

# Running gear

## Overview of the Golf Plus running gear

With the exception of minor modifications, this is identical to that of the Golf 2004. The springs, the shock absorbers and the anti-roll bars have been adapted so that the Golf Plus also offers the ride comfort typical of a Volkswagen and guarantees a high level of vehicle dynamics.

To offer a high level of ergonomic comfort, the accelerator pedal inclination angle has been changed from 65° to 57°, and the upper section of the steering column has been shortened.

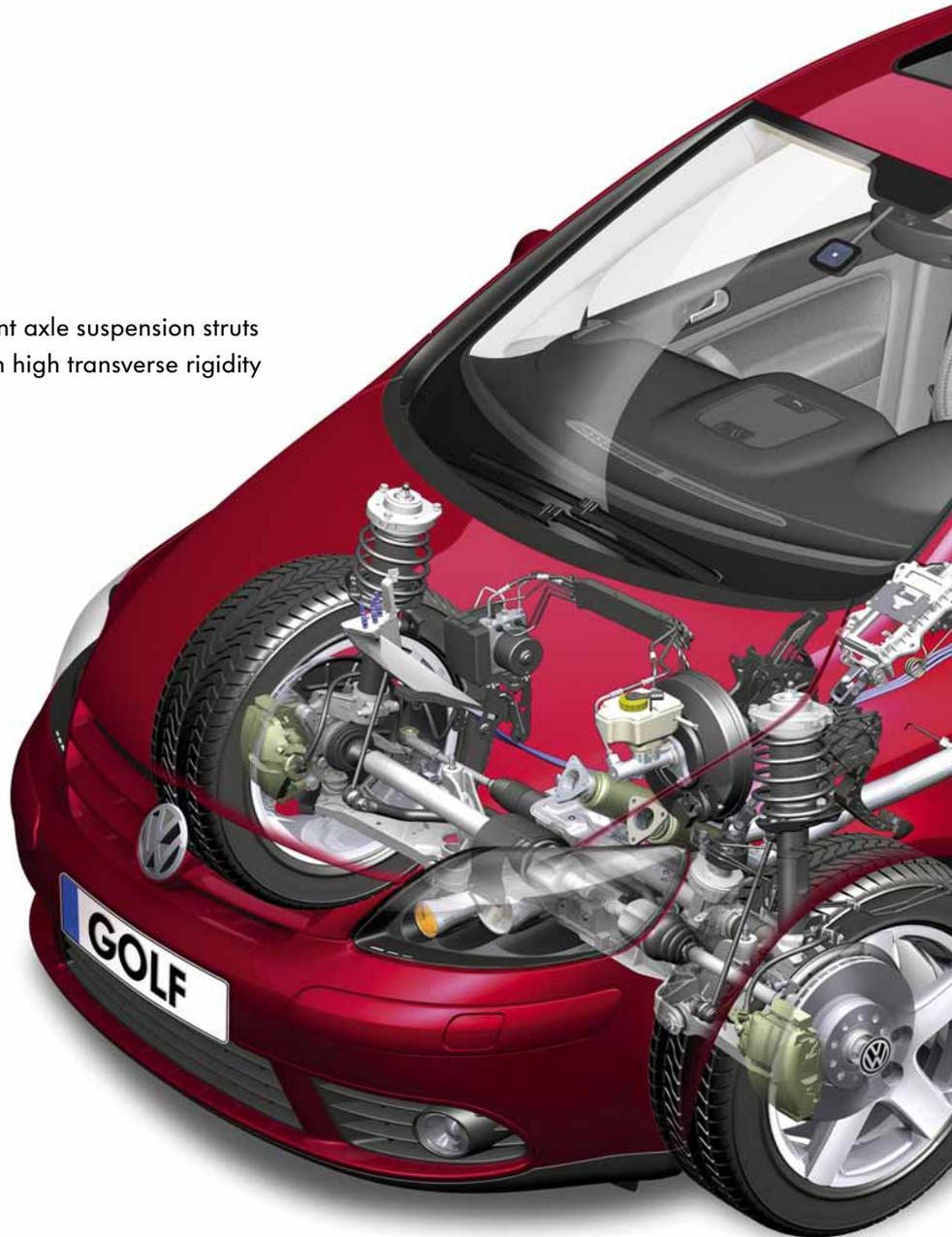
The functions of the accelerator pedal and the steering column are identical to those in the Golf 2004.

- Front axle suspension struts with high transverse rigidity

- Continental Teves ESP MK60

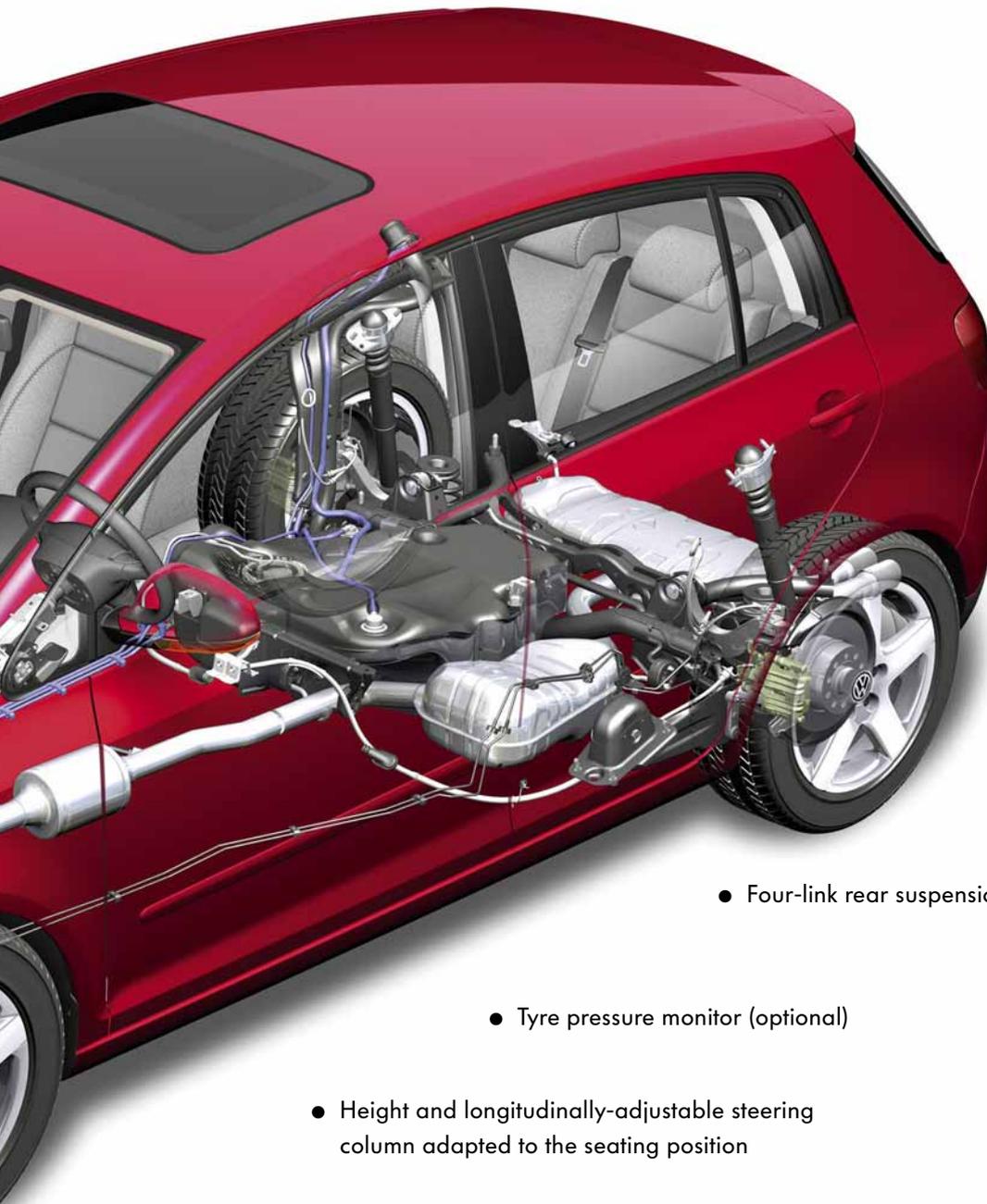
- Brake assist system

- Electromechanical power steering system





Further information on the running gear can be found in self-study programme No. 321 "The Golf 2004 running gear".



S338\_022

- Four-link rear suspension
- Tyre pressure monitor (optional)
- Height and longitudinally-adjustable steering column adapted to the seating position
- Vertical accelerator pedal with inclination angle adapted to the seating position



# Electrical system

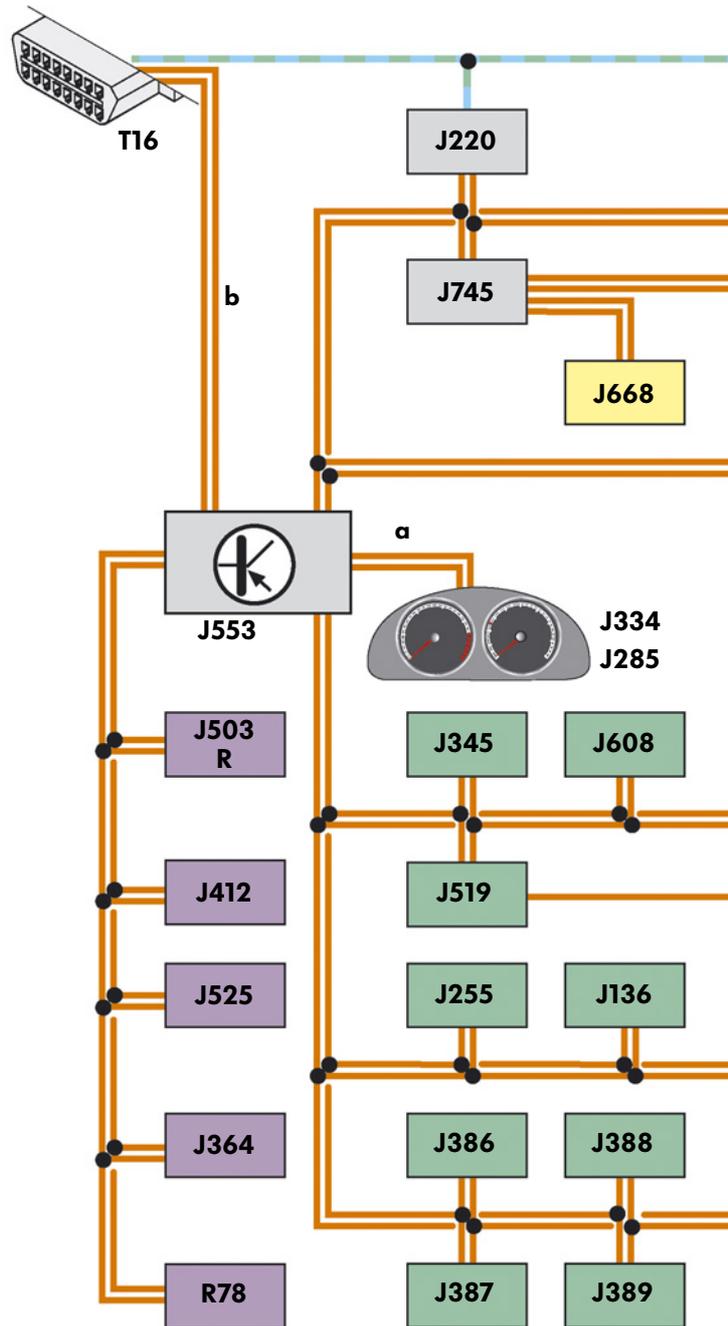
## Overview of networked electronic control units

When fitted with maximum equipment, the following electronic control module configuration can be found in the Golf Plus.

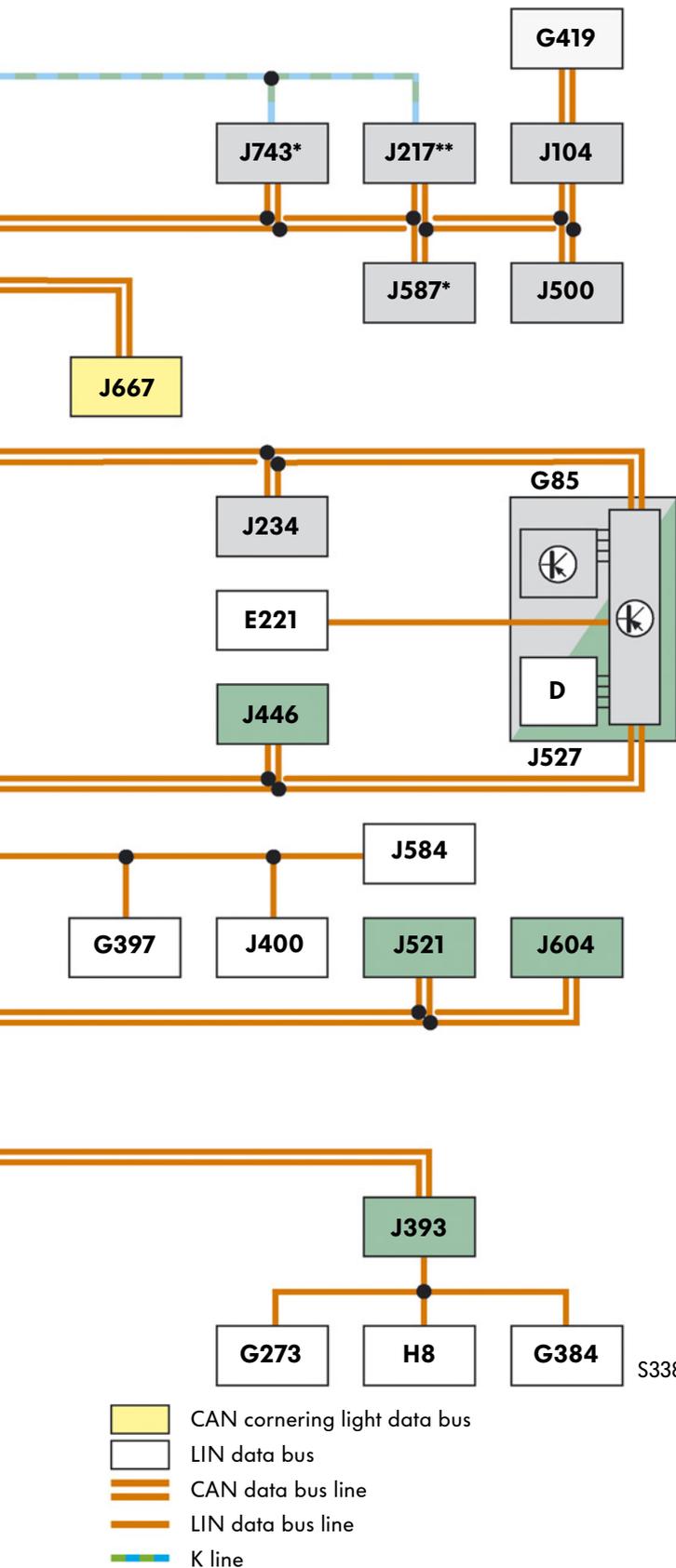
As in the Golf 2004, the diagnostic interface for data bus J553 acts as the interface between the different data buses. It also ensures that data exchange between data buses with different speeds is carried out in an optimal manner.

In addition to the conventional comfort, powertrain and infotainment CAN bus systems, internal communication between the vehicle module or sub-system components frequently takes place via separate CAN links.

These bus links, which are dependent on the different manufacturers, may differ from the above mentioned links, which operate with high- and low-speed signal forms, not only in terms of their transmission protocols, but also physically. This different behaviour must be taken into consideration in the case of direct measurements on CAN systems and their electronic control units.



- Legend**
- CAN powertrain data bus
  - CAN comfort data bus
  - CAN infotainment data bus
  - CAN sensor data bus
  - a** CAN instrument cluster data bus
  - b** CAN diagnostic data bus



**Legend**

- D Ignition/starter switch
- E221 Operating unit in steering wheel (multi-function steering wheel)
- G85 Steering angle sender
- G273 Interior monitoring sensor
- G384 Vehicle inclination sender
- G397 Rain and light detector sensor
- G419 ESP sensor unit
- H8 Anti-theft alarm system horn
- J104 Control unit for ABS with EDL
- J136 Seat and steering column adjustment control unit with memory
- J217\*\* Automatic gearbox control unit
- J220 Motronic control unit
- J234 Airbag control unit
- J255 Climatronic (and Climatic) control unit
- J285 Control unit with display in dash panel insert
- J334 Immobiliser control unit
- J345 Trailer detector control unit
- J364 Auxiliary heater control unit
- J386 Driver door control unit
- J387 Front passenger door control unit
- J388 Rear left door control unit
- J389 Rear right door control unit
- J393 Convenience system central control unit
- J400 Wiper motor control unit
- J412 Mobile telephone operating electronics control unit
- J446 Parking aid control unit
- J500 Power steering control unit
- J503 Control unit with display for radio and navigation
- J519 Onboard supply control unit
- J521 Front passenger seat adjustment with memory control unit
- J525 Digital sound package control unit
- J527 Steering column electronics control unit
- J533 Data bus diagnostic interface
- J584 Front passenger side wiper motor control unit
- J587\* Selector lever sensor control unit
- J604 Auxiliary air heater control unit
- J608 Special vehicle control unit
- J667 Power output module for left headlight
- J668 Power output module for right headlight
- J743\* Mechatronics for Direct-Shift Gearbox
- J745 Cornering light and headlight range control unit
- R Radio
- R78 TV tuner
- T16 Diagnostic connection

\* With Direct-Shift Gearbox only  
 \*\* With automatic gearbox only

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# Electrical system

The electrical system in the Golf Plus essentially corresponds to that fitted in the Golf 2004. Changes particularly refer to the exterior lights.

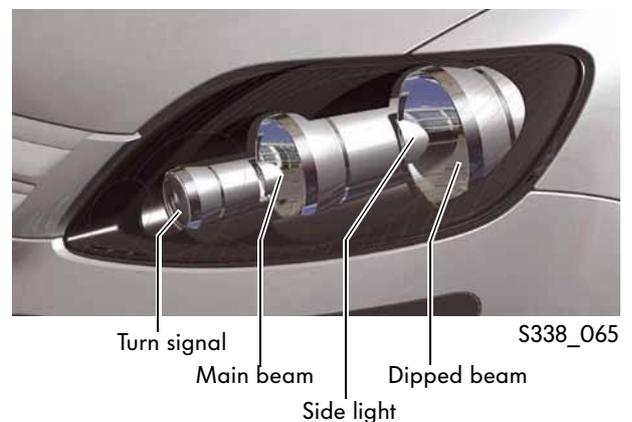
## The exterior lights

### Special characteristics

- Double round headlights with three round elements
- Split rear lights

### The headlights

The double round headlights with dipped beam and main beam reflector are fitted with H7 bulbs as standard. The turn signals are equipped with a round reflector.



### The rear lights

In the Golf Plus, the rear lights are split into two by the rear lid and are designed with multi-section round elements. The rear light elements in the body are designed in LED technology and contain the tail light, brake light and turn signal functions. The rear light elements in the rear lid are fitted with conventional bulbs and contain the rear fog light on the left-hand side and the reversing light on the right-hand side.

In pure tail light mode, the LED light elements are actuated with just 10-15% of their maximum power output in comparison with the brake light and turn signal function.



If individual, defective light-emitting diodes have to be repaired, the entire LED assembly has to be exchanged.

## The inverter



S338\_095



LED  
European socket

S338\_062

As an optional extra, the Golf Plus can be equipped with a 230V/50Hz socket for the European market or a 115V/60Hz socket for North America. Depending on the model, the European socket is designed without an earthing contact.

The inverter has a continuous output of 150W. For a short period of time of max. 2 minutes, maximum power of 300W can be output. In the inverter, the 12V DC low-voltage side and the 230V AC side are galvanically separated from each other. The voltage of 230V is only available when the engine is running in order to protect the battery.

When illuminated green, the two-colour LED indicates normal operating mode on current consumption. The LED's flashing red indicates overload.



S338\_076



Further information can be found in self-study programme 340 "The Passat 2006 – The electrical system".



Repairs to 230V systems must not be carried out in customer service workshops. If the socket or the inverter is defective, the entire assembly must therefore be exchanged.



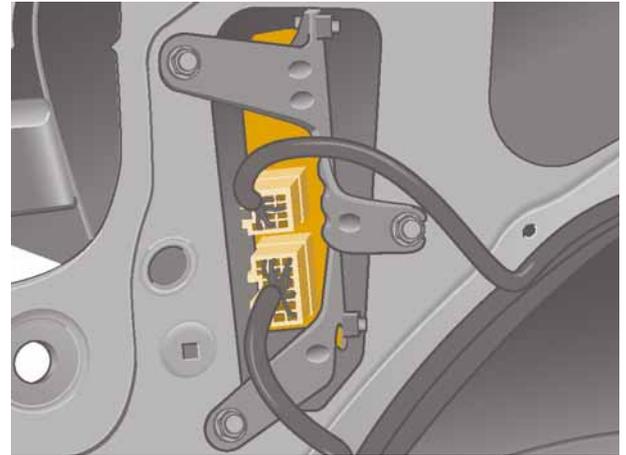
# Electrical system

## Trailer detector control unit J345

This ensures that the trailer's electrical components are integrated into the vehicle network.

### Location

The trailer detector control unit is located behind the luggage compartment trim on the left-hand side panel.



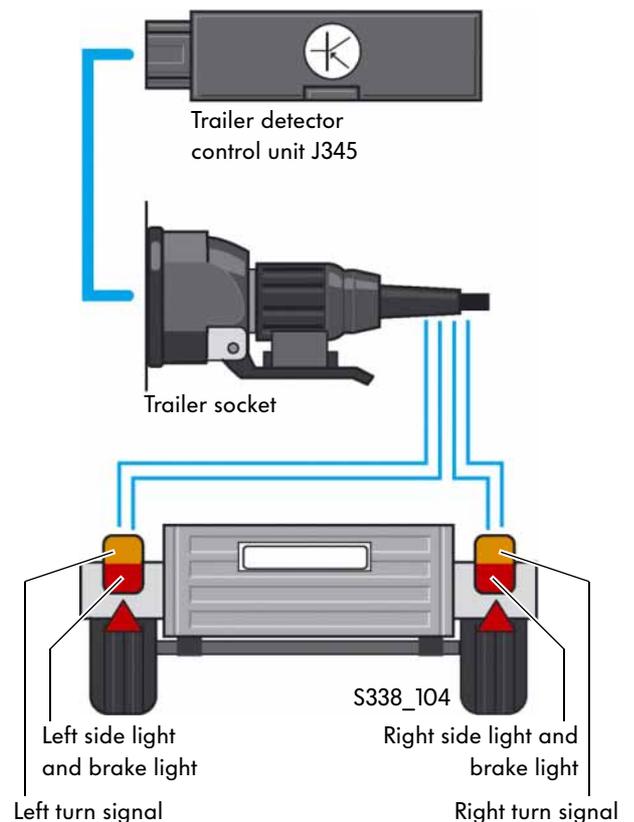
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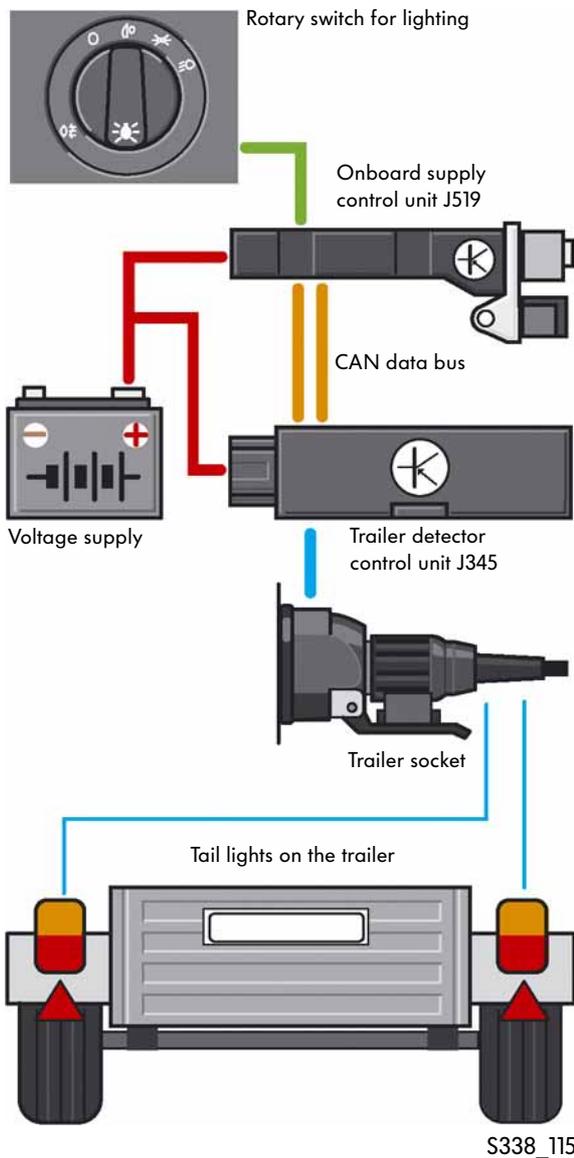
### Tasks

The trailer detector control unit determines whether a trailer is connected to the trailer socket, and makes this information available to other control units via the CAN data bus. It controls the trailer's lighting and also diagnoses the functional capability of the majority of trailer bulbs.

As a CAN subscriber, it reads all messages required for trailer operation, e.g. for the reversing light or turn signals, and processes these to actuate the trailer's corresponding lighting components.

This also applies to equipment-dependent convenience electronics functions such as automatic headlight control or the Coming-Home lighting and safety functions such as the hazard warning lights in the event of emergency braking.





However, the trailer detector control unit also feeds messages into the CAN data bus, so that the affected control units can switch to trailer mode.

This information is required:

- At the onboard supply system control unit to actuate the rear fog light. This is switched off during trailer operation to reduce the dazzle effect to which the driver is exposed.
- At the ABS and ESP control unit to adapt the brake system control functions to trailer operation.
- At the parking aid control unit to deactivate the sensors for the rear sensing range.
- At the anti-theft alarm system to integrate the trailer into monitoring when the trailer line is connected. Since the microswitch in the trailer socket has been omitted, this is carried out via bulb sensing.



When retrofitting a trailer socket, the socket must no longer simply be connected to the rear lights. In this case, the onboard supply control unit is no longer able to carry out functions such as bulb diagnosis via the defined bulb load or dimmed light actuation, because it is unable to distinguish between the vehicle's lights and a possible short-circuit in the relevant power circuit.



A trailer with LEDs in its turn signals and rear lights cannot be detected, because its power consumption is less than 5W. During trailer simulation, workshops must ensure that their test boxes provide this output value of 5W as consumers.

# Electrical system

## Function

Based on cold monitoring of the tail lights and turn signals, the trailer detector control unit determines whether a trailer is connected. This is carried out via bulb current sensing. The minimum load which has to be connected at the control unit outputs to achieve this is 5W per output.

The advantage of current sensing is that the bulbs can be monitored via the self-diagnosis function. If a bulb is defective, an entry is made in the control unit's fault memory.

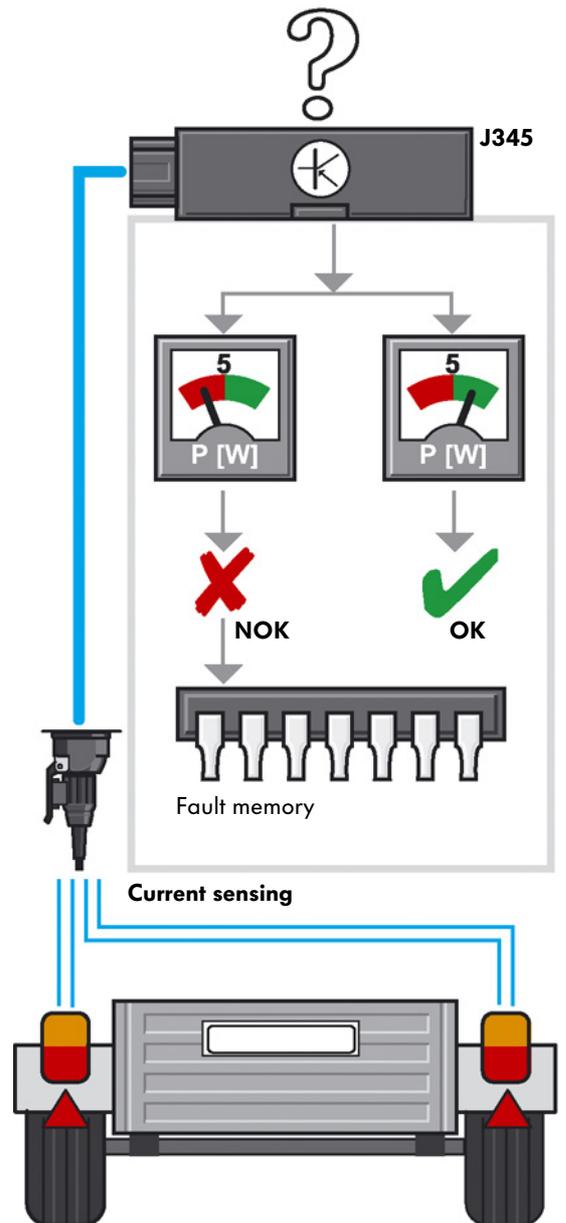
This remains there until trailer re-connection is detected. This means that, even without the trailer, a defective turn signal or rear light can be detected in the trailer electrics in the workshop.

## Self-diagnosis

The trailer detector control unit monitors all components' inputs and outputs during vehicle operation and in the workshop, e.g. during a control element test. The reversing light and rear fog light are the exceptions, as neither of these were legally prescribed for trailers until recently.

The fault memory can contain five faults and is not equipped with "self-healing". This means that static and sporadic faults remain stored until a trailer is connected again.

A fault may change its status from "static" to "sporadic" if a defective bulb is exchanged whilst the trailer is connected.

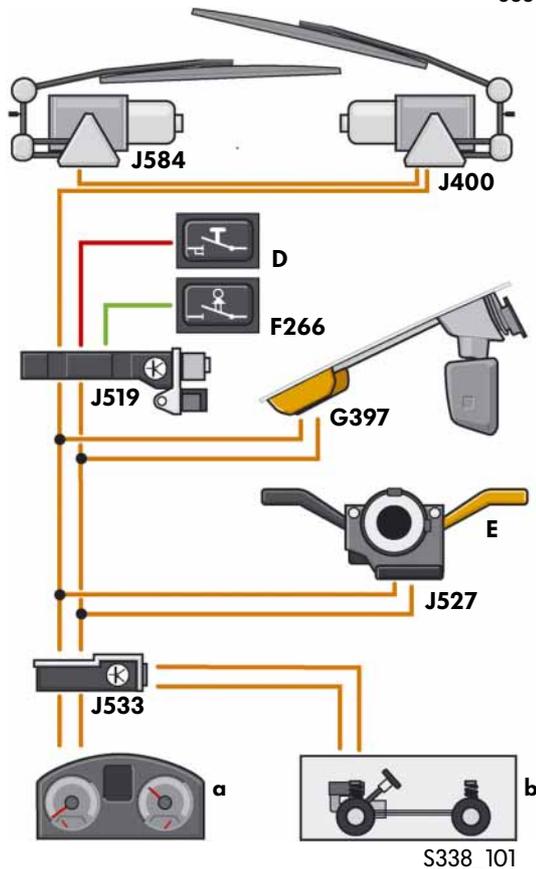


S338\_116

## The windscreen wiper system



S338\_080



S338\_101

- D** - Ignition/starter switch
- E** - Wiper switch
- F266** - Bonnet contact switch
- G397** - Rain and light detector sensor
- J400** - Wiper motor control unit
- J519** - Onboard supply control unit
- J527** - Steering column electronics control unit
- J533** - Data bus diagnostic interface
- J584** - Front passenger side wiper motor control unit
- a** - Ambient temperature signal via CAN instrument cluster data bus
- b** - Vehicle speed signal via CAN powertrain data bus

It is comprised of a contrarotating system with two motors and no mechanical link between the wipers. Due to the wiper system's contrarotation principle, the rain and light detector sensor has been located in a new position in the Golf Plus.

### Function

The wiper switch position is transmitted directly to the steering column electronics control unit and then to the onboard supply control unit via the CAN comfort data bus.

Information on the activated wiper stage is transmitted by the onboard supply control unit, via the LIN data bus, to the wiper motor control unit, and from there to the front passenger side wiper motor control unit. Both control units are located directly at the wiper motors.

The wiper motor control unit controls the wiping processes and actuates the front passenger side wiper motor control unit in accordance with the master-slave principle.



# Convenience electronics

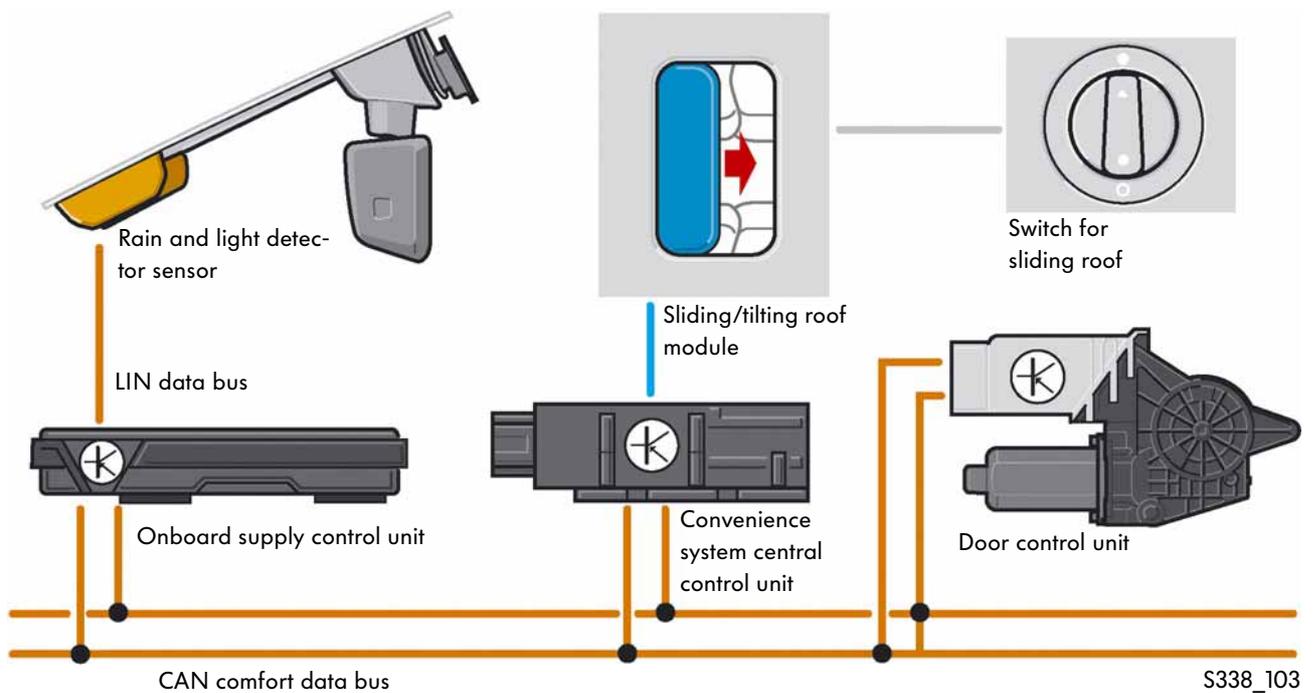
## Rain closing

The "rain closing" convenience function" will be introduced for the first time in Volkswagen's Golf class along with the Golf Plus. This is a distributed function in which the onboard supply, convenience and door control units, the rain and light detector sensor and, depending on the equipment fitted, the sliding roof control unit work together.

Rain closing is initialised in the convenience control unit. To achieve this, the "rain closing" function must be switched on via the personalisation menu in the instrument cluster. It has to be re-activated each time after starting the engine. i.e. "terminal 15 on".



S338\_102



S338\_103

## Function

Once rain closing has been activated, the convenience system control unit transmits a corresponding message to the onboard supply control unit. Once this has detected that the ignition has been switched off, it sets the rain and light detector sensor to monitoring mode. This mode is set to 12 hours as default.

If the rain sensor detects precipitation, it informs the onboard supply control unit via the LIN data bus; in turn, the former informs the convenience control unit via the CAN data bus. Via separate CAN messages, this issues the command "close windows" to the door control units. In accordance with the EU Directive, the window drives' excess force limitation function is also retained in the case of rain closing.

The command for the sliding/tilting roof (STR) is transmitted via a separate line from the convenience control unit to the STR module.

Whilst the door control units confirm that the windows have been closed, the STR drive does not provide the convenience control unit with any feedback.

To avoid inadvertant deployment of the anti-theft alarm system the sensitivity of the interior motion sensors is reduced whilst rain closing is being carried out.

## Deactivation conditions

The function is deactivated following:

- Successful execution of rain closing,
- "Ignition on" status detected,
- Expiry of the monitoring period.



## Rain and light detector sensor G397

### Location

The rain and light detector sensor is located in the Golf Plus in such a way that it is positioned as high as possible, centrally, in the wiping overlap range of both wiper arms.

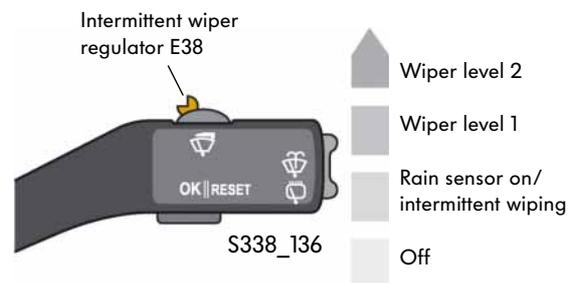
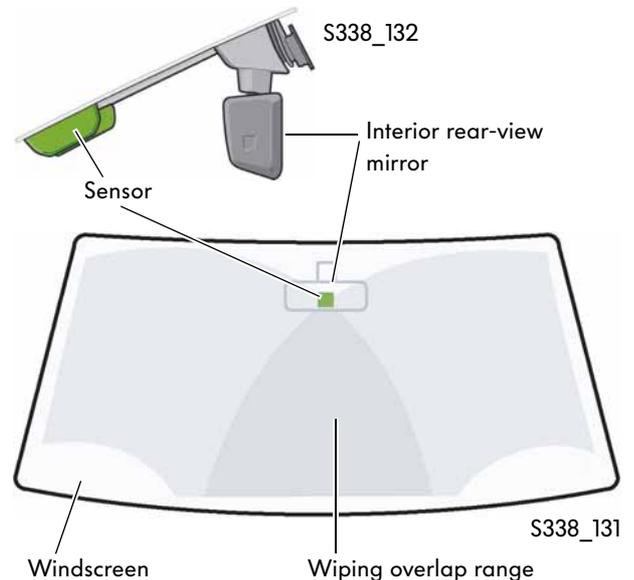
### Task

The rain and light detector sensor only operates in automatic mode if the wiper lever is set to the "intermittent" position for rain detection and the light switch is set to the "automatic headlight control" position for light detection. The rain and light detector sensor then ensures, when rain is detected on the windscreen, that the wipers are actuated from zero to the maximum number of wiper cycles according to the quantity of precipitation, and that the headlights are switched on in twilight conditions.

The rain and light detector sensor independently adapts to the windshield's tinting.

At wiper lever level 1, in which the wipers operate at a speed of 42 cycles per minute without rain sensing, the wiper speed can be independently increased up to 60 cycles per minute with rain sensing, depending on the quantity of precipitation.

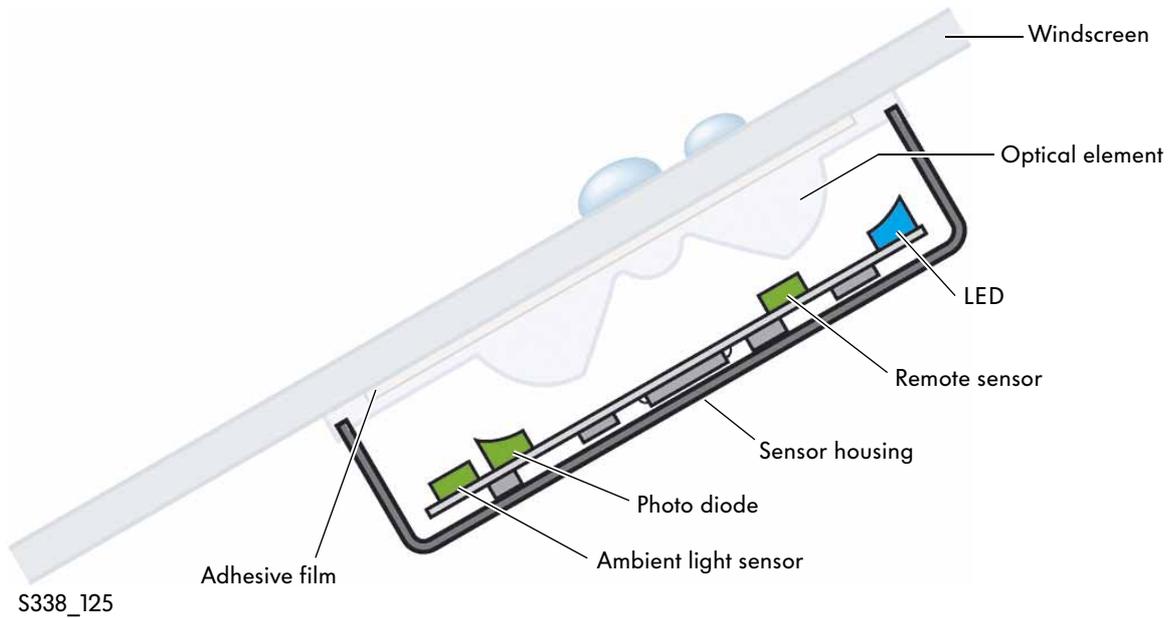
In the case of wiper operation without rain sensing, this value corresponds to level 2. In level 2, rain detection has no influence on the wiper speed. In this case, the wipers operate at a constant 60 cycles per minute.



The intermittent wiper regulator can be used to individually set the sensitivity of the rain detector. In vehicles without a rain detector, the regulator is used to set the length of the intervals.



## Structure



The rain and light detector sensor is comprised of a combination of light-sensitive sensor elements and an LED. All components are mounted on a printed circuit board in the sensor housing. An optical element rounds off the sensor housing towards the windscreen. The optical element's task is to bundle and align the outgoing and incoming light. The entire sensor is secured to the windscreen using an adhesive film. The sensed area measures 300mm<sup>2</sup>.

The LED and a photo diode are used for rain detection, whilst an ambient light and a remote sensor are used for light detection.

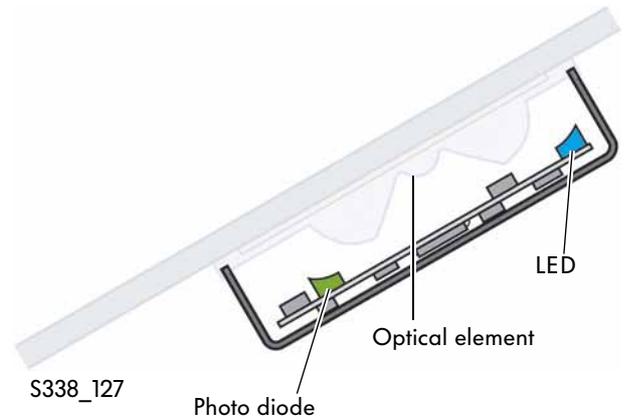


The priority of both rain and light detection is subordinate to manual actuation of the relevant switch elements. This means that even if these assistance functions malfunction, manual activation of the wipers and driving lights always takes precedence.

# Convenience electronics

## Rain detection function

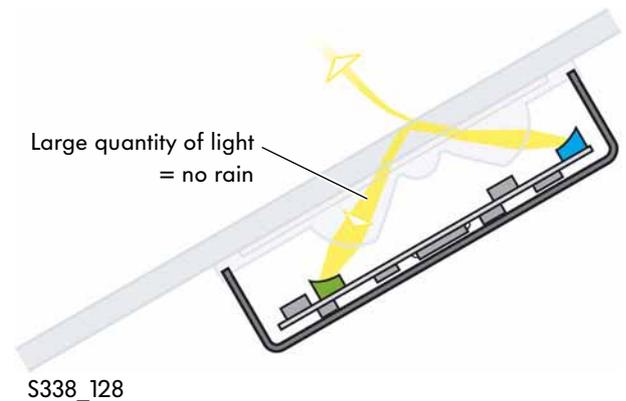
The sensor's core elements are an LED and a photo diode. The sensor's basic principle is that the light emerging from the LED is partially reflected by the surface of the windscreen and, bundled by the optical element, hits the photo diode.



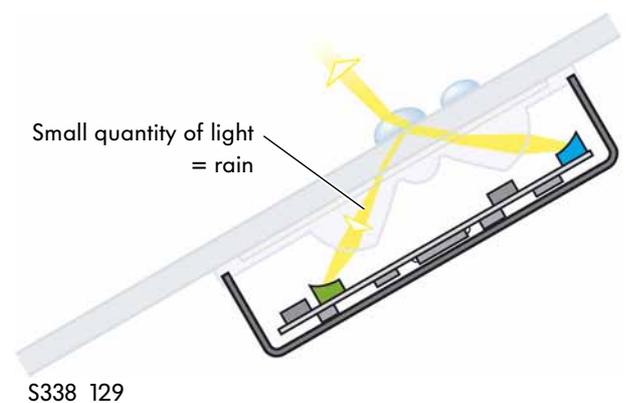
The degree to which the diode's light is reflected, and therefore the volume of light which hits the photo diode, changes if the windscreen is coated with water droplets or a film of water. The greater the coating, the less light is reflected due to light refraction. The photo diode's output signal can therefore be used to calculate the quantity of precipitation.

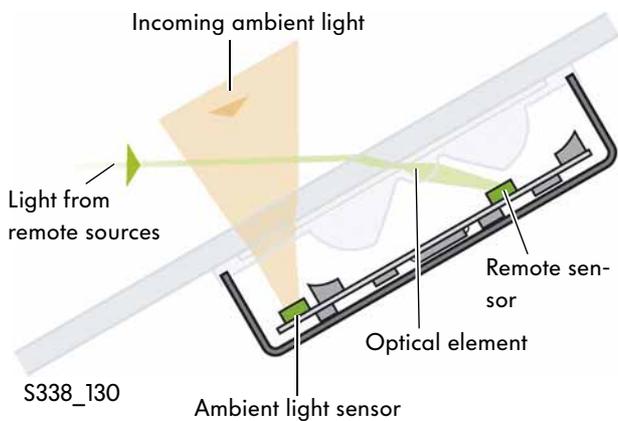
The rain detector response time, i.e. the time which passes between the detection of precipitation and the emission of the output signal to the wipers, is less than 20ms.

## Reflection with a dry windscreen



## Reflection with a wet windscreen





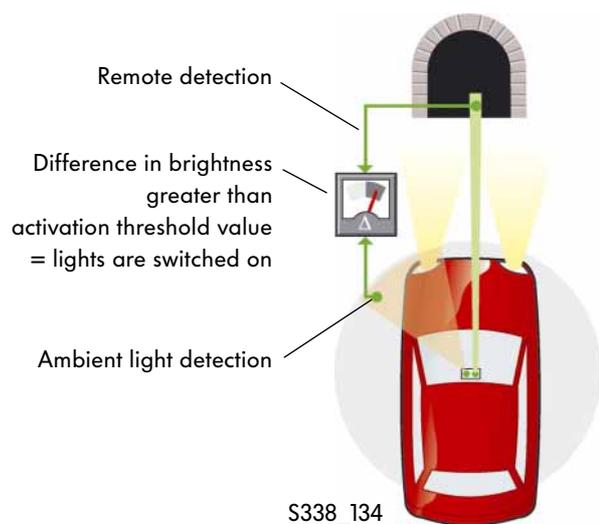
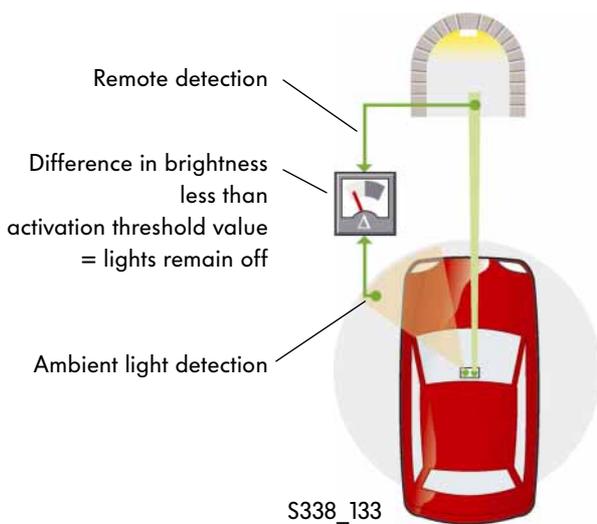
### Light detection function

To distinguish between light conditions, the rain and light detector sensor is fitted with different light sensors. An ambient sensor detects the light conditions in the vehicle's immediate vicinity and a remote sensor senses the light conditions at a distance of up to three vehicle lengths in front in the direction of travel.

The system detects a general decrease or increase in brightness and switches the driving lights on or off when the automatic headlight control function is activated.

From the difference between both sensors' signals, the system is able to determine e.g. that the vehicle is entering a tunnel, thereby switching on the driving lights when the vehicle enters the tunnel at the latest. The system's internal, logical link ensures that the driving lights are only switched off once the ambient light sensor has detected an adequate brightness value.

If the rain detector is also active in addition to the light detector, correspondingly heavy precipitation also leads to activation of the driving lights.



The light detection function does not react to fog or underpasses. In these cases, the driving lights have to be switched on manually.

# Radio and navigation

## The radio systems in the Golf Plus

### Radio R100



S338\_088

The R100 target group is major customers, e.g. vehicle fleet operators.

This radio unit offers the following functions:

- Two loudspeaker channels (front only, 20 Watts each)
- RDS FM/AM European radio (AM without LW)
- Control system for external 6-fold CD-changer
- Telephone control system (hands-free)
- Speed-dependent volume control (GALA)
- Self-diagnosis with loudspeaker diagnosis
- Transport mode (current requirement reduction during transport and idle times)

### Radio RCD 300



S338\_089

Radio RCD 300 is available as the standard radio system for private customers.

It offers the following functions:

- Two or four loudspeaker channels (20 Watts each)
- RDS FM/AM European radio (AM without LW)
- Indication of the stored stations with RDS names in the display
- FM 2-tuner diversity
- Control via the multi-function steering wheel (MFL) and multi-function indicator (MFI)
- Integrated single-CD player,
- Control system for external 6-fold CD-changer
- Telephone control system (hands-free)
- GALA
- Self-diagnosis with loudspeaker diagnosis
- Transport mode
- Driving school function (possible indication of turn signal function and speed via the unit's display)



Due to the change in installation position and reading angle in comparison with the Golf 2004, the displays for the radios fitted in the Golf Plus have been redesigned. This results in a different part number.

## Radio RCD 500



S338\_090

This, or a higher-quality radio, is required to equip the Golf Plus with the digital sound package DSP. It offers the following functions

- Four loudspeaker channels (20 Watts each)
- RDS FM/AM European radio (AM without LW)
- Indication of the stored stations with RDS names in the display
- FM 2-tuner phase diversity
- Control via the MFL and MFI
- Integrated single-CD player
- Control system for external 6-fold CD-changer
- Telephone control system (hands-free)
- GALA
- Traffic Information Memory (TIM)
- Vehicle model-specific sound adaptation
- Self-diagnosis with loudspeaker diagnosis
- Transport mode
- Optional connection of an external sound amplifier

## Radio/navigation system MFD 2



S338\_091

A radio system with an integrated navigation system is also available for the Golf Plus. The operating sequences are similar to those of the radio/navigation system fitted in the Touareg. It offers the following functions, etc.:

- Multi-colour display (MFD)
- Dynamic guidance
- Four loudspeaker channels (20 Watts each)
- RDS FM/AM European radio (AM without LW)
- Indication of the stored stations with RDS names in the display
- External diversity changeover box
- Control via the MFL and MFI
- Control system for external 6-fold CD-changer
- Telephone control system (hands-free)
- GALA
- TIM
- Self-diagnosis with loudspeaker diagnosis
- Optional connection of an external sound amplifier



The cover frame has to be removed to remove or install a radio, in order to access the threaded connection located behind it.



# Radio and navigation

## The antenna concept

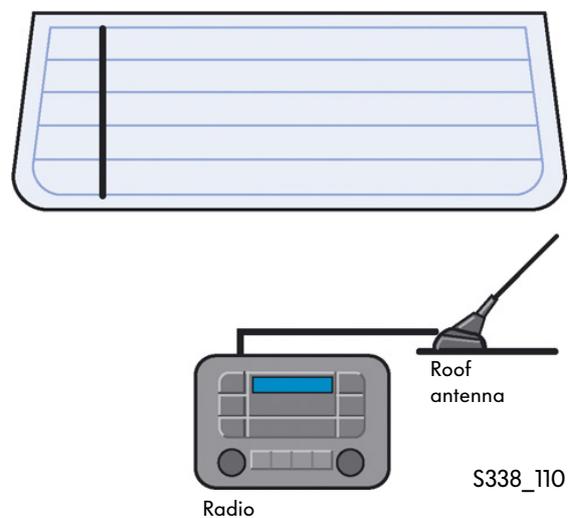
Four antenna equipment alternatives are currently available for the Golf Plus:

- Roof antenna and rear window with an antenna structure without connection option,
- Roof antenna and rear window with an antenna structure and one connection option,
- Roof antenna and rear window with two antenna structures and one connection option, and
- Roof antenna and rear window with two antenna structures and two connection options.

A rod or tri-band antenna may be fitted as the roof antenna.

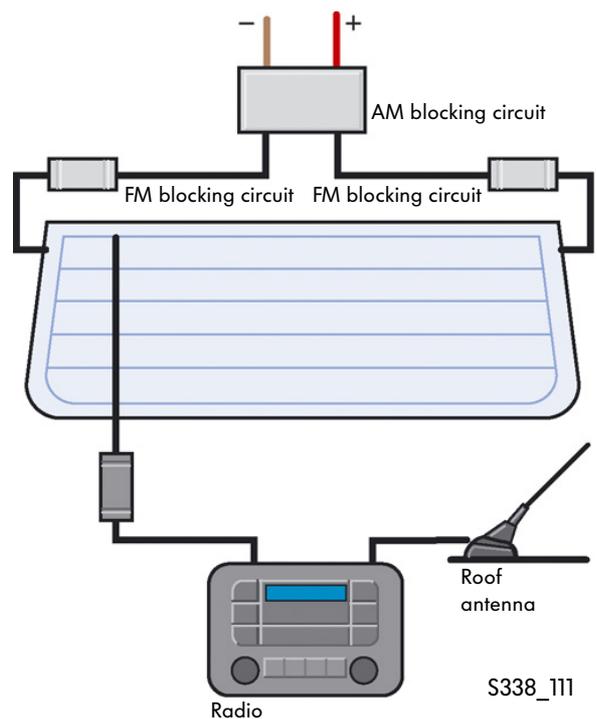
### Roof antenna and rear window with an antenna structure without connection option

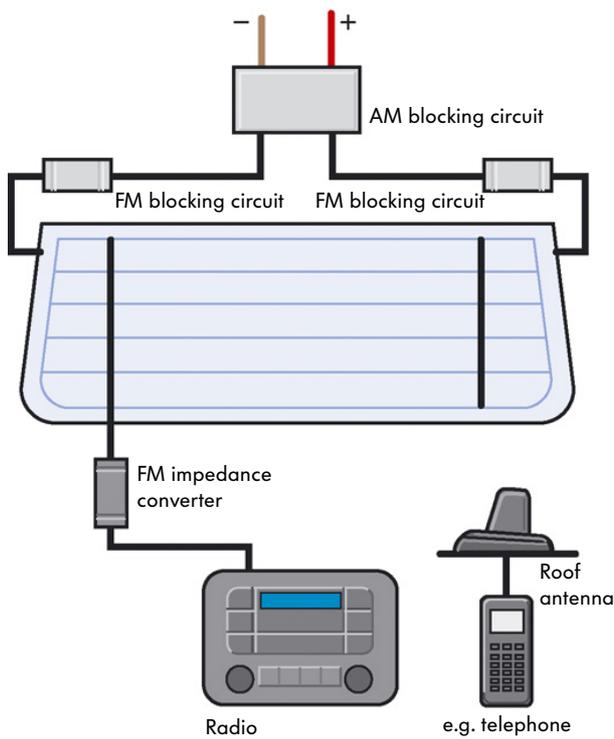
If this equipment is fitted, e.g. radio R100 is connected to the roof antenna. As in the case of the variant "without radio", the integrated rear window antenna has no connection option, with the result that a telephone, navigation and telestart cannot be implemented with this version.



### Roof antenna and rear window with an antenna structure and one connection option

Both antennae are used by one radio (as of RCD 300) to exploit the advantages of antenna diversity. This means that, thanks to an integrated diversity switch, the radio automatically uses the antenna with the stronger input signal. Telephone, navigation and telestart are not available in this case.

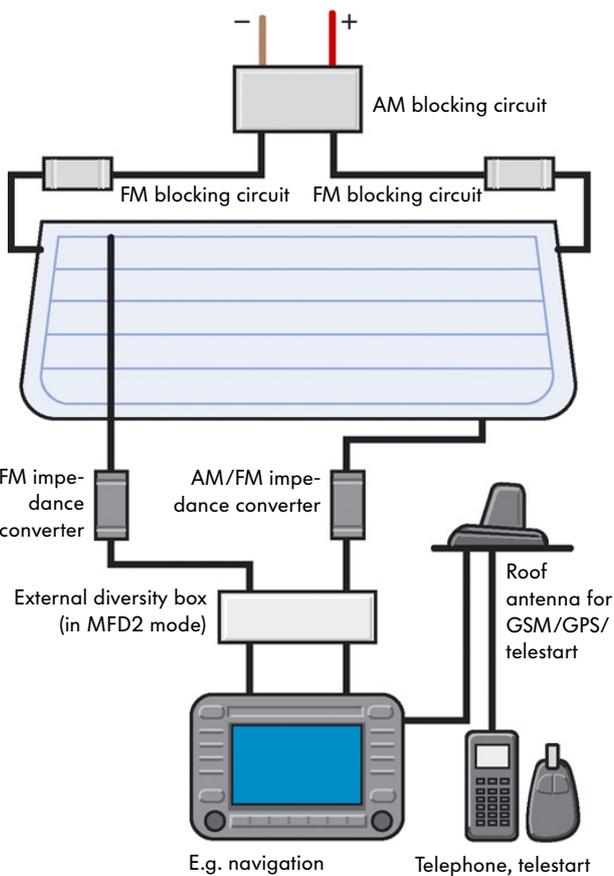




S338\_113

### Roof antenna and rear window with two antenna structures and one connection option

The roof antenna is used for the telephone, navigation or telestart. The rear window antenna's connection option is used for the radio, e.g. the R100.



S338\_112

### Roof antenna and rear window with two antenna structures and two connection options

The roof antenna is used for the telephone, navigation and telestart. The two rear window antenna connections are used for the radio. No external diversity box is installed if the vehicle is equipped with radio RCD 300 or RCD 500. The GPS link to the roof antenna is also omitted in this case.



If the Golf Plus is supplied without preparation for antenna installation, a dummy antenna seals the antenna bore in the vehicle's roof. Whilst the rear window is equipped with the integrated antenna structure, it does not offer any connection option.



# Heater and air conditioner

## Climate control



S338\_059

Three different systems are available in the Golf Plus:

- The manual heater and ventilation system,
- The semi-automatic heater and air conditioner "Climatic" and
- The heater and air conditioner "Climatronic".

An identically designed air conditioner unit, which has been adapted to the relevant vehicle equipment, is used for both air conditioners. The main difference is in the number and design of the air distribution flaps. For example, the 2C-Climatronic is fitted with an additional fresh air/air flow flap.

Depending on the vehicle's equipment, the heater and air conditioner control panels differ.

Four different variants are available:

- With or without instant heat button for the auxiliary coolant heater and
- With or without potentiometer for the seat heating.



S338\_060

All temperature- and ventilation-relevant control elements and the air conditioner control unit are integrated into the control panel.





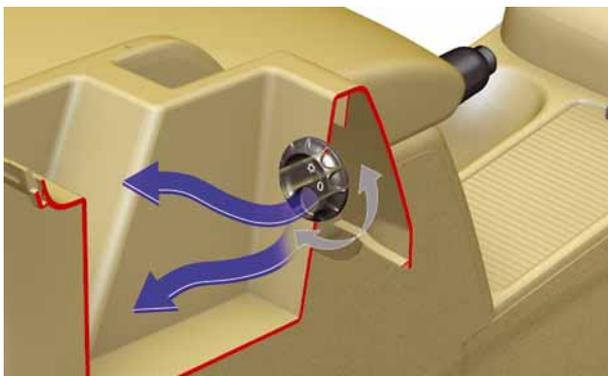
S338\_041

The vents are sub-divided. This doubles the number of vents in the upper area of the dash panel to eight, and enables more individual adjustment. Better air output is made possible thanks to the larger air duct cross-sections. The cross-sections of the rear footwell vents have also been increased. This also improves ventilation in this area.



S338\_081

The glove box is supplied with cooled air, which is diverted directly downstream of the evaporator.



S338\_042

The temperature-controlled storage compartment in the Highline centre console has room for two cans of drink. The temperature corresponds to the pre-set interior temperature.



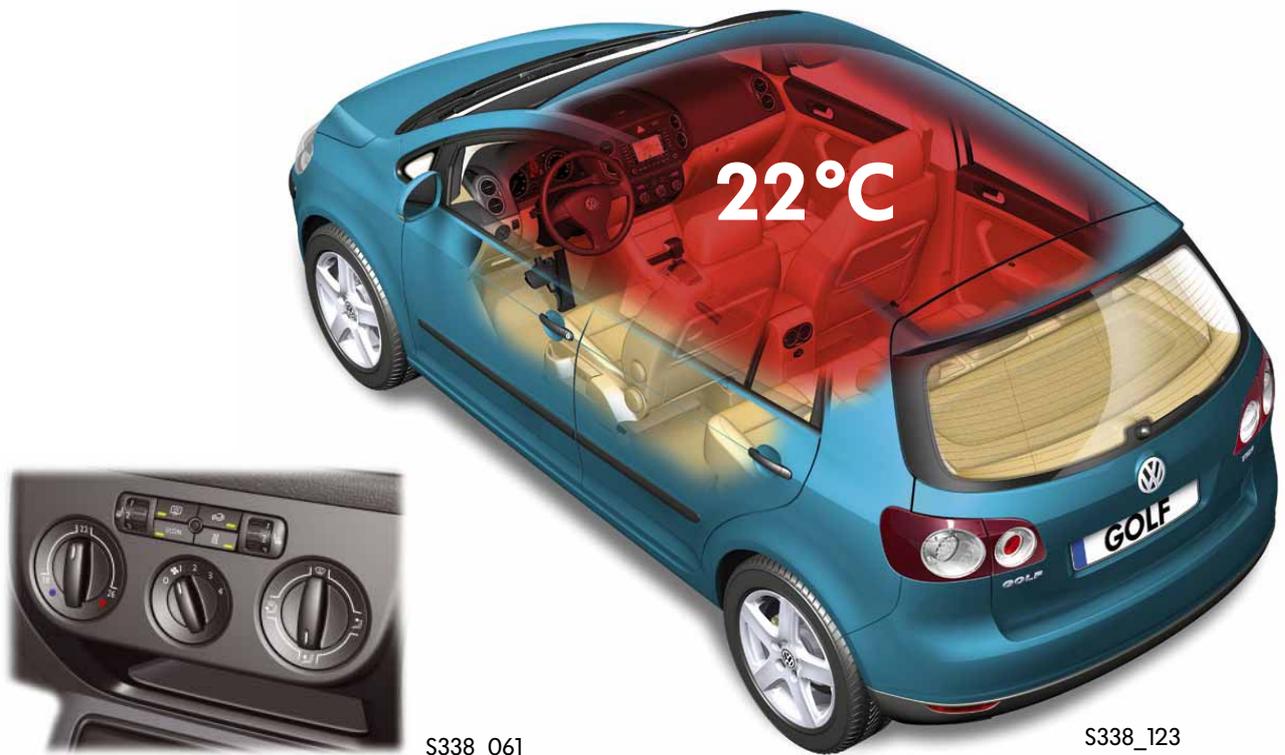
S338\_078

In the Climatronic system, a diffuser offers indirect and draught-free ventilation.



# Heater and air conditioner

## The Climatic system



In the Climatic system, the vehicle's entire interior is comprised to form a single climatic zone. The desired temperature is set at the left rotary switch. The rotary switch is linked to a potentiometer, which passes the temperature command on to the Climatic control unit. The control unit then forwards a calculated flap position value to the temperature flap positioning motor.

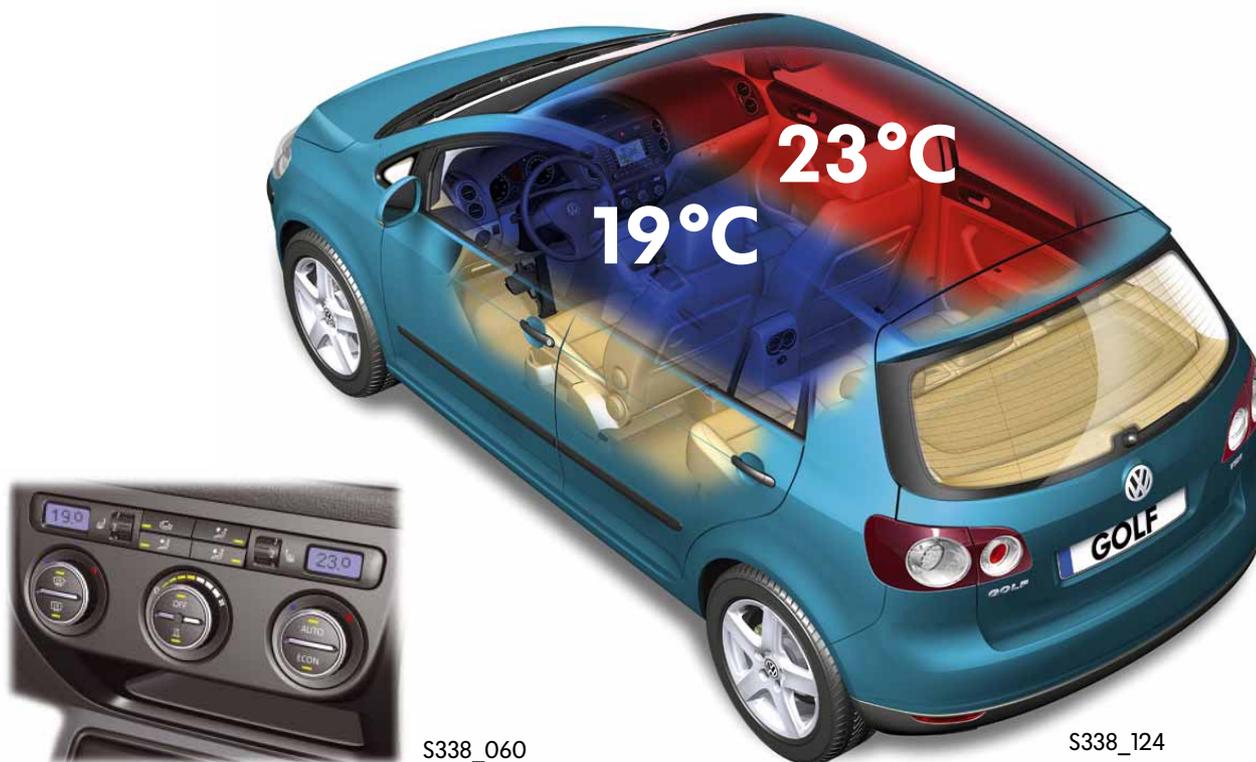
Climatic is able to control the pre-set temperature by monitoring the vent and interior temperature.

The air distribution flaps are actuated via a flexible shaft in the Climatic system. The air conditioner is switched on and off via the ECON button. In ECON mode, the additional heater is also switched off in vehicles fitted with diesel engines. The Climatic air conditioner unit is equipped with a combined fresh air/recirculated air flap.



Further information can be found in self-study programme No. 318 "The Golf 2004".

## The 2C-Climatronic system



In the 2C-Climatronic system, the interior is subdivided into two climatic zones. This means that the temperatures desired on the driver and front passenger side can be set independently of each other. The climatic zones are separated by two temperature flaps inside the air conditioner unit.

All flaps, air distribution and the temperature are actuated via positioning motors with an integrated feedback potentiometer. Maintenance of the pre-set interior temperature and optimal air distribution is thereby controlled and monitored by the Climatronic control unit.

The 2C-Climatronic system can be operated in automatic or manual mode.

In addition to the Climatronic system, 2C-Climatronic is fitted with a fresh air flow flap, which is closed as of 100km/h as speed increases, in order to keep the volume of fresh air which is supplied constant. One further function which is available is speed-dependent blower reduction, which reduces the air conditioner's flow noises at low speed. In cooling mode, this is compensated by lowering the vent temperature and by raising the ventilation temperature in heating mode.

To prevent the windows from misting when the compressor is switched off and the windscreen wipers are switched on, the defrost flap is automatically opened further to conduct more air to the windscreen.



# Heater and air conditioner

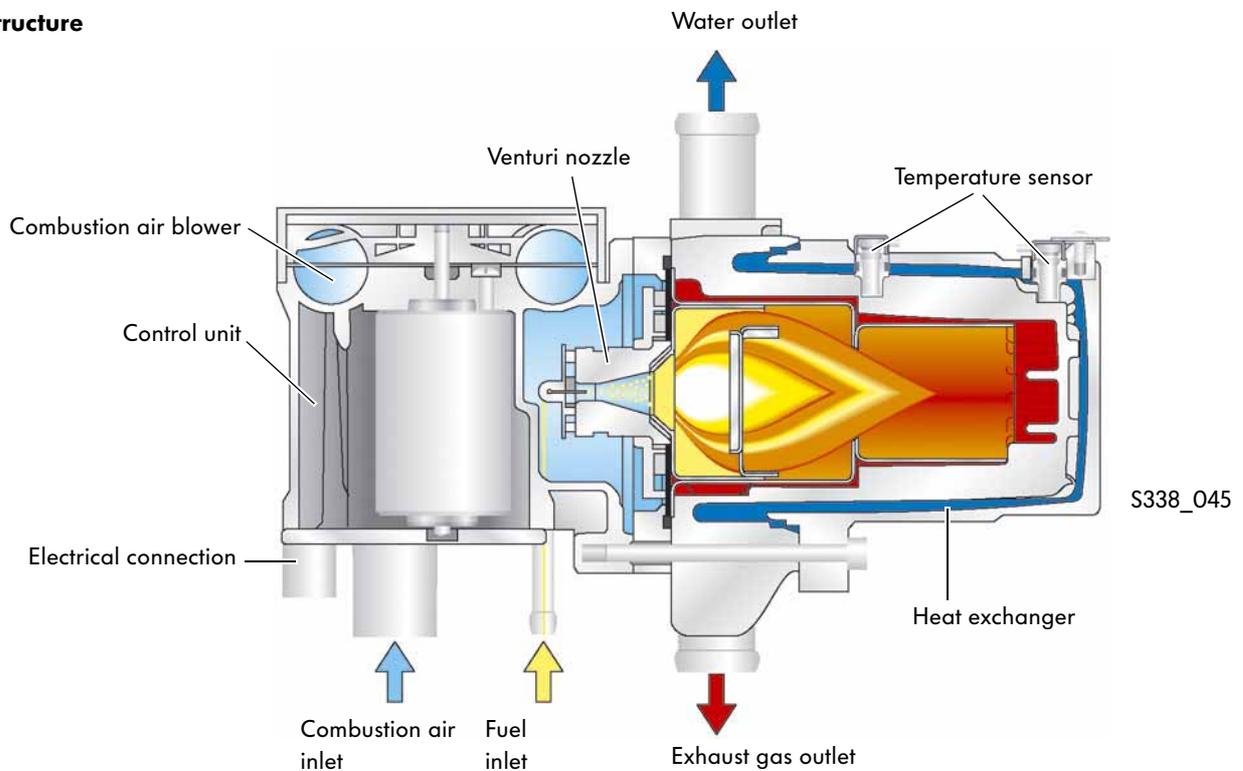
## The Thermo Top V auxiliary coolant heater

The Golf Plus can be fitted with the optional Thermo Top V auxiliary coolant heater.

This undertakes the following tasks:

- Acts as an auxiliary heater for heating the vehicle interior and defrosting the vehicle's windows,
- Acts as stationary ventilation to lower the interior temperature when the vehicle is parked in the sun,
- Acts as an additional heater in vehicles with petrol or diesel engines (fitted as standard in diesel engines).

### Structure

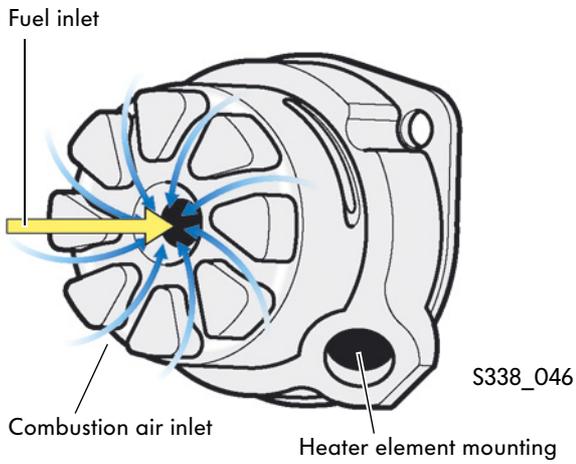


### Special characteristics

- The auxiliary coolant heater control unit is integrated into the heater unit.
- The electrical contacts for the combustion air blower are inserted directly into the control unit.
- The auxiliary coolant heater is fitted with a second NTC temperature sensor for controlling and monitoring the water temperature.
- The combustion air enters the combustion chamber via a venturi nozzle and thereby draws in the fuel delivered by the metering pump from the fuel line.



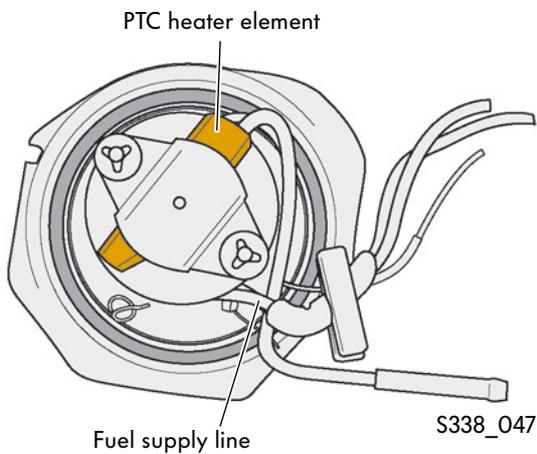
## The venturi nozzle



The intaken air is guided through a ceramic housing, which is shaped as a venturi nozzle. As a result of this, the air delivered by the combustion air blower is accelerated to approx. 50 m/s.

The incoming fuel is therefore drawn from the fuel line and swirled.

## The fuel pre-heater



The Thermo Top V system is fitted with a PTC element for pre-heating fuel; this enables the use of RME (rapeseed methyl ester).

The fuel is heated directly prior to emerging from the fuel line. To do this, the PTC heater element is switched on for one minute at ambient temperatures of less than 5°C.



# Heater and air conditioner

## Activation of Thermo Top V

There are three ways of activating the Thermo Top V auxiliary coolant heater. The "heater" or "ventilation" functions can be set in the dash panel insert display.

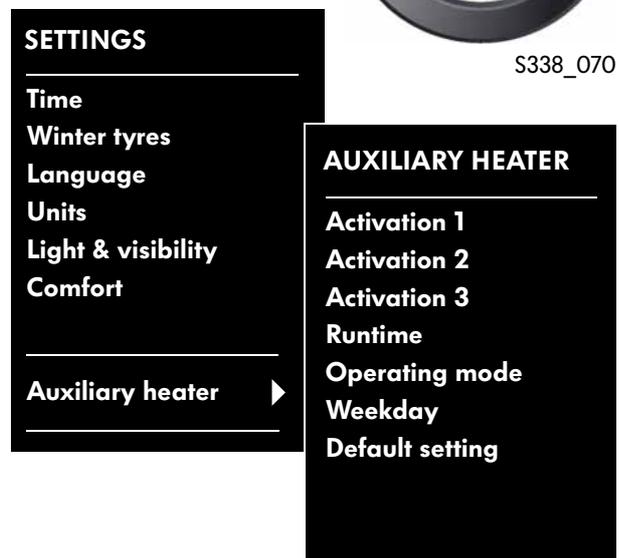
1. Activation of the auxiliary coolant heater via the instant heat button on the control panel.



S338\_070

2. Programming the auxiliary coolant heater via the multi-function indicator (MFI) with the data display protocol (DDP).

In this case, programming is carried out via the display in the dash panel insert in the "auxiliary heater" sub-option (personalisation).



3. The separate radio remote control can be used for switching on and off functions. An indicator lamp indicates whether the radio signal has been received by the auxiliary coolant heater.



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The instant heat button in the control panel shows the status of the auxiliary coolant heater: if active, the yellow feedback LED lights up. If a programmed duty cycle for the auxiliary coolant heater is active, the feedback LED lights up for approx. 10 seconds after the ignition has been switched off.

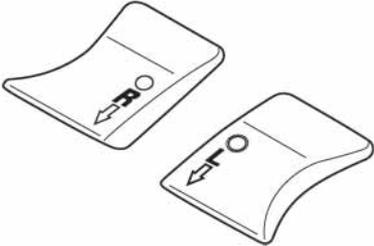


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Further information can be found in self-study programme No. 318 "The Golf 2004".

## Special tools

Tool No.	Figure	Designation and use
T 10311	 S338_137	<b>Wing underlay</b> The wing underlays are required when removing and installing the gearbox. They serve as underlays for support T 10222 A and its adapters T 10222 A/8.





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