

# Onboard power supply

## The electrics box

Housed in the electrics box are the fuses for components of the engine compartment and the interior.

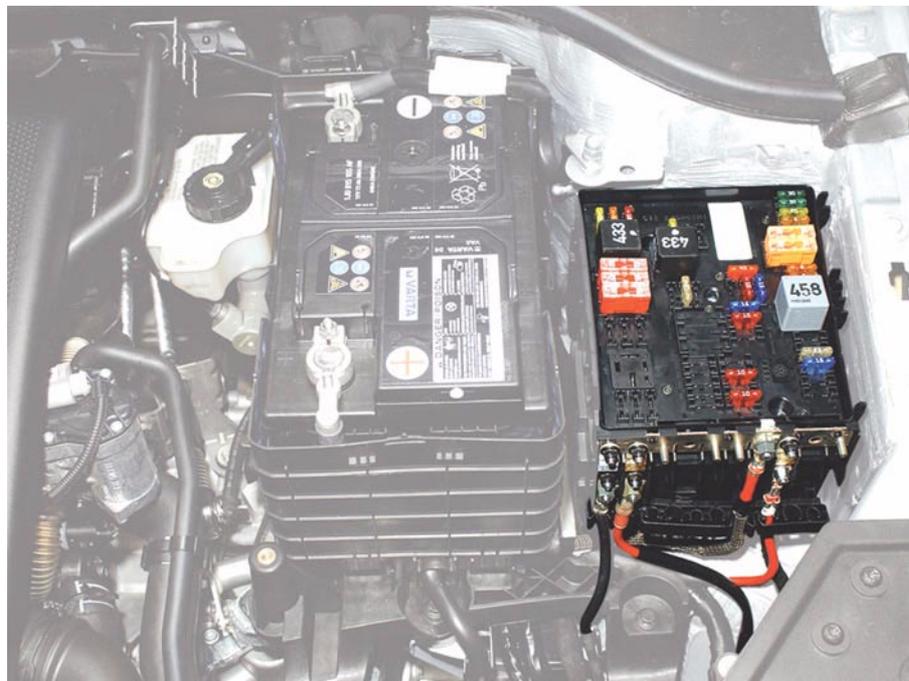
The connection between electrics box and battery is very short (approx. 500 mm), which enables use of the battery as a high frequency filter between the consumers mounted directly on the box.

Due to the increased number of fuses, the rating of the fuses can be set to the individual consumers.

### Fitting location

The electrics box can be found on the left in the engine compartment.

### Electrics box



S319\_031

**The electrics box and pre-fuse box are located in a housing in the engine compartment.**

### Electrics box

In addition to the fuses, the following relays can also be found in the electrics box:

- Terminal 15 voltage supply relay J329
- Terminal 30 voltage supply relay J317
- Terminal 50 voltage supply relay J682
- Fuel pump relay J17  
(not diesel and FSI)



S319\_009

### Pre-fuse box

In the pre-fuse box are fuses for:

- the alternator
- the electromechanical power steering
- the radiator fan
- power supply from terminal X
- the auxiliary heater
- terminal 30
- the rear battery (V6)  
(to be introduced at a later stage)



S319\_010



# Onboard power supply

## The relay carrier

### Fitting location

On the left under the dash panel is a relay carrier and the onboard supply control unit.



### Relay carrier

Additional relays may be included on the relay carrier depending on the equipment level. On vehicles with electric seat adjustment, the automatic safety device (thermal safety) is installed here.



S319\_012

### Relay carrier on onboard supply control unit

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

- Power supply relay terminal 30G
- Terminal 15 voltage supply relay (on V6 only)
- Terminal 75 voltage supply relay
- Heated rear window relay J9
- Horn relay J413
- Double washer pump relay 1 J729 (right)
- Double washer pump relay 2 J730 (left)



S319\_065

## The fuse box

### Fitting location

The fuse box can be found on the left of the dash panel behind a cover.

### Fuses

Included in the fuse box are fuses for the electrical components in the vehicle.



S319\_013



Please refer to the electronic service information system (ELSA) for current assignment details of the fuse box.

# Onboard power supply

## The data bus diagnostic interface J533

Due to the vast range of functions in the vehicle, large amounts of data must be transferred. To guarantee optimal exchange of data, several data bus systems are required.

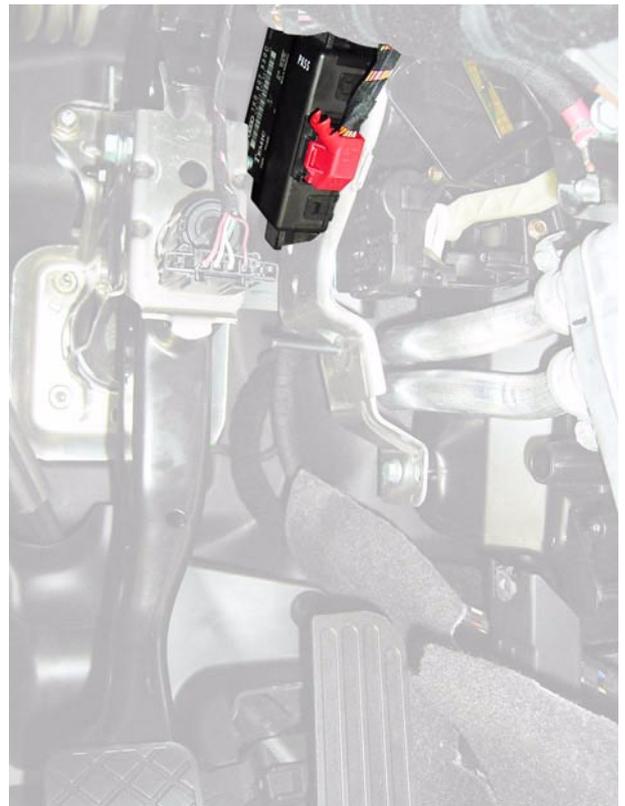
The function previously integrated in the dash panel insert or onboard supply control unit is now assumed by the separate data bus diagnostic interface (Gateway). It forms the interface for data bus systems that are independent of each other and allows information to be exchanged without conflict or interference.

### Fitting location

The data bus diagnostic interface is installed beneath the dash panel, above the accelerator pedal.

### Master functions

The data bus diagnostic interface takes on the master functions of terminal 15 run-on and sleep and wake-up modes.



Further information can be found in SSP 307 "The Touran - Electrical system".

S319\_014

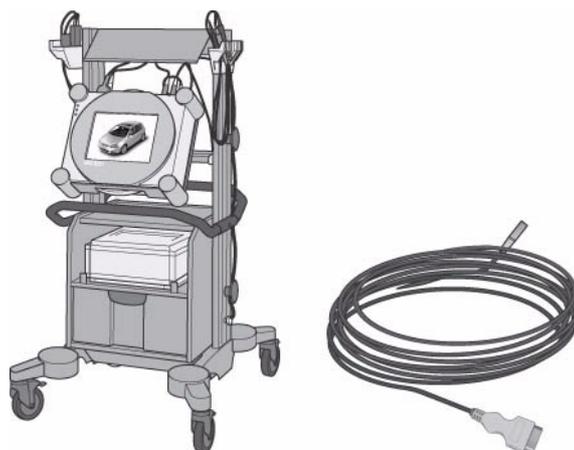
## Transport mode

For transportation of the vehicles to the dealerships, power consumption should be kept to a minimum to protect the battery from possible discharge.

To do this, the following systems are isolated when transport mode is activated:

- Radio
- Radio remote control
- Interior monitoring
- Auxiliary heater telestart receiver
- Inclination sensor
- Save LED in door
- 30 second interior light switch-off delay

The transport mode can only be switched on and off using diagnosis tester VAS 5051 via the vehicle self-diagnosis function [collective services].



S319\_030

"Tra" is shown, when transport mode is active, in the odometer display of the dash panel insert.



S319\_029



# Onboard power supply

## The onboard supply control unit J519

### Fitting location

The onboard supply control unit can be found on the left underneath the dash panel where it forms a unit with the relay carrier.



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### Versions

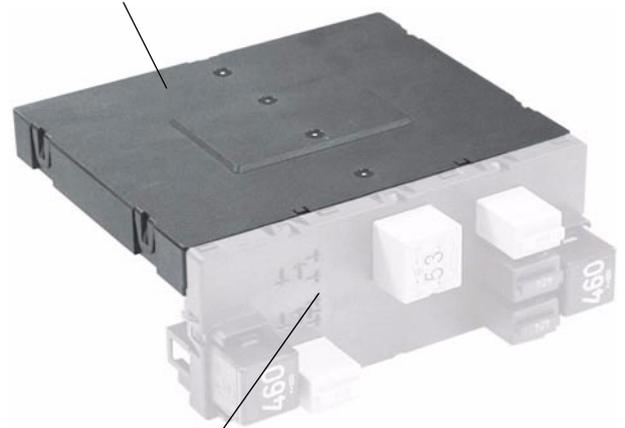
The onboard supply control unit is available in two versions.

- High version  
for vehicles with fog lights and/or bi-xenon lights and personalisation
- Medium version  
for all other vehicles



Fog lights can only be retrofitted if the medium version of the onboard supply control unit is upgraded to the high version.

### Onboard supply control unit



Relay carrier on onboard supply control unit

S307\_017

## Tasks

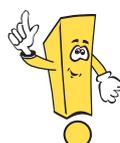
The onboard supply control unit actuates and controls the following functions:

- Exterior light control with bulb monitoring  
In the event of bulb failure, the relevant warning lamp will light up or a text message is displayed in the dash panel insert.
- Convenience light:  
Coming home  
Leaving home  
Dimmable instrument backlights
- Coulisserie lighting
- Windscreen wipers  
Conveyance of CAN data bus signals from onboard power supply control unit to wiper motor control unit
- Rear window wiper  
When reverse gear is selected, the rear window wiper is activated.
- Windscreen and rear window washer pump
- Turn signal control
- Electric load management Shut-off below 11.8 V, as in Touran



The onboard supply control unit also controls the following functions:

- Interior light control  
Terminal 30G, via which voltage is supplied to the interior lights, is activated by the onboard supply control unit.
- Heated rear window  
When the heated rear window button is actuated, the rear window is activated via the onboard supply control unit.
- Terminal actuation  
The onboard power supply control unit controls terminal 75x via an X contact relief relay.  
Terminal 15 is actuated via terminal 15 voltage supply relay in the electrics box.  
Terminal 50 is actuated via terminal 50 voltage supply relay in the electrics box.
- Fuel pump readiness  
When the driver's door is opened, the electric fuel pump is supplied with power by the onboard supply control unit.  
After the engine has started, power is supplied from the Motronic control unit.



For further information, please refer to SSP 307 "The Touran - Electrical system".

# Onboard power supply

## The exterior light control

### Main headlights

The twin headlights with dipped and main beam reflectors are equipped with H7 bulbs on the medium version.

To improve visibility for other road users, the turn signals are located linearly beneath the dipped and main beam lights, i.e. a well balanced distribution of light can be observed from the turn signal.

On the high version, a combination of the bi-xenon module and a main beam reflector equipped with H7 bulbs is available as an option.

The equipment is supplemented with a washer system and dynamic headlight range control.

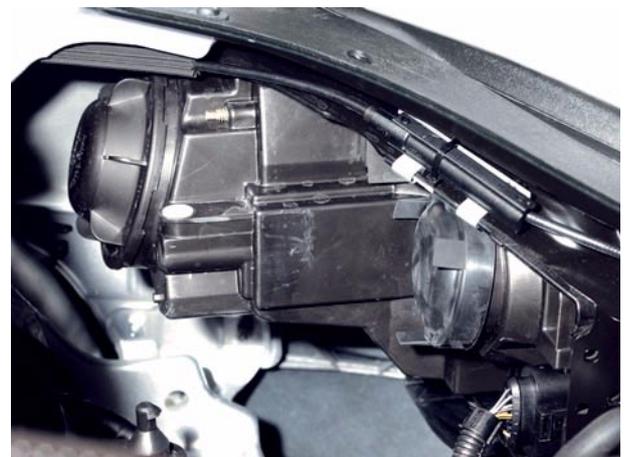


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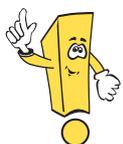
Main beam headlights  
Turn signal light  
Side light  
Dipped beam headlights

### Bulb renewal with One-Touch-System

Thanks to the spacious layout of the headlight design and the One-Touch-System, the cover and the H7 bulbs can be removed by a simple twist motion and replaced with the help of a guide.



S319\_034



For further information, please refer to SSP 307 "The Touran - Electrical system".

## Tail lights

Installed for the first time in the Golf 2004 are the split rear lights with round elements, which are comprised of several elements.

The light unit integrated in the side panel is responsible for the tail, brake and turn signal light functions.

Installed in the tailgate is a fog light on the left and a reverse light on the right.

The auxiliary brake light in the roof spoiler and turn signals mounted in the exterior mirrors complement the headlight and rear light functions and provide an additional visual aid for other road users.



## Actuation of the light functions

The rotary light switch is a powerless semi-conductor module, which sends information about the switch position, in the way of signals, to the onboard supply control unit.

The onboard supply control unit controls all of the relevant exterior light functions.

## Advantages

- Voltage peaks in the light switch are avoided to increase longevity of the bulbs
- Special functions:
- The bulb monitoring system can be displayed visibly in the dash panel insert

# Onboard power supply

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## The convenience lighting

### Coming home

When occupants alight from the vehicle and close the doors, including the tailgate, the vehicle surround lighting is activated for a short period.

If the rotary light switch is in the dipped beam position, the lights are switched off completely once the lighting period has elapsed.

If the rotary light switch is in the side light position, the side light bulbs remain on after the surround lighting is switched off.



### Leaving home

After the vehicle has been unlocked using the radio remote control, the area around the vehicle is lit up for a brief period.



After the lighting period has elapsed or in the event of an interruption, the coming home function cannot be reactivated until the ignition is switched on.

The following lights are switched on by the **coming home** and **leaving home** function:

- Front side lights
- Dipped beam headlights
- Tail lights
- Number plate light



Side light

Dipped beam headlights

S319\_070



Activation or deactivation of the coming home and leaving home function and the lighting period are set in the dash panel insert via the "Light and Vision" personalisation menu, or with the diagnosis tester VAS 5051/5052.



Tail light

S319\_003

# Onboard power supply

## The windscreen wiper system

### Wiper actuation

The wiper system comprises of a single motor with mechanical connection between the wiper arms.

The switch positions of wiper switch E are sent directly to the steering column electronics control unit J527 and then via the convenience CAN data bus to the onboard supply control unit J519.

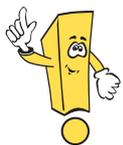
The onboard supply control unit passes on information about the selected wiper stage via the LIN data bus to the wiper motor control unit J400, which is responsible for control of the wiper action.

On vehicles with rain and light detector sensor, the wiper frequency is calculated in rain sensor mode and sent to the wiper motor control unit.

In intermittent operation, the wiper intermittent stages are speed dependent and vary between 2 and 24 seconds.

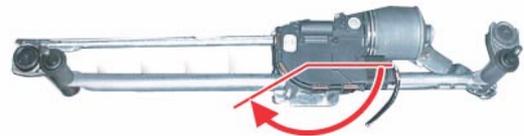
The wiper control system detects a blockage in the wiper motion and reacts according to the degree of resistance. The wipers will try to move the obstacle out of the way. If it has still not been moved after the fifth attempt, the wiper will stay in this position.

Activation of the wiper after the obstacle has been removed is possible only by actuation of the windscreen wiper switch again.



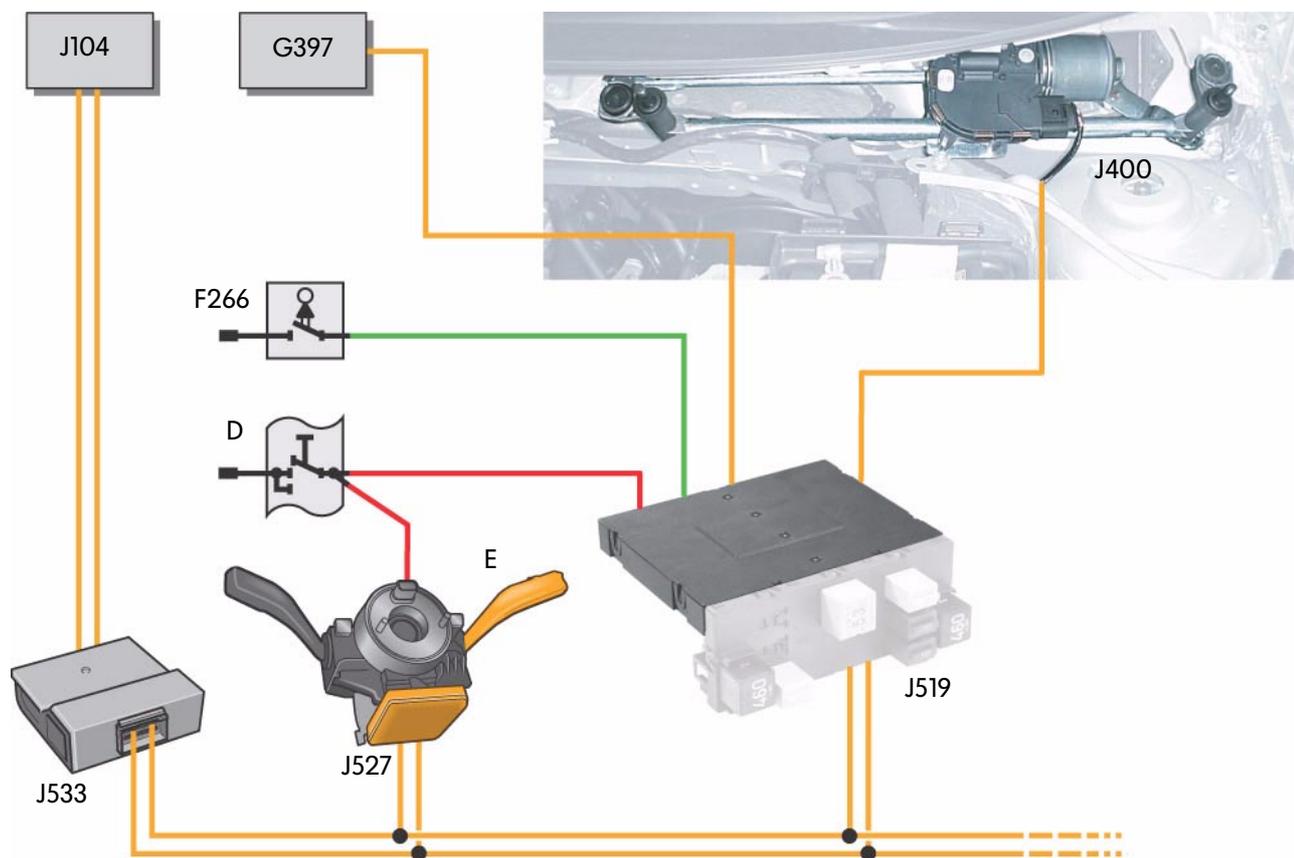
Instead of a 360 degree rotation, the drive housing of the wiper performs a reversing action through an angle of 150 degrees.

In this way, the amount of space required for the wiper linkage has been reduced.



S319\_069

## Overview of wiper system



S319\_016

### Key

D	Ignition/starter switch	J400	Wiper motor control unit
E	Windscreen wiper switch	J519	Onboard supply control unit
F266	Bonnet contact switch	J527	Steering column electronics control unit
G397	Rain and light detector sensor	J533	Data bus diagnostic interface
J104	ABS with EDL control unit		



# Onboard power supply

## Service/winter position

If, within 10 seconds of switching off the ignition, the windscreen wiper switch is switched to the tip wiping position, the wipers will move to the upper end position of the wiped arc.

When the wiper arms are in the service/winter position, the wiper blades can be renewed without restriction or the wiper arms can be lifted up to prevent the blade rubber from freezing to the windscreen.

The wipers will revert to the rest position as soon as the windscreen wiper switch is actuated twice with the ignition switched on or at a driving speed of  $> 2$  km/h.



S319\_015



When the vehicle is stationary and the bonnet is in the open position, the wipers cannot be activated.

## The headlight washer system

Actuation of the headlight washer system is carried out by the onboard supply control unit and is part of the "wash/wipe" function.

### Activation conditions

- Ignition on
- Side, dipped or assistant driving lights ON
- Steering column switch in "wash/wipe" position

### Wash cycle

- Every fourth time the "wash/wipe" function is actuated

## The quick lock system

- Easy removal/assembly
- Improved longevity
- Improved anti-crimp and frost protection
- Corrugated-type tubes

Included in the new features of the new Golf 2004 is also the quick lock system for the windscreen washer system.

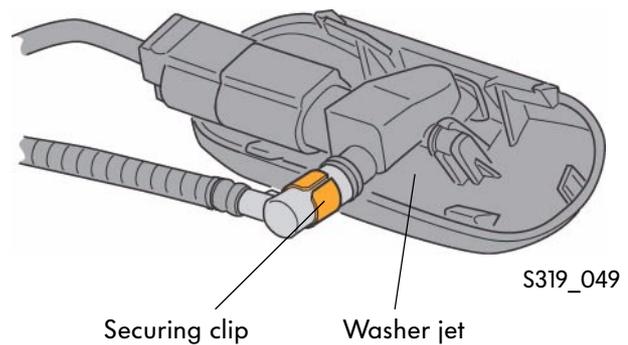
With this system, the windscreen washer hoses are replaced with corrugated-type tubes, which avoids the risk of crimping.

The connections to the windscreen washer pump and the washer jets are fixed by means of securing clips.

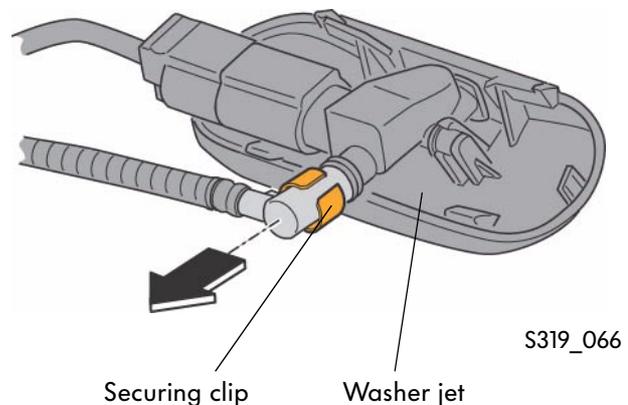
To release the connecting pieces, the securing clip must be pressed outwards by hand so that the hose can be removed.

For assembly, the hose is pressed onto the connecting piece and the securing clip engages automatically.

### Engaged



### Disengaged



# Onboard power supply

## Control unit with display in dash panel insert J285

The control unit with display in the dash panel insert receives its information via the data bus diagnostic interface J533 and the dash panel insert CAN data bus.

Further external sensor signals are sent to the dash panel insert via separate wiring:

- F1 Oil pressure switch
- F34 Front left brake pad wear warning contact
- G17 Ambient temperature sender, located in bumper
- G32 Coolant shortage indicator sender
- G33 Windscreen washer fluid level sender (optional)
- G34 Front left brake pad wear sender
- J538 Fuel pump control unit

### Diagnosis

Diagnosis of the control unit with display in the dash panel insert is carried out using the diagnosis tester VAS 5051/5052 via the CAN data bus.

Furthermore, the dash panel insert control unit is capable of self-monitoring. If a fault occurs, this will be shown in the display by the letters "def".

### Versions

The sections in the display vary depending on the three versions of dash panel insert:

- Lowline version
- Midline version
- Highline version

LED warning lamps only appear in the upper area on Lowline and Midline versions.



For further information, please refer to SSP 307 "The Touran - Electrical system".

## Immobiliser control unit J362

### Immobiliser IV

The immobiliser control unit J362 is integrated in the dash panel insert control unit. With the ignition switched on, it enables or disables vehicle-specific functions.

The control unit can only be adapted using the "guided fault finding" function in the diagnosis tester VAS 5051.

Adaption channels and fault memories are dealt with separately.

The immobiliser requires its own address word 25 for diagnosis.



### Active immobiliser

If the immobiliser is active, a short audible signal will sound and the immobiliser warning lamp will light up in the rev counter.



The illustration shows a dash panel insert of the Highline version

S319\_051



Diagnosis of the immobiliser control unit is done via the guided fault finding function.

# Onboard power supply

## The warning lamps in the dash panel insert



S319\_017

## The dash panel insert of the diesel engine

Symbol	Control lamp	Lowline	Midline	Highline	Warning message or warning
	Airbag	X	X	X	Airbag fault! Airbag Belt tensioner deactivated!
	Anti-lock braking system (ABS)	X	X	X	ABS
	Brake pad wear indicator (BWI)	X	X	Pictogram	Check brake lining! 1 x audible warning
	Low brake fluid level	Flashing	Flashing	Flashing	Stop Brake fluid Operating instructions! 3 x audible warnings
	Preglow period (diesel engines)	X	X	X	
*	Electronic Power Control (EPC)	X	X	X	
	Dynamic oil pressure warning	Flashing	Flashing	Flashing Pictogram	Stop Oil pressure Engine OFF! See operating instruction 3 x audible warnings
*	Electronic power steering (EPS)	X	X	X	Low priority fault yellow High priority fault red
	Electronic brake pressure distribution (EBD)	Flashing	Flashing	Flashing	3 x audible warnings
	Parking brake system	X	X	X	Handbrake applied! 1 x audible warning
*	Electronic stabilisation program (ESP), traction control system (TCS)	X	X	X	



Symbol	Warning lamp	Lowline	Midline	Highline	Warning message or warning
	Left turn signal	x	x	x	Acoustic check
	Right turn signal	X	X	X	Acoustic check
	Main beam headlights	X	X	X	
	Cruise control system (CCS)	X	X	X	
	Bulb blown / driving light defective	X	X	X	e.g. front right dipped beam light defective!
	Tailgate / door open	X	X	Pictogram	e.g. Tailgate open 1 x audible warning
	Fuel reserve	X	X	Pictogram	Replenish fuel! 1 x audible warning
	Low coolant level / excessive coolant temperature	Flashing	Flashing	Flashing Pictogram	Stop - Check coolant! Operating instructions! 3 x audible warnings
	Alternator charge control	X	X	X	
	Engine check Onboard diagnosis (OBD)	X	X	X	Engine fault Workshop! Exhaust gas Workshop!
	Bonnet open	X	X	Pictogram	Door warning! Bonnet! 1 x audible warning if v > 6 km/h
	Rear fog light	X	X	X	
	TOG / oil level	X	X	Pictogram	Check oil level! Oil sensor Workshop! 1 x audible warning
	Tyre pressure monitor	X	X	X	1 x audible warning
	Shift lock	X	X	X	
	Seat belt	X	X	X	Please apply seatbelt! Belt warning alarm
** 	Tank flap open	X	X	Pictogram	
	Low washer fluid	X	X	Pictogram	Replenish washer fluid! 1 x audible warning
	Immobiliser	Flashing	Flashing	Flashing	Immobiliser active! 1 x audible warning

\*) Symbols marked with an asterisk are new or have been revised.

\*\*\*) Planned as of week 22 / 2004

# Onboard power supply

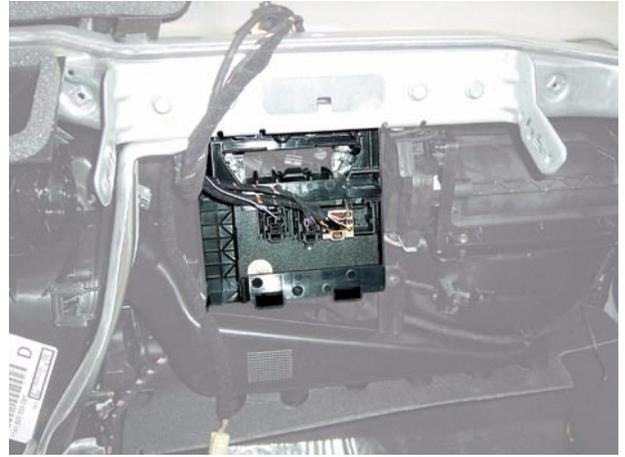
## The convenience system central control unit J393

### Fitting location

The convenience system central control unit can be found beneath the dash panel, on the right behind the glove compartment.

### Tasks

- Control of central locking function
- Actuation of rear doors
- Actuation of tank flap release
- Actuation of tailgate lock release
- Actuation of anti-theft alarm system via LIN data bus



S319\_064

The mirrors were controlled until now via the convenience system central control unit. The door control units now control all systems in the area of the doors, which reduces the amount of wiring.

The convenience system central control unit is the master control unit in the LIN data bus, via which data transfer for the anti-theft alarm system is carried out. Included in the anti-theft alarm system are interior monitoring sensors, intelligent sirens and the vehicle inclination sensor.

Depending on the version, some of the sockets may not be occupied in the convenience system central control unit.

## Trailer detection control unit J345

### Fitting location

The trailer detection control unit can be found on the left behind the luggage compartment trim in the side panel.

### Task

The trailer detection control unit has the task of detecting whether a trailer is connected, it controls the trailer lights and also checks the function of the lights.

The bulb current of each bulb wiring circuit is checked. There is an exception in the fog light and tail lights, as these are not available on every trailer.

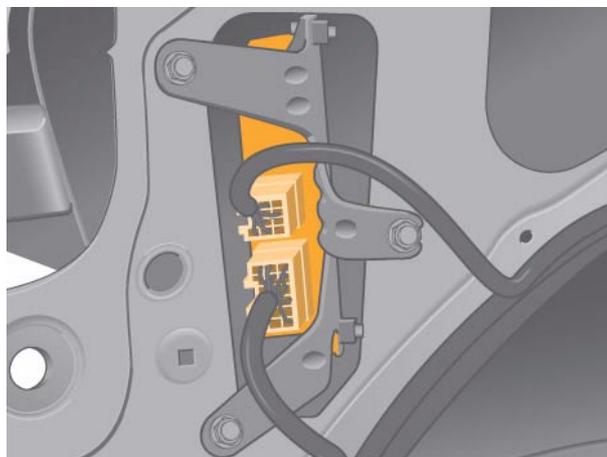
Control of the trailer lighting is provided by the onboard supply control unit, which communicates with the trailer detection control unit via the CAN data bus.

In the Golf 2004 there is no warning lamp in the dash panel insert control unit J285 for trailer detection.

Retrofitting of the trailer detection control unit is possible. However, problems may arise due to the fact that connection to the CAN data bus is necessary.



Please refer to the electronic service information system (ELSA) for the latest pin/terminal assignment and coding of the trailer detection control unit.



S319\_024



Installation of aftermarket control units, which have not been authorised by Volkswagen, is not recommended. In most cases, these are connected to the tail lights, which can result in faulty operation of the bulb monitoring system. In addition, the same tail light of the Golf 2004 is actuated, depending on the function, in varying degrees of brightness.

# Tyre pressure monitor

## The tyre pressure monitoring system

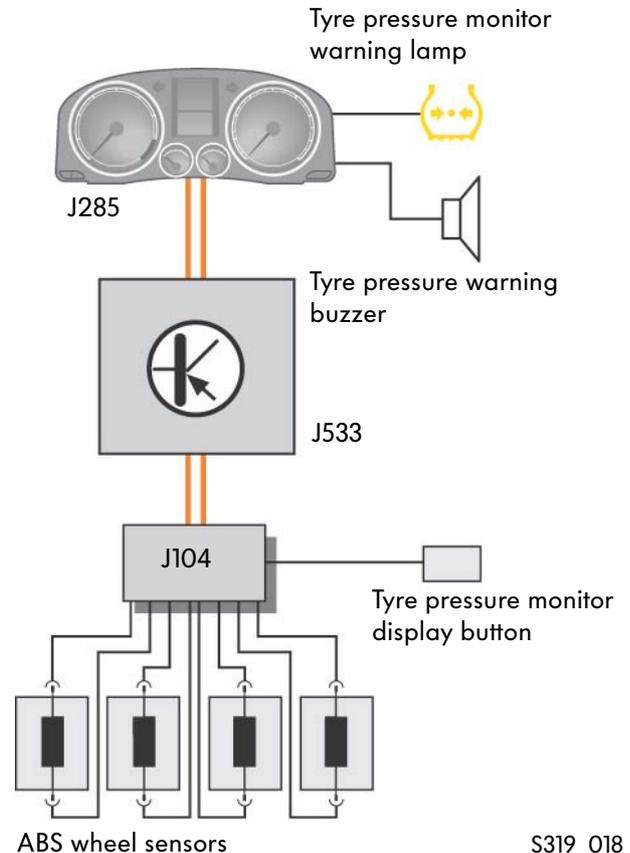
The tyre pressure monitoring system is a software module in the ABS control unit, which detects slow and gradual loss of air from the tyres. From current ABS and ESP data (wheel speed, current vehicle status), it filters out fine changes and compares the information with reference data.

The circumference of a tyre can change depending on the amount of air inside. If the circumference changes beyond a specified degree, the tyre pressure monitoring system will detect pressure loss.

If pressure loss is detected, the driver will be shown a permanent warning by the tyre pressure monitor warning lamp in the speedometer of the dash panel insert and one audible warning will sound when the ignition is switched on.

The warning will not be reset until the driver starts a new calibration procedure.

### System overview



S319\_018

### Key

- J104 ABS with EDL control unit
- J285 Control unit with display in dash panel insert
- J533 Data bus diagnostic interface



- Evaluation of data is interrupted during fast cornering, on uneven road surfaces, during braking and when the vehicle is driven up or down steep gradients. In these situations, tyre pressure loss cannot be detected.
- Each time the tyre pressure is altered or if a tyre has been changed, the driver must carry out a calibration procedure to prevent false warnings that may occur from old reference data.  
Even in the event of repair work on the running gear, the calibration procedure should be carried out by the workshop and the driver informed of this fact.

## Calibration

Since the tyre characteristics can change, a calibration procedure must be performed each time the tyre pressure is altered, or when a wheel is changed, to allow new reference data to be calculated.

### Calibration procedure

To start the calibration procedure, the tyre pressure monitor display button must be pressed for 2 seconds. The warning lamp in the speedometer will light up while the button is pressed and will go out after 2 seconds. In addition, a confirmation signal will sound.

As the vehicle is driven normally, the system will calibrate itself to the set tyre pressures and type of tyres. Tyre pressure monitoring will gradually take over as the calibration procedure nears the end. It takes just a few minutes before basic monitoring can start, based on the figures analysed by the system.

### System fault

In the event of a fault in the ABS with EDL control unit, tyre pressure monitoring will be stopped and the tyre pressure monitor warning lamp will light up in the speedometer.

### Diagnosis

Diagnosis is carried out using the diagnosis tester VAS 5051/5052 via the guided fault finding function in the ABS with EDL control unit J104.



# Convenience and safety electronics

## The exterior mirrors

In the Golf 2004, electrically folding exterior mirrors are available as an option.

Operation of the mirrors is via a mirror setting switch in the driver's door. If the switch is turned to the "fold in" position, the exterior mirrors will fold in automatically.

If the exterior mirrors are in the folded position, they can also be returned to the normal position above the speed threshold.



S319\_050



Normal position



S319\_059

Folded position



S319\_058

## New features and installation of the mobile telephone

For the telephone system in the Golf 2004, a Nokia 6310i is offered as an option.

### Equipment

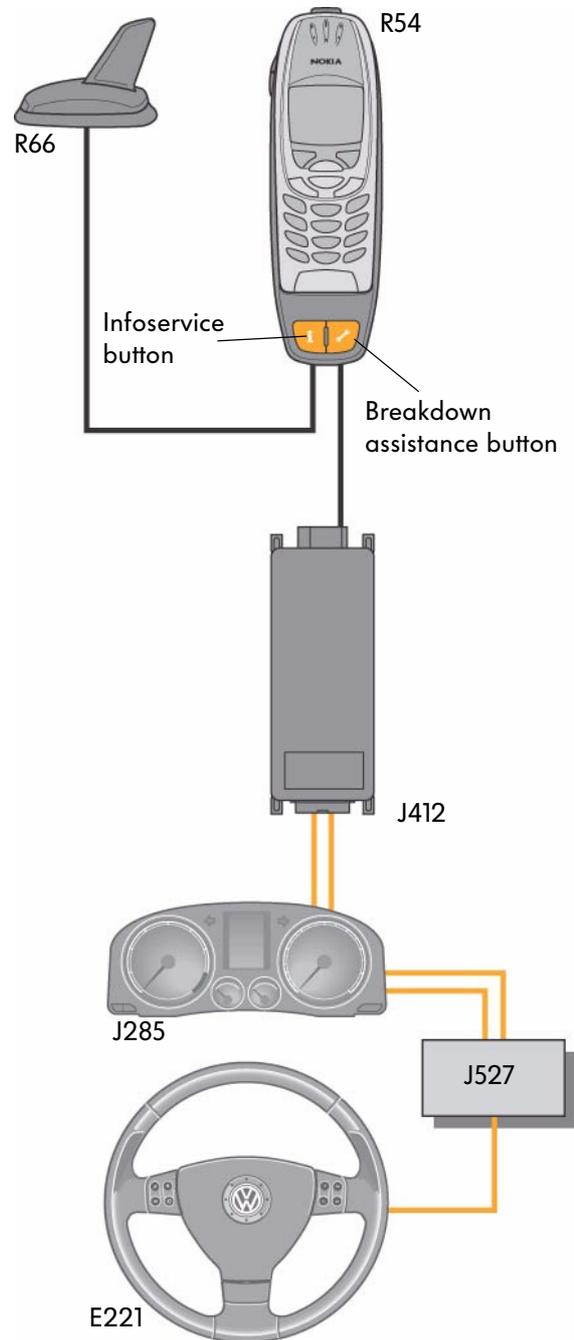
- Nokia 6310i
- Telephone interface
- Telephone mounting
- Buttons for information and breakdown assistance
- Microphone installed in bulb module
- Dual band "shark-fin" roof aerial (GSM 900/1800)

### Additional functions

- Convenient operation via Highline dash panel insert (telephone book and call status display)
- Operation via multi-function display paddle on steering column switch
- Operation via multi-function steering wheel with permanently installed phone (optional)
- Hands-free/battery charger
- Voice output via radio/navigation loudspeaker
- Diagnosis via CAN data bus
- Programmable sleep timer (personalisation)

### Mobile emergency call feature

If the "Infoservice" or "Breakdown" assistance button is pressed during a normal telephone conversation, the current call will be cancelled and a connection will be made to the Volkswagen Service Call Centre for emergencies and information.



S319\_044

### Key

- E221 Operating unit in steering wheel
- J285 Control unit with display in dash panel insert
- J412 Mobile telephone operating electronics control unit
- J527 Steering column electronics control unit
- R54 Mobile telephone
- R66 Aerial for telephone/navigation/auxiliary heater



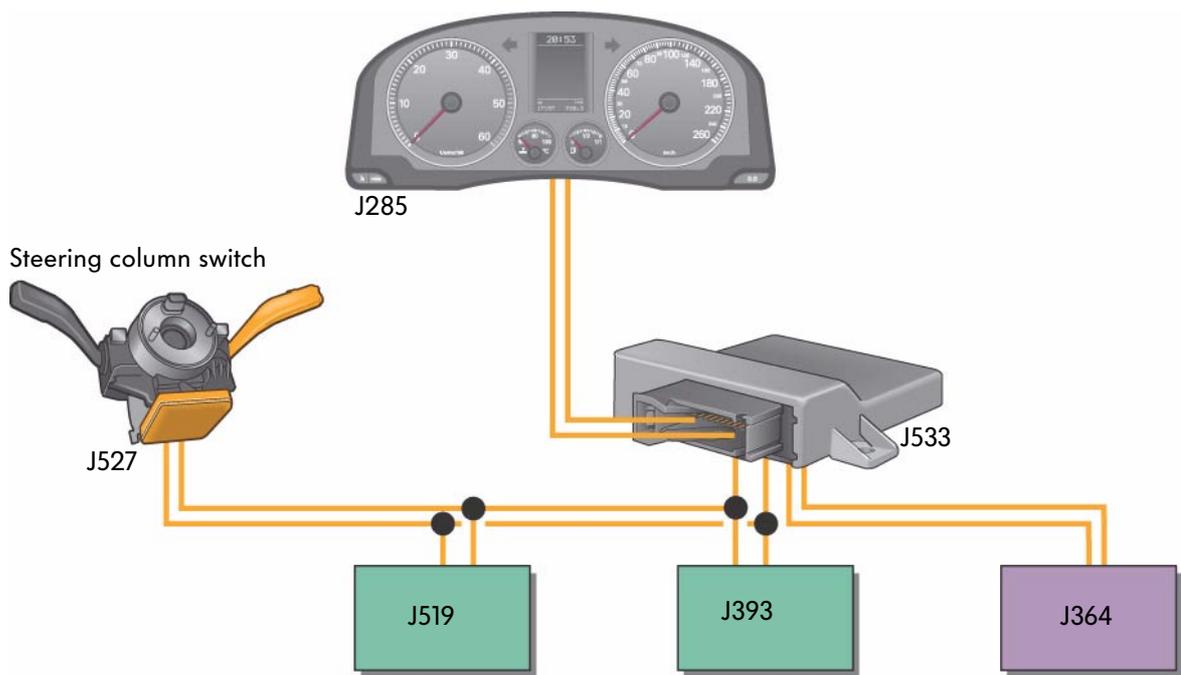
# Convenience and safety electronics

## Personalisation

The user based settings for different unit functions in the convenience and infotainment system are made via an operating unit and a display.

Operation is via control levers on the steering column switch and selection is made from the menu via the display in the dash panel insert. The settings selected are stored in the control unit, which is responsible for the control of each function.

Transfer of the necessary information between the control unit with display in the dash panel insert and the other associated control units is managed by the CAN data bus.

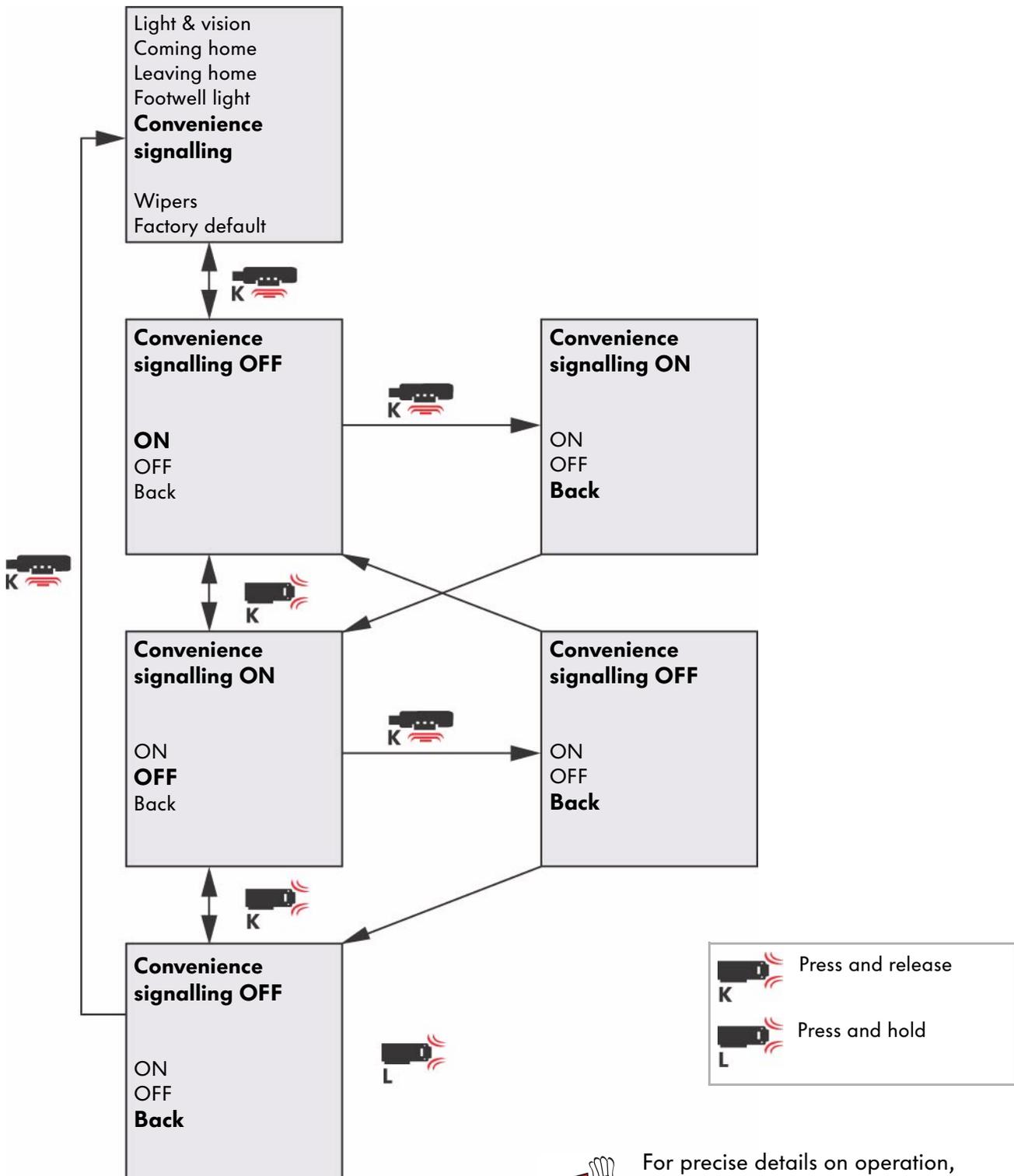


S319\_067

### Key

- J285 Control unit with display in dash panel insert
- J364 Auxiliary heater control unit
- J393 Convenience system central control unit
- J519 Onboard supply control unit
- J527 Steering column electronics control unit
- J533 Data bus diagnostic interface

## Example of menu guide



S319\_060



For precise details on operation, please refer to the operating instructions.



# Convenience and safety electronics

## The radios in the Golf 2004

### Radio R 100

The R100 radio is available to key account holders, e.g. fleet operators. It is a radio system with the following functions:

- Two loudspeaker channels (front only, each 20 W)
- RDS FM/AM Europe Radio (AM without LW)
- Without integrated disc drive
- Controls for external 6 disc CD changer
- Telephone control (hands-free operation)
- Speed-dependent volume control (GALA)
- Self-diagnosis inc. loudspeaker diagnosis
- Transport mode (voltage minimisation for vehicle transportation and storage)



S318\_175

### Radio RCD 300

The RCD 300 radio is available to private customers as a standard radio system. It has the following functions:

- Two or four loudspeaker channels (each 20 W)
- RDS FM/AM Europe Radio (AM without LW)
- Display of stored stations with RDS names
- FM 2 diversity tuner
- Operation via multi-function steering wheel and multi-function display
- Integrated single CD drive
- Controls for external 6 disc CD changer
- Telephone control (hands-free operation)
- GALA
- Self-diagnosis inc. loudspeaker diagnosis
- Transport mode



S318\_177

## Radio RCD 500

The top radio in the 2004 Golf is the RCD 500 with the following functions:

- Four loudspeaker channels (each 20 W)
- RDS FM/AM Europe Radio (AM without LW)
- Display of stored stations with RDS names
- FM 2 diversity tuner
- Operation via multi-function steering wheel and multi-function display
- Integrated 6 disc CD changer
- Controls for external 6 disc CD changer
- Telephone control (hands-free operation)
- GALA
- Traffic Information Memory (TIM)
- Model-specific sound adjustment



S318\_179

- Self-diagnosis inc. loudspeaker diagnosis
- Transport mode
- Optional external sound amplifier can be connected.



## MFD 2 radio navigation system

A radio system with an integrated navigation system is also available for the Golf.

It is operated in much the same way as the radio navigation system from the Touareg.

Features include:

- Multi-colour display (MCD)
- Dynamic traffic route guidance
- Four loudspeaker channels (each 20 W)
- RDS FM/AM Europe Radio (AM without LW)
- Display of stored stations with RDS names
- External diversity tuner
- Operation via multi-function steering wheel and multi-function display
- Controls for external 6 disc CD changer
- Telephone control (hands-free operation)
- GALA
- TIM
- Self-diagnosis inc. loudspeaker diagnosis



S318\_287



To remove and install a radio, the cover frame must be removed to gain access to the threaded connection at the rear.

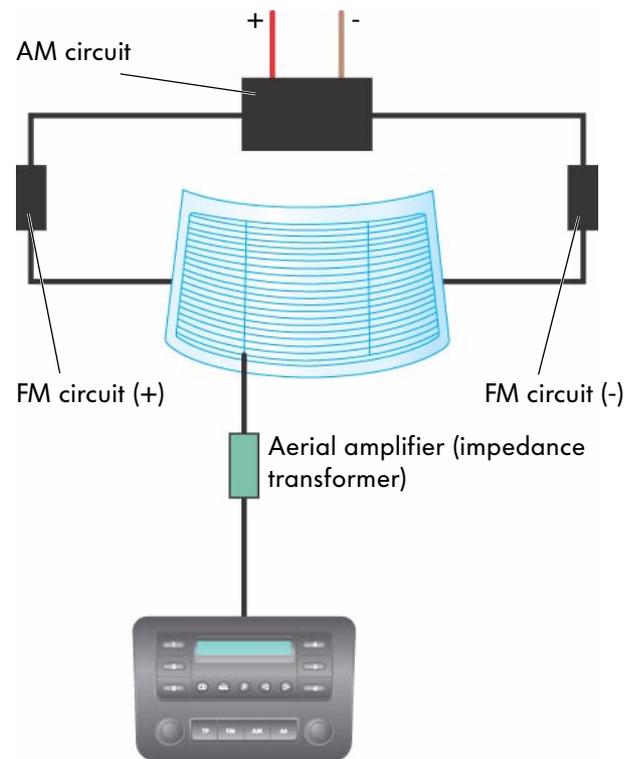
# Convenience and safety electronics

## The aerials

In the Golf 2004, various aerial systems are installed depending on the equipment level. No provision has been made to allow retrofitting of a rear window aerial.

### Radio R 100

The aerial system for the R 100 radio consists of a rear window aerial and a radio connection.

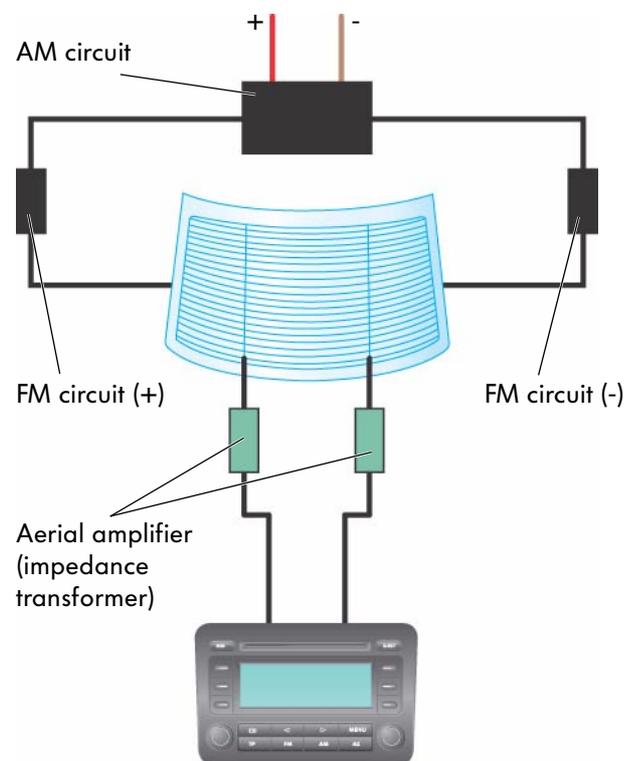


S319\_021

### Radio RCD 300/RCD 500

On the RCD 300 and RCD 500 radios there is an internal diversity tuner (automatic selection between aerials). An external diversity tuner is not required.

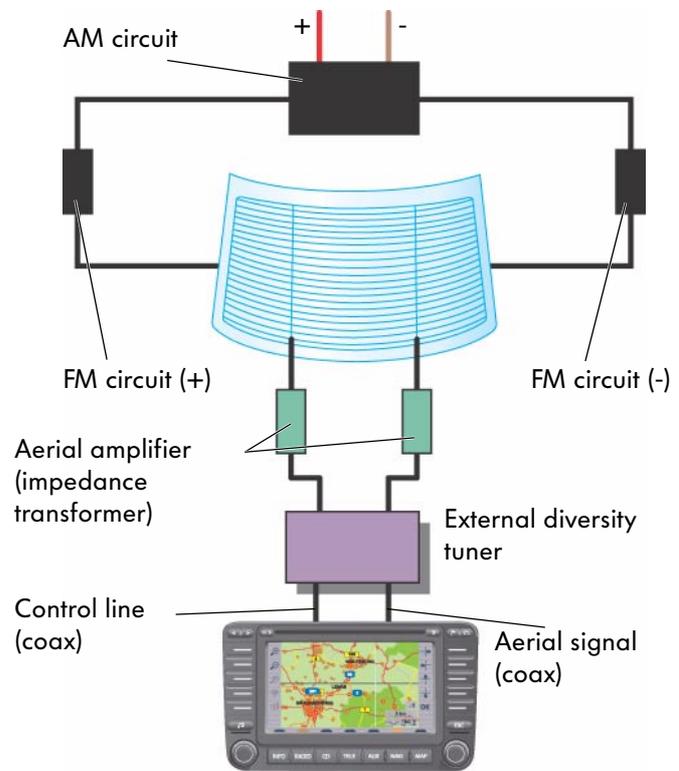
Two rear window aerials are connected simultaneously to the radio. The radio automatically selects the aerial with the strongest signal.



S319\_022

## MFD 2 radio navigation system

The MFD 2 radio navigation system does not feature an internal diversity tuner. It has an external tuner, to which two rear window aerials are connected.



S319\_023

On the MFD 2 radio navigation system, a shark-fin type roof aerial is installed. For reasons of safety, a specified breakage point is integrated in the design (red line). If the aerial breaks off, there is a risk of water ingress.



S319\_032



If a vehicle is ordered without radio system or without radio preparation, only the rear aerial structure is provided. No provision has been made for connection to this structure.

# Convenience and safety electronics

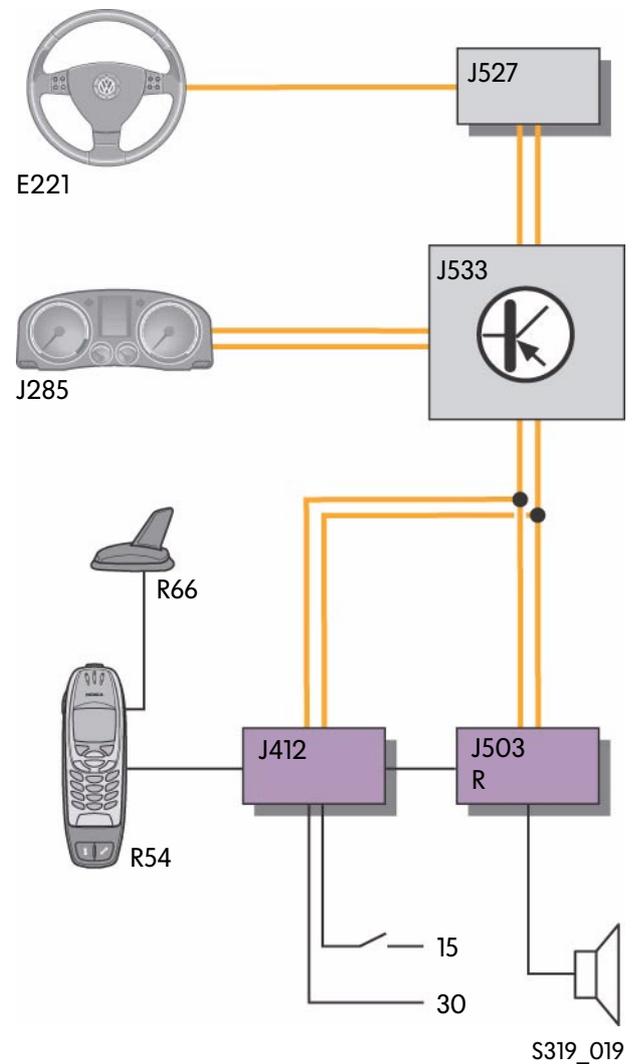
## Multi-function steering wheel

### System overview

Data is exchanged between the multi-function steering wheel and the steering column switch module via a LIN data bus.

Communication of the signals from the steering column electronics control unit to the data bus diagnostic interface is done via the CAN data bus, from where these signals are then passed on to the relevant control units.

The functions of the multi-function steering wheel become active as soon as the ignition is switched on.



### Key

- E221 Operating unit in steering wheel
- J285 Control unit with display in dash panel insert
- J412 Mobile telephone operating electronics control unit
- J503 Control unit with display for radio and navigation
- J527 Steering column electronics control unit
- J533 Data bus diagnostic interface
- R Radio
- R54 mobile cellular telephone
- R66 Aerial for telephone, navigation, auxiliary heater

## Multi-function buttons

Button illumination is controlled by terminal 58d.

There is only one symbol code, which communicates information from the button via the steering column switch module to the CAN data bus. For this reason, button functions can only be carried out individually.

If no telephone is installed, the telephone buttons are non-functional.

After several minutes, the system detects if a button is sticking and will disable the function until the button is released again. All other buttons remain functional.



S319\_025

Button symbol	Description
	Switch to basic telephone menu, various sub functions, such as caller list, make connection  Accept call, make call
	Mute selection of audio sources
	End call
	Switch (mode) between FM/ AM audio sources, CD-changer and CD (radio)
	Next track/start station search
	Previous track/start station search
	Volume up
	Volume down



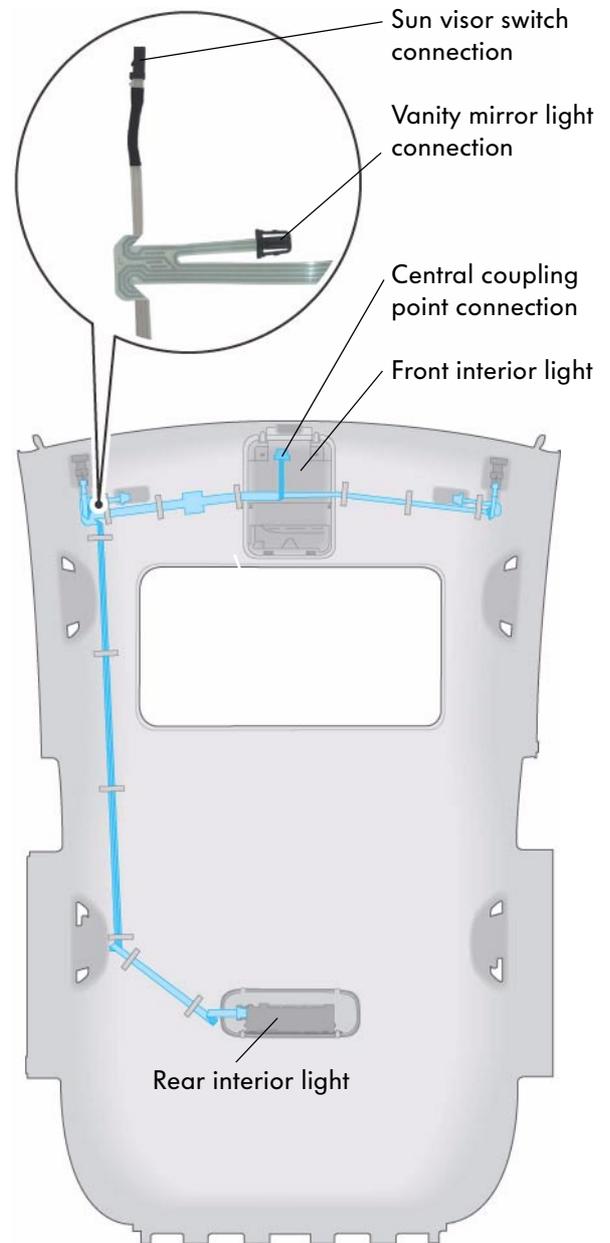
# Convenience and safety electronics

## Headliner wiring with printed circuit wires

By the use of printed circuit wires, an increase in headroom has been achieved. Routing between the headliner and roof is uncomplicated due to the fact that the printed circuit wiring can be attached to the headliner. This means that additional cable clips in the roof area are no longer required.

### Description

The printed circuit wiring connects the rear interior light, the sun visor switch and the vanity mirror lighting to the onboard supply system. The central coupling point to the onboard supply system can be found on the front cross member, above the front interior light.



S319\_073

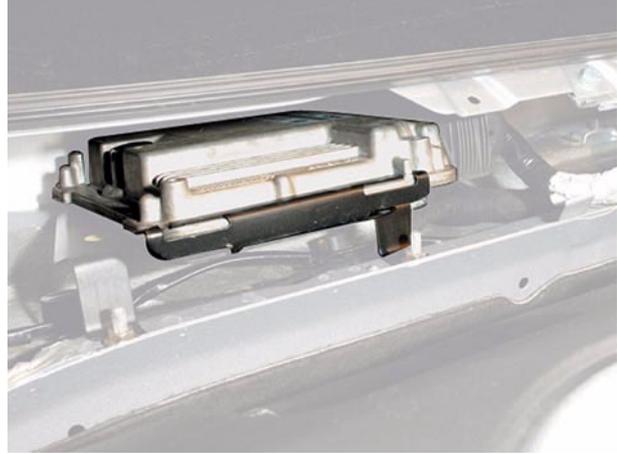


No provision has been made to repair the printed circuit wiring. It should be renewed in the event of a defect.

## Tuning guard

In the Golf 2004, a special guard is installed for the first time to protect the engine control unit. The tuning guard prevents engine control unit data from being accessed by unauthorised persons. Any attempt to alter the permanently stored data will be detected by the engine control unit. If an attempt is made to alter the data, the engine control unit will be disabled, thereby making it impossible to start the engine.

The tuning guard is installed both on diesel and petrol engines.

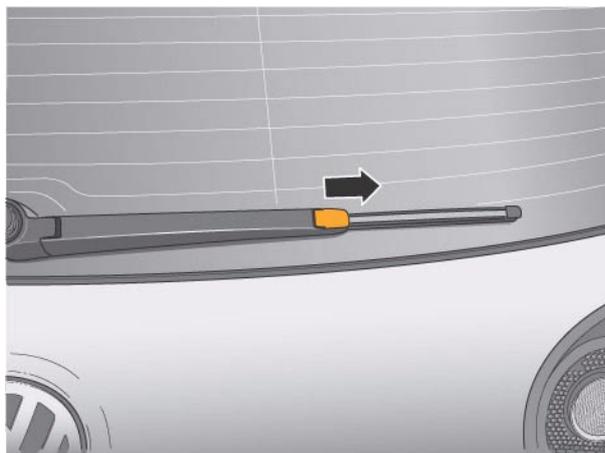


S319\_055

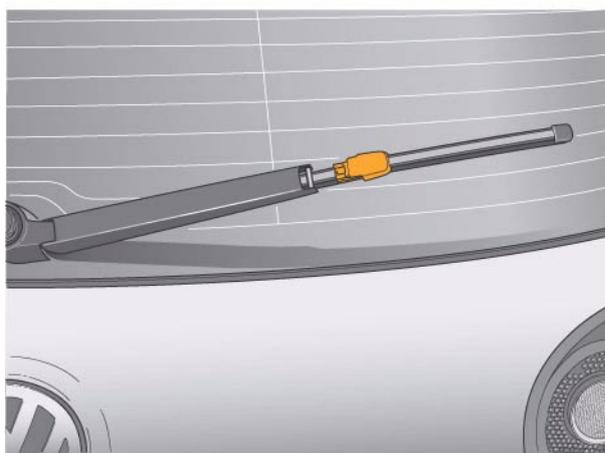


## Rear wiper renewal

To remove the rear wiper blade from the wiper arm, the mounting must be moved to the right in the direction of the arrow.



After the wiper blade has been released, the wiper arm must be lifted away from the rear window to allow the wiper blade to be removed from the mounting.



S319\_048





# Test yourself

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## 1. Where can the data bus diagnostic interface J533 be found?

- a) On the right beneath the dash panel, behind the glove compartment
- b) In the dash panel insert
- c) Beneath the dash panel, above the accelerator pedal

## 2. What are the advantages of the powerless semi-conductor rotary light switch?

- a) Bulb replacement function via control from onboard supply control unit
- b) Coming home and leaving home function
- c) Increase in bulb longevity
- d) Activation of bulb failure warning lamp in dash panel insert



## 3. What systems are switched off in transport mode for transportation of the vehicle?

- a) Auxiliary heater telestart receiver, radio remote control, radio, interior monitoring, interior light, vehicle inclination sensor, alighting aids
- b) Auxiliary heater telestart receiver, radio remote control, radio, interior monitoring, fog light, interior light, vehicle inclination sensor, alighting aids
- c) Vehicle inclination sensor, driving lights, radio remote control, auxiliary heater telestart receiver, interior monitoring, interior light, alighting aids, radio

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#### 4. Which control units are responsible for tyre pressure monitoring?

- a) Control unit in dash panel insert J285, data bus diagnostic interface J534 and ABS with EDL control unit J104
- b) ABS with EDL control unit, data bus diagnostic interface, dash panel insert control unit and tyre pressure monitor display control unit
- a) Data bus diagnostic interface J533, ABS with EDL control unit J104 and control unit with display in dash panel insert J285

#### 5. Which lights are joined by the printed circuit wiring?

- a) Radio and heater display
- b) Ashtray lights and cockpit illumination
- c) Reading lamps and interior lights
- d) Vanity mirror light and interior lights



# Test yourself

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Answers:  
1. c 2. c, d 3. a, 4. c, 5. b, c, d





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