

Service.



Self-study programme 306

The Touran



Seven passengers and 121 litres of luggage capacity or two passengers and 1913 litres of luggage capacity is what the Touran offers as a compact van.

Based on these figures alone, the successful realisation of the MPV concept is for all to see. MPV is the abbreviation for "Multi Purpose Vehicle" or in other terms: "A vehicle with multiple utilisation options".

Clever, innovative and dynamic is not just the technology – that is described in detail on the following pages – but also the production model for the Touran: It is being produced by Auto 5000 Ltd, which is a Volkswagen AG subsidiary.

The name Touran is created from the word "Tour", i.e. to travel. To demonstrate its relation to the Sharan, the end syllable from its big brother was placed on the end.



S306_016

NEW



Important Note



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

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



Brief overview	4
Body	10
Occupant safety	24
Power units	26
Power transmission	34
Running gear	40
Electrical system	48
Heating and air conditioning	52
Radio and navigation	56
Service	58



Brief overview



The Touran – Marketing aspects

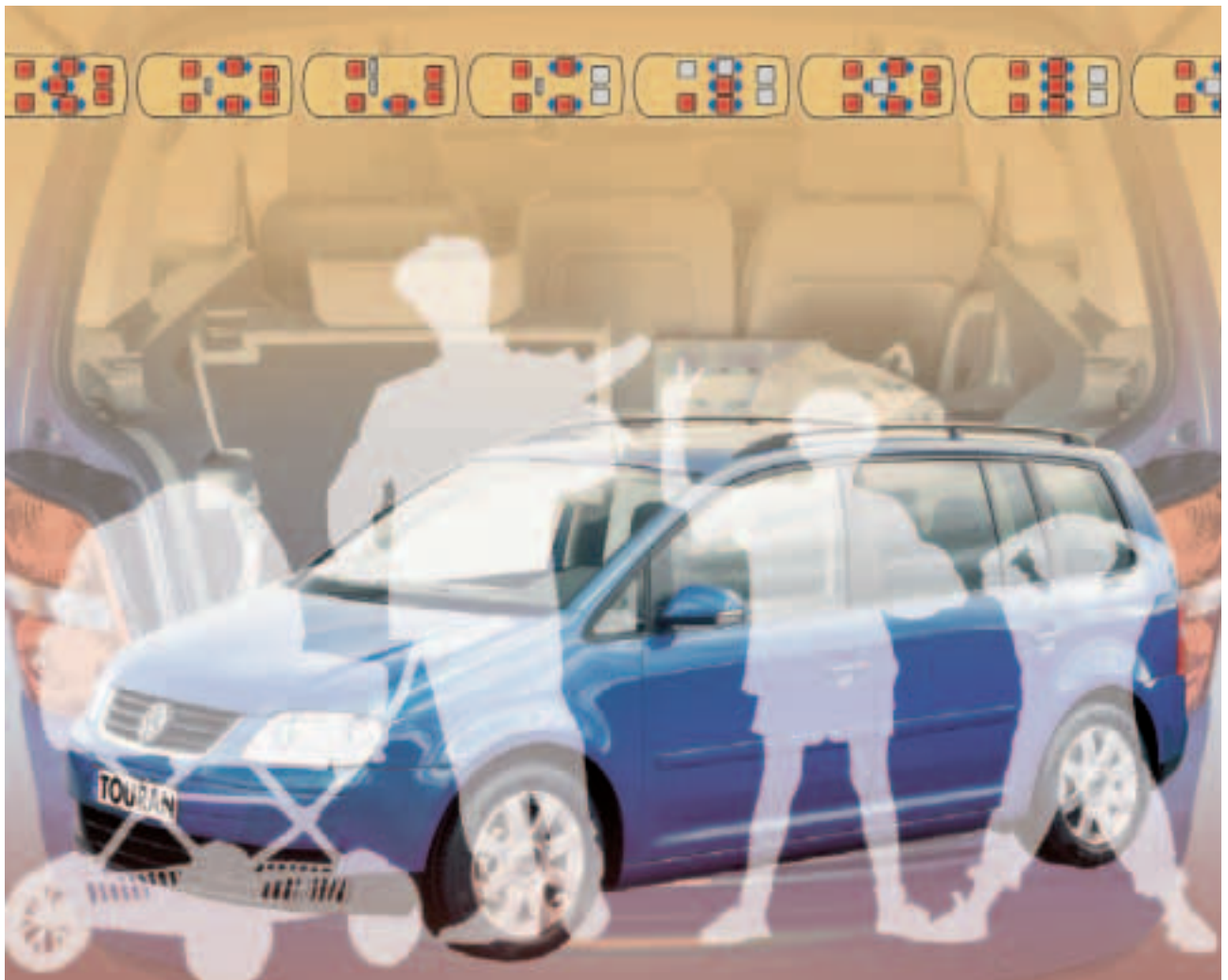
"The flexible allrounder"

The Touran is designed so that it can be adapted to different needs. With this in mind, one of the most important features is the interior, which is variable and can be restructured to suit any situation.

On the technical side, it features engine and gearbox combinations that are superior to the competition and well balanced running gear technology for safety and driving enjoyment.

All of these properties make the vehicle appealing to particular target groups, such as young couples with children. Adjectives that are synonymous with this target group are: active, self confident, well-informed and image conscious.

The Touran is available as a 5 or 7 seater version, which is typical for compact vans.

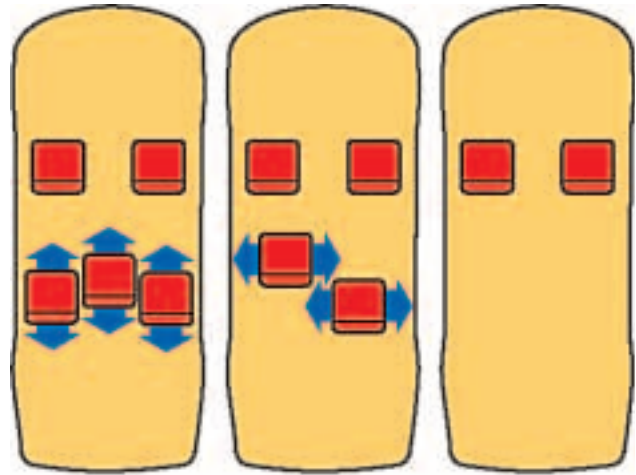




The 5 seater

The 5 seater features a second seat row with single seats. All seats of the second seat row can be folded down, folded together and removed. They are also adjustable longitudinally and can be moved to the left or right.

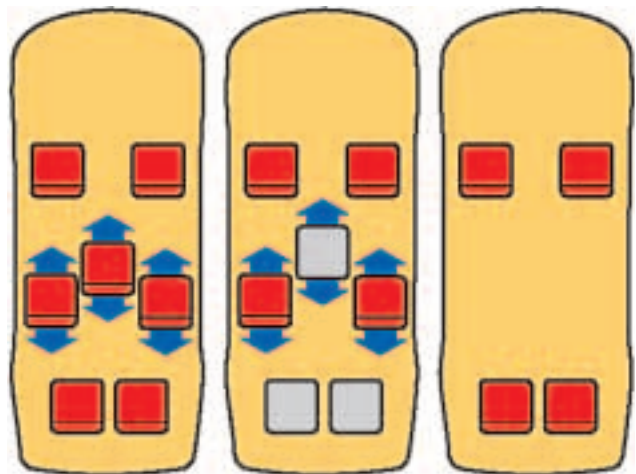
The middle seat in this row can be used in its folded down state as a table thanks to a plastic insert in the backrest. It can also be exchanged for a cool box.



S306_043

The 7 seater

The 7 seater has an additional third seat row with two folding seats that can be lowered individually. This makes the 7 seater the most versatile Touran: It can accommodate up to seven occupants, or it can offer a large cargo area when all seats are removed or folded down.



S306_045

Brief overview



The Touran and Auto 5000 Ltd

What is Auto 5000?

Auto 5000 Ltd is a subsidiary of the Volkswagen AG. At Auto 5000 Ltd, two aims are at the forefront: Firstly, the construction of a new type of vehicle, the Touran compact van, with which Volkswagen wishes to supplement its range of vehicles in this market segment. Secondly, it is to prove that industrial production has a future in Germany.

Process optimisation and cost reduction should not simply be the task of the managers but, above all, lie in the hands of the workers themselves.



S306_220

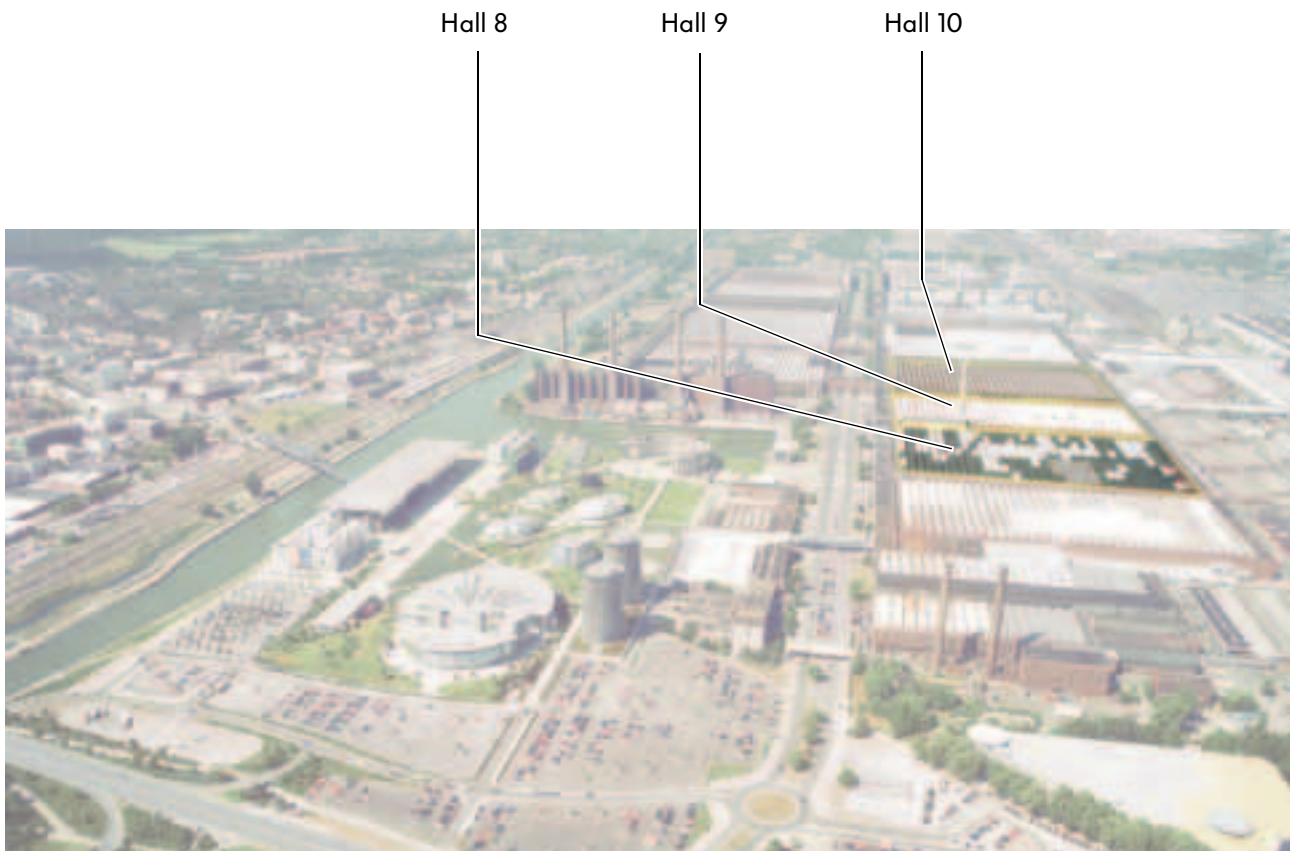


Where is production carried out?

The Touran will be the first vehicle to be produced within Auto 5000 Ltd. The production site is the main Volkswagen Group headquarters in Wolfsburg. On the premises at Volkswagen, modern production facilities were built in halls 8, 9 and 10 of the factory.

For production of the Touran, the core processes: body construction (hall 10), paintwork (hall 9) and assembly (hall 8) are covered within Auto 5000 Ltd.

All other processes are dealt with by internal areas of the company and external organisations.



The Volkswagen factory in Wolfsburg

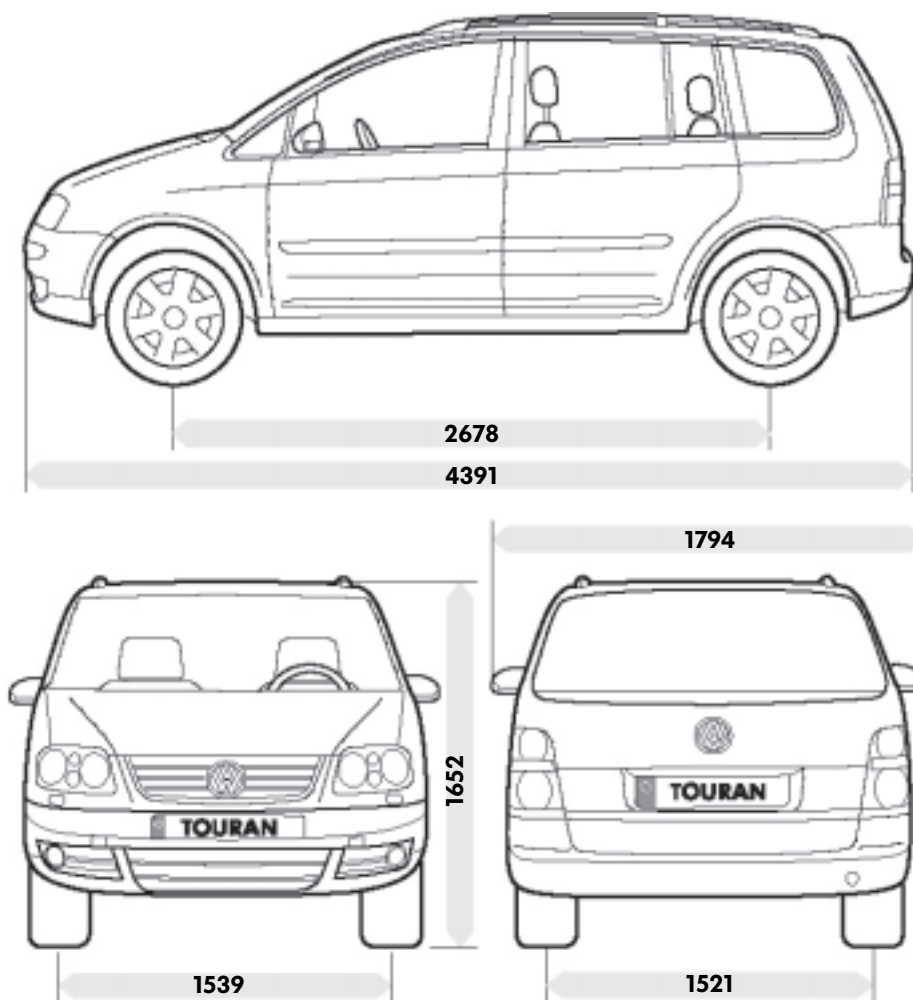
S306_028

Brief overview



Technical data

The diagram shows the dimensions of a 7 seater Touran with Trendline equipment.



S306_155

Measurements and weights

Length	4391 mm
Width	1794 mm
Height	1652 mm
Wheelbase	2678 mm
Track width, front	1539 mm
Track width, rear	1521 mm

Fuel tank volume	60 ltr.
Luggage compartment volume	from 121 ltr.* to 1989 ltr.**
Max. permissible weight	2090 kg***
Unladen weight	1423 kg***
Maximum load	667 kg***
Coefficient drag value	0.315 c _d

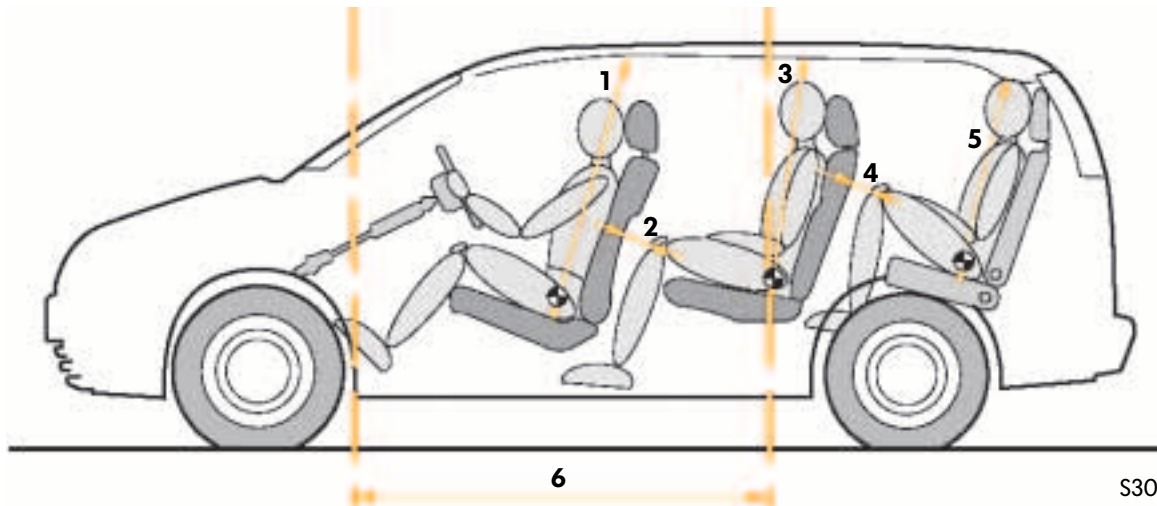
* 7 seater

** 5 seater with 2nd seat row removed

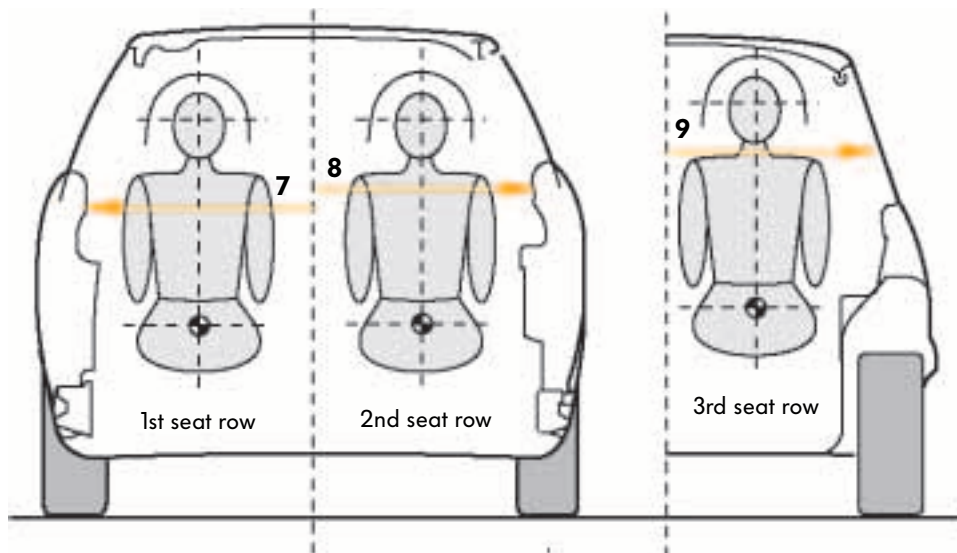
*** 1.6 ltr./85 kW FSI engine

Interior dimensions

The following diagrams show the dimensions of the interior of the Touran (7 seater).



S306_017



S306_019

(1) Head room, front	= 1020 mm	(6) Length of interior	= 1676 mm
(2) Leg room, 2nd seat row	= 38 mm* - 80 mm**	(7) Shoulder room, front	= 1422 mm
(3) Head room, 2nd seat row	= 989 mm	(8) Shoulder room, 2nd seat row	= 1436 mm
(4) Leg room, 3rd seat row	= 17 mm* - 133 mm***	(9) Shoulder room, 3rd seat row	= 1221 mm
(5) Head room, 3rd seat row	= 917 mm		

* Position in accordance with DIN 700200

** with seat of second seat row moved backwards fully

*** with seat of second seat row moved forwards fully

Body

The basic body structure of the Touran

Materials used

On the Touran, the trend towards high tensile and reinforced steel is noticeable.

The use of improved steel quality offers two advantages:

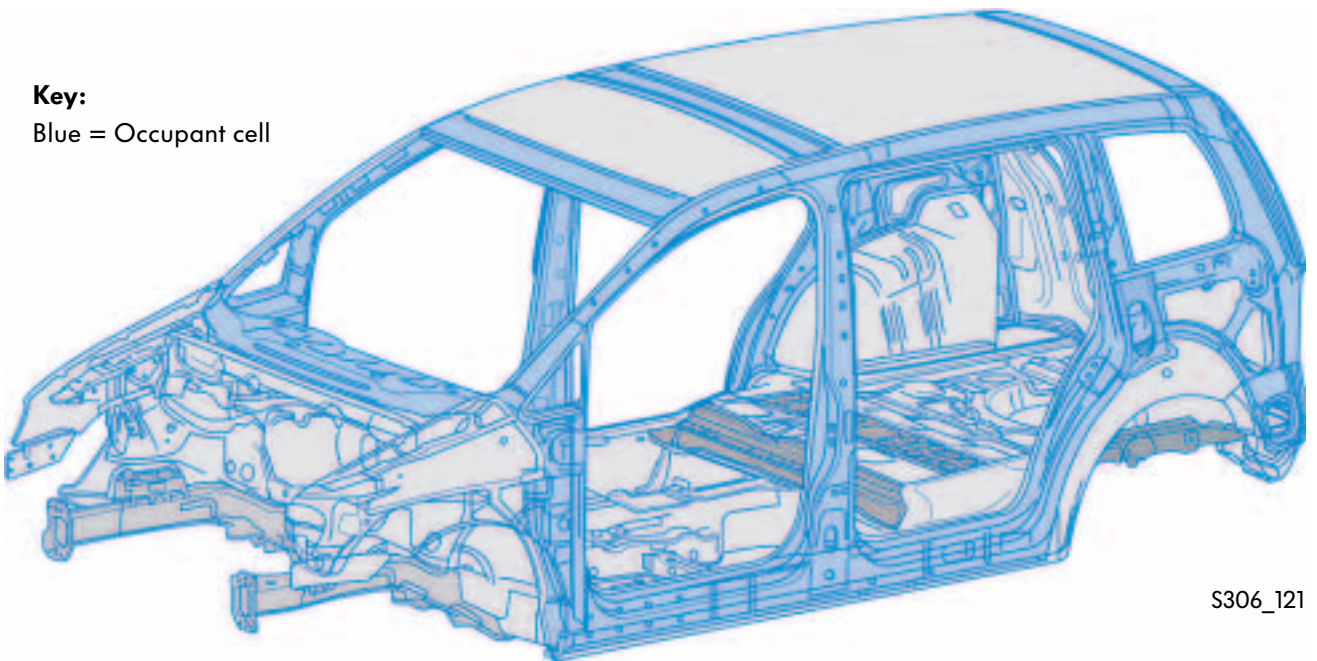
1. The rigidity of the body and thus occupant safety are enhanced.
2. The same level of crash safety is achieved with a reduction in weight of the vehicle, which has a favourable influence on fuel consumption.

Special features

The body of the Touran is bonded in many areas using laser welding techniques. Thanks to laser welding, long weld seams are achievable that allow an uninterrupted joint. In this way, the rigidity of the body is increased, compared to spot welded joints, and also crash safety.

Key:

Blue = Occupant cell



S306_121

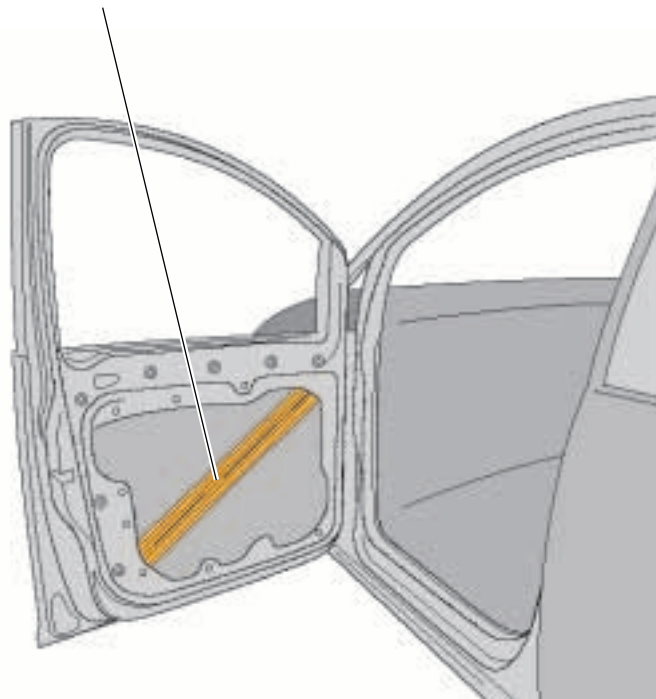
Diagonally installed side impact protection

The side impact protection carriers are attached to the doors diagonally. They therefore bend upwards or downwards in an accident instead of penetrating the A, B and C pillar. This provides easier access for crash rescue personnel as the doors no longer become blocked in a side impact collision.

The diagonal positioning of the side impact protection also covers a greater surface area. This means that, in the event of a side impact collision, the impact protection will always be hit and is therefore able to work fully in the way intended.



Diagonal side impact protection



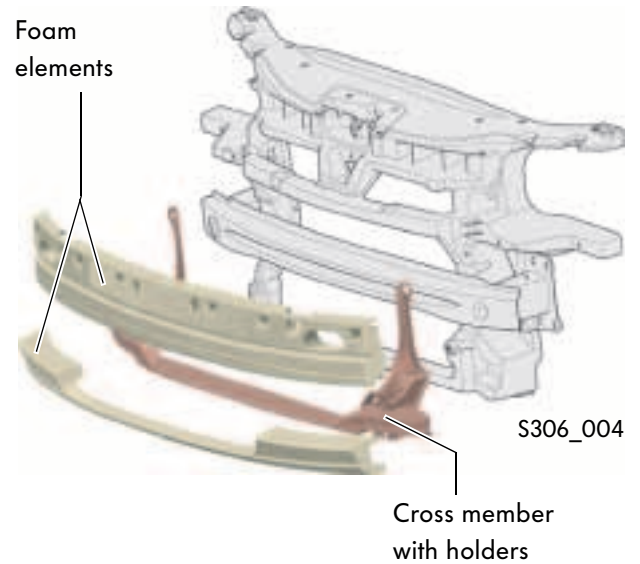
S306_195

Body

The Touran body attachments

Front body

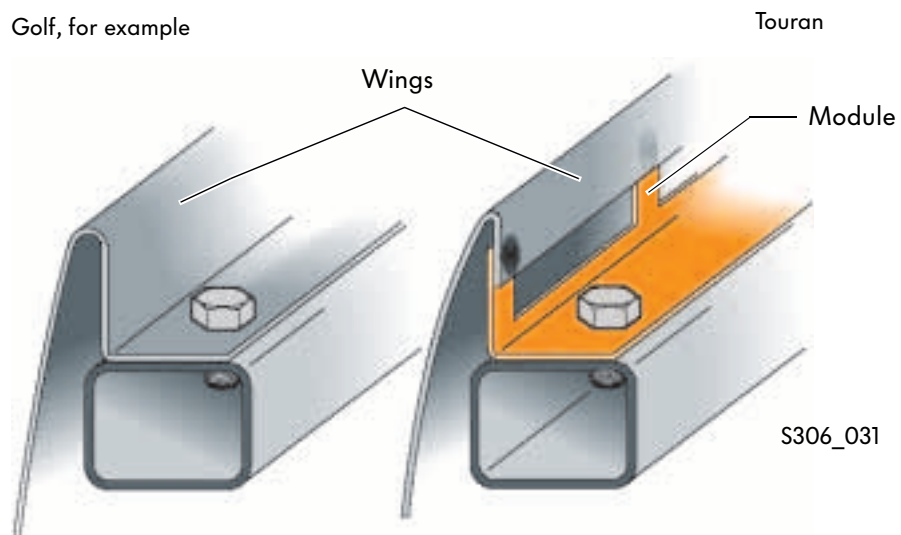
The front body of the Touran is supplemented for pedestrian protection by two foam elements. A cross member with holders supports the foam elements.



Wings

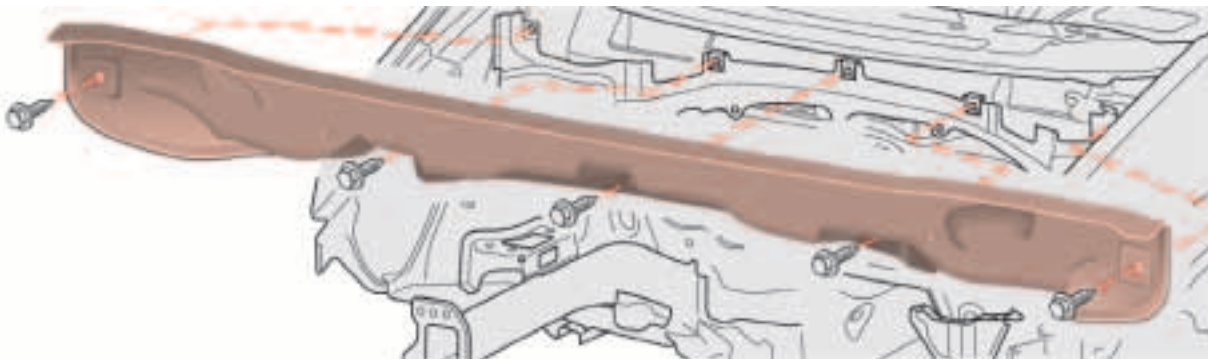
The wings are not bolted directly to the longitudinal member. They are bonded with the longitudinal member via a module. This type of construction is also installed for pedestrian safety: The module is designed to collapse on impact.

Diagram showing connection of wing to longitudinal member:

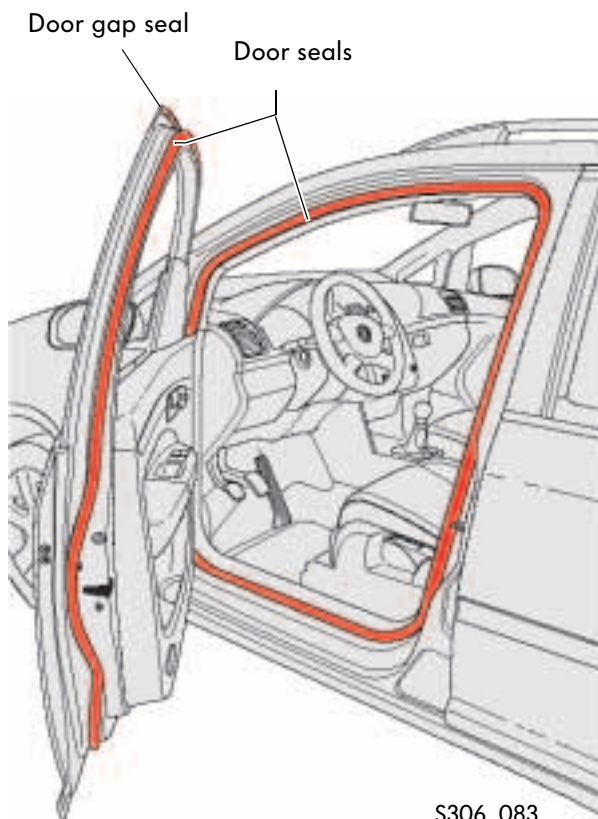


Plenum chamber front plate

The windscreen of the Touran is designed to reach into the engine compartment. In order to allow access of the components that are partly concealed in the engine compartment behind the bottom of the windscreen, the plenum chamber front plate can be removed.



S306_035



S306_083

Seals

The Touran has three seals to the exterior. In addition to two door seals, a door gap seal is installed.

Body

Roof rails

The roof rails have been designed for optical reasons as a continual bar. The roof rail blocks are secured to the body by means of hexagon nuts on the inside of the roof. To change the roof rails, the interior trim has to be removed.



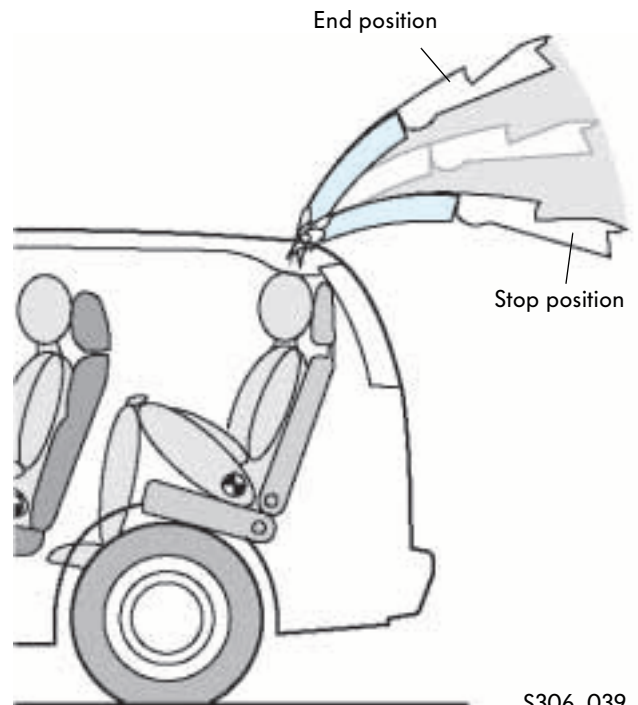
S306_027



For further information, please refer to the electronic service information system ELSA.

Tailgate

For the first time, Volkswagen has installed a special two stage gas filled strut on the tailgate. The tailgate opens to the stop position first, which is at the same level as the roof. In this position, damage to the tailgate can be avoided in enclosed areas with low ceilings (garages etc.). The stop position can be overcome by simple application of hand force. In this way, the tailgate can be opened variably between the stop and end positions.



S306_039

The body characteristics

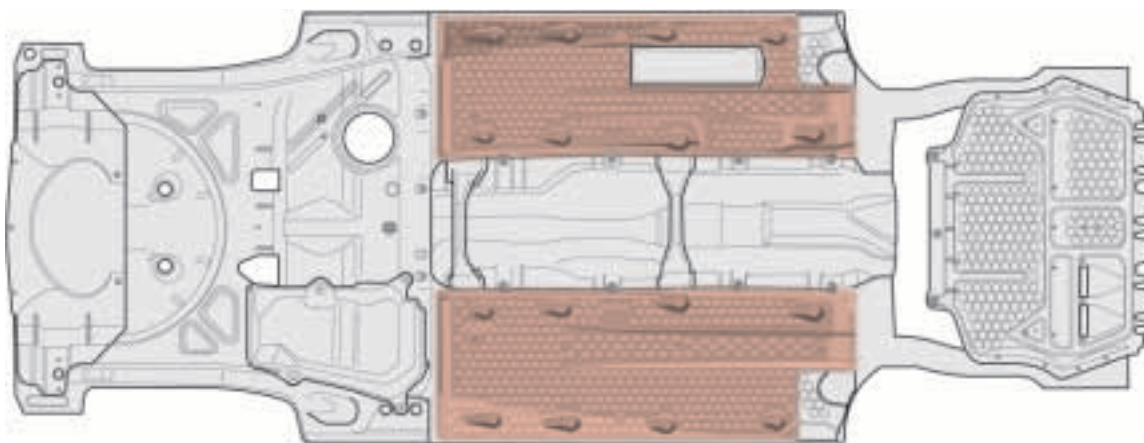
Touran in the wind tunnel



S306_026

With a c_d value of 0.315, the Touran has a good coefficient drag factor for a compact van. This has been partly achieved by the air flow optimised body upper part and partly by the application of plastic underbody trim. The underbody trim provides a continual surface along which air can flow without swirling.

The underbody trim offers an additional advantage in that there is no longer a requirement for the PVC underbody protection. This helps to reduce weight and also the production of PVC. Since PVC has poor recycling properties, the general recycling properties of the vehicle are improved with the removal of this material.



S306_025



Body

The interior

Space concept

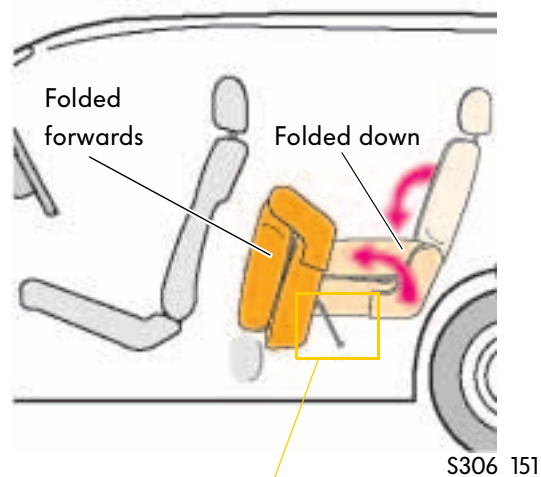


The 5 and 7 seater Touran are identical up to the C-pillar.

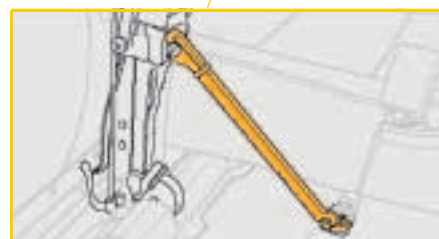
At a later stage in production, a front passenger seat will be installed that, when folded down, can also be used as a table.

- The 5 and 7 seater

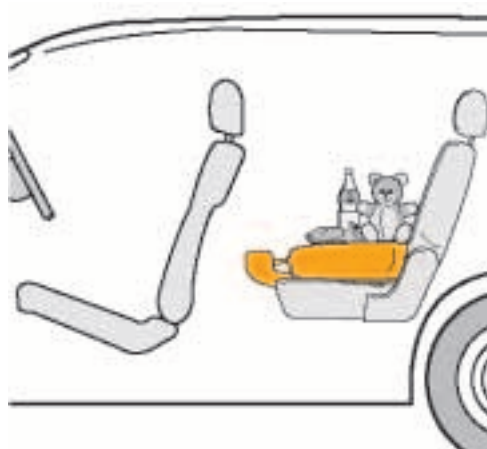
The second seat row consists of three single seats. Each of the seats can be folded down, folded forwards and removed quickly with the aid of a pull catch. The seats can also be adjusted individually in the longitudinal plane. When the middle seat is removed, both outer seats can be moved laterally inwards by 140 mm. Attached to the outer seats of the second seat row are Isofix mountings.



To prevent seats that have been folded forwards from falling back, a safety device has been installed in the second seat row.



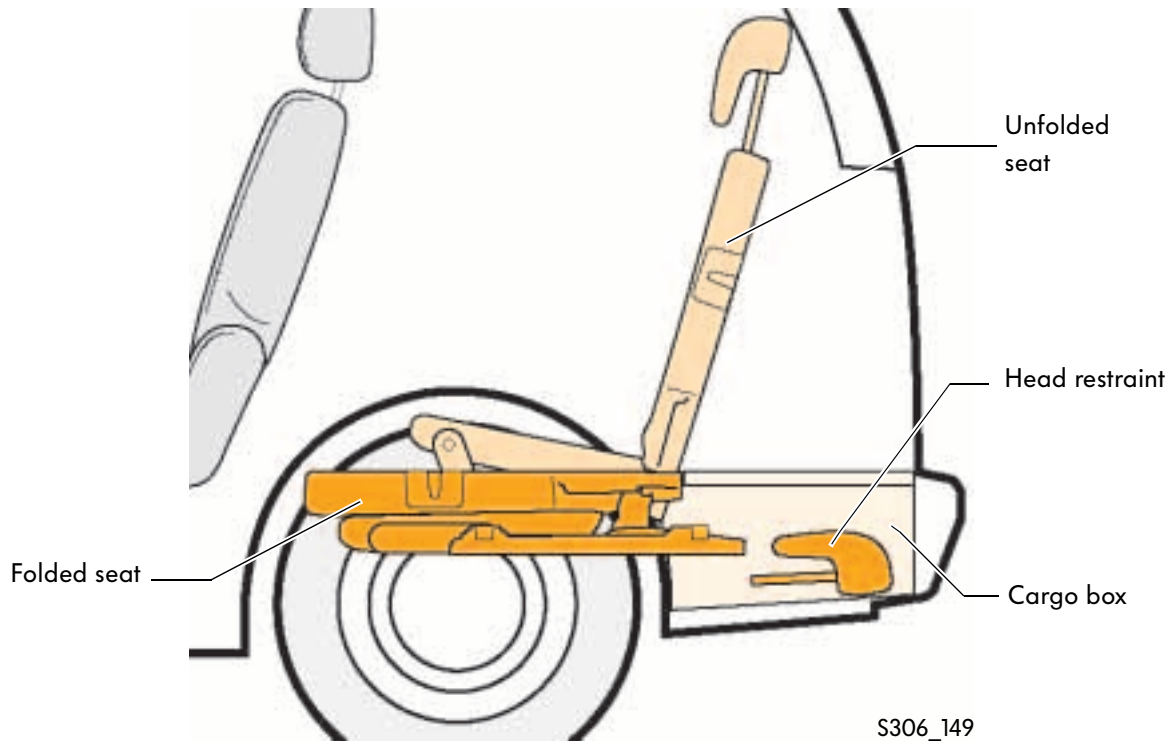
The middle seat of the second row doubles up as a table as it features a plastic surface on the rear of the backrest.



- Properties of the 7 seater Touran

In addition to the second seat row, the 7 seater Touran has two further seats in the third seat row.

Both of these seats can be lowered with the help of a lever to provide a level surface in combination with the cargo box. The level surface is at loading height. The head restraints are stored in the cargo box.

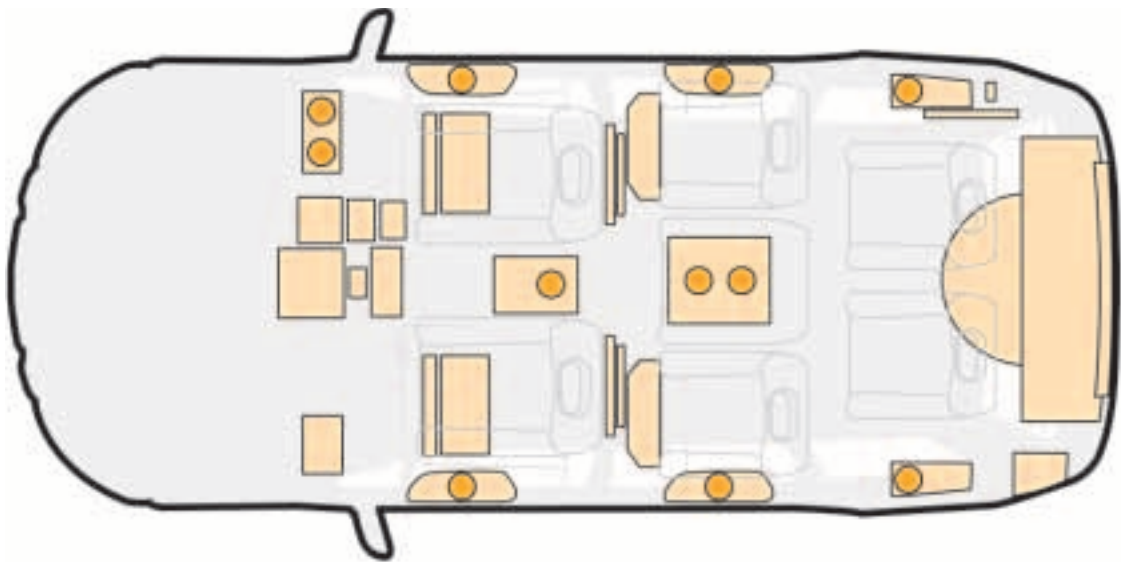


Further information on this subject can be found in the multimedia training package for the Touran.

Body



Stowage facilities

The interior of the Touran features up to 39 stowage facilities. The marked areas in the following diagrams indicate where the Touran has stowage facilities.



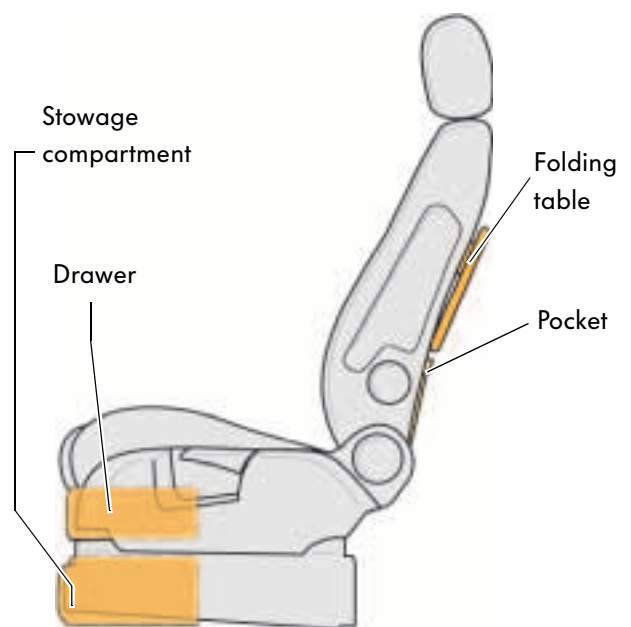
S306_057

Key:

-  = Compartments, stowage facilities
-  = Drinks holder

Compartments in front seats

The front seats generally feature one stowage compartment each beneath the seat. From the Trendline version, a drawer is also installed above these compartments. Furthermore, there is also a folding table and pockets in the backrests.

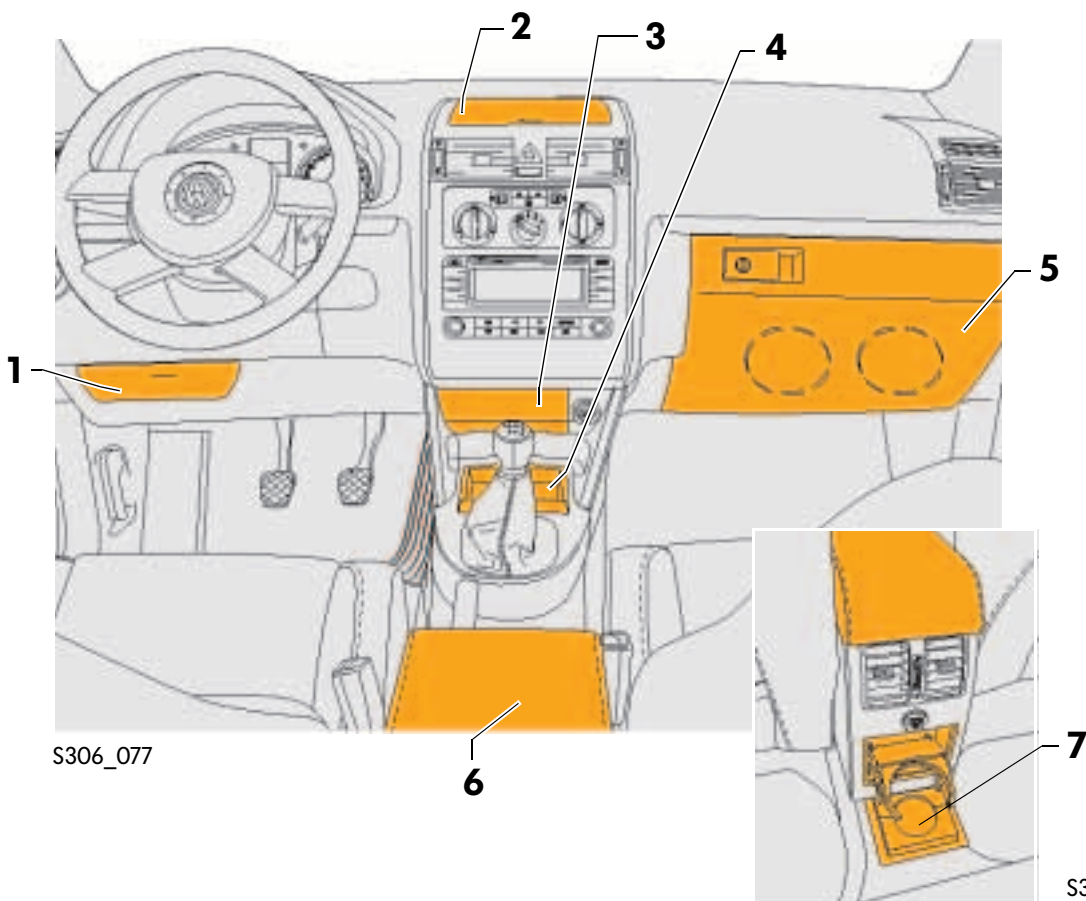


S306_147

Stowage compartments in dash panel and centre console

In the dash panel and centre console there are several compartments and drinks holders. These are as follows:

- 1) One stowage compartment beneath instrumentpanel on driver side
- 2) One stowage compartment with cover above instrument panel
- 3) One stowage compartment beneath instrumentpanel with cover (or ash tray)
- 4) One stowage compartment in centre console beneath instrument panel with open compartment
- 5) Illuminated glove compartment on front passenger side with two drinks holders in flap (on vehicles with air conditioner, this compartment is chilled.)
- 6) Stowage compartment in armrest (suitable for CD changer)
- 7) Drinks holder for second seat row at rear of centre console.



Body

Stowage compartments in roof

New and unique are three stowage compartments in the roof console of the Touran. They offer space, for example, for parking permits, sunglasses or tissues. On equipment levels with sliding/tilting sunroof, these compartments are not included.



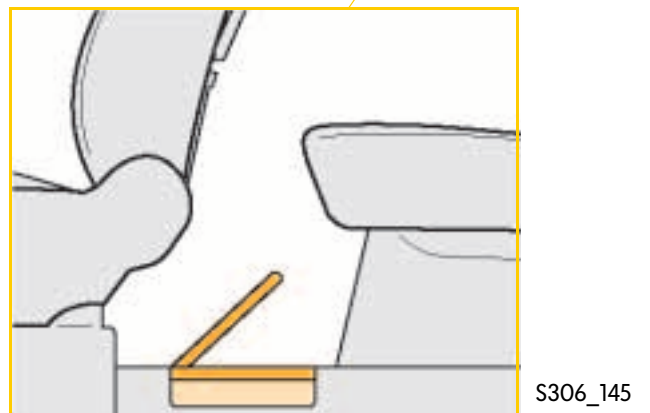
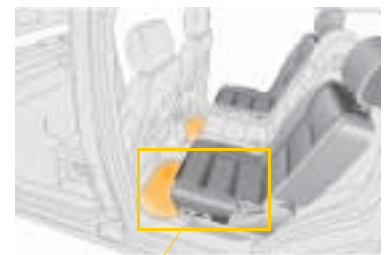
Door stowage compartments

In the 5 and 7 seater versions, each seat has a 1 litre bottle holder. For the front seats and both outer seats of the second row, these stowage facilities are incorporated in the doors.



Stowage compartments in footwell

Directly in front of the second seat row there is a stowage compartment in the floor on the left and right of each footwell. The compartments can be used to store toys or an atlas for example.



Luggage compartment stowage facilities

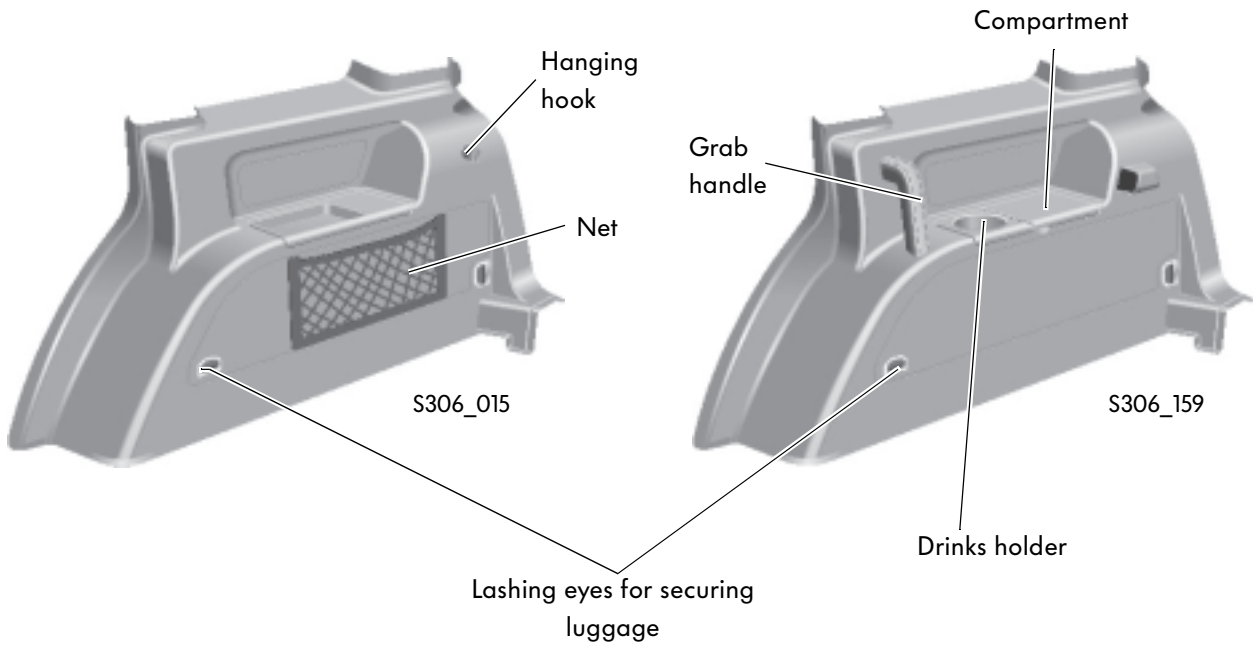
The rear side panel trim varies according to the equipment level. On the 5 seater without spare wheel and variable cargo floor, there is a net and hanging hook in the trim on the right-hand side of the vehicle. If the vehicle is equipped with a spare wheel and variable cargo floor, the net and hanging hook are not included.

The 7 seater features on both sides a grab handle, a bottle holder and a stowage compartment for the comfort of passengers in the third seat row.



Luggage compartment trim on right-hand side of 5 seater without variable cargo floor

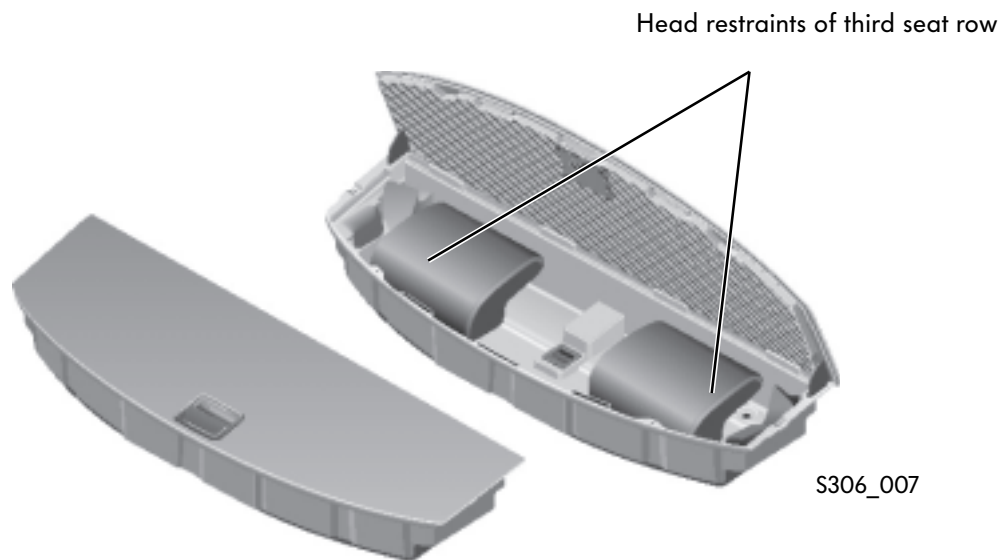
Luggage compartment trim on right-hand side of 7 seater



Body

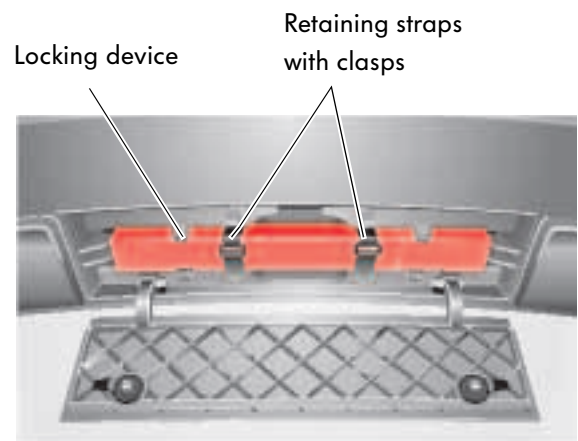
Cargo box for 7 seater

On equipment levels with a third seat row (7 seater Touran) there is a cargo box, in which the head restraints of both rear seats can be stored. This cargo box fills the space in the luggage compartment behind the third seat row.



Compartment in tailgate

In the tailgate of the Touran there is a stowage compartment for the warning triangle. The warning triangle is prevented from falling out by a locking device with retaining straps and clasps.



Variable cargo floor

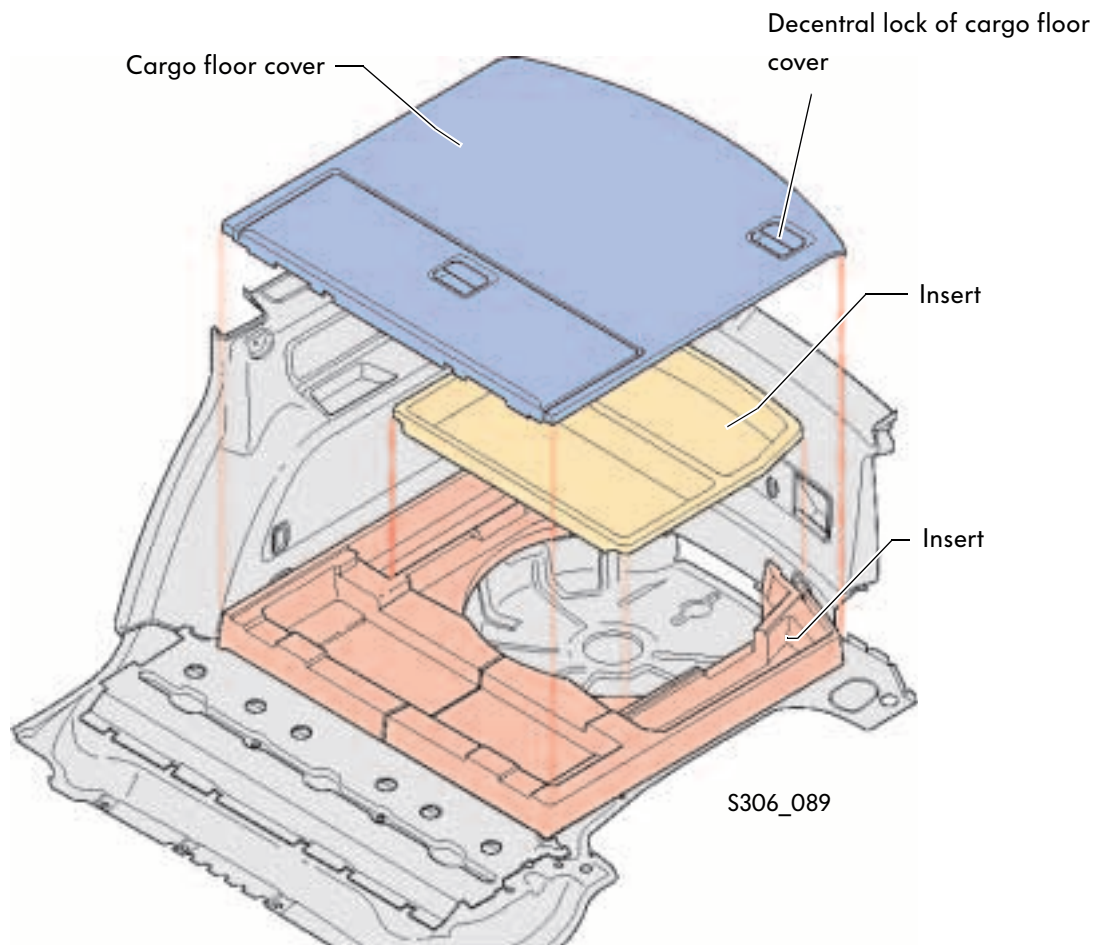
Since the spare wheel moulding is designed for the breakdown kit, a variable cargo floor is featured on vehicles with spare wheel. Thanks to the variable cargo floor, a level and flat surface is given at loading height.

If a variable cargo floor is installed, there is no luggage net or hanging hook in the side panel trim on the right-hand side of the vehicle.



The variable cargo floor consists of:

- inserts that supplement each other and
- a cover that can be locked decentrally above the inserts.



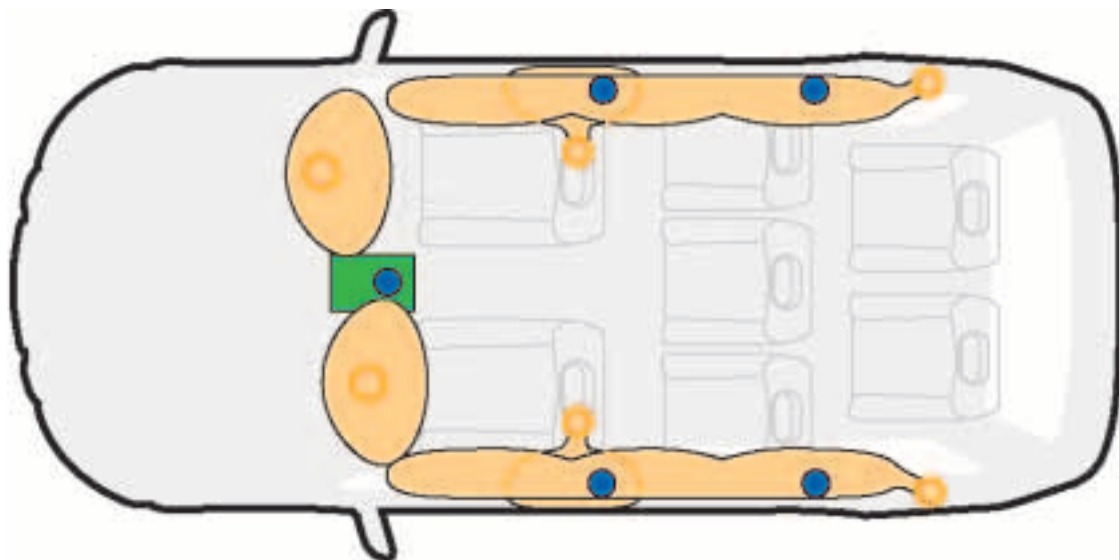
Occupant safety

The airbag system

The Touran is equipped with a well proven airbag system. Included in this system are the following airbags:





- Driver airbag (approx. 60 ltr. volume)
- Front passenger airbag (approx. 110 ltr.)
- Side airbags in front seat armrests (approx. 15 ltr. each),
- Curtain airbags in A, B and C pillar (approx. 32 ltr. each).

The curtain airbags cover the area from the A pillar to the C pillar. If they are activated, they protect the head and torso of the occupants as they expand from the top downwards.



S306_055

Key:

-  : Gas generators
-  : Airbags
-  : Airbag control unit
-  : Crash sensors

Airbag deactivation

The lock to deactivate the front passenger airbag can be found in the glove compartment.



S306_047

If the airbag is deactivated, this status will be shown by a lamp in the centre console.



S306_107



The seatbelt system

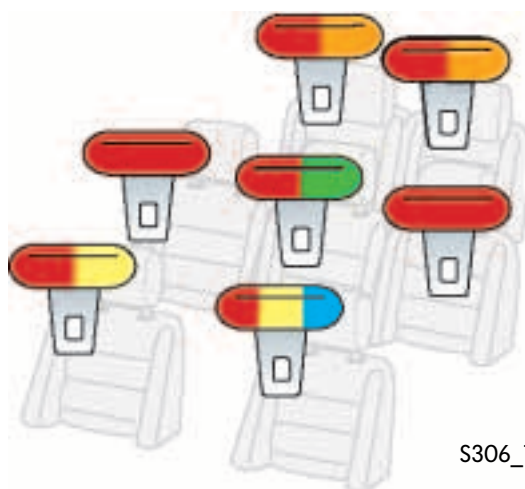
All seats of the Touran are equipped with three-point seatbelts.

The seatbelts of the front seats feature belt tensioners and belt tension limiters. For the driver there is also belt recognition to prompt the driver of the vehicle to apply his/her seatbelt.

For the middle seat of the second seat row, the belt – as in the Sharan – is attached to the roof moulding. The belt latches differ in size so that the large belt latch will only fit in the buckle on the left-hand side.

The seatbelts of the third seat row in the 7 seater are attached to the D pillar. These belt latches also differ in size.

The large belt latch will only fit on the outer seat side.



S306_135

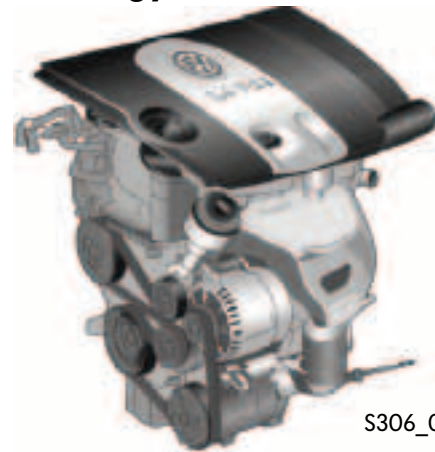
Key:

- Red = Three-point seatbelt
- Yellow = Belt tensioner and belt tension limiter
- Blue = Seatbelt recognition
- Green = Belt connection in roof moulding, coded belt latches
- Orange = Belt attached to D-pillar

Power units

The 1.6 ltr./85 kW FSI engine with 4-valve technology

This 1.6 ltr./85 kW FSI engine is based on the 1.4 ltr./63 kW petrol engine from the Polo. It has been designed as a direct injection engine with timing chain with the aim of reducing fuel consumption and exhaust gas emissions.



S306_051

Technical properties of engine mechanicals:

- Intake manifold upper part from plastic
- Camshaft drive above timing chain
- Continually variable valve timing
- Dual circuit cooling system
- Cross flow cooling of cylinder head
- Crankcase breather system
- Regulated oil pump

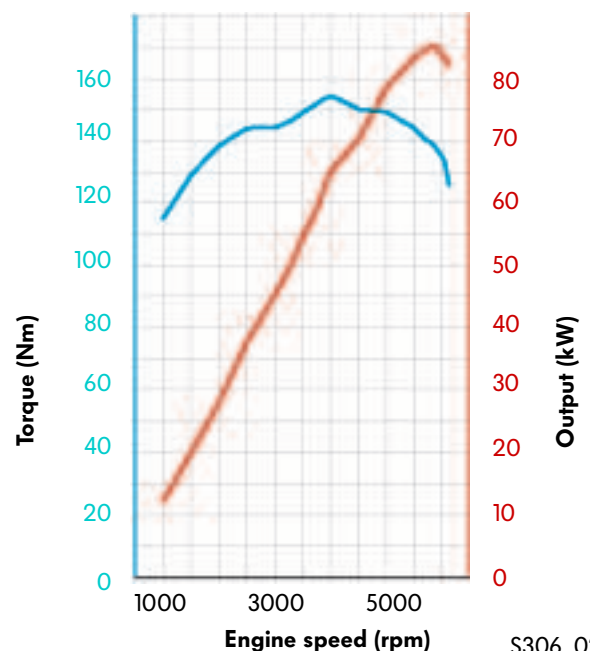
Technical properties of engine management

- Petrol direct injection MED 9.5.10
- Engine control unit with altitude sensor
- Intake air temperature sender in engine cover
- Supply on demand fuel system
- Exhaust gas treatment with NOx storage catalyst and NOx sender.

Technical data

Engine code	BAG
Engine type	4-cylinder in-line engine
Displacement	1598 cm ³
Bore	76.5 mm
Stroke	86.9 mm
Valves per cylinder	4
Compression ratio	12:1
Max. output	85 kW at 5800 rpm
Max. torque	155 Nm at 4000 rpm
Engine management	Bosch Motronic MED 9.5.10
Fuel	Super unleaded RON 98 (unleaded RON 95 with performance reduction)
Exhaust gas treatment	Three way catalyst with Lambda control, NOx storage catalyst
Emissions standard	EU4

Torque and power development diagram



S306_021

Supply on demand fuel system for 1.6 ltr./85 kW FSI engine

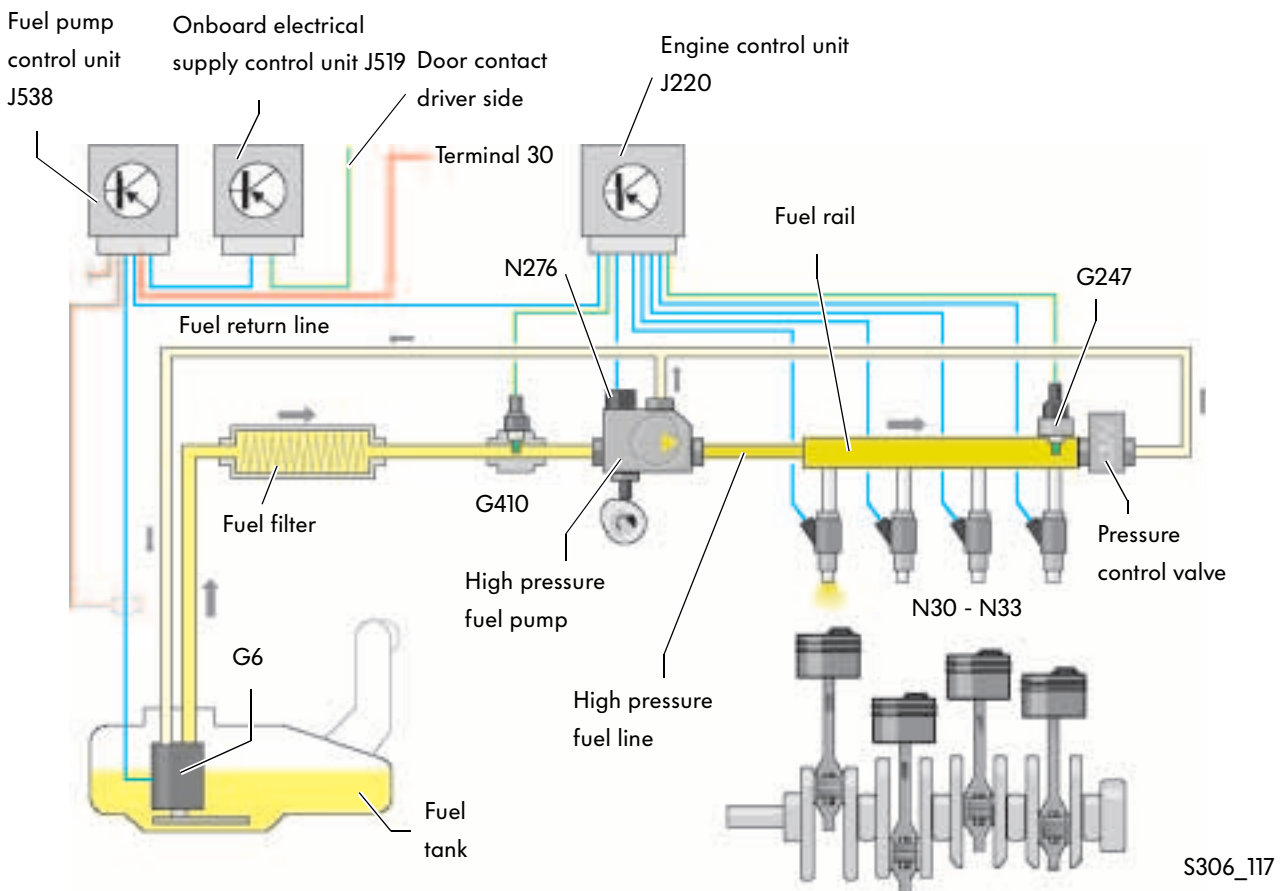
The supply on demand fuel system consist of a low pressure and high pressure side. The electric fuel pump supplies only the right amount of fuel required by the high pressure fuel pump.

Components in low pressure fuel system:

- Fuel pump control unit J538
- Fuel tank
- Electric fuel pump G6
- Fuel filter
- Fuel pressure sender, low pressure G410.

Components in high pressure fuel system:

- High pressure fuel pump
- Fuel pressure control valve N276
- High pressure fuel line
- Fuel rail
- Pressure control valve
- Fuel pressure sender, high pressure G247
- High pressure fuel injectors N30-N33.



Fuel pressure 50 to 100 bar
 Fuel pressure 4 to 5 bar
 No fuel pressure

S306_117



Power units

The 2.0 ltr./100 kW TDI engine with 4-valve technology

Engine concept

This engine is based on the 1.9 ltr./96 kW TDI engine.

Technical features:

- 4-valve technology
- Two camshafts, driven by toothed timing belts
- Increased engine displacement by means of greater cylinder bore
- New unit injectors that have been adapted to 4-valve technology
- Switchable EGR cooler
- Crankshaft sealing flange with integrated engine speed sender wheel.

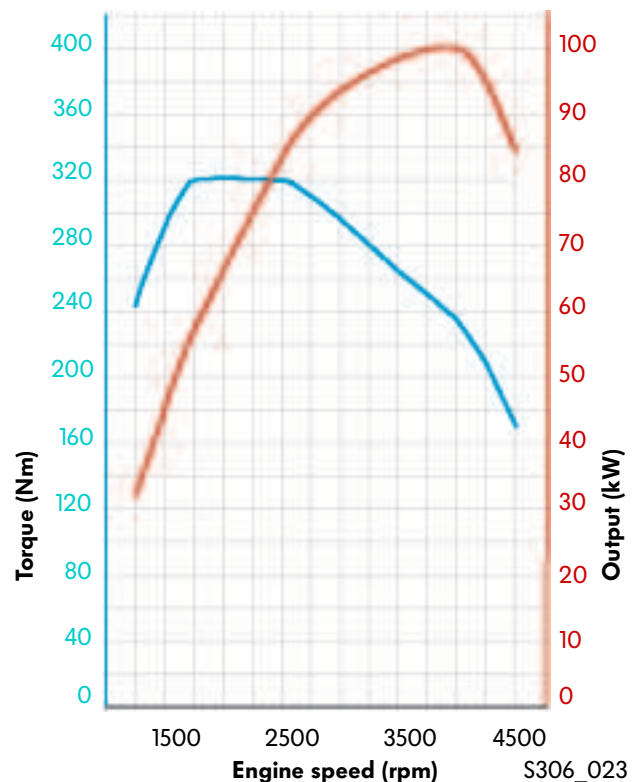


S306_131

Technical data

Engine code	AZV
Engine type	4-cylinder in-line engine
Displacement	1968 cm ³
Bore	81 mm
Stroke	95.5 mm
Valves per cylinder	4
Compression ratio	18:1
Max. output	100 kW at 4000 rpm
Max. torque	320 Nm at 1750 rpm to 2500 rpm
Engine management	EDC 16
Fuel	Diesel, at least 49 CN
Exhaust gas treatment	Exhaust gas recirculation and oxidising catalytic converter
Emissions standard	EU4

Torque and power development diagram

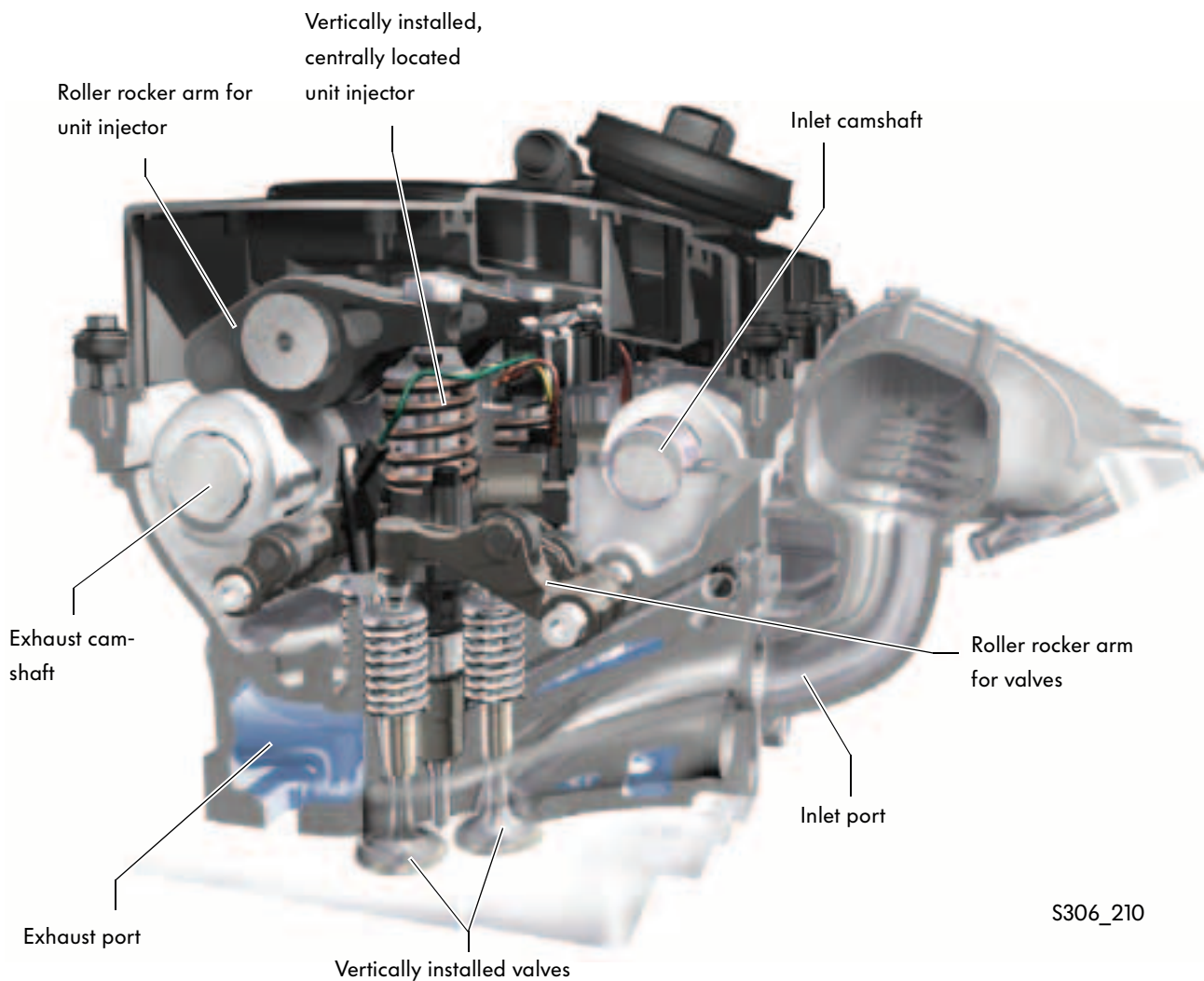


S306_023

Advantages of 4-valve technology

Greater inlet and exhaust ports result in improved level of filling and thereby increased performance and torque. Wastage on load change is also reduced.

The symmetrical layout of the valves and the vertical, centrally located unit injectors allow for good mixture formation. This leads to lower fuel consumption and exhaust gas emissions are reduced as a result.



Power units

The 1.9 ltr./74 kW TDI engine with 2-valve technology

This TDI engine is a further development of the 1.9 ltr./74 kW TDI engine from the Polo.

New technology:

- Switchable EGR cooler
- Crankshaft sealing flange with integrated engine speed sender wheel.

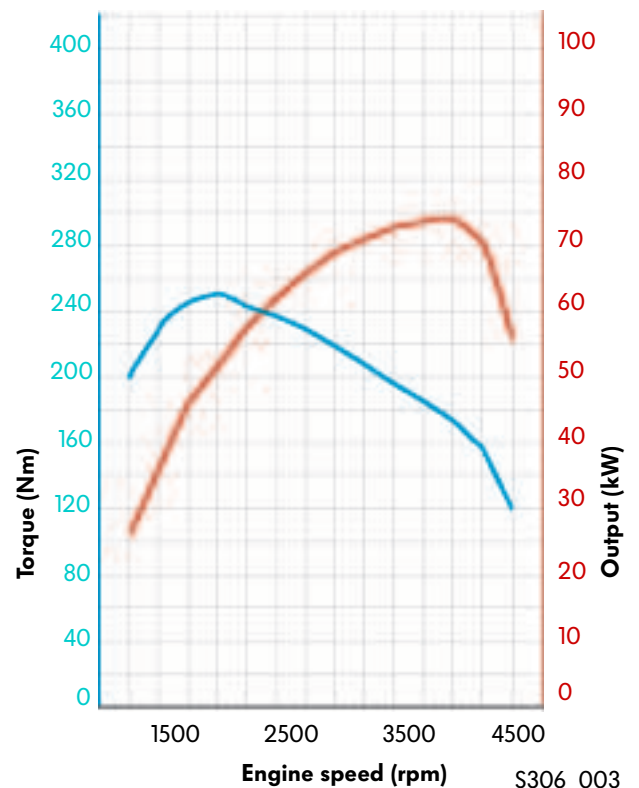


S306_053

Technical data

Engine code	AVQ
Engine type	4-cylinder in-line engine
Displacement	1896 cm ³
Bore	79.5 mm
Stroke	95.5 mm
Valves per cylinder	2
Compression ratio	19:1
Max. output	74 kW at 4000 rpm
Max. torque	250 Nm at 1900 rpm
Engine management	Bosch EDC 16
Fuel	Diesel, at least 49 CN
Exhaust gas treatment	Exhaust gas recirculation and oxidising catalytic converter
Emissions standard	EU4

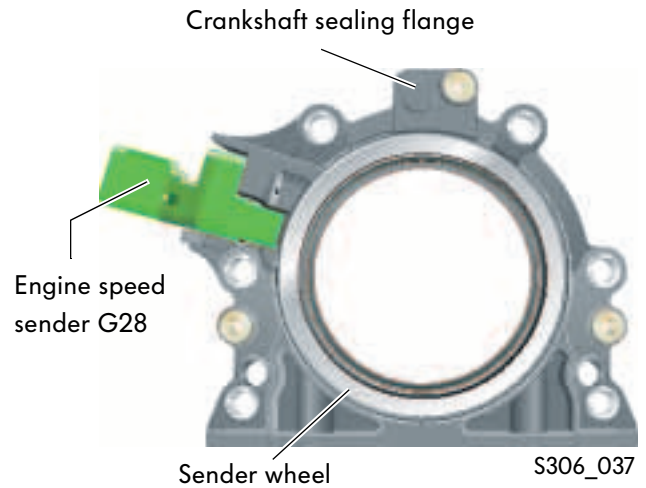
Torque and power development diagram



S306_003

The crankshaft sealing flange with integrated sender wheel

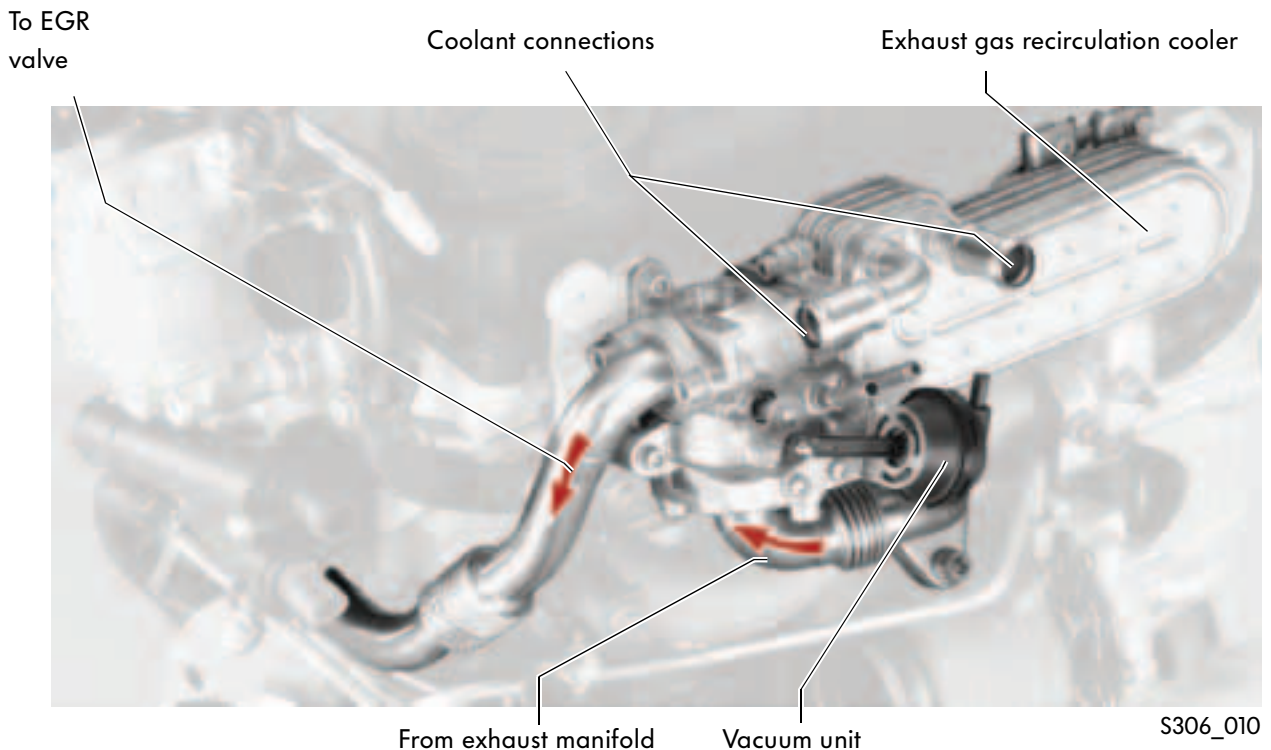
The crankcase is sealed on the flywheel side by a sealing flange. Installed in the sealing flange is an engine speed sender wheel. The engine speed sender cannot be renewed as an individual item. The sealing flange and sender wheel form one module.



The switchable exhaust gas recirculation cooler

The diesel engines in the Touran have a switchable EGR cooler.

The diagram shows the switchable EGR cooler on the 2.0 ltr./100 kW TDI engine.

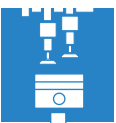


Power units

Functional principle of exhaust gas cooling

Cooling of the recirculated gases has the effect of reducing combustion temperature and a greater mass of exhaust gases can thus be recirculated. This helps to reduce nitrogen oxides and also the build up of carbon deposits.

A switchable EGR cooler is installed because continual cooling of the recirculated exhaust gas increases the time required for the engine to reach operating temperature and this leads to greater hydrocarbon and carbon monoxide emissions.

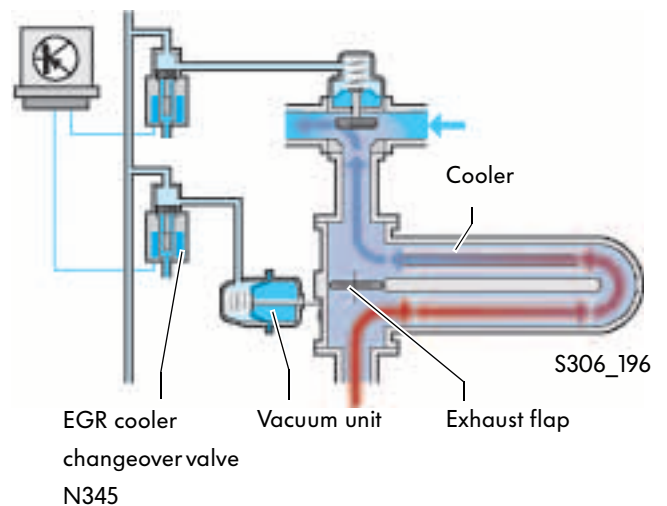
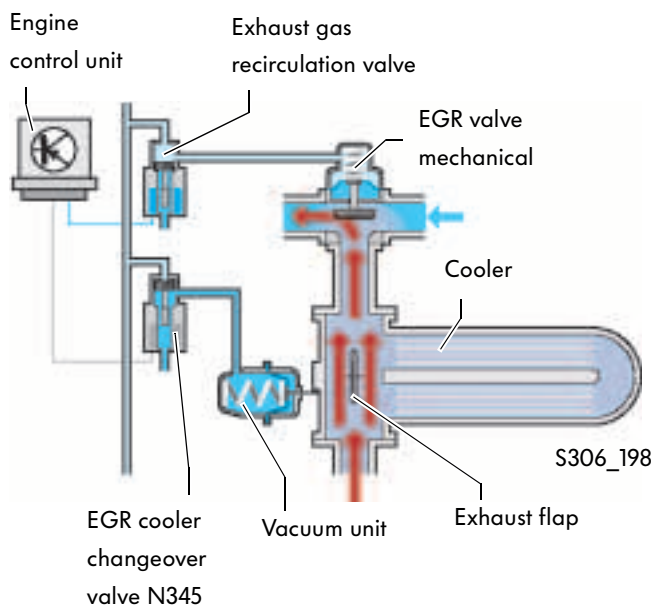


Exhaust gas cooling switched off

The exhaust flap remains in the open position up to a coolant temperature of 50 °C and exhaust gas does not pass through the cooler. In this way, the catalytic converter and the engine reach their operating temperatures within a short space of time. The hydrocarbon, carbon monoxide and particulate emissions are reduced as a result.

Exhaust gas cooling switched on

From a coolant temperature of 50 °C, the exhaust flap is closed by the changeover valve. The recirculated exhaust gas now flows through the cooler. This helps to reduce nitrogen oxides.



The fuel tank

For petrol and diesel engines, the fuel tank is made from plastic that is coated with fluorinated polyethylene. It has a fill capacity of 60 litres.

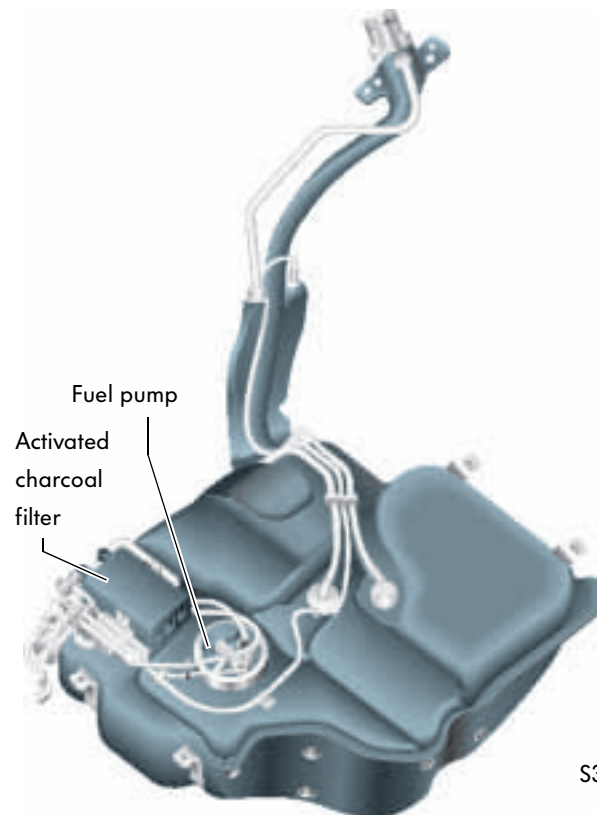
The system is installed under the rear bench seat in the crash protected area in front of the rear axle. The filler neck is also installed in front of the wheel as a crash protection measure.

The fuel system is screened against high temperatures by an aluminium heat shield. All fuel lines that lead into the engine compartment are screened by a heat shield channel made from heat resistant plastic.

The activated charcoal filter of the plastic petrol fuel system is installed directly on the fuel tank in the Touran. This makes it possible for the system to be installed as a complete module.



Fuel tank, petrol engine



S306_029

Power transmission

The manual gearbox

For the product launch, only 6-speed manual gearboxes will be available.

Depending on the type of engine, three manual gearboxes will be installed in the Touran.

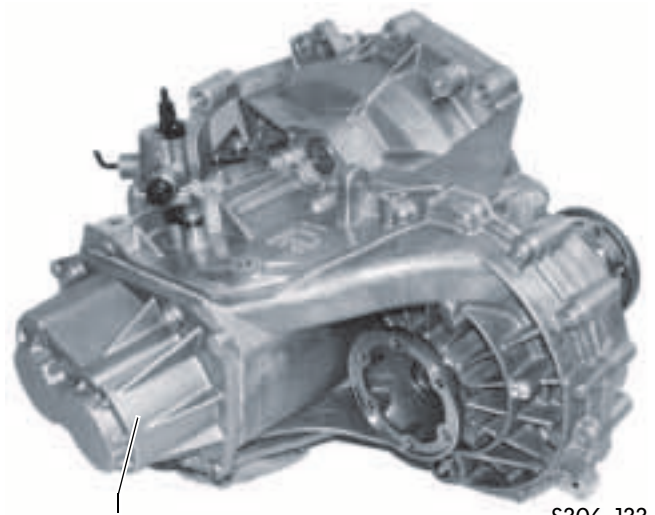
6-speed manual gearbox 0AJ

This gearbox is related to the 5-speed gearbox 02U that originates from the Lupo GTI.

The following modifications were necessary to change the gearbox to a six speed version:

- Extended shafts
- Additional gear wheel pair
- New housing cover

The 6-speed manual gearbox 0AJ is capable of transmitting a maximum torque of 200 Nm.



Housing cover

S306_133

6-speed manual gearbox 02S

The basis of manual gearbox 02S is the 5-speed manual gearbox 02R from the Polo of model year 2002. This was supplemented by one gear, i.e. the following changes were necessary:

- Extended shafts
- Additional gear wheel pair
- New extended cover

The 6-speed manual gearbox 02S is capable of transmitting a maximum torque of 250 Nm.

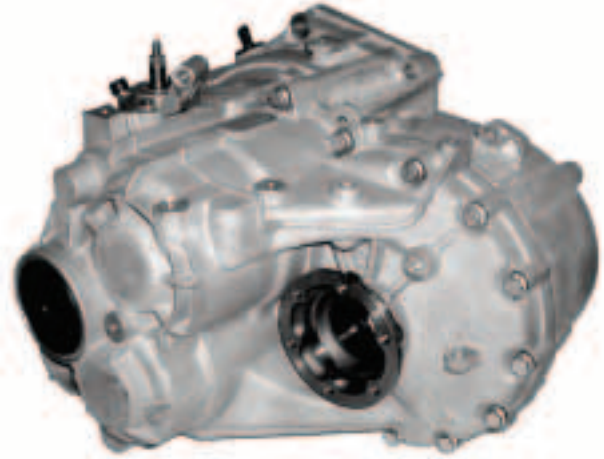


S306_063

6-speed manual gearbox 02Q

This gearbox originates from the 02M gearbox from model year 1999.

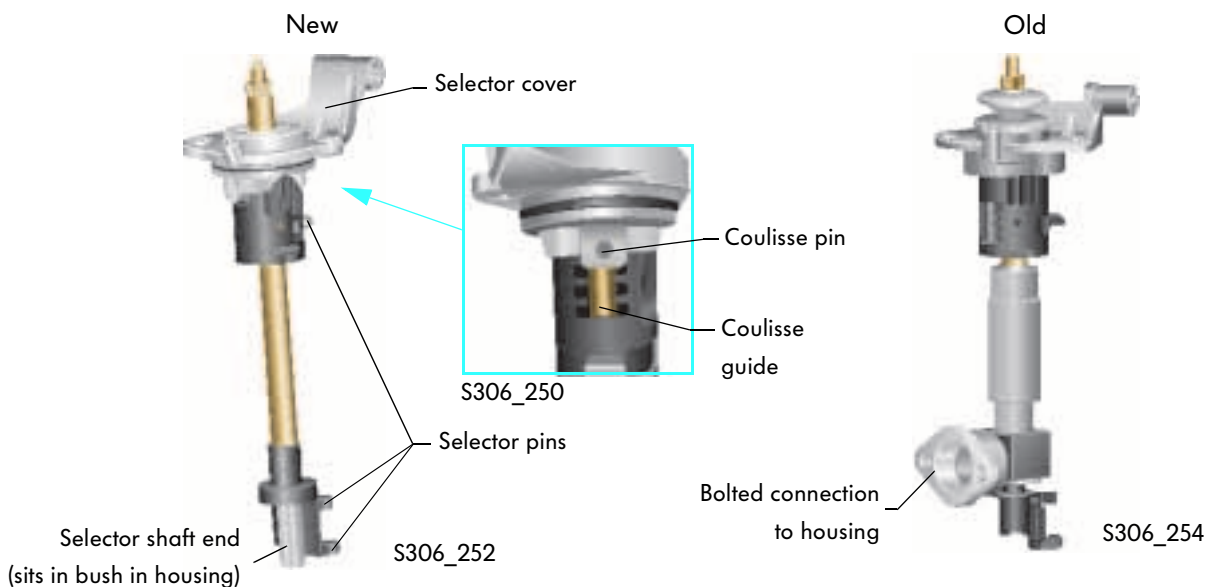
To improve gear selector movement and gear engagement of the 6-speed manual gearbox, the selector shaft was modified, the selector forks now feature limit stops in the housing and the taper roller bearing points were changed to fixed and free ball and roller bearings.



S306_240



With the selector cover, the modified selector shaft now forms the selector dome. The selector shaft end sits in a bush in the housing. This way, there is no need for a bolted connection to the housing, as is the case with the old shaft. In addition, the coulisse bolt has been exchanged for a pin.



The 6-speed manual gearbox 02Q is capable of transmitting a maximum torque of 350 Nm.

Power transmission

The 6-speed direct selection gearbox 02E

The 6-speed **D**irect **S**election **G**earbox (DSG) combines the specific advantages of a manual gearbox with those of an automatic gearbox.

The high degree of efficiency of a manual gearbox is combined with the comfortable gear selection of an automatic gearbox.

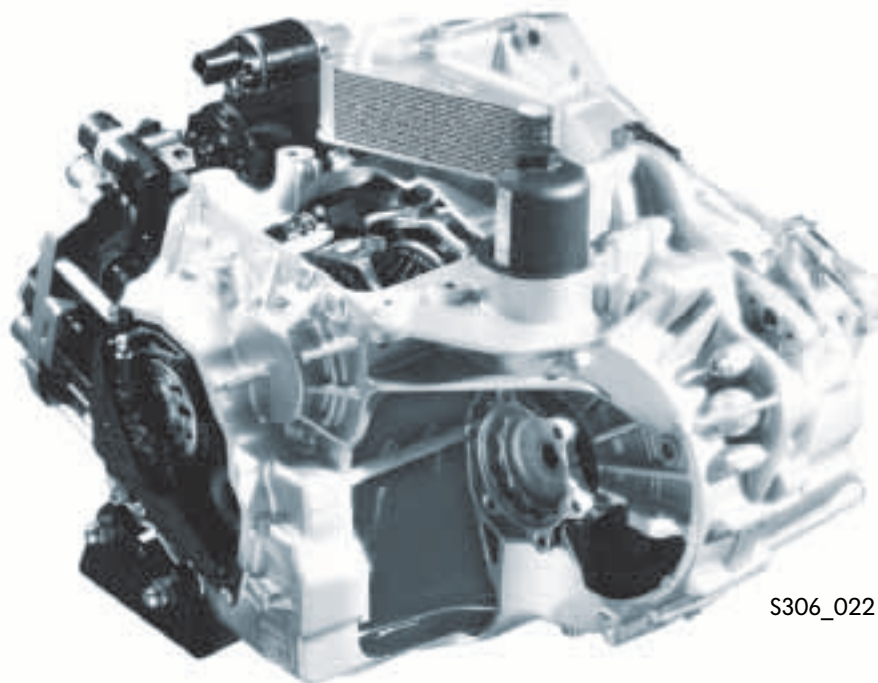
This guarantees driving enjoyment for the driver with a high level of comfort. The flow of power is practically uninterrupted in between gear changes and therefore a reduction in fuel consumption by approx. 10% was made possible.

The gearbox is distinguished by:

- Compact construction for transverse installation
- Maximum torque of 350 Nm
- 80 kg in weight
- Six forward gears and one reverse

The direct selection gearbox consists of two parallel part transmissions (1+2) with a common final drive and two multi-plate clutches.

Part transmission 1 consists of 1st, 3rd, 5th and reverse gears. Part transmission 2 consists of 2nd, 4th and 6th gears.



S306_022

Gearbox design overview

The multi-plate clutches have different diameters - the small ones are located within the larger ones - and these are actuated via solenoid valves.

The outer clutch (K1) is closed when 1st, 3rd, 5th or reverse gear is selected. The inner clutch (K2) is allocated to 2nd, 4th and 6th gear.

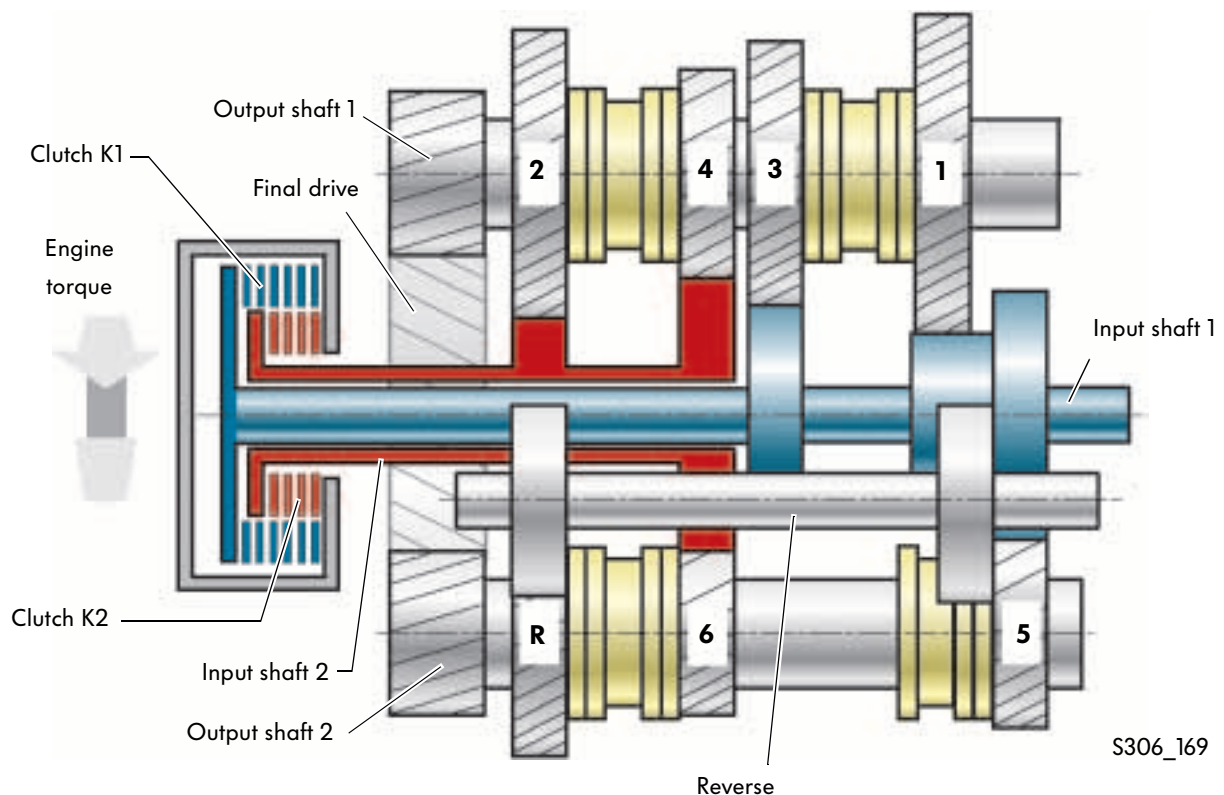
The transmission of torque from the clutches (K1, K2) is via output shafts (1, 2) in each case.

As the gear wheels are not fixed to the output shafts, two gears can be selected mechanically at the same time.

If torque is to be transmitted in 1st gear, for example, clutch K1 must be closed. The second gear can be selected mechanically in advance. When this happens, clutch K2 is open. For gear change from 1st to 2nd, clutch K1 will open and at the same time clutch K2 will close. The change takes place without any noticeable break in the flow of power.

Torque is now transmitted from clutch K2 via input shaft 2 to the 2nd selector gear of output shaft 1.

Both output shafts are joined to the final drive.



Power transmission

The 6-speed automatic gearbox 09G

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

The basis of the electro-hydraulic design is taken from the 6-speed automatic gearbox 09D.

Features of the gearbox are:

- Max. torque of 310 Nm
- 84 kg in weight
- Approx. 350 mm in length
- Torque converter with lock-up clutch
- Automatic and Tiptronic operation

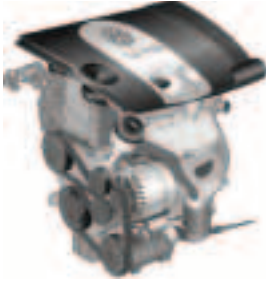

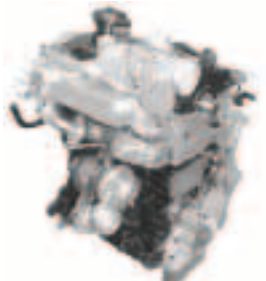

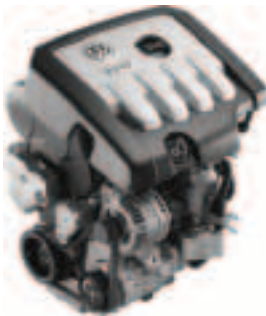






S306_113

The six forward gears and the reverse gear are made effective by the use of a simple planetary gear set with a double Ravigneaux planetary gear set further down. The planetary gear sets are laid out according to the Lepelletier principle.

The automatic gearbox control unit regulates the pressure of the multi-plate clutches and multi-plate brakes via modulation valves. The modulation valves allow pressure to build up with a delay. This enables a lighter response and prevents gear change jolts.

The engine and gearbox combinations

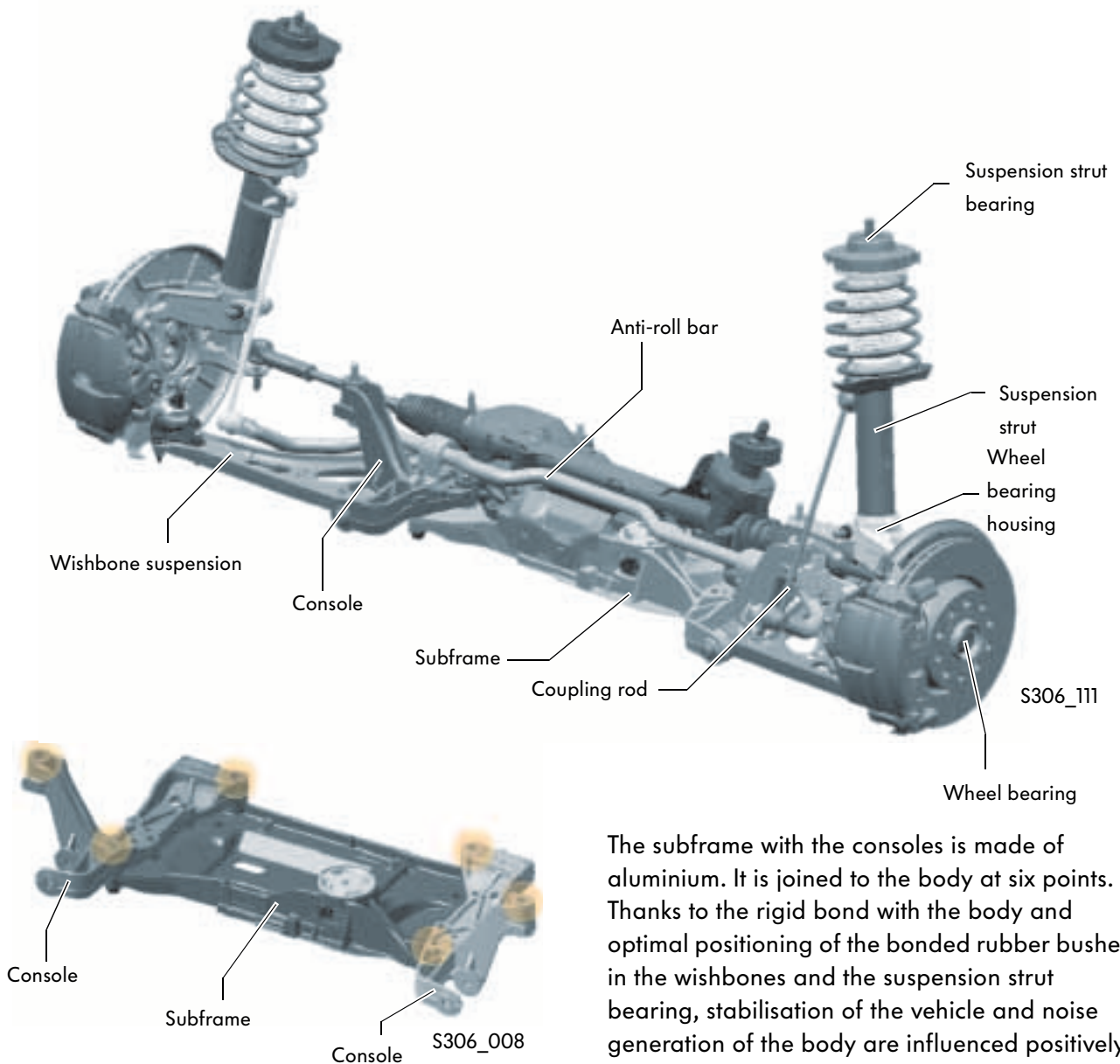
<p>1.6 ltr./85 kW FSI engine with 4-valve technology</p> 	<p>6-speed manual gearbox 0AJ</p> 
<p>1.9 ltr./74 kW TDI engine with 2-valve technology</p> 	<p>6-speed automatic gearbox 09G</p> 
<p>2.0 ltr./100 kW TDI engine with 4-valve technology</p> 	<p>6-speed manual gearbox 02S</p> 
	<p>6-speed Direct Selection Gearbox 02E</p> 
	<p>6-speed manual gearbox 02Q</p> 
	<p>6-speed Direct Selection Gearbox 02E</p> 



Running gear


The front axle

The Touran has McPherson front suspension with lower wishbones and suspension struts positioned ahead of the wheels. The front axle offers optimal comfort at a high level of stability.

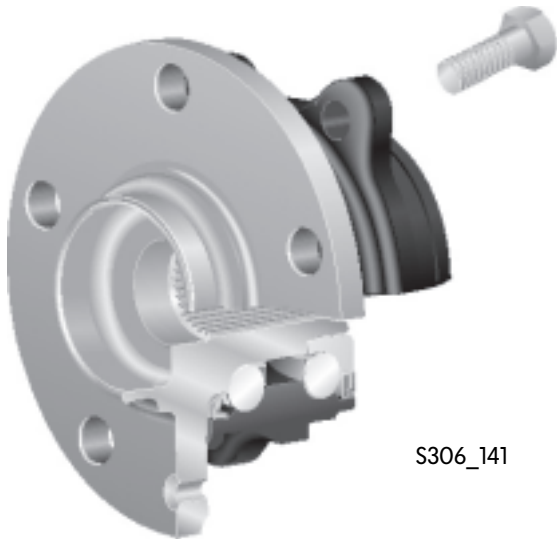


The subframe with the consoles is made of aluminium. It is joined to the body at six points. Thanks to the rigid bond with the body and optimal positioning of the bonded rubber bushes in the wishbones and the suspension strut bearing, stabilisation of the vehicle and noise generation of the body are influenced positively.

Key:

 = Bonding point to body

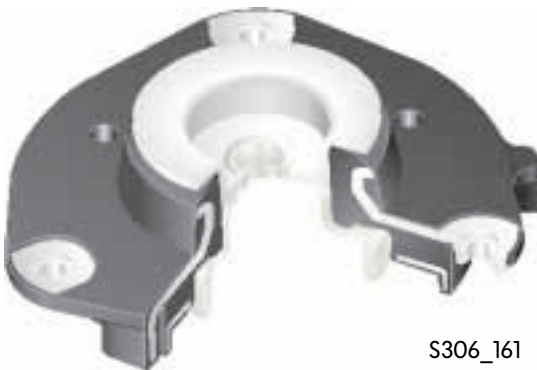
Wheel bearing



S306_141

On the Touran, the wheel bearing is of the 3rd generation. The new component is a compact wheel bearing unit that is bolted with four bolts to the swivel joint.

Suspension strut bearing



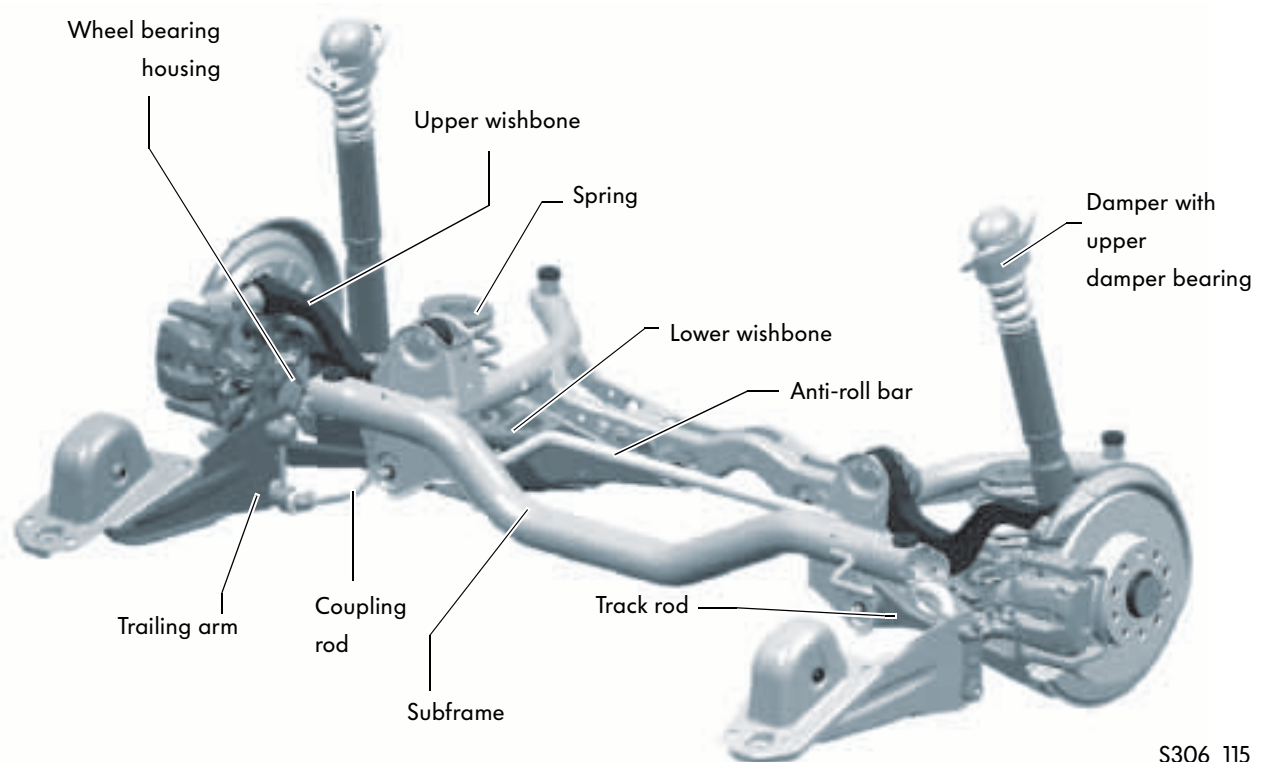
S306_161

The suspension strut bearing is a bonded rubber bush. By detaching the connection of spring and damper to the body, the damping force is transmitted separately to the body. In this way, pretension in the damper bearing is prevented. This positively influences rolling comfort and reduces the transfer of noise from the road surface to the body.

Running gear

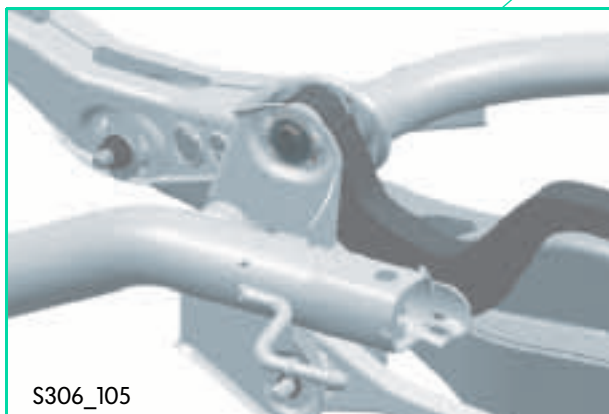
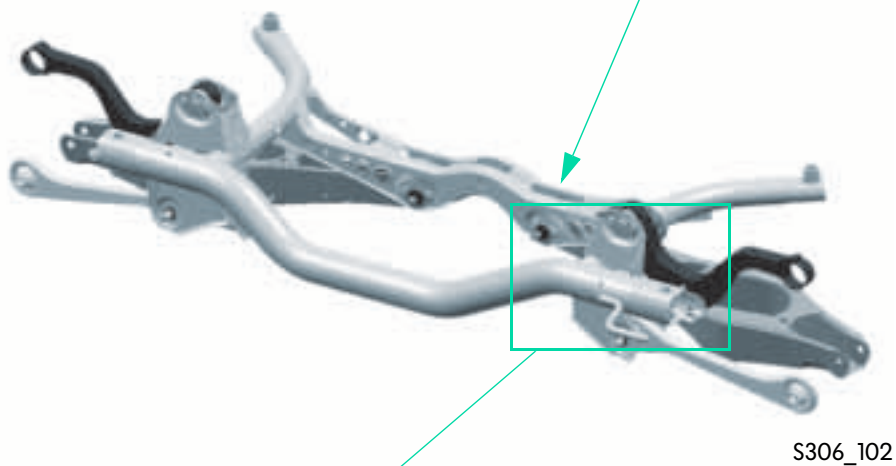
The rear axle

The rear axle of the Touran is a compact four link suspension design. On each side it has three wishbones (lower wishbone, track rod and upper wishbone) and a trailing arm. This design provides optimal comfort and the best stabilisation properties.



The rear axle of the Touran is of the adjustable type, i.e. track and camber can be adjusted individually.

The track is adjusted via an eccentric bolt between lower wishbone and subframe.



The camber is adjusted via an eccentric bolt. This eccentric bolt joins the wishbone with the subframe.

Running gear

The electro-mechanical power steering

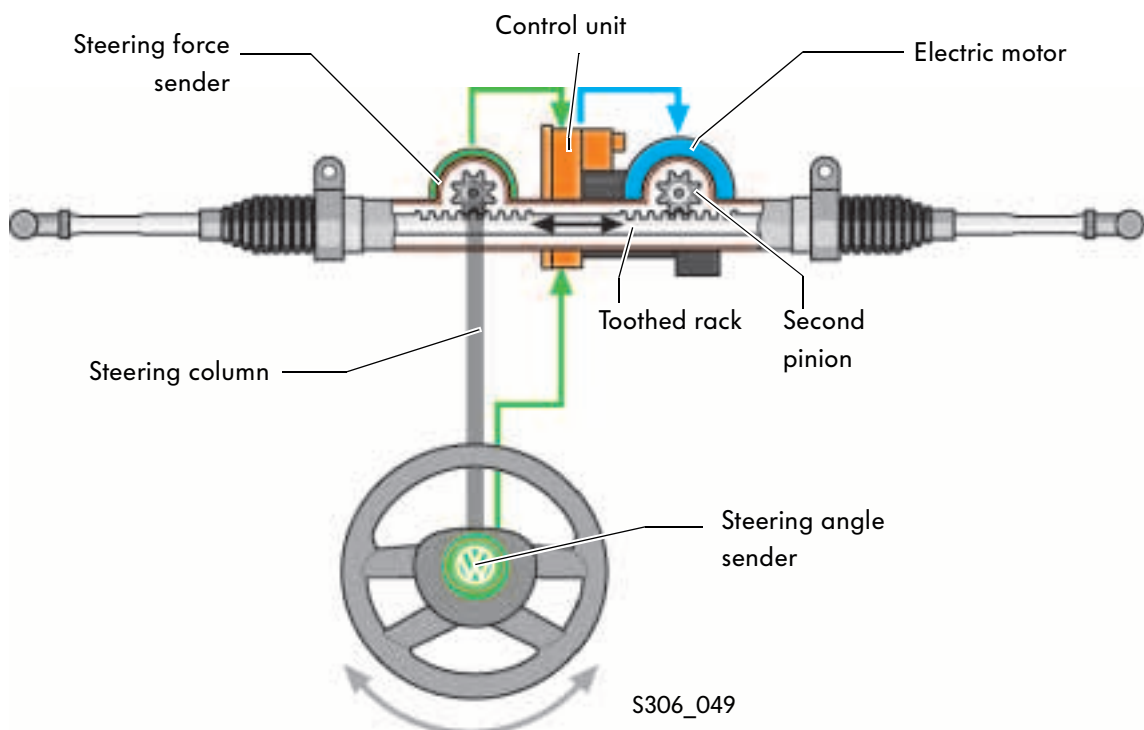


S306_012

The Touran is fitted as standard with electro-mechanical power steering. This steering system consists of steering box and an electric motor with control unit. The system is installed on the subframe. The power steering output of the electric motor, which is flanged to the rack, is transmitted via a second pinion to the rack.



The electro-mechanical power steering is an active steering system, which is directly dependent on road speed, the steering force and the steering angle. Data is transferred via the drive train CAN data bus. The control unit is flanged to the electric motor.



S306_049

The brake system

The Touran has a high performing brake system. The system is fitted as standard with ABS/EDL Mark 60 and electronic stabilisation programme (ESP) with brake assist system from Continental Teves. The brake assist system works on the common hydraulic principle. The brake pressure sender integrated in the hydraulic unit is a new feature. This sender can provide communication for diagnosis.

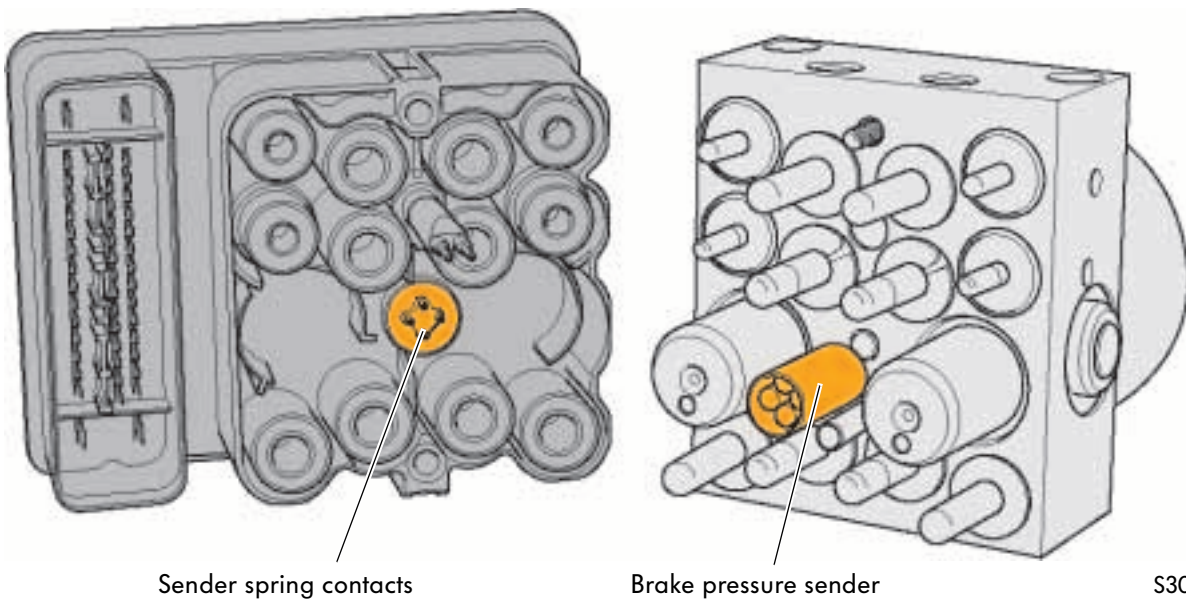


The brake assist system is described in SSP 264 "The brake assist system".

The conventional brake servo is 11" in size and therefore particularly powerful. This is distinguished by the fact that braking is notably stronger when high pressure is applied. Foot pressure at the pedal is reduced considerably when the vehicle has to be rapidly decelerated.



Hydraulic unit with brake pressure sender



Running gear

Front brakes

The front brakes of the Touran consist of ventilated brake discs and floating calipers.



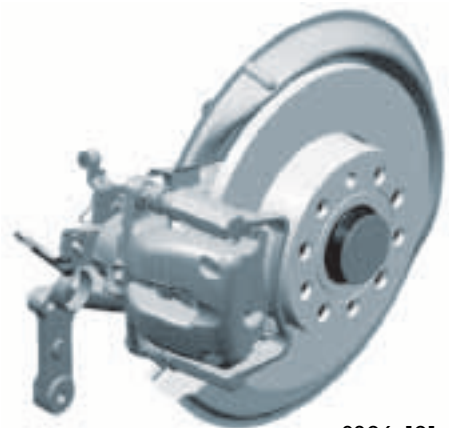
S306_099

Brake disc diameter x thickness

- 288 mm x 25 mm

Rear brakes

Solid material brake discs are used on the Touran. The service brake function and the floating caliper are integrated in one aluminium floating caliper.



S306_101

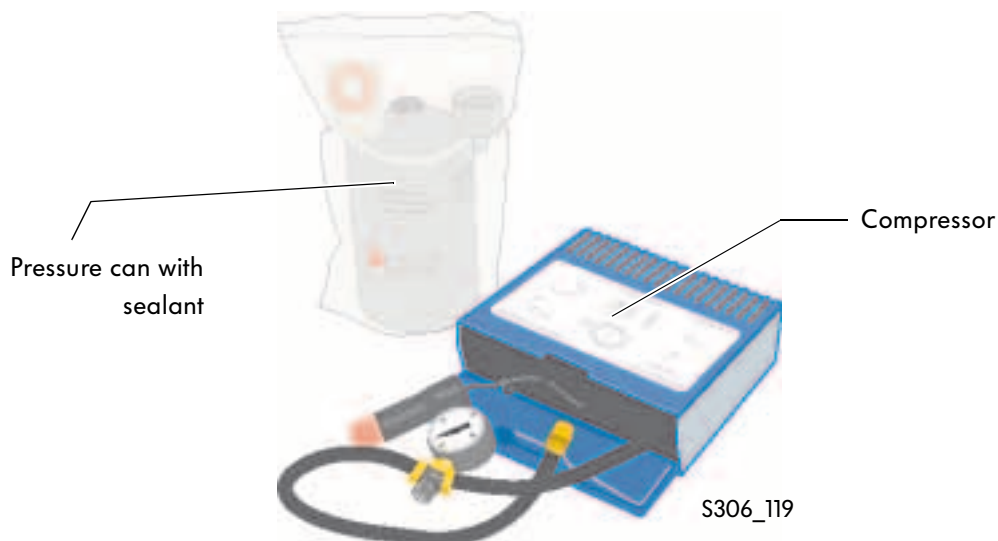
Brake disc diameter x thickness

- 260 mm x 12 mm

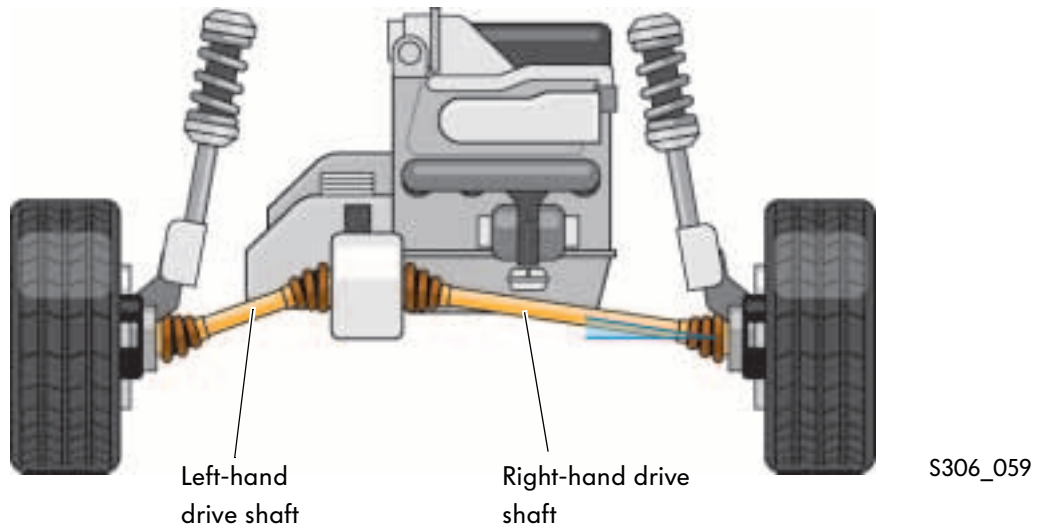


The breakdown kit

The Touran has a breakdown kit that consists of a pressure can with tyre sealant and a compressor. The instructions for the breakdown kit can be found in the compressor housing.



The drive shafts

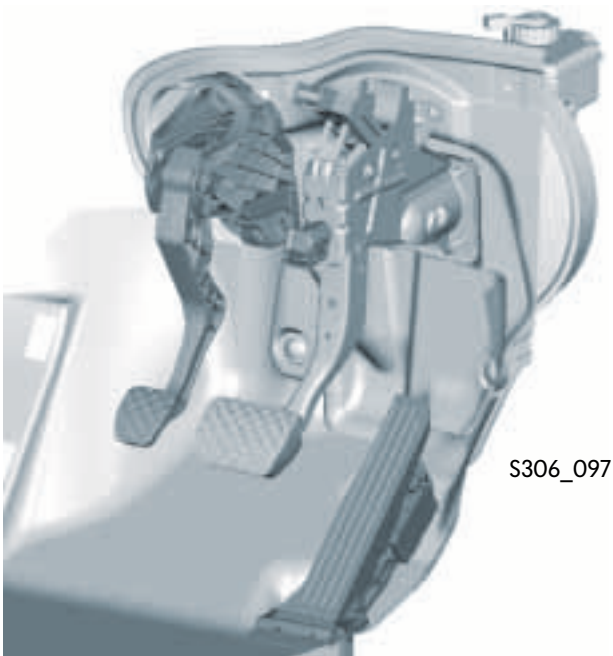


The Touran is installed with the proven drive shaft concept with different sized drive shafts.

The shorter shaft on the left-hand side is solid. The longer shaft, on the other hand, is hollow.



The pedal cluster



The pedal cluster has been modified to fit the Touran. The accelerator pedal is installed vertically.

Electrical system

Installation locations of the fuse boxes and relay carrier in the onboard power supply system

Electrics box

The fuses and relays for the electrical components in the engine compartment are housed in the electrics box (E-box).

Back-up fuse box

On the front of the electrics box there is a back-up fuse box, which is part of the E-box. It accommodates, for example, the alternator fuses and the electro-mechanical power steering.

Relay carrier

The relay carrier houses further relays. The amount depends on the vehicle equipment level.

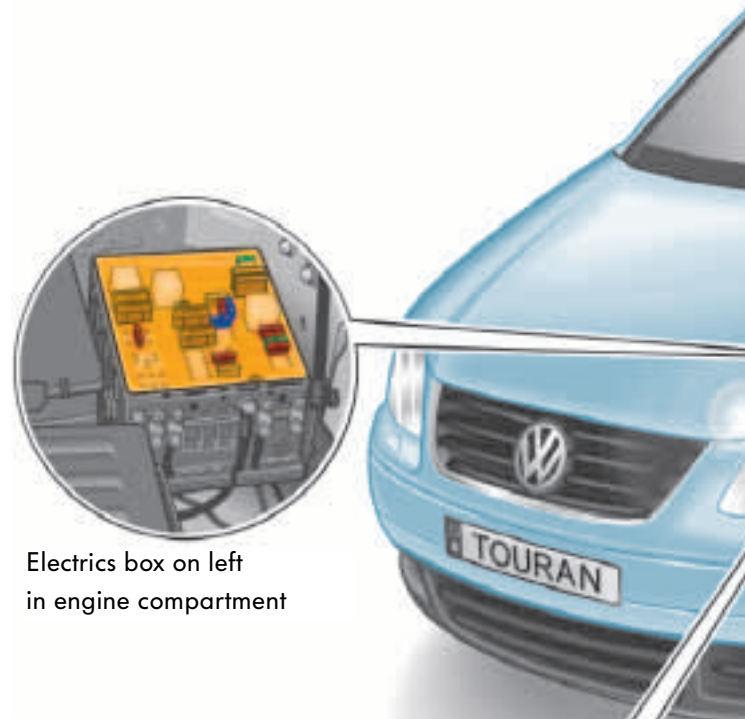
Relay carrier on onboard power supply control unit

The following relays can be found in the relay carrier on the onboard power supply control unit:

- Power supply relay term. 30G
- Heated rear window relay J9
- Horn relay J413
- Double washer pump relay 1 J729
- Double washer pump relay 2 J730
- X contact relief relay J59

Fuse box

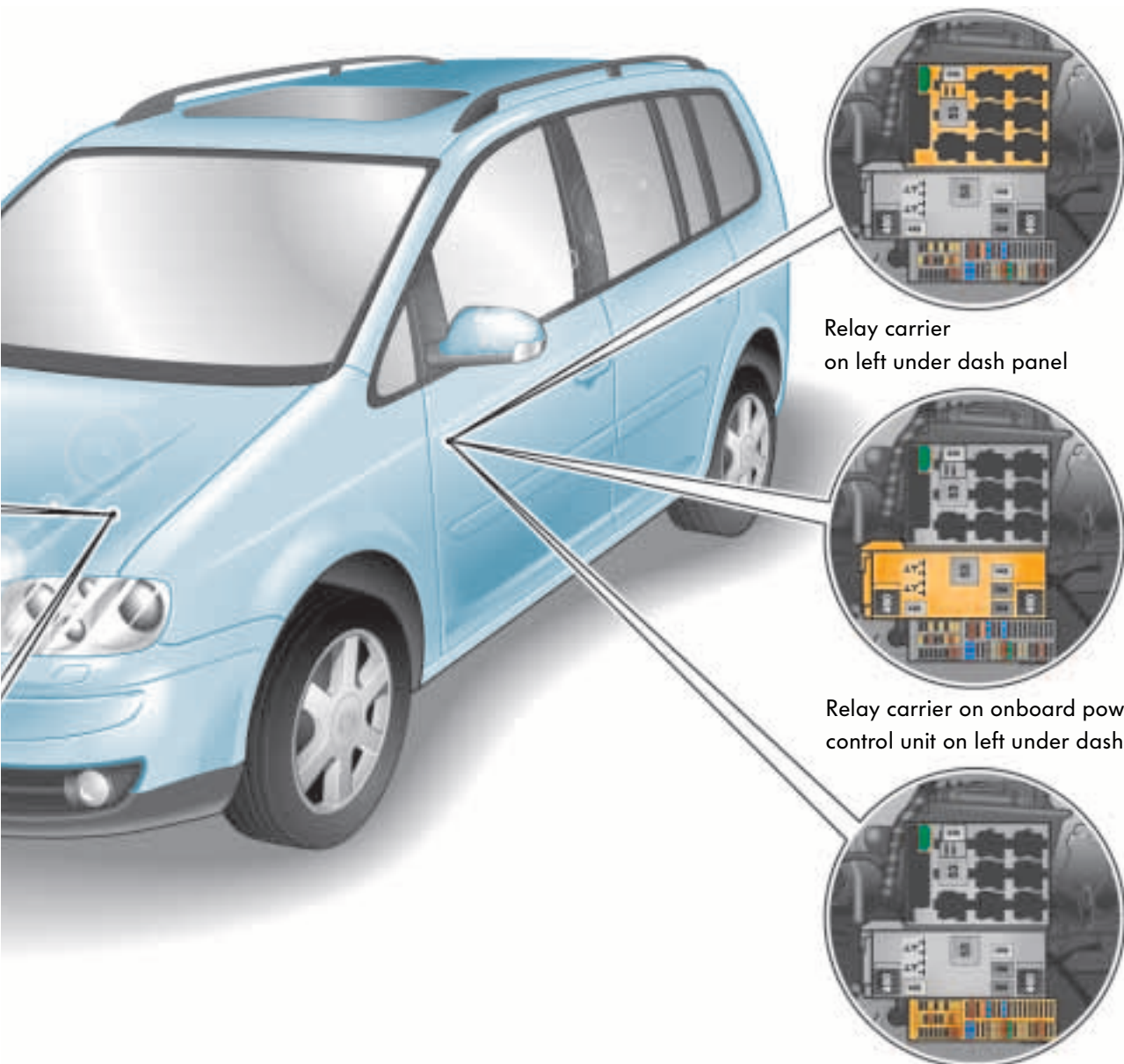
The fuses for the electrical components of the vehicle can be found in the fuse box.



Electrics box on left in engine compartment



Back-up fuse box on left in engine compartment



Relay carrier
on left under dash panel

Relay carrier on onboard power supply
control unit on left under dash panel

Fuse box on left
under dash panel

S306_260

Electrical system

The network concept

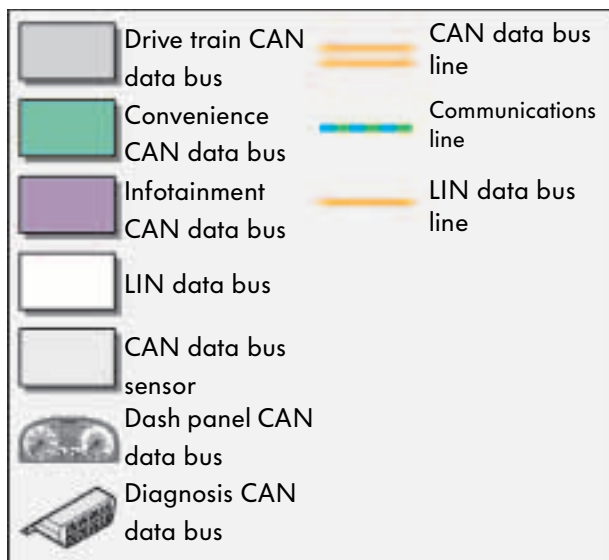
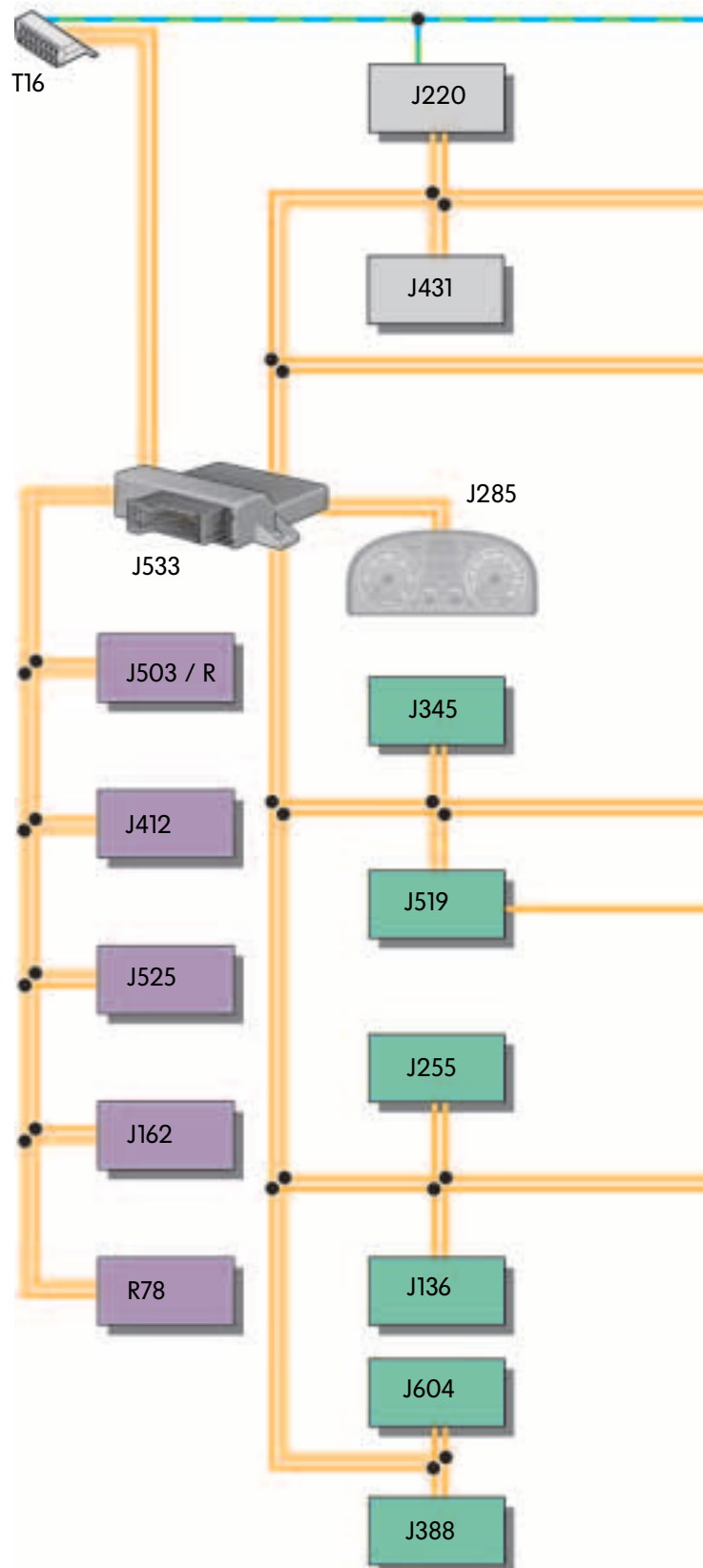
Overview of network

The Volkswagen Touran features more than five CAN data bus systems that are broken down as follows:

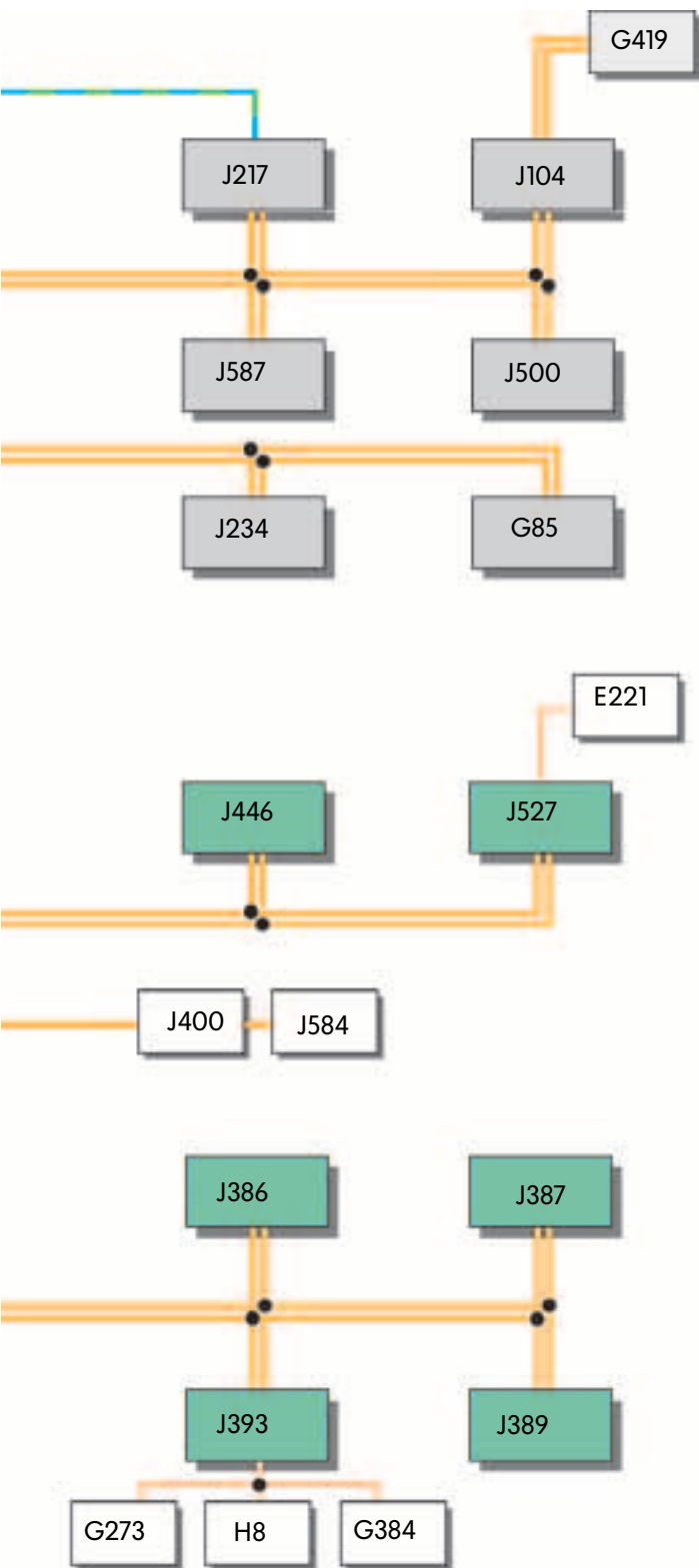
- Drive train CAN data bus
- Convenience CAN data bus
- Infotainment CAN data bus
- Dash panel CAN data bus
- Diagnosis CAN data bus

The data bus diagnosis interface J533 forms the central interface.

The LIN data bus (local interconnect network) is used in the same way to transfer data to various actuators, for example, the wiper motor J400 and the wiper control unit, passenger side J584.



S306_264



Key

- E221 Operating unit in steering wheel
- G85 Steering angle sender
- G273 Interior monitoring sensor
- G384 Vehicle inclination sender
- G419 ESP sensor unit
- H8 Anti-theft horn
- J104 ABS with EDL control unit
- J136 Seat heating control unit
- J162 Heating control unit
- J217 Automat. gearbox control unit
- J220 Motronic control unit
- J234 Airbag control unit
- J255 Climatronic control unit
- J285 Control unit with display unit in dash panel insert
- J345 Trailer detector control unit
- J386 Door control unit, driver side
- J387 Door control unit, front passenger side
- J388 Door control unit, rear left
- J389 Door control unit, rear right
- J393 Convenience system central control unit
- J400 Wiper motor control unit
- J412 Cellphone operating electronics control unit
- J431 Headlight range control, control unit
- J446 Parking aid control unit
- J500 Parking aid control unit
- J503 Control unit with display for radio and navigation
- J519 Onboard power supply control unit
- J525 Digital sound package control unit
- J527 Steering column electronics control unit
- J533 Data bus diagnosis interface
- J584 Wiper control unit, front passenger side
- J587 Selector lever sensors control unit
- J604 Auxiliary air heater control unit
- R Radio
- R78 TV tuner
- T16 Diagnosis connection



Heating and air conditioning

Introduction

The Touran can be ordered with the following systems:

- 2C Climatronic heating and air conditioning
- Climatic heating and air conditioning
- Manual heating and ventilation system

All three systems are based in design on one basic air conditioning system that was adapted for each of the different demands. A further feature of the air conditioning systems is a dust and pollen filter that can be removed from below, in accordance with the instructions from the workshop manual, even with the air conditioning system in situ.

For rear seat passengers there are middle vents in the centre console.

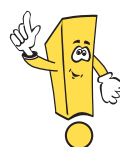
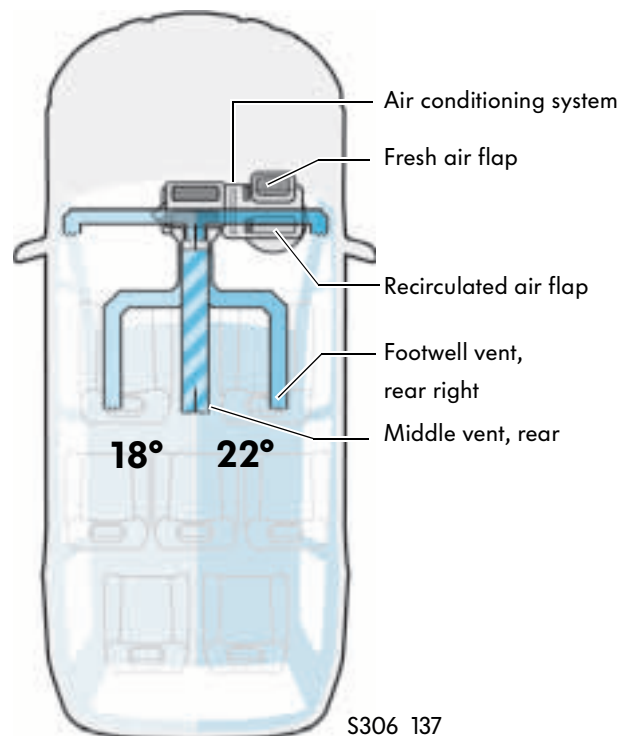
The 2C Climatronic

For the first time at Volkswagen in this vehicle class, an air conditioning unit with 2 zone climate control is being installed.

That means that for driver and front passenger, different temperatures can be selected independently of each other.

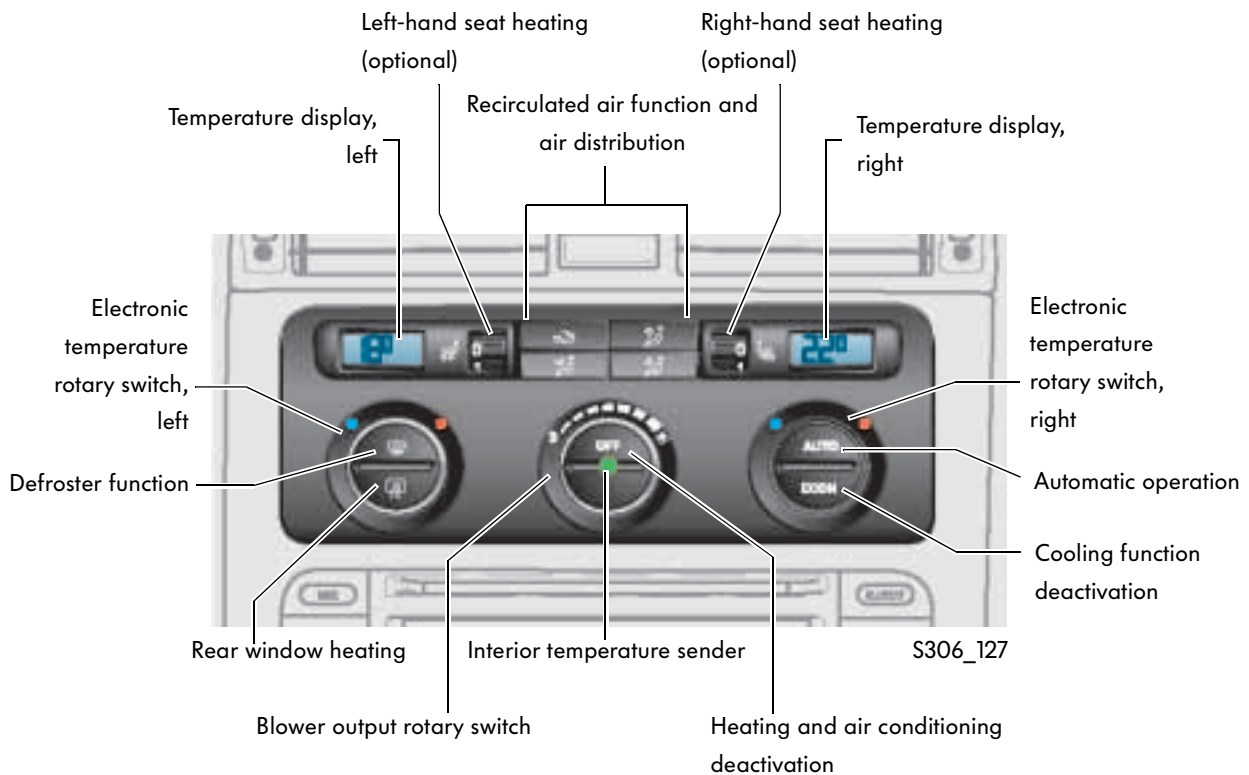
Separating the vehicle interior into two climate zones is done by means of temperature flaps inside the air conditioning system, similar to the 2C Climatronic in the Touareg.

The difference to the other variants is that the 2C Climatronic air conditioning system has a separate fresh air and recirculated air flap. This makes it possible for the flow of fresh air to remain constant even at different speeds.



The blower motor of the air conditioning system features an integrated regulator.

Display and operating unit of 2C Climatronic



In addition to control of individual temperature requirements from driver and front passenger, the system can also be switched to automatic operation. Beyond automatic operation, air distribution and blower output can be adjusted manually. The options here for air distribution and recirculated air can be selected via electric buttons on the 2C Climatronic.

To monitor the interior temperature, the Climatronic uses a new type of interior temperature sensor. It is part of the display and operating unit and cannot be renewed separately.

The interior temperature sensor is an unventilated interior sensor (UIF). It consists of an NTC sensor with photo diode. In this way, the interior temperature sensor can evaluate the interior temperature and any sunlight intensity.



Further information about vehicles with multi-zone climate control can be found in self-study programmes SSP 271 "The Phaeton – Heating and air conditioning" and SSP 301 "The Touareg – Heating and air conditioning".

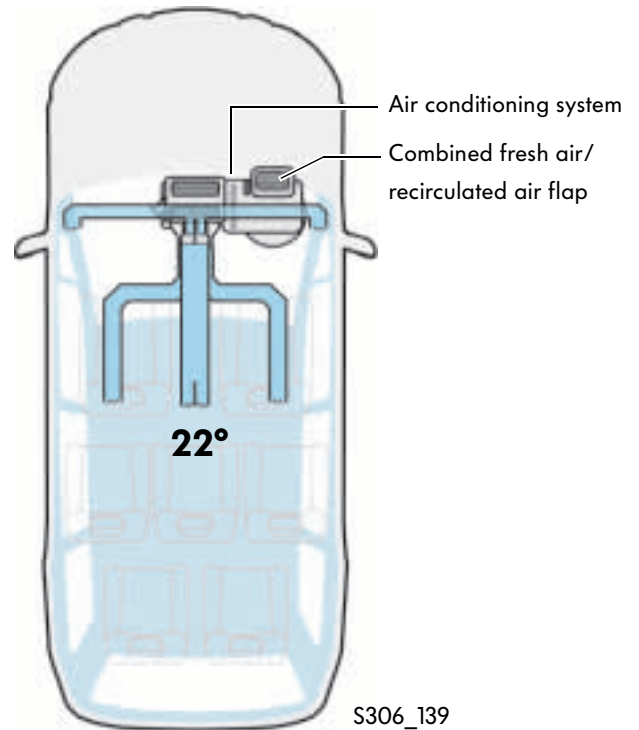
Heating and air conditioning

The climatic system

For climate control, the interior of the vehicle is seen as one climate zone. Using the left-hand rotary switch, a uniform temperature can be set, which is maintained by the climatic system. The rotary switch is combined with a potentiometer that conveys the temperature requirement to the climatic system and from here the temperature flap is controlled by the air conditioning unit.

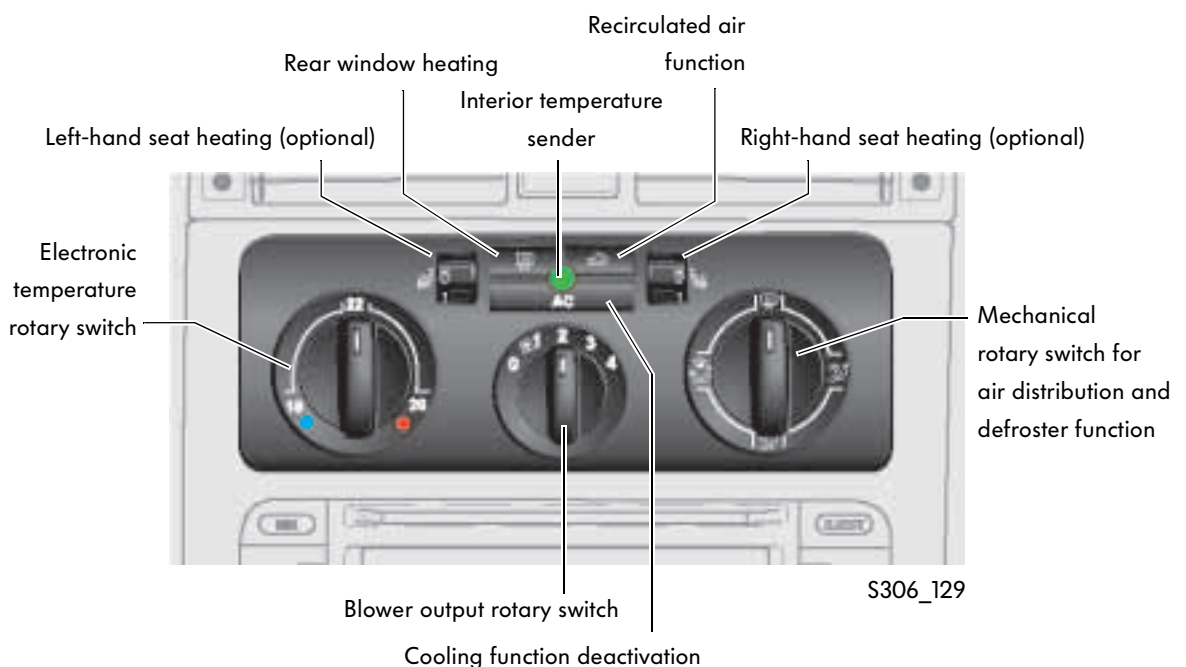
Air distribution and the defroster function are selected via the right-hand rotary switch, which is connected to the air conditioning unit via a flexible shaft and a cable.

The climatic air conditioning features a combined fresh air/recirculated air flap.



S306_139

Climatic operating unit



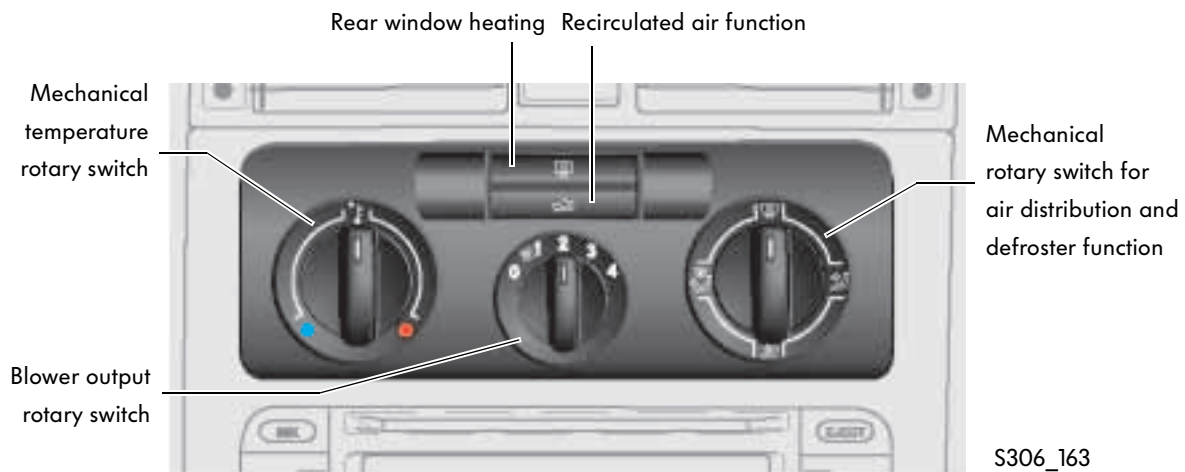
S306_129

The manual heating and ventilation system

With this system, a uniform climate zone is created in the vehicle. The temperature and air distribution are selected manually on the operating unit in the dash panel. Temperature regulation does not take place.

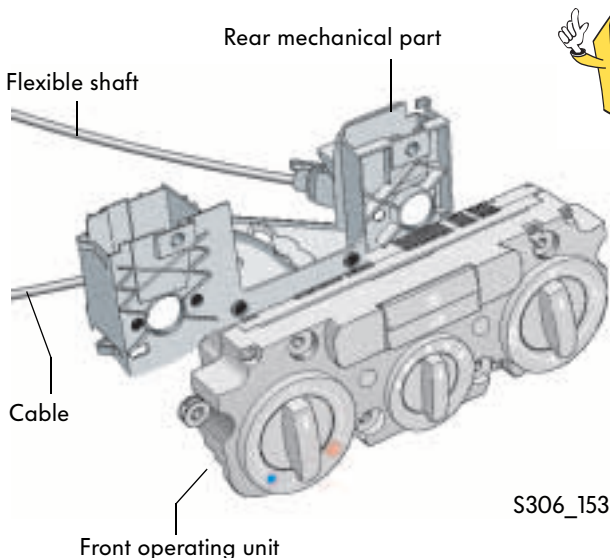
The connection of both rotary switches to the air conditioning unit for temperature and air distribution is mechanical via a flexible shaft and a cable.

Operating unit of manual heater



Common features of climatic system and manual heating

The blower of the climatic system and the manual heating are controlled by a series resistor.



The operating unit of the climatic system and the manual heating are designed constructively as one rear mechanical part and one front operating unit. The connection is made via a flexible shaft and a cable.

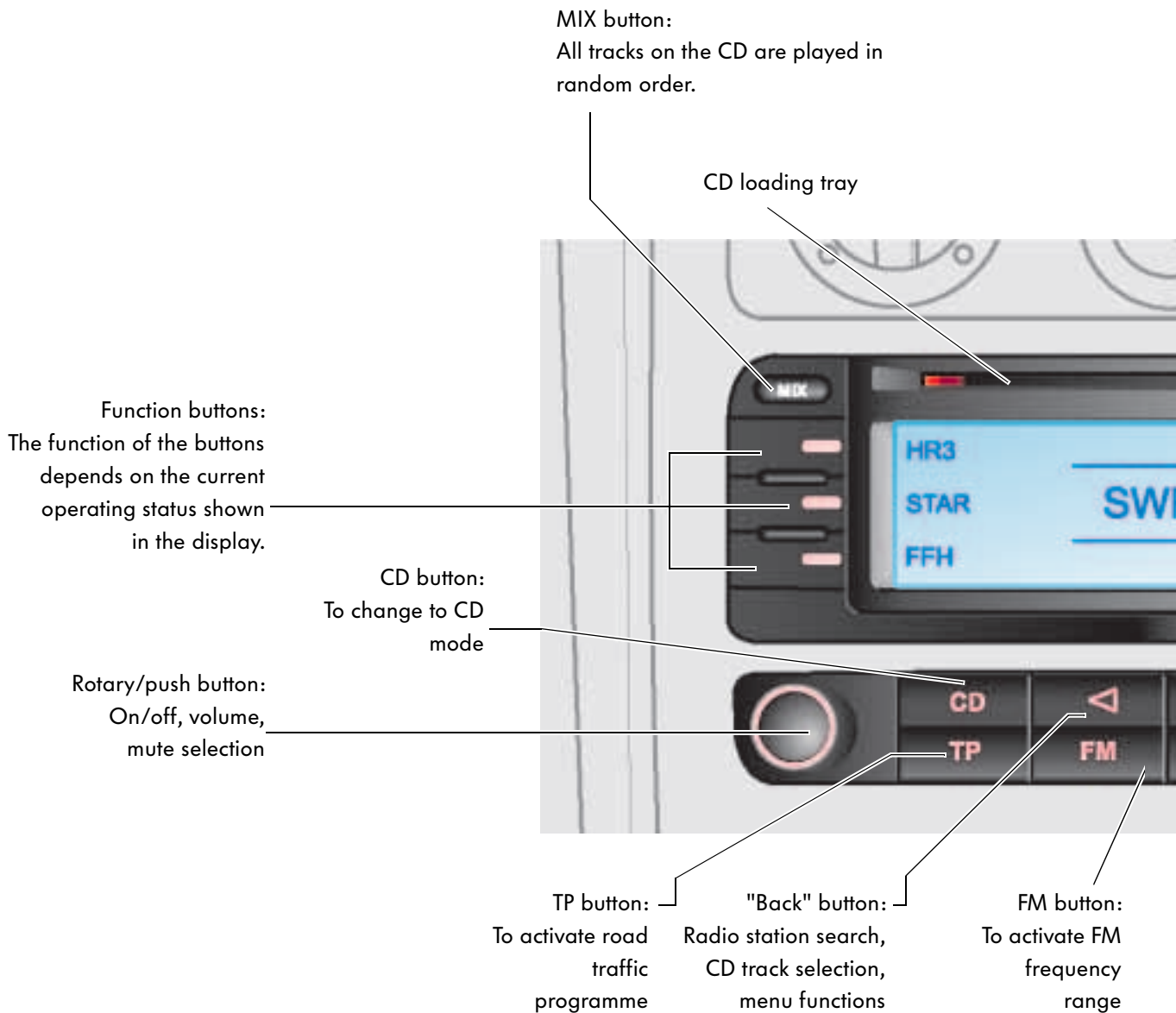
If the front operating unit is defective, only this part will require renewal and the flexible shaft and the cable can remain in position.



Radio and navigation

The RCD 300 radio system

For the launch of the Touran, the vehicle will be equipped with the basic RCD 300 radio. It features an integrated CD loading tray. A CD changer is available as an option. The CD changer is installed under the armrest between the front seats, as on the New Beetle Cabrio.



Please note: The radio is connected to the infotainment CAN data bus.

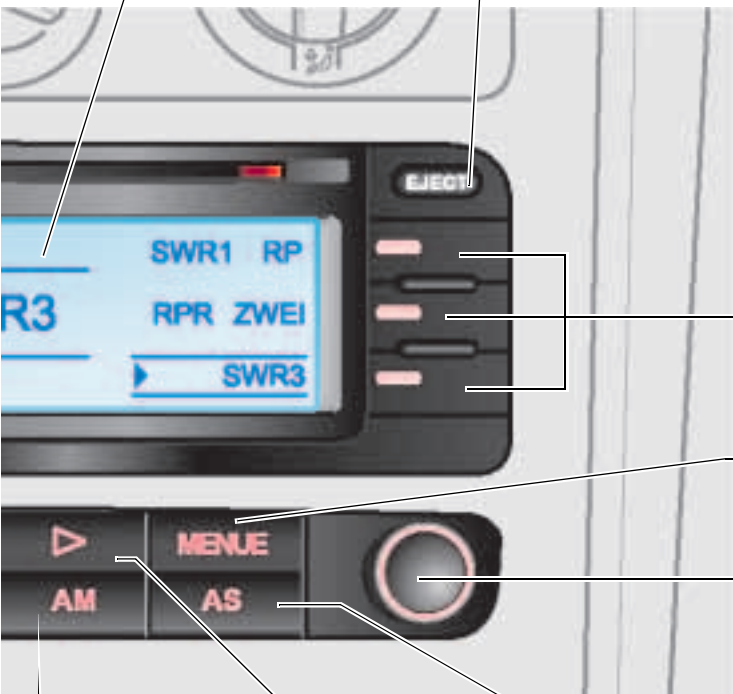
At 230 mm in width, the new radio has a double DIN width. The radio is screwed to the dash panel and the trim is then clipped on afterwards.



If navigation is selected as an option, the radio navigation system from the Touareg will be installed.

EJECT button:
To eject the CD.

Display



Function buttons:
The function of the buttons depends on the current operating status shown in the display.

MENU button:
SOUND and
SETUP settings

Rotary/push button:
To set manual radio station, to switch SCAN function on and off

S306_081

AM button:
To activate AM frequency range

"Forwards" button:
Radio station search, CD track selection, menu functions

AS button:
Function to save automatically



The new radio generation installed in the Touran no longer requires a changeover box for aerial diversity. Only on versions with radio navigation, as used in the Touareg, is this changeover box installed.

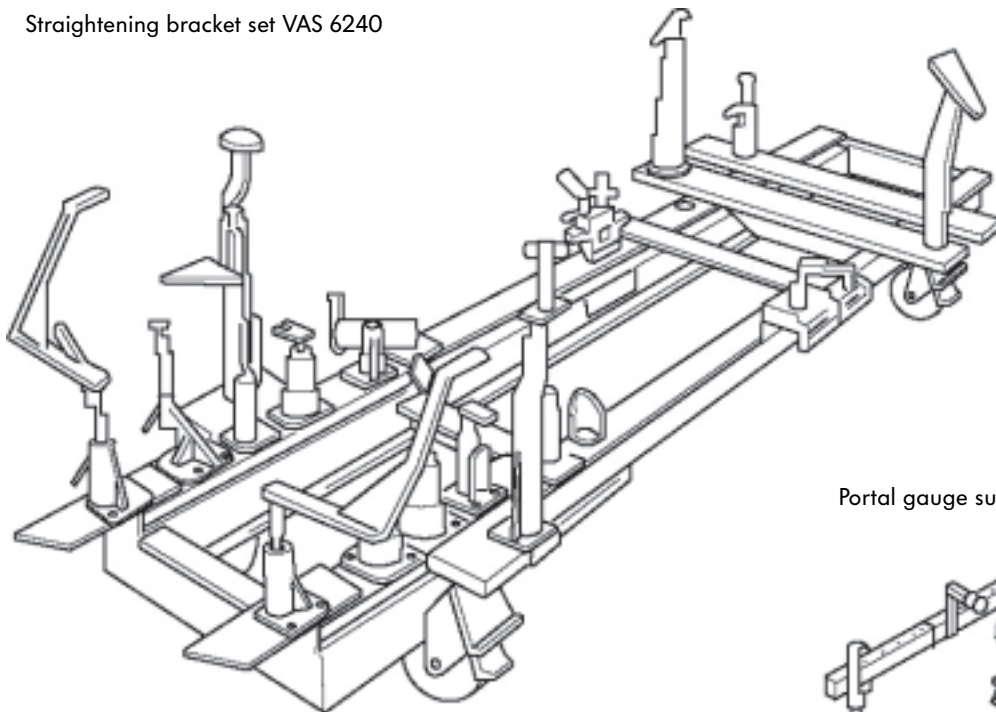
New workshop equipment

For the Touran there is a new straightening bracket set. This alignment equipment can be used for the complete platform, that is it can also be used for the Golf 5 and Audi A3 successor. The portal gauge supplement, however, is only suitable for the Touran.

New workshop equipment

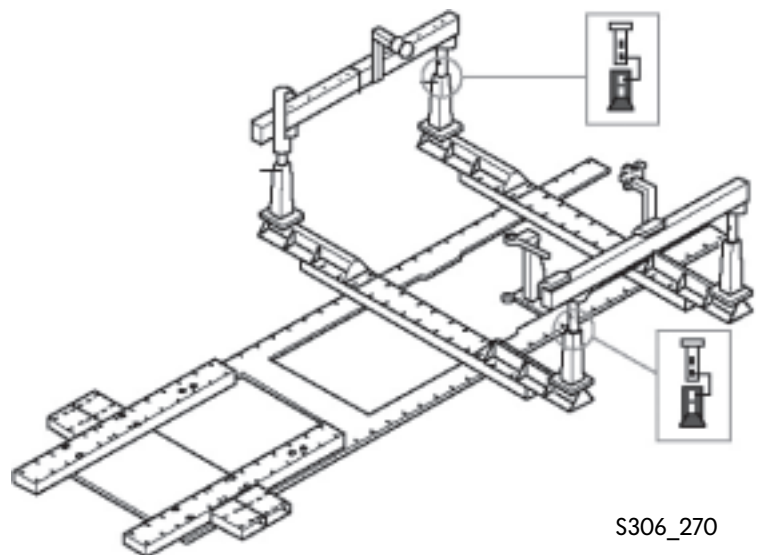
- Straightening bracket set VAS 6240
- Portal gauge supplement VAS 5007/17

Straightening bracket set VAS 6240



S306_272

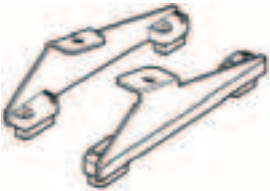
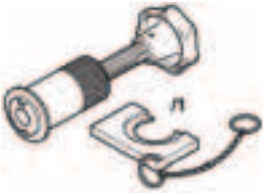


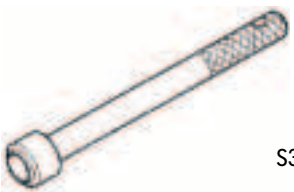


Portal gauge supplement VAS 5007/17



S306_270



New special tools

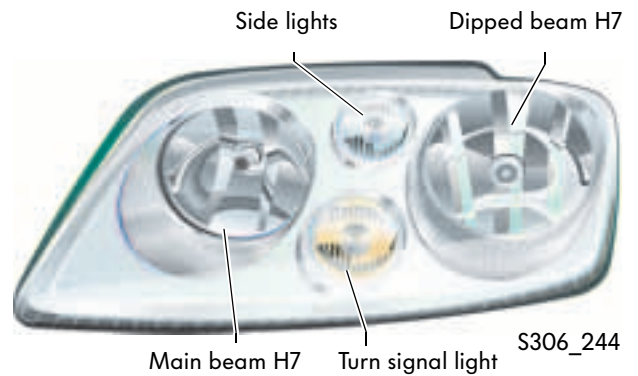
Tool no.	Diagram	Application
10-222A/22	 <p>S306_069</p>	Adapter for support device (Touran only)
T10165	 <p>S306_071</p>	Caliper piston resetting and removing tool
3282/39	 <p>S306_075</p>	Manual gearbox adjustment plate
T10168	 <p>S306_241</p>	Setting pin for assembly of manual gearbox 02Q bush
T10169	 <p>S306_242</p>	Setting pin for assembly of manual gearbox 02Q locking sleeve
T10178	 <p>S306_067</p>	Assembly tool for removal and assembly of over-centre spring / clutch pedal
T10179	 <p>S306_073</p>	Tool attachment AF 18 for adjustment of camber on rear axle



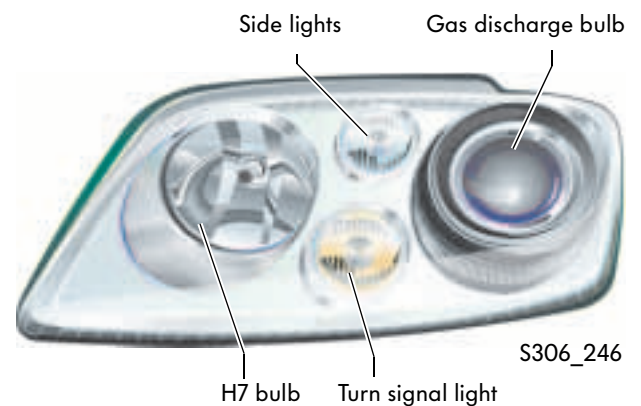
The headlights

On the Touran there are two different types of headlights available, the standard headlights and the Bi-Xenon headlights.

The standard headlight consists of two H7 bulbs for dipped beam and main beam. These bulbs are of the one touch design. The turn signals and the side lights are integrated in the headlights. The bulb for the turn signal is coloured.



The Bi-Xenon headlight consists of a gas discharge bulb for dipped beam and main beam and a H7 bulb to support the main beam. The H7 bulb is also used when the lights are flashed. As with the standard headlights, the turn signals and the side lights are integrated.



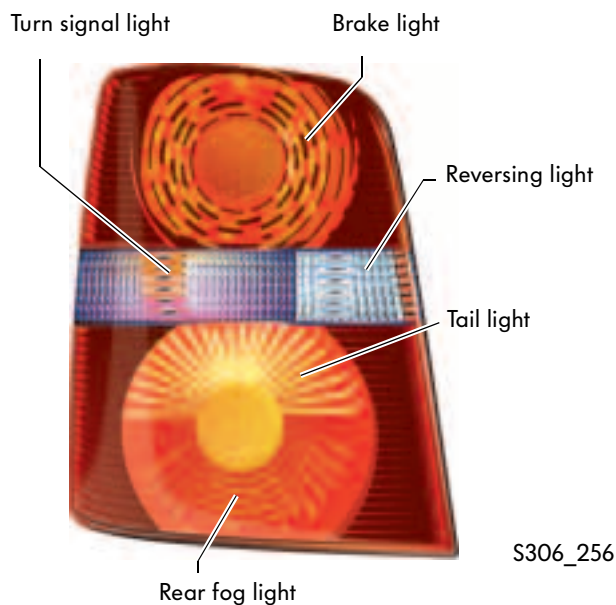
Further information about the one touch design can be found in SSP 307.
Further information about the Bi-Xenon headlight can be found in SSP 251.

The fog lights

The fog lights are integrated in the bumper. They are based on reflection technology with one H11 bulb.



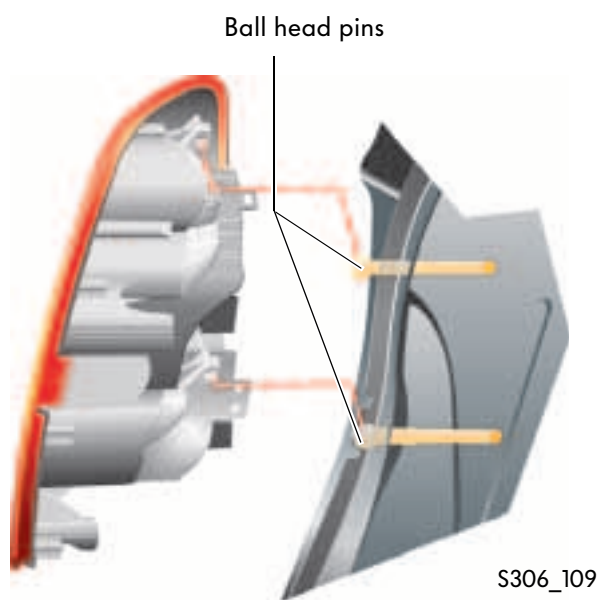
The rear lights



The rear lights consist of three parts. In the upper part there is the brake light. The part below that has a clear lens and is split into two for turn signal and reverse lights. The bulb for the turn signal is coloured. The lower part is made up of rear light and rear fog light.

The brake light and the rear fog light are activated dimmed to support the rear light.

Special maintenance



Adjusting rear lights

If after repairs to the body or the lights the lights are installed with excessive shut lines to the body, the installation position must be corrected.

The rear lights are engaged in ball head pins. By screwing these pins in or out, the seat of the rear lights can be adjusted.

This is only possible when the lights have been removed.



For further information, please refer to the electronic service information system ELSA.



Service

Diagnosis

Available on vehicle diagnosis, testing and information system VAS 5051 are operating modes:

- Guided fault finding
- Vehicle self-diagnosis
- Test instruments

Available on vehicle diagnosis and service information system VAS 5052 is currently operating mode:

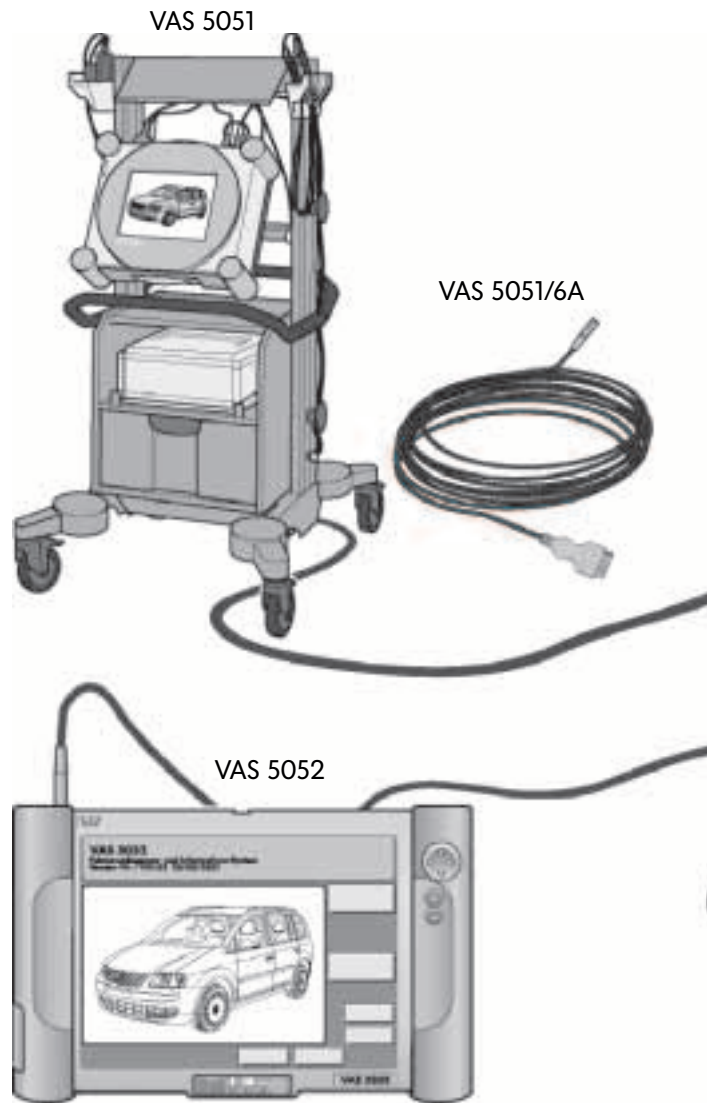
- Vehicle self-diagnosis

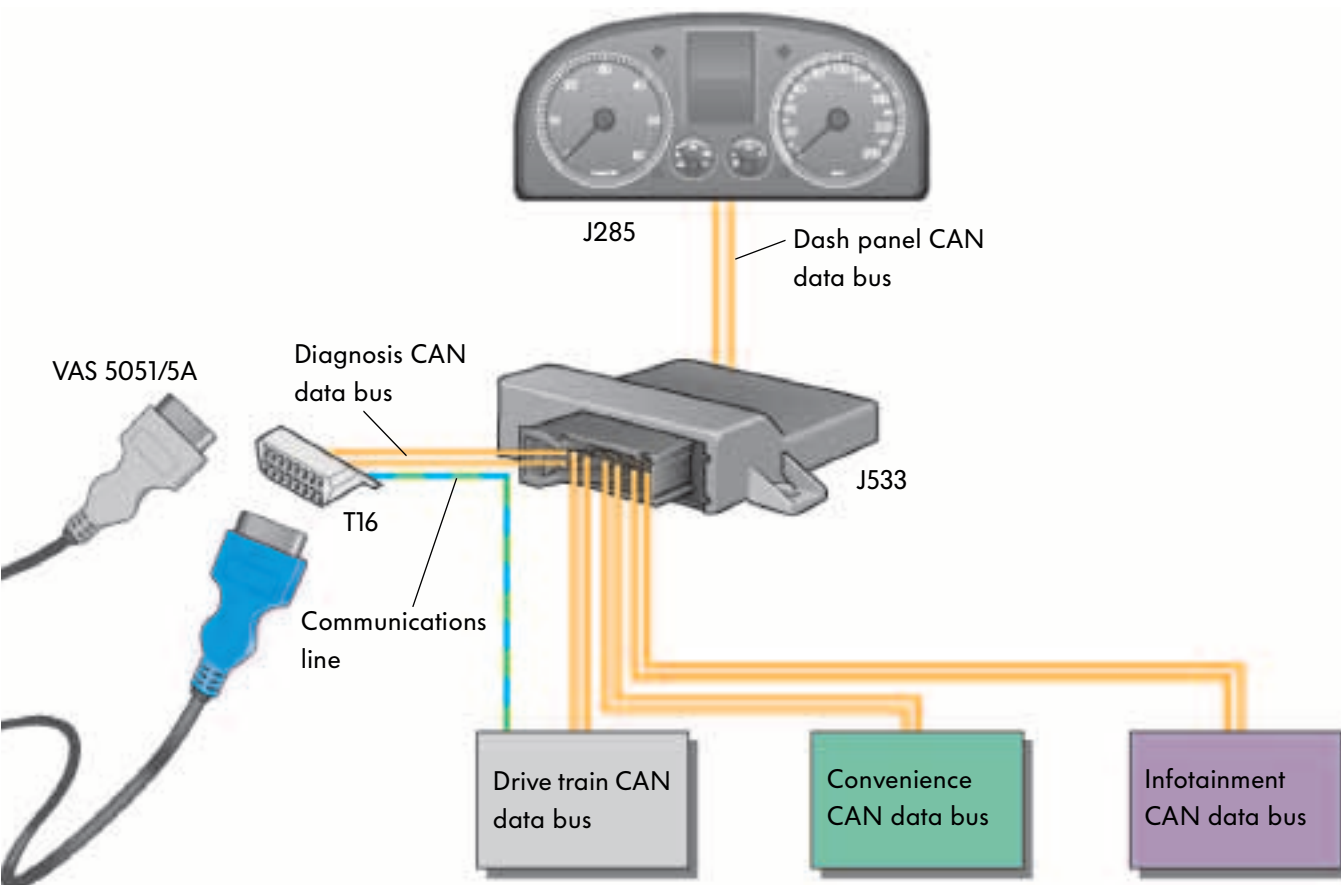
Data is transferred between vehicle diagnosis, testing and information system VAS 5051 and the vehicle control units via the diagnosis CAN data bus and this is only possible using diagnosis leads VAS 5051/5A and VAS 5051/6A.

These diagnosis leads must be used as they are the only ones suitable for data transfer via the diagnosis CAN data bus.

The diagnosis lead from vehicle diagnosis and service information system VAS 5052 is generally suitable for data exchange via the diagnosis CAN data bus.

The COM lead, used until now, is for diagnosis of the engine and gearbox control units in OBD mode.





S306_266

Key

J285	Control unit with display unit in dash panel insert
J533	Data bus diagnosis interface
T16	Diagnosis connection
VAS 5051	Vehicle diagnosis, testing and information system
VAS 5051/5A	Diagnosis lead 3 m
VAS 5051/6A	Diagnosis lead 5 m
VAS 5052	Vehicle diagnosis and service information system





For internal use only © VOLKSWAGEN AG, Wolfsburg

All rights and the right to make technical alterations reserved

000.2811.26.20 Technical status 02/03

♻️ This paper was manufactured from pulp that was bleached without the use of chlorine.