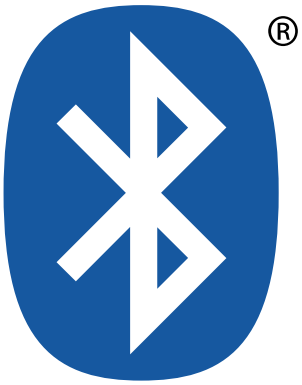
Curriculum Training

Infotainment

Jaguar Bluetooth Telematics



JAGUAR

Please remember that our training literature has been prepared for TRAINING PURPOSES only. Repairs and adjustments MUST always be carried out according to the instructions and specifications in the workshop literature. Please make full use of the training offered by Technical Training to gain extensive knowledge of both theory and practice.

Lesson 4 – Service Procedures

Workshop safety

This page highlights the general observations expected whilst attending this training programme, and its continuation upon returning to your place of work.

General

Whilst working on all vehicles, the following items where available should always be used:

- Wing covers
- Seat covers
- Floor protection

Optional items:

- Steering wheel cover
- Park brake lever cover
- Door grab handle protection

Safety

All precautions must be taken and observed at all times, to prevent injury or damage to the following:

- Yourself
- Customer's property
- Workshop equipment
- Work place colleagues

Operating guidelines

Whilst using any piece of workshop equipment:

The manufacturer's guidelines and warning labels must be followed.

This will ensure correct use and application at all times.

Seek the necessary advice or training where equipment usage is unclear.

Chemicals, Oils and Solvents

Follow all manufacturer's warnings and labels, also take into account local disposal regulations when working with chemicals, oils or solvents.

Ensure that all risks are completely minimised.

Make sure that all protective items of clothing are worn where required e.g.

- Eye protection
- Gloves
- Overalls
- Footwear

System capping

Upon disconnecting components from a system, take all precautions necessary to prevent system contamination or environmental leakage.

Fit relevant plugs or caps i.e. to pipes, unions and component orifices etc.

Updates

Keep abreast of all relevant changes that effect your role within the dealership, by monitoring all factory issued documentation.

Driving

Operating vehicle features, such as ICE, mobile phones and CD player equipment etc., can cause a momentary distraction whilst driving.

Follow all road traffic regulations as written in the Highway Code, when operating vehicle systems or using diagnostic equipment whilst on the move.

Mobile diagnostic equipment operation, may require the use of an assistant.

This self-study course is intended to provide Jaguar Dealer Service Personnel with an overview of Jaguar's conversion to Bluetooth connectivity from the currently available V60 telematics system.

MODEL DESIGNATIONS

Jaguar Training publications use the following internal designations when referring to vehicle models.

Jaguar Internal Designation	Model	Model Year(s)
X100	XK	1997 – 2002
X103	XK	2003 – 2004
X105	XK	2005 – 2006
X200	S-TYPE	2000 – 2002
X202	S-TYPE	2003 – 2004
X204	S-TYPE	2005 Onward
X308	XJ	1998 – 2003
X350	XJ	2004 – 2005
X356	XJ	2006 Onward
X400	X-TYPE	2002 – 2003
X404	X-TYPE	2004 Onward

ACRONYMS

Any of the listed acronyms may be used in this publication. Emissions-related acronyms conform to SAE J1930 standards.

Acronym	Definition
B+	Battery Positive Voltage
BT	Bluetooth
BTUM	Bluetooth Upgrade Module
CAN	Controller Area Network
CM	Control Module
C/O	Carry Over
D2B	Digital Data Bus
GHz	Gigahertz
ICE	In-Car Entertainment
MHz	Megahertz
MY	Model Year
OEM	Original Equipment Manufacturer
PAN	Personal Area Network
PSE	Portable Support Electronics
RF	Radio Frequency
SCP	Standard Corporate Protocol Network
VACM	Voice Activated Control Module
WDS	Worldwide Diagnostic System

APPLICABILITY

This course covers the Bluetooth OE solution introduced during the 2005 Model Year on S-TYPE (X204), X-TYPE (X404), XK (X105) and XJ Range (X350) vehicles.

Bluetooth Technology

Bluetooth is an industry trademarked technology defining a standard for wireless communication between personal use electronic devices, such as cellular phones, audio players, and handheld games. The technology cost is kept low by using specialized, standard chips communicating via a short-range radio link. It allows most devices to converse with one another by creating a universal language. The devices then form a private network know as a “personal area network” (PAN).

Interaction between Bluetooth devices can take place whenever two or more Bluetooth devices are within each other's range. The Bluetooth transceiver chip will trigger an automatic connection to deliver and accept a flow of data.

Bluetooth devices operate on a radio frequency (RF) band known as the Industrial, Scientific, and Medical frequency. The Industrial, Scientific, and Medical radio frequency band is 2.40 - 2.48 gigahertz (GHz) which is divided into 79 channels, each carrying a bandwidth of 1 Megahertz (MHz).

The devices randomly choose one of the 79 individual channels within the frequency band for communication, changing from one channel to another on a regular basis. The Bluetooth transmitters change channels approximately 1,600 times every second, meaning that more devices can utilize the limited slice of the radio frequency.

Since every Bluetooth transmitter uses this technique automatically, it’s most unlikely that two transmitters will be on the same frequency at the same time. This technique minimizes the risk of disruption to Bluetooth devices, as any interference on a particular frequency will last only a fraction of a second.

System Overview

The Bluetooth system allows the driver to integrate their personal cellular phone to the vehicle. When a cellular phone is paired to the vehicle, it allows the storage of up to 500 individual phone numbers and 40 related voice tags to the voice activated control module (VACM) (if fitted). These stored phone numbers can then be accessed by using the audio unit control buttons, the audio unit touch screen (for vehicles equipped with navigation) or steering wheel telematics control switches. The audio unit and touch screen operate as with the V60 system. The voice tags can be accessed by using the steering wheel telematics control switches when utilizing the voice activation facility.

The paired phone may be able to download the phonebook during pairing in one of three ways, depending on phone model. Once stored to the vehicle, the phone numbers can be viewed on the audio unit screen. There is no phonebook 'sync' feature at this time. If a new phone number has been added to the cellular phone memory, it also will need to be added manually to the vehicle memory. Phone numbers stored to the Portable Support Electronics (PSE) module, and voice tags stored to the VACM need to be manually updated if any changes occur to the phone's memory.

It is possible to memory redial the last 10 dialed phone numbers that were dialed from the vehicle while the key is in the on position. Five minutes after the vehicle is keyed off, the vehicle will no longer remember the dialed phone numbers. These dialed phone numbers are retrieved from the PSE module memory and not from the cellular phone's memory. Note that, once a phone is paired to the vehicle, the last 10 phone numbers dialed from the phone will not be accessible through the vehicle's memory redial feature.

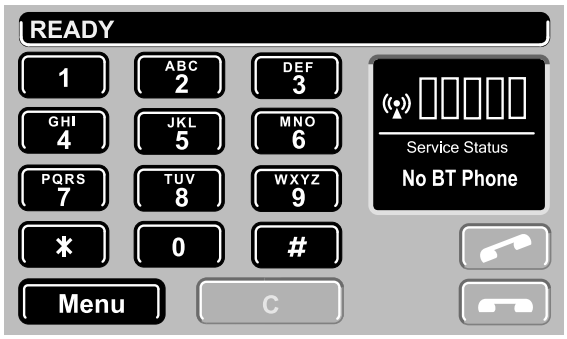
The Bluetooth system does not require a phone cradle or its own individual vehicle antenna. As a consequence of this wireless feature, there are no cellular phone signal amplification or in-car charging facilities (except, of course, any powerpoint charger supplied with the customer's phone).

Bluetooth Connection Status

To identify if a Bluetooth cellular phone has been paired to the vehicle system, the service status indicator is used. On the previous model, this icon was the signal strength indicator located on the right-hand side of the telematics screen.

Bluetooth Inactive

BLUETOOTH INACTIVE: Vehicles with Touch-Screen



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If the system does not have a Bluetooth cellular phone paired, the service status indicator will not have any bars shaded in the right-hand side of the screen and **No BT Phone** will be displayed in the service status box directly below, as shown in the above illustration.

BLUETOOTH INACTIVE: Vehicles without Touch-Screen

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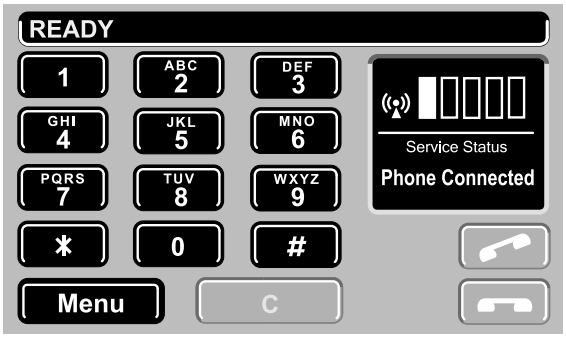
To identify if a Bluetooth cellular phone has been paired to a non-touch-screen vehicle system, the service status is indicated by displaying the word **SIG** followed by 1 shaded bar on the display screen.

If the system does not have a Bluetooth cellular phone paired, the display screen will only show **SIG** on the display screen as shown in the above illustration.

Bluetooth Active

BLUETOOTH ACTIVE: Vehicles with Touch-Screen



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When a Bluetooth cellular phone has been paired to the vehicle system, the service status indicator will display 1 shaded bar or a (*) on the right-hand side of the touch-screen and **Phone Connected** will be displayed in the service status box below as shown in the above illustration.

BLUETOOTH ACTIVE: Vehicles without Touch-Screen

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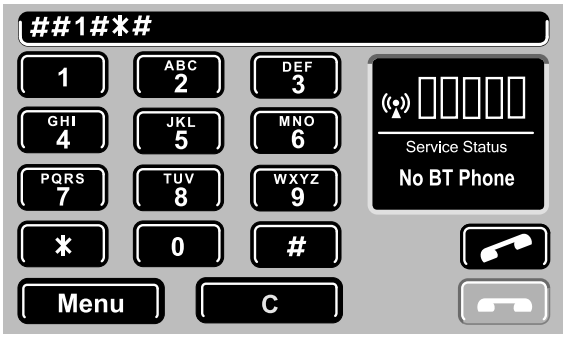
Pairing a Bluetooth Phone

Only one mobile phone can be paired with the vehicle at one time. Once paired, the vehicle will look for the same phone each time the ignition is switched on (position II). The phone therefore does not need to be manually paired each time the ignition is turned on.

NOTE: The Bluetooth function of the phone must be switched on, or active, when the ignition is switched on for the phone to pair with the vehicle automatically.

PAIRING A PHONE: Vehicles with Touch-Screen



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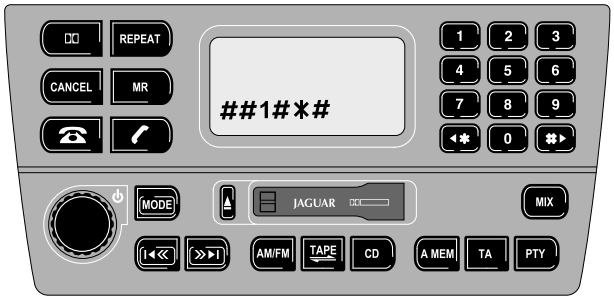
PAIRING A PHONE: Vehicles without Touch-Screen



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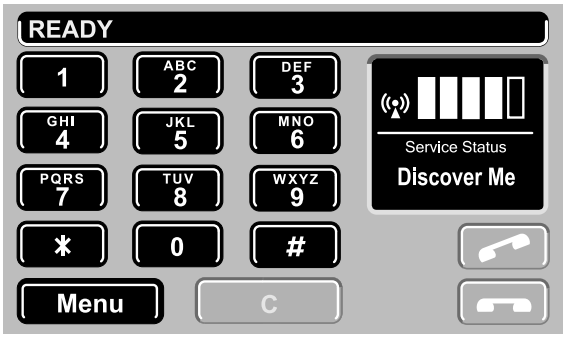
To pair a Bluetooth cellular phone to the system:

1. Set the cellular phone to the Bluetooth active mode
2. Turn the vehicle ignition switch to the **ON** position
3. Key in the sequence **##1#*#** on the key pad or touch screen
4. Press the **phone send** button

- While the cellular phone and vehicle system are pairing, the system enters **Discover Me** mode. This will be displayed in the service status box or as **SIG** with 4 to 5 shaded bars or * on the display screen as shown in the illustrations.

DISCOVER ME: Vehicles with Touch-Screen



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DISCOVER ME: Vehicles without Touch-Screen

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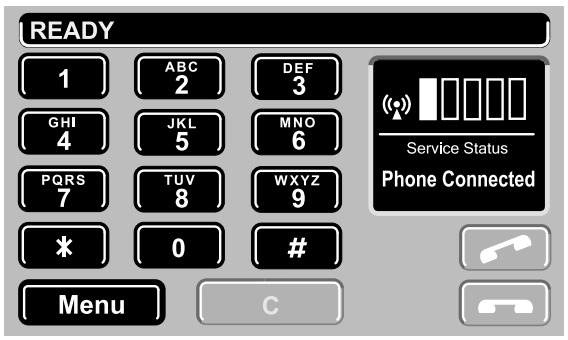
Once the vehicle is in **Discover Me** mode:

1. Using the cellular phone's menu, select the item which will **Search for Bluetooth Devices**. Once the cellular phone has identified the vehicle signal, **Jaguar** will be shown on the phone display.
2. Select **Jaguar**, then input **1313** into the cellular phone keypad, completing the pairing process.

COMPLETED PAIRING PROCESS: Vehicles with Touch-Screen



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COMPLETED PAIRING PROCESS: Vehicles without Touch-Screen

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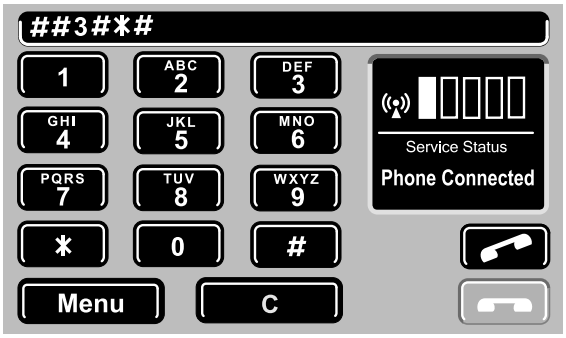
Deleting a paired cellular phone or Pairing a second cellular phone

Deleting a paired cellular phone.

To delete a paired phone and its data, the user keys in the pairing key sequence **##3#*#** and then press the **phone send** button. The phone will no longer be paired.

DELETING A PAIRED PHONE: Vehicles with Touch-Screen



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DELETING A PAIRED PHONE: Vehicles without Touch-Screen

E58881

Pairing a second cellular phone. Only one phone can be paired to the vehicle at any time. Therefore, the pairing of an additional cellular phone to the vehicle system will overwrite all previous stored data, effectively deleting the previously paired phone. To pair the second phone, the user keys in the pairing key sequence **##3#*#** and then presses the **phone send** button. The user will then need to carry out the **Discover Me** steps described in **Pairing a Bluetooth cellular phone to the system**.

NOTE: Once the user initiates pairing, a "Handset in Use" screen may appear, if the system does not find a paired phone in 2 minutes. If this screen should appear, the user will have to key off and wait 5 minutes. The user can then key back on and complete the pairing process with the new phone. This delay occurs with -AA level BTUM that was available at launch, and should not occur in vehicles equipped with a -AB level BTUM.

Phonebook overview

Downloading phonebook entries from a Bluetooth phone to the vehicle will work only with specific handsets. In addition, the download process will follow one of three procedures, as defined by the phone model:

1. Automatic download during the connection process
   - Automatic download will occur the 2nd time the phone is connected, but not the first time, during the pairing process.
2. User initiated download during a connection process
3. User initiated 'push' of each listing

For all phonebook download procedures, the bluetooth connection for the paired phone must be disconnected, but not unpaired, before transfer can begin. The transfer process can then be initiated from the phone's menu system. Once the phonebook entries are tranferred, the phone can be reconnected to the vehicle.

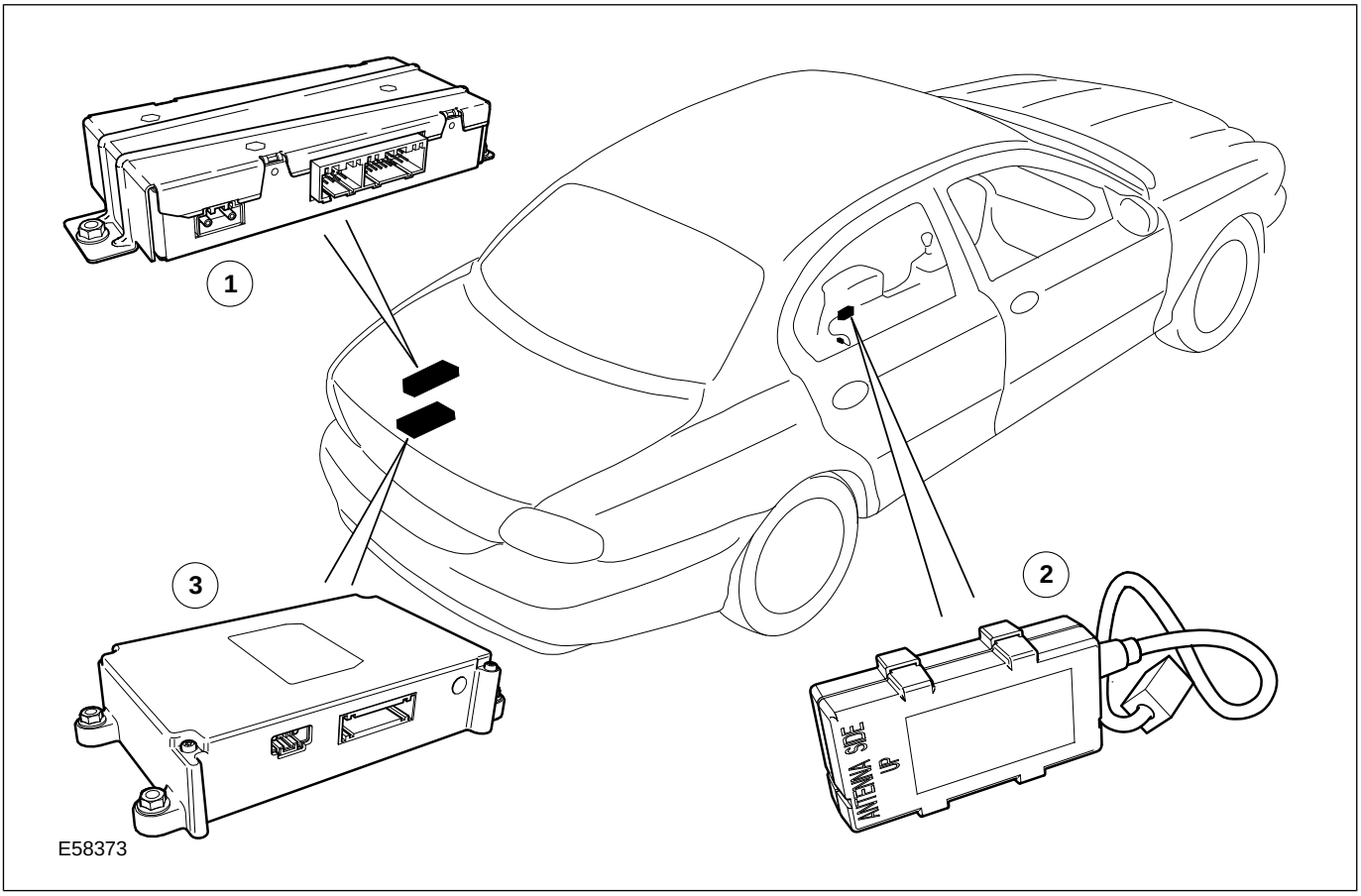
For more information, refer to the owner documentation supplied with the paired phone.

Downloading a Phonebook - Nokia 3660 Example

1. On the phone, select the 'menu' key. Highlight 'Bluetooth'. Press the scroll key center.
2. Press the scroll key right to enter 'Paired devices'. Highlight 'Jaguar'. Select 'Options'.
3. Highlight 'Disconnect'. Press 'select'. Press 'Yes' to disconnect from Jaguar.
4. Select the 'menu' key. Highlight 'Contacts'. Press the scroll key center.
5. Highlight the contact required to be transferred.
6. Select 'Options'. Scroll down to 'send'. Press scroll key right. Highlight 'Via Bluetooth'. Press scroll key center.
7. Highlight 'Jaguar'. Press 'select'. Once the data is sent, repeat this step until all required contacts are transferred.
8. Select 'Exit'. From main menu, select 'Connection'. Select 'Bluetooth'. Press scroll key right to enter 'paired devices'. Highlight 'Jaguar'. Select 'Options'. Select 'Connect'.

COMPONENT OVERVIEW

Bluetooth Telematics Modules



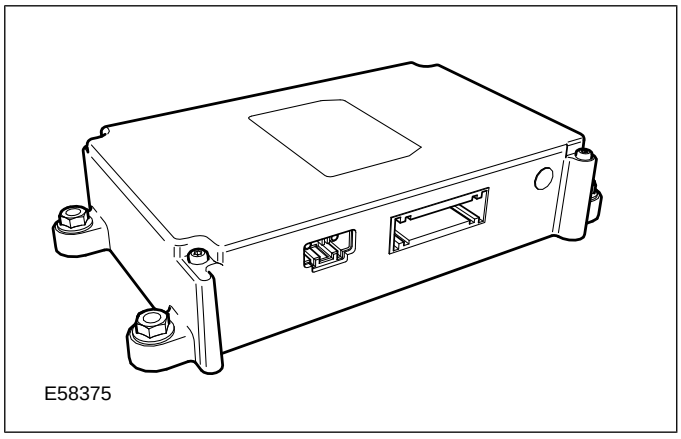
1 Voice Activated Control Module (VACM)

2 Bluetooth Upgrade Module (BTUM)

3 Portable Support Electronics (PSE) Module

In addition to the modules shown above, the following components complete the telematics system:

- A microphone
- Steering wheel telematics control switches
- The audio unit.



Portable Support Electronics (PSE) Module

The Portable Support Electronics (PSE) module is fixed behind the rear seat backrest on X105 vehicles. On all other vehicles, the module is located in the left-hand side of the luggage compartment.

For all X200, X300 and X400 series vehicles, the PSE module is fixed in a bracket which also supports the Voice Activation Control Module (VACM) and the navigation control module. If the PSE module is being

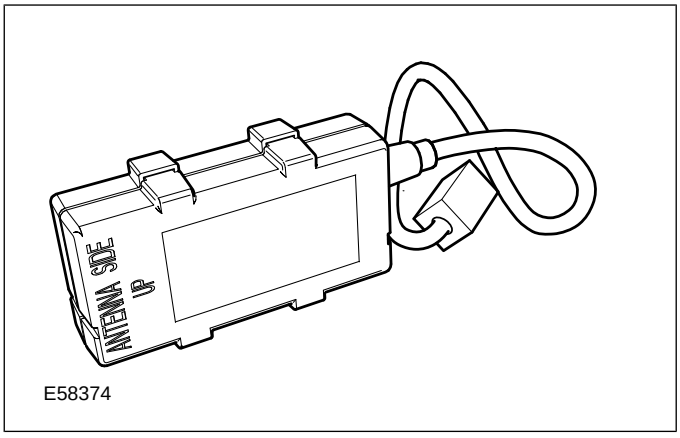
added as a dealer installed option to a vehicle without navigation, voice, or CD changer, the bracket will also need to be ordered and installed.

The PSE module has one electrical connector and one optical connector. The module is unique to Jaguar, but utilizes carry over hardware from the V60 solution.

Up to 500 phone numbers can be stored in the PSE Module, including the last 10 dialled phone numbers from the vehicle.

Bluetooth Upgrade Module

The Bluetooth upgrade module (BTUM) is located under the centre console and is attached to the centre console using velcro.



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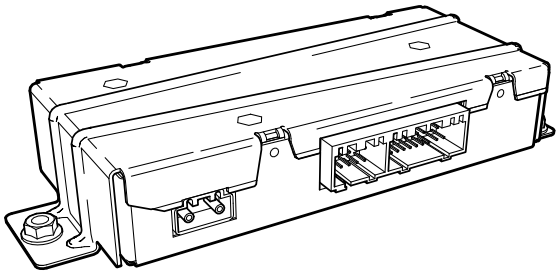
The BTUM has one electrical connector and communicates with the PSE module by it's own proprietary communications bus.

The driver's cellular phone transfers data via RF communication to the BTUM, which integrates the phone into the vehicle system, transferring information such as call status and phonebook information to the PSE.

Voice Activated Control Module

If fitted, the voice activated control module is located in the left-hand side of the luggage compartment. It is fixed to a bracket which also supports the PSE and the navigation control module.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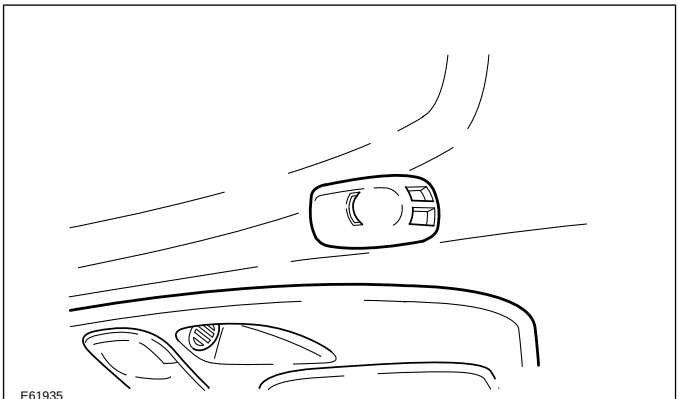
The voice activated control module stores up to 40 voice tags.

Microphone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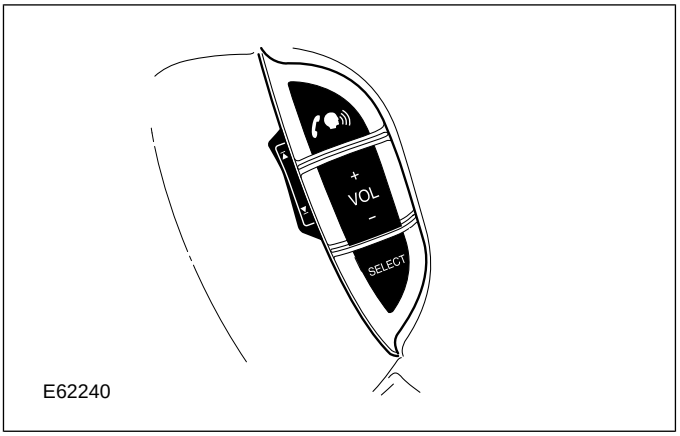
There are two types of microphones used on Jaguar vehicles. The V60 factory fit microphone is integrated into the overhead console. For dealer installation, the microphone is located above the driver and is attached to the headliner. It is also recommended that this microphone be installed when V60 systems are upgraded to Bluetooth, as the the external microphone has improved clarity versus the factory microphone.

Steering Wheel Telematics Control Switches

To ensure minimum disruption to concentration when driving, control of critical audio, telephone and voice activation system functions is possible using the steering wheel telematics control switches.

Steering Wheel Controls - S-Type, XJ, XK



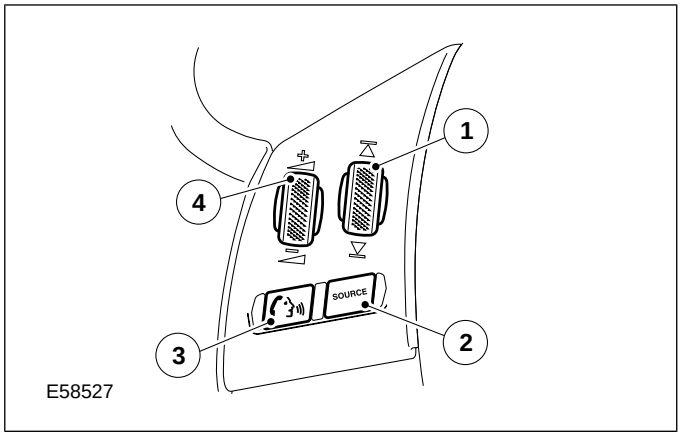
The control switches provide the following phone functionality:

- Answer phone call/end handsfree calls
- Increase or decrease volume
- Cycle through phone memory.

The “Source” button on the X-Type serves the same purpose as the “Select” button on other vehicle types.

If Voice is fitted, the 'answer phone call' button also initiates the voice module to begin listening for a voice command.

Steering Wheel Controls - X-Type



Item	Description
1	In phone mode main screen, press/rotate to scroll up or down through the numbers stored in the phone memory.
2	Press and hold for 2 seconds to select Phone Ready mode.
3	Press to start voice session, or mute when voice is not fitted. Answer phone call when ringing. Send/End when in phone mode.
4	Press/rotate as required to increase or decrease volume.

Procedures - Dealer Installation Guides

Fitting Instructions and part requirements are unique for each vehicle line.

All Jaguar accessory instructions can be found at www.jaguartechinfo.com/extfree2viewjagprod/index.jsp

Diagnostic Resources

Similar to the Jaguar V60 system, the Jaguar Bluetooth Phone System is supported jointly by Motorola and Jaguar. There are four sources of diagnostic information available to the dealership technicians:

- **Technical Bulletins on GTR**
  - hub.franchise.jaugar.com
- **Admin and Parts Bulletins**
  - web.jagtech.dealerconnection.com
- **www.jagdigitalphones.com**
  - Requires username and password, found on Jagtech website
- **Jaguar Technical Helpline**
  - 1-888-JAGDLRS

NOTE: Before diagnosing any communication issues between a Bluetooth phone and the vehicle, verify that both the customer's phone and the software being run on that phone are listed on the Jaguar compability chart. Compatible phones and software versions can be found in GTR, in the 'Owner Information' section.