

# Running gear

**The running gear, which comprises a suspension strut axle, double wishbones and a torsion beam rear axle, is based on the same principle as the predecessor model.**

The interaction of the running gear components, for example, the newly designed front and rear axles with large wheels and power steering, results in a comfortable ride.

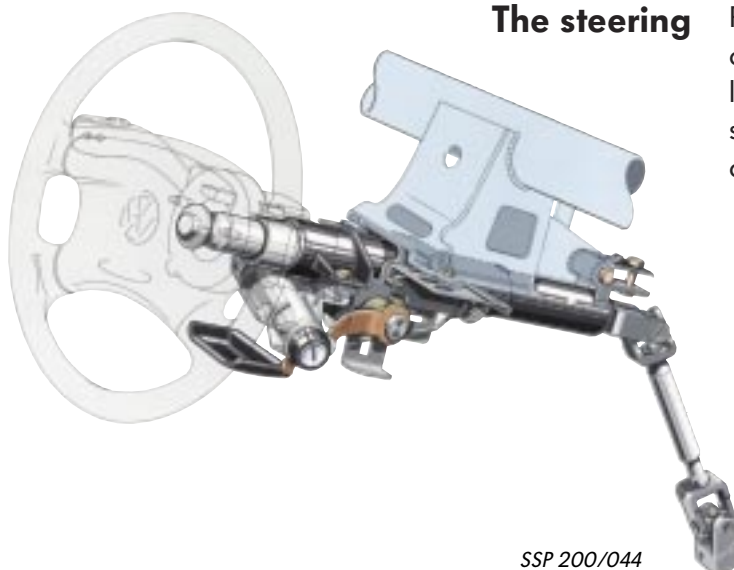
All the wheel hubs have a five-hole pattern for securing the wheels.



SSP 200/047

The following features will be explained to you on the next pages:

- The steering
- The front axle
- The torsion beam rear axle
- The braking system
- The front and rear brakes
- The ULW tyres
- The light-alloy wheel.



## The steering

Power steering is fitted as standard. The steering assembly is rigidly attached to the subframe and locked in place to prevent the steering gear from slipping on the subframe. Both track rods are adjustable.

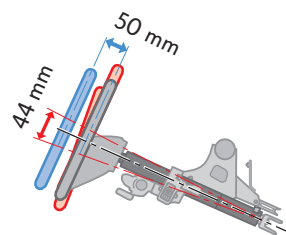
SSP 200/044

### Reach adjustment

The steering column can be adjusted manually by 50 mm fore and aft.

### Rake adjustment

The steering column can be adjusted by 44mm in height.



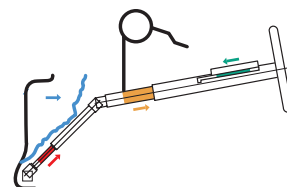
### The steering column attachments

The upper end of the steering column is attached to the central tube by two 8 mm hexagon bolts. Shear pins are no longer needed. The lower end is attached to the steering gear by a universal joint.



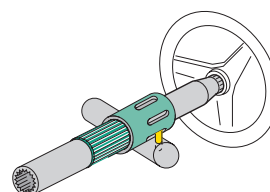
### The crash concept

The deformation distance of the steering system during a crash is 250 mm. The steering column angle is 24°. The direction in which the airbag inflates is therefore better matched to the driver's position.



### Steering system anti-theft device

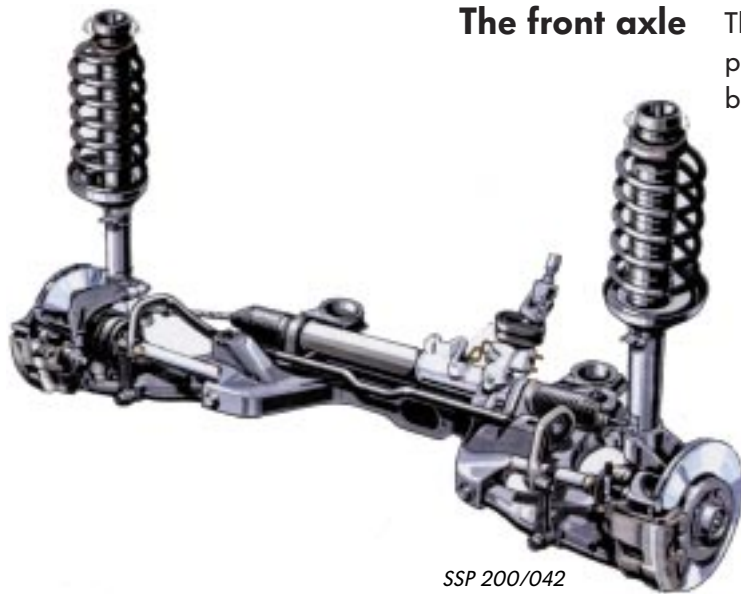
The mechanical anti-theft device on the steering assembly prevents the striker pin from shearing off at the steering wheel lock.



SSP 200/33 a,c-e



# Running gear



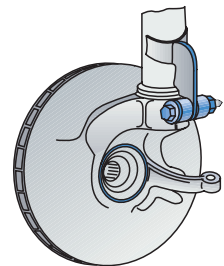
SSP 200/042

## The front axle

This is based on the proven principle of the suspension strut axle with double wishbones. It has been optimised and adapted to the new Golf.

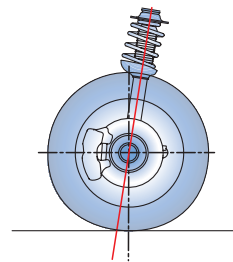
## The single bolt clamp

The suspension strut is mounted in the wheel bearing housing and clamped with a bolt. A special tool is required to remove the suspension strut (Spreader 3424)



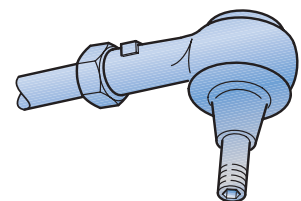
## The caster

The standard power steering permits a larger caster. This improves directional stability.



## The track rod end

The self-locking effect is eliminated by modifying the conical shape of the track rod end. To slacken the nut, use a hexagon socket wrench to counter-hold the track rod end.



SSP 200/036 a-c

**The rear axle** It is a torsion beam axle with anti-roll bar.



SSP 200/043

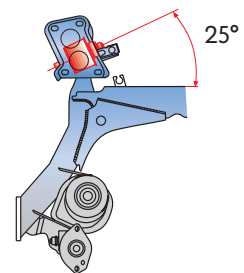
#### Separate spring and shock absorber mountings

The shock absorbers and springs are located separately, giving a through-loading width of over one metre. There is less tyre noise in the interior because the dampers are secured by bolts in the wheel housing.



#### Rear axle mountings

The large-size rear axle mountings are positioned at an angle of  $25^\circ$  to the transverse axis of the vehicle. This reduces the self-steering effect of the rear axle.



#### Wheel bearings

The double ball bearings of the rear axle require no adjustment. The axial play is determined by the tightening torque of the axle nut.



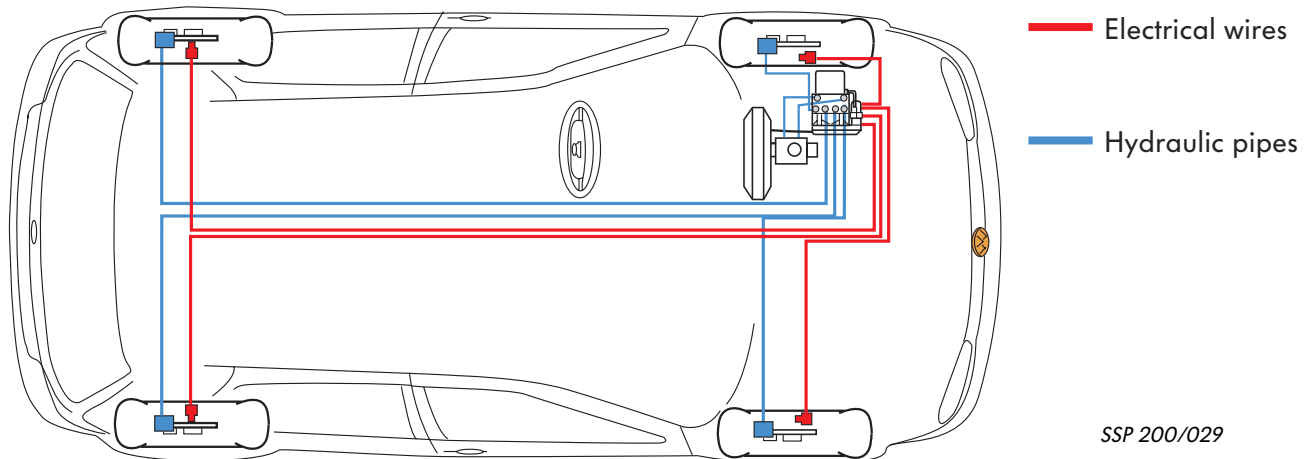
SSP 200/037 a-c

# Running gear

## The braking system

The new Golf is equipped with the Mark 20 IE anti-lock braking system and electronic brake pressure distribution (EBPD) as standard. It has a diagonally-split dual-circuit design.

The new Golf has disc brakes at the front and rear; the front disc brakes are ventilated.



### The anti-lock braking system

prevents the wheels from locking when braking. This means that the driver can retain vehicle manoeuvrability even in extreme situations.

### Electronic brake pressure distribution

allocates brake pressure to the front and rear wheels by means of solenoid valves in the ABS unit. The operating range of the EBPD ends at the ABS cut-in point.

### The electronic differential lock

is an automatic starting control system. The EDL automatically brakes wheels which spin when setting off on slippery surfaces. The differential transfers the input torque to the wheel which is gripping the road. The EDL is effective up to 80kph.

### The engine braking control

prevents the driven wheels from lock up on slippery surfaces when the driver lifts his foot off the accelerator pedal quickly. The ABS sensor recognises when the driven wheels are on the verge of locking up. The ABS control unit then sends a command to the engine control unit over the CAN databus. The engine control unit increases engine speed momentarily to enable the wheels to rotate freely again. This retains vehicle manoeuvrability.

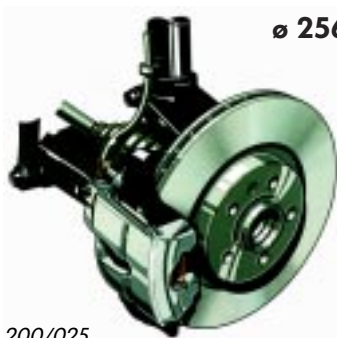
The EBC operates across the entire engine speed range.

EBC is only available on the 66kW TDI and the 81kW TDI models.

## Front brake



## Rear brake



Ø 256 x 22 mm

SSP 200/025

55 KW  
50 KW-SDI  
74 KW



Ø 280 x 22 mm

SSP 200/026

66 KW-TDI  
81 KW- TDI  
92 KW



Ø 288 x 25 mm

SSP 200/027

110 KW

Ø 232 x 9 mm



SSP 200/028



Brake servo: left-hand drive vehicles (Ø 10" )

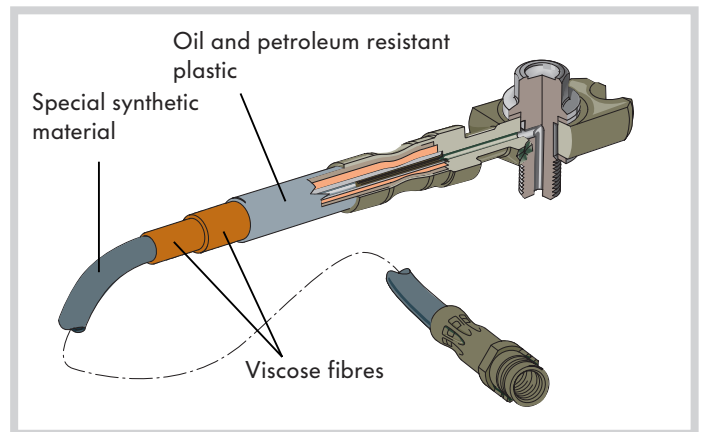
Since there is less space in right-hand drive vehicles, a tandem brake servo (Ø 7" / 8") is used.

# Running gear

## Brake hoses and brake pipes

### The brake hoses

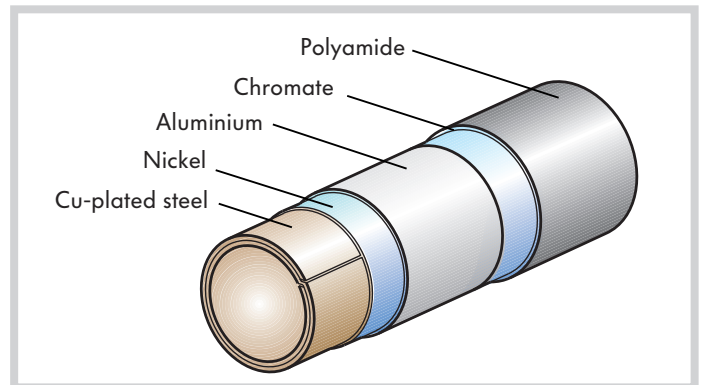
link up the moving parts of the braking system. The brake fluid absorbs the bulk of the water through these hoses. Brake hoses are made of four layers. The innermost layer is now made of a special synthetic material which reduces water absorption.



SSP 200/030

### The brake pipes

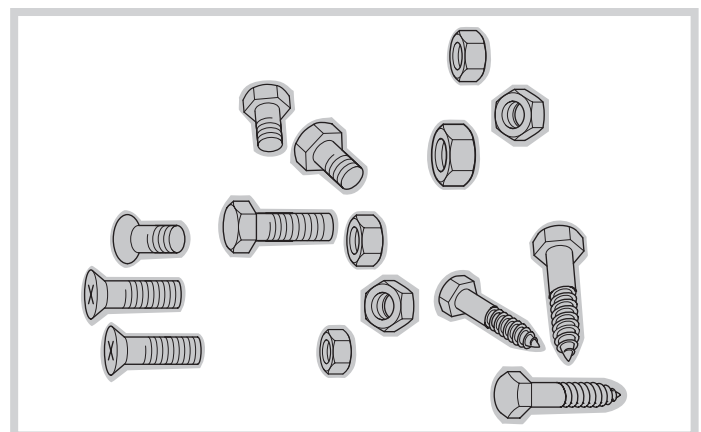
are made of precision-bent steel pipes. They are protected against corrosion by several coatings.



SSP 200/032

### Dacrometised bolts

All exterior bolts in the braking system are dacrometised. This coating, which contains zinc-aluminium powder, protects the bolts against corrosion.



SSP 200/031



You can find further information in Self-Study Programme No. 160.



## Ultra Light Weight tyres

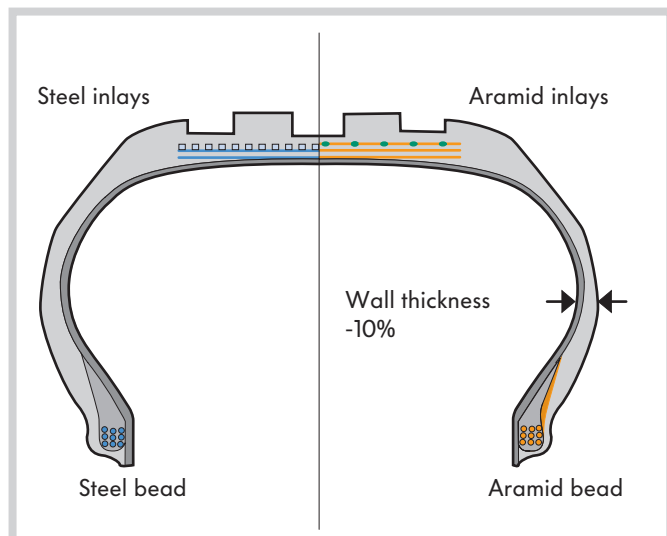
The new Golf is only equipped with Dunlop ULW tyres in combination with light alloy rims and tyres of size 175/80 R 14 88 H.

### Tyre design

Instead of the steel inlays used in steel cord tyres, ULW tyres have aramid inlays. Aramid is a synthetic material which weighs six times less but has 10 times more tensile strength than steel. The outer wall thickness of the ULW tyre is 10% less than that of a steel cord tyre. The result is a weight saving of 3 kg compared to conventional steel cord tyres.

### Steel cord concept

### ULW concept

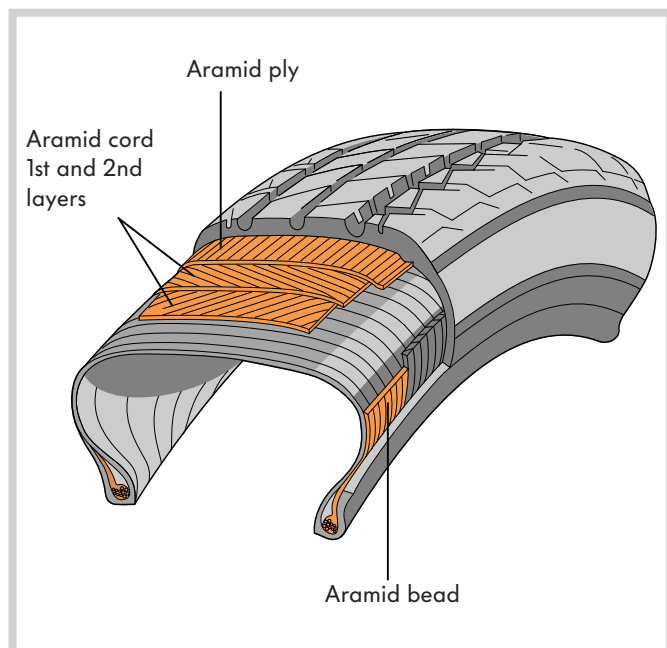


SSP 200/080

### Advantages of ULW tyres

The low weight of the ULW tyre means that fewer unsprung masses have to be moved. This saves fuel and reduces pollutant emissions. The control frequency of the ABS system is higher, because the rotating wheel masses are small. A shorter stopping distance can then be achieved on road surfaces with a low friction coefficient.

The ULW tyre is manufactured from pure crude oil products which can be sorted into clean material streams for recycling. The use of aramid makes the tyres better suited to retreading. This is because aramid is a non-corrosive material.



SSP 200/105



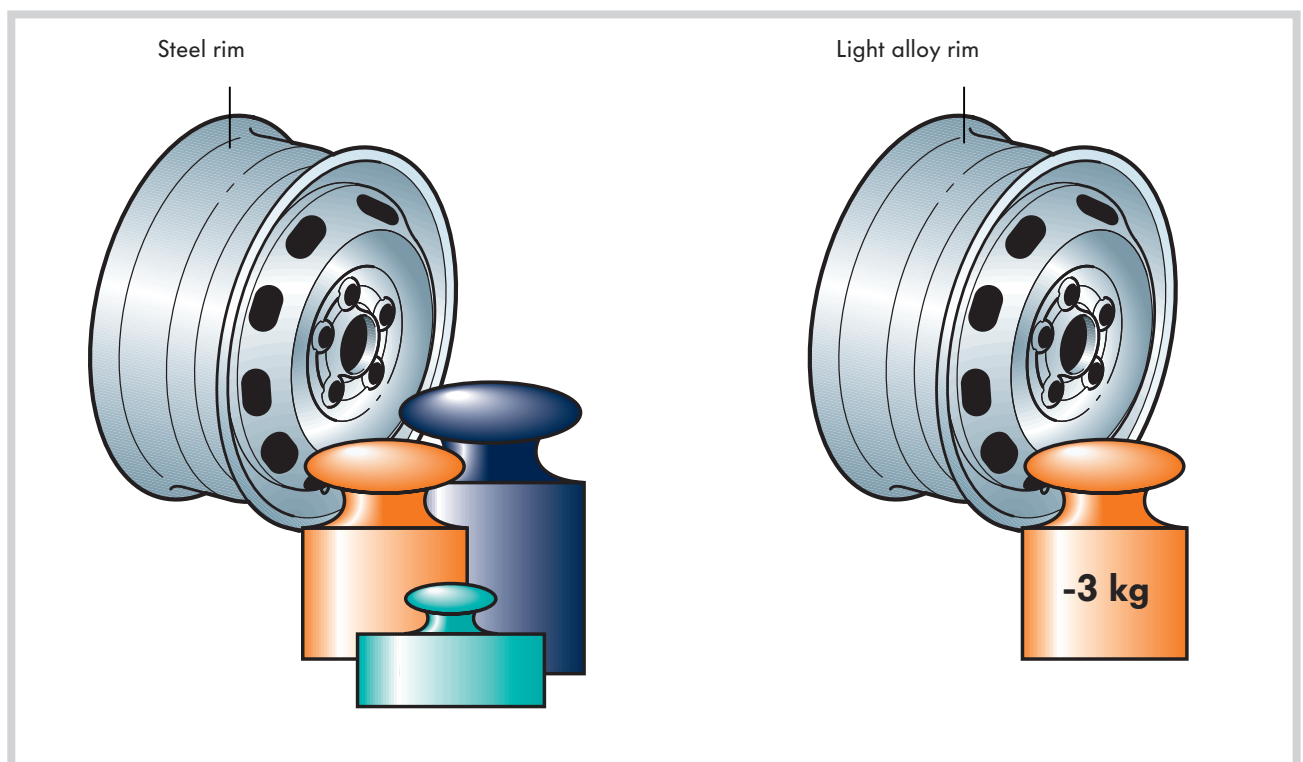
# Running gear

## The light alloy rim

In the development departments of the automobile industry, the top priority is to reduce the weight of conventional components. The traditional material of steel is gradually being replaced by alternative materials such as aluminium, magnesium and synthetic materials.

The new Golf has light alloy rims in combination with size 175/80 R14 ULW tyres. These rims consist of an aluminium-magnesium-manganese alloy. The alloy can be cold-formed, is corrosion resistant and lightweight.

The alloy rim is approx. 3 kg lighter than the steel rim through the use of this material.





SSP 200/090

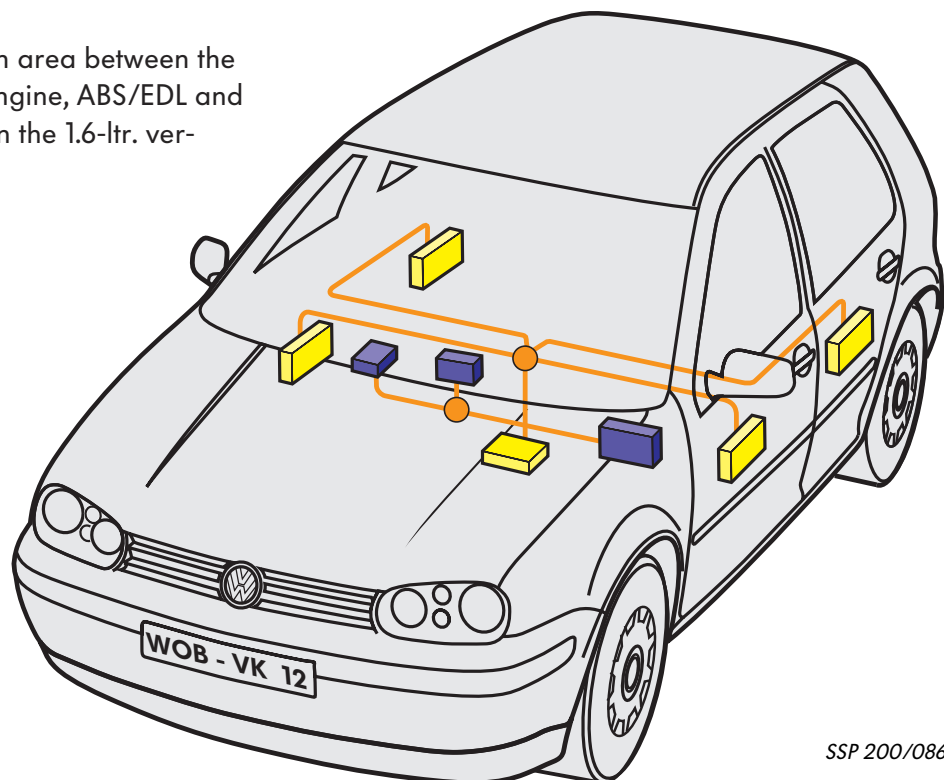
## Controller Area Network databus

The demands on vehicle safety, ride comfort, exhaust emissions and fuel economy are constantly rising. To meet these demands, a large volume of data has to be exchanged between the control units. The CAN databus can transmit large data streams within the shortest possible space of time.

If it wasn't for the CAN databus, a separate wire would be required to convey every item of information between each of the control units. To keep the electrics/electronics as simple and compact as possible, Volkswagen uses the Bosch CAN databus.

 CAN in the convenience system between the central control unit and the door control units

 CAN in the drive train area between the control units for the engine, ABS/EDL and automatic gearbox on the 1.6-ltr. version and upwards.



SSP 200/086



You can find detailed information in Self-Study Programme No. 186.

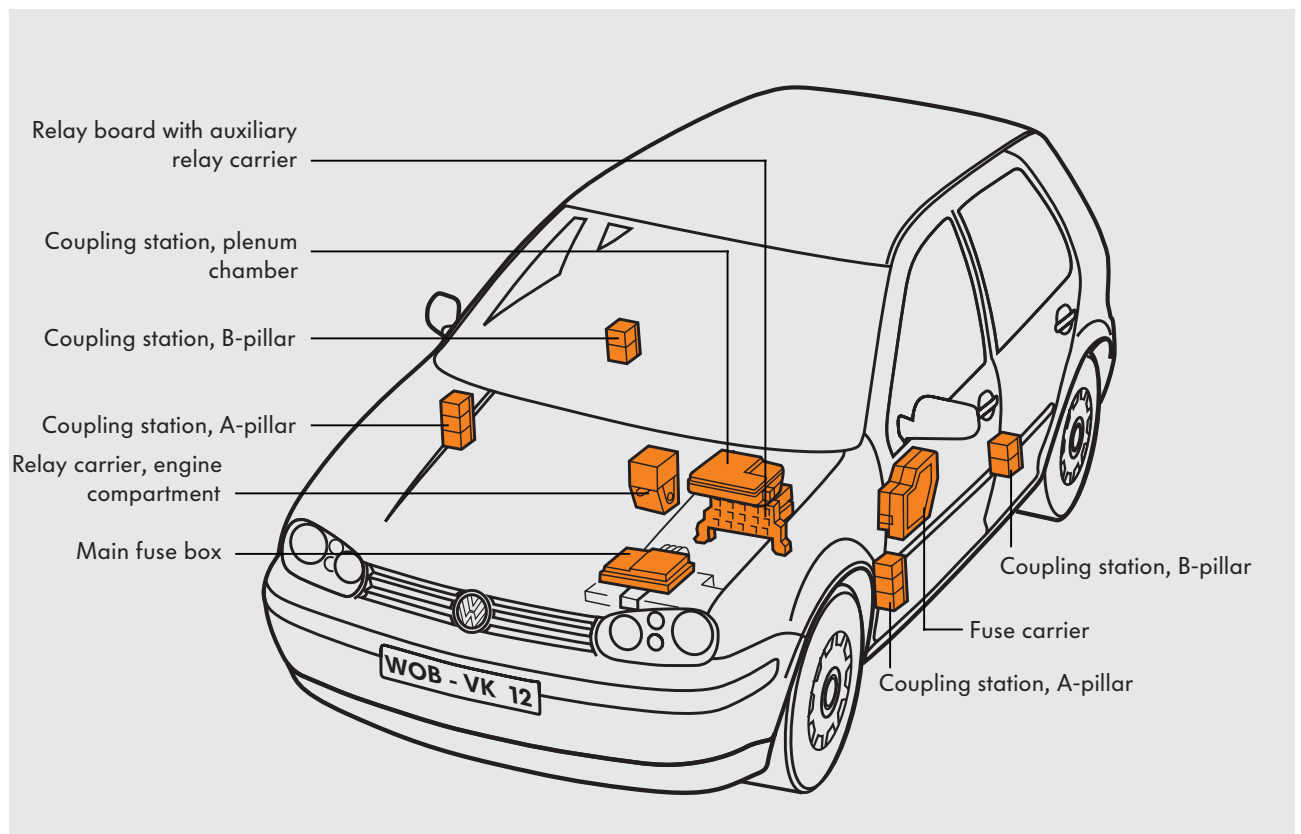
# Electrical system

## The vehicle electrical system

has a decentralised layout, i.e. the component parts of the system are situated at different fitting locations within the vehicle. This is

necessary due to the increase in the amount of electrics/electronics used in the new Golf.

The fitting locations for the component parts are shown in the drawing below.








SSP 200/085

The wiring harness is dependent on the vehicle specifications. It is custom-made according to the vehicle identification number (VIN).



Use Wiring Harness Repair System VAS 1978 to carry out repair work on the wiring harness.

## The components of the decentralised vehicle electrical system

	<p><b>Main fuse box</b></p> <p>These fuses prevent overloading of the main consumers connected directly behind the battery, e.g. alternator, engine control unit, passenger compartment and cooling fan 2nd stage.</p>
	<p><b>Coupling station in plenum chamber</b></p> <p>Integrated in the coupling station in the plenum chamber are the plug connectors between the passenger compartment and the engine compartment.</p>
	<p><b>Relay board with auxiliary relay carrier</b></p> <p>Located on the relay board are the relays for the basic equipment and three fuses for optional extras. For installing optional extras, there are additional relays and fuses on the auxiliary relay carrier.</p>
	<p><b>Fuse box</b></p> <p>These fuses protect the individual electric circuits against overload.</p>
	<p><b>Relay carrier in engine compartment</b></p> <p>The relays for low and high heating output for TDI diesel engines are arranged on this relay carrier.</p>
	<p><b>Coupling stations, A and B pillars</b></p> <p>Integrated in these coupling stations are the plug and socket combinations for the electrical components in the doors.</p>

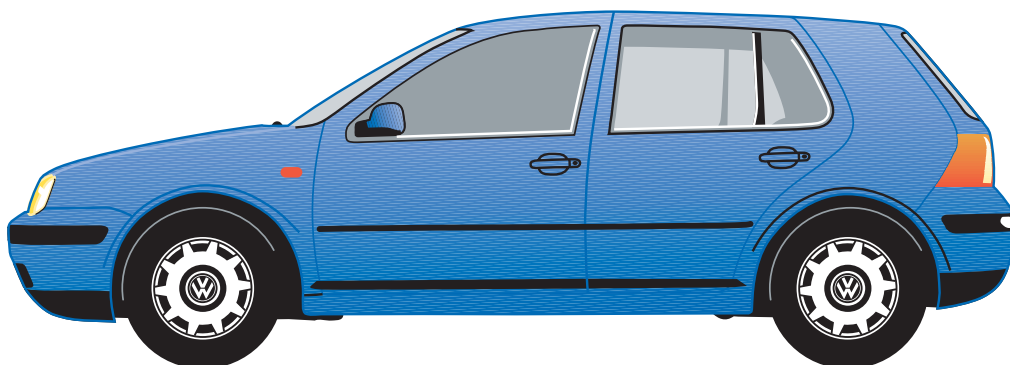
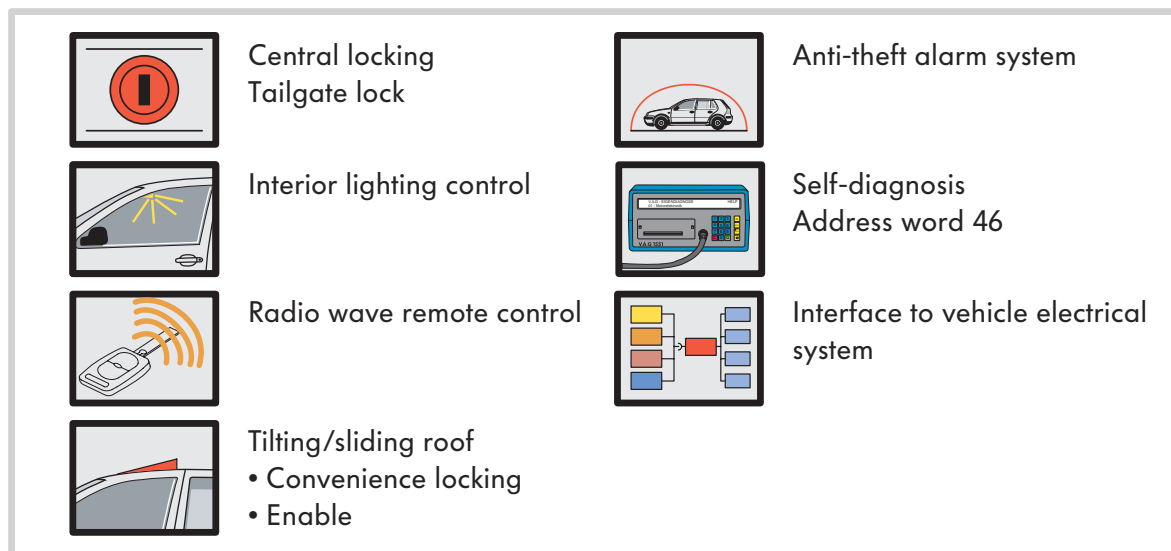


# Electrical system

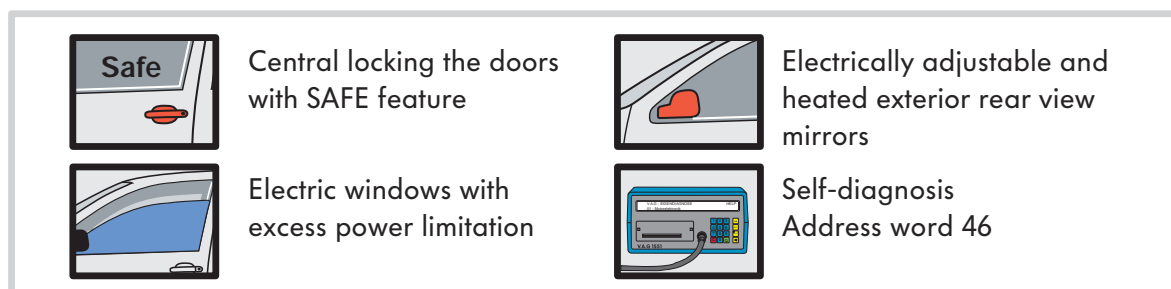
## The convenience system

assumes the functions shown in the diagram below. It has a decentralised layout, which means that the individual functions are shared among several control units.

### Functions of the central control unit



### Functions of the door control units




SSP 200/088


## The convenience system

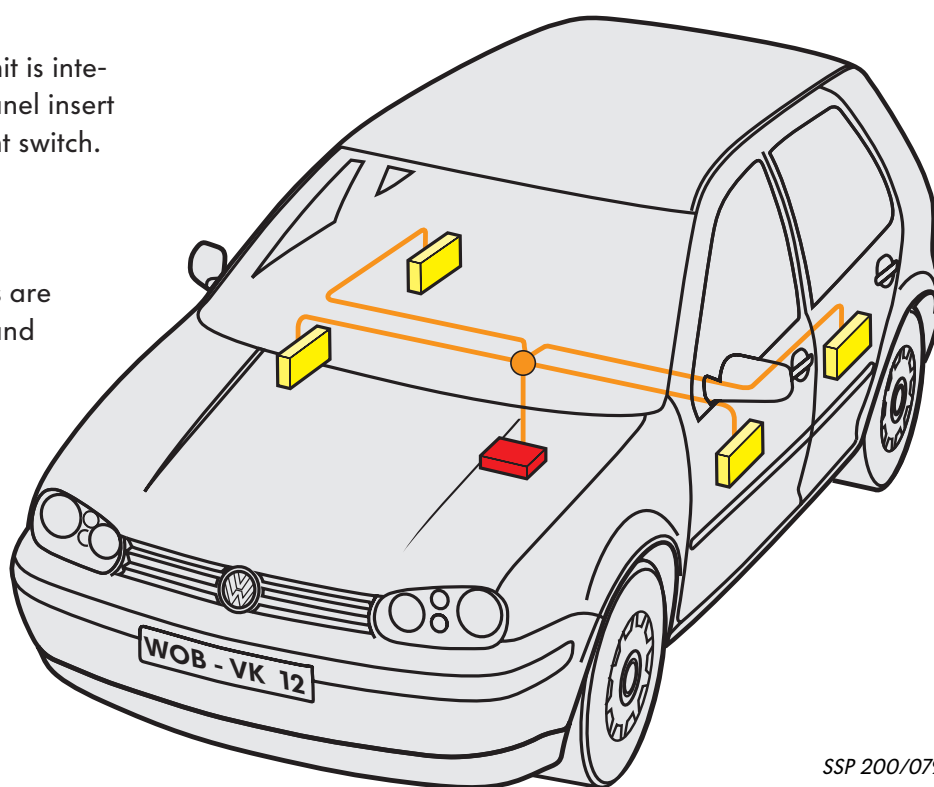
is only available in combination with electric windows. To optimise their operation, the central control unit and the door control units are connected via the CAN databus.

If the convenience system fails, each door can be locked and unlocked mechanically.

### Convenience system with central control unit and four door control units

 The central control unit is integrated in the dash panel insert behind the rotary light switch.

 The door control units are located on the front and rear electric window motors.



SSP 200/079



### Self-diagnosis

Self-diagnosis can be performed by using address word 46.

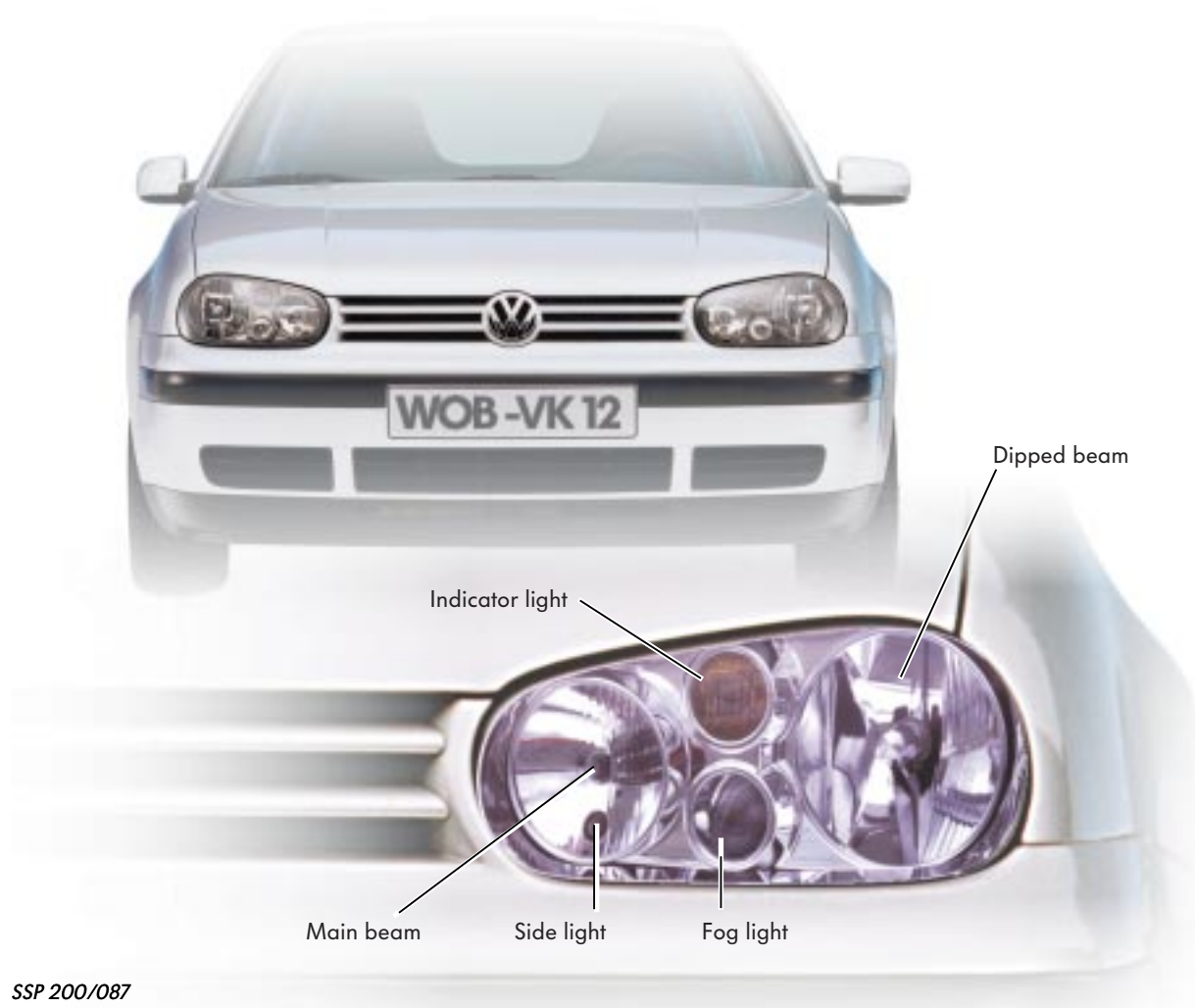


You can find detailed information in Self-Study Programme No. 193.

# Electrical system

## The new headlights

have a different design. The cover glasses are transparent and the new shape of the reflectors ensures better light dispersion.



When changing from driving on the right to driving on the left, the headlight beams must be adapted using masking tape. Please refer to the relevant Service Literature for detailed information.

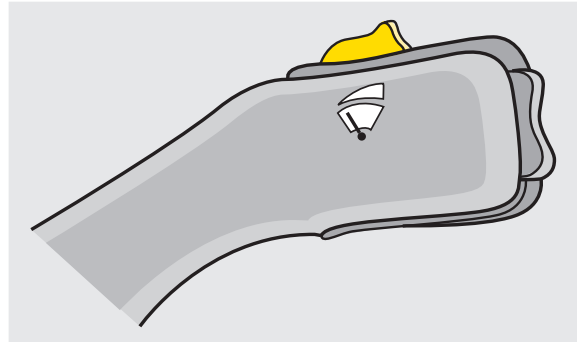


## The adjustable wiper interval

Four wiper intervals can be preset using a pre-selector switch.

Each setting is automatically adapted to the road speed. The higher the road speed, the shorter the wiper interval.

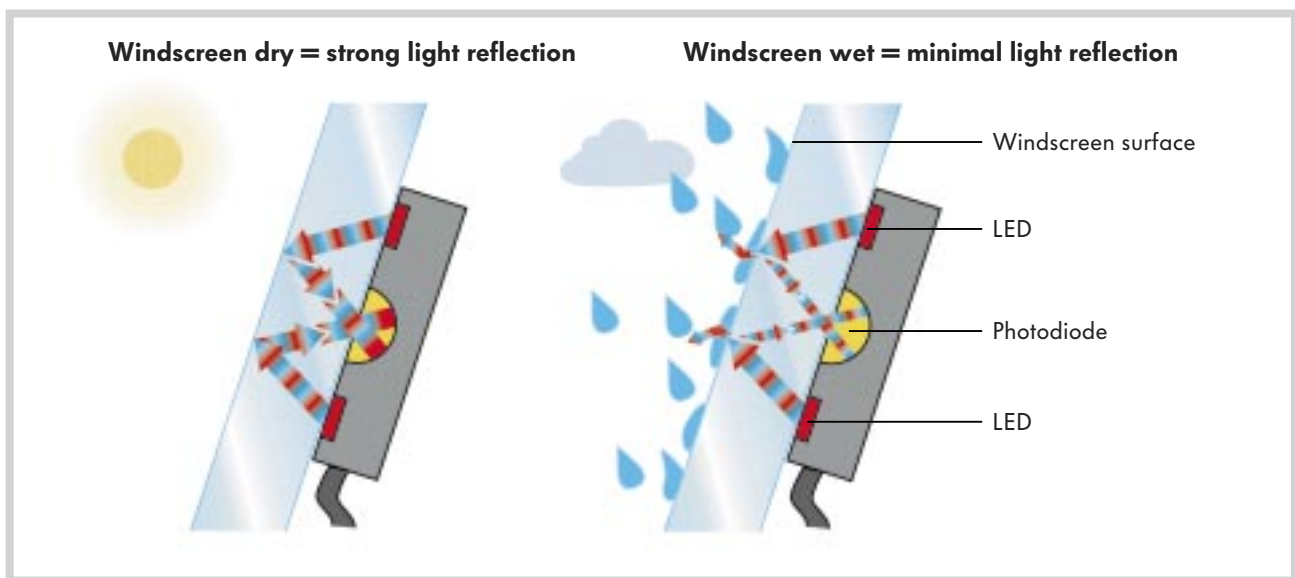
Wiper interval =  
Time to wipe window + pause



SSP 200/093

## The rain sensor

is located at the base of the interior rear-view mirror. It detects rainfall and automatically switches the wiper on in the intermittent setting.



SSP200/082

The rain sensor emits a light beam through LEDs. When the windscreen is dry, the entire light beam is reflected by the windscreen surface. If the windscreen is wet, the light beam emitted by the rain sensor is refracted differently.

As a result, less light is reflected by the windscreen surface. Light refraction is dependent on rainfall intensity. The rain sensor sends a signal to the relay for the automatic intermittent wash/wipe system and the windscreen washers are switched on.

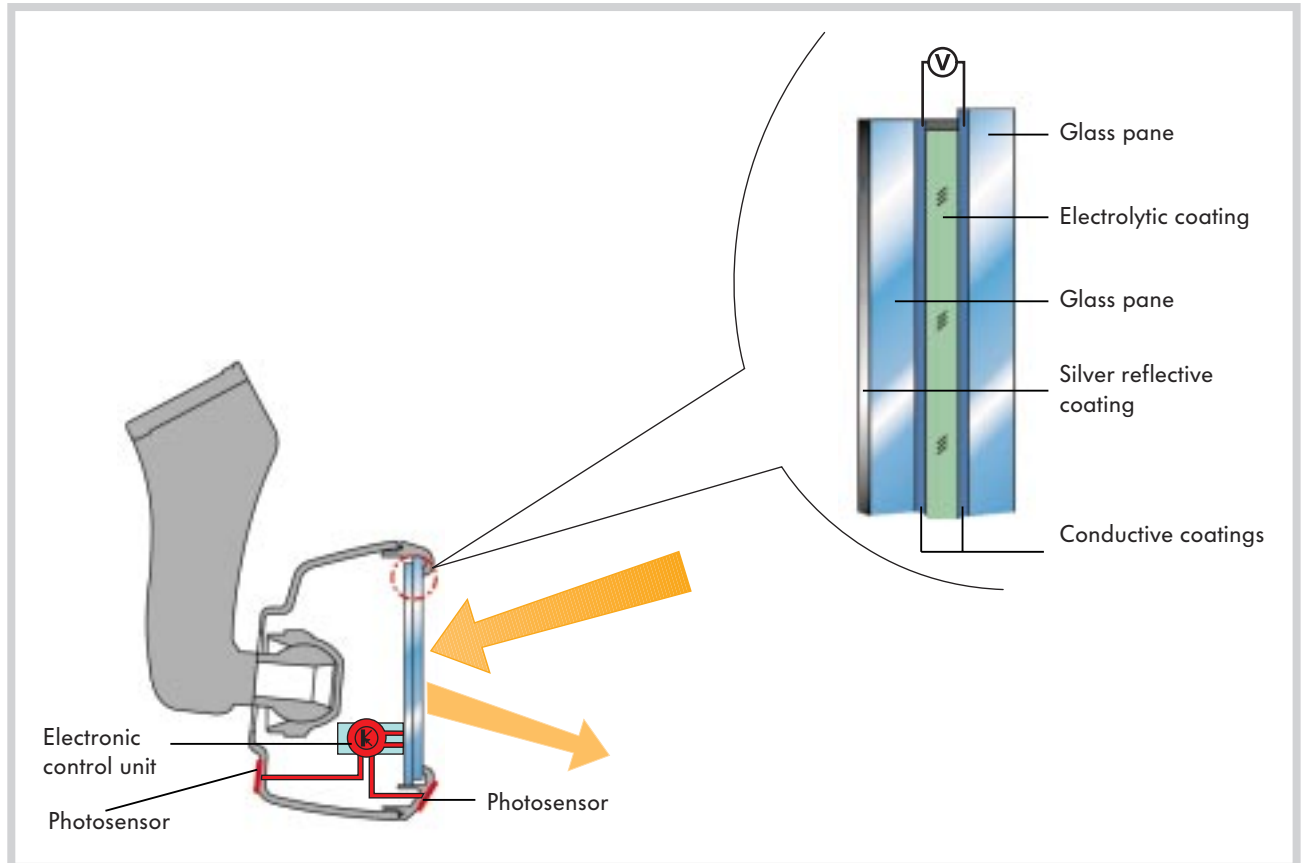


# Electrical system

## The automatic anti-dazzle interior mirror

has a continuous dimming function which prevents the driver from being dazzled by vehicles behind.

The anti-dazzle interior mirror consists of a mirror element and an electronic control unit with two photosensors.



SSP 200/081

### This is how it works

The electronic control unit detects incident light from the front and rear by means of the photosensors. If the light incidence on the side of the mirror facing the rear is greater than from the front, the electronic control unit applies a voltage to the conductive coating.

The applied voltage changes the colour of the electrolyte. The higher the voltage, the darker the electrolyte. Incident light is no longer reflected so strongly.

When reverse gear is engaged, the mirror dimming function is deactivated. The mirror can now be used to, say, reverse out of a dark garage into the light.

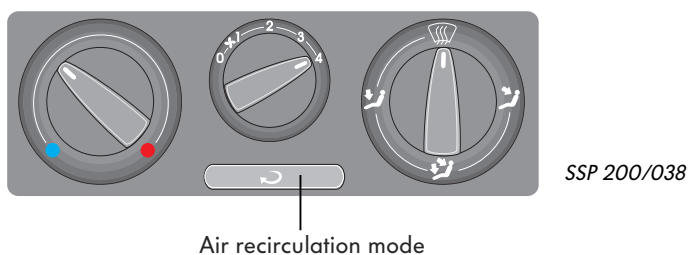
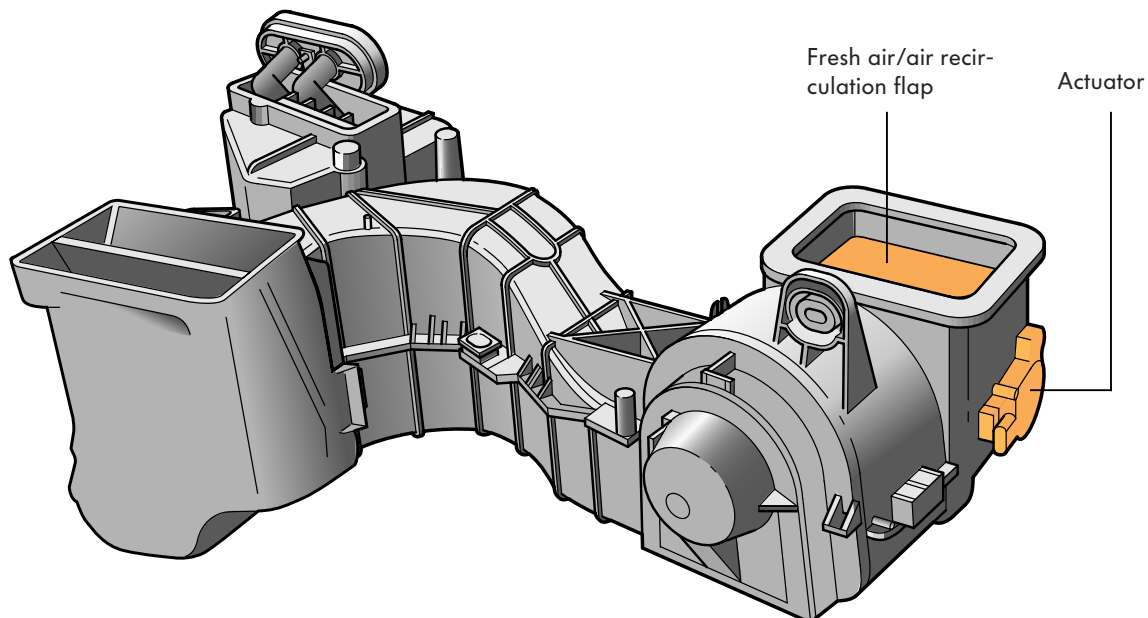
# Heating, air-conditioning system

Three alternative heating and air-conditioning packages are available for the Golf:

- Heater only
- Manually-operated heater and air conditioner
- Electronically-operated heater and air conditioner (CLIMAtronic)

## Heating

In contrast to the predecessor model, a fresh air/air recirculation mode is possible in the new Golf. The main shut-off flap is therefore no longer required.



The fresh air / air recirculation flap is operated by an actuator. All other flaps are adjusted by Bowden cables.

In defrost mode, the air recirculation mode is deactivated mechanically. This also prevents moist air inside the vehicle from condensing on the windscreen.

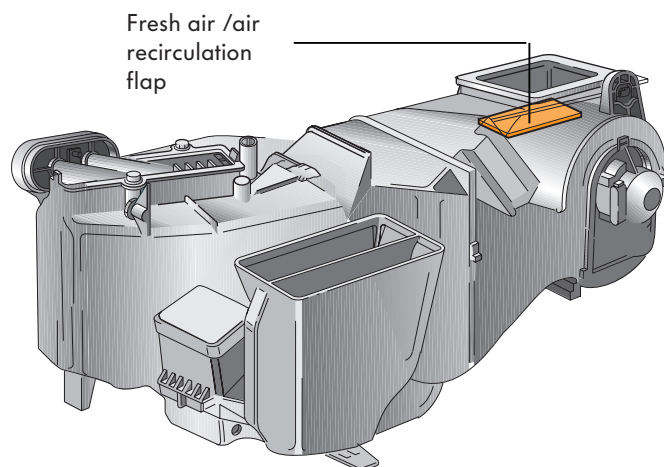


# Heating, air-conditioning system

## The manual air-conditioning system

If a manual air-conditioning system is fitted, the climate inside the vehicle is controlled by the driver.

The fresh air / air recirculation flap is now operated by an electric motor. All other flaps are adjusted by Bowden cables.

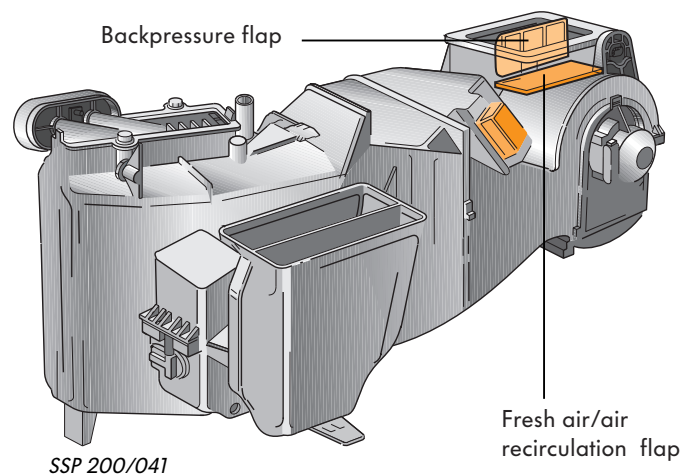


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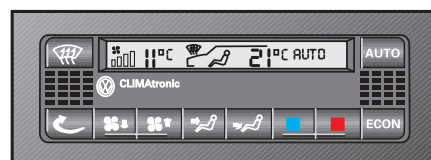


## CLIMAtronic

When CLIMAtronic is fitted, the climate inside the vehicle is controlled automatically. CLIMAtronic is controlled in the same way as the system fitted in the Passat 97. Temperature and air flow rate control have been adapted to the interior dimensions of the Golf.



SSP 200/041



The fresh air / air recirculation flap together with the backpressure flap are driven by a common electric motor.



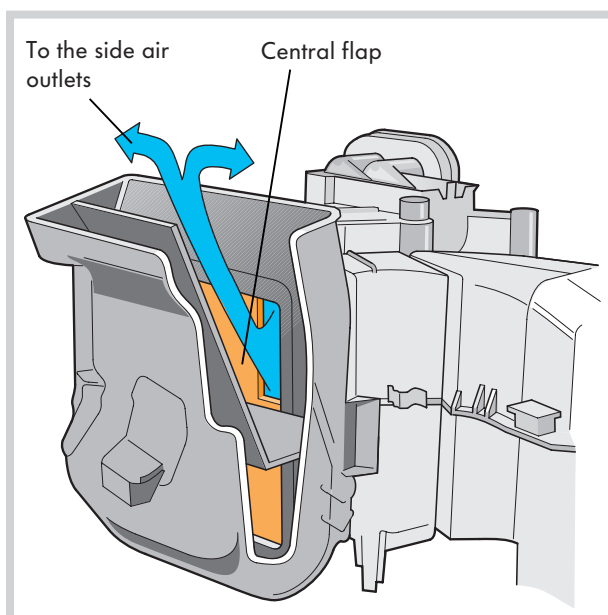
## Air distribution box and central flap

The air distribution box distributes the air flow to the middle and side air outlets. It is located directly behind the central flap and is fitted in combination with the heater and the air conditioner.

### Defrost mode

When defrost mode is activated, the central flap closes. A small air flow is ducted to the side air outlets through the opening in the central flap. At the same time, the middle air outlets are closed.

In this way, the side windows inside the passenger compartment are demisted quickly.

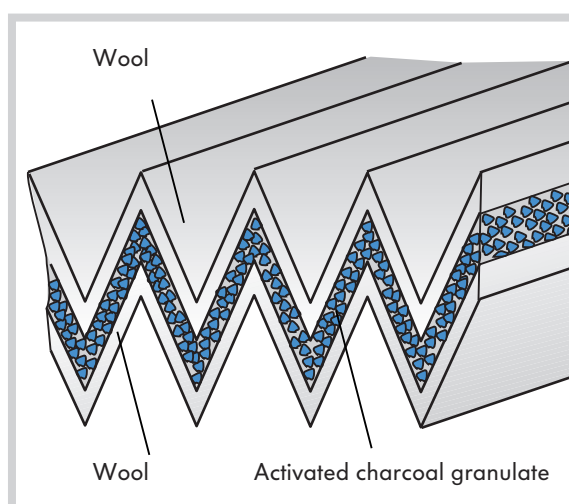


SSP 200/034

## Activated charcoal dust and pollen filter

The newly developed filter differs from previous dust and pollen filters in that it now comprises a combination of wool and an activated charcoal granulate layer.

The wool filters out dust and pollen particles, while the activated charcoal reduces odour and gaseous pollutants. The surface of the activated charcoal binds or changes the chemical composition of gaseous substances to make them safe. The large part of the harmful substance of ozone, for example, is converted into harmless oxygen.



SSP 200/035

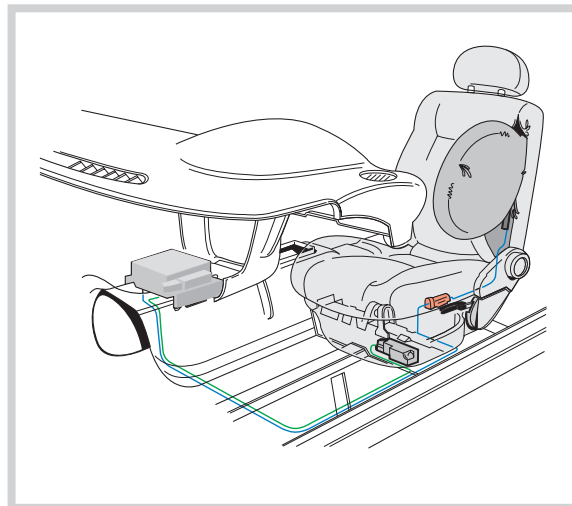


# Service

## Body

### Removing seats

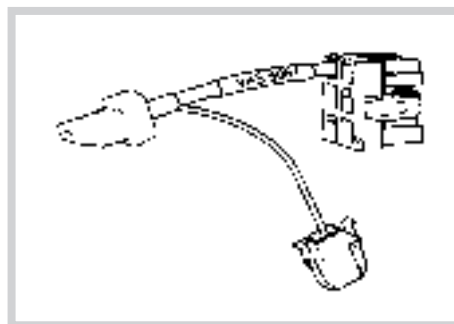
When removing one of the front seats, the side airbag can be triggered by anybody who is electrostatically charged. Therefore, before unplugging the connectors briefly touch the door striker pin or the vehicle body panel to get rid of any electrostatic charge.



SSP 200/109

### Adapter for side airbag VAS 5061

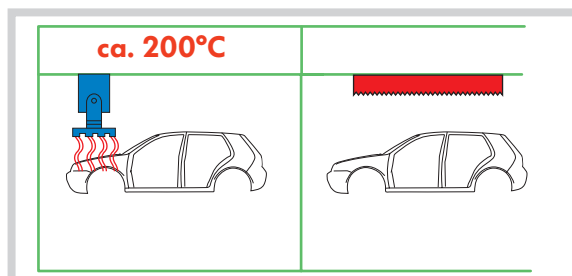
After unplugging the connectors below the seat, plug in the adapter to re-close the earth circuit of the airbag system.



SSP 200/110

### Repairing high-strength panels

After a panel has been beaten to remove a dent, it has a greater rigidity against dents. The panel is more resilient and greater force is required. The material may fracture if subjected to excessive stress.

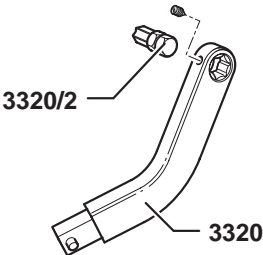

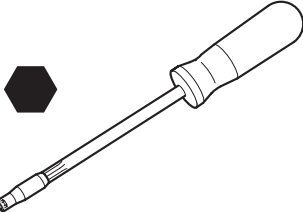
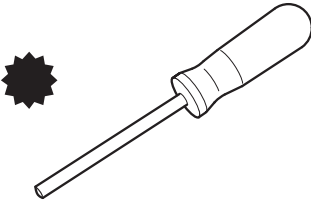
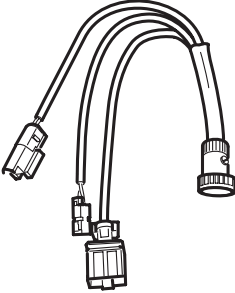


SSP 200/111

If the material is heated too rapidly and to an excessively high temperature (approx. 200°C) with a drying radiator during a partial respray, the panel will deform.



The new special tools and workshop equipment are shown below.

Tool number and designation		Use
<b>3320/2</b> Socket insert		For adjusting the door
<b>T 10006</b> Disengaging tool		For disengaging the brake servo linkage from the brake pedal
<b>T 10010</b> Socket wrench		For fitting the positioning element of the central locking system in the tailgate
<b>T 10011</b> Socket wrench		For fitting the door lock
<b>VAS 5056/2</b> Adapter cable set		For airbag auxiliary tester VAS 5056

SSP 200/134a-e





# Notes

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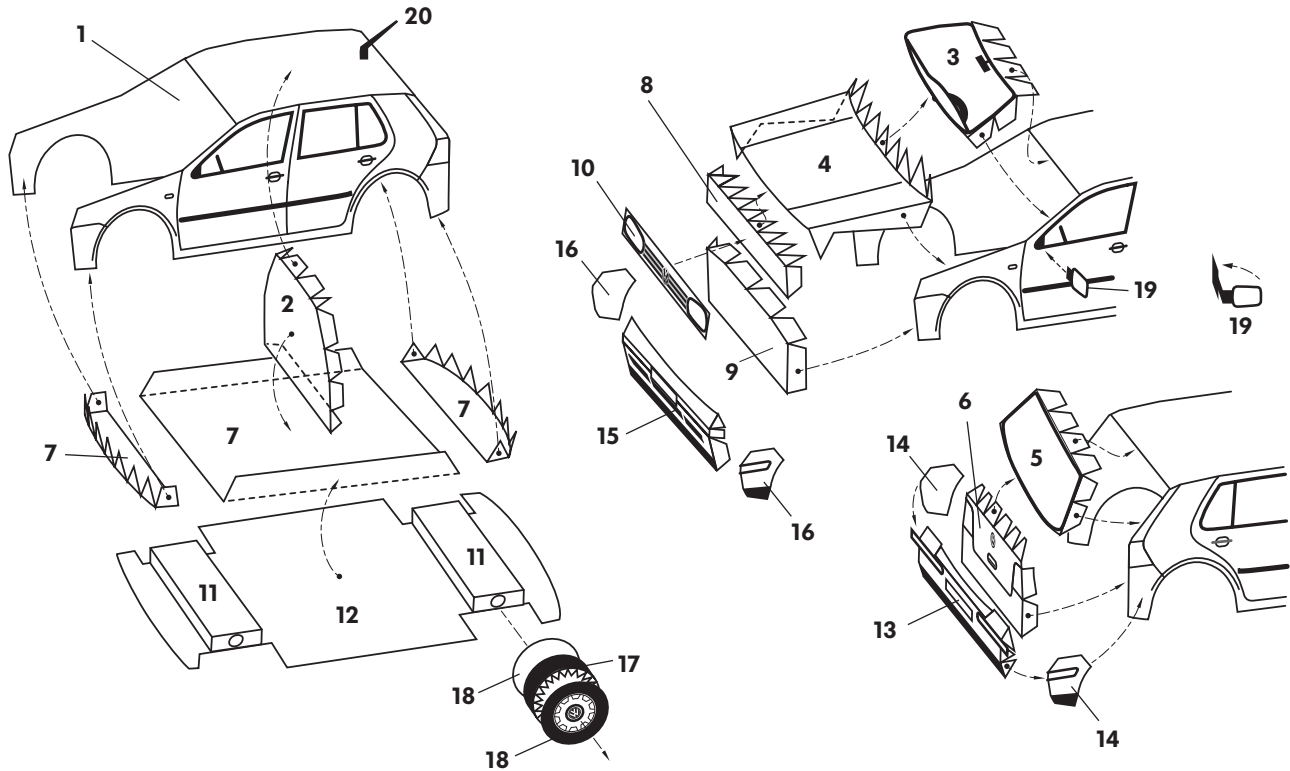
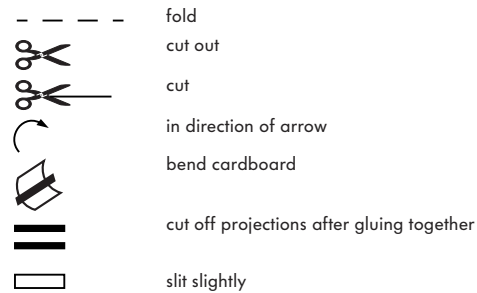
# Assembly instructions for VW GOLF 98

## General notes:

It is better to cut out all parts in the order in which they are fitted.

Slightly slit all fold lines on the flat section using a blunt cutter, fold them up and then coat with adhesive.

Carefully coat all folds with adhesive and allow them to set slightly. Then press the parts together firmly between thumb and index finger.



## The body (part 1)

To assemble the body, cut out small triangles between roof and body side section on each side at the front and rear. Then fold these triangles inwards and use them as tabs for gluing the roof and body side section.

## The rear end parts 5,6)

Once the rear end has been glued together for a few minutes, coat the outer ends of the indicator lights, fold them and press them into the desired position. You can shape adjustments in this way.

## The front section (parts 3, 4)

Glue the windscreen. Glue the bonnet from the inside to the lower side section of the windscreen. Then glue the bonnet to the side sections of the body.

## The anti-roll bar (part 2)

Glue the anti-roll bar level with the central roof pillar. Press the outer sides firmly against the anti-roll bar to help maintain the basic shape of the model. Now place the model on a level surface to see if all parts have been inserted straight. Any unevenness can now be corrected by pulling parts apart at the adhesive bond or by applying light pressure.

## The floorpan sections (part 7)

Glue the floorpan sections to the underside of the body to stabilise the model.

## The front section reinforcements (parts 8,9)

Bend slightly and glue in place as shown in the drawing.

## The axles (parts 11)

Glue the axles on the

## Floorpan (part 12).

Now you can glue the entire floorpan assembly into the model from below.

## The tyres (parts 17, 18)

are to be shaped. To do this, pull the tread downwards over an edge (e.g. table edge) before joining the wheel halves in order to soften the cardboard so it is easier to shape. Now coat the inner surfaces of the wheel halves with glue, allow the glue to set slightly and glue on the tread around the outer circumference of the wheel. Use the serrations on each side of the tread to affix the tread. Now glue the wheels on the axle, making sure that the centre of the wheel coincides with the axle marking.

Now assemble the bumpers.

## The rear bumper (part 13)

must be folded beforehand and glued on the

## Side sections (parts 14)

After allowing the glue to evaporate, glue the bumper together with the side sections on the body. Using a cutter; now carefully press the upper edge of the bumper upwards so that it finally takes shape.

## The front bumper (part 15)

should also be folded beforehand and glued on the

## side sections (parts 16).

Then glue the bumper on the body.

## The mirrors (parts 19)

Precut the mirrors to roughly the correct shape beforehand, then fold them along the marking and glue as shown in the drawing. Now cut out the mirror contour. Using a sharp cutter, carefully cut a slot at the marking in the black triangle on the side window. Now glue the mirror in this slot.

## The roof aerial (part 20)

Also attach the roof aerial to the model.



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