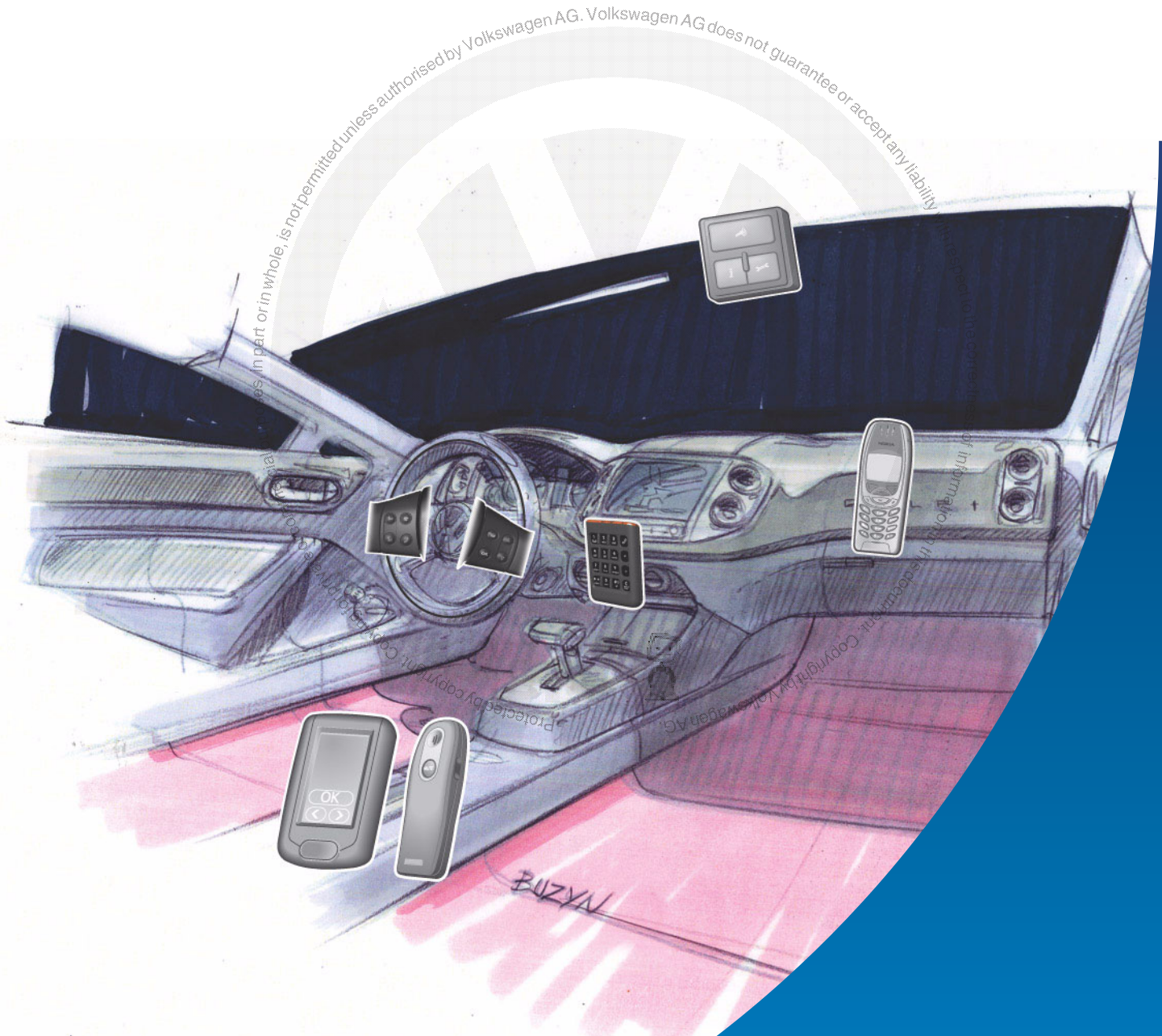




## Self-study Programme 345

# Universal Mobile Phone Preparation

## Design and Function



We are without a doubt living in the age of communications. Communication is also a basic human need, of course.

From this perspective, the invention of the telephone was the milestone in technical evolution.

As a result, long distances are not a problem when you need to contact somebody. Despite this, the audio quality of telephone connections has had to be and still needs to be constantly improved.

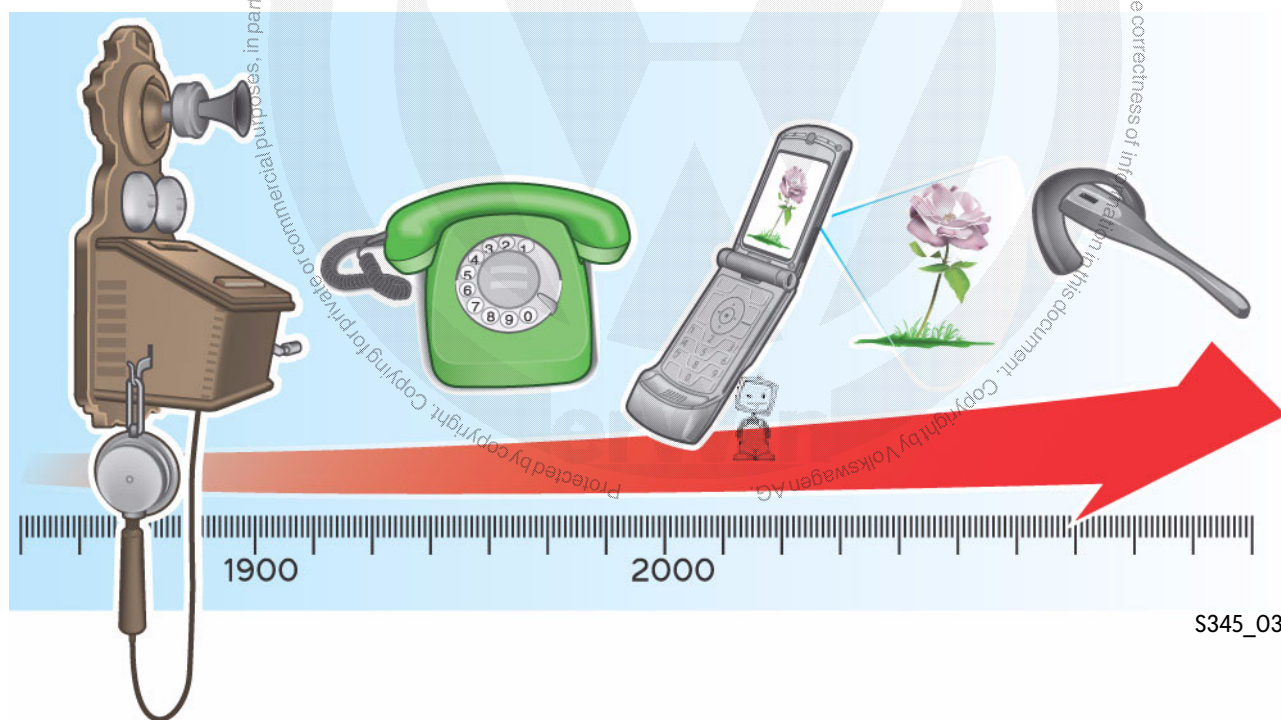
The ever rising number of users in the global telecommunication networks has led to greater demands on the management and coordination of the enormous quantities of data.

For a while now, straightforward audio files have no longer accounted for the whole scope of the telephone transfer. A multitude of additional convenience functions have made the popular mobile phone indispensable.

These new requirements, which are more or less determined by the market, have caused the introduction cycles of mobile phones to be continuously shortened and the number of providers to increase constantly.

For this reason, car manufacturers, including Volkswagen, do not need to install fixed phone systems and can offer a universally compatible platform with the corresponding standardised interfaces (GSM, Bluetooth™ etc.).

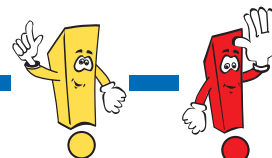
The “Universal Mobile Phone Preparation”  
This self-study programme describes the function of all systems currently used in Volkswagen cars.



S345\_036

**NEW**

**Important  
Note**



**The self-study programme shows the design and function of new developments.  
The contents will not be updated.**

For current testing, adjustment and repair instructions, refer to the relevant service literature.



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# Introduction



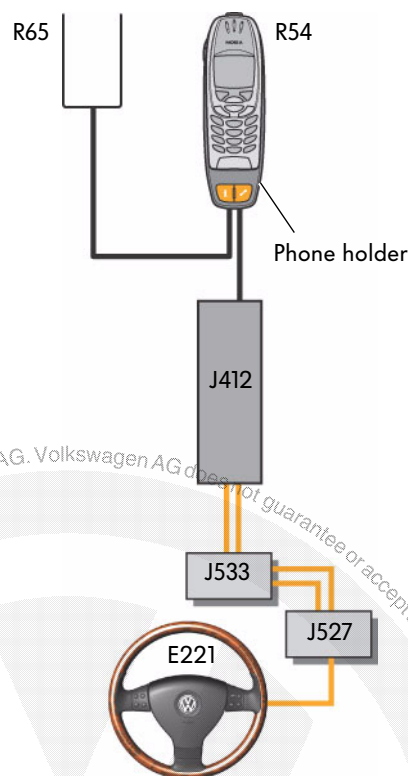
## Universal Mobile Phone Preparation (UMPP)

### System variants

Different systems are used depending on the vehicle model in which the universal telephone preparation is installed and the mobile phone to be connected.

The mobile phone model determines the internal system procedures. These do not have an influence on the operation of the telephone functions. Depending on the phone preparation, there are different connections between the mobile phone and the control unit for the mobile phone operating electronics.

### UMPP system overview



### Equipment

- Mobile telephone operating electronics control unit
- Telephone interface
- Telephone holder
- Buttons for information and breakdown calls
- Microphone mounted in light module
- Dual-band "shark fin" roof aerial (GSM 900/1800)

### Variant-dependent functions

- Operation via MFI switch on steering column stalk
- Operation via multifunction steering wheel (optional)
- Hands-free/charging
- Speech via car speakers
- Diagnosis via CAN data bus (depending on variant)
- Programmable switch-off timer (customisation)

### Legend

- E221 Operating unit in steering wheel
- J412 Mobile telephone operating electronics control unit
- J527 Steering column electronics control unit
- J533 Data bus diagnostic interface
- R54 Mobile telephone
- R65 Telephone aerial

S345\_007



Volkswagen radios, which have a CAN data bus connection to the mobile telephone operating electronics control unit, use this connection to switch to mute. All other radios use discrete wiring to switch to mute.





## Mounting

The UMPP consists of a base mounting and an adapter.

The speech signals between the mobile phone and UMPP are connected via Bluetooth™ (HFP) or wiring depending on the mobile phone and the UMPP.

The holder serves as a charger for the phone with Bluetooth transfer and as a connection to the exterior aerial.

### Universal mobile phone preparation from model year 2006

Base mounting on instrument panel

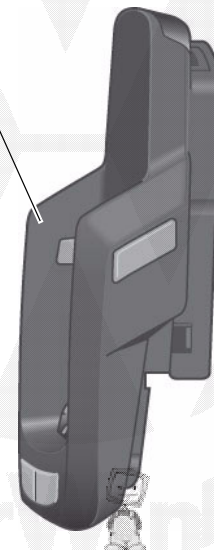


Adapter

S345\_023

A cradle for the specific phone is required to operate the mobile phone on the UMPP.

Mobile phone-specific cradle



S345\_011



You will find the mobile phone holders that are currently available in the VOTEX catalogue at [www.volkswagen-zubehoer.de](http://www.volkswagen-zubehoer.de).

# Introduction



## Multifunction steering wheel

The telephone hands-free systems can be operated via the multifunction steering wheel. The data is exchanged between the multifunction steering wheel control unit, the steering column electronics control unit and the mobile telephone operating electronics control unit.

Data is exchanged between the multifunction steering wheel control unit and the steering column electronics control unit via a LIN data bus.

The data is sent from the steering column electronics control unit via the CAN data bus to the data bus diagnostic interface and is forwarded from there to the mobile telephone operating electronics control unit.

The operating functions of the multifunction steering wheel are activated as soon as the ignition is switched on.

### Multifunction steering wheel buttons



S345\_008

## Mobile emergency phone

When you press the “Info Service” button, a connection is set-up with the VW info hotline to access information that is not necessarily related to VW.

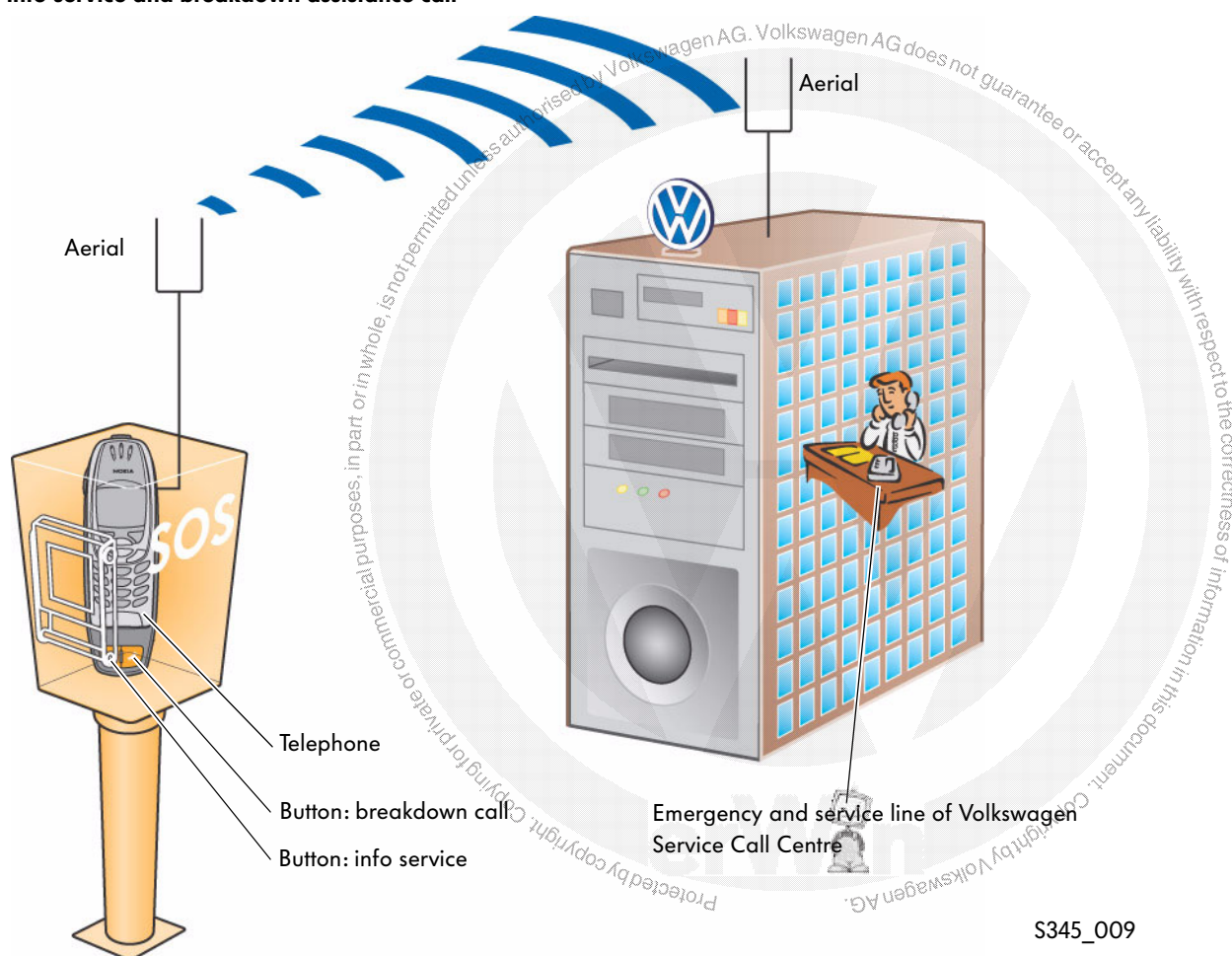
When the “Breakdown Call” button is pressed, a connection to the emergency and service line at the Volkswagen Service Call Centre (VW-SCC) is set-up, for example, so you can contact a Volkswagen service partner.

The corresponding national telephone numbers for the information and breakdown calls are stored in a reference table in the mobile telephone operating electronics control unit (J412). The respective call is made via the SIM card recognition.

Pressing one of these buttons automatically interrupts any call you are making.



### Overview of info service and breakdown assistance call



S345\_009

# Introduction



## Bluetooth™

Bluetooth™ is named after the Danish King Harald Blatand (Bluetooth in English), who was the first monarch to unite large areas of Scandinavia under his rule.

Like Harald Blatand united the Scandinavians, Bluetooth™ should unite the wireless communication between electronic devices. Bluetooth™ is a short-range wireless system with a standardised interface for wireless linking of devices with different functions. Bluetooth devices can switch their interfaces to the modes

- visible to all and
- invisible (only visible for linked devices)



S345\_001

The frequency range is between 2.402 GHz (GigaHertz) and 2.480 GHz. 79 channels are therefore available each with a bandwidth of 1 MHz. This frequency range is licence-free throughout the world and is therefore used by a wide range of devices. The devices connected via Bluetooth™ interact in a network (piconet).

A piconet consists of up to eight subscribers. One device sends out a query as the master and up to seven devices respond parallel and simultaneously as slaves.

The transmission power of the Volkswagen UMPP Bluetooth™ interface is 2.4 mW. This allows for a range of approx. 10 m. To ensure that devices transmitting on this frequency band do not cause interference, the piconet subscribers hop between the 79 channels at a frequency of 1600 Hz using a switching method that is only known internally.



S345\_002



## Profiles

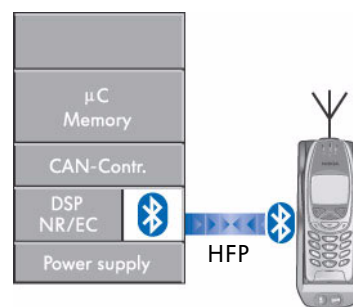
Profiles are used to allow mobile electronic devices made from different manufacturers without configuration by the users. A profile is characterised by its parameters.

The parameters are, for example, the transmission rate for upload and download, the type of transmitter and receiver, the type of information transmitted (speech, data), communication procedure etc.

The universal mobile preparations from Volkswagen use up to 3 profiles depending on the features.

### Hands-free profile (HFP)

The Bluetooth™ profile HFP (hands-free) was conceived for telephone applications in cars. It regulates the communication between hands-free systems and mobile telephones/headsets with an integrated Bluetooth™ module.



S345\_004

### Remote SIM Access Profile (rSAP)

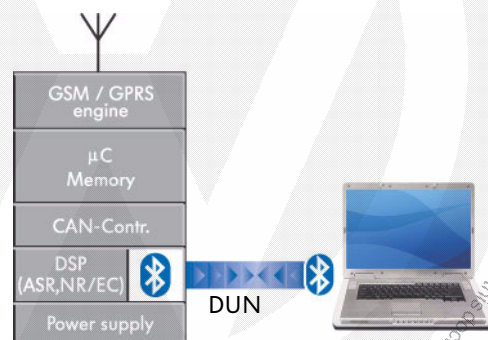
The Bluetooth™ profile rSAP allows SIM cards in mobile telephones to be read. Hands-free systems can therefore access the data on the SIM card and the mobile phone itself, for example, read a telephone entry from a SIM card. This function is only available on the Premium universal mobile phone preparation, however.



S345\_005

### Dial-Up Network Profile (DUN)

The Bluetooth™ profile DUN allows you to connect to the Internet. You can therefore connect your notebook to the universal mobile phone preparation via Bluetooth™ and then access the Internet via the GSM network. This function is being kept open at Volkswagen for future innovations.



S345\_006

# Universal Mobile Phone Preparations

## UMPP Low from Cullmann

A model-specific mobile phone cradle is required to hold the phone on the instrument panel. The audio data is transferred between the mobile phone and UMPP via a cable.

The connection to the mobile telephone operating electronics control unit is formed with a special connector containing the control electronics.

The mobile phone needs to be placed in the holder to work with the universal mobile phone preparation.

The UMPP Low from Cullmann supports the GSM 900 network and is used in the Volkswagen Passat 2001, Golf '98, Sharan, Polo, New Beetle and New Beetle Cabrio.

### Functions

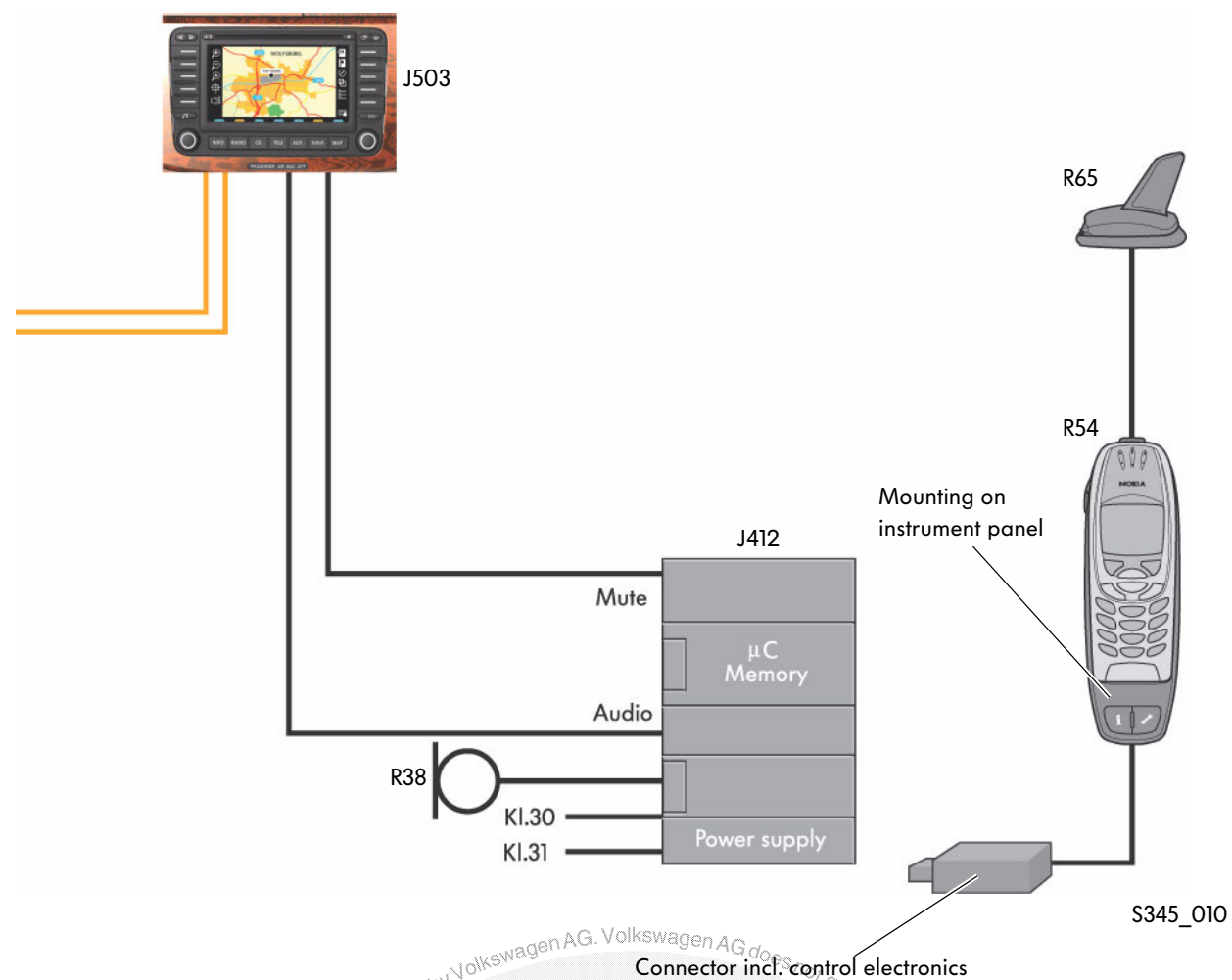
The UMPP Low has the following functions:

- The operation and display is on the mobile phone.
- It has a hands-free system and radio mute switching.
- The phone is charged via the phone holder.
- The info and breakdown call buttons are located on the mobile phone holder.
- A GSM car aerial system that is connected directly to the telephone holder.
- The follow-up time can be set (max. 60 minutes).

The radio is connected to the mobile telephone operating electronics control unit via discreet wiring.



After a new holder is connected, it will need to be taught in by the UMPP.



### Legend

**J412** Mobile telephone operating electronics control unit

**J503** Control unit with display for radio and navigation

**R38** Telephone microphone

**R54** Mobile telephone

**R65** Telephone aerial

# Universal Mobile Phone Preparations

## UMPP Low from Peiker

A special mobile phone cradle is required to mount the phone in the holder on the instrumental panel. The control electronics for the mobile phone are integrated in the holder. The audio data is transferred between the mobile phone and UMPP via a cable. The mobile telephone operating electronics control unit communicates with the other control units via the CAN data bus.

The mobile phone needs to be placed in the holder to work with the UMPP.

The UMPP Low from Peiker is suitable for the GSM 900 and GSM 1800 networks. It is used in the Volkswagen Golf '98, Bora '98, Transporter 2004 and Touareg.

### Functions

The UMPP Low has the following functions:

- The operation and display is on the mobile phone.
- It has a hands-free system and radio mute switching.
- The phone is charged via the phone holder.
- The info and breakdown call buttons are located on the mobile phone holder.
- The car has a tri-band-capable GSM vehicle aerial system that is connected directly to the holder.
- There is a CAN data bus interface to the Infotainment CAN data bus.
- This UMPP is diagnosis compatible.
- The follow-up time is permanently set to 30 minutes.







# Universal Mobile Phone Preparations

## UMPP Low from Nokia

The UMPP Low from Nokia uses Bluetooth™ technology in Volkswagens for the first time. The audio data is transferred via Bluetooth™ from the mobile telephone to the mobile telephone operating electronics control unit. Mobile phones that are not Bluetooth™-compatible exchange audio data via the discreet wiring. The internal microchip in the holder is accessed.

A cradle for the specific mobile phone model is required to hold the mobile phone in the mounting and to use the hands-free system.

The mobile telephone operating electronics control unit communicates with the other control units via the CAN data bus.

The UMPP Low from Nokia is suitable for GSM 900 and GSM 1800 networks. It will appear first in the Volkswagen Passat 2006 and the Golf Plus.

## Functions

The UMPP Low has the following functions:

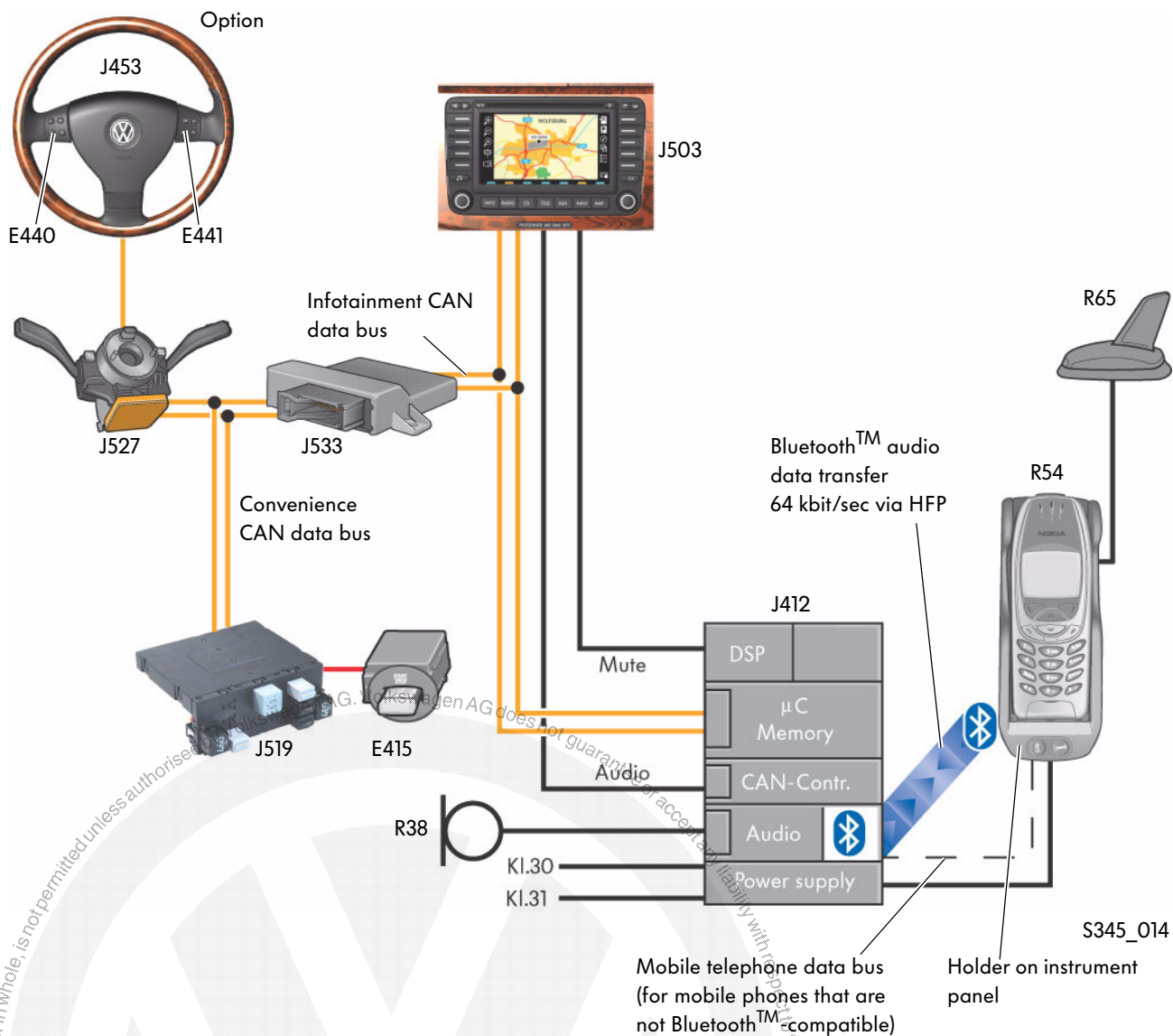
- The operation and display is on the mobile phone.
- It has a hands-free system and radio mute switching.
- The phone is charged via the phone holder.
- The info and breakdown buttons are located on the mobile phone holder. These signals are transferred via a discreet cable connection.
- The car has a tri-band-capable GSM vehicle aerial system that is connected directly to the holder.
- There is a CAN data bus interface to the Infotainment CAN data bus.
- The audio data transfer between the mobile phone and the mobile telephone operating electronics control unit occurs via a Bluetooth™ or wire interface.
- This UMPP is diagnosis compatible.
- The follow-up time can be set (max. 60 minutes).



If a Nokia 6310i is used with the UMPP, a pairing process has to be performed once.

Please check the latest VOTEX information at [www.volkswagen-zubehoer.de](http://www.volkswagen-zubehoer.de) for the compatibility of the UMPP with different mobile phones.





### Legend

- E415 Entry and start authorisation switch
- E440 Multifunction buttons on left in steering wheel (optional)
- E441 Multifunction buttons on right in steering wheel (optional)
- J412 Mobile telephone operating electronics control unit
- J453 Multifunction steering wheel control unit (optional)

- J519 Onboard supply control unit
- J503 Control unit with display for radio and navigation
- J527 Steering column electronics control unit
- J533 Data bus diagnostic interface
- R38 Telephone microphone
- R54 Mobile telephone
- R65 Telephone aerial



# Universal Mobile Phone Preparations

## UMPP Low from Temic

A specific mobile phone cradle is used to mount the phone and for operation with the UMPP.

The speech and control information, the signals for Info and breakdown calls and the charging current pass through the connecting cable.

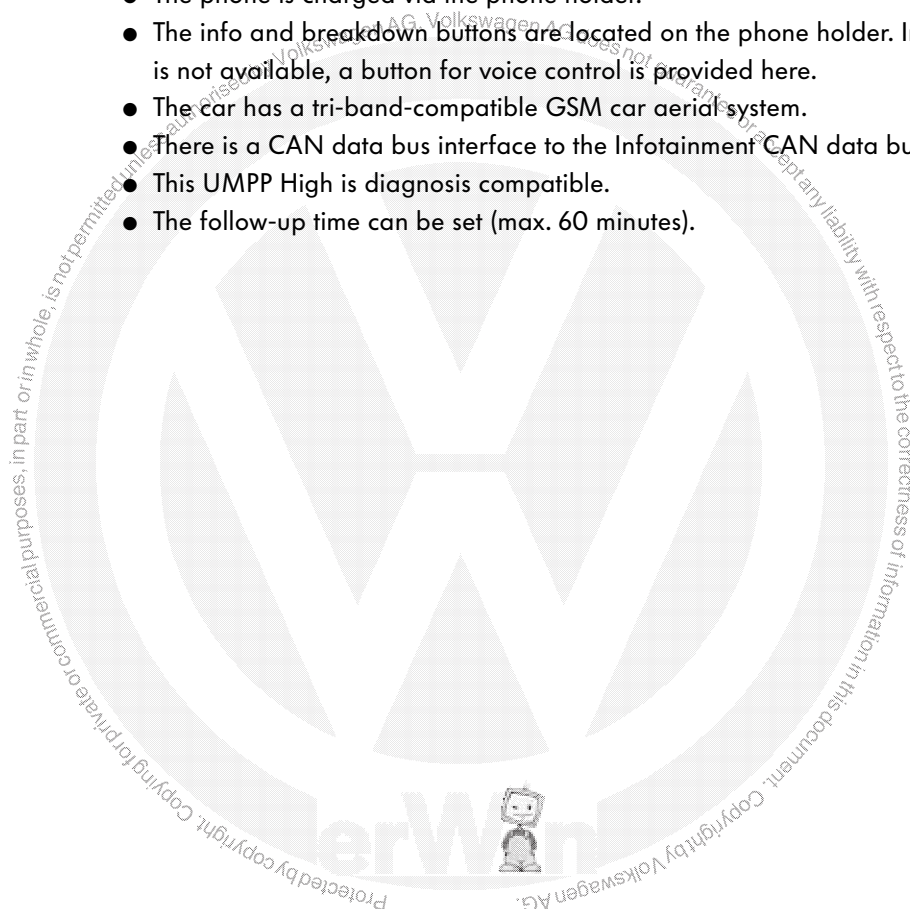
A speech recognition module (ASR) is integrated in the UMPP. The mobile telephone operating electronics control unit communicates with the other control units via the CAN data bus.

The UMPP High is suitable for GSM 900 and GSM 1800 networks. It is used in the Volkswagen Touareg.

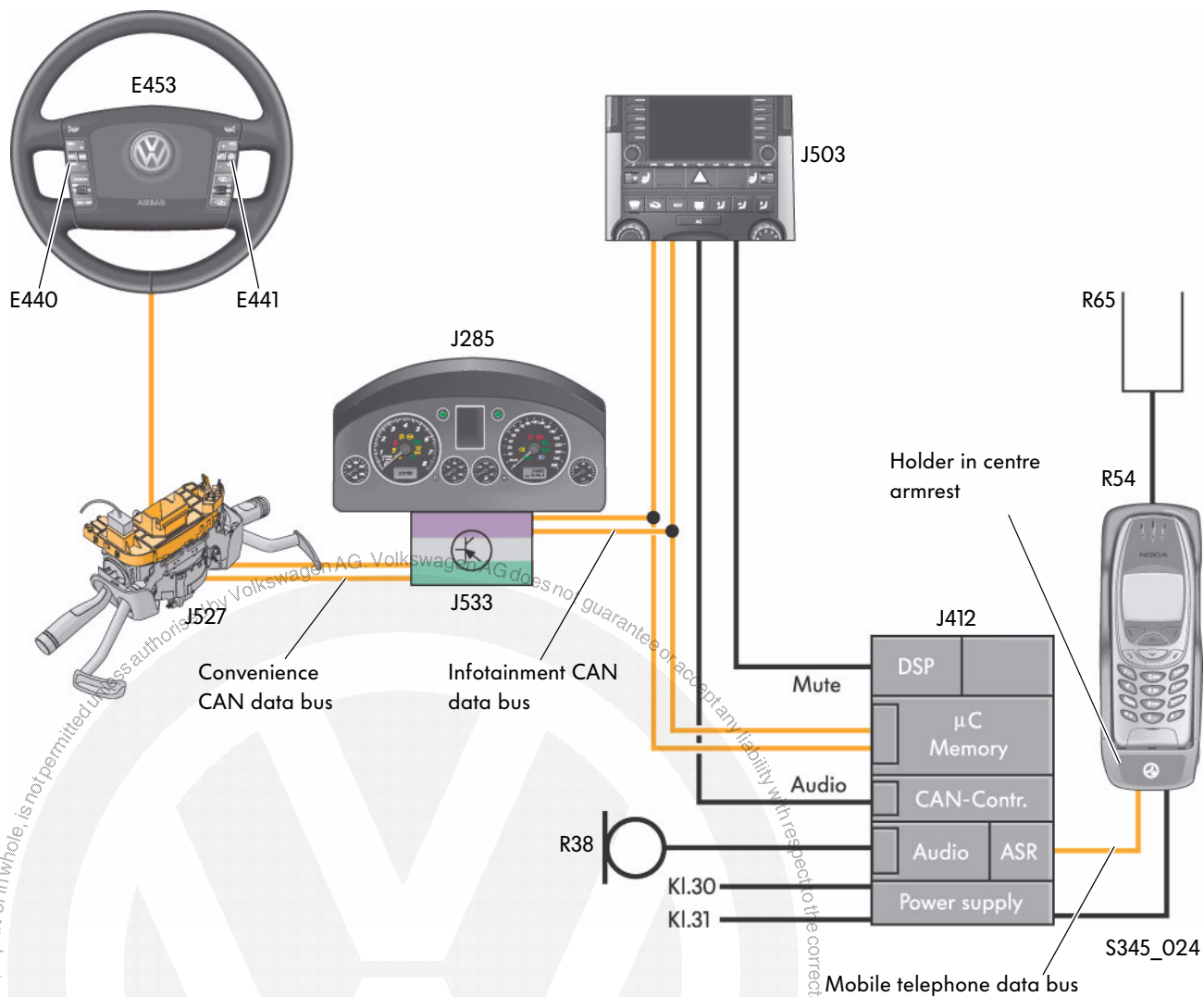
## Functions

The UMPP High has the following functions:

- It is controlled via the mobile phone, the multifunction steering wheel and voice recognition.
- The telephone information is displayed via the display in the dash panel insert and via the display on the mobile phone.
- The telephone book on the SIM card is imported when the phone is placed in the holder.
- It has a hands-free system and radio mute switching.
- The phone is charged via the phone holder.
- The info and breakdown buttons are located on the phone holder. In countries where this technology or service is not available, a button for voice control is provided here.
- The car has a tri-band-compatible GSM car aerial system.
- There is a CAN data bus interface to the Infotainment CAN data bus.
- This UMPP High is diagnosis compatible.
- The follow-up time can be set (max. 60 minutes).







### Legend

E440	Multifunction buttons on left in steering wheel	J503	Control unit with display for radio and navigation
E441	Multifunction buttons on right in steering wheel	J527	Steering column electronics control unit
J285	Control unit with display in dash panel insert	J533	Data bus diagnostic interface
J412	Mobile telephone operating electronics control unit	R38	Telephone microphone
J453	Multifunction steering wheel control unit	R54	Mobile telephone
		R65	Telephone aerial



# Universal Mobile Phone Preparations

## UMPP Premium from Nokia

Like the UMPP rSAP Phaeton, the UMPP Premium has a considerable number of improved functions for customers. After the UMPP and the mobile phone have been paired, the phone does not need to be put in a holder. You can simply leave your phone in your pocket as long as it supports rSAP.

### Functions

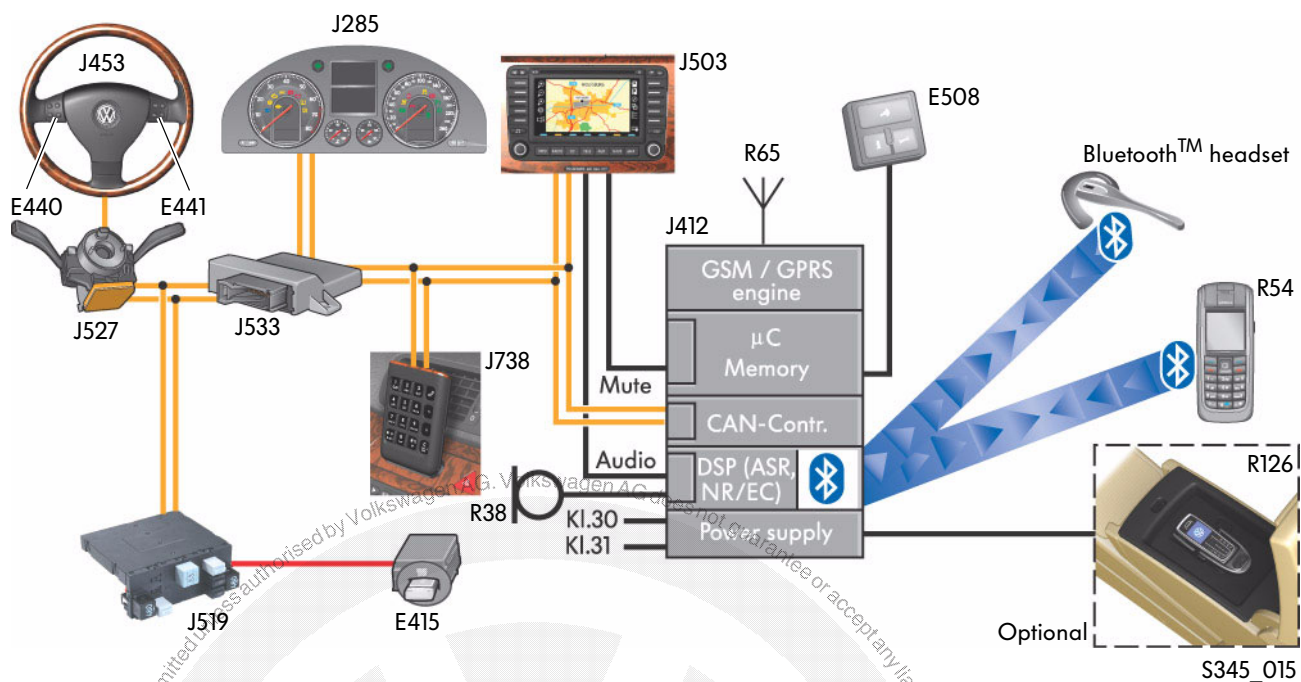
The UMPP Premium has the following functions:

- It is operated via the multifunction steering wheel and the telephone controls control unit (J738) on the instrument panel.
- The telephone information is displayed on the screen in the dash panel insert.
- It has a hands-free system and radio mute switching.
- A Bluetooth™ headset can be connected.
- A charge preparation for charging the mobile phone is available as an option (concealed installation).
- The access to the telephone book and reading text message is possible via the mobile telephone operating electronics control unit.
- Call lists, speed dial functions, mail box and user settings, for example, ringtones, can be managed.
- The voice recognition can be activated via the multifunction steering wheel or the button on the telephone preparation.
- The info and breakdown call buttons are located on the phone holder and in the operating unit for preparation for mobile telephone (E508) in the roof.
- The GSM car aerial is tri-band-capable.
- The follow-up time can be set (max. 60 minutes).
- The system is diagnosis-capable.
- Electronic business cards (Vcard) and calendar entries (Vcal) can be received and saved on Nokia mobile phones.

The UMPP Premium is used in the Passat 2006.



Please check the latest VOTEX information at [www.volkswagen-zubehoer.de](http://www.volkswagen-zubehoer.de) for the compatibility with different mobile phones.



### Legend

E415	Entry and start authorisation switch	J503	Control unit with display for radio and navigation
E440	Multifunction buttons on left in steering wheel	J519	Onboard supply control unit
E441	Multifunction buttons on right in steering wheel	J527	Steering column electronics control unit
E508	Operating unit for preparation for mobile telephone	J533	Data bus diagnostic interface
J285	Control unit with display in dash panel insert	J738	Telephone controls control unit
J412	Mobile telephone operating electronics control unit	R38	Telephone microphone
J453	Multifunction steering wheel control unit	R54	Mobile telephone
		R65	Telephone aerial
		R126	Telephone bracket (optional)



# Universal Mobile Phone Preparations

## Function description

The mobile phone needs to support rSAP to form a link with the rSAP data transmission. Once the mobile phone has been correctly identified by the UMPP Premium and, after the corresponding SIM data transfer, has checked out of the GSM network, the GSM module in the mobile phone becomes inactive.

The mobile telephone operating electronics control unit then checks in using the transferred identification data after a switchover time (approx. 15 sec.).

Furthermore the telephone book from the selected memory (SIM/telephone) is transferred. This can take a while depending on the size of the telephone book. Once the system has checked into the network, the user has the option of manual selection and reception of incoming messages. The telephone books are transferred in the background without the user noticing.

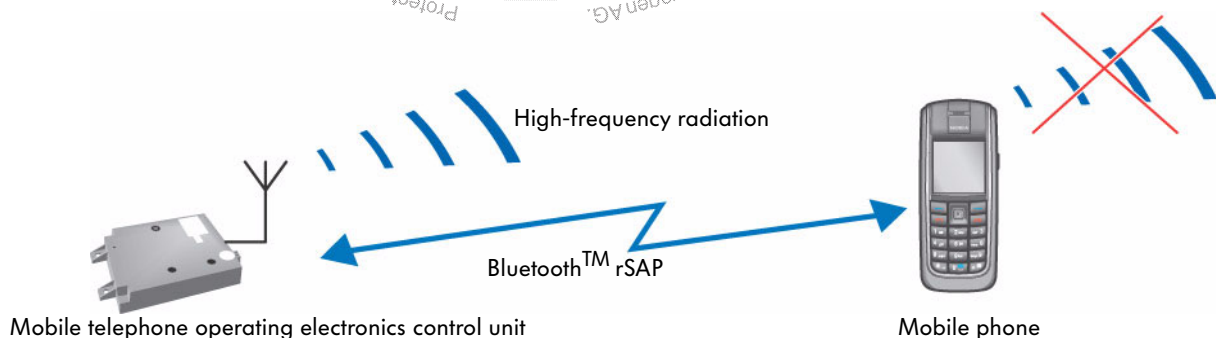
The UMPP Premium then works like a permanently installed telephone.

Only the Bluetooth™ interface is active in the phone. It therefore recognises when the reception area is left. In this case or if the Bluetooth™ connection between the phone and the mobile telephone operating electronics control unit, the UMPP checks out of the GSM network and the mobile phone checks in again.

A call that is started outside the car needs to be ended when you climb into the car and then started again if you want to use the hands-free system.

You only need to put the phone in the holder to charge it.

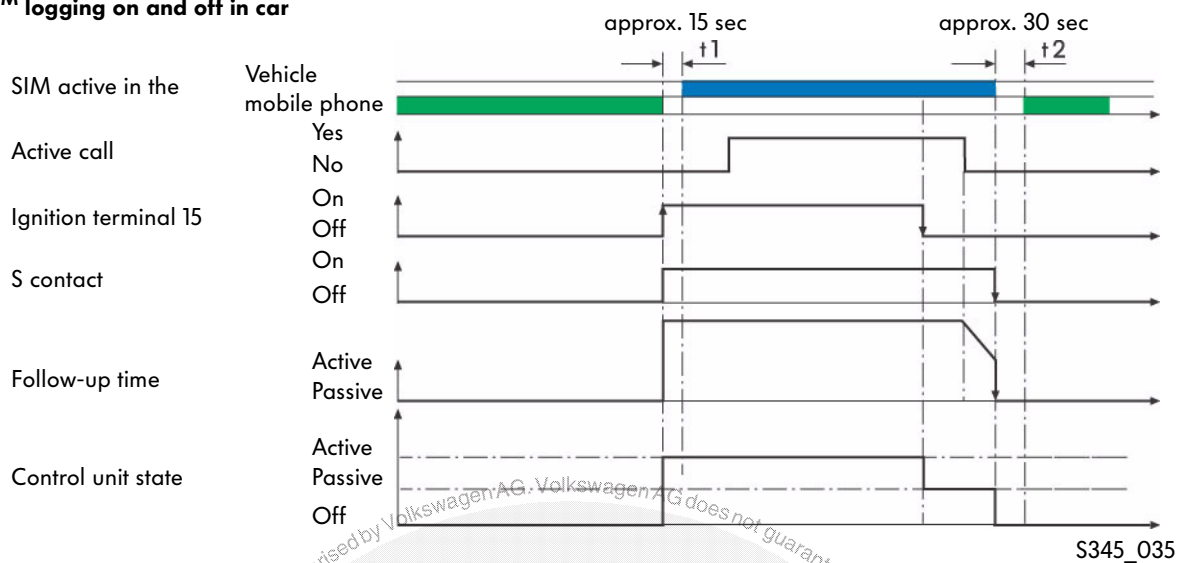
The UMPP Premium can manage up to 3 different mobile phones. An active audio channel is set up only for one mobile phone. For each user, a total of one thousand contacts can be stored with three telephone numbers. The UMPP Premium is equipped with an internal DSP (Digital Sound Processor), which, for example, prevents feedback of your voice by suppressing the echo. This improves the audio quality when the hands-free system is used.



S345\_016



## Bluetooth™ logging on and off in car

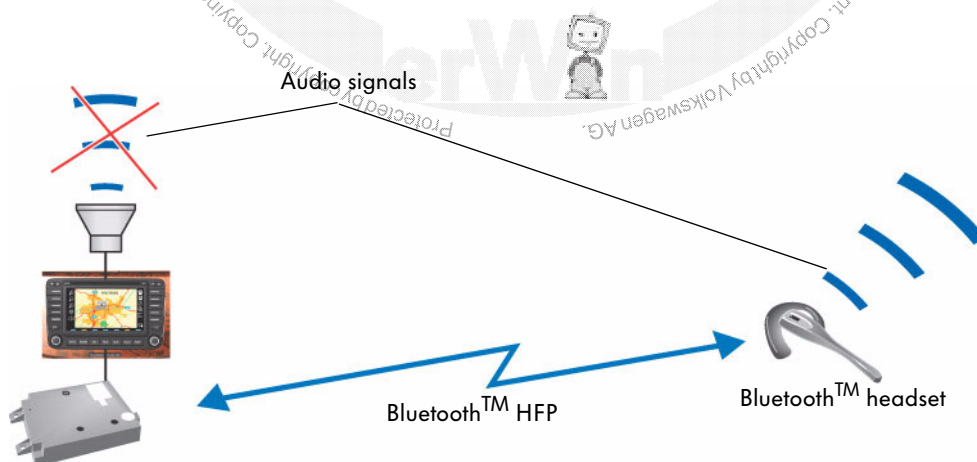


The control unit follow-up time starts after the ignition is turned off if a call is not being made. If a call is being made when the ignition is switched off, the follow-up time does not start until after the call is ended.

## Headset

If you want to make private calls, i.e. without the conversation being heard over the speakers, you can use a compatible Bluetooth™ headset.

The headset and UMPP are linked via the Bluetooth™ profile HFP.



Mobile telephone operating electronics control unit



# Universal Mobile Phone Preparations

## UMPP rSAP Phaeton from THB

This is a Bentley telephone system in which the hardware and functions have been modified and expanded for the requirements of the Volkswagen Phaeton.

Your mobile phone needs to support rSAP for use with the UMPP in the Phaeton.

The telephone needs to be taught into the UMPP once (pairing). This occurs via Bluetooth™ transfer as no phone holders and therefore also no charging function are provided with the Phaeton system.

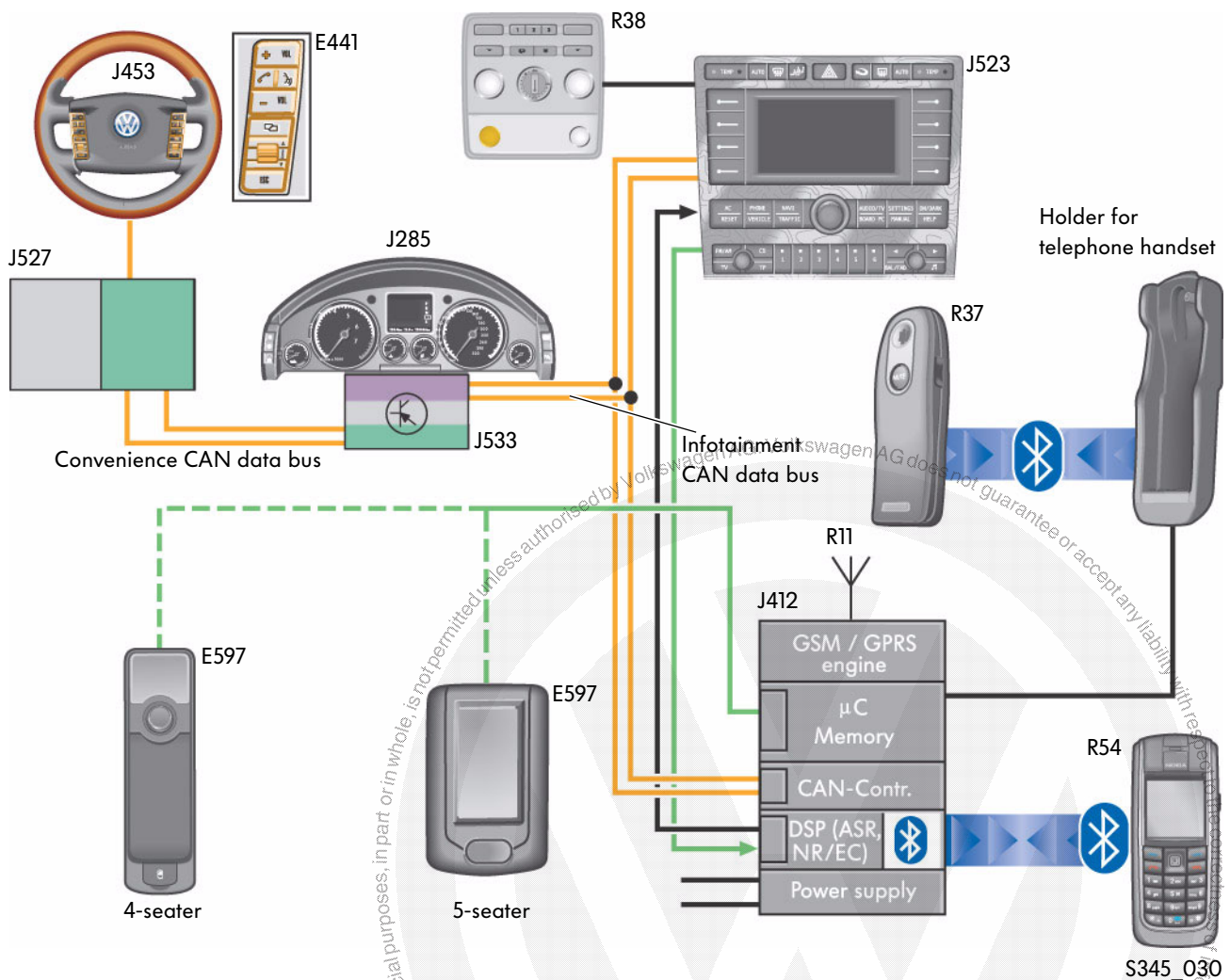
After the SIM data has been transferred to the control unit, it will take care of further processing.

The UMPP rSAP Phaeton is suitable for GSM 900 and GSM 1800 networks.

### Functions

The UMPP rSAP Phaeton has the following functions:

- The GSM module is integrated in the mobile telephone operating electronics control unit.
- It is operated via the model-specific operating and display unit for universal mobile phone preparation, the front information display and operating unit control unit and the multifunction steering wheel.
- The telephone information is displayed via the display in dash panel insert as well as via the front information display and operating unit control unit.
- The telephone book from the SIM card is read in by the mobile telephone operating electronics control unit after the ignition is switched on (terminal 15 on).
- Up to 10 users can be managed.
- It has a hands-free system and radio mute switching.
- There is a CAN data bus interface to the Infotainment CAN data bus.
- This UMPP rSAP Phaeton is diagnosis compatible.
- A separate telephone handset (privacy headset) can be incorporated in the UMPP as an option.



### Legend

E441	Multifunction buttons on right in steering wheel	J523	Front information display and operating unit control unit
E597	Operating and display unit for universal mobile phone preparation	J527	Steering column electronics control unit
J285	Control unit with display in dash panel insert	J533	Data bus diagnostic interface
J412	Mobile telephone operating electronics control unit	R11	Aerial
J453	Multifunction steering wheel control unit	R37	Telephone handset
		R38	Telephone microphone
		R54	Mobile telephone

# Universal Mobile Phone Preparations

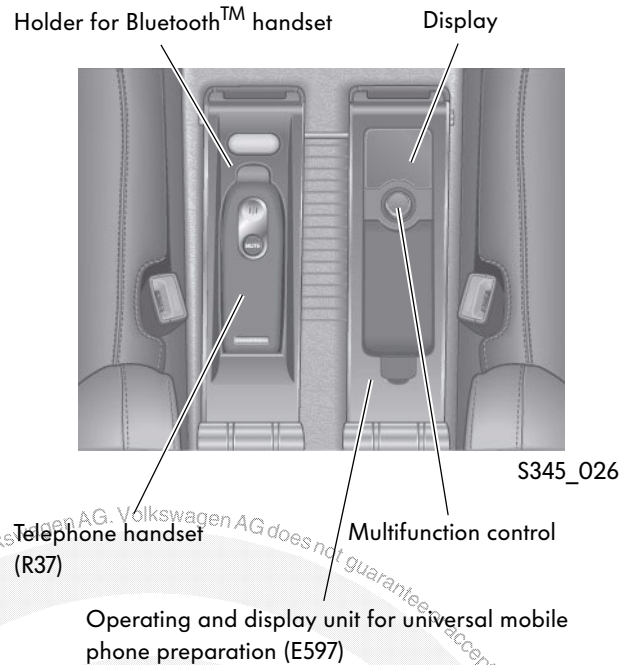
## Additional controls for the UMPP rSAP Phaeton

### 4-seater

The mobile phone and its keypad can no longer be used for call functions once the SIM data has been transferred.

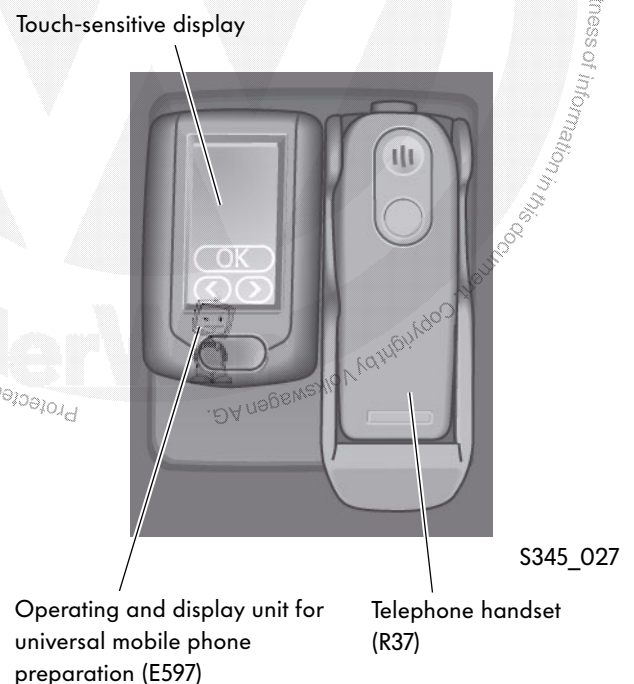
In addition to the multifunction steering wheel, the phone is operated via the front information display and operating unit control unit and the discreetly connected operating and display unit for universal mobile phone preparation (E597).

In the 4-seater Phaeton, the operating and display unit for universal mobile phone preparation and the telephone handset are in the front passenger armrest. The operating and display unit for mobile phone preparation has a display and a multifunction control with which you carry out the basic settings and the pairing process.



### 5-seater

In the 5-seater Phaeton, the operating and display unit for universal mobile phone preparation and the telephone handset are in the centre armrest storage compartment. The functions in the operating and display unit for universal mobile phone preparation are selected using soft key buttons on the display. It is required for the pairing process and the basic settings.





## Use without rSAP mobile phone

If you do not have an rSAP mobile phone, the UMPP rSAP Phaeton can still be used by inserting the SIM card into the slot on the control unit.

Operating and display unit for universal mobile phone preparation 5-seater (E597)



SIM card slot



Multifunction control



Display

Operating and display unit for universal mobile phone preparation 4-seater (E597)

S345\_028

## Telephone handset

The optional wireless telephone handset is connected to the supplied holder (charging holder) via the Bluetooth interface.

While you are making a call, the call will be switched from the hands-free system to the handset (PRIVACY MODE) if you pick up the handset. Placing the handset in the holder will return the call to the hands-free system.

If the telephone handset is not in the holder, you can accept a call using the mute button. Pressing the button again will switch off the microphone in the handset.

Mute button



S345\_029



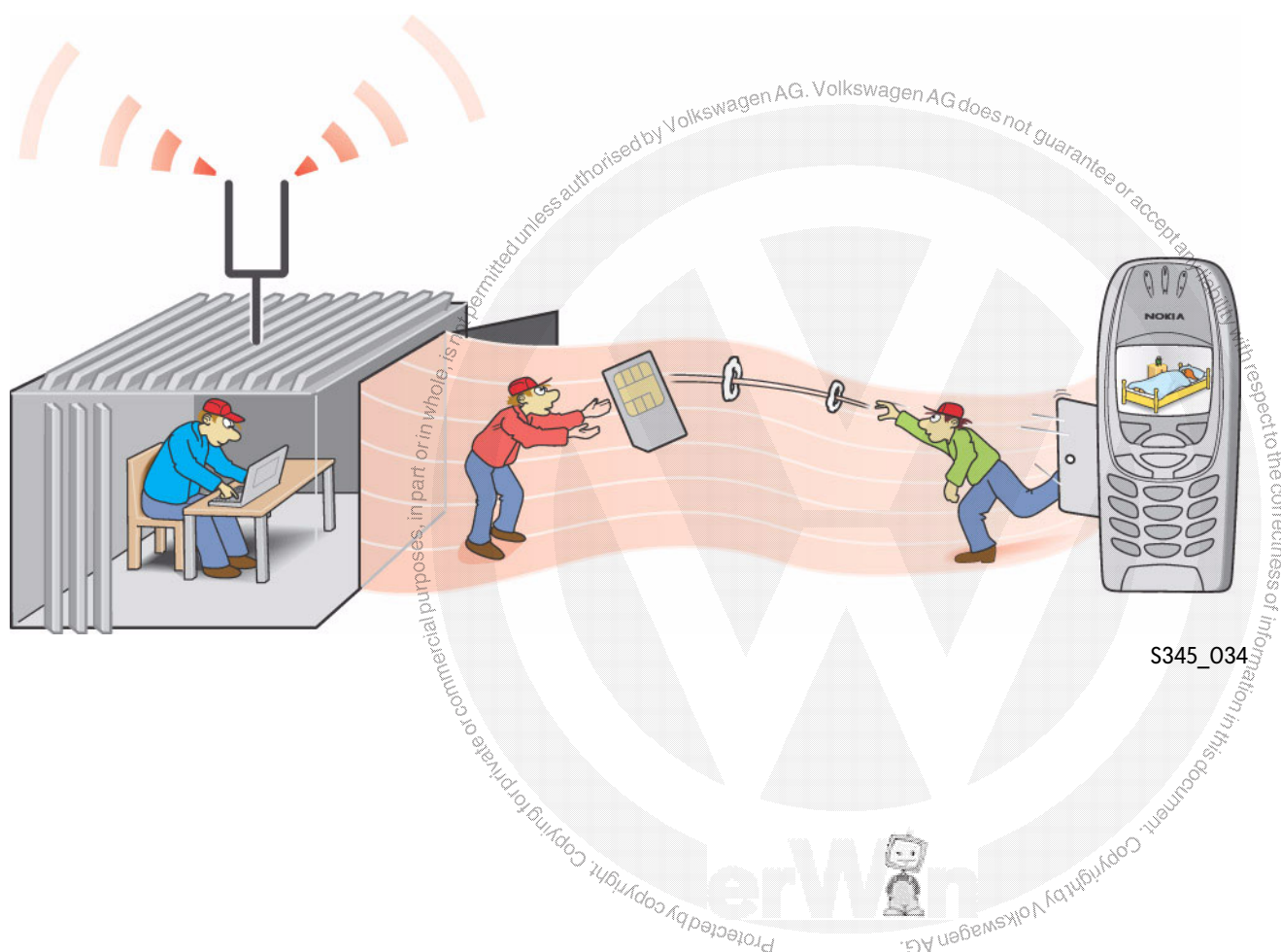
# Linking

## Pairing

To make communication at all possible between the mobile telephone operating electronics control unit and the mobile phone, they have to recognise each other (pairing).

You simply need to place the mobile phone in the holder while a wire connection is set up. The pairing takes place in a few steps in the background and the user will not notice anything.

A procedure with several steps is necessary to pair a phone to the mobile telephone operating electronics control unit of the UMPP Low via Bluetooth™. The same applies to linking a phone with rSAP to the UMPP Premium or UMPP rSAP Phaeton via a Bluetooth™ data transfer.



## Pairing process UMPP Low

### Mobile phone

- Activate the Bluetooth™ function in the mobile phone menu.
- End any existing Bluetooth™ connection to other mobile phones.

- Search for Bluetooth™ accessories in the mobile phone menu.
- Connect the mobile phone to the identified VW UMPP.
- Enter the four-digit PIN number (see operating manual).

### UMPP Low from Nokia

- Switch to the “Visible” Bluetooth™ status by pressing the info and breakdown call buttons one after the other. You will hear a positive acknowledgement tone as confirmation.

- The active connection is confirmed by the UMPP with a positive acknowledgement tone and restored the next time the mobile phone is recognised.

### Bluetooth™ pairing process UMPP Low

BT connection active

BT connection not active

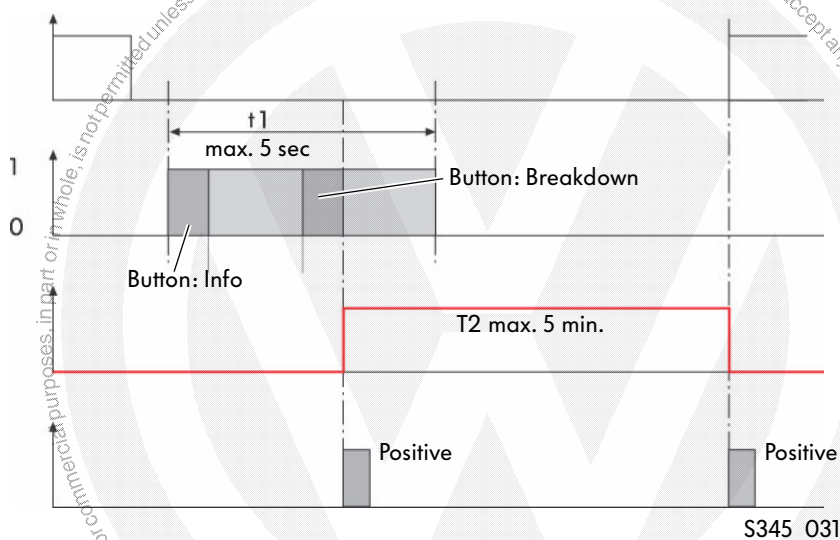
I/P buttons

I/P buttons

UMPP visible

UMPP invisible

Acknowledgement tone



If the pairing fails, a deep tone will sound.

Acknowledgement tone:

Positive 1 KHz = high tone

Negative 333 Hz = deep tone



# Linking

## Pairing process UMPP Premium

The car is stationary and the ignition (terminal 15) is switched on.

### Mobile phone

- The mobile phone is checked into the network.
- The Bluetooth connection is active and visible.

- Confirm the connection query.
- Read the 16-character password from the dash panel insert and enter it on the telephone.
- Confirm the connection has been set up with the UMPP.

### Mobile telephone operating electronics control unit

- Start the device search in the telephone menu.
- Select the mobile phone from the list.

- Enter the user name.
- Enter the SIM PIN (optional).
- Store the SIM PIN (optional).

The UMPP Premium should be selected as the paired device, automatic connection set-up without confirmation enabled and the "Confirmation dialogue before connection" option set to "Off" (a Bluetooth™ connection with the UMPP should not be active during this). Otherwise you will have to confirm the connection on the phone each time you climb into the car.

Optionally you can then switch the mobile phone to "Device invisible".



## UMPP rSAP Phaeton with mobile phone

The car is stationary and the ignition (terminal 15) is switched on.

### Mobile phone

- The mobile phone is checked into the network.
- The Bluetooth connection is active and visible.

- Confirm the connection query.
- Read the 16-character password from the operating and display unit for universal mobile phone preparation and enter it into the phone.
- Confirm the connection has been set up with the UMPP.

### Mobile telephone operating electronics control unit

- Start the device search in the telephone menu.
- Select the mobile phone from the list.

- Enter the SIM PIN (optional).

The UMPP Premium should be selected as the paired device, automatic connection set-up without confirmation enabled and the “Confirmation dialogue before connection” option set to “Off” (a Bluetooth™ connection with the UMPP should not be active during this). Otherwise you will have to confirm the connection on the phone each time you climb into the car.

Optionally you can then switch the mobile phone to “Device invisible”.

### SIM card operation

If you do not have a mobile phone with rSAP, the SIM card can be inserted directly into the operating and display unit for universal mobile phone preparation so you can use the hands-free system (see page 25). To switch to SIM card mode, you need to switch the mode from rSAP to SIM card in the settings menu in the operating and display unit for universal mobile phone preparation.

The mobile telephone operating electronics control unit will automatically import the telephone book entries in both cases.

You can select numbers from the telephone book via the front information display and operating unit control unit on the multifunction steering wheel. Manual dialling is only possible using the front information display and operating unit control unit.





# Glossary

## ASR

Automatic Speech Recognition

## DSP

Digital Sound Processor  
see page 20

## DUN

Dial-Up Network profile  
see page 9

## GHz

Gigahertz

The unit Hertz is the number of oscillations per second or also the number of cycles per second. It is named after German physicist Heinrich Rudolf Hertz.

Kilo (kHz) = thousand

Mega (MHz) = one million

Giga (GHz) = a billion

Tera (THz) = one trillion

## GSM

Global System for Mobile Communication

GSM is a fully digitised mobile communications standard for telephone calls, digital data transfer (e. g. Internet) and text messages (SMS).

## GSM 900

A mobile phone network for the transfer of speech, text and data in the frequency range 900 MHz.

## GSM 1800

A mobile communications network in the frequency range 1800 MHz.

## HFP

Hands-free profile  
see page 9

## Privacy mode

Making calls when car hands-free system is switched off.

## rSAP

Remote SIM Access Profile  
see page 9

## SMS

Short Message Service

A telecommunications service for transferring text messages.

## SIM card

Subscriber Identity Module

The SIM card is inserted in the mobile phone and is used to identify the user on the mobile communications network.

## UMPP

Universal Mobile Phone Preparation

## VW SCC

Volkswagen Service Call Centre  
see page 7



**1. Which function does rSAP support?**

- ☐ a) The transfer of audio data.
- ☐ b) The transfer of SIM card data.
- ☐ c) The transfer of ringtones.
- ☐ d) The transfer of telephone book entries.

**2. Why does the universal mobile phone preparation need the onboard supply control unit?**

- ☐ a) So it is supplied with voltage.
- ☐ b) So that the control unit in the dash panel insert is activated.
- ☐ c) Because voice entries are only active after the ignition is switched on.
- ☐ d) So that the system recognises when the follow-up is active.

**3. Why can a call that is being made on the mobile phone not be continued on the UMPP Premium without an interruption?**

- ☐ a) Because a Bluetooth™ connection only works inside a vehicle.
- ☐ b) Because you cannot transmit with two GSM aerials at the same time.
- ☐ c) Because only one user can currently be logged onto the GSM network with one user data ID.
- ☐ d) Because otherwise feedback could be caused in the audio system.





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000.2811.59.20 Technical status 09/2005

Volkswagen AG  
Service Training VK-21  
Brieffach 1995  
38436 Wolfsburg

 This paper was manufactured from pulp that was bleached without the use of chlorine.