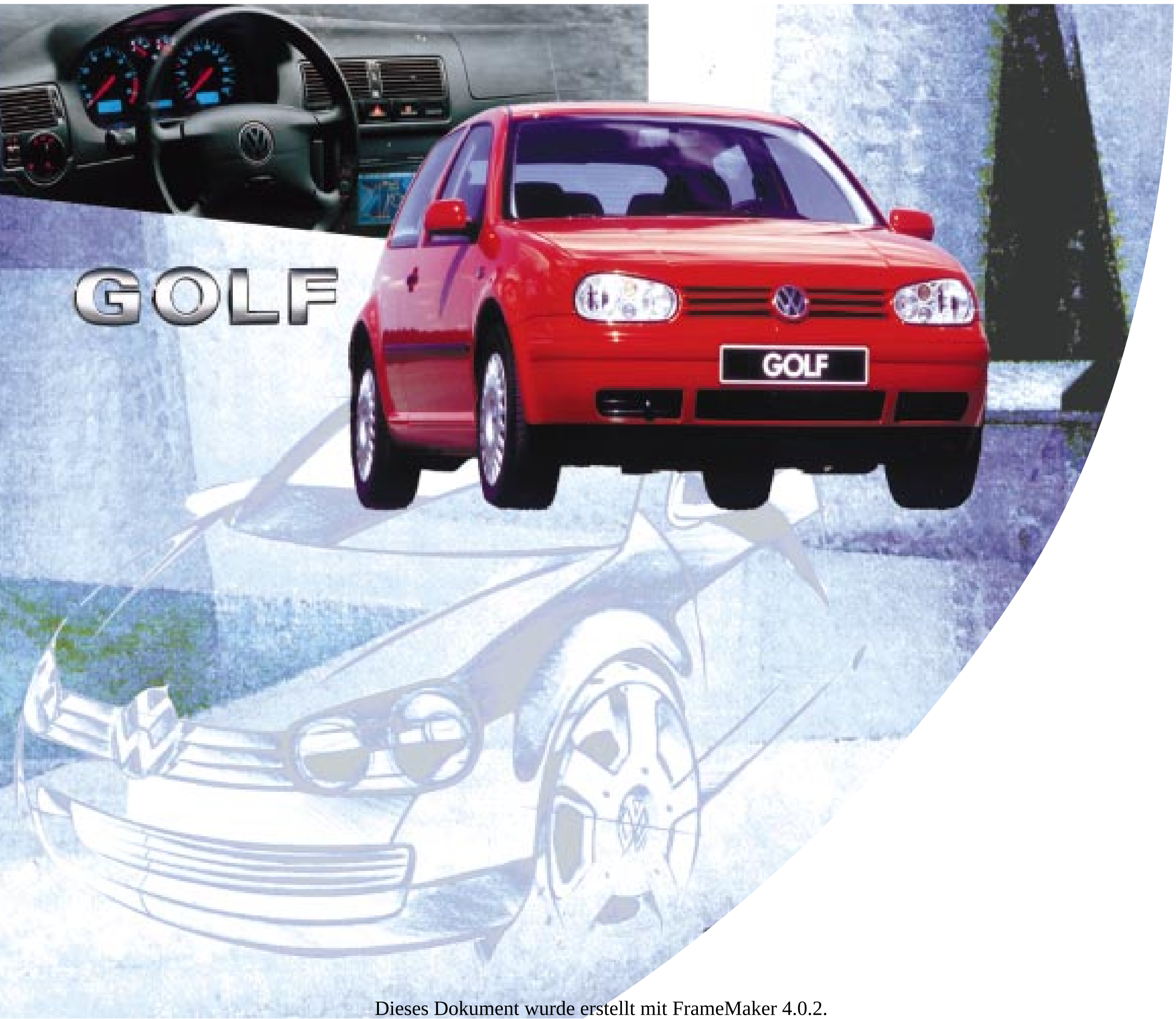
Golf '98

Construction and operation

Self-Study Programme No. 200



Dieses Dokument wurde erstellt mit FrameMaker 4.0.2.

Dear Reader,

The Self-Study Programme series has been keeping you informed about the construction and operation of Volkswagen and Audi technology for the past 24 years .

In conjunction with the launch of the new Golf, we have taken the opportunity to revise slightly the layout of our Self-Study Programme.

- In keeping with the times, the style of our Self-Study Programmes is now friendlier and more easily distinguishable.
- The contents are based on the workshop manuals.
- The chapter entitled "Servicing" informs you about changes in our servicing procedures.

We hope that the Self-Study Programme will provide you with useful information and assistance in your daily work.

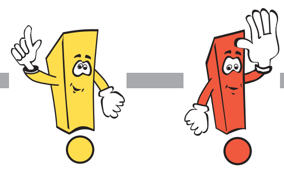
With kind regards of your Self-Study Programme Team K-VK-12

ONE for ALL?

ALL for ONE!

You can find your new Golf in the middle of the Self-Study Programme.

New



Important Note

This Self-Study Programme is not a Workshop Manual. Please refer to the relevant Service literature for all inspection, adjustment and repair instructions.

At a glance

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Body
New special tools

An all-new Golf

NEWS •NEWS • NEWS • NEWS • NEWS • NEWS • NEWS • NEWS

GOLF

The second legend of Volkswagen

On March 2, 1974 the successor to the Beetle first rolled off the production line.

Since 1974, the GOLF . . .

. . . with its distinctive design has established a reputation as a highly charismatic vehicle.

Golfed

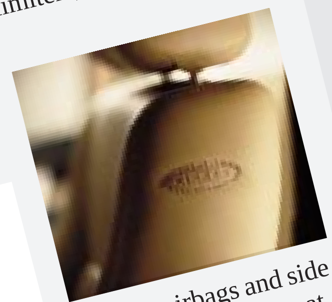
The fourth generation

Red-and-blue instruments

red-and-blue Instrument lighting
- available in three versions
- has self-diagnostic capability

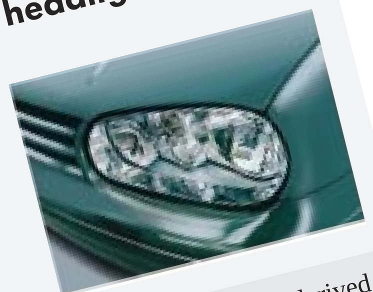
Safety . . .

The occupants are protected by a modern system featuring belt tensioners and belt force limiters, two



full-size airbags and side airbags in the front seat backrests.

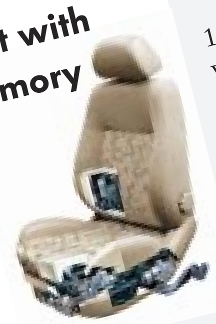
New headlights



The oval headlights derived from the original round headlights are highly distinctive and show their complex inner workings.

High trim level in the entry-level version.

Seat with memory



Body . . .

12-year warranty

NEWS • NEWS • NEWS • NEWS • NEWS •

The new model GOLF looks like a Golf and again sets new standards.

It is the evolutionary development of the classless Golf design. It reflects a high technical standard and is therefore superior to the competition.

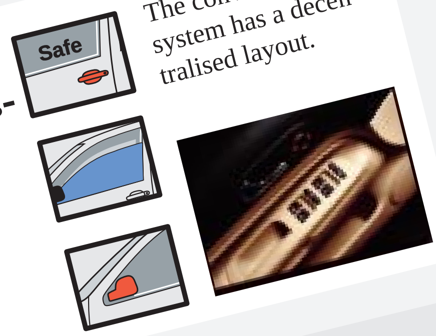
For the sake of the environment:

Over 90% of the new Golf is recyclable at the end of its long useful life, thus conserving valuable resources for the benefit of generations to come.

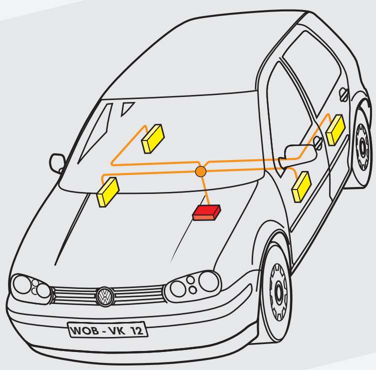
. . . Safety

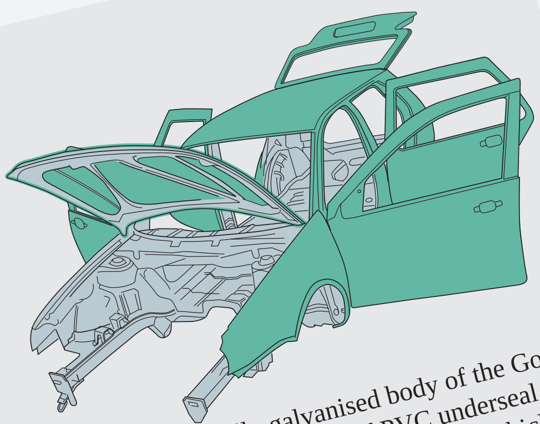
The safety structure of the new Golf has been specially optimised against side impact and in the driver footwell area.

Convenience system



The convenience system has a decentralised layout.





The fully galvanised body of the Golf saves about 4 kg of PVC underseal and extends the useful life of the vehicle by 30%.

An all-new Golf

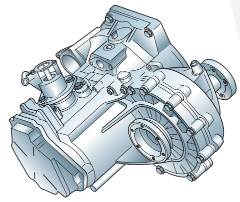
NEWS • NEWS • NEWS • NEWS • NEWS • NEWS • NEWS •

The engines are

modern and powerful. Based on a harmonised fuel-efficient concept,

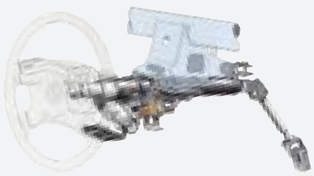
they achieve low emissions and offer a high level of driving comfort.

The gearboxes



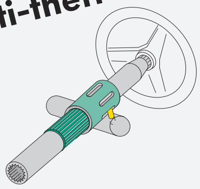
in the Golf are the proven automatic and manual gearboxes.

The steering



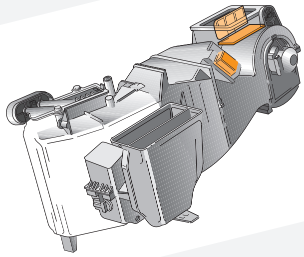
The power steering as well as the adjustment of the fore-and-aft steering column provide added comfort.

Anti-theft measures

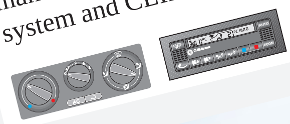


A number of measures have been taken to provide more effective theft protection.

Air conditioning



Choose between heater, manual air-conditioning system and CLIMAtronic.



The running gear

The interaction of the running gear components gives a good level of driving comfort.

The front axle

The rear axle

The Golf is Volkswagen

Vehicle dimensions

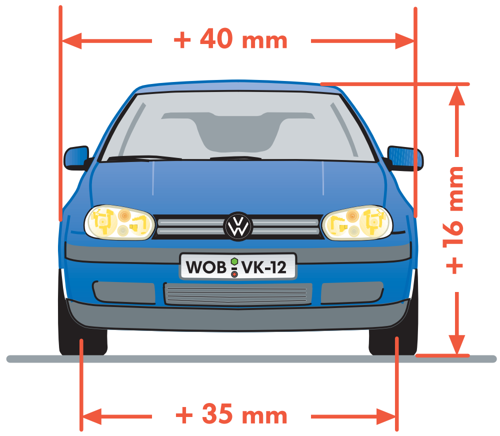
the "+ dimensions" in the drawing are comparative values with the predecessor model

Width	1735 mm
Height	1439 mm
Track width, front	1513 mm

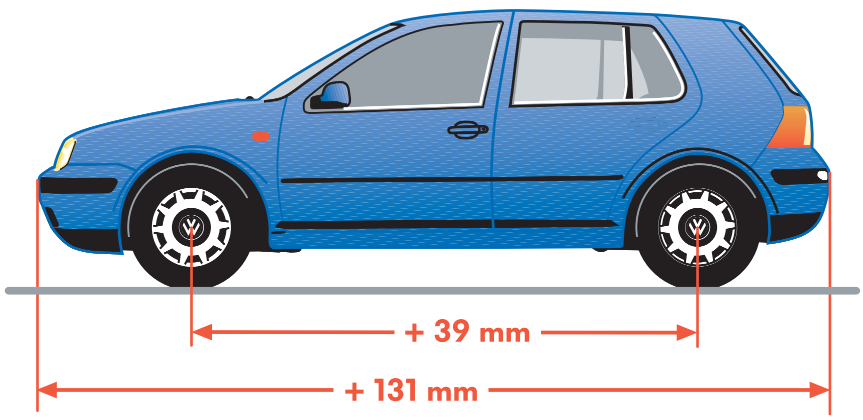
Aerodynamic drag = Drag coefficient x Frontal area, projected surface area

cd x A m^2

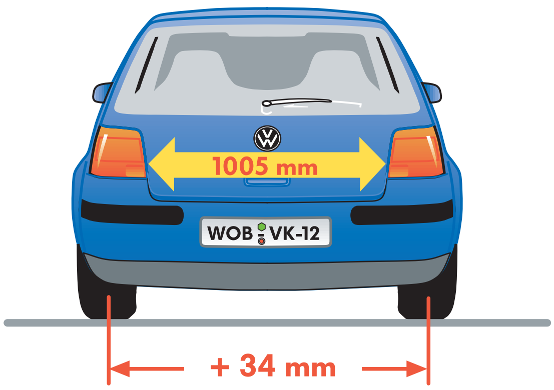
$0.65\ m^2$ = 0.31 x $2.1\ m^2$



Length	4149 mm
Wheelbase	2511 mm



Rear track width	1494 mm
Through-loading width	1005 mm
Tank capacity	55 litres



SSP 200/066

An all-new Golf

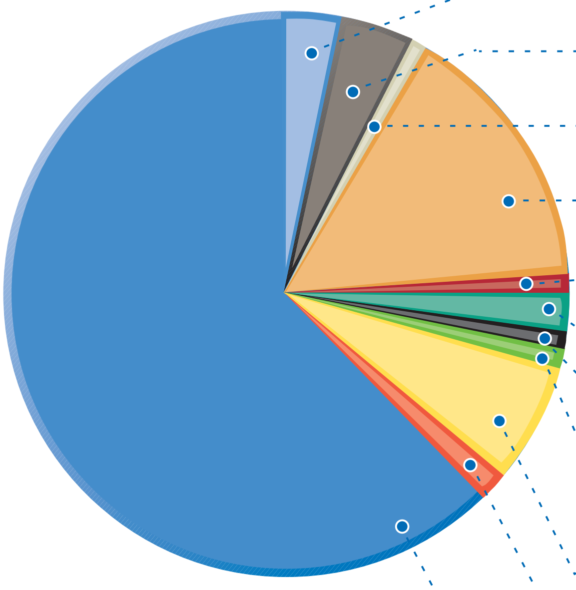
Environmental protection

The Volkswagen Group is making eco-efficient, progressive technologies available world-wide.
It employs these technologies throughout the life cycle of its products and beyond.

Recycling at a high level

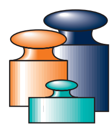
In stripping centres the parts removed from scrap cars are sorted into clean material streams according to type and then recycled. In many cases, plastics, metals and insulating materials can even be made into the original product again.

The overview below shows what materials are used in the Golf:



SSP 200/008

34 kg	Glass	3.1%
44 kg	Rubber	4.0%
12 kg	**Insulating materials**	**1.1%**
174 kg	Plastics	16.0%
10 kg	Paint	0.9%
27 kg	Light alloys	2.5%
14 kg	Electrics/cable	1.3%
17 kg	Non-ferrous metals	1.6%
58 kg	Petroleum/oil/grease	5.3%
2 kg	Miscellaneous	0.2%
696 kg	Steel/iron	64.0%
1088 kg	**Total weight**	



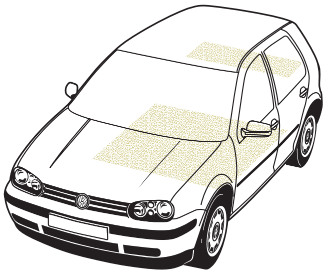
On the following pages we will explain to you our eco-friendly policy on raw materials using insulating materials as an example.

Recycling

Principle:
- Avoidance comes before reduction
- Reduction comes before recovery
- Recovery comes before disposal

Renewable raw materials are used every vehicle. Their recyclability is a major factor. The raw materials which are made into components are processed and recycled.

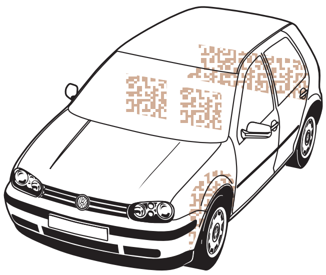
Recycled insulating materials



Cotton fibre fleece in insulating mats and luggage compartment floor coverings

For example, the **cotton fibre fleece** used in insulating mats is a recyclate of garment cuttings.
Waste fibre recovery is industry's contribution to reducing the burden on waste disposal sites.

Trims and covers made from renewable materials

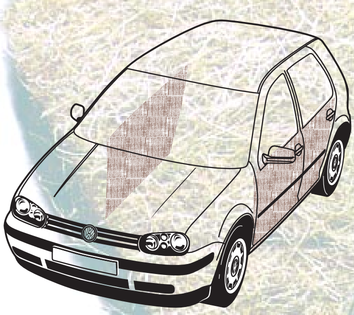


0.5 kg flax fibre - moulding material used for the tailgate trim

0.8 kg flax fibre - moulding material for seat backrest cover

2.1 kg flax fibre moulding material used for the wheelhouse trim

Flax fibre moulding material is contained in trim panels and covers.
The straw left over from the linseed harvest was burnt for many years. However, approximately 25% of fibre component can be used as a basic material for fibre mouldings. The quality of the fibres need not meet the high standards of the textile industry, but it does satisfy the high quality standards for trim panels.
Flax fibres are highly workable and have excellent material properties.



1.5 kg wood fibre moulding material in the doors and side panels

SSP 200/009

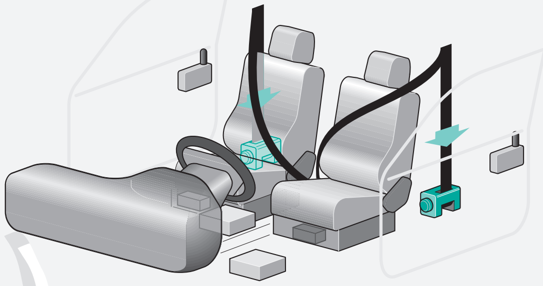
Wood fibre moulding material is used for trim panels. The basis of wood fibre moulding materials are the pine woodchips left over from the production of wooden beams and boards in sawmills.
Wood fibre moulding material meets the requirements of the automobile industry.
These include: low weight, low emissions, high strength and non-splintering properties.

An all-new Golf

Occupant protection

There is more to occupant protection than the airbag, belt tensioner and stable side protection. Most of the impact energy is absorbed by the car body.
Achieving such a high standard of safety means paying special attention to detail.

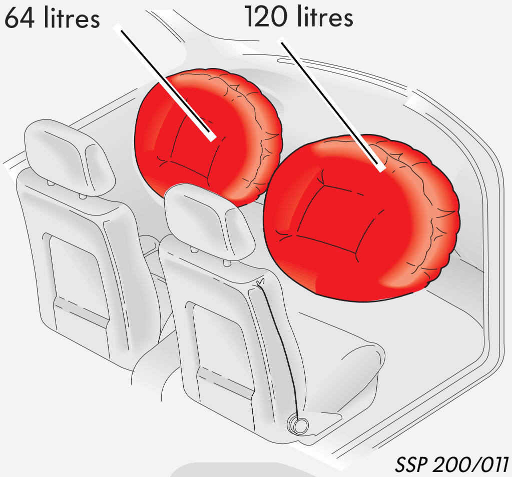
The front seat belts
have two pyrotechnical belt tensioners which operate according to the same principle as the rotary-piston engine.



SSP 200/013

You can read about the design and function of this seat belt tensioner in Self-Study Programme No. 192.

The full-size airbags
for the driver and front passenger sides are almost twice the size they were before.

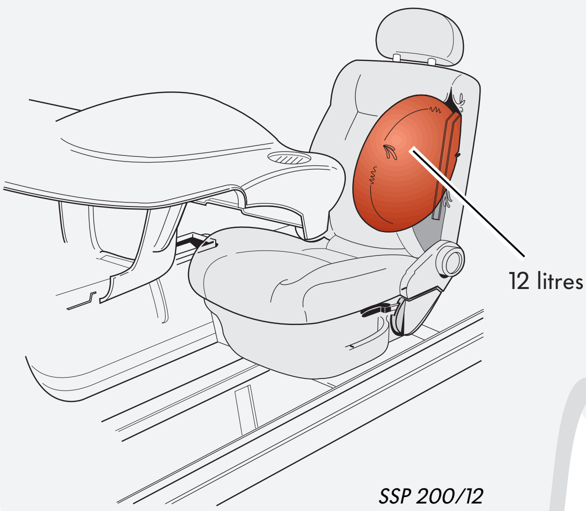


SSP 200/011

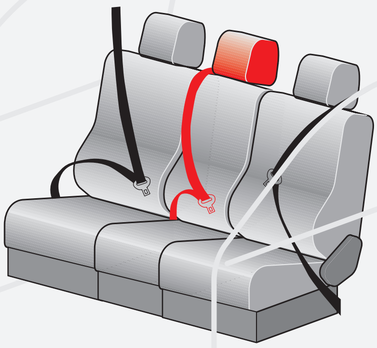
A 3-point seat belt
and a 3rd head restraint

are available for the rear middle seat.
The rear seat belts do not have belt tensioners.

The side airbags
for the driver and front passenger.



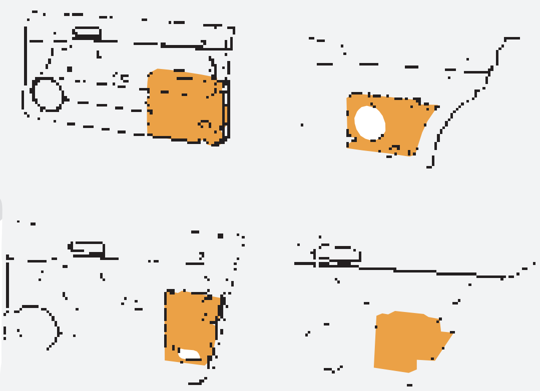
SSP 200/12



SSP 200/014

The paddings

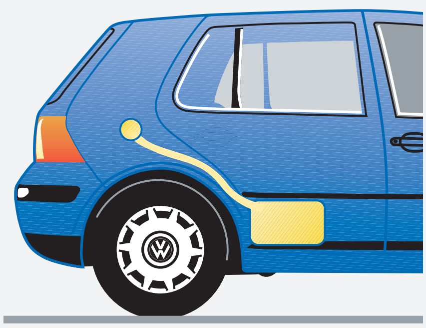
are integrated in the door and side trims. They protect the pelvis and rib areas of occupants during a side impact.



SSP 200/015

The fuel tank

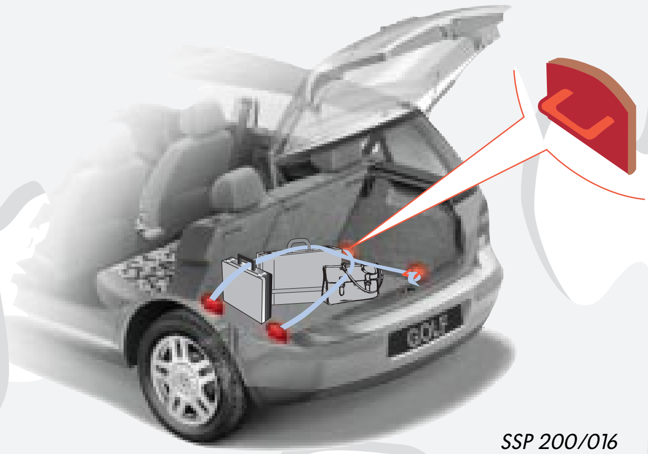
is now located in front of the rear axle for added safety in a rear collision.



SSP 200/017

Lashing eyes

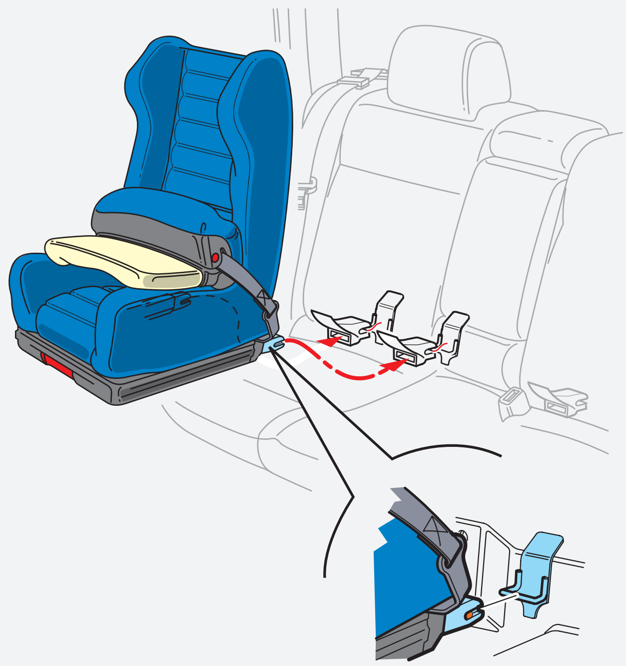
The four lashing eyes in the luggage compartment enable luggage to be secured safely.



SSP 200/016

The child safety seat fastening system

Welded on the vehicle body are retaining eyelets to which child safety seats equipped with the ISOFIX fastening system can be easily secured.



SSP 200/018

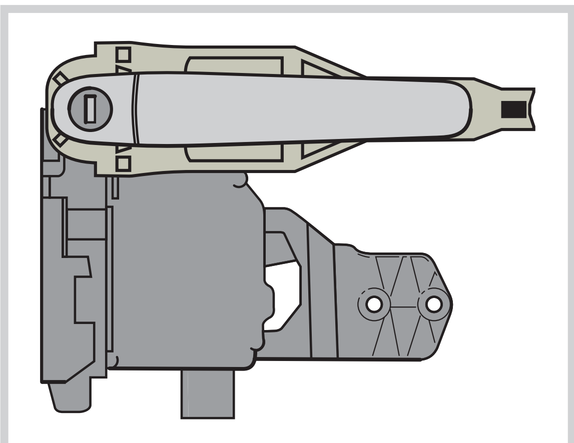
Anti-theft measures

A number of measures have been taken to provide more effective theft protection.

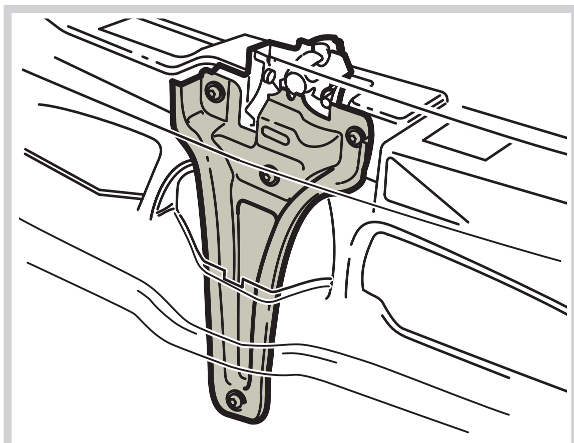
SSP 200/076

The door lock is encapsulated and there is a metal reinforcement around the door lock. These measures prevent would-be thieves piercing a hole through the bodyshell in this area and levering open the door handle.

The bonnet lock cover makes breaking open the bonnet more difficult.



SSP 200/077

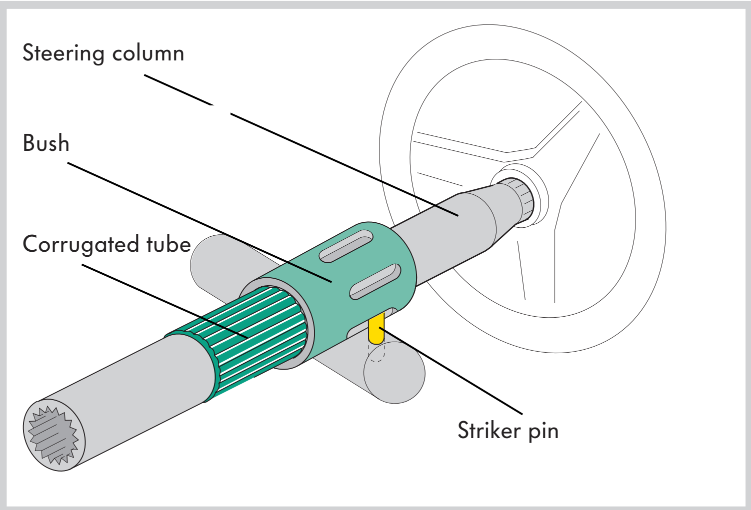


SSP 200/078

Anti-theft measures

The steering system

The striker pin of the ignition lock can no longer be sheared off. This makes it impossible to steer the vehicle.



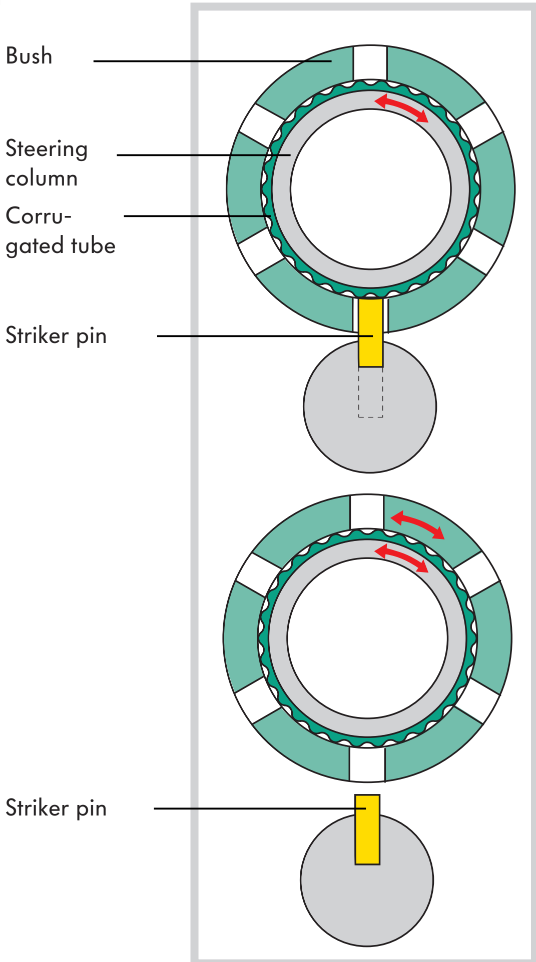
SSP 200/073

A corrugated tube is located on the steering column. A bush with oblong holes is press-fitted on it. The steering column and the bush joined by an interference fit via the corrugated tube.

This is how it works:

The striker pin of the ignition lock engages in the oblong holes of the bush when the ignition key is removed from the ignition. If an attempt is made to turn the steering wheel by applying a force of approx. 150 Nm, the corrugated tube will be friction-locked between the steering column and bush.
It is not possible to steer the vehicle or shear off the locking pin.

Inserting the ignition key in the ignition withdraws the striker pin from the oblong holes of the bush.
The vehicle can again be steered since the corrugated tube and the bush now rotate with the steering column.



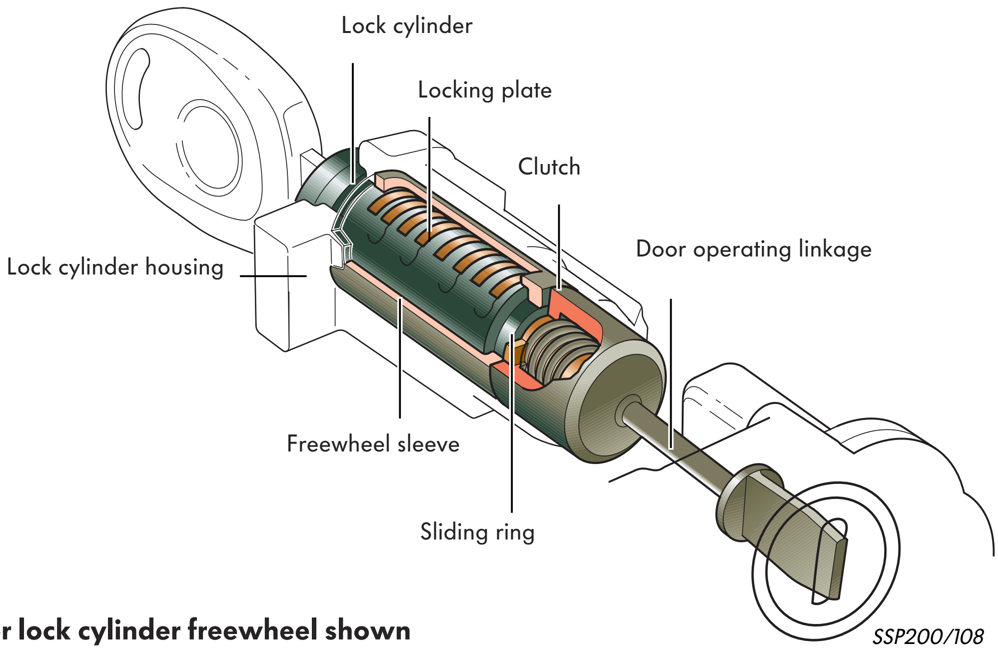
SSP 200/074

Anti-theft measures

The lock cylinder freewheel

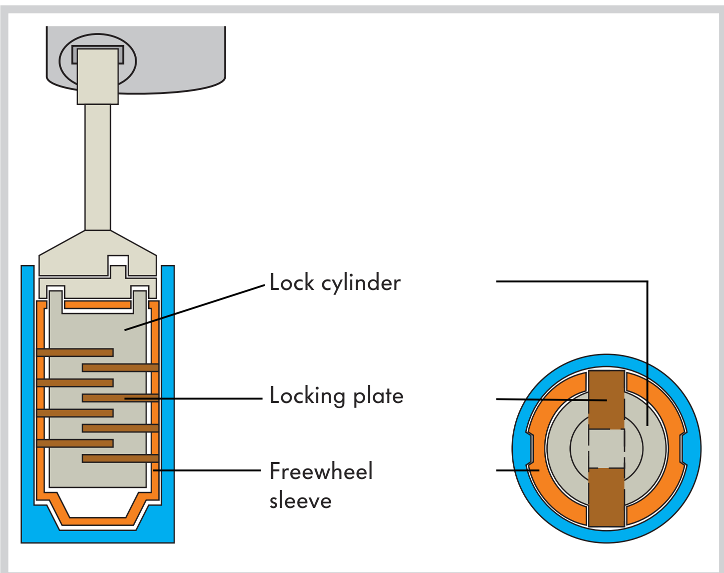
is integrated in the front doors, tailgate and ignition lock.
It prevents these locks being forced and limits the damage caused by an attempted break-in.

The lock-cylinder unit comprises the following components:



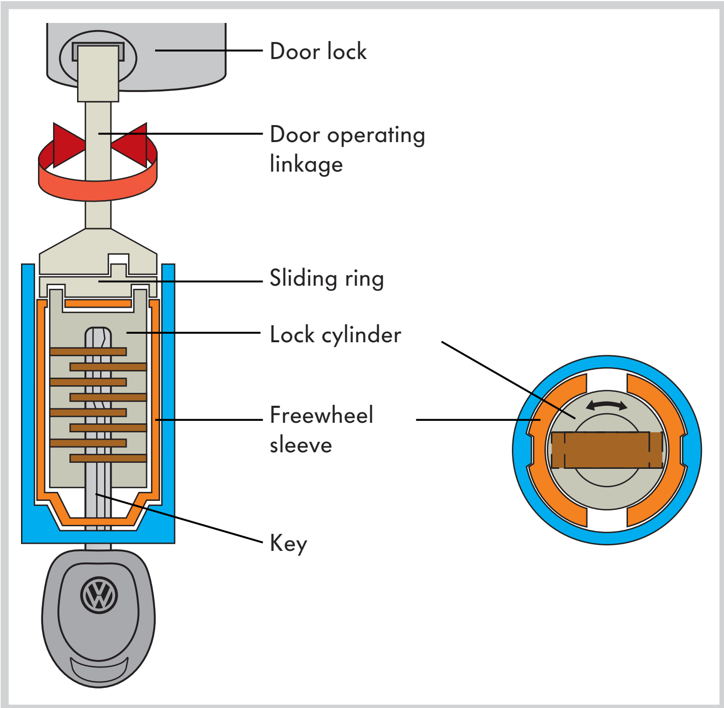
SSP200/108

Function of door lock cylinder freewheel shown below using a door lock as an example



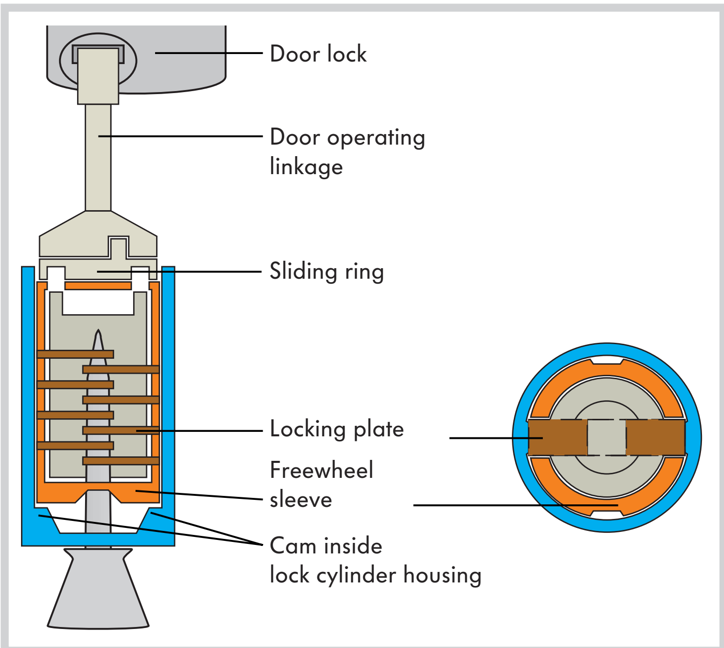
SSP 200/131

When the key is not inserted in the ignition, the locking plates engage in the freewheel sleeve.



SSP 200/132

Inserting the matching key in the ignition draws the locking plates into the lock cylinder. When the ignition key is turned, the lock cylinder in the freewheel sleeve rotates and opens the door lock via the sliding ring and the door operating linkage.



SSP 200/133

If the wrong ignition key is used or another tool, the locking plates remain in the freewheel sleeve. When the lock cylinder is turned, the freewheel sleeve is also rotated. The freewheel sleeve and the sliding ring are moved by two cams inside the lock cylinder housing. In the process, the lock cylinder is disconnected from the sliding ring. The lock cylinder turns without the sliding ring or the door operating linkage. The door lock is not opened.

The lock cylinder freewheel and the encapsulated internal door lock minimise damage caused by an attempted break-in.

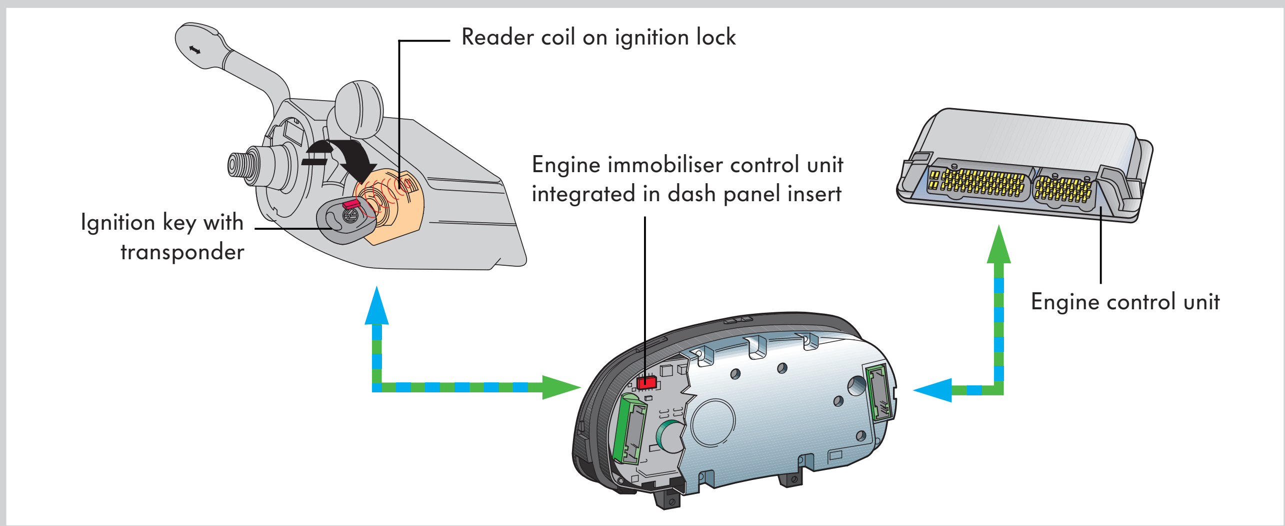
Anti-theft measures

Immobiliser

This is an electronic theft deterrent. It is activated when the ignition is turned on. The immobiliser prevents unauthorised persons from operating the car by intervening in the engine control unit.

The differences between the 2nd generation immobiliser and the previous generation are as follows:

- The immobiliser control unit is integrated in the dash panel insert.
- In addition to the fixed code, the engine immobiliser control unit transmits a self-varying code to the transponder integrated in the vehicle ignition key.



SSP 200/064

After the ignition is turned on, the transponder sends a fixed code to the engine immobiliser control unit. If this code is correct, a self-varying code is generated in the engine immobiliser control unit by a random generator. The self-varying code is transmitted to the transponder inside the vehicle ignition key. This starts a series of secret arithmetic operations in the transponder and the engine immobiliser control unit.

If these arithmetic operations produce identical results, the vehicle key is recognised as the correct one. As before, a check is performed to see if the self-varying code of the engine immobiliser control unit and the engine control unit match. If they match, the vehicle is ready to operate.

The advantage of these secret arithmetic operations is that the calculated self-varying code cannot be decoded. In addition, the vehicle ignition keys cannot be copied.

Anti-theft measures

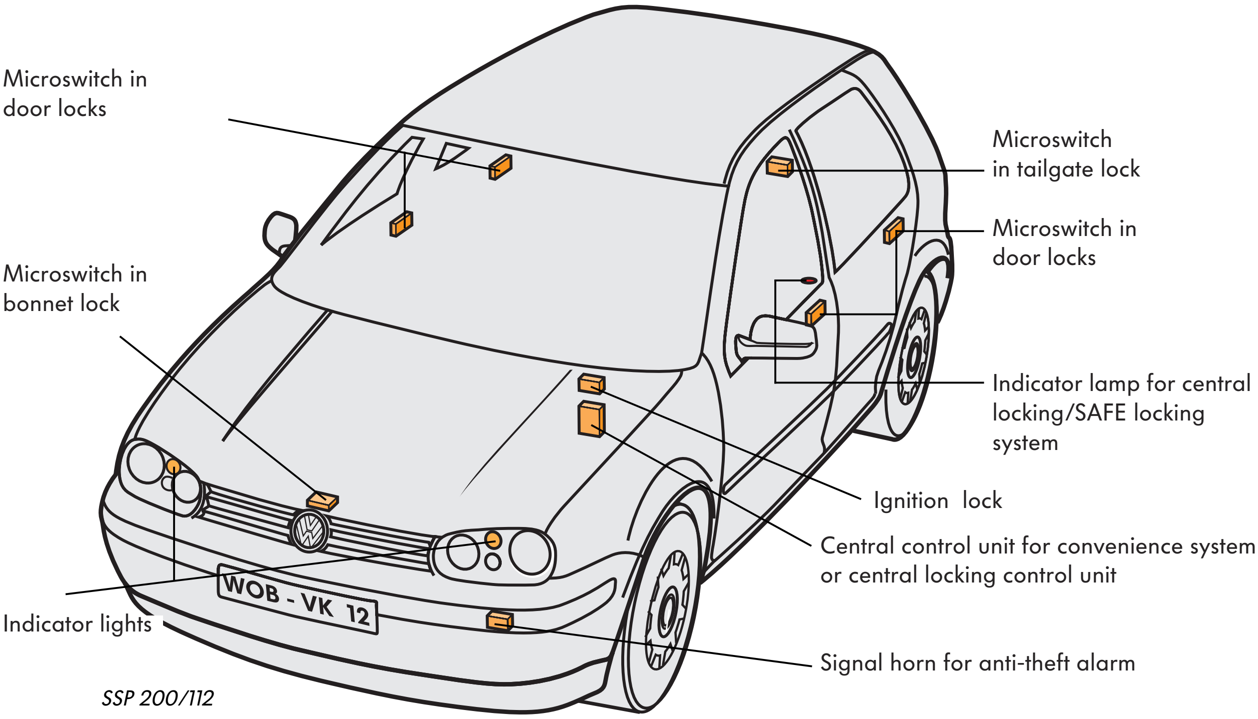
Anti-theft alarm

This monitors the doors, the bonnet, the tailgate and the ignition lock.

The function can be integrated in two different control units:

In the central locking control unit
on vehicles without electric windows

In the central control unit for the convenience system
on vehicles with electric windows



SSP 200/112

The anti-theft alarm is switched on when the vehicle is locked once with the ignition key.
To lock the vehicle without switching the anti-theft alarm on, the vehicle must be locked twice within a period of 5 seconds.

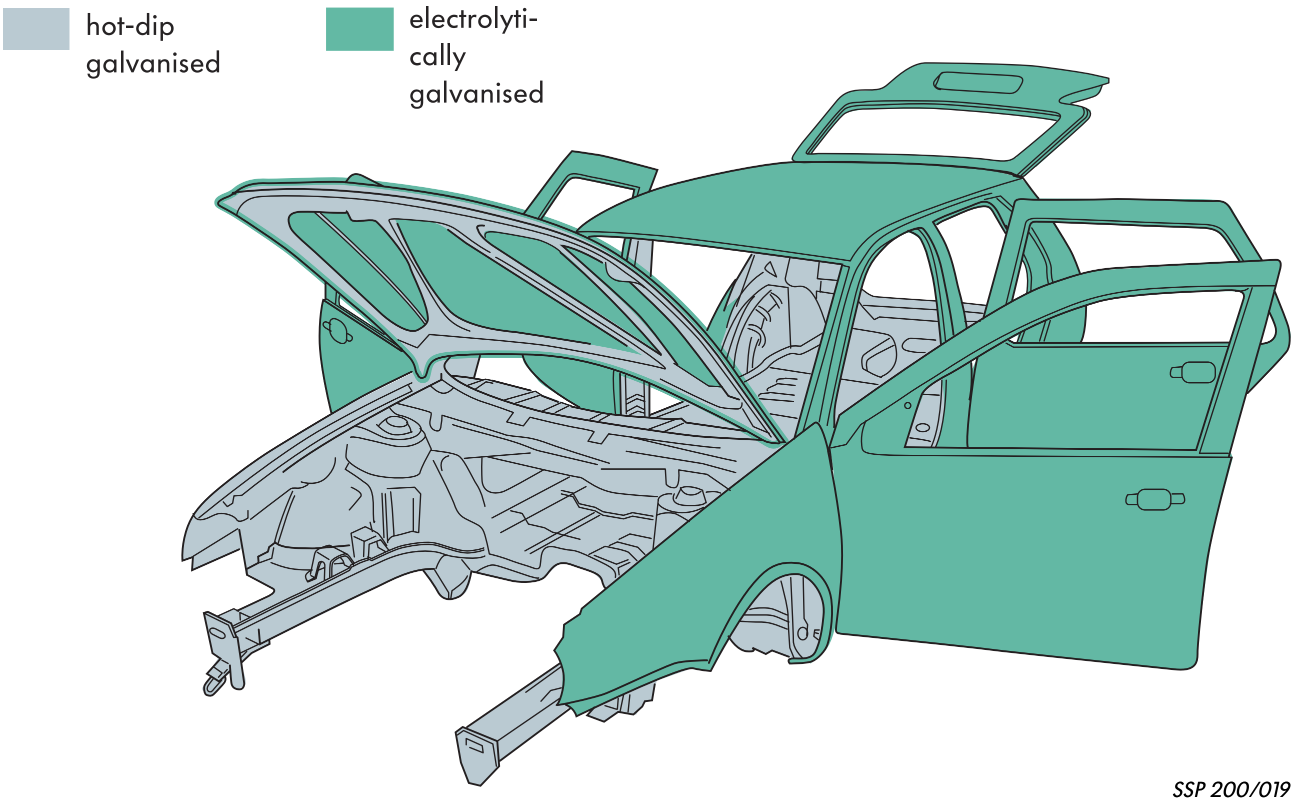
If the vehicle is broken into in one of the monitored areas, a signal is sent to the control unit and the alarm is tripped. The alarm is reproduced audibly by activating the signal horn for the anti-theft alarm and visually by activating all the indicator lights.

Depending on the car's specification, the self-diagnosis can be performed using
- address word 35 in the central locking control unit or
- address word 46 in the convenience system central module.

The fully galvanised body

The new Golf has a fully galvanised body and therefore offers greater protection against corrosion (12-year anti-corrosion perforation warranty).

In the past, only body areas of the Golf prone to corrosion were galvanised.
Now, for the first time, all body parts are either hot-dip galvanised or electrolytically galvanised.



SSP 200/019

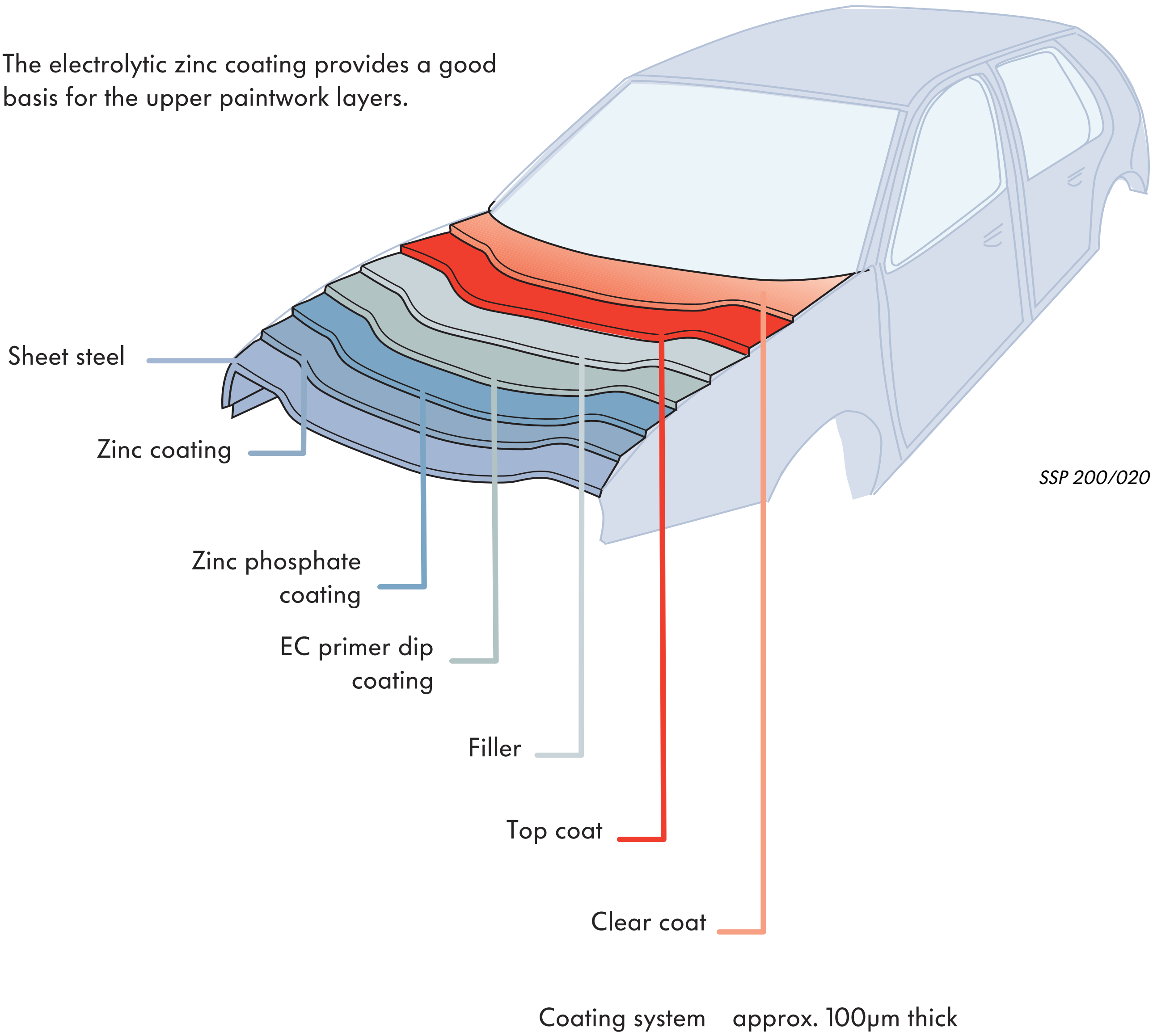
All parts which are externally visible are hot-dip galvanised.	**All outer skin panels are electrolytically galvanised**
Rough surface	Smooth surface
Zinc coating approx. 10µm thick	Zinc coating approx. 8µm thick
Does not change shape easily.	Changes shape easily.

The paintwork structure

The paintwork is specifically structured to increase body corrosion protection even more.

Vehicle paintwork structure

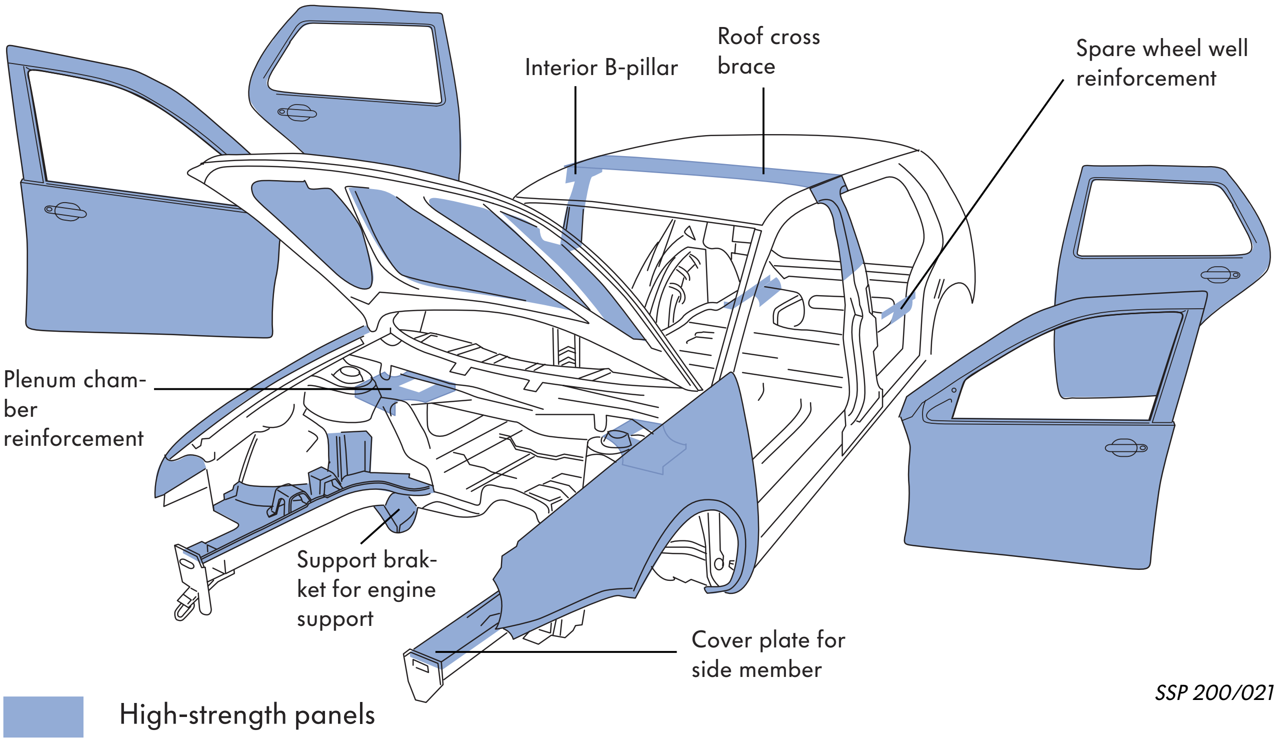
The electrolytic zinc coating provides a good basis for the upper paintwork layers.



SSP 200/020

High-strength panels

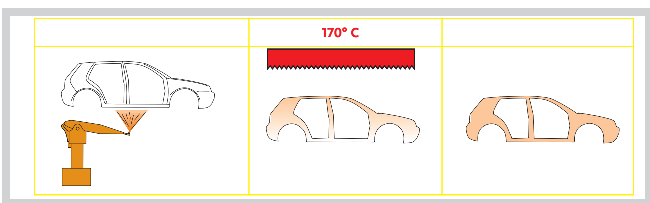
They are specially alloyed thin panels which achieve high strength as a result of subsequent heat treatment.
Therefore, it is possible to use panels which are thinner than deep-drawn panels yet they are just as strong. A great deal of weight is saved in this way.



SSP 200/021

Thermal post-treatment

This is a welcome “side-effect” of the stove enamelling process during which the body is heated to approximately 170°C anyway.
The advantage of this effect is that the body panels, made of a relatively soft material, only achieve their ultimate strength once the shaping process has been completed.



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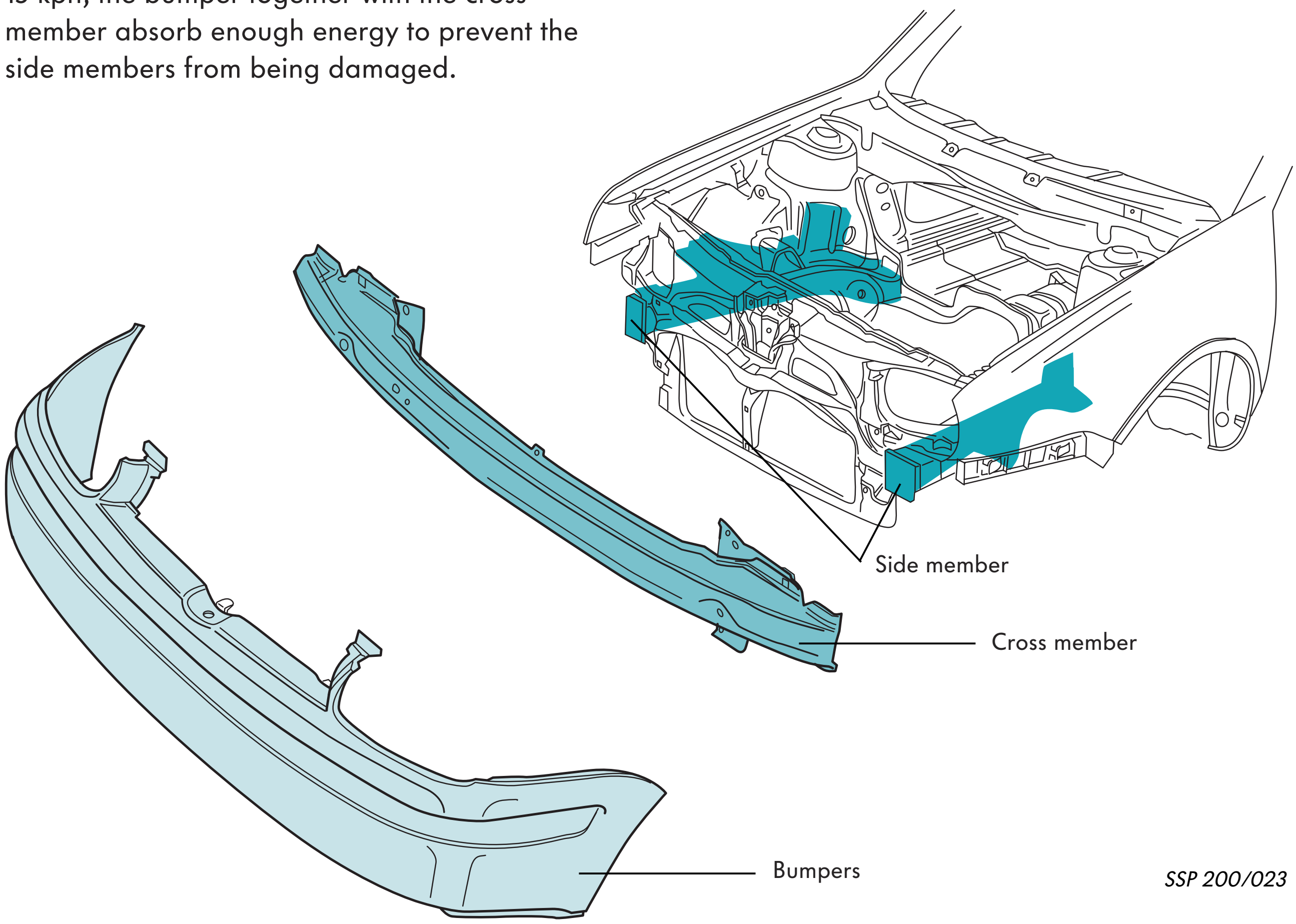
Front bumper

In a frontal collision at speeds of up to approx. 15 kph, the bumper together with the cross member absorb enough energy to prevent the side members from being damaged.



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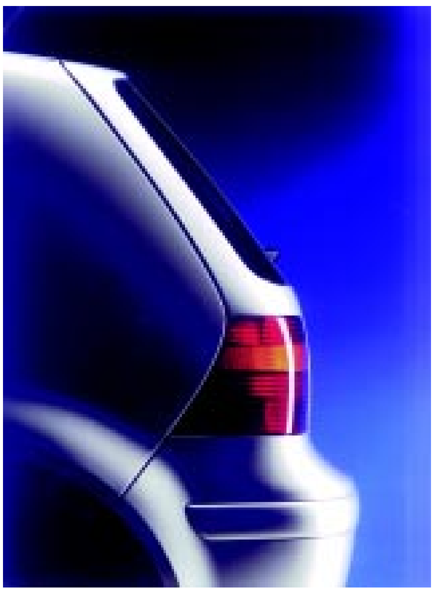
Rear bumper

The rear bumper has been enlarged.
As a result, a low-speed rear collision does not cause damage to the body side section.

These measures will reduce repair costs.



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