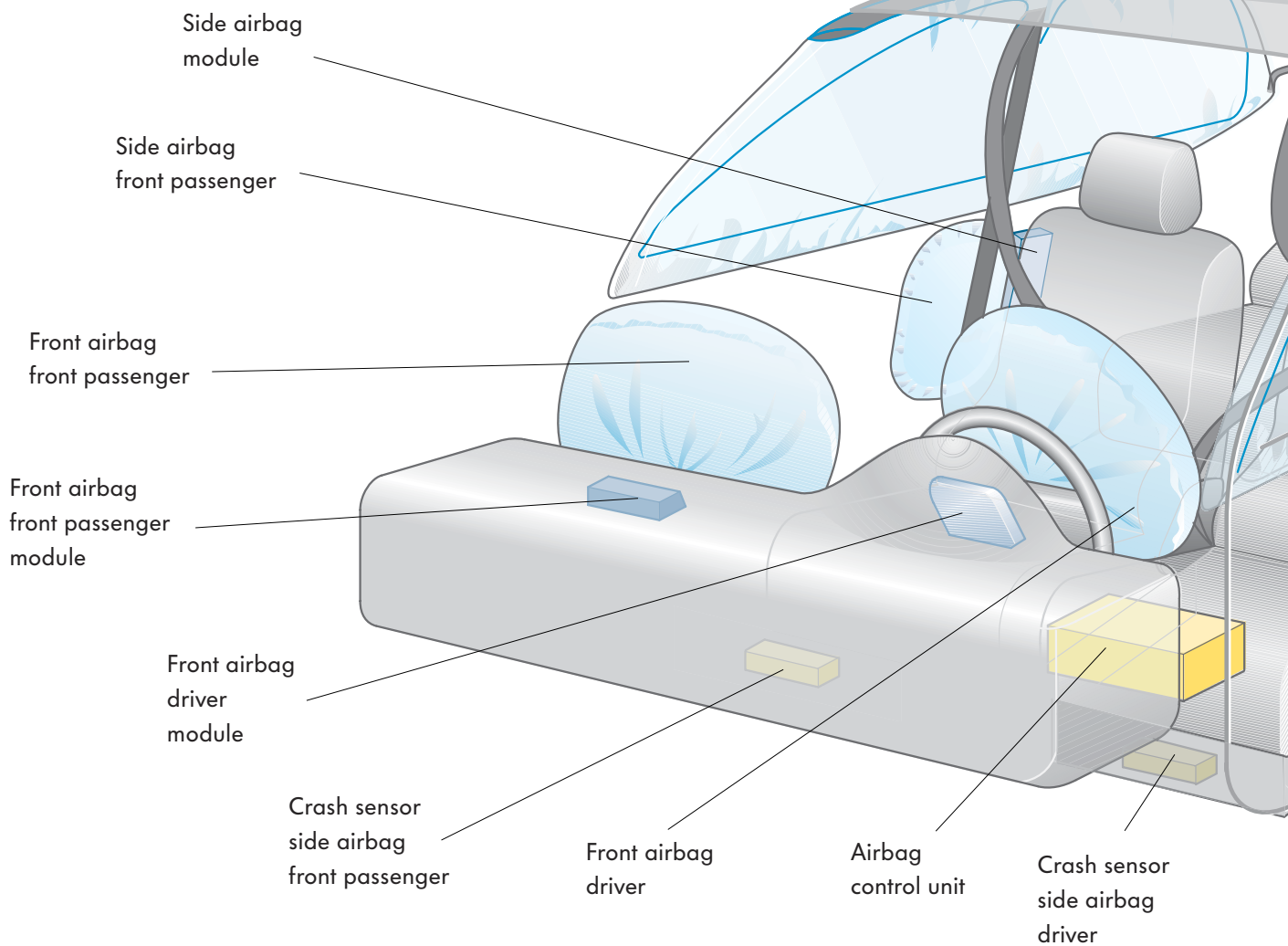


Occupant protection

Occupant protection

Occupant protection is assured by the airbag system. It comprises two front airbags, side and head airbags, seat belts and belt tensioners, as well as the child restraint system.

The Polo Model Year 2002 has two full-size front airbags on the driver and front passenger sides with filling volumes of 64 and 120 litres respectively. The central airbag control unit is located behind the central console, on the tunnel.



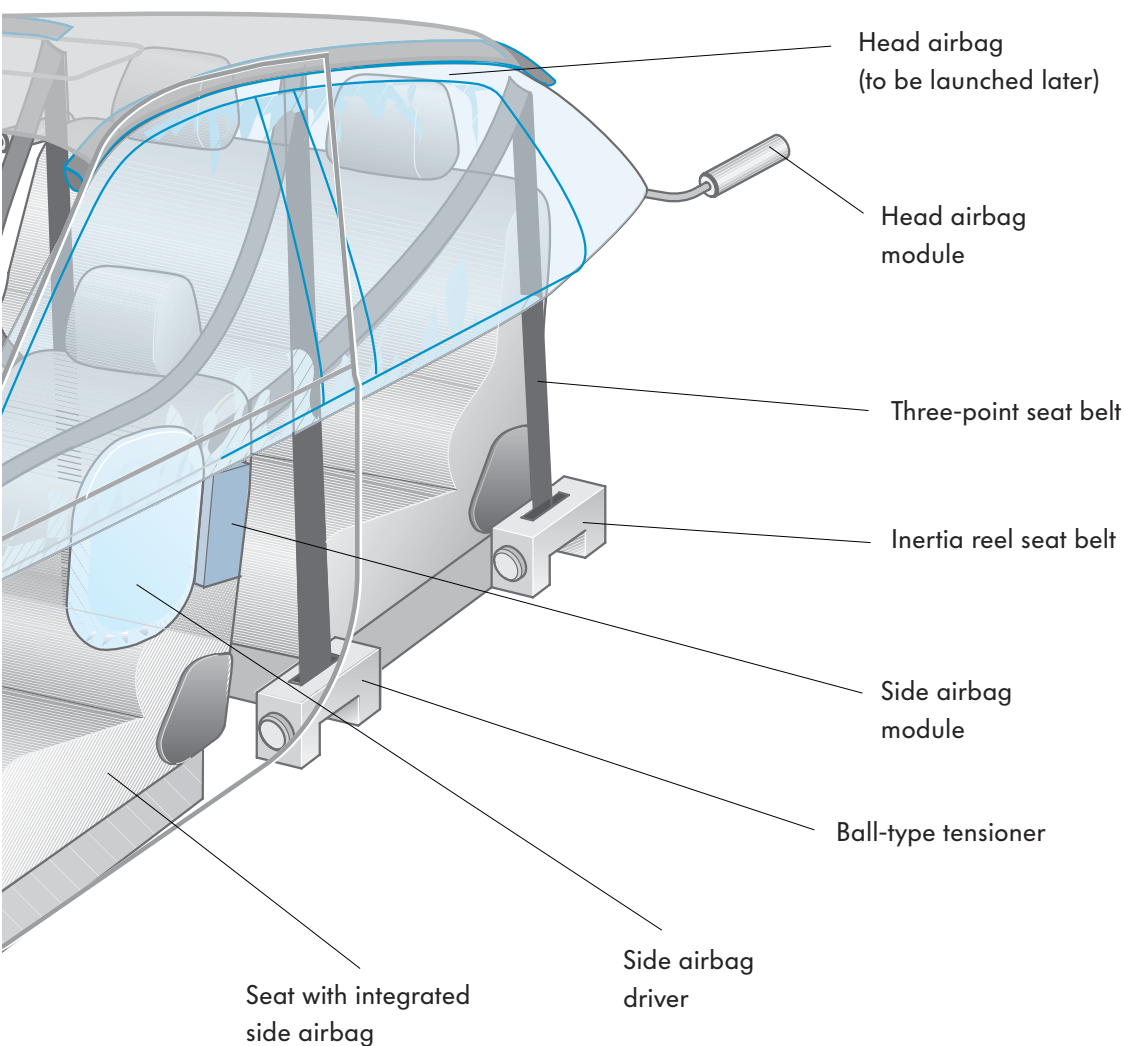
The side airbags are integrated in the front seats and have a filling volume of 12 litres. The head airbags have a filling volume of 23 litres each and are installed in the vehicle head-lining above the doors.

The airbag sensor system comprises two lateral acceleration sensors (vehicles with head airbags have four lateral acceleration sensors). They are located below the front seats.

Standard inertia-reel seat belts are employed in the outer front and rear seating positions. In the front seating positions, ball-type tensioners are fitted.

In vehicles without side airbags, the belt tensioners are triggered mechanically and pyrotechnically.

In vehicles equipped with side airbags, the belt tensioners are triggered electrically and pyrotechnically.



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In the new Polo, the front passenger airbag can be deactivated by a key switch.

Occupant protection

Deactivation of front passenger's airbag

Airbag switch

A key switch for deactivating the front and side airbags for the front passenger is located in the glove compartment.

To deactivate these airbags, the airbag switch must be turned to the "OFF" position using the ignition key.



The airbag switch may only be operated when the ignition is OFF.



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"AIRBAG OFF" indicator lamp

When the front passenger airbags are deactivated, the "AIRBAG OFF" indicator lamp comes on when the ignition is turned on.

If a fault occurs in the airbag system, the indicator lamp begins to flash.

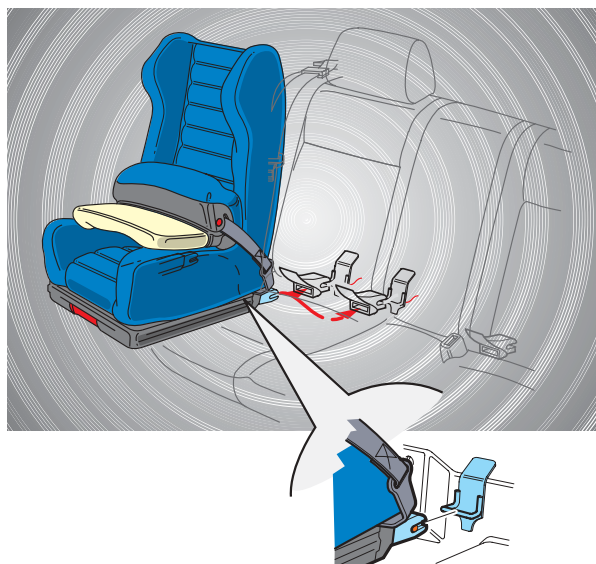


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Child restraint system

Isofix system

The new Polo comes as standard with retaining eyelets for mounting Isofix child safety seats.



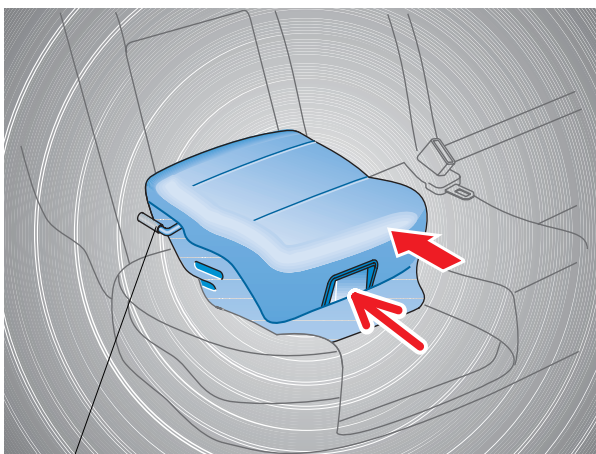
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Integrated child safety seat

A rear bench seat with integrated child safety seat is available as an optional extra. To make use of the integrated child safety seat, the child safety seat elements of the seat cushion must be moved up and locked into place.

For children between 1.30 m and 1.50 m in height, the belt height is corrected by an additional shoulder belt guide. A belt guiding hook on the raised cushion ensures that the belt fits snugly around the child's pelvis.



263_118

Belt guide hook

Engines

General

The range of engines in the new Polo is presented on the following pages. It comprises a mixture of newly developed assemblies and assemblies with a proven track record.

For all engines, you will find specifications, power and torque diagrams, as well as details of technical features.

The key aim for engine design engineers was to reduce fuel consumption and exhaust emissions.

All petrol engines comply with the EU4 exhaust emission standard. The TDI diesel engine with unit injector system conforms to the D4 exhaust emission standard.

In the Federal Republic of Germany, owners of vehicles which conform to the D4 or EU4 exhaust emission standard receive financial incentives from the government.

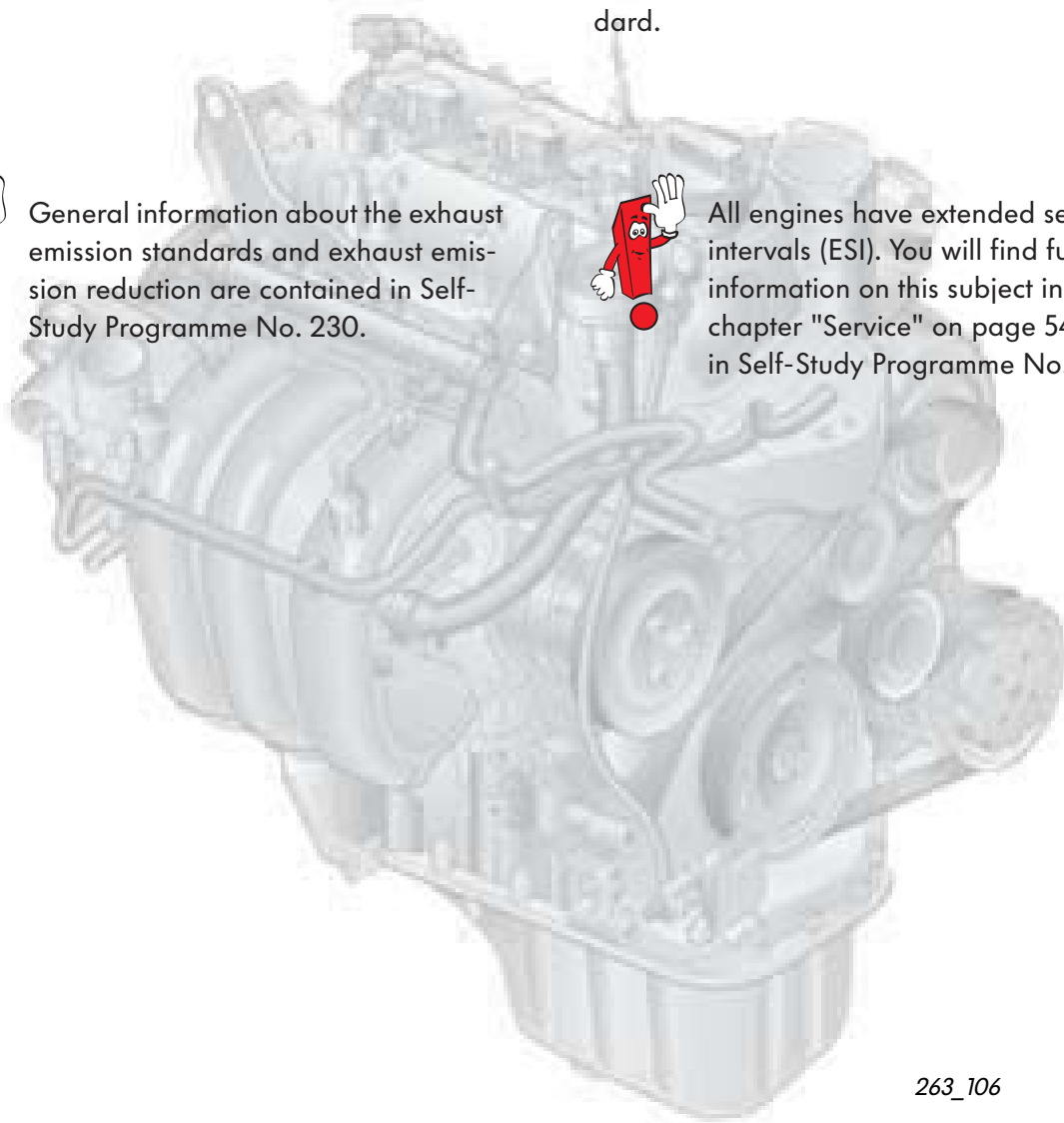
As compliance with the D4 and EU4 exhaust emission standard involves higher technical complexity, the engines are supplied in several countries in slightly modified versions. They are compliant with a different exhaust emission standard.



General information about the exhaust emission standards and exhaust emission reduction are contained in Self-Study Programme No. 230.



All engines have extended service intervals (ESI). You will find further information on this subject in the chapter "Service" on page 54 and in Self-Study Programme No. 224.



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The 1.2-litre 40 kW 3-cylinder petrol engine with 2-valve technology

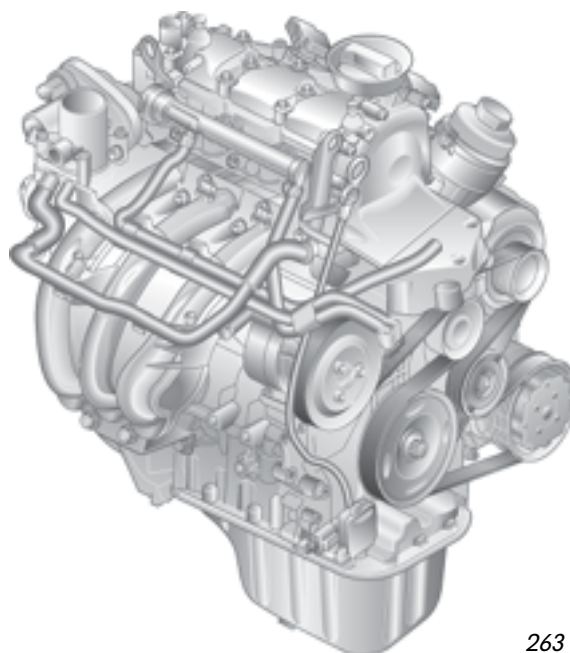
The 1.2-litre engine is the first 3-cylinder petrol engine to be built by Volkswagen.

Technical features - Engine mechanicals

- Air filter integrated in engine cover
- Chain driven camshaft
- Split cylinder block
- Crankshaft drive with balancer shaft
- Crossflow cooling in cylinder head
- Upright oil filter
- Crankcase ventilation

Technical features - Engine management

- Single-spark ignition coils with integrated power output stage
- Exhaust treatment with near-engine catalyst and two non-linear lambda sensors



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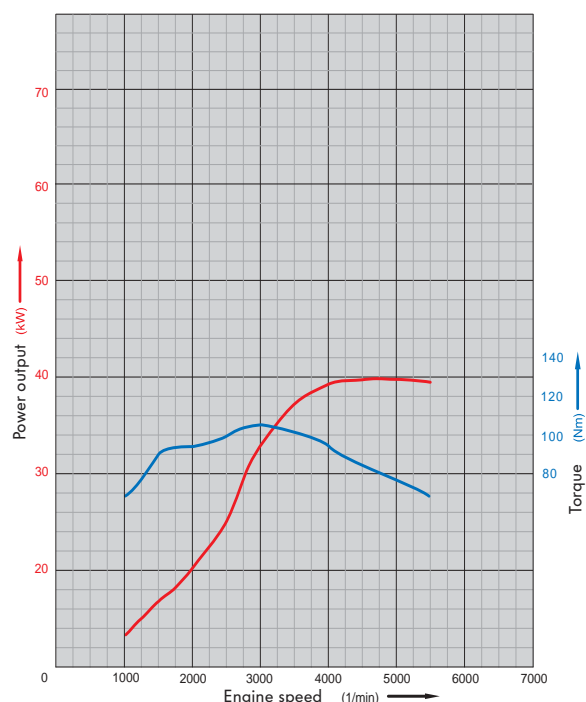


More detailed information about this engine is contained in Self-Study Programme No. 260 - 1.2-litre 3-cylinder petrol engines.

Specifications

Engine code	AWY
Displacement	1198 cc
Type	3-cylinder inline engine
Valves per cylinder	2
Bore	76,5 mm
Stroke	86,9 mm
Compression ratio	10,3 : 1
Max. power	40 kW at 4750 rpm
Max. torque	106 Nm at 3000 rpm
Engine management	Simos 3PD
Fuel	95 RON unleaded premium (91 RON unleaded petrol can be used alternatively. This reduces performance slightly)
Exhaust treatment	Three-way catalyst with lambda regulation
Exhaust emission standard	EU4

Power/torque diagram



263_001

Engines

The 1.2-litre 47 kW 3-cylinder petrol engine with 4-valve technology

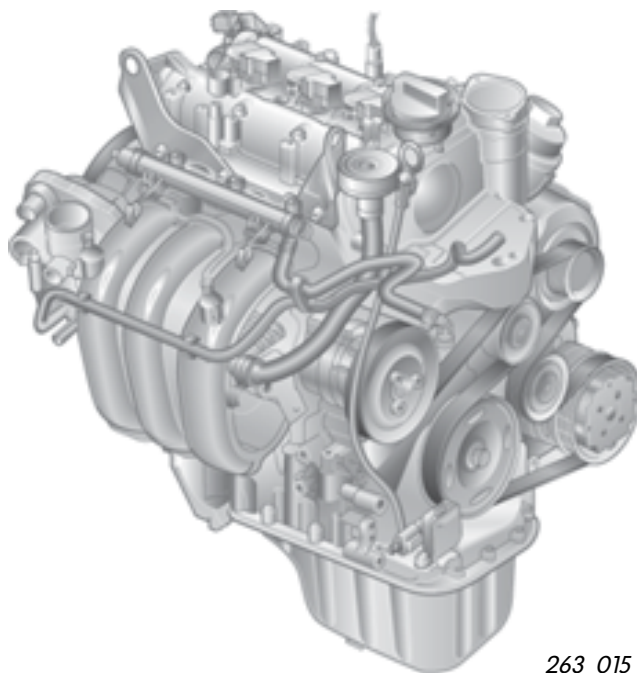
4-valve technology distinguishes this engine from the 1.2-litre 40 kW engine.

Technical features - Engine mechanicals

- Air filter integrated in engine cover
- Chain driven camshaft
- Split cylinder block
- Crankshaft drive with balancer shaft
- Crossflow cooling in the cylinder head
- Upright oil filter
- Non-return fuel system
- Crankcase ventilation

Technical features - Engine management

- Single-spark ignition coil with integrated power output stage
- Electrical EGR valve
- Exhaust treatment with near-engine catalyst, broadband lambda probe and non-linear lambda probe



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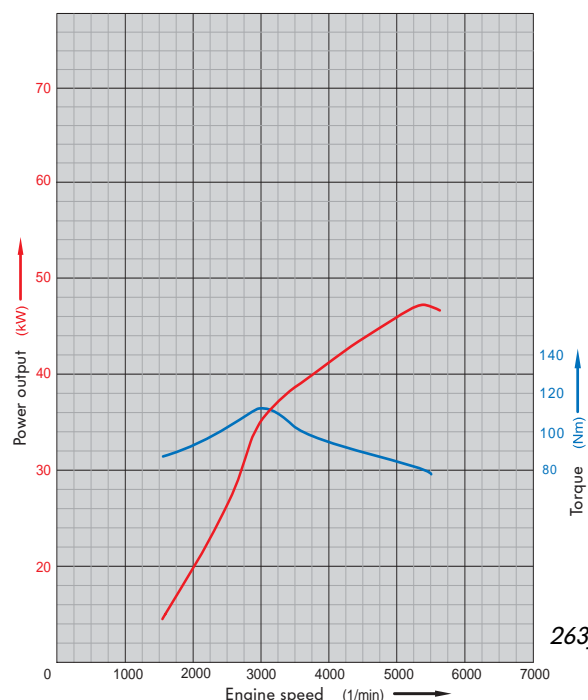


More detailed information about this engine can be found in Self-Study Programme No. 260 - 1.2-litre 3-cylinder petrol engines.

Specifications

Engine code	AZQ
Displacement	1198 cc
Type	3-cylinder inline engine
Valves per cylinder	4
Bore	76,5 mm
Stroke	86,9 mm
Compression ratio	10,5 : 1
Max. power	47 kW at 5400 rpm
Max. torque	112 Nm at 3000 rpm
Engine management	Simos 3PE
Fuel	95 RON unleaded premium (91 RON unleaded can be used alternatively. This reduces performance slightly)
Exhaust treatment	Three-way catalyst with lambda regulation, exhaust gas recirculation
Exhaust emission standard	EU4

Power/torque diagram



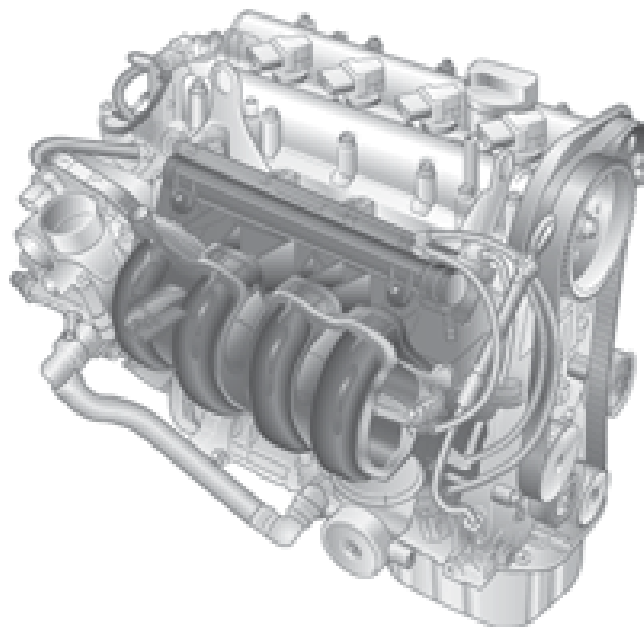
263_002

The 1.4-litre 55 kW 4-cylinder petrol engine with 4-valve technology

The 1.4-litre 55 kW engine with engine code AUA will be launched in combination with the manual gearbox. This engine, however, already has a non- return fuel system.

A more advanced 1.4-litre 55 kW engine with engine code BBY will be introduced at a later date.

This engine (BBY) is available at launch in conjunction with the automatic gearbox.



Technical new features - Engine mechanicals

- Air filter integrated in engine cover
- Non-return fuel system
- Crankcase ventilation

Technical new features - Engine management

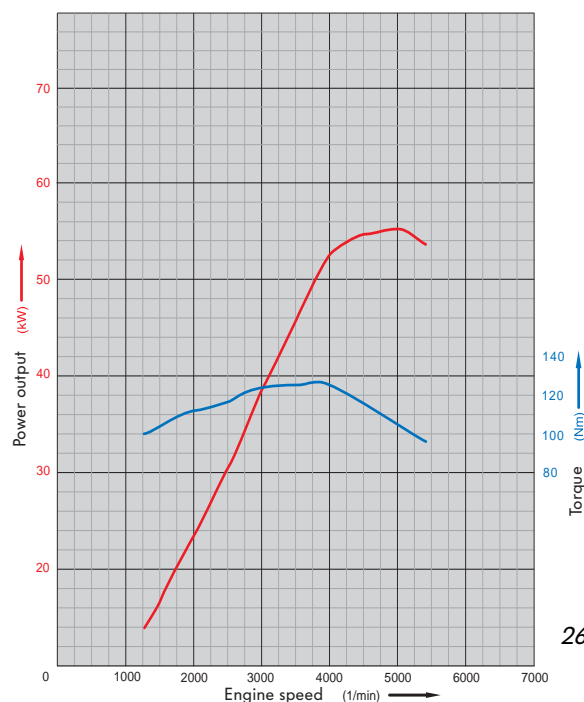
- Single-spark ignition coil
- Electrical EGR valve

263_127

Specifications

Engine code	AUA/BBY
Displacement	1390 cc
Type	4-cylinder inline engine
Valves per cylinder	4
Bore	76,5 mm
Stroke	75,6 mm
Compression ratio	10,5 : 1
Max. power	55 kW at 5000 rpm
Max. torque	126 Nm at 3800 rpm
Engine management	Magneti Marelli 4MV
Fuel	95 RON unleaded premium (91 RON unleaded petrol can be used alternatively. This reduces performance slightly)
Exhaust treatment	Primary catalyst, main catalyst with lambda regulation, exhaust gas recirculation
Exhaust emission standard	EU4

Power/torque diagram



263_018

Engines

The 1.4-litre 74 kW 4-cylinder petrol engine with 4-valve technology

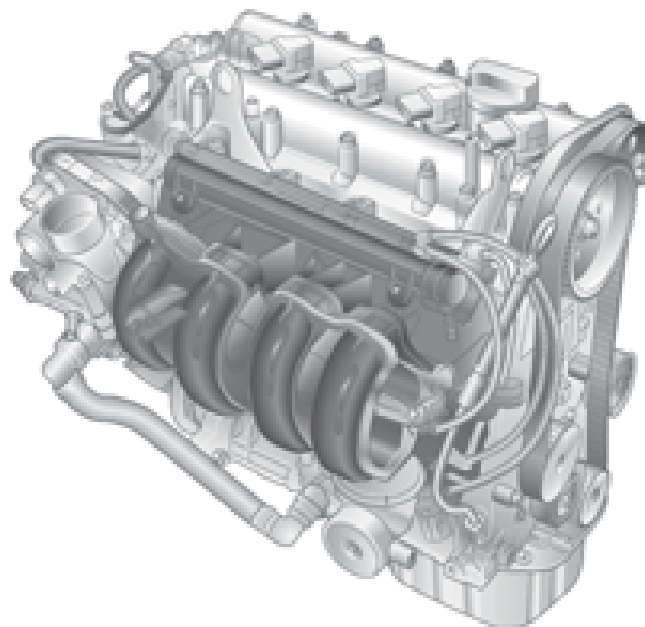
This engine is an advanced development of the 1.4-litre 74 kW engine from the previous model.

Technical new features - Engine mechanicals

- Air filter integrated in engine cover
- Non-return fuel system
- Crankcase ventilation
- Plastic intake manifold

Technical new features - Engine management

- Single-spark ignition coil
- Electrical EGR valve

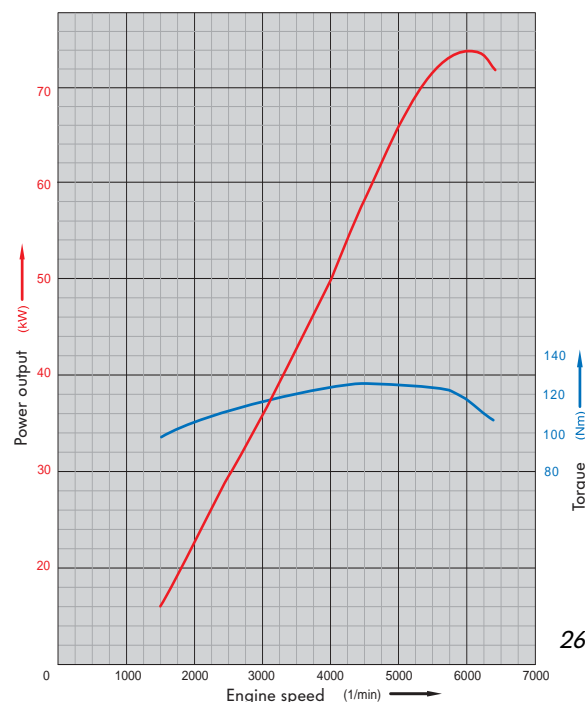


263_127

Specifications

Engine code	BBZ
Displacement	1390 cc
Type	4-cylinder inline engine
Valves per cylinder	4
Bore	76,5 mm
Stroke	75,6 mm
Compression ratio	10,5 : 1
Max. power	74 kW at 6000 rpm
Max. torque	126 Nm at 4400 rpm
Engine management	Magneti Marelli 4LV
Fuel	95 RON unleaded premium (91 RON unleaded petrol can be used alternatively. This reduces performance slightly)
Exhaust treatment	Primary catalyst, main catalyst with lambda regulation, exhaust gas recirculation
Exhaust emission standard	EU4

Power/torque diagram



263_019

Crankcase breather

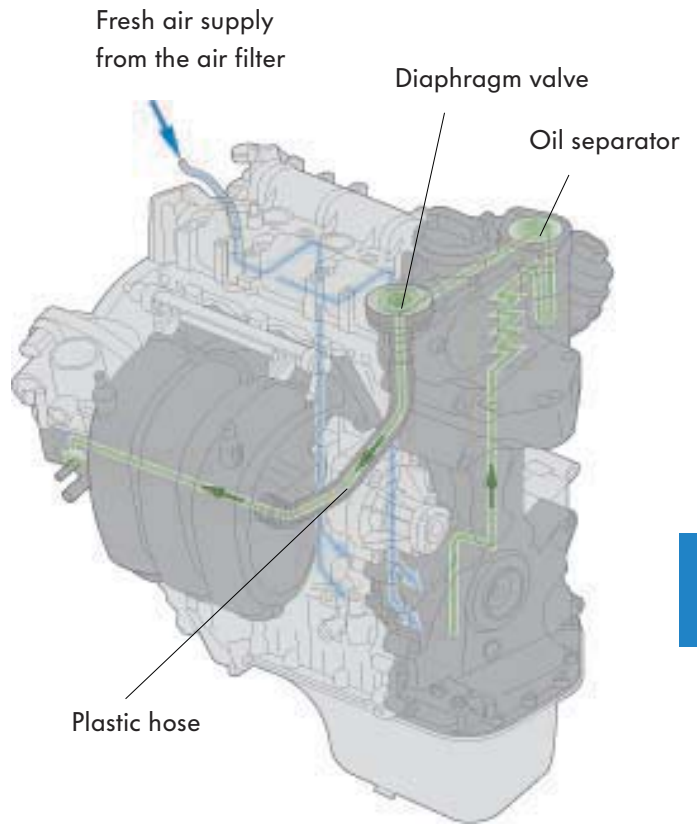
The crankcase breather is used in all petrol engines.

The system consists of:

- an oil separator
- a diaphragm valve
- a plastic hose, and
- a tube with a non-return valve for ventilation purposes (on the air filter)

The crankcase breather prevents oil and unburned hydrocarbons from being expelled into the environment.

Crankcase ventilation is improved by inducing additional fresh air. This reduces condensation, and dramatically improves oil quality and anti-freezing protection.

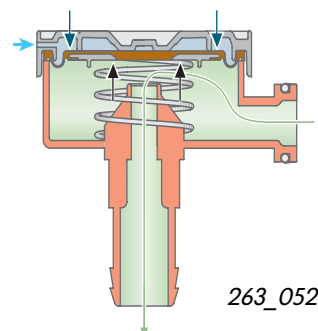
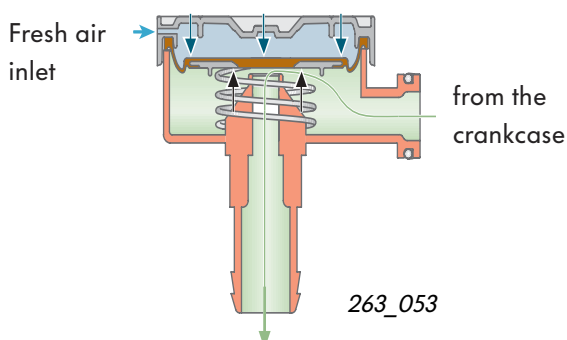


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Diaphragm valve

Ensures that the pressure level inside the crankcase stays constant and that the crankcase is well-ventilated. This valve is divided into two chambers by a diaphragm. One chamber leads out into the open air and the other is connected to the intake pipe.

- At a high intake manifold vacuum (e. g. when the engine is idling), the diaphragm is drawn towards the port cross section in the opposite direction to the spring pressure. As a result, less gas is drawn out of the crankcase.
- At a low intake pipe vacuum (e. g. at full throttle), the spring pushes the membrane back. As a result, the port cross-section is open wide and more gas is sucked out of the crankcase.



Engines

Non-return fuel system

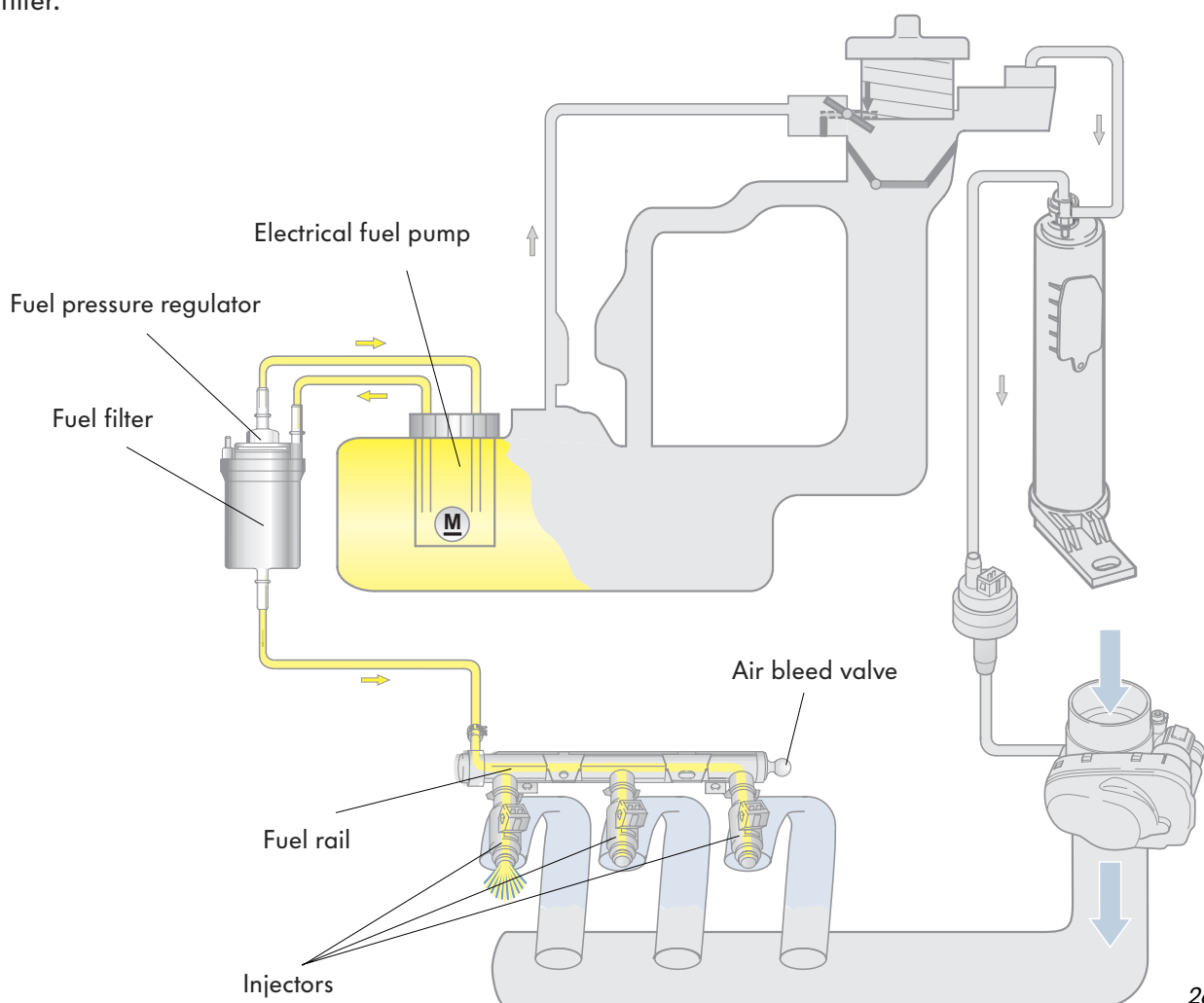
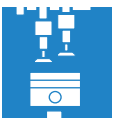
The non-return fuel system is used in all petrol engines, with the exception of the 1.2-litre 40 kW engine.



In the non-return fuel system there is no return line from the fuel rail to the fuel tank.

The fuel is delivered from the electrical fuel pump to the fuel filter. Once in the fuel filter, the fuel flows to the fuel rail and the injectors.

The fuel pressure is a constant 3 bar, and is regulated by the fuel pressure regulator in the fuel filter.



263_054



In the non-return fuel system, there is an air bleed valve on the fuel rail. You must bleed the system after working on the system. Please follow the instructions given in the Workshop Manual.