

# Altea electrical system

Self Study Program No. 97



**SEAT**  
service

**Technical Status: 03.04.** Due to constant product development and improvements, the data which appears in this document is subject to possible modifications.

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# Altea electrical system

The Altea is fitted with a **decentralised electrical system**, following the trend set on other SEAT models.

The main distinctive feature is the fitting of **new CAN-Bus lines** for infotainment, instrument panel and diagnosis together with the already familiar drive and comfort CAN-Bus lines.

This set-up now makes it possible to carry out the self-diagnosis using the CAN-Bus lines, thus improving the speed of data transmission and simplifying the electrical connections between the diagnosis connector and the different control units.

Another single wire communication protocol known as the **LIN-Bus** is also used together with the CAN-Bus.

This document will cover the different electrical equipment items fitted to the Altea, some of which have few changes and others such as the trailer control unit or steering column unit which are completely different.

The **on board network**, although it forms part of the Altea electrical system, is not covered in this manual since it is dealt with in a separate Self Study Program No. 101 "Altea on board network".

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**Note:** The precise checking, adjustment and repair information is contained in ELSA and in the guided fault finding or guided functions.

# ELECTRICAL INSTALLATION

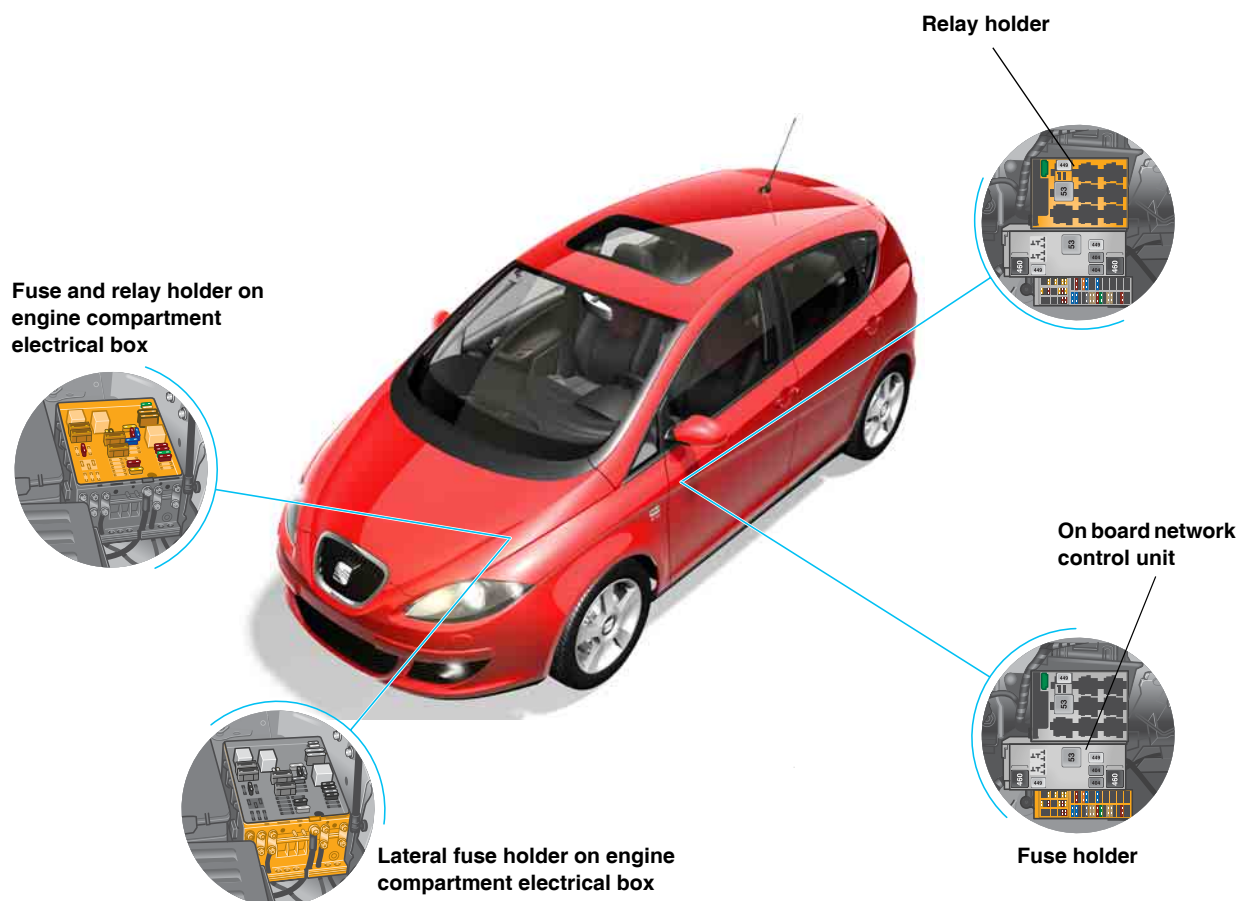
The electrical installation of the Altea is **decentralised**, similar to that already fitted to the Ibiza 02.

It requires an **electrical box** in the engine compartment and a **fuse holder** and relay holder inside the vehicle, next to the on board network control unit.

The electrical box in the engine compartment also contains the relay for the glow plugs on diesel engines. This relay holder can only be

reached by first removing the battery and its support

The **relay holder** in the passenger compartment is located below the instrument panel on the left side, and contains different relays according to the equipment fitted on the vehicle.



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## ENGINE COMPARTMENT ELECTRICAL BOX

The electrical box is located next to the battery and contains the fuses for the components located in the engine compartment and for the high power consumption items in the passenger compartment.

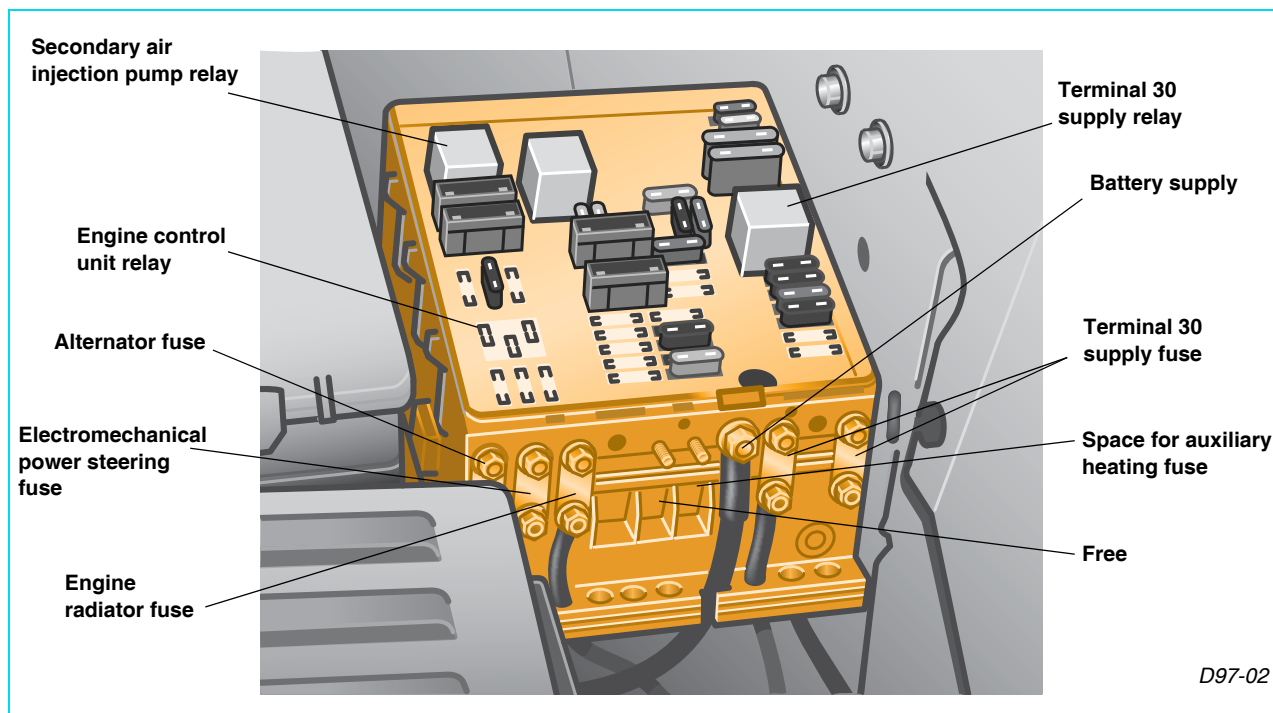
This reduces the number of unprotected cables in the passenger compartment and simplifies the location of faults.

The **upper part** contains 54 fuses and 4 relay spaces with 3 relays at present for the secondary air injection

pump, the engine control unit and the supply for terminal 30.

The **lateral part of the electrical box** contains the high consumption primary fuses for the:

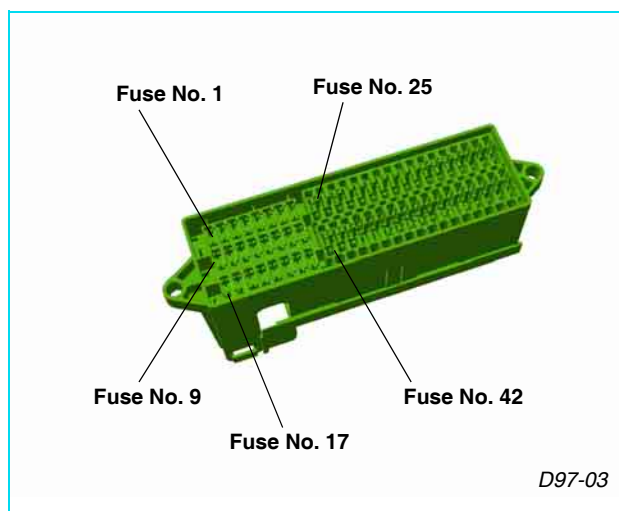
- Alternator.
- Electro-mechanical power steering.
- Radiator fans.
- Auxiliary heating.
- And supply to terminal 30.



## FUSE HOLDER

This is located on the left of the steering column below the relay holder and the on board network control unit.

This unit can hold a maximum of 58 fuses for the protection of the different electrical components in the passenger compartment.



# DATA BUS LINES

The number of **CAN-Bus lines** has been considerably **increased** on the Altea and new **LIN-Bus lines** have been incorporated.

The present CAN-Bus lines used are as follows:

- Drive.
- Comfort.
- Infotainment.
- Instrument panel.
- Diagnosis.

As well as the various LIN-Bus lines for:

- Steering wheel controls.
- Wiper operation.
- And alarm.

**Diagnosis** is performed **using the CAN-Bus line** leading to an increase in speed and volume of data transmission.

The connection to the VAS is made with new cables, the VAS 5051/5A and the VAS 5051/6A. The difference between both cables is that the first one is a 3-meter cable and allows the VAS to be supplied with power through the diagnosis connector whereas the VAS 5051/6A is a 5-meter cable and does not allow the unit to be supplied with power.

The speed of data transmission for the drive, instrument panel and diagnosis bus is 500 kbps, whereas the infotainment and comfort bus operate at speeds of 100 kbps.

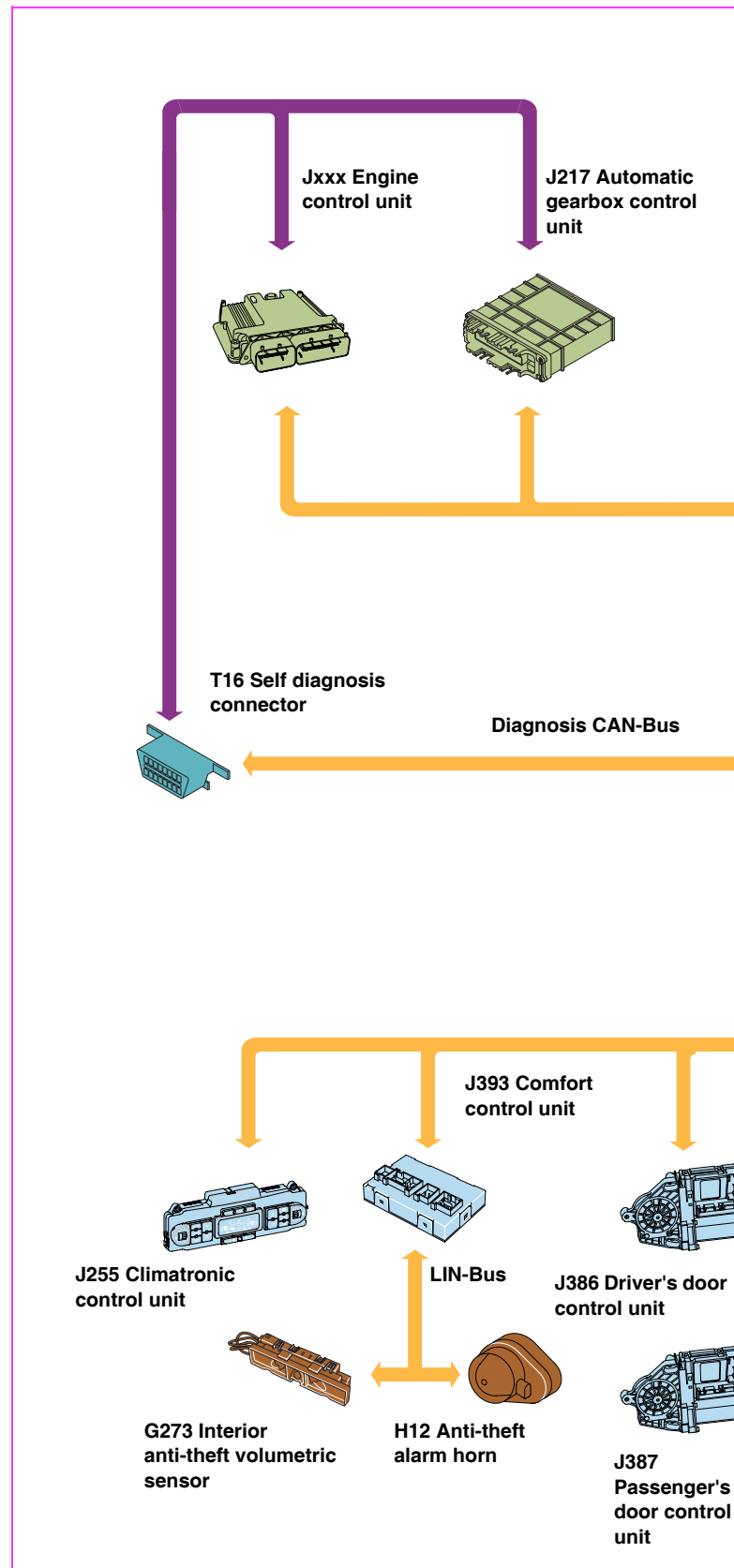
In all cases, with the exception of the instrument panel CAN-Bus, the “low” cable is orange/brown in colour and the “high” can vary depending on the CAN-Bus line in question. For drive, it is orange/black, for comfort it is orange/green, for infotainment it is orange/lilac and for diagnosis it is orange/black.

On the instrument panel CAN-Bus line, the “high” cable is yellow in colour and the “low” is brown.

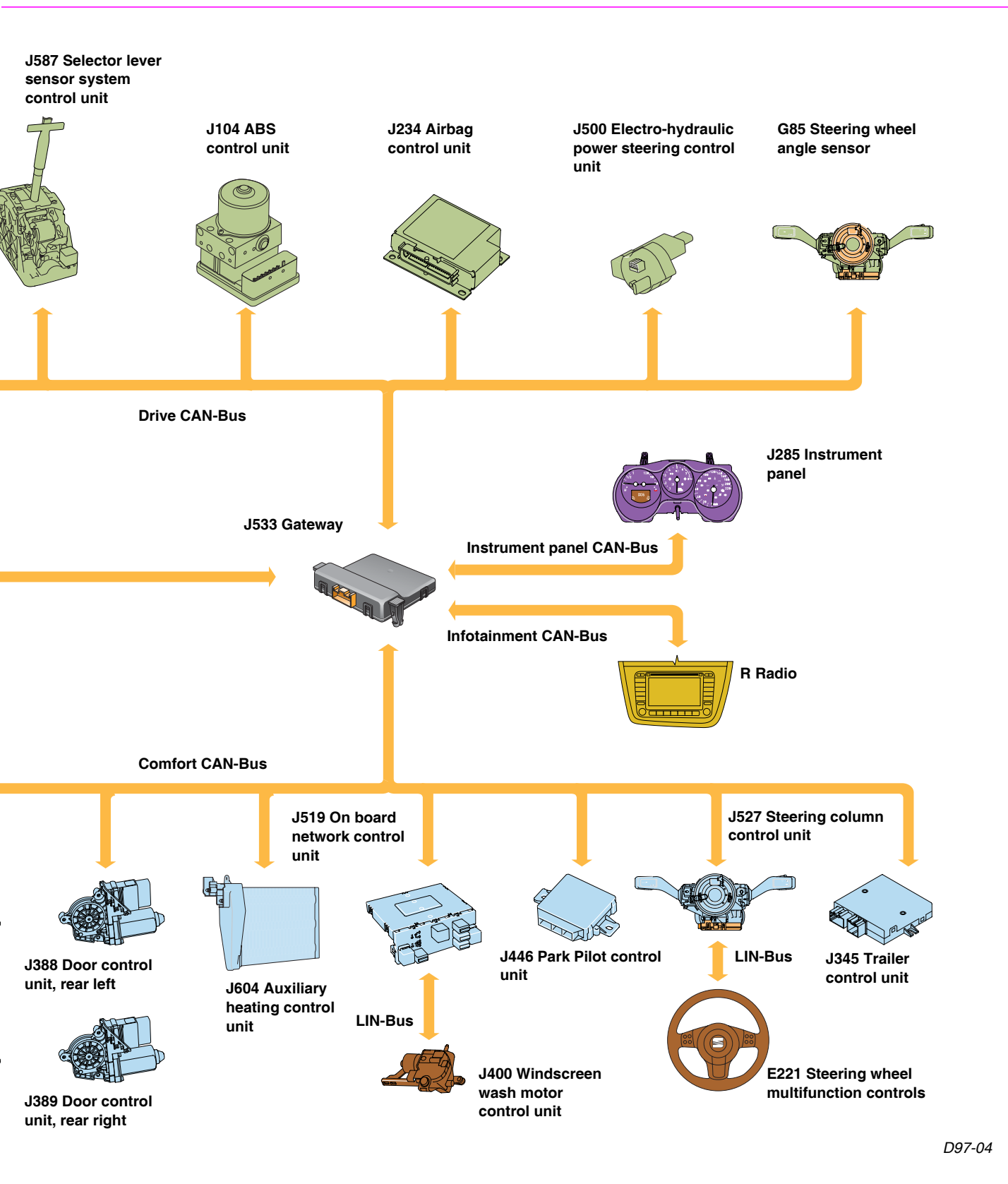
All the **CAN-Bus lines communicate** through the **gateway**.

The Altea is fitted with 3 LIN-Bus lines:

- The first is between the central comfort control unit and the wiper control unit.
- The second is between the power steering electronics and the controls on the steering wheel.
- And the third is between the on board network and the alarm and the anti-theft sensor in the passenger compartment.







# LIN-Bus

The name LIN-Bus is an abbreviation of **Local Interconnect Network**.

Local Interconnect means that all the control units are located in a determined area.

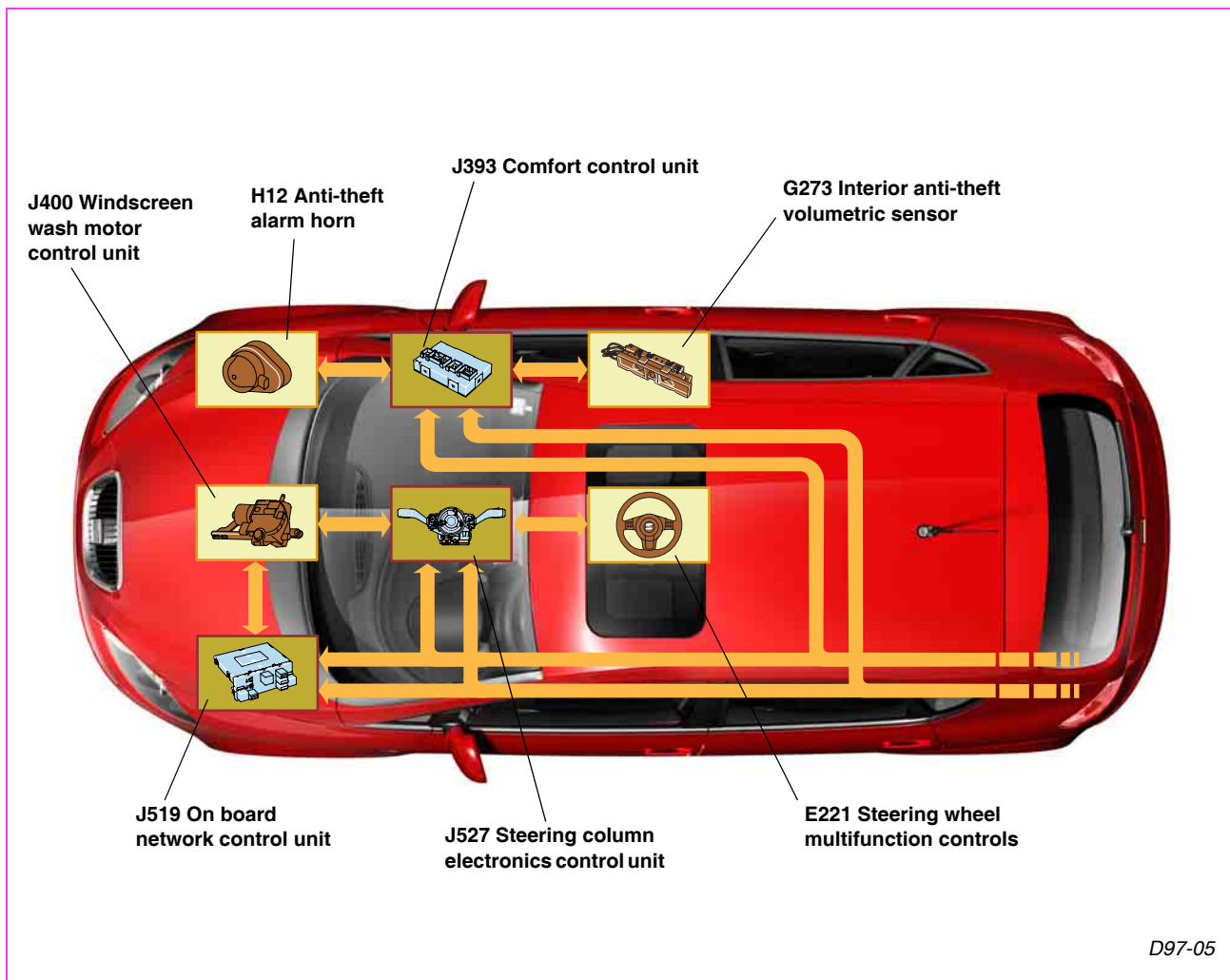
The exchange of data between the different LIN-Bus systems on a vehicle is carried out by means of a CAN-Bus control unit.

The LIN-Bus is a **single wire system**. The wire is a yellow/black colour for the steering wheel controls and alarm LIN circuit and lilac/white in the case of the wiper circuit. The wire section is 0.35 mm<sup>2</sup> and does not require shielding.

The system allows communication between one master LIN-Bus unit and up to 16 slave units.

All the LIN-Bus lines on the Altea are connected to the CAN-Bus lines through their respective master LIN-Bus unit.

The **diagnosis** of the LIN-Bus systems is **carried out through the master control unit**. The diagnosis data transmission from the slave units to the master unit is through the LIN-Bus.





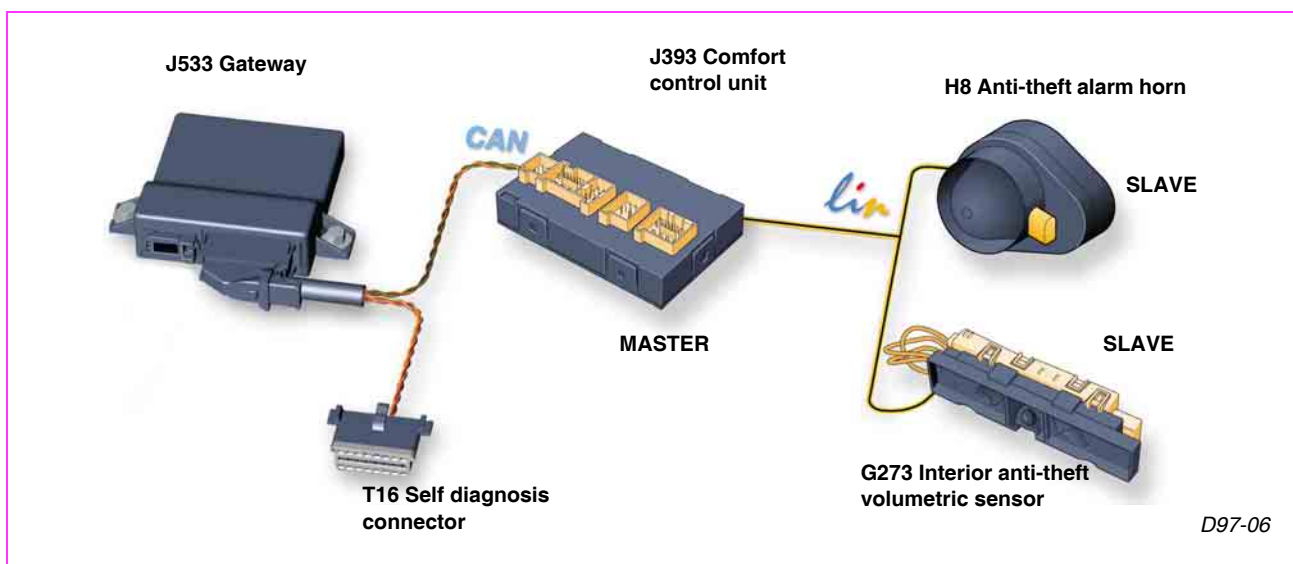
## MASTER UNIT

The control unit which is connected to the CAN-Bus line takes on the role of master for the LIN-Bus.

The assigned functions for this unit are:

- Control of data transmission and speed.
- Definition of a cycle by the control unit to determine which messages are transmitted to the LIN-Bus and when this transmission takes place.

- Responsibility for data translation between the different LIN-Bus units subscribed to the local network and the CAN-Bus data line. This also means that it will be the only unit connected to the CAN-Bus line.

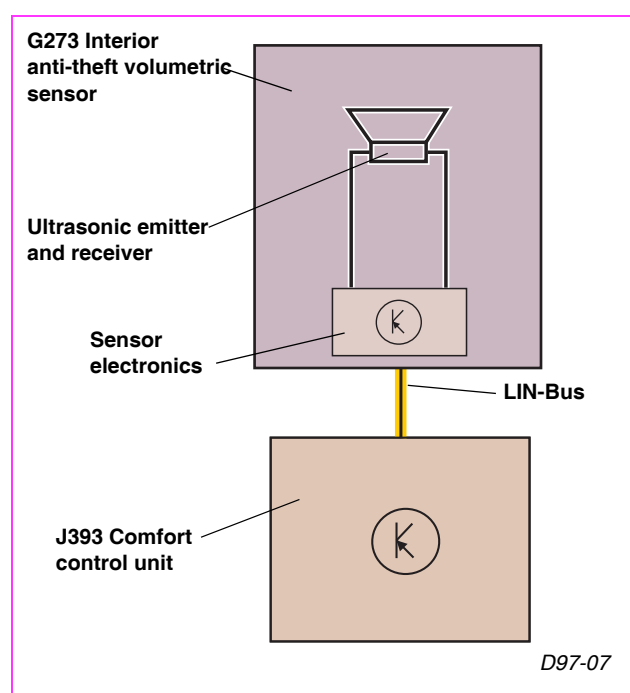


## SLAVE UNIT

On a LIN-Bus system, the slave function can be carried out by a control unit or also by any of the different sensors or actuators, such as the anti-theft alarm volumetric sensor.

The sensors have an integrated electronic circuit which analyses the values measured by the sensor itself. These values are then transmitted over the LIN-Bus as digitalised signals.

Several slave units can connect to one single LIN-Bus master control unit.

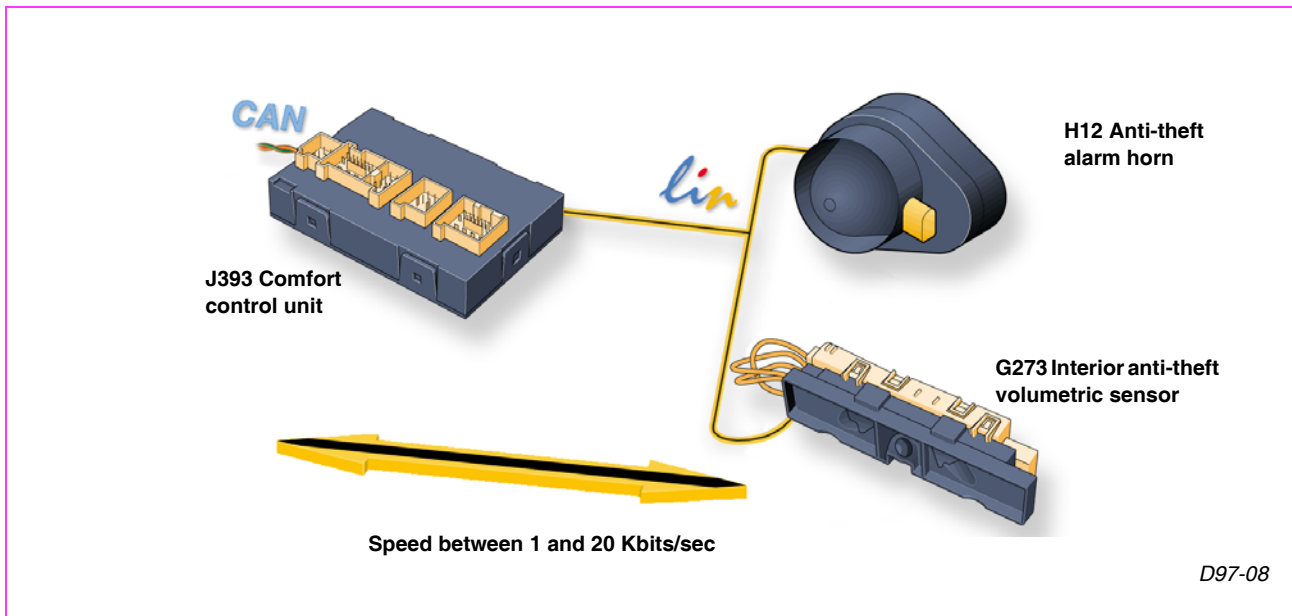


# LIN-Bus

## DATA TRANSMISSION

The speed of data transmission is between 1 and 20 kbps and this is determined by the programs in the subscribed control units. It is about 5 times less than the speed of data transmission in the comfort CAN-Bus system.

Two voltage states are used for the transmission of data over the CAN-Bus lines, the **dominant** and **recessive** states.

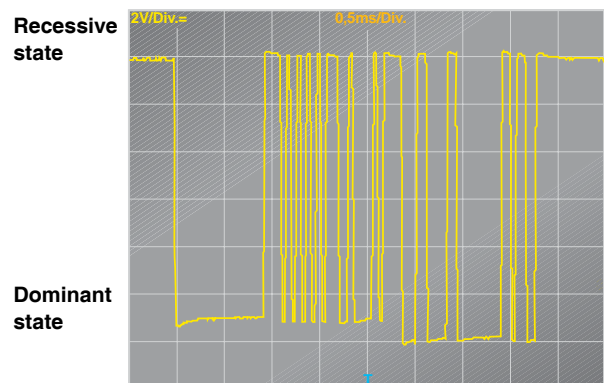


## RECESSIVE STATE

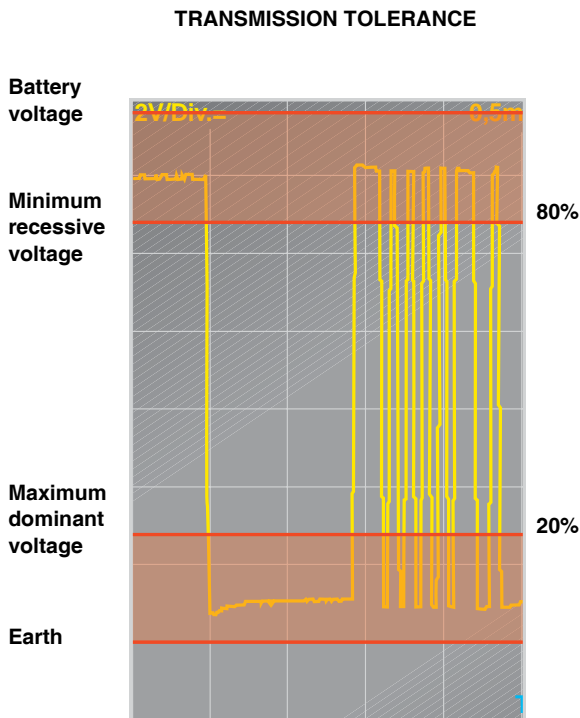
If the LIN-Bus transmits no message or transmits a recessive bit, the bus cable will have an applied **voltage** very close to **battery** level.

## DOMINANT STATE

To transmit a dominant bit over the LIN-Bus, a transistor in the control unit responsible for the transmission must connect the data bus cable to earth, thus obtaining a **voltage** very close to **zero**.



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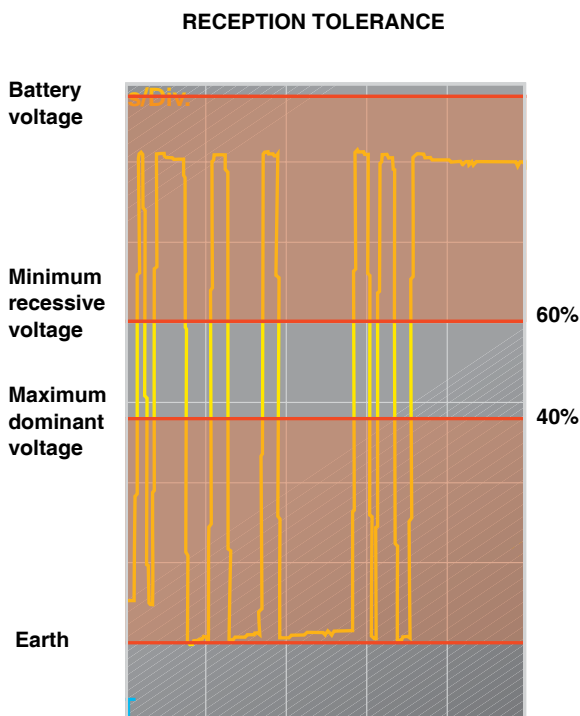
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## TRANSMISSION SECURITY

Two tolerance ranges were defined to ensure correct data transmission and reception and to eliminate possible interferences.

The **tolerance** range for the **transmission** of data is between 20% and 80% of the signal voltage level.

If the signal voltage reaches 80% of the battery voltage it is considered as recessive, whereas if it is less than 20% it is known as a dominant signal.



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To ensure the reception of valid signals, the **reception tolerances** were defined more extensively allowing the voltage level for a recessive signal to reach 60% and the dominant voltage to be set at 40%.

All these precautions ensure **stable** data **transmission** and **reception**.

## MESSAGE

The message is divided into two parts, **body** and **header**.

The header is always transmitted by the master unit, however the message body can be transmitted either by the master or slave unit.

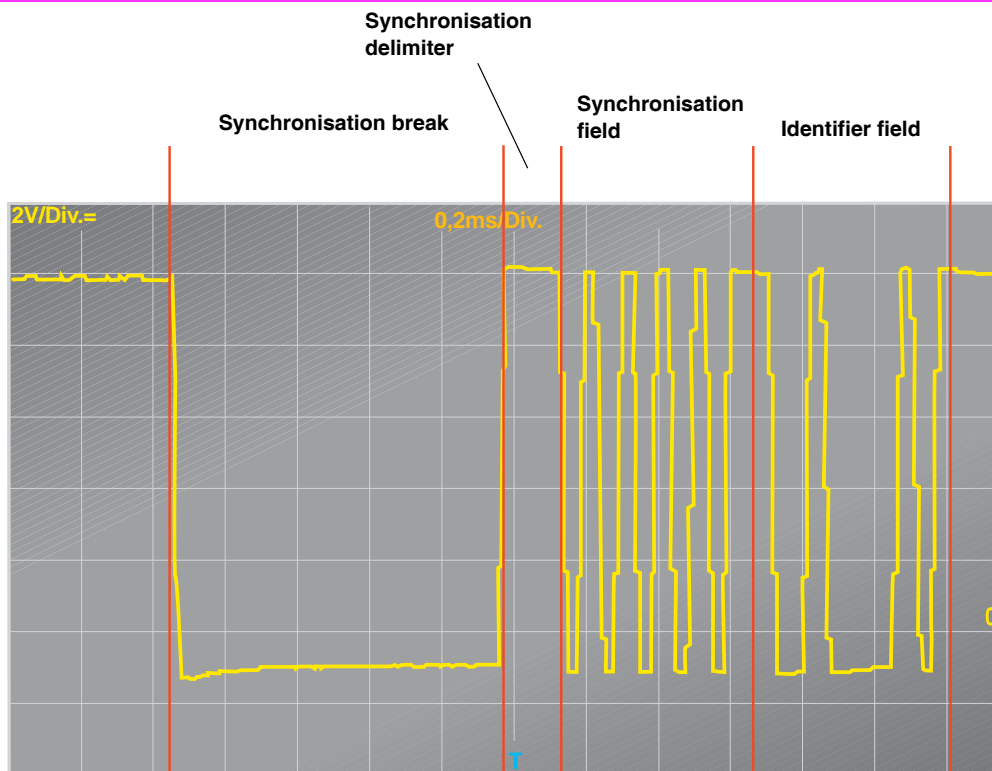
The master LIN control unit uses the message **header** to **request** the slave unit to transmit **information**. The slave unit transmits the corresponding reply.

The message **body** is the part which contains the **information**.

If the information is transmitted by the slave unit, this unit will incorporate the message body directly after the header generated by the master unit.



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## MESSAGE HEADER

The message header is transmitted in a cyclic pattern by the master control unit. It is divided into 4 fields:

- Synchronisation break.
- Synchronisation delimiter.
- Synchronisation field.
- Identifier field.

The **synchronisation** break has a minimum length of 13 periods per bit. It is transmitted in a dominant state.

This length of 13 bits is required to provide an unmistakable indication of a message initiation to all the slave units.

In other areas of the message this length will have a maximum value of 9 consecutive dominant bits.

The **synchronisation delimiter** has a minimum length of 1 recessive bit.

The **synchronisation field** is made up of a binary chain 0101010101. This bit sequence

allows all the control units to be synchronised to the level of the master LIN-Bus unit.

The synchronisation of all the control units is needed to ensure an error-free data exchange. If the synchronisation is lost, the bit values could be incorporated in an incorrect location in message at the receiver end, leading to errors in the data transmission.

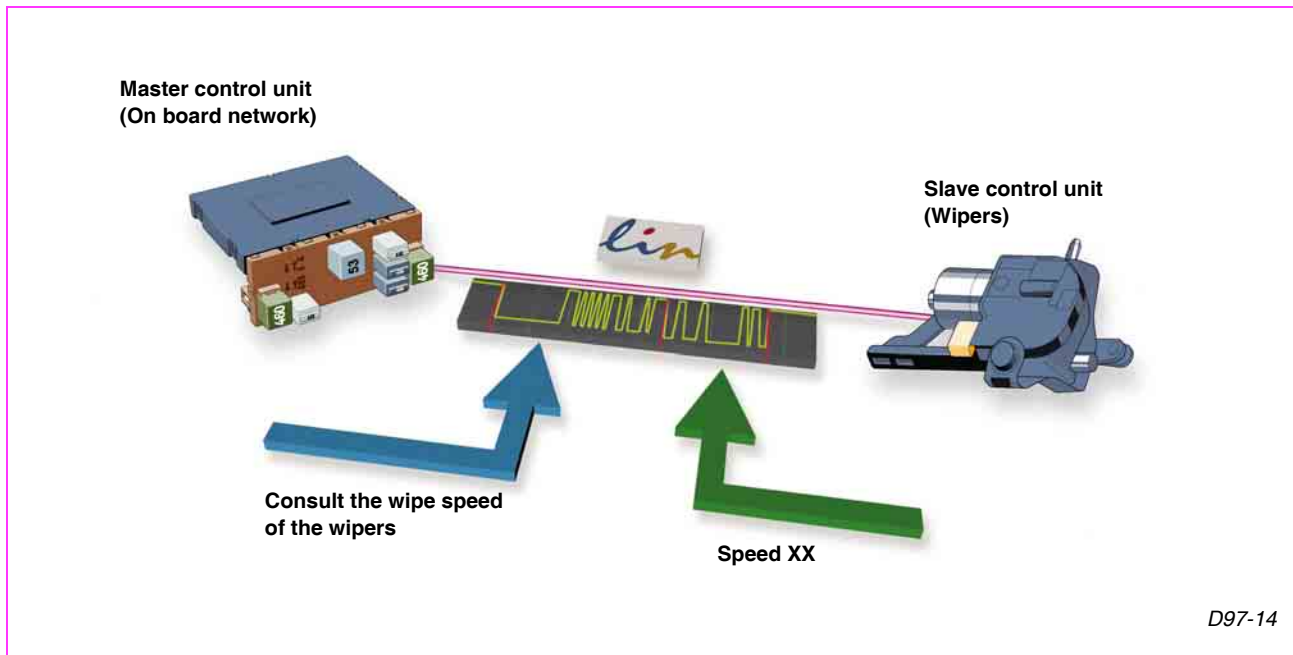
The **identifier field** has a length of 8 periods per bit. The first 6 bits contain the message identifier and the number of data fields contained in the reply. The reply could contain from 0 to 8 data fields.

The last two fields contain the verification total of the first 6, to enable error detection. This total value is required to avoid assignments to faulty messages due to errors in the transmission of the identifier.

## MESSAGE CONTENT

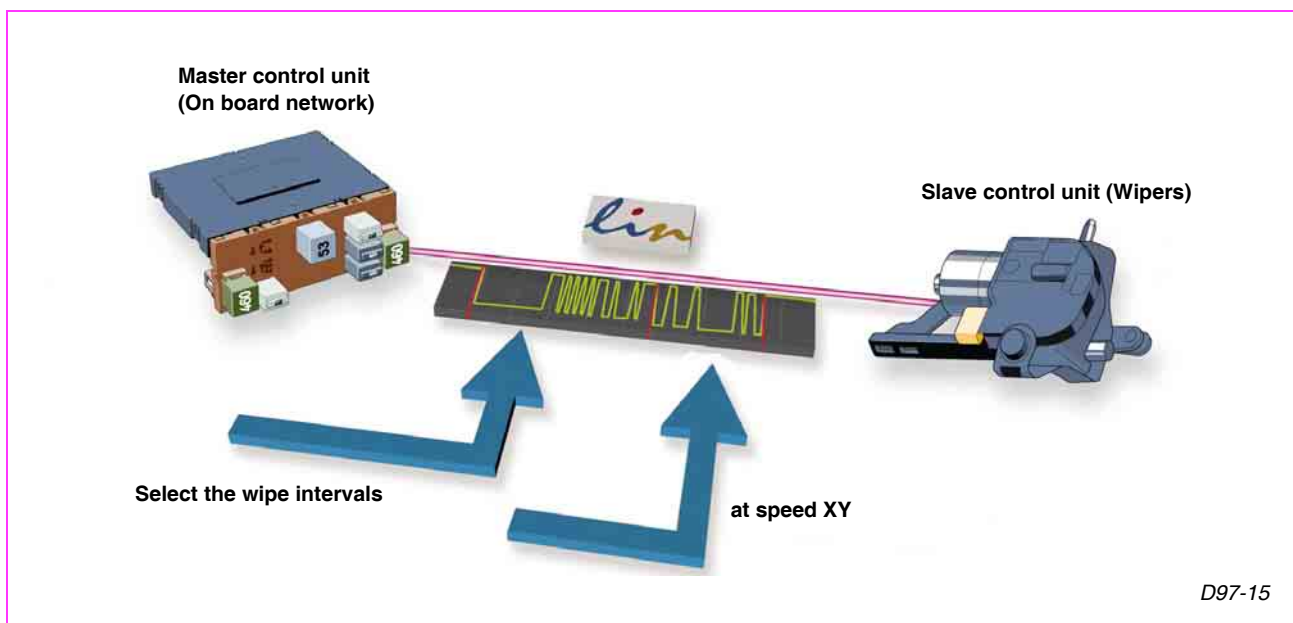
In the case of a message with a slave reply, the control unit will add information in the reply in accordance with the requirements specified by the identifier.

For example in the case of the on board network, the wiper motor control unit will be interrogated to determine its speed and this information will be inserted in the message by the control unit.



The master unit could also emit the message content with information for the slave unit, for example requesting a specific speed for wiper motor operation,

In this case the slave unit will process the message and use it for function execution.

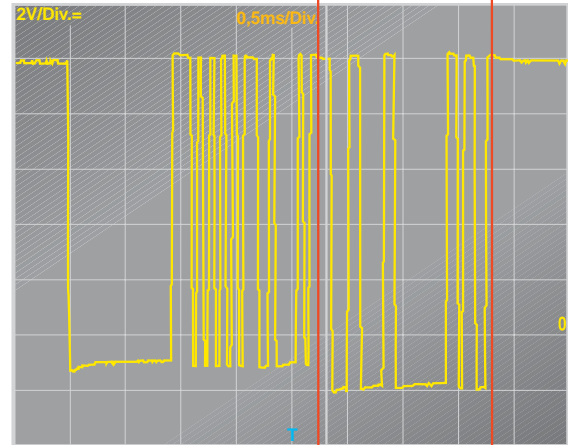




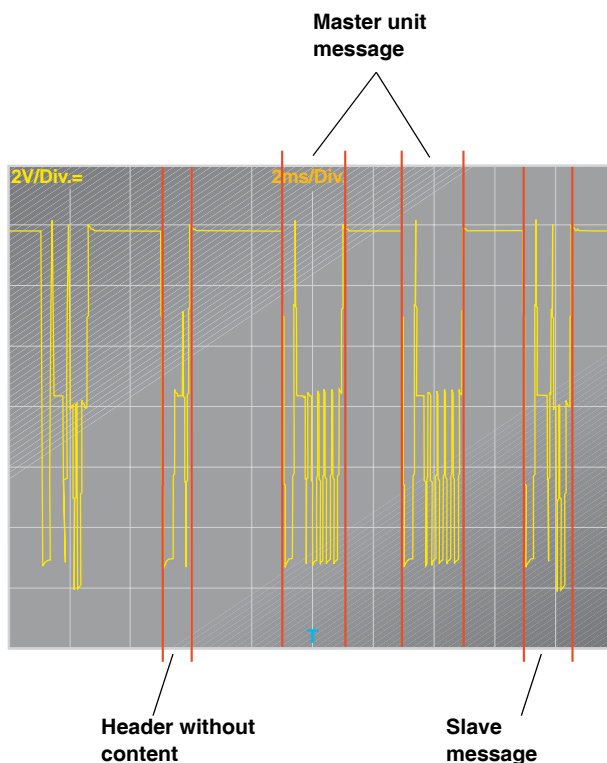
### CONTENT LAYOUT

This is composed of 1 to 8 data fields and each field contains 10 bits. Each data field is composed of one dominant starting bit, a data byte which contains information and one termination bit. The starting and termination bits are used for the re-synchronisation to prevent transmission errors.

Message content



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### CONTENT MESSAGE ORDER

The LIN-Bus master control unit will make cyclical transmissions of the message headers based on the order specified in its programme, and when these are master messages it will include the replies.

Information which is required with greater frequency is also transmitted more often.

The message order could also change based on the conditions surrounding the master unit.

To reduce the quantity of different master control units, this unit transmits the message headers of a completely equipped vehicle to the LIN-Bus.

The replies for optional control units not fitted on the particular vehicle is handled by a reply without a message header.

This has no influence on the operation the system.

# GATEWAY

The gateway control unit J533, is located behind the instrument panel on the lower right side, directly above the accelerator pedal.

All the CAN-Bus lines fitted to the Altea are connected to this unit.

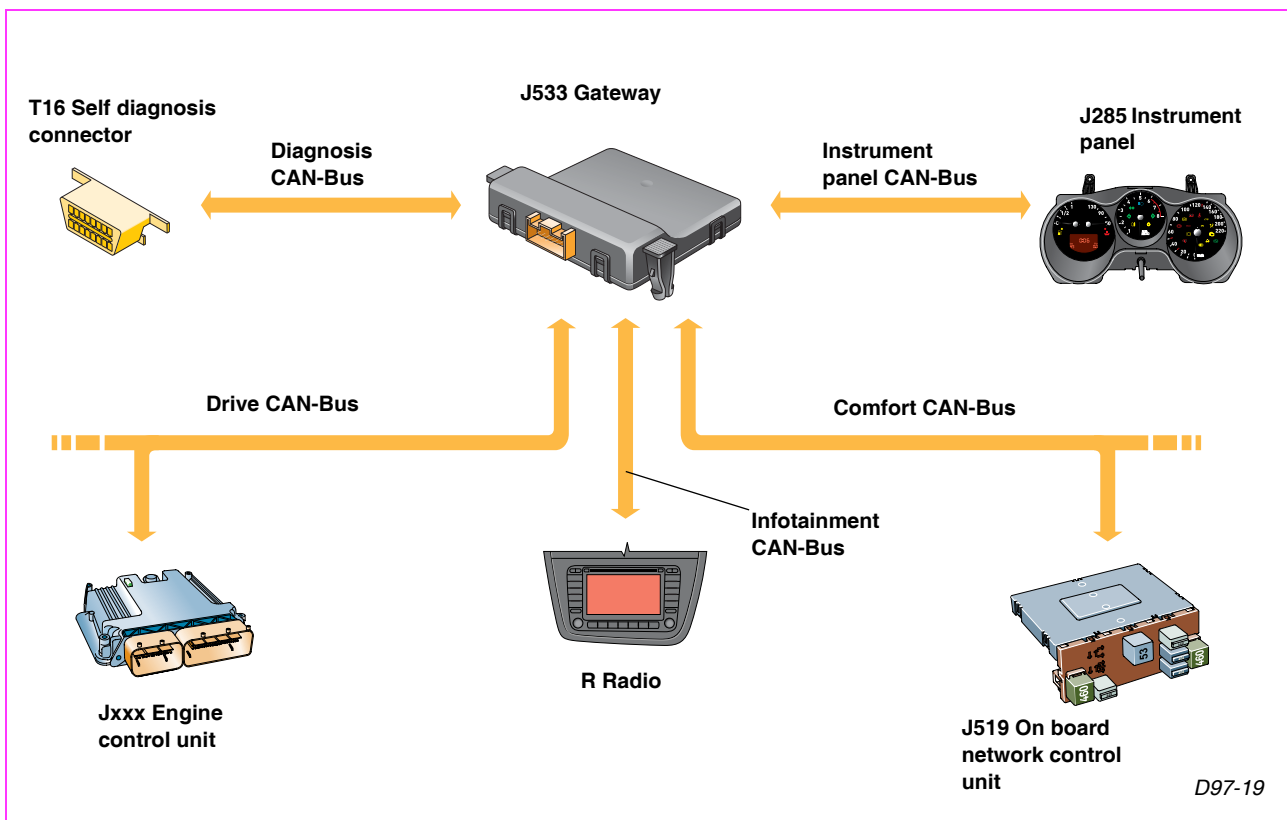
Its main task is to **communicate** and **convert** the **messages** between the different CAN-Bus lines, as well as handling the **activation** and **deactivation** of the signal to the “**terminal 15**” of the different control units subscribed to the drive CAN-Bus line.

The gateway is also responsible for transmitting the signal to “**sleep**” or “**wake-up**” to the different CAN-Bus lines thus reducing the vehicle electrical consumption.

It also has a **transport mode** which is activated in the factory and has to be deactivated before delivering the vehicle to the customer.



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D97-19

## ACTIVATION/DEACTIVATION FUNCTION OF “TERMINAL 15”

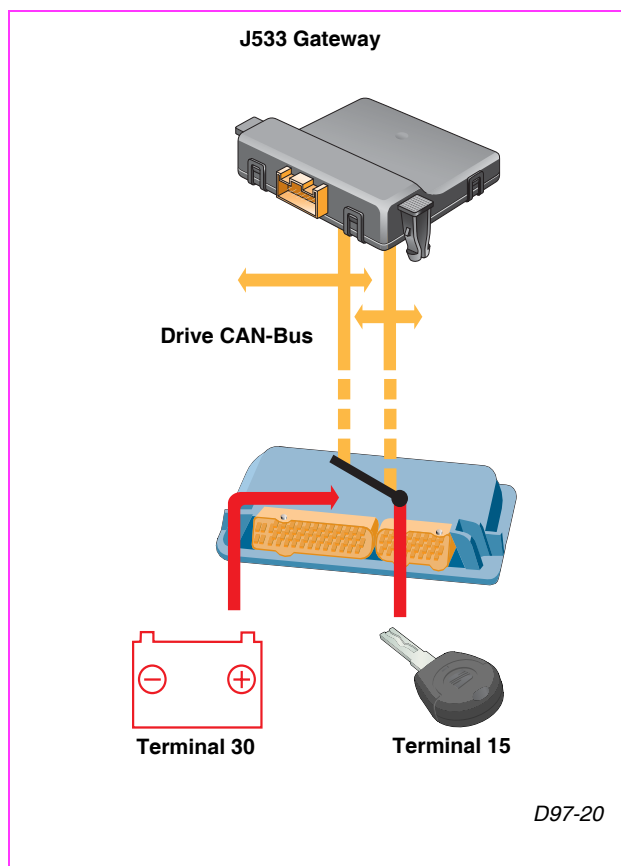
The following control units and active sensors continue to receive and deliver messages even when the signal from “terminal 15” is lost:

- Steering wheel angle sensor G85.
- ABS J104.
- Automatic gearbox J217.
- Engine Jxxx.
- Electro-mechanical power steering J500.
- Selector lever sensors J587.

This message communication is ensured since the gateway passes a message to the CAN-Bus line to ensure that the units affected can pass the signal from terminal 15 to 30 internally, thus permitting the data transmission.

This cycle could be **active** for a **maximum** period of **15 minutes** depending on the data being transmitted.

The cycle is terminated by the gateway when it sends a final deactivation message.



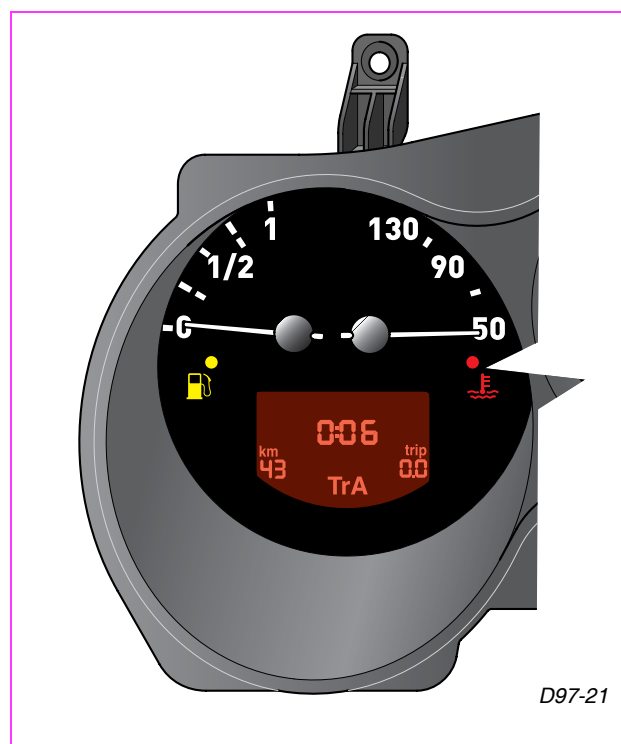
## TRANSPORT MODE

This mode is **activated** in the **factory** to **reduce** the **power consumption** of the vehicle during transport and storage prior to sale.

When the transport mode is activated the **letters “TrA”** will appear on the **instrument panel** digital display and the following units are disconnected:

- Radio/ navigation.
- Radio frequency remote control.
- Anti-theft protection of the passenger compartment.
- Interior lights.

This mode is automatically deactivated when the vehicle has covered 150 Km, however it is also possible to activate and deactivate it using the guided fault finding when the vehicle has driven less than 150 Km.



# GATEWAY

## SLEEP AND WAKE-UP

The **electrical consumption is reduced** by the use of the “**sleep**” function on CAN-Bus lines, during which all data bus lines and the control units subscribed to these lines are placed in the “sleep” mode. When the “**wake-up**” mode is selected they are reactivated.

The gateway is responsible for passing the “sleep” and “wake-up” messages to the different CAN-Bus units.

The “sleep” message for the **drive** CAN-Bus line is passed when the terminal 15 is deactivated and the “wake-up” mode is transmitted when terminal 15 is activated again.

In the case of the **comfort** CAN-Bus line, the “sleep” signal is passed when all the subscribed

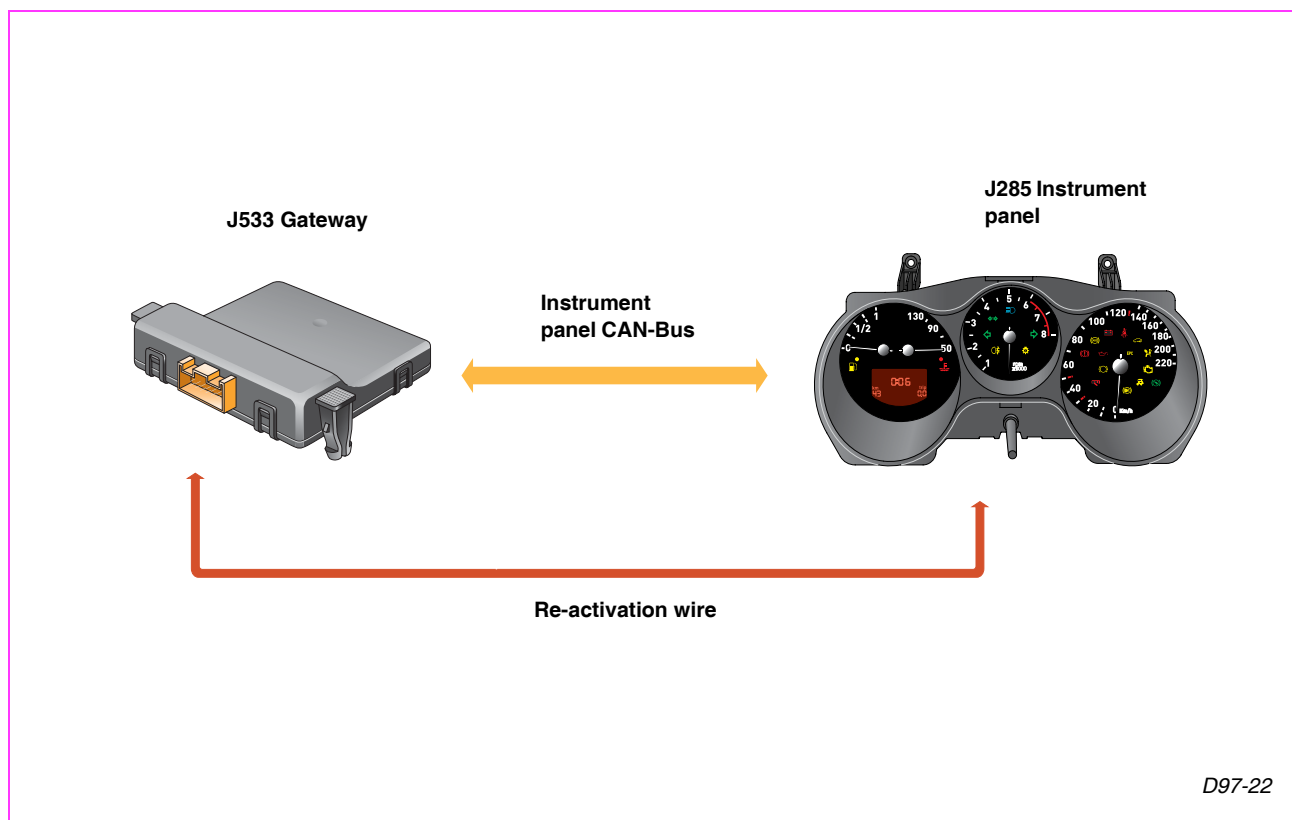
units indicate their intention to suspend communication.

The “wake-up” signal is given when any of the subscribed control units request reactivation, for example when a door is opened.

The **infotainment** and **instrument panel** CAN-Bus lines can only go into the “sleep” mode when the comfort CAN-Bus is also in this mode.

The **instrument panel** CAN-Bus can be brought out of the “sleep” mode through a **reactivation cable** connecting the panel with the gateway, for example when the trip Km. zero setting button is pressed.

Since there is 12 volts in this cable, the CAN-Bus line is reactivated.



## SELF-DIAGNOSIS

The guided fault finding or guided functions can be used to perform the following operations:

- Verification of wiring installation and operation of all CAN-Bus lines.
- Verification of the different units connected to the CAN-Bus line.
- Gateway coding.

## CODING

The gateway needs to be coded and the following data needs to be introduced to complete this operation:

- Vehicle make.
- Body type.
- Left or right hand drive.
- And control units fitted to the vehicle and connected to the different CAN-Bus lines.

The coding has to be completed according to a specific test plan during which it will be necessary to indicate all the options available on the vehicle one by one.

Guided fault finding	Seat	V06.19 13/02/2004
Function / component selection	Altea	
	2004 (4)	
Function or component selection	Saloon	
	BHD 2.0L Motronic / 110 kW	
<b>+ Bodywork</b>		
<b>+Electrical installation</b>		
+01 - Systems capable of self-diagnosis		
+ 19 - Diagnostic interface for data bus		
<b>+Functions of the diagnostic interface for data bus</b>		
Check the bus activity		
Check the bus participants		
Code the gateway		

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## ACTIVATION /DEACTIVATION OF THE TRANSPORT MODE

The deactivation of the transport mode is only possible if the vehicle has covered less than 150 Km.

This operation can be performed by accessing the function "**Vehicle information documentation**" and selecting "**Transport mode 1**" within guided fault finding.

The transport mode can be activated or deactivated whenever required using this function.

Guided fault finding	Seat	V06.19 13/02/2004
Function / component selection	Altea	
	2004 (4)	
Function or component selection	Saloon	
	BHD 2.0L Motronic / 110 kW	
<b>+ Vehicle information documentation</b>		
<b>Transport mode 1</b>		

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# COMFORT SYSTEM

The comfort system on the Altea is similar to that of the Ibiza 02/Cordoba 03 models.

It has a central comfort control unit and separate units on each door. The communication between all the units is through the comfort CAN-Bus line.

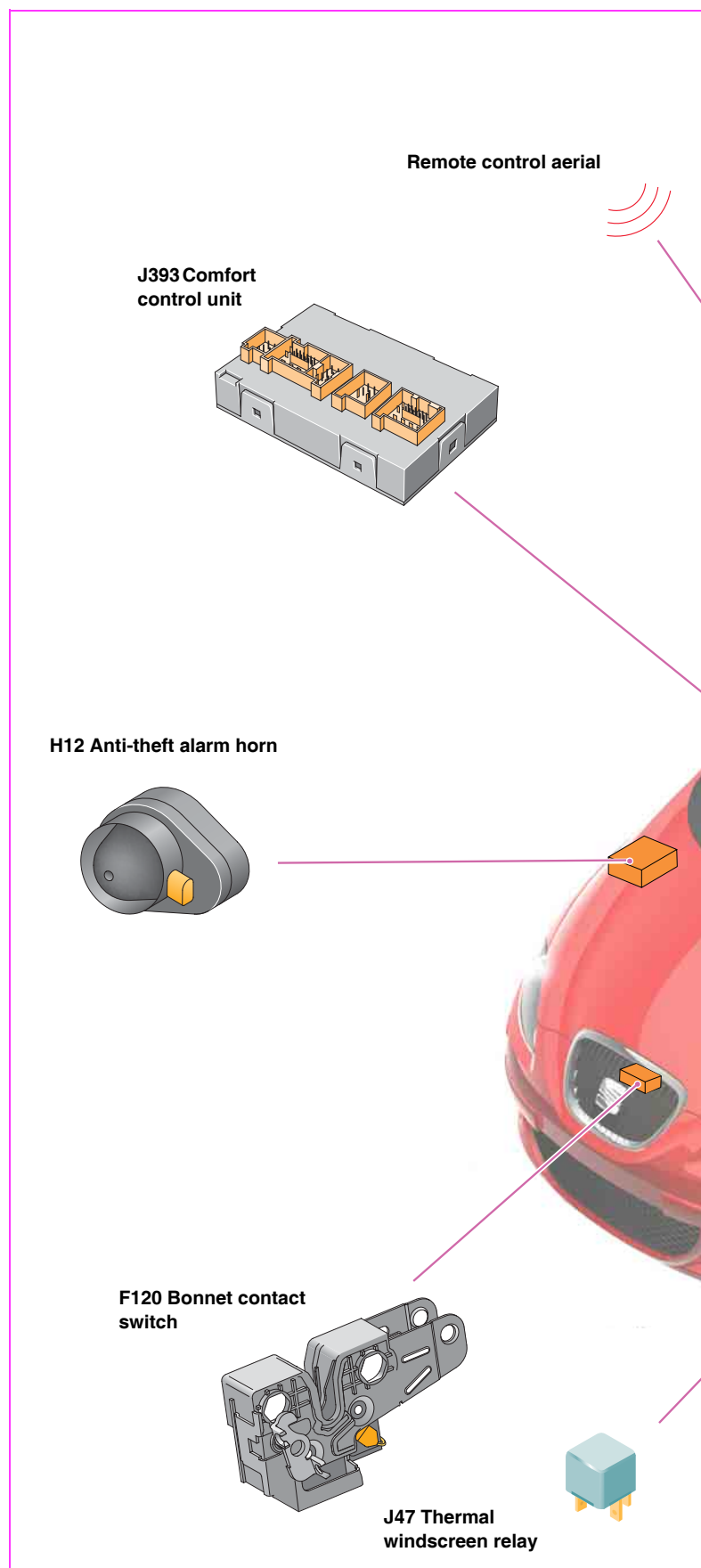
The main new features fitted are:

- The introduction of a **motorised unlocking** of the **tailgate** to reduce the effort required by the user.
- Also in some countries, the **windscreen** is fitted with a **thermal resistance** next to the A pillar, which is governed by the driver's door control unit. This prevents the jamming of the wipers due to the accumulation of snow or ice between the blade and the pillar moulding.
- The **door control units have their own self-diagnosis**. When these are replaced, they should be coded according to the equipment fitted on the vehicle.
- The volumetric sensor and the anti-theft alarm horn exchange information with the central comfort control unit through the **LIN-Bus**.
- It is possible to program a double locking action "**safe locking**" by pressing twice on the remote control button and a single locking action by pressing once on the button.

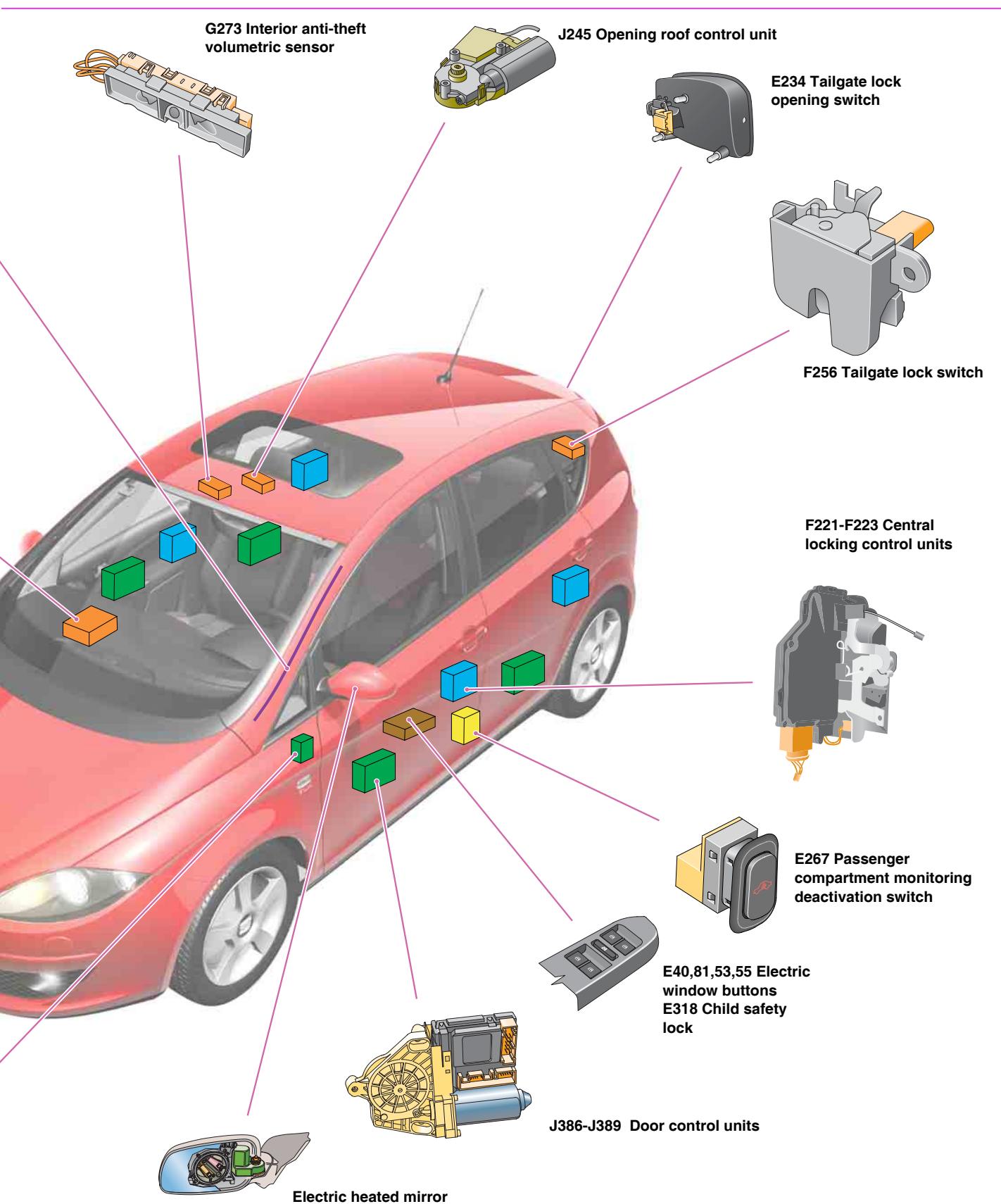
The diagram alongside indicates the most important components which are available in the comfort system.

The explanations here will only cover new components or functions.

**Note:** For more information on the rest of the components, consult the Self Study Program No. 85 "Ibiza 02".







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# COMFORT SYSTEM

## SYNOPTIC CHART

The control of the different functions in the comfort system is divided between the central comfort control unit and the door control units. It should be mentioned that the interior illumination function is shared with the on board network control unit.

### CENTRAL UNIT

#### ANTI-THEFT ALARM

- Priming and unpriming.
- Activation.

#### INTERIOR ILLUMINATION (Shared)

- Switching on.
- Switching off.

#### CENTRAL LOCKING

- Single or double locking "SAFE".
- Speed related locking.
- Individual unlocking.
- General unlocking.
- Airbag related unlocking.
- Confirmation warnings.
- Unlocking due to signal from "S" terminal.
- Comfort closing of the sunroof.
- **Tailgate opening.**

#### SELF-DIAGNOSIS

- Fault memory.
- Programming and adaptation functions.

### DOOR UNITS

#### ELECTRIC WINDOWS

- Raising and lowering.
- Anti trap function.
- Comfort closing.
- Slow stopping.
- Rear window locking.

#### ELECTRIC MIRRORS (only on front doors)

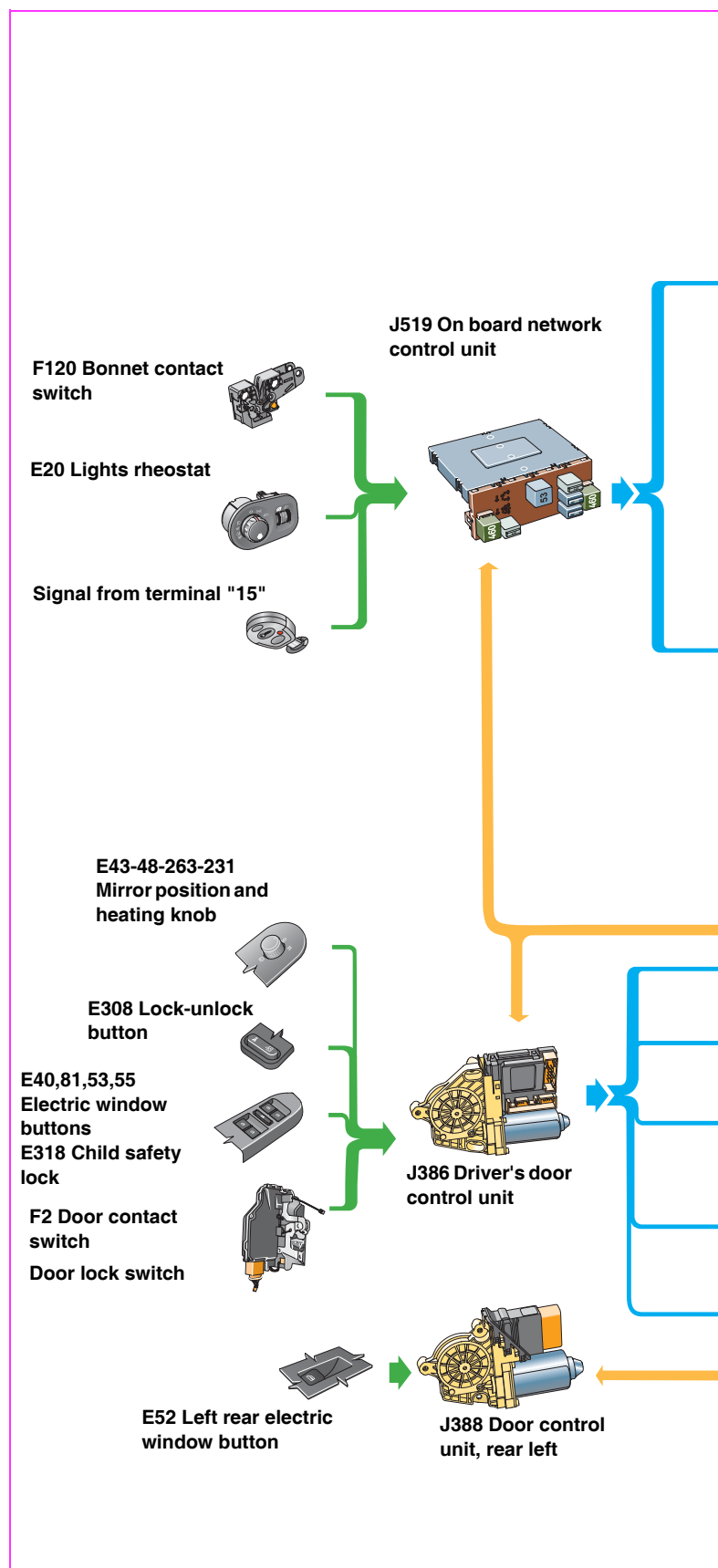
- Setting.
- Heating.
- Folding and unfolding.

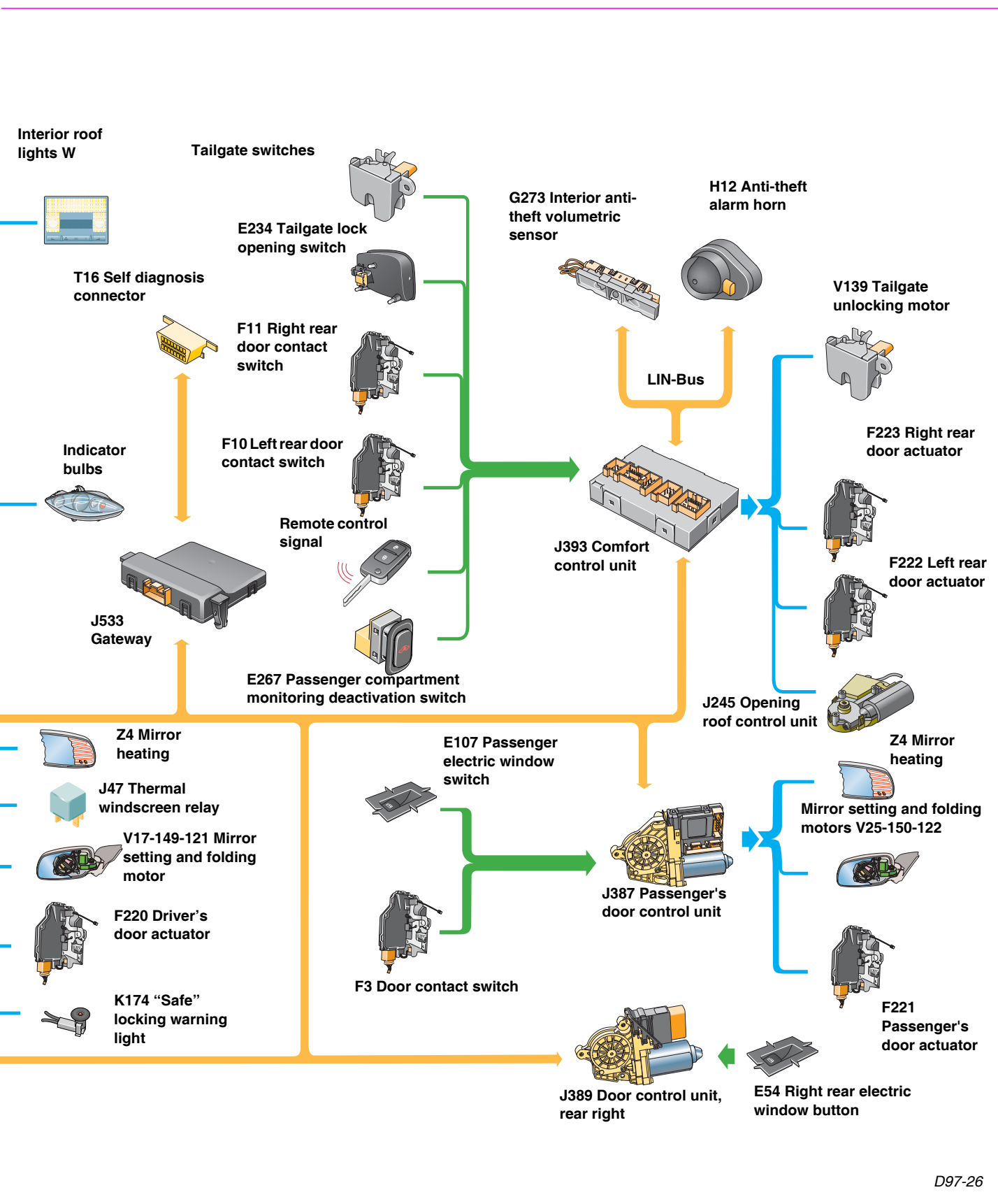
#### THERMAL WINDSCREEN (only on driver's doors)

- **Activation and deactivation.**

#### SELF-DIAGNOSIS

- Fault memory.
- Coding.





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# COMFORT SYSTEM

## UNLOCKING OF TAILGATE LOCK

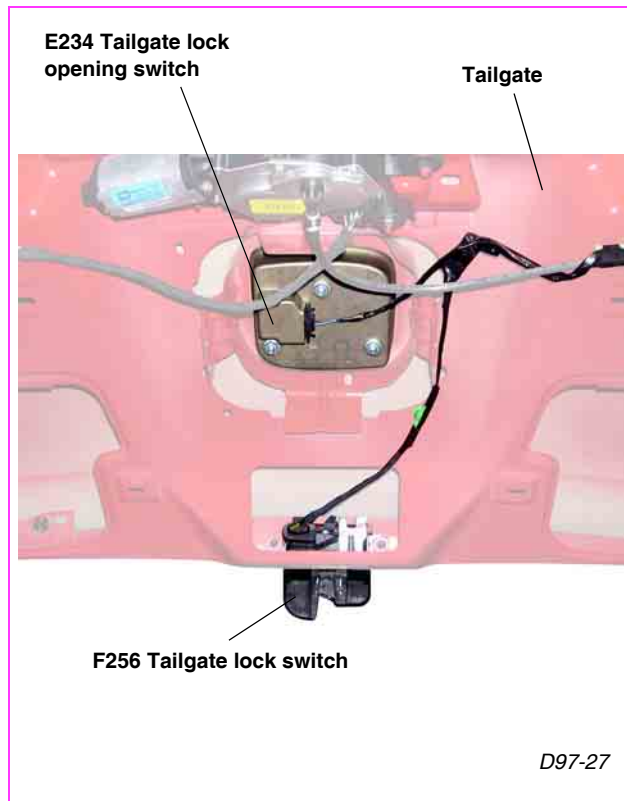
This function **frees the catch** from the hook **with no effort** on the part of the user, and it also eliminates the need for links between the boot opening control and the lock assembly.

### OPERATION

When the tailgate opening handle is activated, the unlocking switch which is located in the handle assembly sends a signal to the central comfort control unit.

If the central locking is in the general unlocking position, the comfort control unit will activate the boot lock actuator to free the catch from the hook.

The tailgate is closed manually as on previous models.



### F256 TAILGATE LOCK ASSEMBLY

This unit is composed of a motor V139 and two switches.

The motor is responsible for freeing the locking catch from the locking lever pin and consequently opening the tailgate.

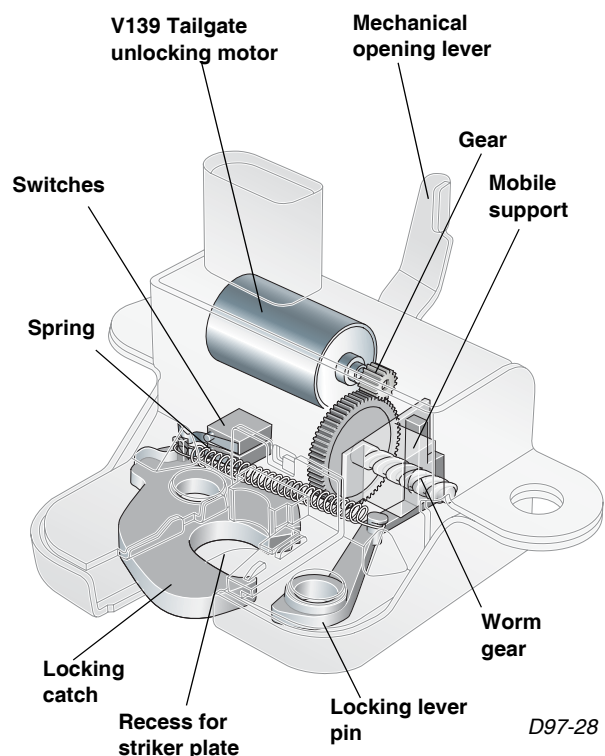
This action is performed by the motor gear driving a worm gear which in turn moves a mobile support.

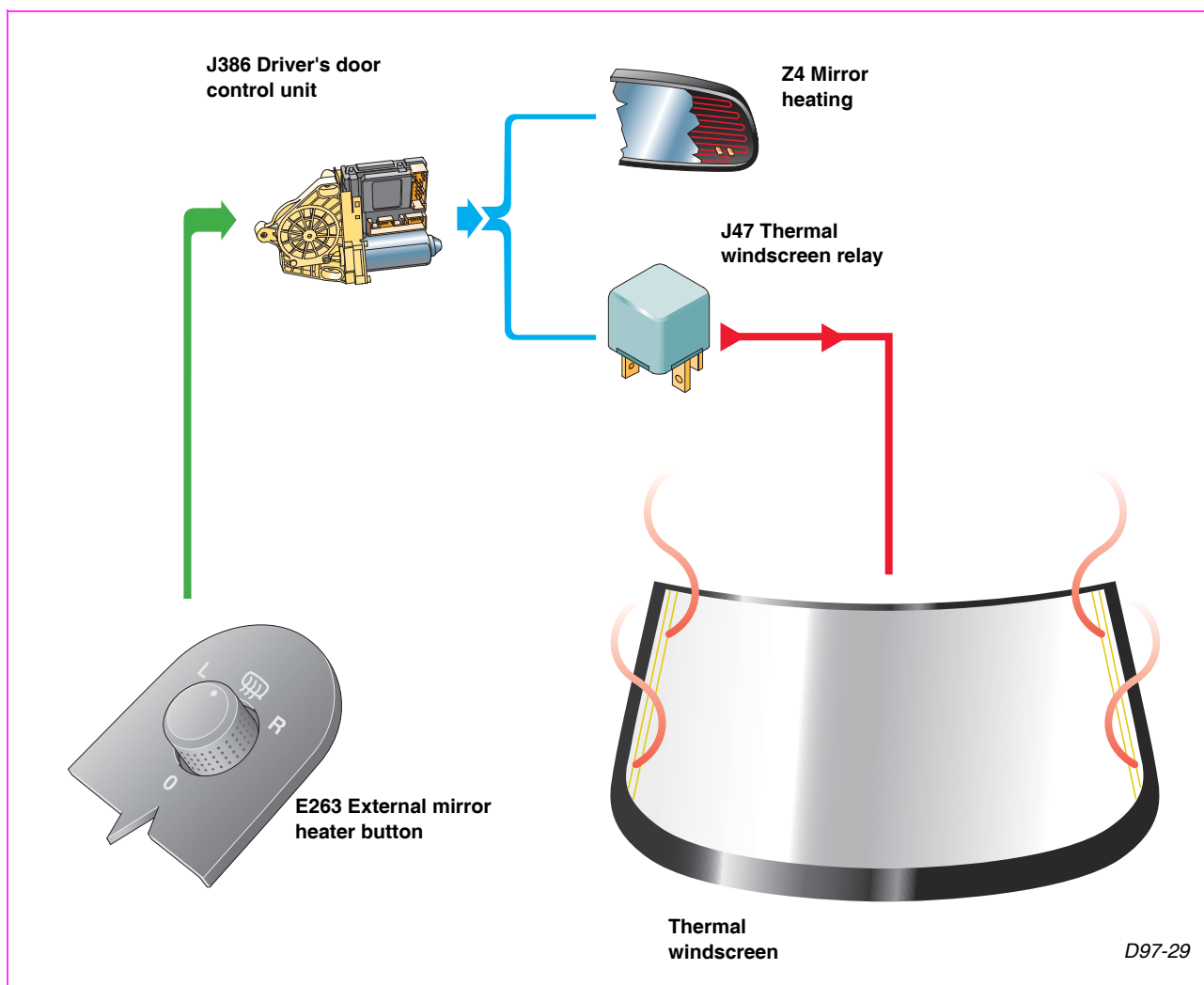
The movement of the mobile support displaces the locking lever pin to free the locking catch.

The locking catch then releases the tailgate lock.

The two switches inform the central control unit about the status of the tailgate. The signal from one of the switches is used for the boot illumination while the other signal is used for the central locking.

The tailgate lock assembly is also fitted with a mechanical handle for opening in case of a system failure.





## THERMAL WINDSCREEN

The vehicles fitted with heated electric mirrors also have a resistance fitted at both lateral edges of the windscreen.

The main function is to **prevent** the **accumulation** of **snow or ice** between the A pillar trim and the windscreen, since this could prevent the wipers from returning to their at-rest position.

## OPERATION

The thermal windscreen is activated together with the heating of the external rear-view mirrors by the rotary control knob for mirror adjustment.

The windscreen heating is activated by the driver's door module.

# COMFORT SYSTEM

## SELF-DIAGNOSIS

There are different address words available for the Altea, one for the central comfort control unit and one for each door control unit. This implies that each control unit has different functions.

All of these functions can be accessed by:

- **Guided fault finding** which combines the self-diagnosis with the test instruments and the Repair Manuals.

- **Guided functions** which allow fast simple access to the functions section of the guided fault finding.

All the control units should be coded when they are replaced and the central comfort control unit can be used to adapt different operating parameters.

Guided fault finding	Seat V06.19 13/02/2004
Function / component selection	Altea
Function or component selection	2004 (4)
	Saloon
	BHD 2.0L Motronic / 110 kW
<b>+ Bodywork</b>	
<b>+Bodywork fitting tasks</b>	
+01 - Systems capable of self-diagnosis	
+ 42 - Driver's door electronics	
<b>+J386 Driver's door control unit, functions</b>	
J386 - Coding	
J386 - Replace	
J386 - Fault memory	
J386 - Read measuring value block	
J386 - Final control diagnosis (sequential)	
J386 - Control unit version	
	Test instruments
Go to	Print
Help	

D97-30

## DOOR CONTROL UNIT GUIDED FUNCTIONS

When one of the door units is accessed, it is possible to perform the following functions:

- Coding.
- Fault memory.
- Read measuring value block.
- Final control diagnosis.
- Consult control unit version.

Guided fault finding	Seat V06.19 13/02/2004
Operating test	Altea
J38x - Code front door control units	2004 (4)
	Saloon
	BHD 2.0L Motronic / 110 kW
<b>Automatic operation</b>	
Do you want the one-touch window lift?	
<input type="button" value="Yes"/>	
<input type="button" value="No"/>	
	Test instruments
Go to	Print
Help	

D97-31

## CODING THE DOOR CONTROL UNIT

Both the front and rear door control units need to be coded. The coding of the units allow the following functions to be adapted:

- Automatic raising and lowering of the windows.
- Mirror heating.

The mirror coding is not available in the control units for rear doors.



## REPLACEMENT OF THE DOOR UNIT

This function on the VAS allows the coding of the control unit fitted to the vehicle to be read, and automatic transfer of the coding to the new control unit.

However this function cannot be performed if a fault in the control unit prevents communication with the CAN-Bus and in this case coding will have to be done using the "coding" function when fitting a new control unit.

Guided functions	Seat	V06.19 13/02/2004
Operating test	Altea	
J388 - Rear left door control unit, replace	2004 (4)	
	Saloon	
	BHD 2.0L Motronic / 110 kW	

Communication check to door control units	
The following code was emitted by the rear left door control unit - J388-: 00016	Ready

Test instruments	Go to	Print	Help
------------------	-------	-------	------

D97-32

Guided functions	Seat	V06.19 13/02/2004
Operating test	Altea	
J386 - Visualise MVB driver's door control unit	2004 (4)	
	Saloon	
	BHD 2.0L Motronic / 110 kW	

Read measured values	
Measure block values 1	1. Function description
Front left electric window switch (local): not activated	2. Location
Front left electric window switch: not activated	
Electric windows driver's door: End stop register	
Thermal protection of driver's door electric windows: inactive	
- To continue press the > button	

Test instruments	Go to	Print	Help	
------------------	-------	-------	------	--

D97-33

## READ MEASURING VALUE BLOCK

The measure value blocks can be used to check the working values of each one of the door control units and thus verify their proper operation.

## ACTUATOR DIAGNOSIS

Each of the door control unit contains an actuator diagnosis function, through which it is possible to verify the operation of the different functions which are directly assigned to each door control unit. For this reason, the component activated depends on the door control unit selected.

Guided functions	Seat	V06.19 13/02/2004
Operating test	Altea	
J386 - Actuator diagnosis (Sequential)	2004 (4)	
	Saloon	
	BHD 2.0L Motronic / 110 kW	

First test stage	
The SAFE LED will be activated during the first test stage.	Ready

Test instruments	Go to	Print	Help	
------------------	-------	-------	------	--

D97-34

# COMFORT SYSTEM

## GUIDED FUNCTIONS OF THE CENTRAL COMFORT CONTROL UNIT

This function allows the unit to be coded and the different operating parameters to be adapted. It also allows the fault memory and code of the present unit to be read and permits energising of the actuators.

Guided fault finding	Seat V06.19 13/02/2004
Function / component selection	Altea 2004 (4)
Function or component selection	Saloon BHD 2.0L Motronic / 110 kW
<b>+ Bodywork</b> <b>+Bodywork fitting tasks</b> <b>+01 - Systems capable of self-diagnosis</b> <b>+ Comfort system</b>	
<b>+ Functions - comfort system</b> Operating variation for remote control General comfort system description Comfort system control unit actuator diagnosis Code the comfort control unit Consult the control unit version	
<div>Test Instruments</div> <div>Go to Print Help</div>	

D97-35

## CHANGES IN OPERATION OF THE REMOTE CONTROL

This option allows the following functions of the remote control to be activated or deactivated:

- Individual door opening.
- Automatic locking at 15 km/h.
- Automatic unlocking when the key is removed from the ignition.
- Visual or acoustic signal for locking or unlocking with the remote control.
- Visual or acoustic signal for locking or unlocking using the door lock barrel.
- Acoustic or visual signal for the alarm.

Guided fault finding	Seat V06.19 13/02/2004
Operating test	Altea 2004 (4)
Operating variation for remote control	Saloon BHD 2.0L Motronic / 110 kW
Function or component selection	
At this point the following functions are activated or deactivated:	
Function	Status
· Individual door opening	Activated
· Automatic lock out at speed > 15km/h	Deactivated
· Automatic unlock on key removal	Activated
· Acoustic unlock signal	Activated
<div>Yes No</div>	
<div>Test Instruments</div> <div>Go to Print Help</div>	

D97-36

## GENERAL DESCRIPTION OF THE COMFORT SYSTEM

This function can be used to adapt the different central locking functions. In this case it will be necessary to decide if the locking, unlocking or alarm functions are to be adapted. The VAS then will provide the menus with the functions unavailable.

Guided fault finding	Seat V06.19 13/02/2004
Operating test	Altea 2004 (4)
Comfort system description	Saloon BHD 2.0L Motronic / 110 kW
Opening functions	
There are different vehicle opening functions among these the following should be noted.	
Press the corresponding button for more information:	
-1- Unlocking with/without SAFE	-1-
-2- SAFE unlocking using switch	-2-
-3- Interior unlocking	-3-
-4- Unlock on key removal from ignition	-4-
-5- Crash signal	-5-
-6- Opening indication	-6-
-7- Return to function selection	-7-
<div>Test Instruments</div> <div>Go to Print Help</div>	

D97-37

## CODING OF THE CENTRAL COMFORT CONTROL UNIT

This unit needs to be coded according to the equipment fitted to the vehicle.

For this reason and due to the extensive variations possible, a code composed of a programming matrix was established and this is known as **extended coding**.

The code is composed of different bits each associated with a different equipment option.

Before entering the coding process, it is necessary to begin by consulting the present code, as well as the part number of the control unit. The results are shown on the diagram.

Guided functions	Seat	V06.19 13/02/2004
Operating test	Altea	
Comfort system control unit coding	2004 (4)	
	Saloon	
	BHD 2.0L Motronic / 110 kW	

First check and pass to 13 Bytes

Query result:

Part No.: 1K0959433T

Present comfort control unit coding:  
19c000bc090905050c4f863000

Ready

Test Instruments Go to Print Help

D97-38

The code is associated with certain equipment or functions shown on VAS 5051 screen, and this code can be changed if required.

Guided fault finding	Seat	V06.19 13/02/2004
Operating test	Altea	
Comfort system control unit coding	2004 (4)	
	Saloon	
	BHD 2.0L Motronic / 110 kW	

Evaluate the present coding

The following code was emitted

19c000bc090905050c4f863000

This has the following characteristics :  
LHD + Passenger compartment monitoring + Remote control frequency 433 Mhz + 4 Electric windows + Sun roof

Does the code need changing?

Yes

No

Test Instruments Go to Print Help

D97-39

This process consists in following a specific test plan where each equipment and function option is checked and based on the answers provided, the extended coding is generated.

The equipment or functions selected appear in a list on the screen as the questions are being answered.

Guided fault finding	Seat	V06.19 13/02/2004
Operating test	Altea	
GI control coding	2004 (4)	
	Saloon	
	BHD 2.0L Motronic / 110 kW	

(GI) Select the vehicle equipment

Does the vehicle have this equipment?  
With remote control frequency of 433 Mhz

The equipment presently selected is:  
LHD + Passenger compartment monitoring

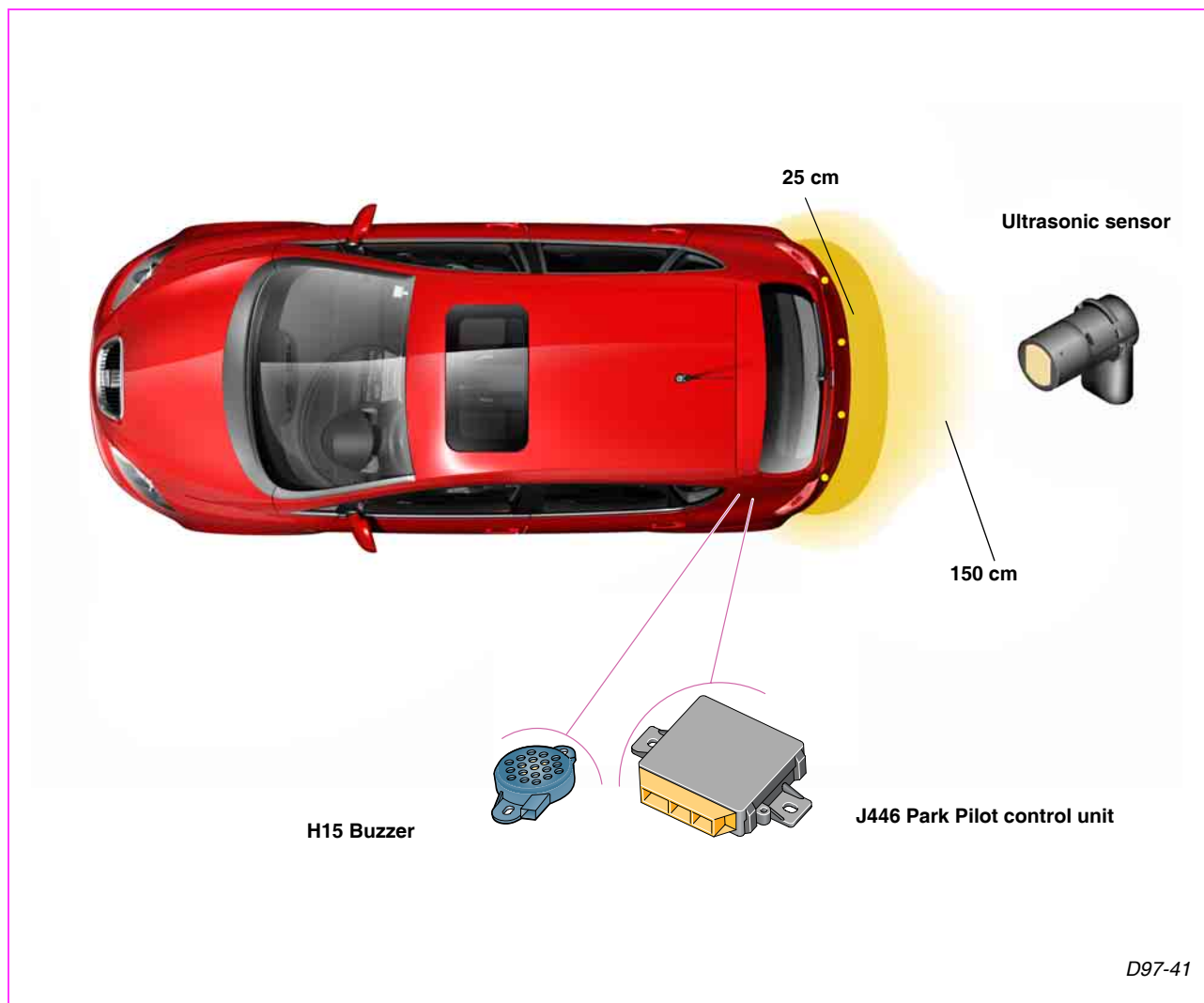
Yes

No

Test Instruments Go to Print Help

D97-40

## PARK PILOT



The Altea comes with a Park Pilot system very similar to that fitted on other SEAT models.

It is composed of:

- A **control unit** J466 located in the rear left wing.
- A **buzzer** H15 located next to the control unit
- Four **ultrasonic sensors** G252-G255 located in the rear bumper.

Their working range is defined between 25 and 150 cm and they are only activated when reverse gear is engaged, otherwise they remain inactive.

When the trailer control unit detects that a trailer is fitted, it will send a message to the comfort CAN-Bus line to deactivate the Park Pilot function.

If the vehicle is fitted with a trailer hitch but has no trailer attached, the control unit will displace the measuring point from the bumper surface to the tip of the trailer hitch. This value is adjustable using the guided fault finding function.

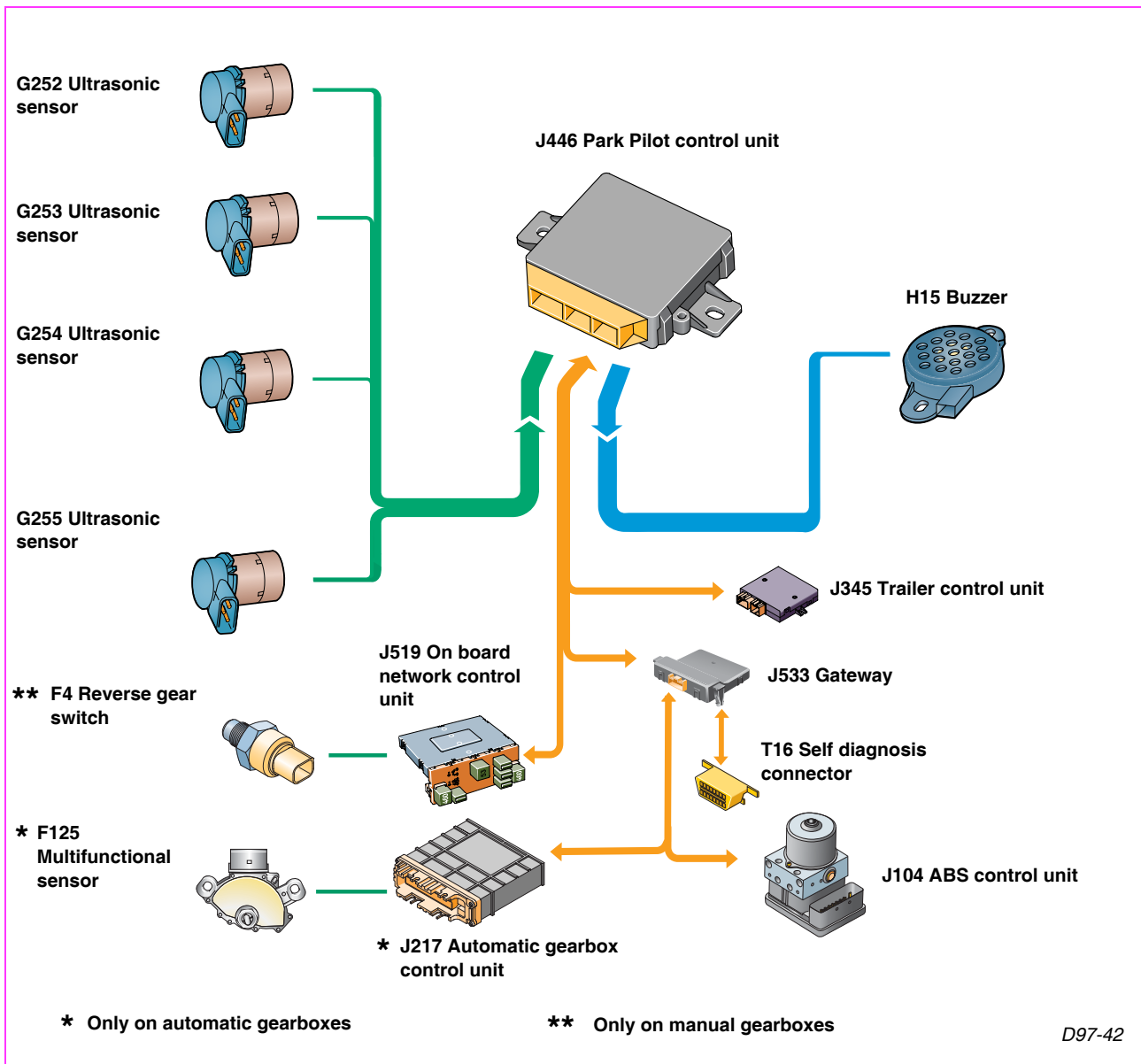
## SYNOPTIC CHART

The main new feature in the Park Pilot system fitted to the Altea is that the control unit receives the signal of **reverse gear** engaged through the **comfort CAN-Bus** line. This signal is passed by the on board network control unit and the Park Pilot system uses it for system activation.

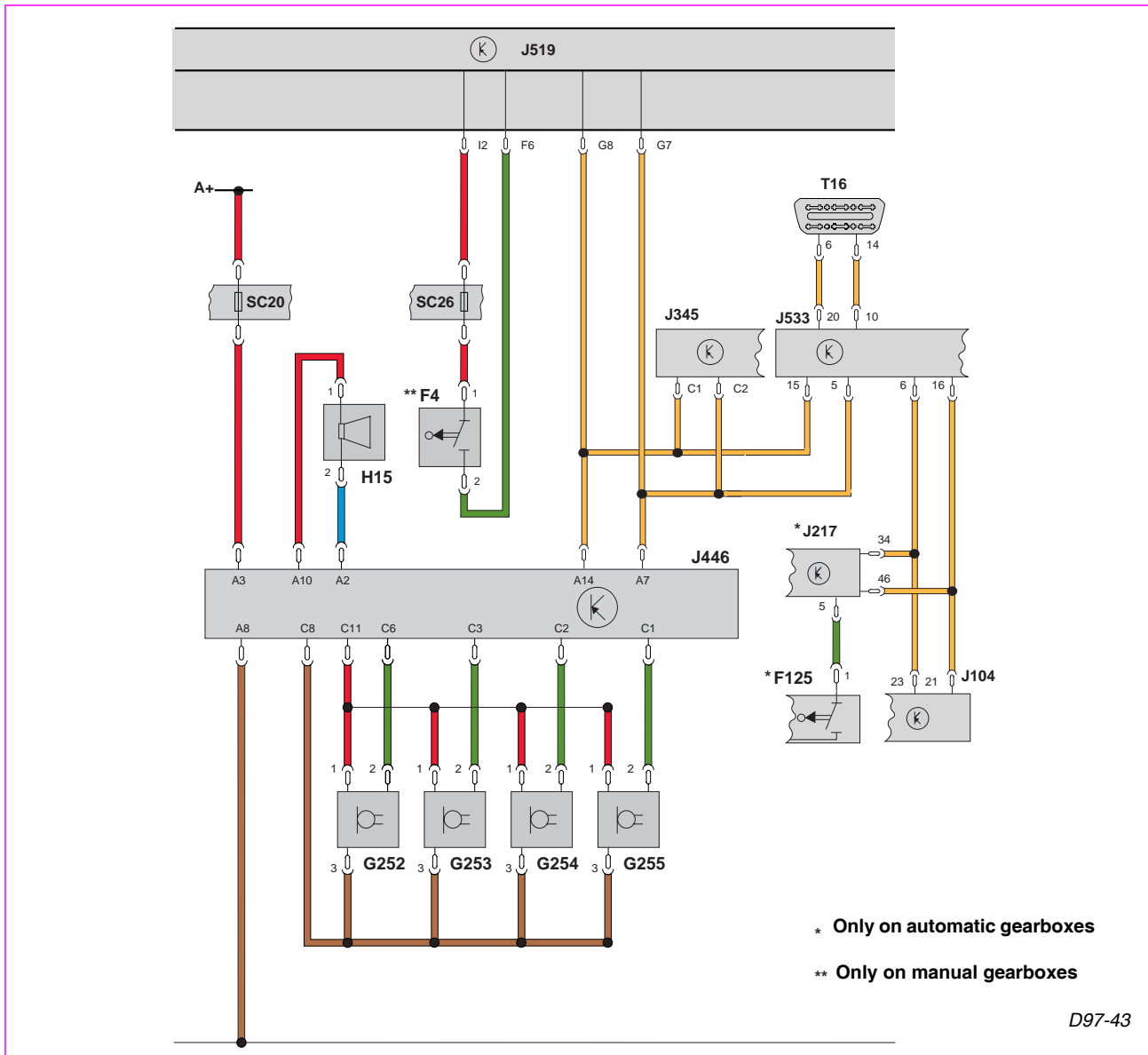
Another new signal is that passed to the comfort CAN-Bus line by the trailer hitch unit. This signal allows the Park Pilot system to determine at any moment if a trailer is fitted or not, thus ensuring that the Park Pilot system is not activated when a trailer is being used.

The precise operation of the sensor and the buzzer is described on page 42 of the Self Study Program No. 80 "Alhambra 01".

The control unit has an extensive diagnosis system to permit interrogation and location of any possible system faults as well as the adaptation of different parameters.



## WIRING DIAGRAM



### COLOUR CODES

- Input signal
- Output signal
- Positive supply
- Earth
- CAN-Bus

### LEGEND

- A** Battery.
- F4** Reverse gear switch.
- F125** Multifunctional sensor.
- G252** Ultrasonic sensor.

- G253** Ultrasonic sensor.
- G254** Ultrasonic sensor.
- G255** Ultrasonic sensor.
- H15** Buzzer.
- J104** ABS control unit.
- J127** Automatic gearbox control unit.
- J345** Trailer control unit.
- J446** Control unit for Park Pilot.
- J519** On board network control unit.
- J533** Gateway.
- T16** Self diagnosis connector.



## SELF-DIAGNOSIS

The diagnosis of the Park Pilot system should be performed using the **guided fault finding** or **guided functions** options.

This method enables a specific test plan to be generated to check the different sensors and actuators within the “electrical components” section and to check the supply voltage in the “partial systems, marginal conditions” section. It also allows the following functions to be accessed:

- Adapt or replace the control unit.
- Read measuring value block.
- Adapt the buzzer volume.
- And adapt the trailer distance figure.

All the above is covered in the “Park Pilot, functions section”.

Guided fault finding	Seat	V06.19 13/02/2004
Function / component selection	Altea	
	2004 (4)	
Function or component selection	Saloon	
	BHD 2.0L Motronic / 110 kW	
<b>+ Bodywork</b> <b>+Electrical installation</b> <b>+01 - Systems capable of self-diagnosis</b> <b>+ 76 Park Pilot</b> Electrical components J446 - Park Pilot, functions Partial systems, marginal conditions		
<input type="button" value="Test Instruments"/> <input type="button" value="Go to"/> <input type="button" value="Print"/> <input type="button" value="Help"/>		

D97-44

## CONTROL UNIT REPLACEMENT

When the Park Pilot control unit is replaced, it is not necessary to change any coding, however the **buzzer volume** and **trailer hitch distance** should be adapted.

A specific test plan is generated with which both functions can be completed.

If this adaptation is not preformed, the control unit will use the factory default settings with a buzzer volume of 30% and 0 cm to the trailer hitch tip.

Guided fault finding	Seat	V06.19 13/02/2004
Operating test	Altea	
	2004 (4)	
Replace the Park Pilot control unit	Saloon	
	BHD 2.0L Motronic / 110 kW	
Replace the control unit  If required, it is possible to modify the rear buzzer volume setting - H15 - or the distance from the rear bumper to the tip of the trailer hook  What option is chosen?  <div style="float: right;"> <input type="button" value="Modify volume"/>  <input type="button" value="Trailer setting"/>  <input type="button" value="Terminate"/> </div>		
<input type="button" value="Test Instruments"/> <input type="button" value="Go to"/> <input type="button" value="Print"/> <input type="button" value="Help"/>		

D97-45

## ADAPTATION OF THE BUZZER VOLUME

The buzzer volume can be modified with a value ranging from 0 to 100. A zero setting means the buzzer will not sound and 100 is the maximum working value.

All the buzzer units have a factory setting of 30.

Guided fault finding	Seat	V06.18 13/02/2004
Operating test	Altea	
	2004 (4)	
Adaptation of Park Pilot (acoustic)	Saloon	
	BHD 2.0L Motronic / 110 kW	
Volume setting  The volume level setting is 20  Introduce a new adaptation value (0...100)  To continue press >  <div style="border: 1px solid black; padding: 5px; text-align: center;">           Press here to display the keyboard and introduce the corresponding data         </div>		
<input type="button" value="Test Instruments"/> <input type="button" value="Go to"/> <input type="button" value="Print"/> <input type="button" value="Help"/>		

D97-46

Guided fault finding	Seat	V06.19 13/02/2004
Operating test	Altea	
	2004 (4)	
Adaptation of Park Pilot (trailer distance)	Saloon	
	BHD 2.0L Motronic / 110 kW	

**Adapt distance**

The distance is 0 cm

Introduce a new adaptation value in cm.  
(0...30)

To continue press >

Press here to display the keyboard and introduce the corresponding data

Test Instruments
Go to
Print
Help

D97-47

## ADAPTATION OF THE TRAILER HITCH DISTANCE

This function is used to set the real **distance** between the **rear bumper** and the **tip of the trailer hitch**.

For this reason it is necessary to measure the real distance to enable the value to be set. The setting can vary from 0 to 30 cm.

This function is required to enable the Park Pilot system to recognise the trailer hitch position even when a trailer is not attached. It adjusts the setting according to the figure introduced, taking the hitch extremity as the reference point and not the rear bumper.

If the value introduced is 0 cm, the control unit will determine that no hitch is fitted.

## READ MEASURING VALUE BLOCK

This function enables the different working values of the Park Pilot system to be visualised and thus check their proper operation.

To perform this function, the reverse gear has to be engaged.

An example of the different screens is shown here together with Measuring Value Block 1.

Guided fault finding	Seat	V06.19 13/02/2004
Function / component selection	Altea	
	2004 (4)	
Function or component selection	Saloon	
	BHD 2.0L Motronic / 110 kW	

**+ Bodywork**

**+ Electrical installation**

**+01 - Systems capable of self-diagnosis**

**+ 76 Park Pilot**

**+ J446 - Park Pilot, functions**

Adapt/Replace control unit

Code Park Pilot control unit

**Read measuring value block**

Adapt the warning buzzer volume

Adapt the trailer distance

Test Instruments
Go to
Print
Help

D97-48

Guided fault finding	Seat	V06.19 13/02/2004
Operating test	Altea	
	2004 (4)	
Park Pilot value blocks	Saloon	
	BHD 2.0L Motronic / 110 kW	

**Reading**

What values are to be displayed?

- Sensor distance.
- Voltages.
- Automatic gearbox and Park Pilot
- Trailer

**Note:**  
Park Pilot must be activated.  
(reverse gear engaged)

Sensor distance

Voltages

Automatic Gearbox

Terminate

Test Instruments
Go to
Print
Help

D97-49

Guided fault finding	Seat	V06.19 13/02/2004
Operating test	Altea	
	2004 (4)	
Park Pilot value blocks	Saloon	
	BHD 2.0L Motronic / 110 kW	

**Measure block values 1**

255 cm > Rear left external distance sensor

65 cm > Rear left interior distance sensor

255 cm > Rear right external distance sensor

255 cm > Rear right internal distance sensor

**Note:**  
A distance of 255 cm means that no obstacle has been identified

Test Instruments
Go to
Print
Help

D97-50

# STEERING COLUMN CONTROL UNIT

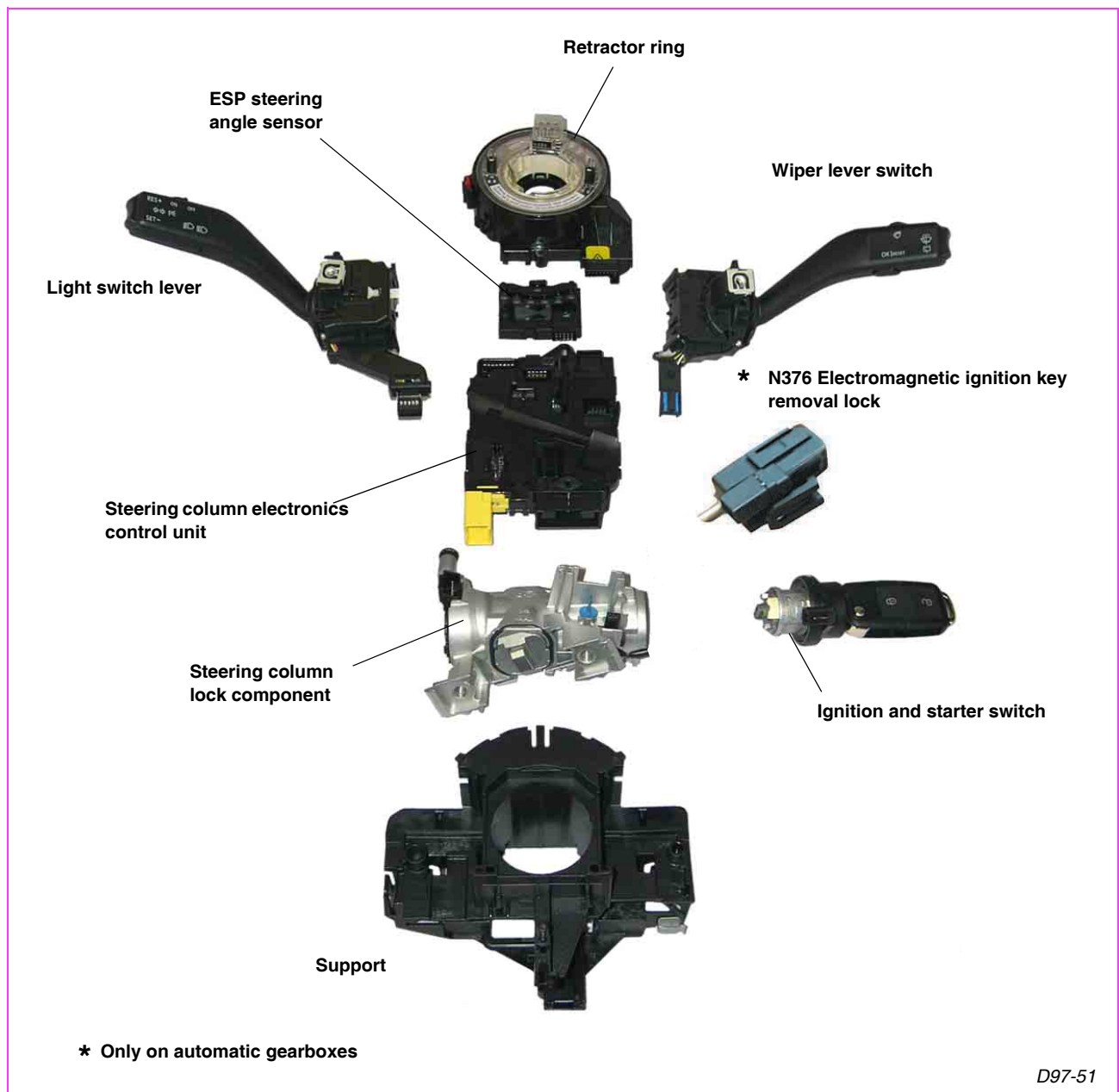
A new control unit J527 has been fitted to the Altea for the control assembly fitted on the steering column.

This assembly contains the following components:

- Light switch lever.
- Wiper lever.
- Retractor ring.
- Steering wheel angle sensor.
- Steering lock.

- Ignition switch.
- Steering column electronics control unit.
- Electromagnetic ignition key removal lock (only with automatic gearboxes).
- A support plate.

All these components are fitted to the holder body, enabling each part to be separately replaced. This can only be done when the complete assembly is dismantled.



# STEERING COLUMN CONTROL UNIT

## OPERATION

The steering column control unit receives signals from the following components and is responsible for passing these to the **comfort CAN-Bus** line:

- Cruise control selector.
- Main beam and dipped beam lever.
- Indicator lever.
- Wiper lever.
- And multifunctional indicator controls.

And it also **receives** information on the **automatic gearbox** through the CAN-Bus line for the activation of the **electromagnetic ignition key removal lock** N376.

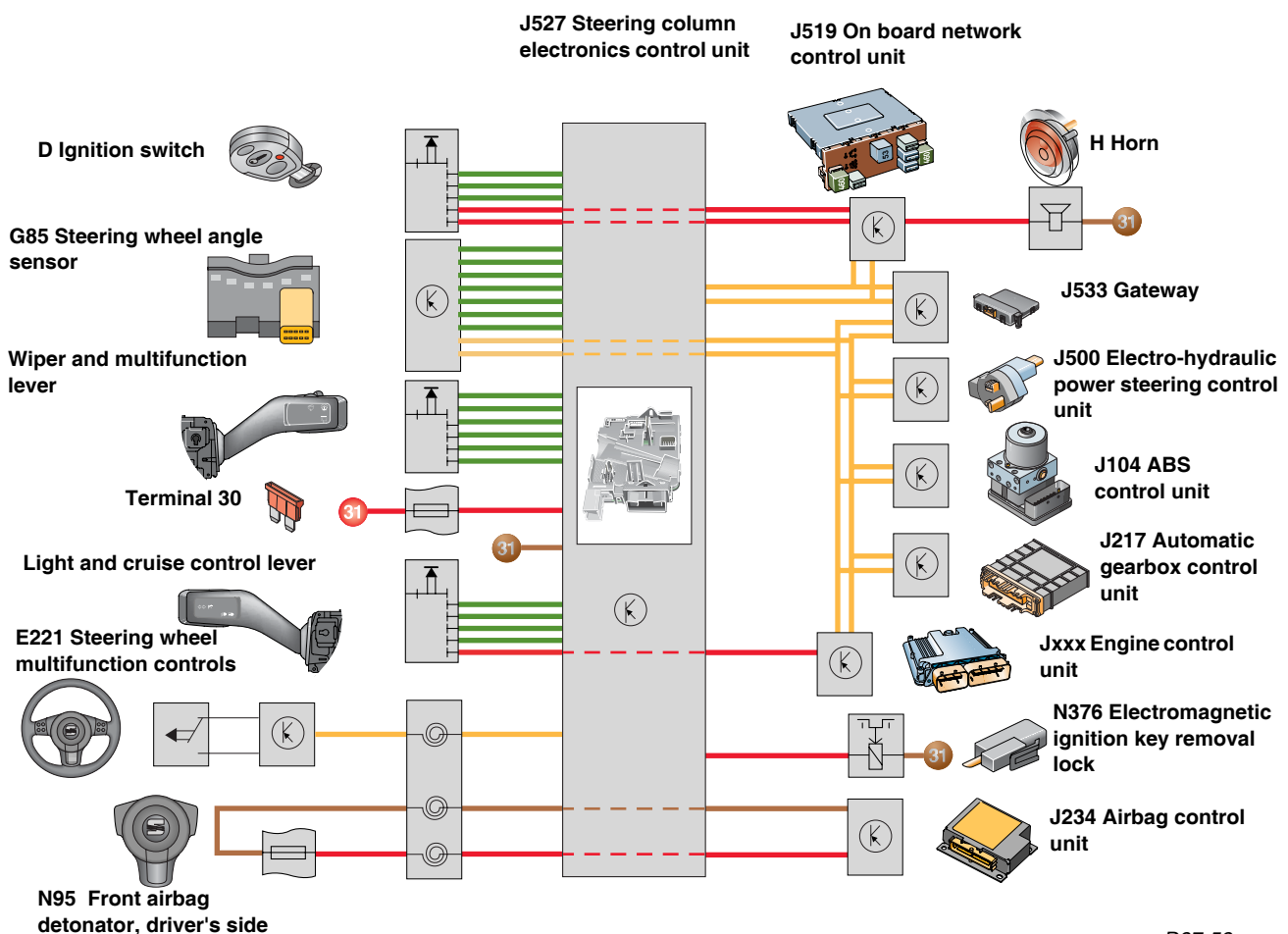
It receives information from the steering wheel controls through the **LIN-Bus** on:

- Steering wheel button operation.
- Horn button.

The information transmitted by wire is:

- Signal from terminal 15 and terminal 50 to the **on board network** control unit.
- **Cruise control** deactivation signal to the **engine** control unit.
- And it receives information on **airbag** deactivation directly from the **airbag control unit** and transmits this in an unprocessed state directly to the driver module.

The steering wheel angle sensor is connected to the **drive CAN-Bus** line.



D97-52

## SELF-DIAGNOSIS

The steering column control unit has its own self-diagnosis and this can also be used to diagnose the steering column controls.

The guided fault finding can be used to access the:

- Fault memory.
- Final control diagnosis.
- Control unit coding.

Guided fault finding	Seat V06.19 13/02/2004
Function / component selection	Altea
Function or component selection	2004 (4)
	Saloon
	BHD 2.0L Motronic / 110 kW
+ Bodywork + Electrical installation +01 - Systems capable of self-diagnosis + Steering wheel electronics <b>+ Steering wheel electronic functions</b> Steering wheel electronics actuator diagnosis Code the steering wheel electronic control unit	
<input type="button" value="Test Instruments"/> <input type="button" value="Go to"/> <input type="button" value="Print"/> <input type="button" value="Help"/>	

D97-53

## ACTUATOR DIAGNOSIS

This function can be used to check the communication between the steering column and the multifunction steering column controls over the LIN-Bus.

This is done by energising the illumination of the **steering column controls**.

Another component which can be tested is the **ignition key lock** for automatic gearboxes.

Guided fault finding	Seat V06.19 13/02/2004
Function / component selection	Altea
J527 - Final control diagnosis	2004 (4)
	Saloon
	BHD 2.0L Motronic / 110 kW
Actuators test Actuator - Ignition key lock on is activated <input type="button" value="Ready"/> To continue press the arrow key (->)	
<input type="button" value="Test Instruments"/> <input type="button" value="Go to"/> <input type="button" value="Print"/> <input type="button" value="Help"/>	

D97-54

## CODING

Whenever the steering column control unit is changed, it should be coded with the guided fault finding or guided functions option.

In both cases a test plan has to be created to check the old coding and then the new control unit has to be coded **according** to the **equipment** fitted on the vehicle.

Guided fault finding	Seat V06.19 13/02/2004
Function / component selection	Altea
J527 - Code control unit	2004 (4)
	Saloon
	BHD 2.0L Motronic / 110 kW
Coding The present code is: 0013141 <input type="button" value="Yes"/> The coding means: - Automatic gearbox. - Multifunction steering wheel with cruise control. - Tiptronic on wheel without heating. - MFA and cruise control. - No rear wiper. <input type="button" value="No"/>	
<input type="button" value="Test Instruments"/> <input type="button" value="Go to"/> <input type="button" value="Print"/> <input type="button" value="Help"/>	

D97-55

# TRAILER CONTROL UNIT

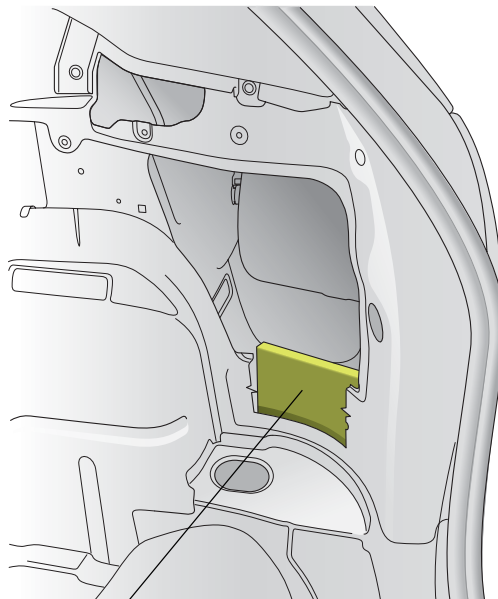
The Altea is fitted with a new trailer control unit J345, located behind the left side boot trim.

It is responsible for **activation** and **control** of the **trailer lights** as well as **deactivation of the Park Pilot** system when a trailer is attached to the vehicle.

The system can **detect** when a **trailer** is fitted by checking the resistance in the indicator bulb filaments.

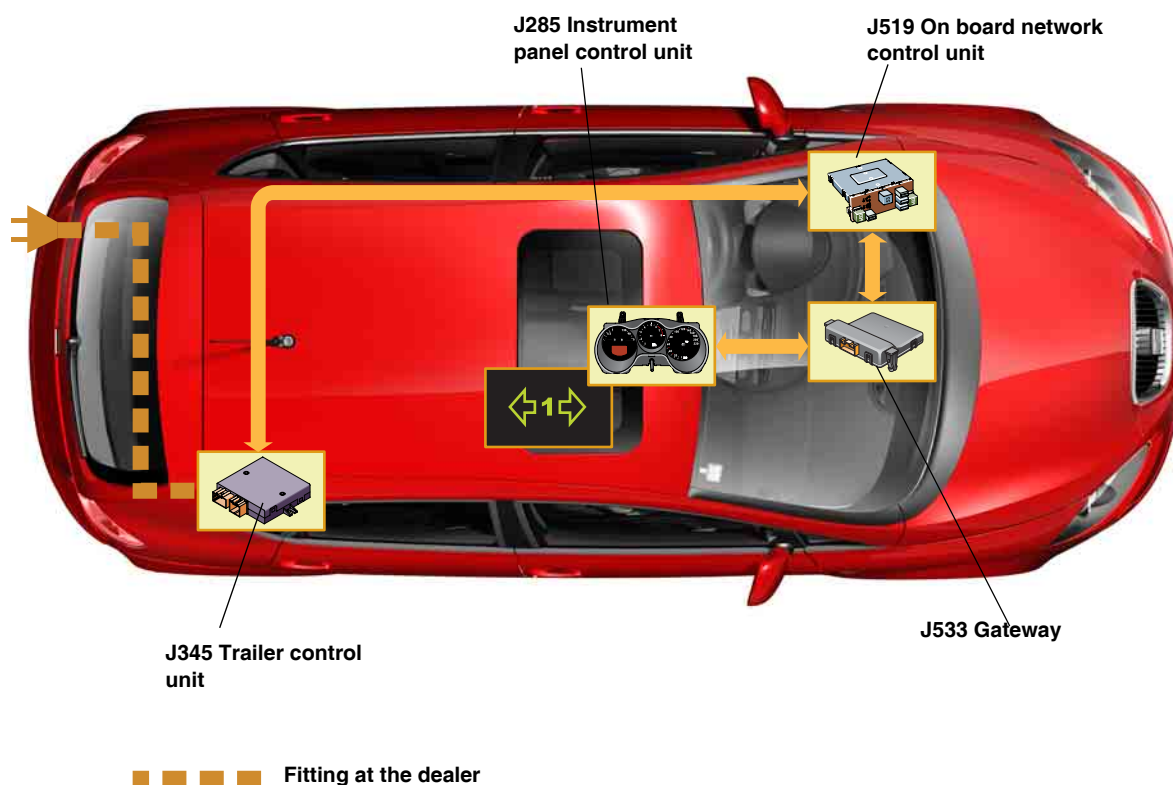
The trailer control unit is connected to the **comfort CAN-Bus** line and has its own address word for diagnosis.

It is fitted on all vehicles which are delivered from the factory with a pre-installation for trailer hitch fitting.



J345 Trailer control unit

D97-56



J345 Trailer control unit

J533 Gateway

■ ■ ■ ■ ■ Fitting at the dealer

D97-57

## OPERATION

The trailer control unit assumes the following functions:

- Activation of trailer lights.
- Trailer light bulb monitoring.
- Deactivation of Park Pilot system.
- Self-diagnosis.

The control unit monitors the following trailer light bulbs:

- Parking.
- Number plate.
- Brake.
- Indicator.

This monitoring is performed by the control unit, generating a low voltage impulse to the bulbs and checking their consumption.

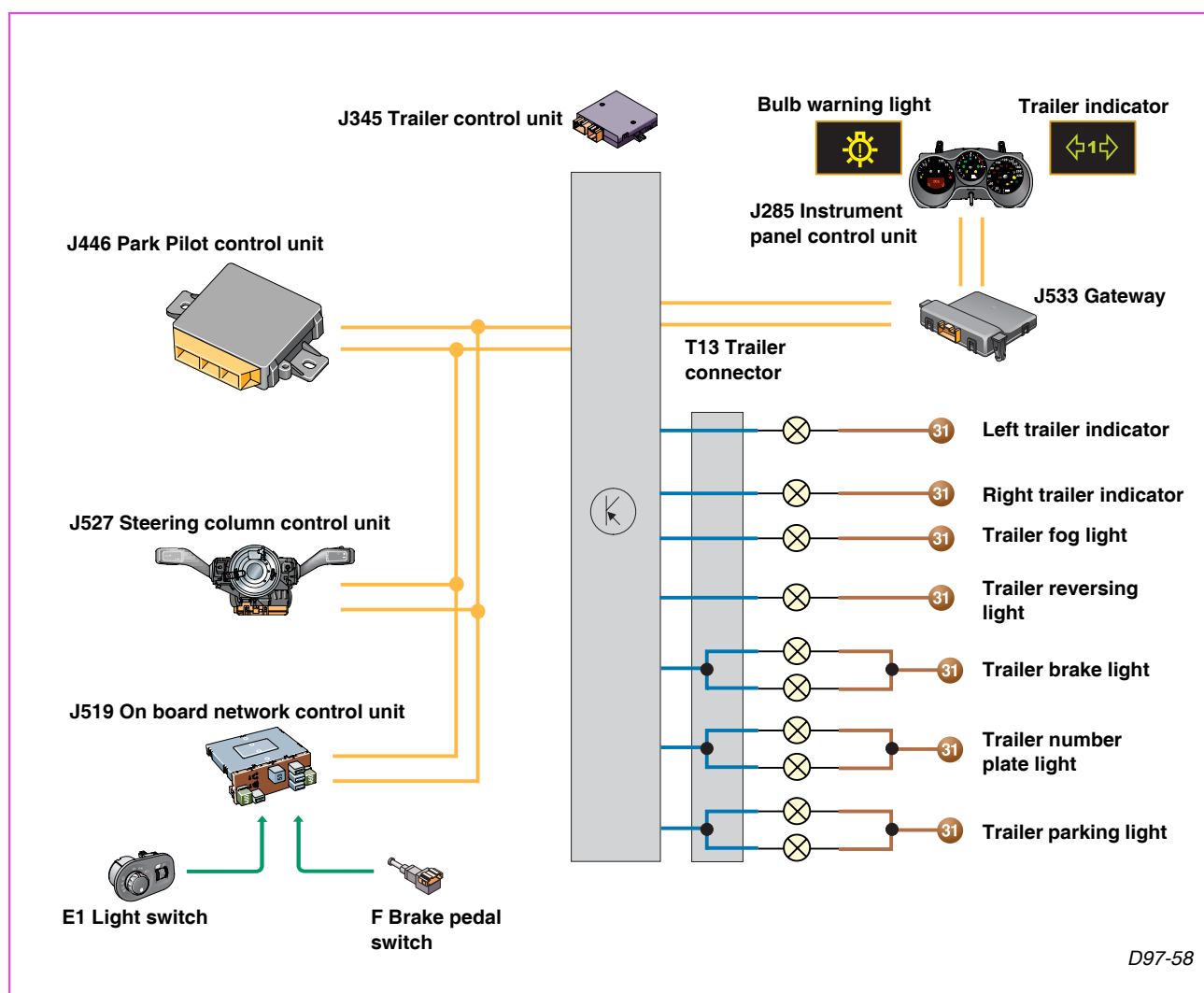
When the indicators are switched on, a message is passed to the comfort CAN-Bus line

to activate a flashing warning light on the instrument panel for the trailer indicators. If there is a fault in the trailer indicators, this warning light will remain off.

If the fault is in the parking, number plate or brake light bulbs, the trailer control unit will send a message to activate the faulty bulb warning light.

The fog light and reverse lights are not monitored since all trailers do not have these lights.

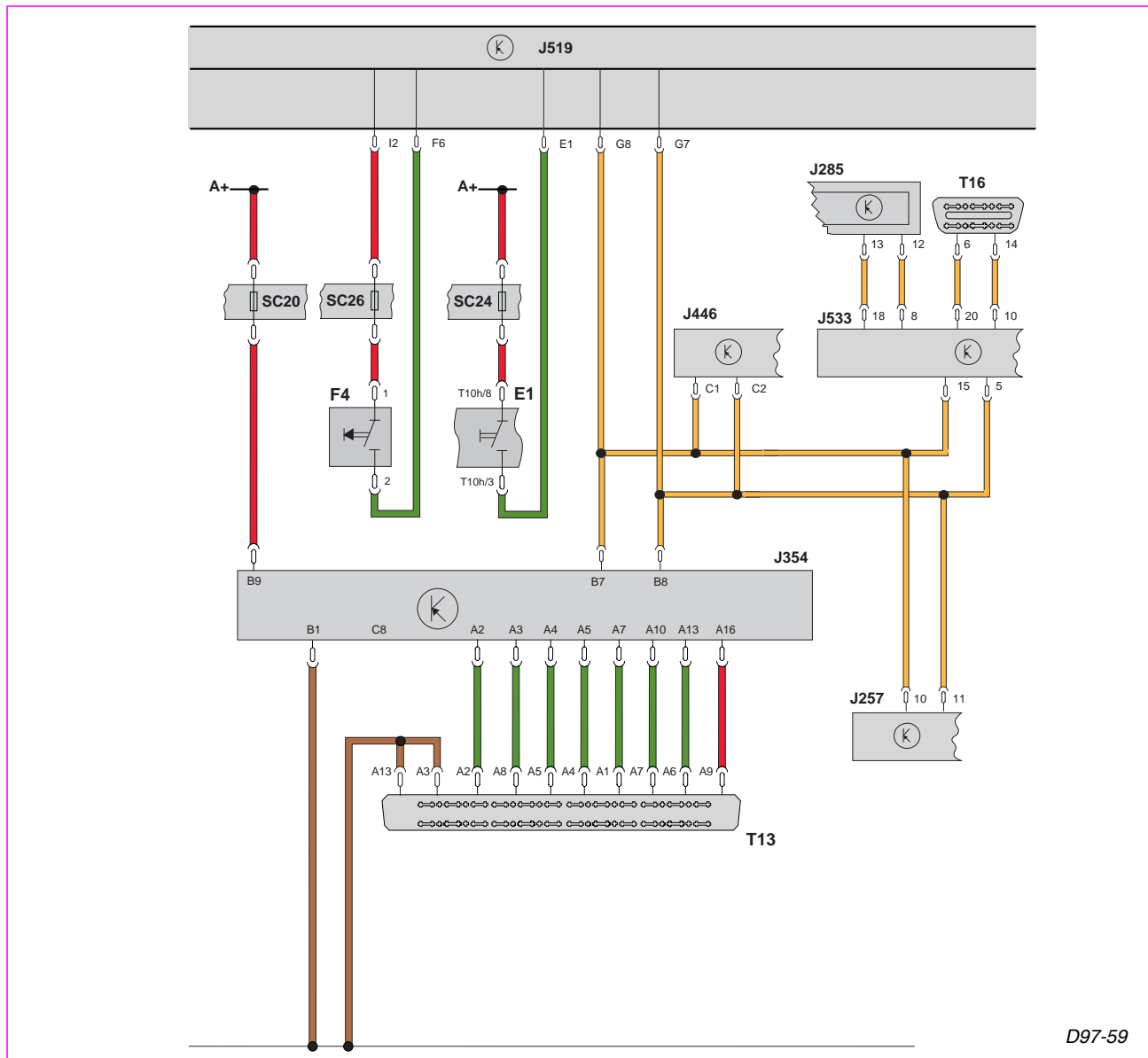
If there is a fault in the control unit processor, the brake light activation will be performed by avoiding the processor to ensure their operation as a replacement function.





# TRAILER CONTROL UNIT

## WIRING DIAGRAM



D97-59

### COLOUR CODES

- Input signal
- Output signal
- Positive supply
- Earth
- CAN-Bus

### LEGEND

- A** Battery.
- E1** Light switch.
- F4** Reverse gear switch.

- J285** Instrument panel.
- J345** Trailer control unit .
- J446** Control unit for Park Pilot.
- J519** On board network control unit.
- J527** Steering column control unit.
- J533** Gateway.
- T13** Trailer connector.
- T16** Self diagnosis connector.

## SELF-DIAGNOSIS

The trailer control unit has its own self-diagnosis system. The guided fault finding or guided functions can be used to access the different functions, the most important of which are:

- Fault memory.
- Final control diagnosis.
- Control unit coding.
- Measurement value blocks.

Guided fault finding	Seat	V06.19 13/02/2004
Function / component selection	Altea	
	2004 (4)	
Function or component selection	Saloon	
	BHD 2.0L Motronic / 110 kW	
<b>+ Bodywork</b> <b>+ Electrical installation</b> +01 - Systems capable of self-diagnosis + 69 Trailer function		
<b>+ J345- Trailer control unit, functions</b> System description Code the trailer control unit Replace the trailer control unit Read trailer measuring value block Selective actuators diagnosis Sequential actuators diagnosis Control unit version		
<div> <span>Test Instruments</span> <span>Go to</span> <span>Print</span> <span>Help</span> </div>		

D97-60

Guided fault finding	Seat	V06.19 13/02/2004
Function / component selection	Altea	
	2004 (4)	
J345 - Final control diagnosis	Saloon	
	BHD 2.0L Motronic / 110 kW	
<b>Actuators test</b> The trailer brake light is activated. To continue press the arrow key (>)		
<div> <span>Test Instruments</span> <span>Go to</span> <span>Print</span> <span>Help</span> </div>		

D97-61

## FINAL CONTROL DIAGNOSIS

This function can be used to activate the following trailer bulbs:

- Brakes.
- Left parking.
- Right parking.
- Reverse gear.
- Hazard warning.
- Right indicator.
- Left indicator.
- Foglights.

Since the trailer will not be available in the workshop, the VAG 1537/A will have to be used.

The bulb activation can be **selective** by choosing the bulb to be tested or **sequential** where all the bulbs are checked.

## CODING

When the trailer control unit is replaced, the new unit will need to be coded.

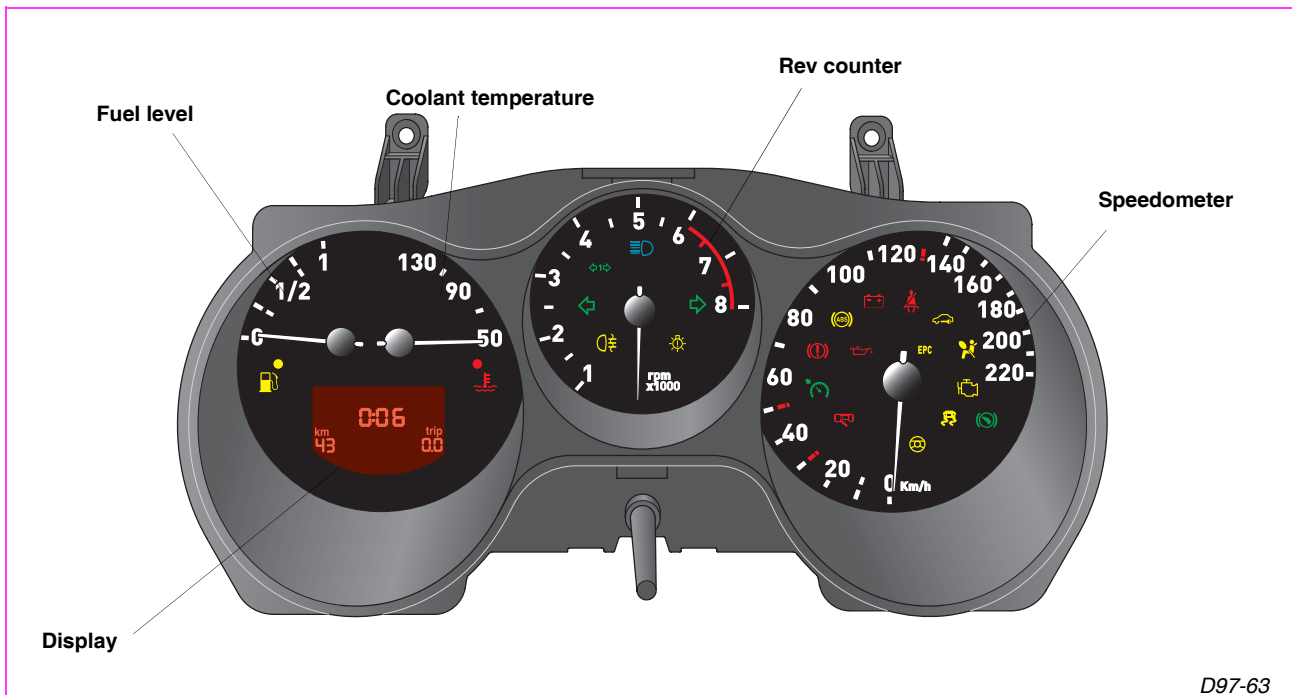
This coding can be done using the guided fault finding or guided function options.

In both cases a specific test plan is generated to code this unit.

Guided fault finding	Seat	V06.19 13/02/2004
Function / component selection	Altea	
	2004 (4)	
J345 - Coding trailer control unit	Saloon	
	BHD 2.0L Motronic / 110 kW	
<b>Coding</b> The present code is: 00001 Do you wish to change the code?		
<div> <span>Test Instruments</span> <span>Go to</span> <span>Print</span> <span>Help</span> </div>		

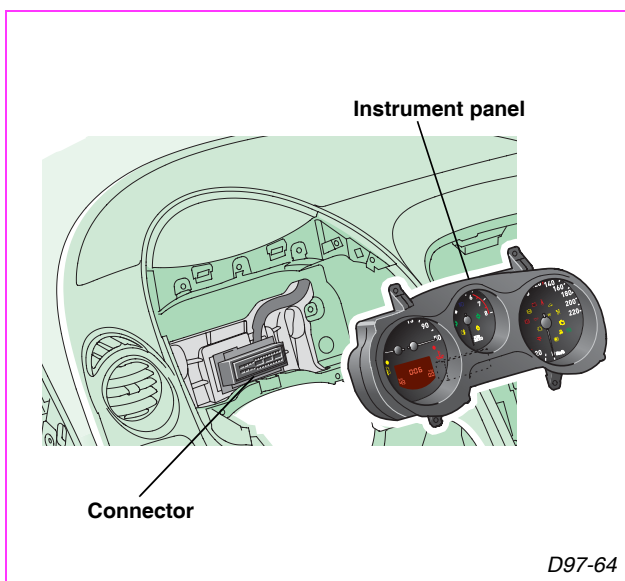
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# INSTRUMENT PANEL



The instrument panel on the Altea has a rev counter in the centre, a speedometer on the right and on the left a circular gauge containing

both the fuel level and coolant temperature indications together with a display screen.



The instrument panel connection to the system is through **one single quick-fit connector** located at the rear of the unit.

It has its own specific CAN-Bus line "**Instrument panel CAN-Bus**" through which it communicates with the **gateway**.

The interior of the instrument panel contains the **immobiliser phase IV** control unit which is explained on page 49 of the Self Study Programme No. 96 "Altea".

## SERVICE INTERVALS

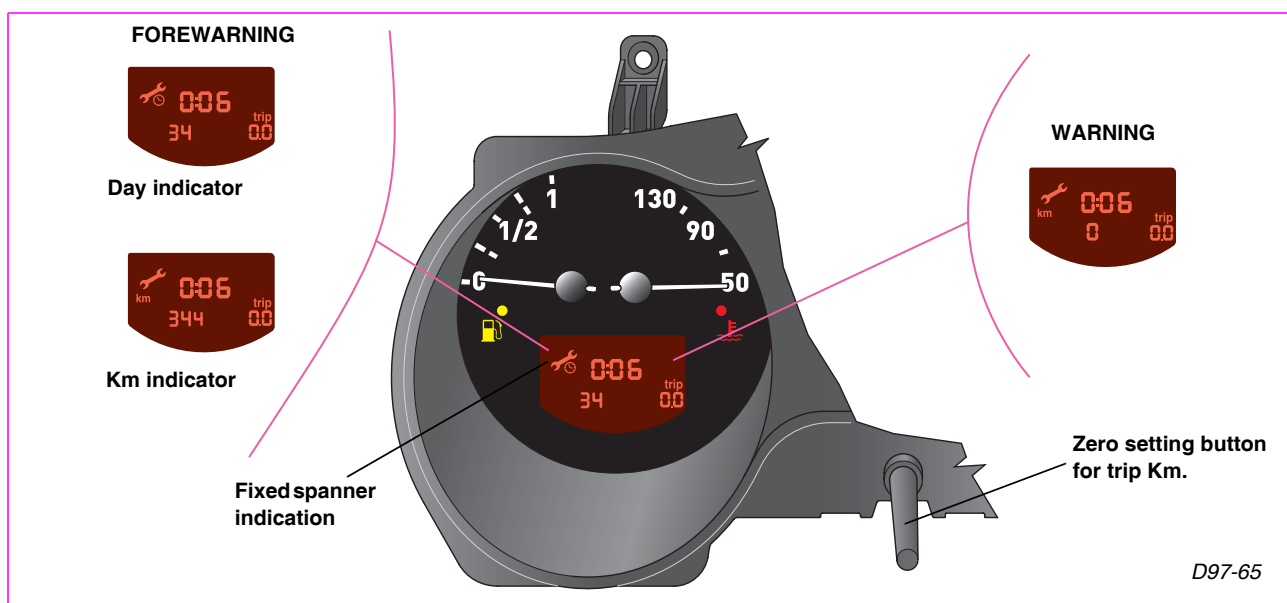
This function is used to inform the owner of the maintenance operations required on the vehicle on the display screen of the instrument panel.

There are two types of indication, one is a **forewarning** indicating the kilometres and days to the next maintenance and the other is a **warning** signal indicating that the maintenance operation should be carried out.

The warning is activated based on a calculation by the instrument panel of the Km. covered and the time elapsed.

Both **indications** will come on for **20 seconds** after switching on the ignition and will go off after this period.

These indications can also be consulted at any time by pressing the zero setting button of the trip Km. indicator for 2 seconds.



### FOREWARNING AND WARNING

The **forewarning** is shown with a fixed spanner signal, and in the lower section the remaining Km. before the next maintenance event are shown.

After 10 seconds, the Km. indication will disappear and a clock symbol will be displayed to show the days remaining before the next service.

The **warning** signal will appear when the days or time to the next service have elapsed and a fixed spanner signal will be shown intermittently for 10 seconds with the Km. and days indication at zero. The display on the instrument panel will be accompanied by an acoustic warning.

### ZERO SETTING

The zero setting of the service interval Km. and time indication can be done with the **VAS 5051** or using the zero setting button for the trip Km. indication.

The latter operation requires the following procedure:

- Disconnection of the ignition.
- Pressing the zero setting button for trip Km. Indication.
- This button should continue to be pressed while switching on the ignition.
- The button should then be released.
- When the spanner symbol is shown on the display, rotate the zero setting button to the right.
















The service interval Km. and time values will then be reset to zero.









# INSTRUMENT PANEL

## SIGNAL FOR WARNING LIGHTS

The instrument panel receives the majority of the signals for the panel operation through the instrument panel CAN-Bus. However

some signals are still transmitted by wire. The following table shows the origin of each one of the signals.

Symbol	Warning light	Signal source	Wire	CAN-Bus
	Airbag	J234, airbag control unit		X
	ABS	J104, ABS control unit		X
	Low brake fluid level	F34, brake fluid level switch	X	
	Glow plug and engine fault	Jxxx, engine control unit		X
	Dynamic oil pressure warning	F1, oil pressure switch	X	
	Engine fault	Jxxx, engine control unit		X
	Electromechanical power steering	J500, electro-hydraulic power steering control unit		X
	Handbrake	F9, handbrake warning light switch	X	
	Bulb fault	J519, on board network control unit		X
	Alternator fault	J519, on board network control unit		X
	Seatbelt	J234, airbag control unit		X
	Electronic immobiliser	J326, immobiliser control unit (in instrument panel)		
	Electronic accelerator	Jxxx, engine control unit		X
	ESP	J104, ABS control unit		X
	Press the pedal	J217, automatic gearbox control unit		X

Symbol	Warning light	Signal source	Wire	CAN-Bus
	Door or tailgate indicator	J393, comfort control unit		X
	Fuel reserve	G, fuel level sender	X	
	Coolant level	G32, coolant level sensor	X	
	Excess coolant temperature	Jxxx, engine control unit		X
	Rear foglights	J519, on board network control unit		X
	Indicators	J519, on board network control unit		X
	Trailer indicators	J345, trailer control unit		X
	Mainbeams	J519, on board network control unit		X

## ***SIGNALS FOR THE NEEDLE GAUGE DISPLAYS***

As well as the signals for the warning lights, the instrument panel also receives information for the following indicators:

- Fuel level, reaching the panel by wire from the level sender.
- Engine temperature and speed coming from the engine control unit over the CAN-Bus.
- Vehicle speed coming from the ABS control unit over the CAN-Bus.

## ***OUTPUT SIGNALS***

The instrument panel converts the speed signal from the CAN-Bus into an analogical signal and transmits it through a wire to the radio and sunroof.

# INSTRUMENT PANEL

## SELF-DIAGNOSIS

The self diagnosis should be done using the **guided fault finding** or **guided functions** option.

This enables a specific test plan to be generated to verify the different sensor and electrical components both inside and outside the instrument panel.

It is also possible to code the unit and adapt the service intervals.

Guided fault finding	Seat	V06.19 13/02/2004
Function / component selection	Altea	
	2004 (4)	
Function or component selection	Saloon	
	BHD 2.0L Motronic / 110 kW	
<b>+ Bodywork</b>		
<b>+Electrical installation</b>		
<b>+90 - Instrument panel</b>		
+ Instrument panel electrical components		
+ Sensors		
<div><span>Test instruments</span> <span>Go to</span> <span>Print</span> <span>Help</span></div>		

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## CODING

When the instrument panel is replaced, it has to be coded and the total Km. and service interval indications have to be reset.

Use the function “**Adapt/replace instrument panel**” to read the adaptation values and the code of the instrument panel fitted to the vehicle. This code will then be passed automatically to the new instrument panel making it unnecessary to do any manual coding.

Nevertheless the function “**Code the instrument panel**” is useful when it is not possible to access the old panel with the VAS 5051 or if is necessary to change the coding of optional equipment.

- Brake wear indicator (not available at present).
- And the warning for seatbelt use.

Guided fault finding	Seat	V06.19 13/02/2004
Function / component selection	Altea	
	2004 (4)	
Function or component selection	Saloon	
	BHD 2.0L Motronic / 110 kW	
<b>+ Bodywork</b>		
<b>+Electrical installation</b>		
+01 - Systems capable of self-diagnosis		
+ 17. Instrument panel		
<b>+ Functions</b>		
Code the instrument panel		
Adapt/Replace the instrument panel		
Set the service interval indicator to zero		
<div><span>Test instruments</span> <span>Go to</span> <span>Print</span> <span>Help</span></div>		

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## SERVICE INTERVALS

This function is used to erase the time and Km. value stored in the panel since the last service.

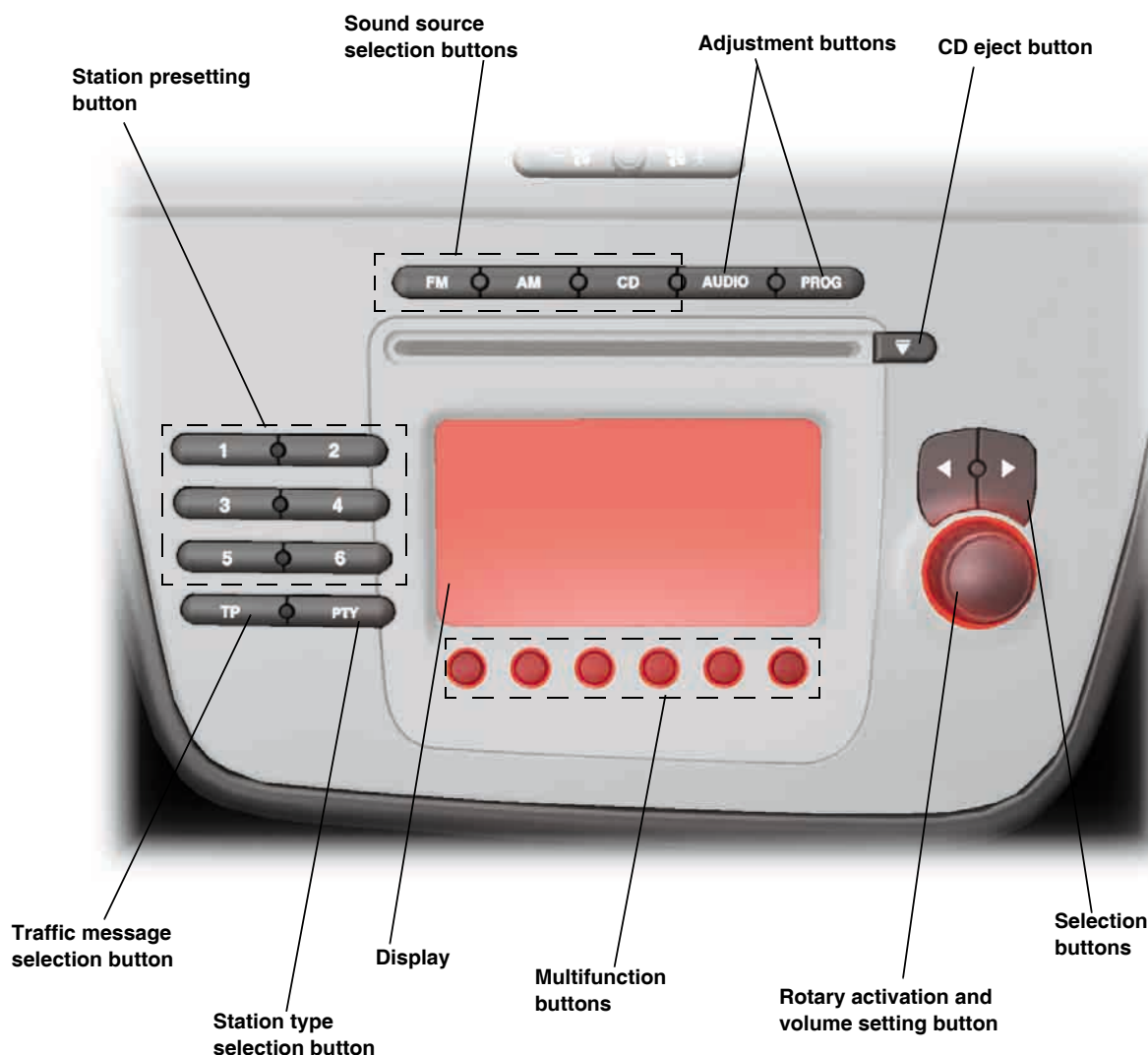
The reference values are 15000 Km. and 372 days.

Guided fault finding	Seat	V06.19 13/02/2004
Operating test	Altea	
	2004 (4)	
Set service interval to zero	Saloon	
	BHD 2.0L Motronic / 110 kW	
<b>Note</b>		
- Now adapt the service intervals		
<div><span>Test instruments</span> <span>Go to</span> <span>Print</span> <span>Help</span></div>		

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# AUDIO AND NAVIGATION SYSTEM



D97-69

## AUDIO

The Altea can be fitted with a radio/CD player integrated in the central console.

The main characteristics are:

- Power **4 x 20 watts**.
- Option of **steering wheel controls**.
- SAFE **comfort** coding.
- **Dot matrix** display.
- Reception of **TP** traffic messages and **PTY** message channel search.
- 12 pre-selected **FM** stations.
- 6 pre-selected **AM** stations.
- Speed related volume adjustment (**GALA**).

The orientation of the central console means that there are **two part numbers** for the Radio/

CD player depending on whether the vehicle is left or right hand drive.

The unit can also control the CD charger located in the box between the two front seats.

This can only be done if the unit is properly coded.

There is a new tool **T20184** available for removing the radio/CD.

A distinctive feature is that the **security code** is stored in the instrument panel and it allows automatic recognition of the unit when reconnecting the equipment or refitting the battery.

# AUDIO AND NAVIGATION SYSTEM

## DYNAMIC NAVIGATION

The navigation on the Altea requires the use of the CD's with the programs adapted for **dynamic navigation**.

The screen graphics have been improved in relation to previous models.

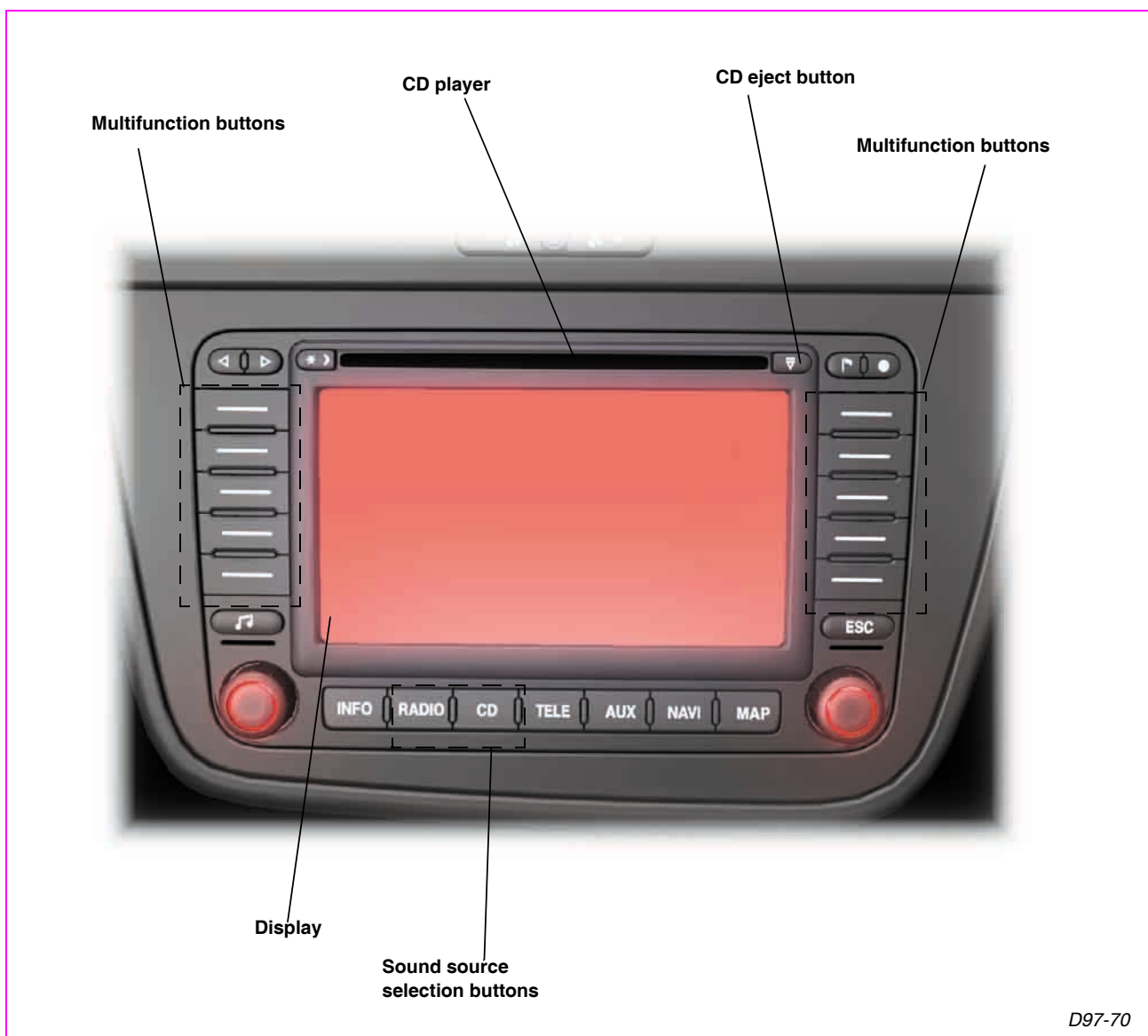
The lateral navigation buttons have different functions depending on which screen menu is being used.

No special tools are required to remove the unit from its housing. The external trim is fitted to

the central console using clips and when this is removed, access is provided to the 4 screws which hold the navigation unit.

The CD player can also be used to play music **CD's**.

In the future it is planned to have the **navigation information** displayed on the instrument panel **dot matrix** screen together with information regarding the telephone use.



## SIGNAL TRANSMISSION

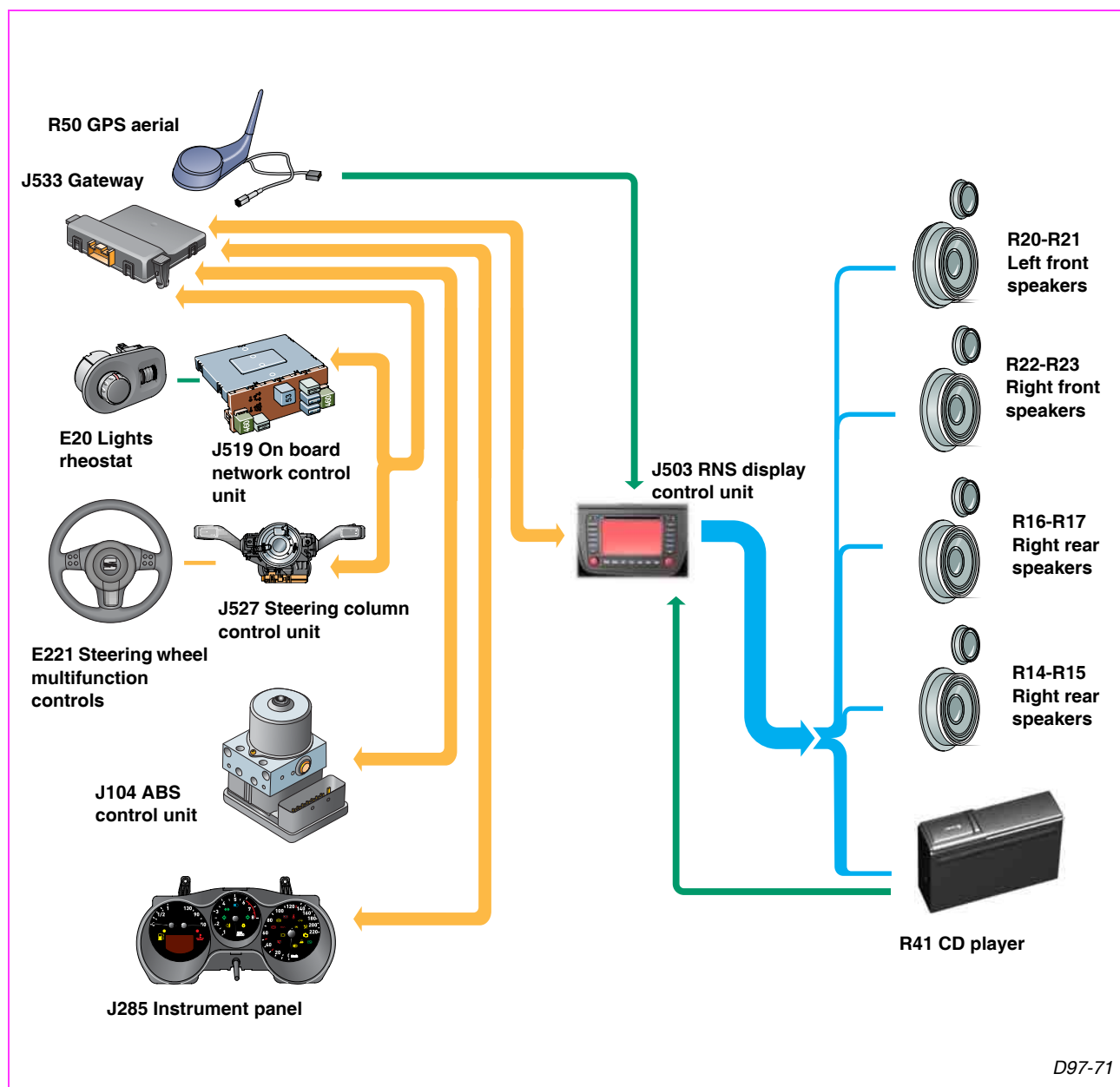
To enable the audio equipment to operate properly, it is necessary to have an **exchange of signals** between all the CAN-Bus units on the vehicle including the LIN-Bus which handles the communication between the multifunction steering controls and the steering column control unit.

The signals which reach the audio equipment over the CAN-Bus line are:

- Vehicle speed, comfort security code, illumination intensity and the signal from terminal 15.

In the future it is intended to show the radio information on the instrument panel display.

Depending on the vehicle equipment, it can be fitted with **8 speakers** having 4 at the front and 4 at the rear, or with **6 speakers** having 4 front and 2 rear.



# AUDIO AND NAVIGATION SYSTEM

## TELEPHONE

The Altea can be fitted with a **pre-installation** for a telephone together with the radio or navigation unit.

The telephone pre-installation contains:

- Aerial for radio telephone or aerial for radio, telephone and navigation.
- Microphone integrated in the courtesy light support.

The control unit for the telephone operation, J412, as well as the telephone holder and holder support have to be installed in the workshop.

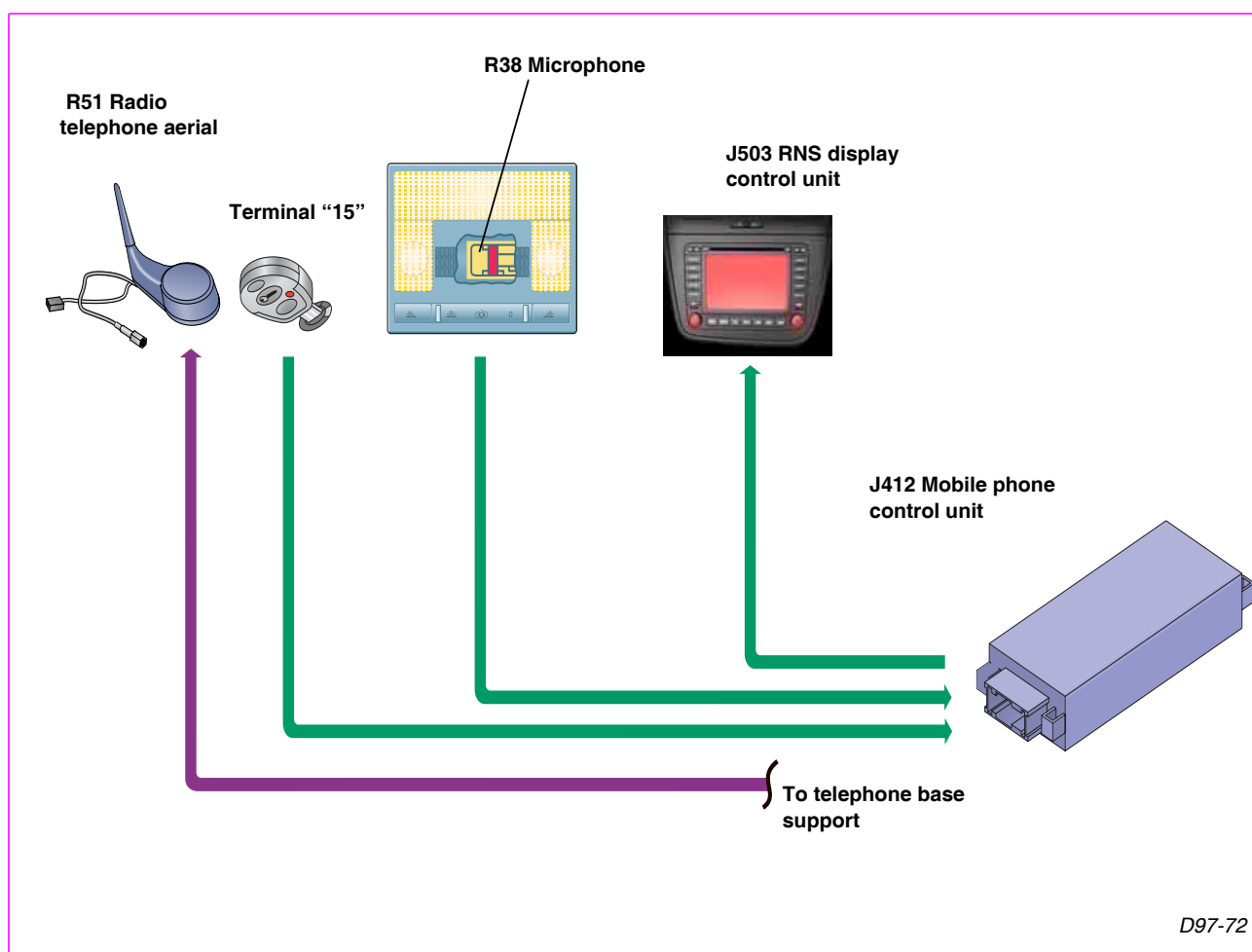
To ensure that the radio or navigation operates in combination with the hands free

telephone system, a prior coding of the audio or navigation system control unit is required.

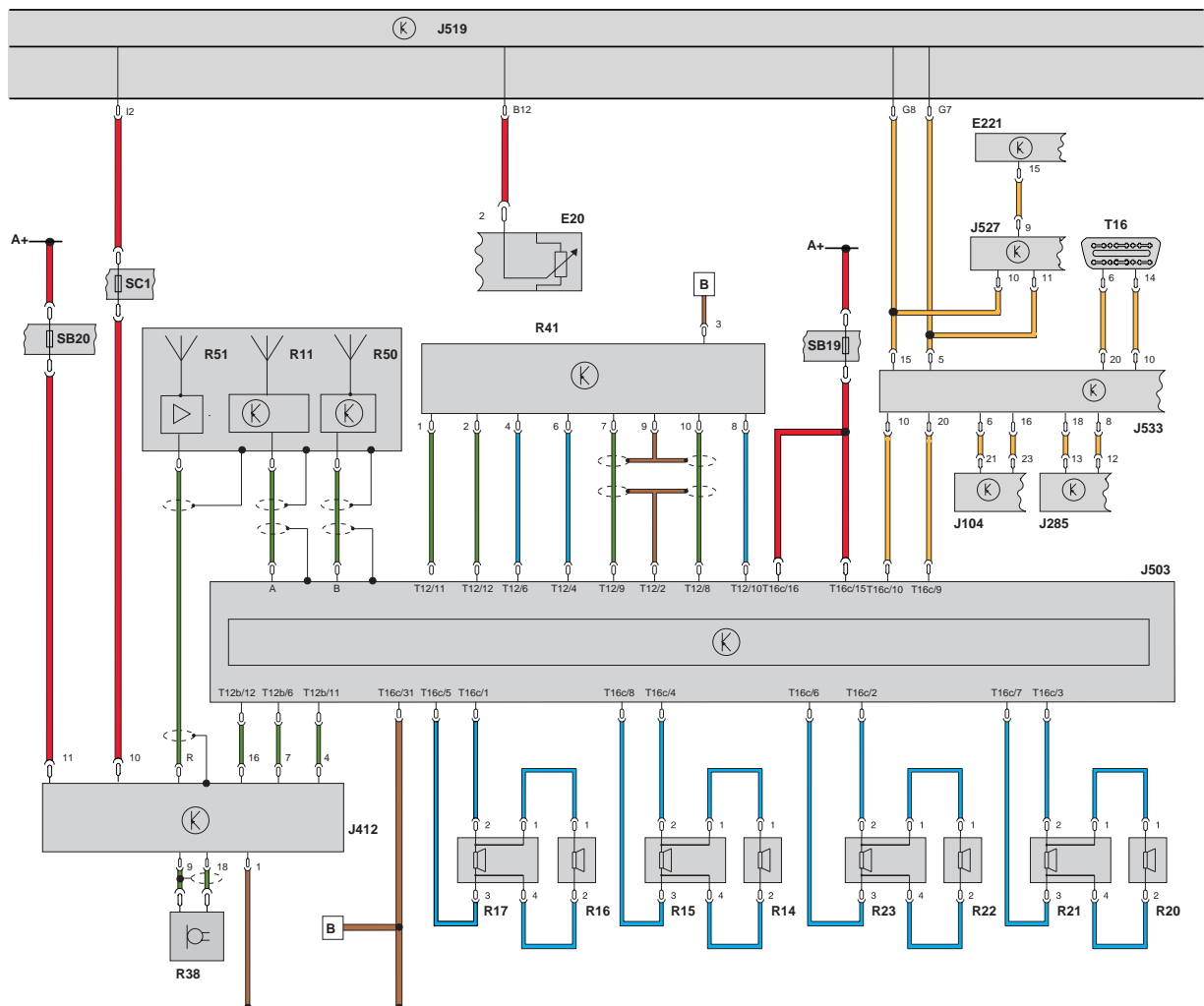
## OPERATION

The control unit for the telephone electronics is responsible for lowering the audio volume when a call is received or made. Based on a signal from the telephone, only the tweeters are utilised.

The volume should be adjusted using the audio or navigation installation.



## WIRING DIAGRAM



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### LEGEND

- A** Battery.
- E20** Lights rheostat.
- E221** Steering wheel multifunction controls.
- J104** ABS control unit.
- J285** Instrument panel.
- J412** Mobile phone control unit.
- J503** RNS display control unit.
- J519** On board network control unit.
- J527** Steering column electronics control unit.
- J533** Gateway.
- R11** Radio aerial.
- R14** Rear left tweeters.
- R15** Left rear woofer.
- R16** Rear right tweeters.
- R17** Rear right woofers.
- R20** Front left tweeters.

- R21** Left front woofer / bass.
- R22** Right front tweeter.
- R23** Right front woofer.
- R38** Microphone.
- R41** CD changer.
- R50** GPS aerial.
- R51** Radio telephone aerial.
- T16** Self diagnosis connector.

### COLOUR CODES

- Input signal
- Output signal
- Positive supply
- Earth
- CAN-Bus

# AUDIO AND NAVIGATION SYSTEM

## SELF-DIAGNOSIS

The diagnosis of the audio or navigation equipment can be performed using the **guided fault finding** or **guided functions** option.

In both cases the available functions are very similar although there are some slight differences as seen on the following VAS 5051 screen.

Guided functions	Seat	V06.19 13/02/2004
Functions	Altea	
	2004 (4)	
Vehicle system or function selection	Saloon	
	BHD 2.0L Motronic / 110 kW	
<b>56 Single CD Radio</b>		
Consult the signal strength of the present emitter Consult the radio coding Code the radio functions Radio actuators diagnosis		
<div>Test Instruments</div> <div>Go to</div> <div>Print</div> <div>Help</div>		

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Guided functions	Seat	V06.19 13/02/2004
Functions	Altea	
	2004 (4)	
Vehicle system or function selection	Saloon	
	BHD 2.0L Motronic / 110 kW	
<b>56 Navigation system radio</b>		
Navigation code evaluation Code the navigation system Radio code evaluation Code the radio functions Navigation actuators diagnosis Radio actuators diagnosis		
<div>Test Instruments</div> <div>Go to</div> <div>Print</div> <div>Help</div>		

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## CODING

The coding of the **audio** system enables the equipment and functions to be defined. (speakers, CD changer and telephone).

In the case of the **navigation** equipment, there are two codes available, one for the radio and another for the navigation.

Guided functions	Seat	V06.19 13/02/2004
Operating test	Altea	
	2004 (4)	
Radio code analysis	Saloon	
	BHD 2.0L Motronic / 110 kW	
<b>Emission of explanatory text</b>		
The code is 40400 <div>Ready</div>		
4 - Monitoring of front and rear tweeters 0 - No CAN telephone control 4 - Front and rear passive speaker output 0 - Always 0 0 - No CD changer		
<div>Test Instruments</div> <div>Go to</div> <div>Print</div> <div>Help</div>		

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Guided functions	Seat	V06.19 13/02/2004
Operating test	Altea	
	2004 (4)	
J401 Navigation system control unit	Saloon	
	BHD 2.0L Motronic / 110 kW	
<b>Locate and check code 1</b>		
What control unit components are fitted?		
1. No dynamic navigation 2. TMC tuner 3. GSM telephone 4. TMC and GSM telephone		
<div>- 1 -</div> <div>- 2 -</div> <div>- 3 -</div> <div>- 4 -</div>		
<div>Test Instruments</div> <div>Go to</div> <div>Print</div> <div>Help</div>		

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**SEAT**  
service

