

The rear axle ...

is a torsion beam axle with anti-roll bar and separate spring-damper layout.

The springs are fitted compactly in between the trailing arms and frame side members. The shock absorbers are mounted behind the springs.

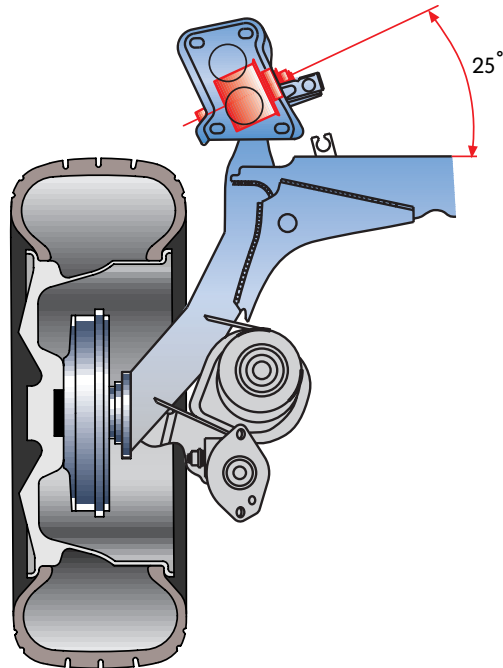
Rear axle bearing

The large-sized rear axle bearings are attached at an angle of 25° relative to the vehicle's transverse axis.

Lateral forces act on the suspension while cornering and change the toe. This produces a self-steering effect. The diagonally installed bearings reduce the self-steering effect and enhance driving stability when exiting a corner.



Self-steering cannot be effectively corrected if the rubber mountings are not fitted properly.



211/059



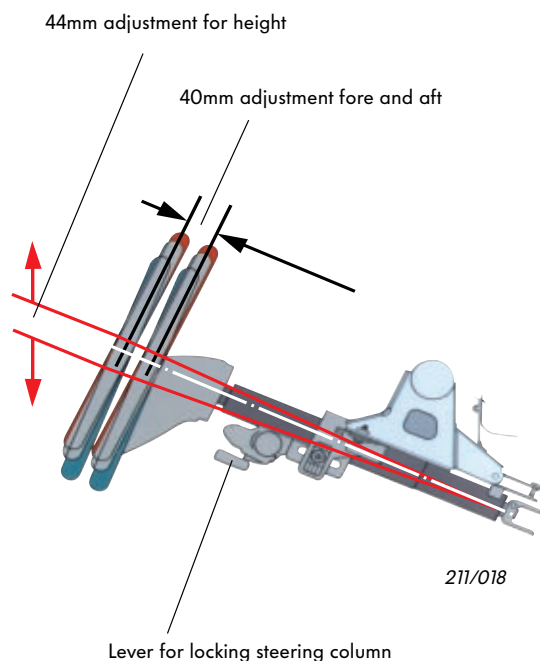
Steering

The New Beetle has power steering as standard.

The steering column can be adjusted 44mm for height.

The steering column can be adjusted 40mm fore and aft.

Both settings can be changed simultaneously after operating a lever on the lower part of the steering column.



211/018

Running gear

Brakes

The New Beetle has disc brakes at the front and rear as standard.

The front disc brakes are ventilated.

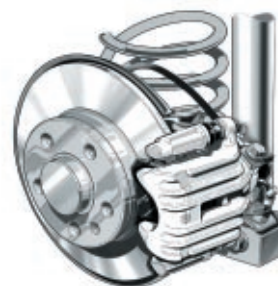
At the rear wheels, brake calipers made of aluminium reduce the unsprung masses.

Front axle Ø 280x22mm



211/089

Rear axle Ø 232x9mm

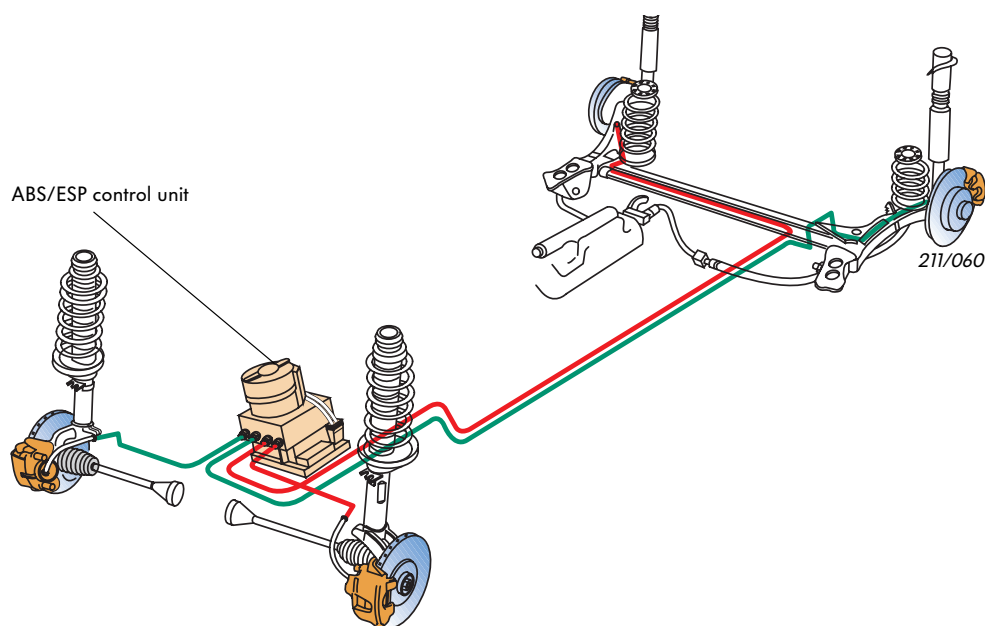


211/038

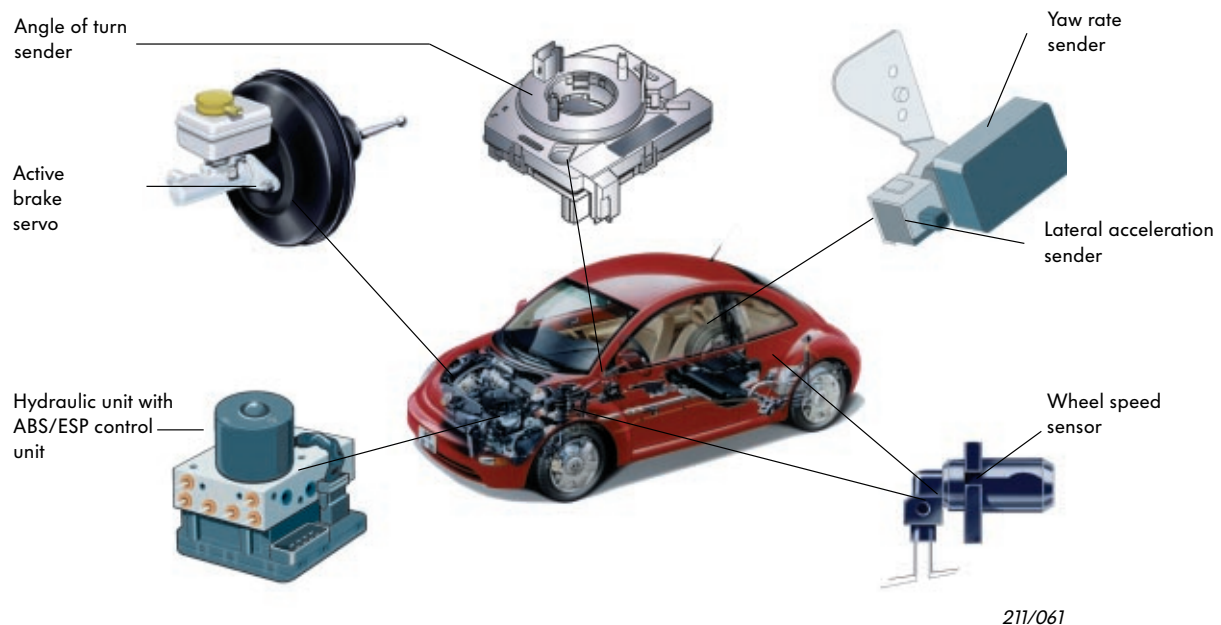
ABS with Electronic Stability Programme (ESP)

The New Beetle is fitted with the Electronic Stability Programme (ESP) as standard.

This additional safety package made by ITT Automotive is based on the conventional ABS/EDL 20 IE system and ensures maximum stability in any driving situation.



Components of the ESP



Design

The ESP control unit and the hydraulic assembly form a single unit.
The ESP hydraulic unit is an extended version of the ABS/EDL hydraulic unit. It can develop, maintain and again reduce brake pressure at each wheel individually without the driver having to operate the brake pedal.

The following components belong to ESP:

- Hydraulic unit and ESP control unit
- Active brake servo with pressure sensor
- Wheel speed sensor
- Lateral acceleration sender
- Yaw rate sender
- Angle of turn sender
- TCS/ESP warning lamp
- CAN databus network to engine and gearbox control units
- Button for TCS/ESP

Function examples

When ESP detects from the input signals that the vehicle is beginning to understeer, it brakes the rear wheel on the inside of the corner.

In case of oversteer, ESP brakes the front wheel on the outside of the corner.
This prevents the rear end breaking away, allowing the vehicle to stabilise itself.

If braking an individual wheel is not enough, ESP reduces input torque by decreasing engine output and/or by activating the individual wheel brakes.



Electrical system

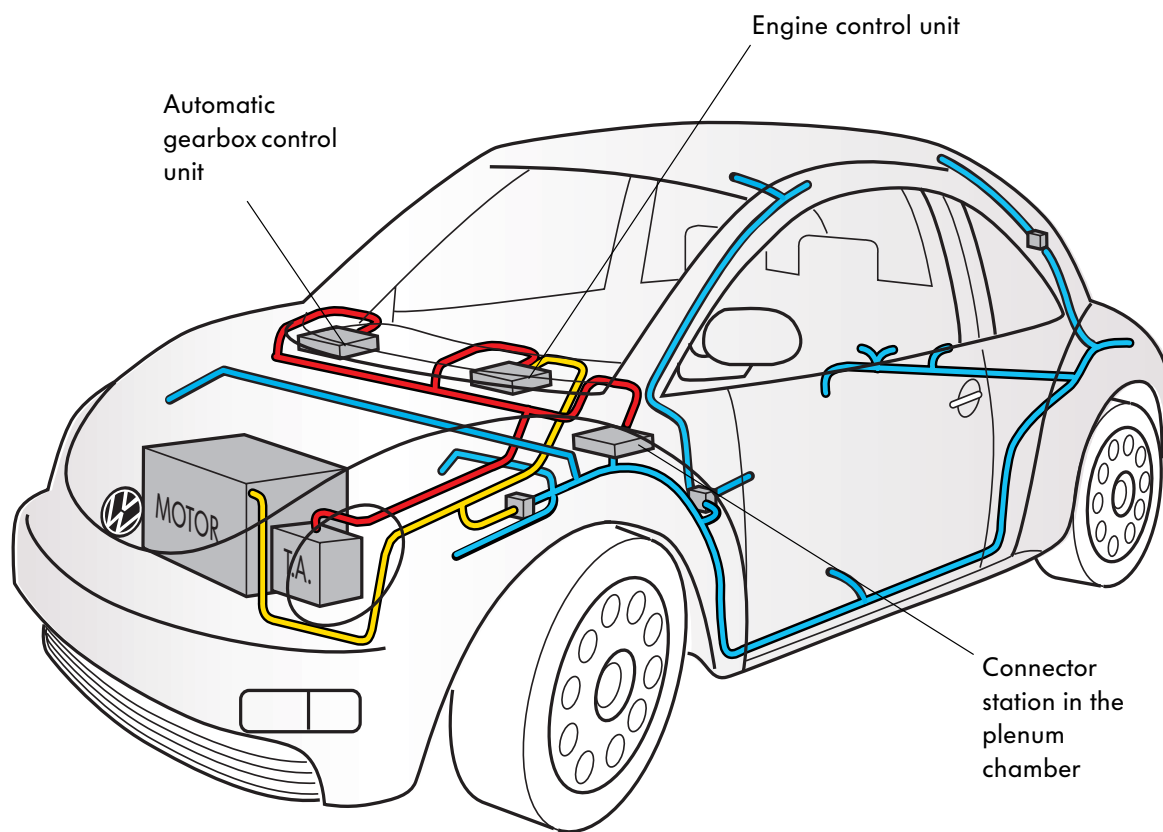
Wiring harnesses

The distribution of the wiring harnesses in the New Beetle matches the decentralised electrics concept of the A4 platform.




The wiring harness of the engine compartment connects, for example, the engine and the gearbox electronics with the ABS/ESP, as well as the other parts of the electrical system.

The wiring harness of the headlights supplies power to the front-end components included in the standard specification, such as the headlights and windscreen wipers.

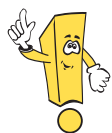
The engine wiring harness connects all engine-specific components to the vehicle electrical system via connector T10a; it also connects these components directly to the engine control unit.



211/009

-  Wiring harness, engine compartment
-  Wiring harness, engine
-  Wiring harness, headlights

Control units in the plenum chamber



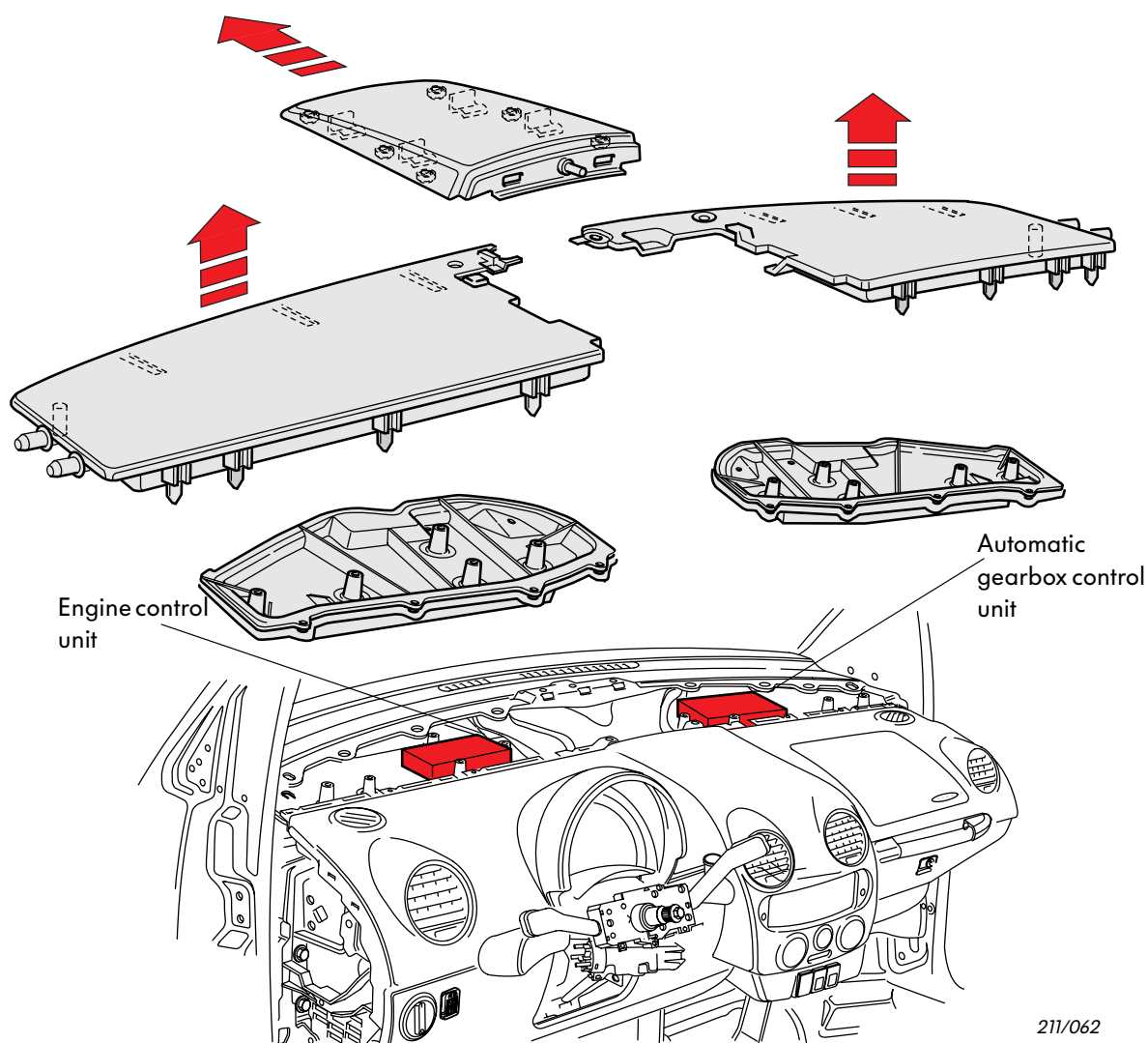
The plenum chamber in the New Beetle is only accessible from the vehicle interior on account of the bodyshell styling.

The units housed in the inner plenum chamber include:

- the engine control unit and
- the automatic gearbox control unit.

The plenum chamber is locked by two locking units.

A three-section cover is located above the locking units. The mid-section can be detached by sliding it towards the windscreen.



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Electrical system

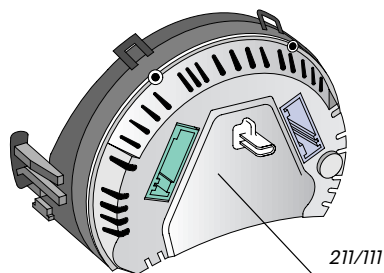
Control units

Due to the fact that the electrical system is decentralised, the control units are located directly adjacent to the individual systems.

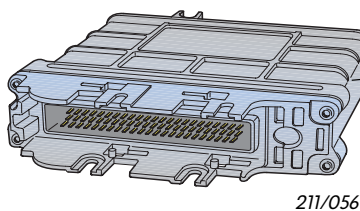
Advantages:

- Weight savings through short wiring harnesses.
- Fewer connections mean fewer fault sources.

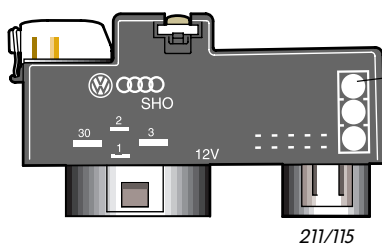
Immobiliser control unit J362
in the dash panel insert



Automatic gearbox control unit J217



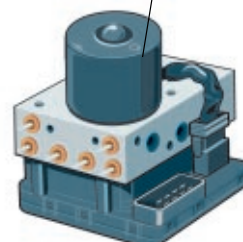
Radiator fan control unit J293



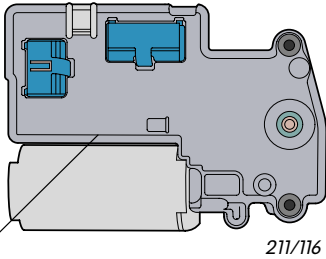
Important. Note.

The above-mentioned items are contained in the chapter on "Fitting locations" in the current flow diagram folder

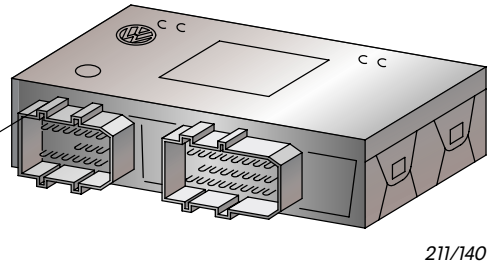
ABS control unit
(at the hydraulic unit)



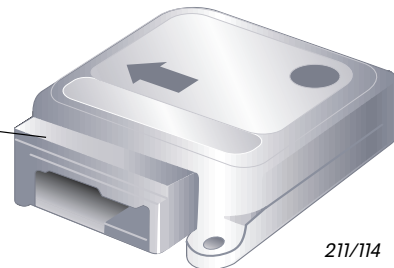
Control unit for sliding sunroof adjustment J245



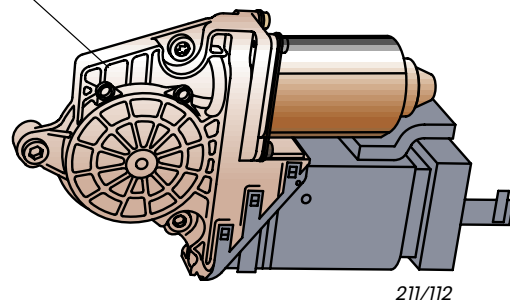
Central control unit for convenience electrics J393 (under the dash panel to the left)



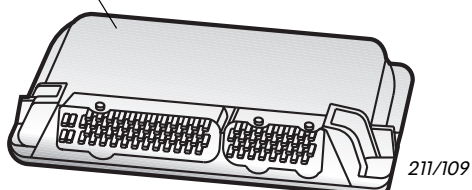
Airbag control unit J234 (centre tunnel below dash panel)



Door control units J386 /J387 at window lifter motor



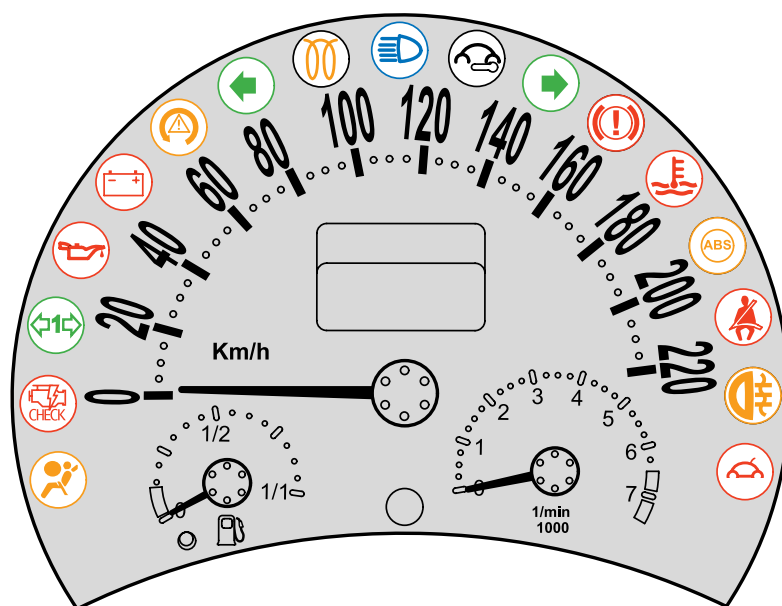
Motronic control unit J220



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The red dial is illuminated from the dial hub. The indicator and warning lamps are arranged in a circular pattern on the exterior of the dash panel insert.

The dash panel insert can be removed without having to dismantle the steering wheel.



01	Interrogate control unit version
02	Interrogate fault memory
03	Actuator diagnosis
05	Erase fault memory
06	End of output
07	Encode control unit
08	Read measured value block
10	Adaption

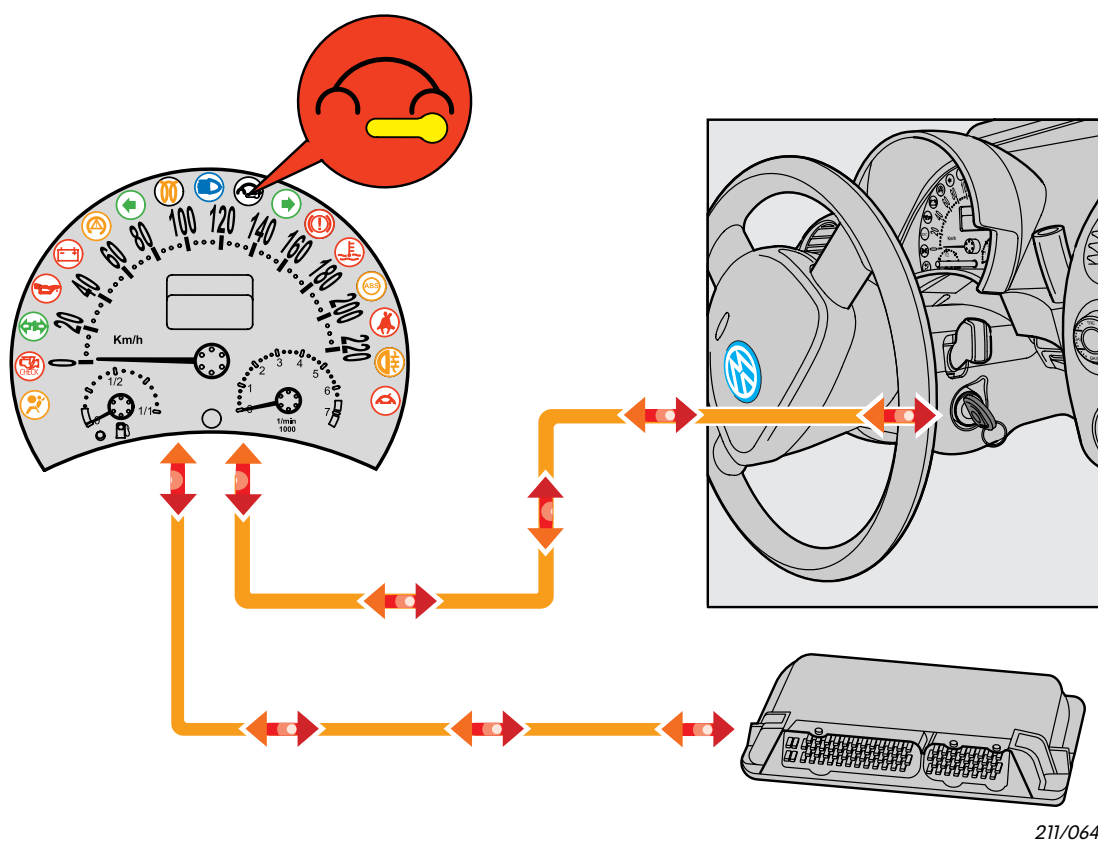
The **Adaption** function can be used to enter the mileage in a new dash panel insert and calibrate the fuel gauge.

Immobiliser

An electronic immobiliser of the 2nd generation is used in the New Beetle.

This system differs from its predecessor by the following features:

- The immobiliser control unit is located in the dash panel insert.
- In addition to the fixed code, a variable code is cross-checked between the car key and immobiliser control unit.



This process for cross-checking the fixed code or variable code between the transponder and immobiliser control unit means that the vehicle can only be started with the correct car key. Replacement keys are only available in the form of original spare parts.

Electrical system

Radio/Sound system

The New Beetle has a new sound system with 6 loudspeakers; this system offers a wider range of adjustments and better sound quality.

The volume adjustment button can also be used for tone control.

If the power supply to the radio is disconnected, the anti-theft device code must be re-entered using the arrow keys of the search function.



211/023A



Additional features:

- The radio has a special front panel which is only fitted in the New Beetle.
- Special tools are required to remove the radio.
- The lighting for the switches, buttons and displays is identical to the dash panel lighting.
- A CD-changer which is fitted in the luggage compartment is optional.



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Variable intermittent wipe

The New Beetle also features four intermittent wipe settings.

The intermittent wipe cycle length decreases automatically as road speed increases.

Intermittent wipe cycle length = wiping time + pause time

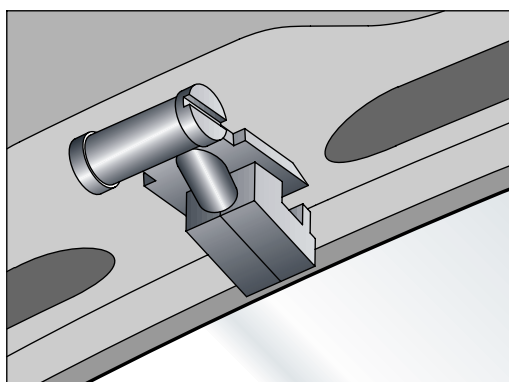


200/093

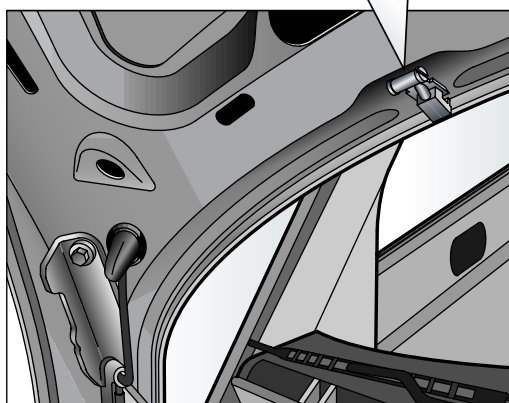
Windscreen washer jets for the windscreen

The windscreen washer jets are secured to the bonnet from below.

They can be adjusted by rotating an eccentric.



The windscreen washer jets in the optional “winter package” are heated.



211/065

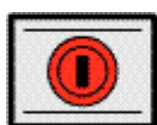
Electrical system

The convenience system ...

assumes the functions illustrated.
The central control unit and the door control unit are responsible for the control functions.

On vehicles equipped with power windows, the central control unit and the door control unit communicate over the CAN databus.

Functions of the central control unit



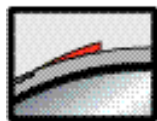
Central locking
Rear lid



Interior lighting control



Radio-wave remote control



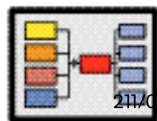
Tilting/sliding sunroof
- Convenience locking
- Enable



Anti-theft alarm system



Self-diagnosis



Interface to vehicle electrical system

211/080

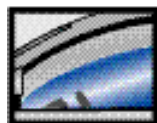


211/028

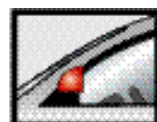
Functions of the door control units



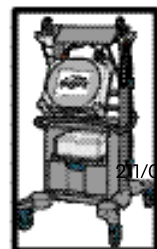
Door central locking with Safe function



Electrical windows with roll-back function



Electrically adjustable and heated door mirrors



Self-diagnosis via the central control unit

211/081

Design of the convenience system

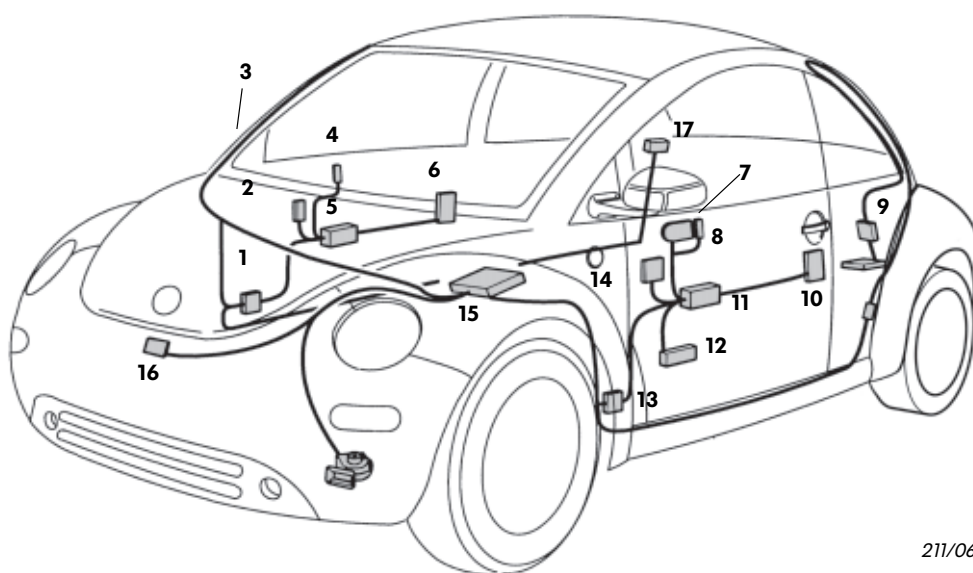
The central control unit is installed close to the steering column behind the dash panel.

The door control units are located on the window lifter motors.



The convenience system has self-diagnostic capability. The address word is **46**.

For vehicles without power windows, the address word is **35**.



211/067



- 1 Connector station, right-hand A-pillar
- 2 Window lifter switch, front passenger's door E107
- 3 Aerial for central locking and anti-theft alarm system R47
- 4 Interior locking switch, front passenger's side E198
- 5 Door control unit, front passenger's side J387
- 6 Locking unit for central locking, front passenger's side F221
- 7 Mirror adjustment switches E43 and E48
- 8 Interior locking switch, driver's side E150
- 9 Rear lid remote control motor V151
- 10 Locking unit for central locking, driver's side F220
- 11 Door control unit, driver's side J386
- 12 Rear lid remote control switch E188/tank flap switch E204
- 13 Connector station, left-hand A-pillar
- 14 Window lifter switch, front left E40/front right E81(driver)
- 15 Central control unit for convenience system J393
- 16 Contact switch for anti-theft alarm system/anti-rodent system F120
- 17 Tank flap lock motor V155

Electrical system

Opening the boot

The boot of the New Beetle can be opened mechanically with the key or electrically by the radio-wave remote control or boot switch.

Opening the boot electrically

The boot switch is located on the driver's door interior trim.

When this switch is Activated, the central control unit for the convenience system activates a relay on the auxiliary relay carrier.

The relay activates an electric motor which opens the boot.

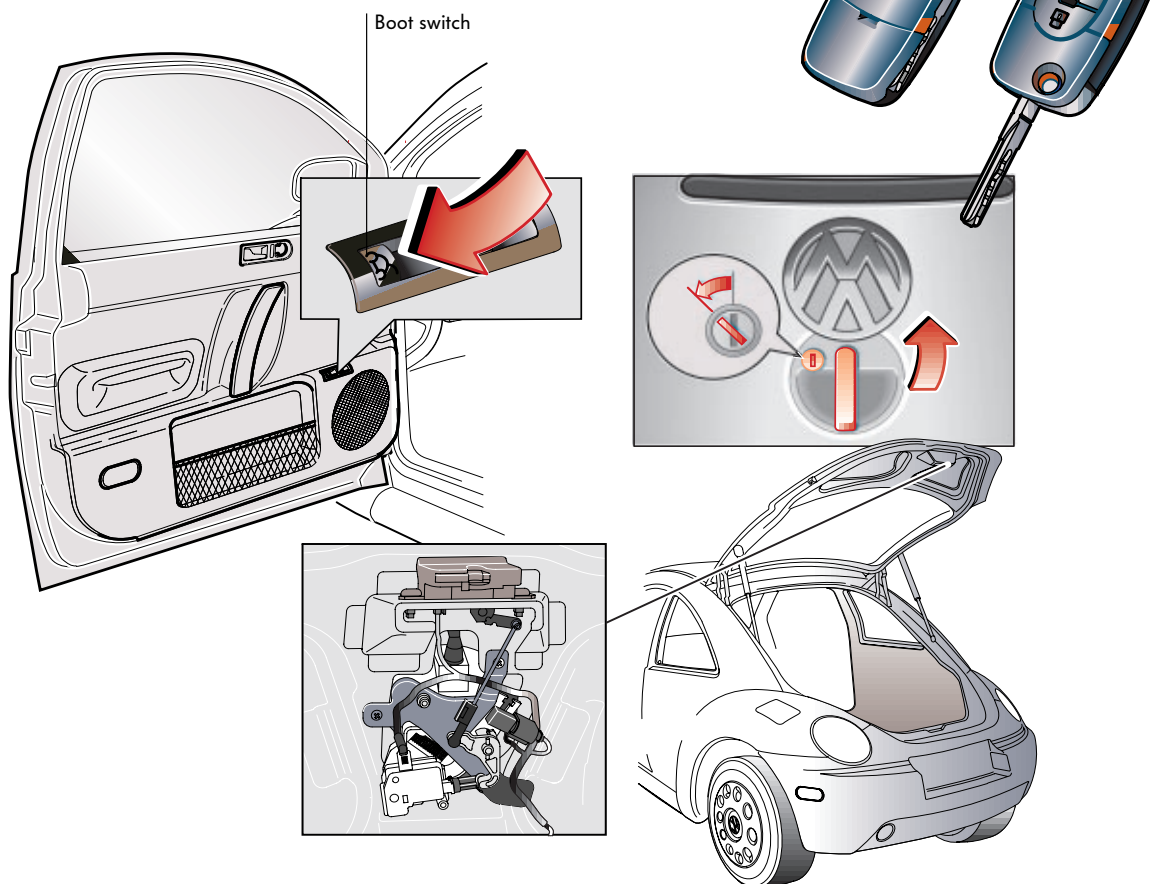
The boot can also be opened electrically with the car key.

When the car key is turned in the boot lock, the boot lock is opened by means of a microswitch.

Mechanical emergency boot opening

If the convenience system fails, the boot must be opened mechanically.

To activate the emergency boot opening function, **turn** the car key in the boot lock **beyond** the point at which the electric motor normally opens.



Locking the tank flap

The fuel filler flap may be unlocked electrically or mechanically.

Unlocking the tank flap electrically

The tank flap switch is located on the inner trim of the driver's door.

This switch activates a final control element which is mounted on the C-pillar in the vehicle interior.

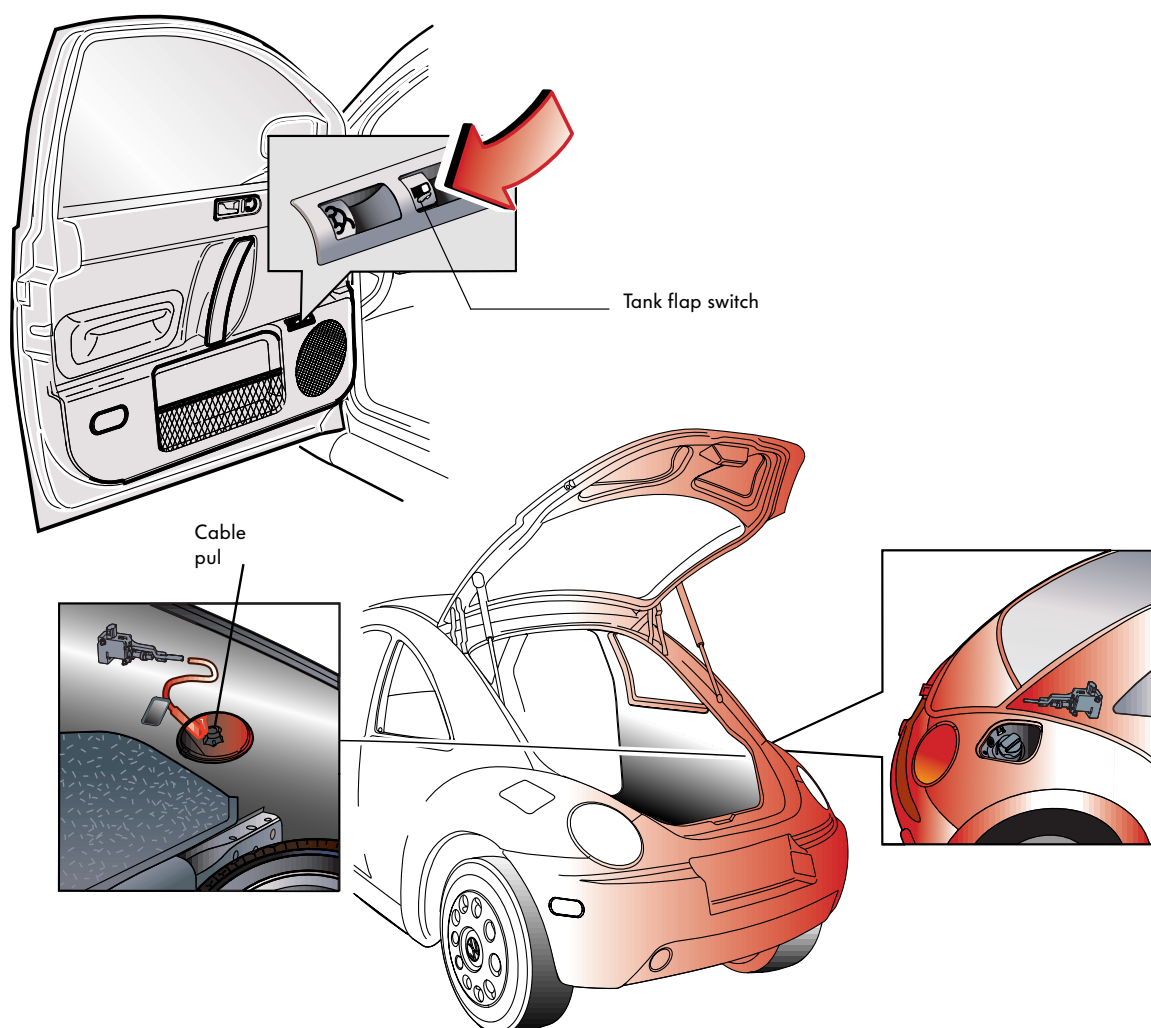
The final control unlocks the tank flap lock by cable pull.

Mechanical emergency tank flap unlocking

If the electrical opening function is defective, the tank flap can be unlocked mechanically.

For this purpose, a small cover on the right-hand side of the luggage compartment must be removed.

The rear lid is activated and the tank flap unlocked by drawing a cable pull.



Heating, air conditioning system

There is a choice of two equipment versions for the heating and air conditioning system in the New Beetle:

- a heater, and
- a manually operated heater and air conditioner

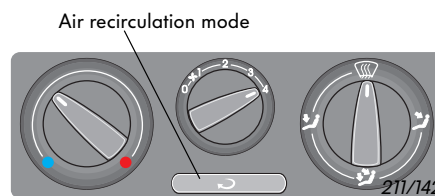
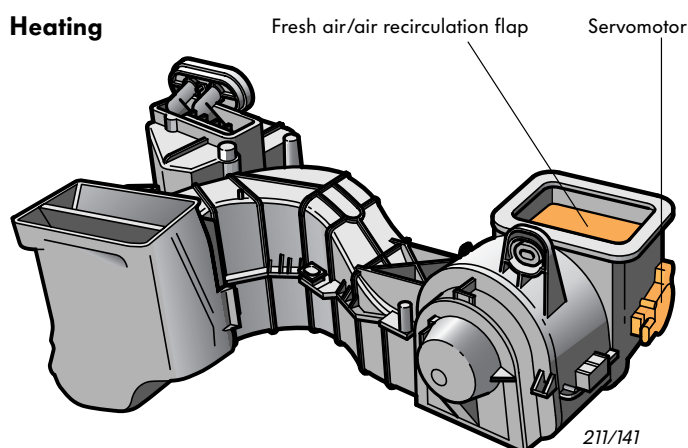


Only a manually operated air conditioning system is available for the New Beetle.

A plate-type evaporator is used for the air conditioning system.

The evaporator requires 40% less space but it has the same capacity and cooling surface area.

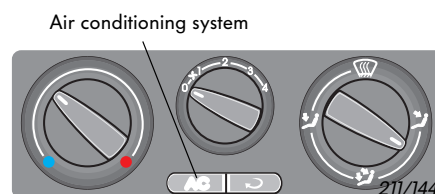
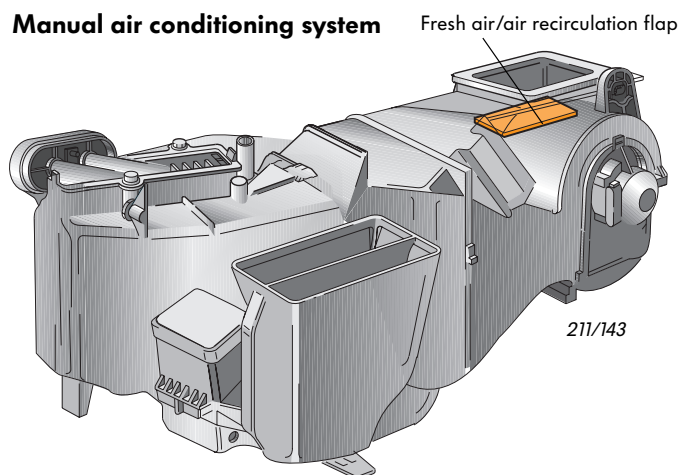
Heating



The fresh air/air recirculation flap is activated by servomotor. All other flaps are moved by means of Bowden cables. In defrost mode, the air recirculation mode is switched off mechanically.



Manual air conditioning system



When a manual air conditioning system is installed, the cabin climate is driver-controlled. The fresh air/air recirculation flap is electric motor driven. All other flaps are adjusted via Bowden cables.

Dust and pollen filter with activated charcoal

The dust and pollen filter consists of a combination of a fleece material and an activated charcoal granulate.

Dust and pollen are filtered by the fleece. The activated charcoal reduces odour and noxious gases.

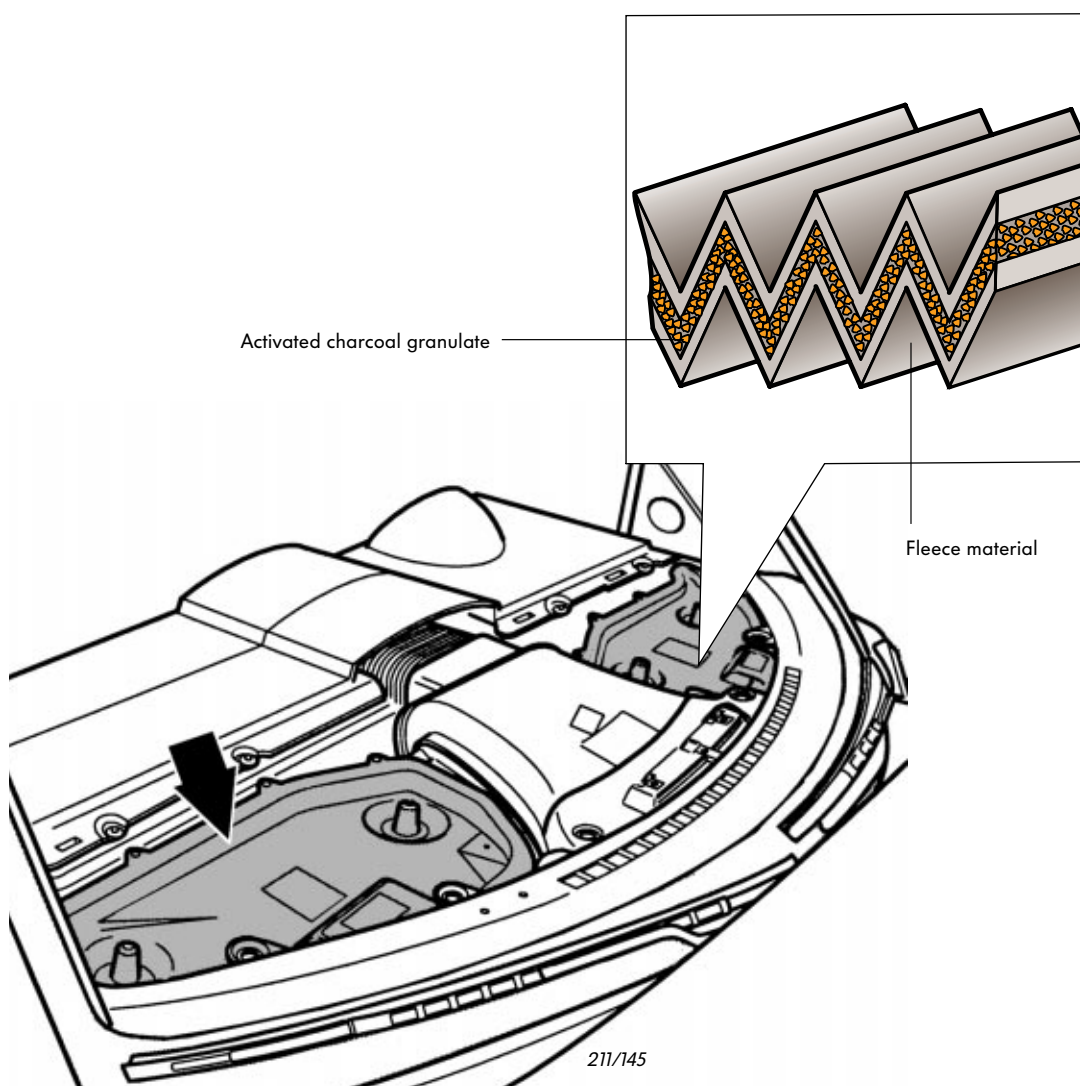
The gases are bound or chemically changed on the surface of the activated charcoal.

Consider ozone, for example. It is almost fully converted into oxygen.

The dust and pollen filter is located in the plenum chamber which can only be accessed through the vehicle interior.

Removing the dust and pollen filter:

- Remove the upper, three-section cover located in between the dash panel and defrost duct.
- Remove the locking unit on the right.
- Located on the air distributor housing below this is the dust and pollen filter.



211/145

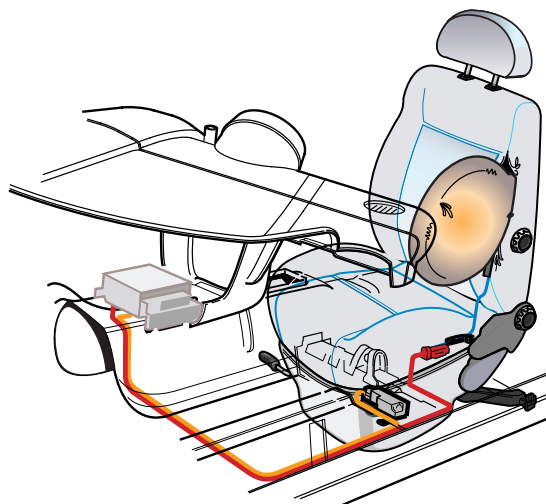
Service

Service

Removing seat

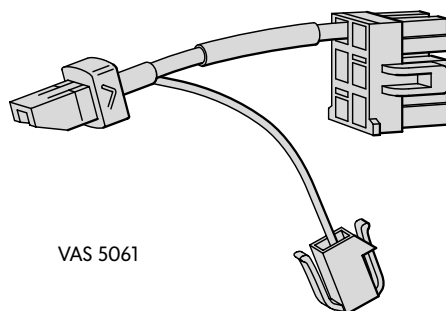


Before removing a front seat, you must remove any static charge you may be carrying by touching the door locking pin or the bodyshell, since the side airbag can be triggered during repair work by the static charge a person normally carries.



211/130

After disconnecting the plug and socket connection under the seat, plug in the adapter for the side airbag VAS 5061 so that the airbag system is connected to earth.



VAS 5061

211/001

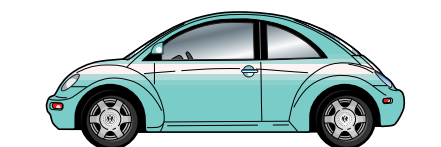
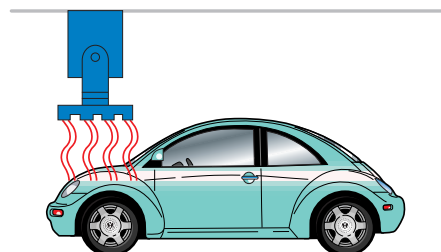
Repairing high-strength sheet-metal panels



For spot painting, do not heat up the panel too quickly or to an excessively high temperature (approx. 200°C), since the panel will otherwise become misshapen.

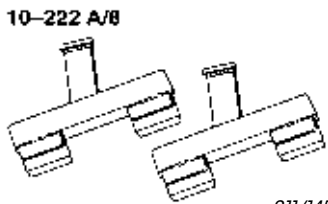
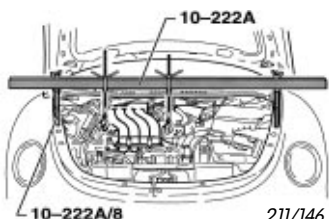
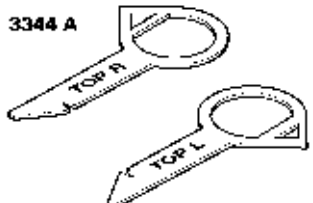
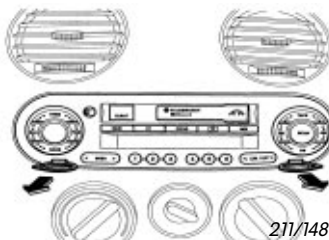
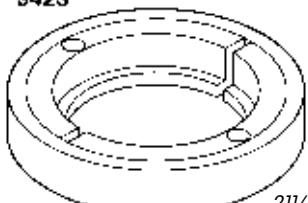
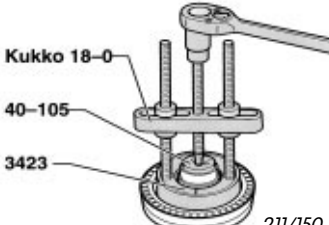

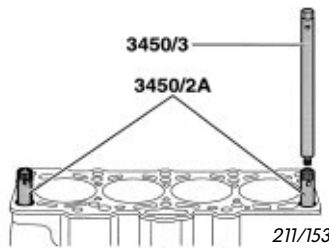
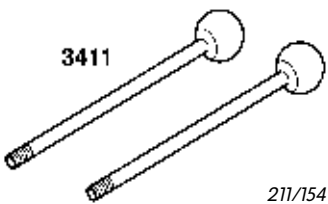



During panel beating, the high-strength panel exhibits higher buckling strength. The panel is springier.



211/073

Here are the new special tools for the New Beetle

Tool number and designation		Usage
10-222A/8 Adapter for removing the engine	 <p>10-222 A/8</p> <p>211/145</p>	 <p>10-222A</p> <p>10-222A/8</p> <p>211/146</p>
3344A Releasing tool for removing the radio	 <p>3344 A</p> <p>211/147</p>	 <p>211/148</p>
3423 Gripper for removing the front wheel bearing	 <p>3423</p> <p>211/149</p>	 <p>Kukko 18-0</p> <p>40-105</p> <p>3423</p> <p>211/150</p>
3450/2A, 3450/3 Guide pins for installing the cylinder head	 <p>3450/2A</p> <p>3450/3</p> <p>211/151/152</p>	 <p>3450/3</p> <p>3450/2A</p> <p>211/153</p>
3411 Guide rods For moving the lock carrier with attachments to servicing position	 <p>3411</p> <p>211/154</p>	 <p>3411</p> <p>211/155</p>



notes



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