



# Installation Instructions

Communication, Hands-Free

Version 1.0

Page 1 of 20

January 2005

Accessory  
Development

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## **SUBJECT**

**BMW Universal Hands-Free (ULF) Kit - P/N 84 11 0 390 318**

## **MODEL**

5 Series Sedan (E39): Select Vehicle Production 9/00 - 2/02\*  
5 Series Sport Wagon (E39/2): Select Vehicle Production 9/00 - 2/02\*

*\* Vehicle must have optional Telephone Pre-wiring (SA640), which is 100% for US spec vehicles.*

**SUGGESTED INSTALLATION TIME:      1.5 HOURS**

The instructions below are developed for BMW vehicles and are not be compared to any other existing instructions for vehicles other than BMW. No methods other than those specified in this document are to be used for installation in BMW vehicles. Left and right are determined from driver's seat.

Carefully read all instructions and supplements before proceeding with the installation. Reference should be made to TIS for instructions dealing with a stock part of the vehicle but not stated in detail in these instructions.

The instructions were complete and up to date at time of publication; however, changes to the vehicle or installation may have occurred. Please report any problems or changes noted with the installation to BMW Technical Hotline, along with VIN, date of manufacture and as much detail as possible.

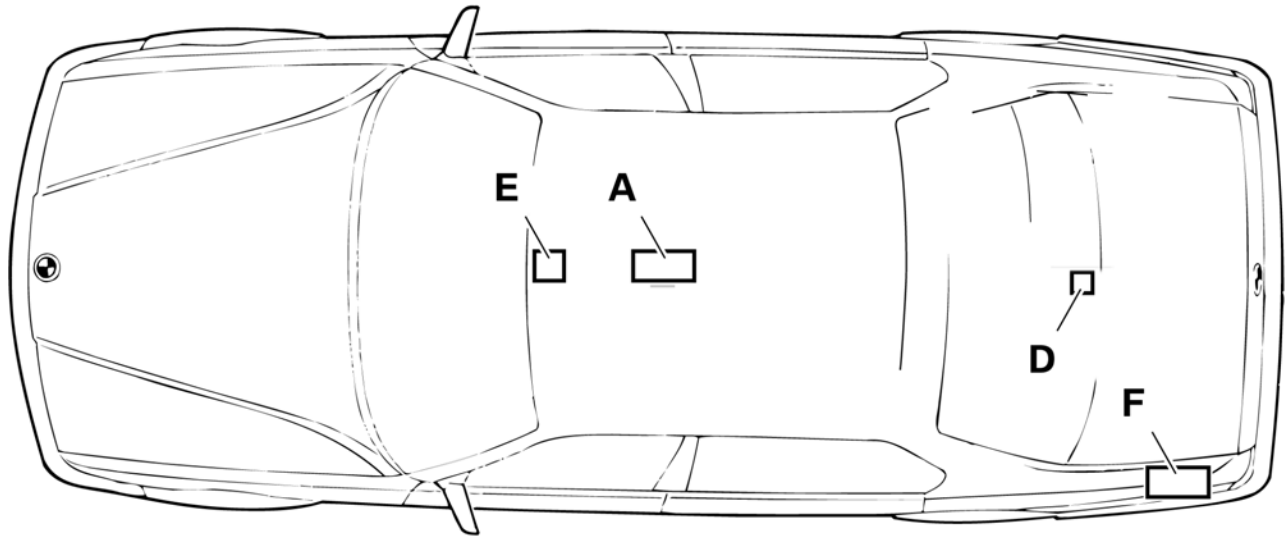
**★ ★ DO IT RIGHT THE FIRST TIME, ON TIME, EVERY TIME ★ ★**

**PARTS INFORMATION****Contents of Kit - P/N 84 11 0 390 318**

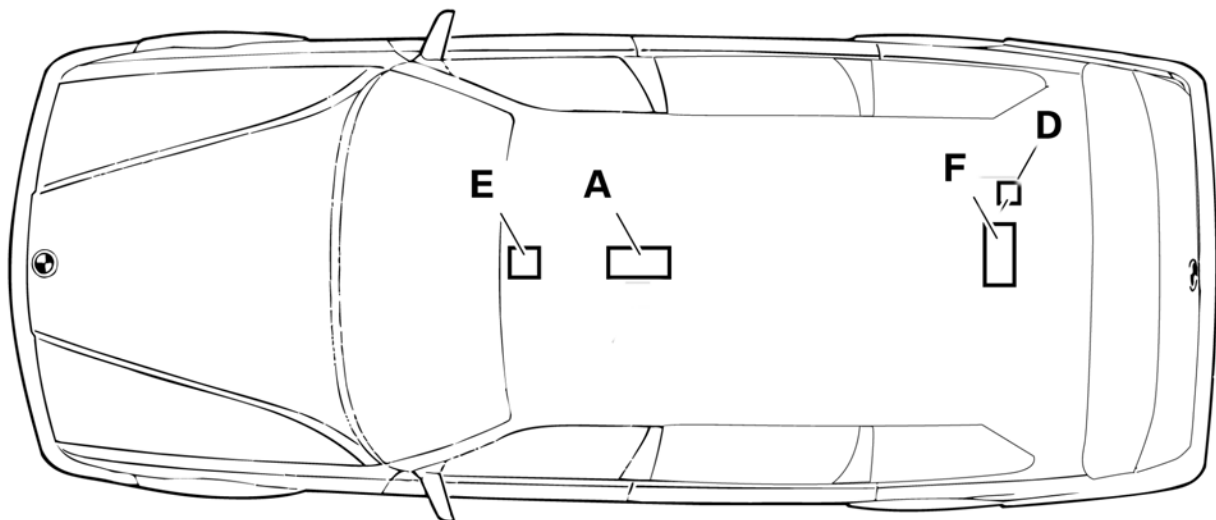
<b>Description</b>	<b>Qty</b>	<b>BMW Part Number</b>
Bluetooth® Antenna	1	84 50 6 928 461
Bluetooth® Antenna Cable	1	61 12 0 137 616
Cable Clip	1	64 11 1 364 073
Eject Box with Tray	1	84 21 6 933 415
ELO 18 pin Adapter	1	84 12 0 308 373
FAKRA Antenna Adapter	1	84 32 0 027 140
M5 Bolt w/Washer	4	07 11 9 902 932
M5 Clip Nut	3	61 13 1 372 033
M5 Hex Nut	3	63 21 1 371 401
M5 Plastic Cap Nut	1	51 71 1 934 930
Microphone	1	84 31 8 380 319
Owner's Manual For Voice Input System	1	84 11 0 027 942
ULF D-Sub Adapter	1	84 12 0 308 375
ULF Owner's Manual	1	84 11 0 302 638
ULF Passkey Reference Card	1	84 11 0 302 646
Wire Tie	2	61 13 1 367 599

**Additional Parts (may be required)**

ULF Control Module	1	84 21 6 934 552
Voice Input System Jumper Plug (may already be installed on some vehicles)	1	84 11 0 018 038
ULF Bracket (vehicles without Navi)	1	84 13 6 924 546
Ulf Bracket (vehicle with Navi)	1	84 13 6 924 547
ULF Bracket Clips for Sport Wagon	1	84 11 0 308 676

**COMPONENT LOCATION:****SEDAN**

039 0413 Z

**SPORT WAGON**

039 0421 Z

A - Eject Box

D - Bluetooth™ Antenna

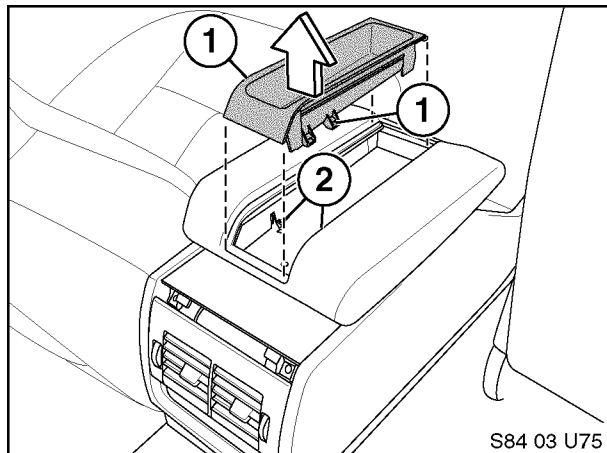
E - Microphone

F - ULF Control Module

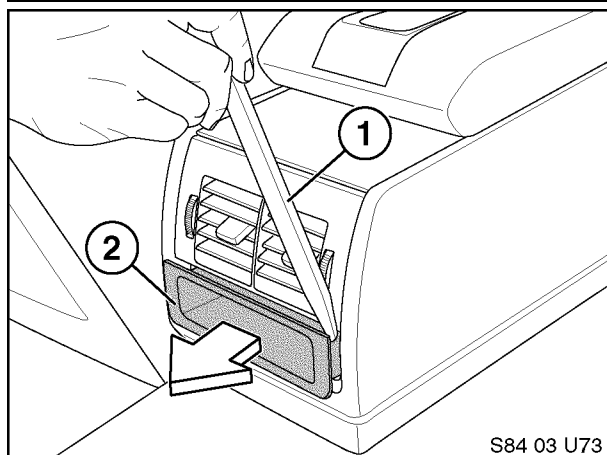
## **PROCEDURE**

To install and connect the universal charger/hands-free electronic control unit

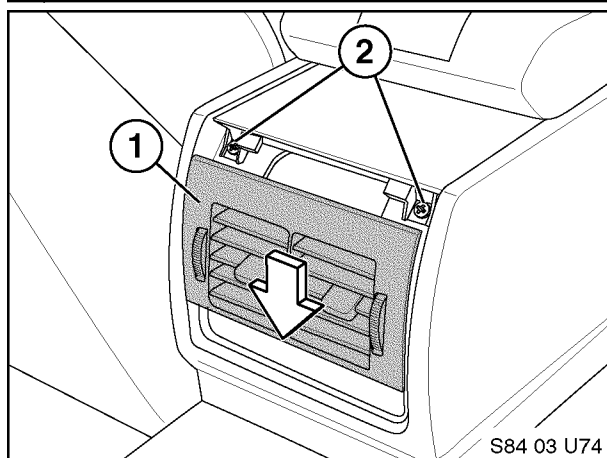
### **A. Eject box Installation:**



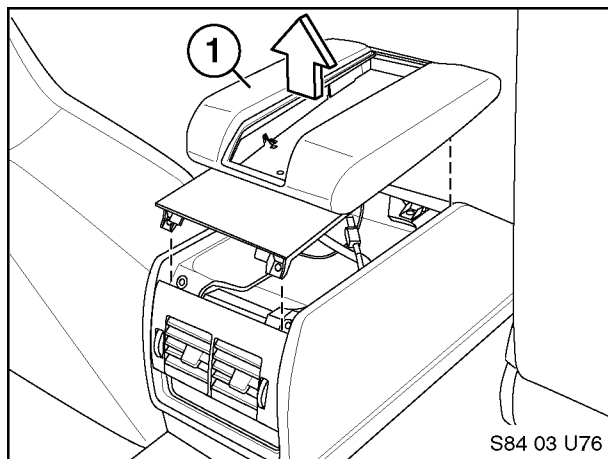
1. Remove the oddment tray from the center console by releasing the securing taps (1) on the tray by pressing in on the taps (2) located on each side of the armrest and pull the tray up.



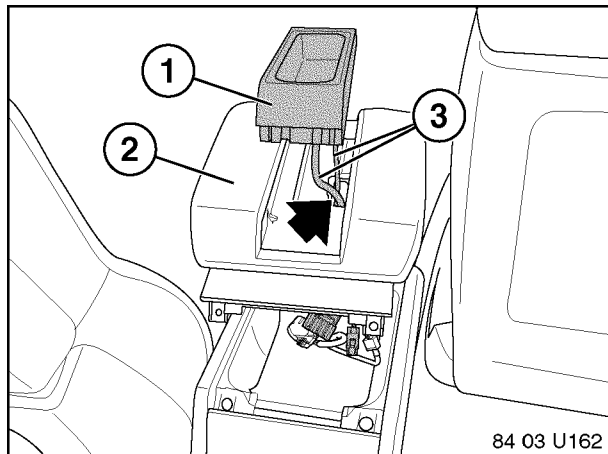
2. To remove the armrest, first remove the oddment tray (2) from the rear of the console using a plastic pry tool (1) to release the taps on the tray, then pull the tray out.



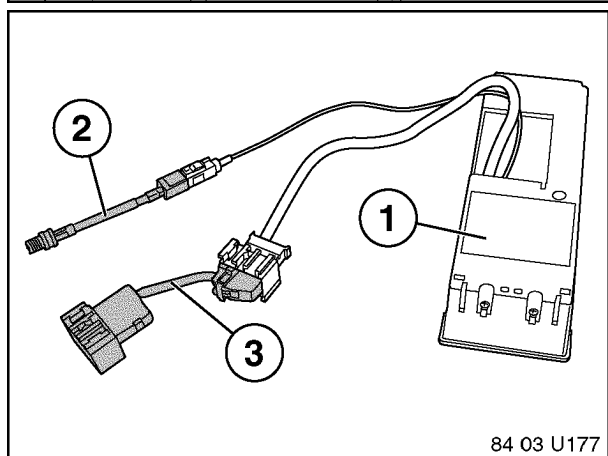
3. Slide the ventilation grill (1) down
4. Remove the two screws (2) that hold the armrest assembly in place.



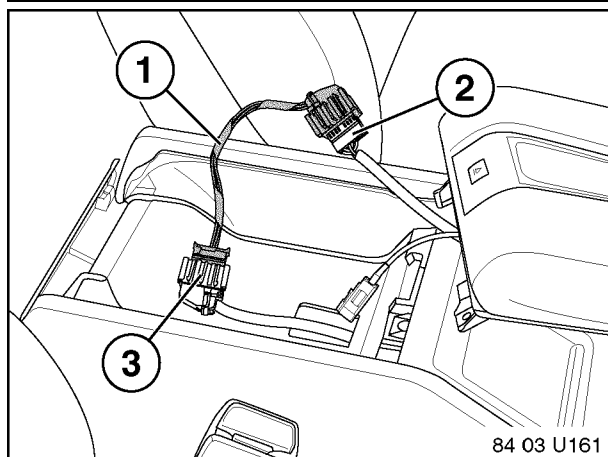
5. Lift the armrest assembly (1) off of the center console.



6. Insert the Eject Box (1), P/N 84 21 6 933 415, into the armrest (2) by feeding the wires/connectors (3) through the opening in the armrest assembly.

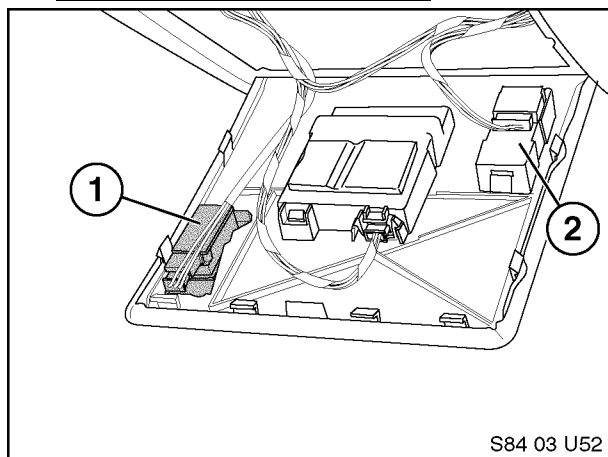


7. The FAKRA antenna adapter (2) P/N 84 32 0 027 140 is connected to the FAKRA connector from the Eject Box (1) and then to the antenna cable.
8. The 18-pin ELO Adapter Harness (3), P/N 84 12 0 308 373 is connected between the Eject Box (1) and the X4545 connector.



9. Connect the 18-pin ELO Adapter Harness (1), P/N 84 12 0 308 373 to the X4545 connector (3).  
**Note: In some vehicles connector X4545 may be located below air duct in center console.**
10. Connect the antenna lead to the adapter lead from the eject box.
11. Reinstall the center armrest assembly.

## B. Installation of Microphone:

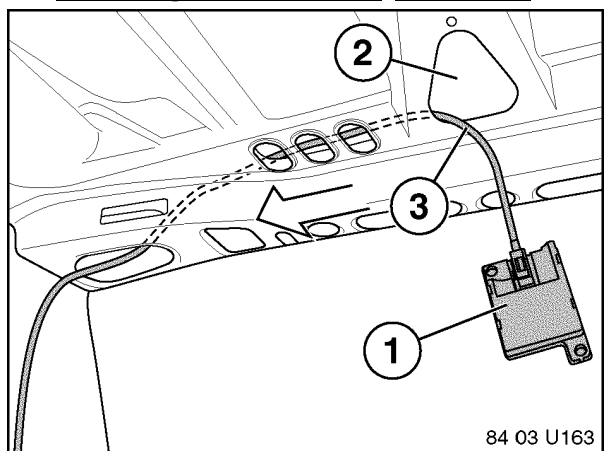


1. Install microphone (1), P/N 84 31 8 380 319 and connect the black 3-pin connector to the microphone.

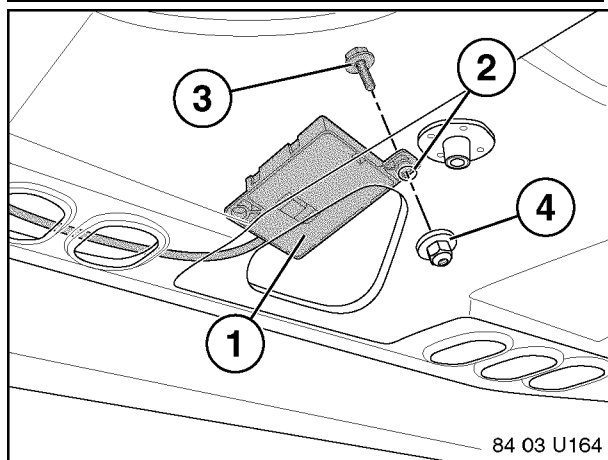
***Note:*** Vehicles that previously had a phone system installed may already have a microphone installed.

***Note:*** The black 3-pin connector may be taped to the wiring harness near the interior light assembly.

## C. Installing the Bluetooth® Antenna:

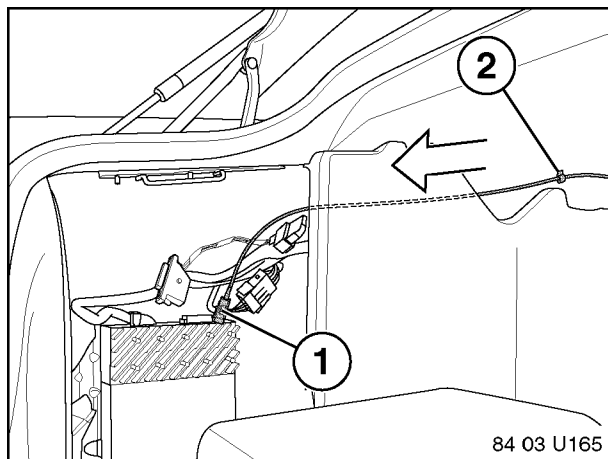


1. Install the Bluetooth® Antenna underneath the rear parcel shelf (2), access area from inside the trunk.
2. Connect the Bluetooth® Antenna, P/N 84 50 6 928 461 to the black FAKRA Connector of the antenna cable.
3. Feed the end of Bluetooth® Antenna Cable (3), P/N 61 12 0 137 616 with the white FAKRA connector through the triangle opening (2) and route toward the left.
4. Pull/feed cable through the opening on the left side of the support.



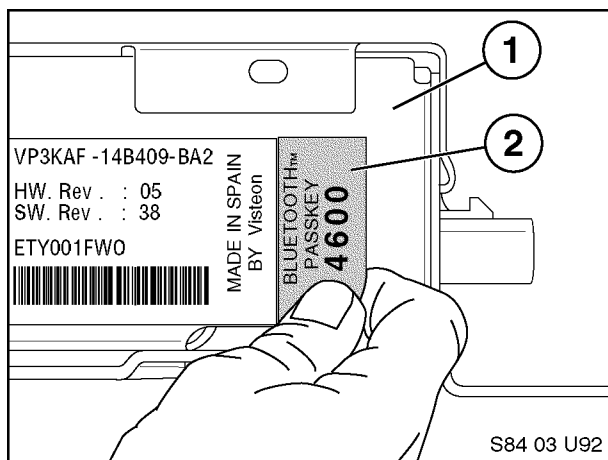
5. Secure the Bluetooth® Antenna (1) by placing an M5 Bolt w/Washer (3), P/N 07 11 9 902 932, through the hole (2) and secure it using a M5 Hex Nut P/N 63 21 1 371 401.

***Note:*** For M5 vehicles with optional M Audio system, mounting hole (2) is occupied by wiring harness clip. Remove clip and proceed with Bluetooth antenna installation.

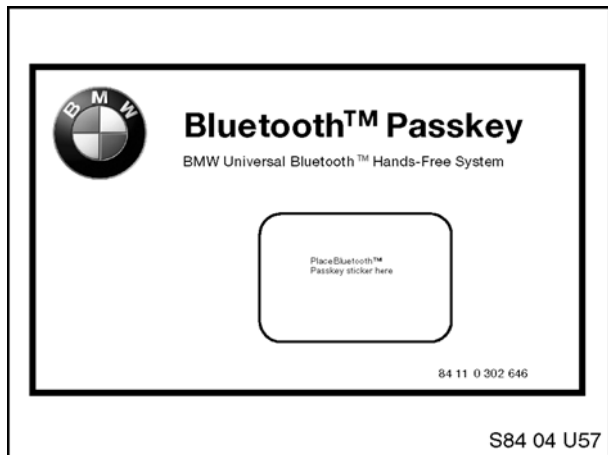


6. Route the Bluetooth® Antenna Cable (1) behind the left side trunk trim panel.
7. Secure the cable to the underside of the parcel shelf with a cable clip (2), P/N 61 11 1 364 073.

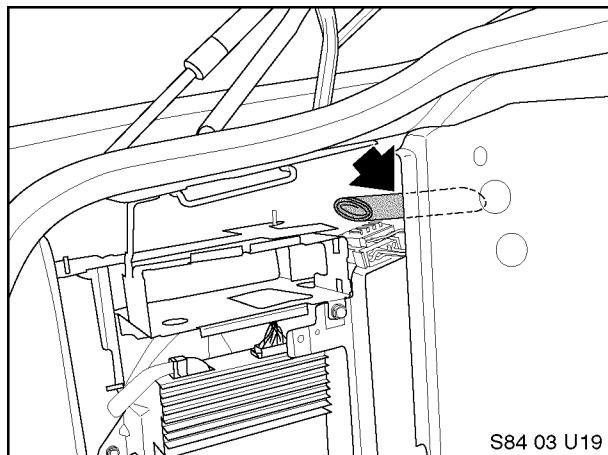
#### D. ULF Control Module Installation



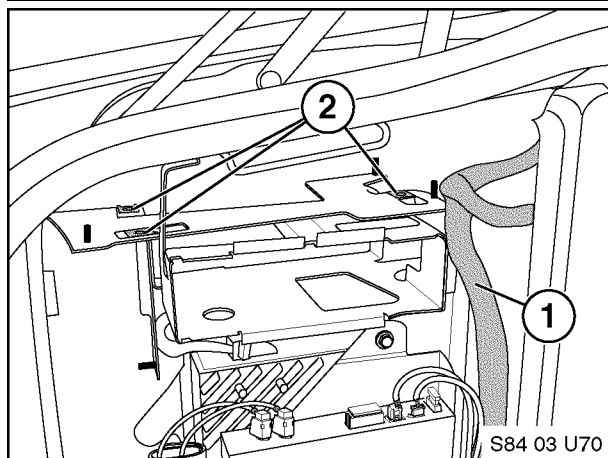
1. Remove/peel off the Bluetooth® Passkey sticker (2) from the label on the ULF Control Module (1).



2. Place the Bluetooth® Passkey sticker removed from the ULF Control Module onto the ULF Passkey Reference Card, P/N 84 11 0 302 638.
3. Place this card inside the owner's manual portfolio. Show this card to the customer when demonstrating the system and the pairing procedure to the customer. The code on the sticker is needed to pair phones to the ULF Control Module.

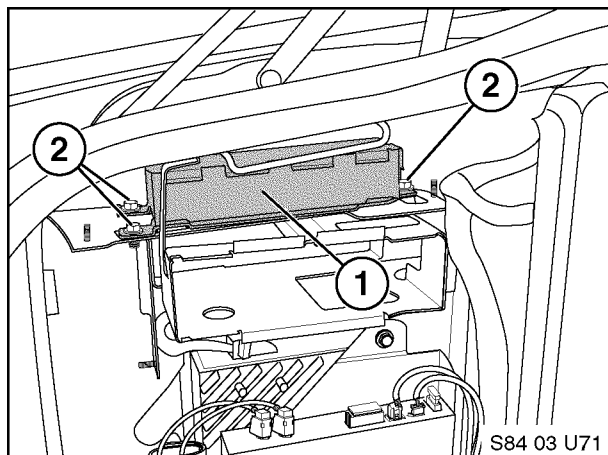
**E39 Sedan - Produced prior to 3/02 with Navigation**

1. In order to install the ULF control module the bracket that secures/holds the Navigation Computer will need to be replaced with P/N 84 13 6 924 547.
2. Locate the 25-pin D-Sub plug connector, located in the upper right corner above the wheel well housing.

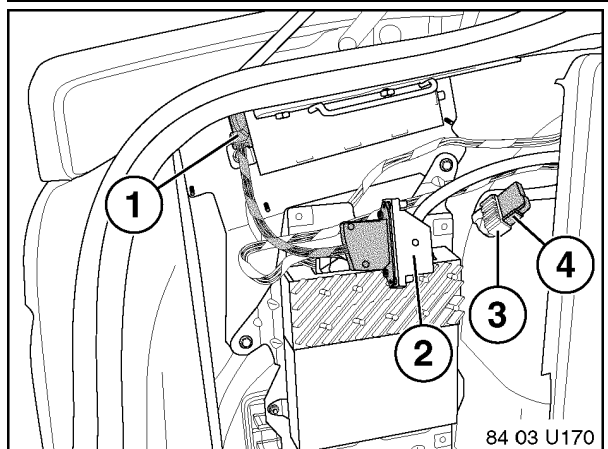


3. Install three M5 Clip Nuts (2), P/N 61 13 1 372 033, on the ULF Control Module-mounting bracket.

**Note: Mounting bracket P/N 84 13 6 924 547 should be installed in all E39 Sedans as of 9/02 production.**

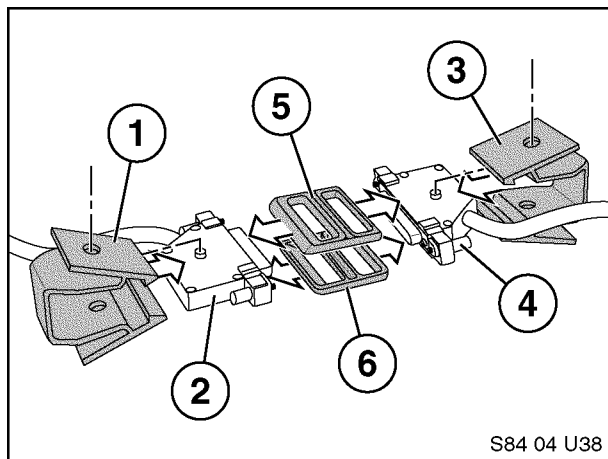


4. Install the ULF Control Module (1), P/N 84 21 6 934 552.
5. Use three M5 bolts (2), P/N 07 11 9 902 932, to secure the ULF control module to the mounting bracket.

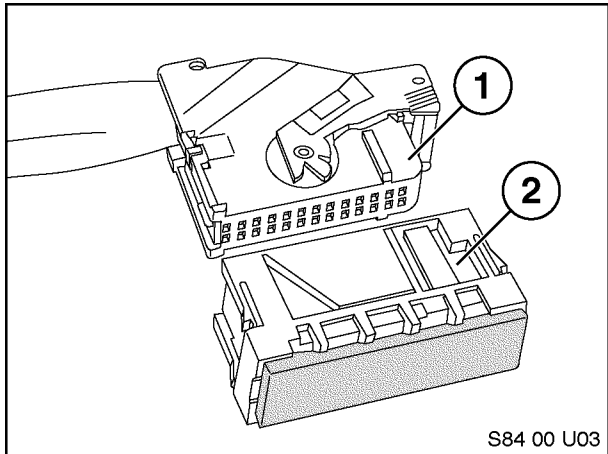


6. Connect white FAKRA connector (1) coming from the Bluetooth® Antenna, to the ULF Control Module.
7. Connect the adapter harness, P/N 84 12 0 308 375 to the 25-pin D-Sub (2) and to ULF Control Module (1).
8. Ensure that Jumper plug (4) is connected to blue 26-pin connector (3). If no jumper is connected, follow Step 11 for correct procedure.





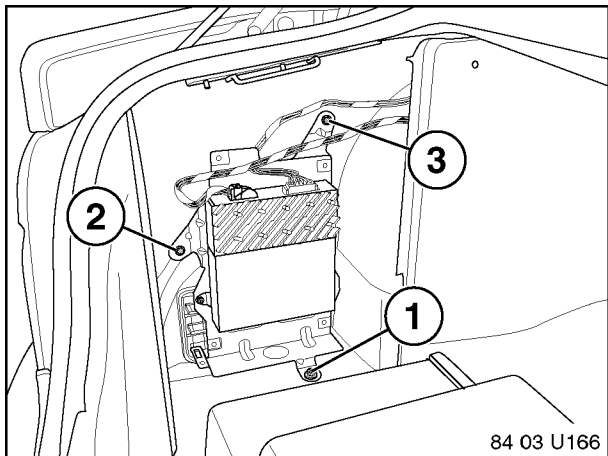
9. Secure the D-Sub connectors by sliding securing clips 1 and 3 over D-Sub connectors 2 and 4.
10. Slide the plastic securing brace 5 and 6 under clip 1 and then under 3 to keep the connectors from separating.



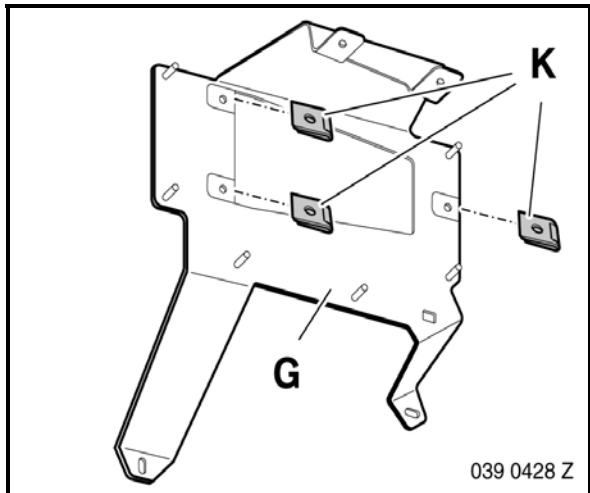
11. The jumper plug (2) should be installed onto a blue 26-pin connector (1) that is located near the black 25-pin D-Sub connector for the ULF module.

**Note: The Jumper plug P/N 84 11 0 018 038 is not included in the kit as this plug may already be installed on some vehicles.**

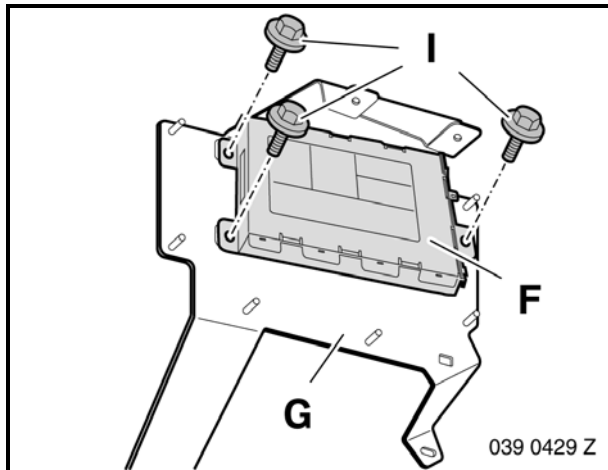
### **E39 Sedan - Produced prior to 3/02 without Navigation**



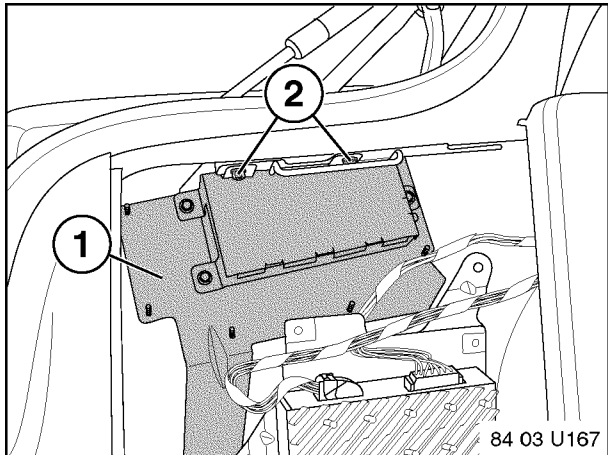
1. In order to install the ULF Control Module Mounting Bracket P/N 84 13 6 924 546, into the left rear side of the cargo area, the bolts (1, 2 & 3) that hold the audio amplifier in place will need to be removed to allow the mounting bracket to be placed behind the amplifier bracket.



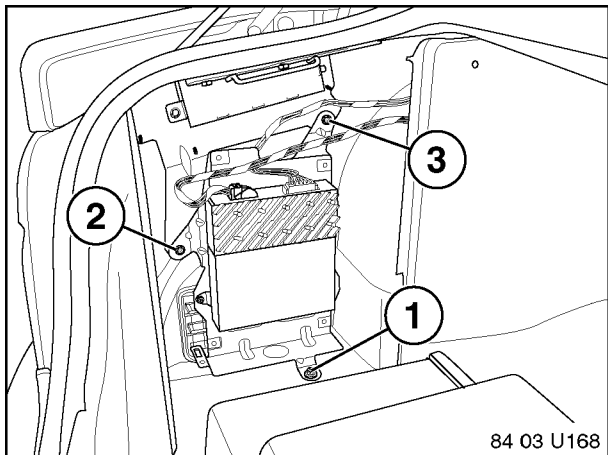
2. Install three M5 Clip Nuts (K), P/N 61 13 1 372 033, onto the ULF Control Module-mounting bracket (G).



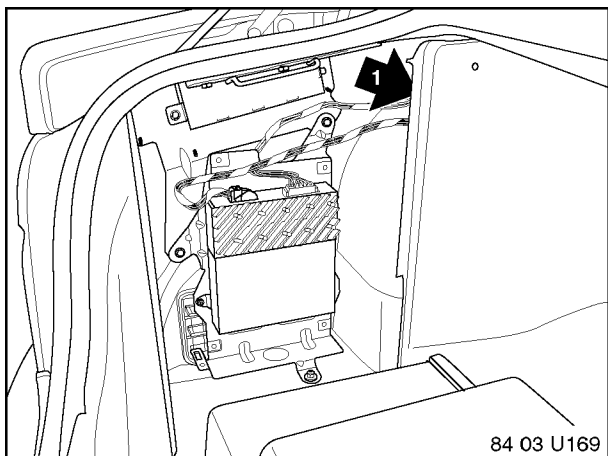
3. Use three M5 hex bolts (I), P/N 07 11 9 902 932, to secure the ULF control module (F) to the mounting bracket (G).



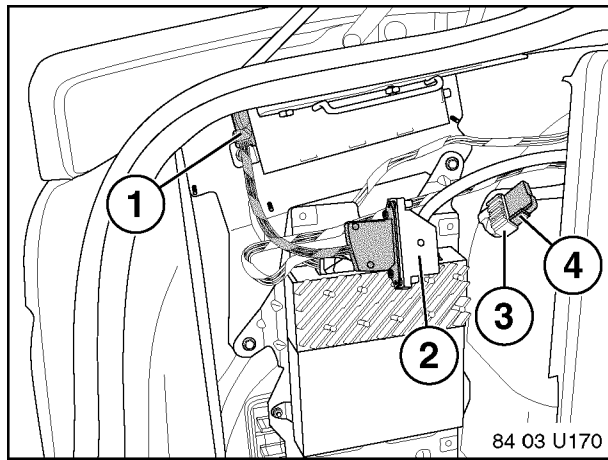
4. Place the ULF Mounting bracket (1) behind the amplifier bracket and secure the upper portion of the bracket using two M5 Hex nuts (2).



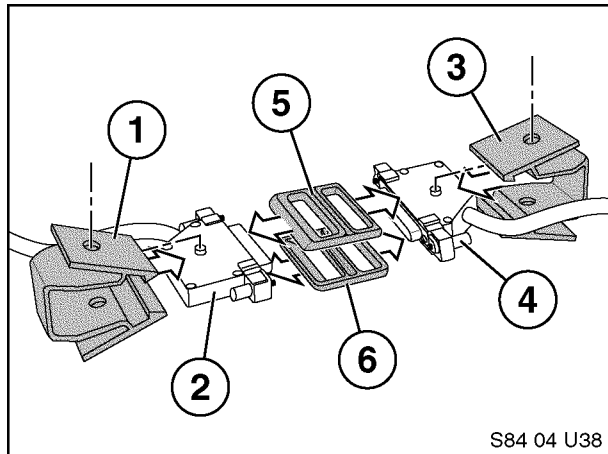
5. Reinstall the two bolts (2 & 3) removed previously. Secure both brackets with the removed M5 bolts and make sure that the attachments from the ULF bracket are below the amplifier bracket.
6. Reinstall the M5 hex nut (1).



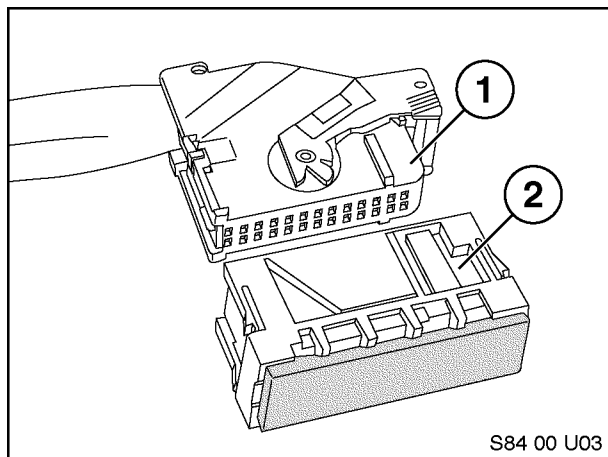
7. Locate the 25-pin D-Sub plug connector, located in the upper right corner above the wheel well housing (1).



8. Connect white FAKRA connector from the Bluetooth Antenna to the ULF Control Module.
9. Connect adapter harness, P/N 84 12 0 308 375 to 25-pin D-Sub (2) and to ULF Control Module (1).
10. Ensure that Jumper plug (4) is connected to blue 26-pin connector (3). If no jumper is connected, follow Step 12 for correct procedure.

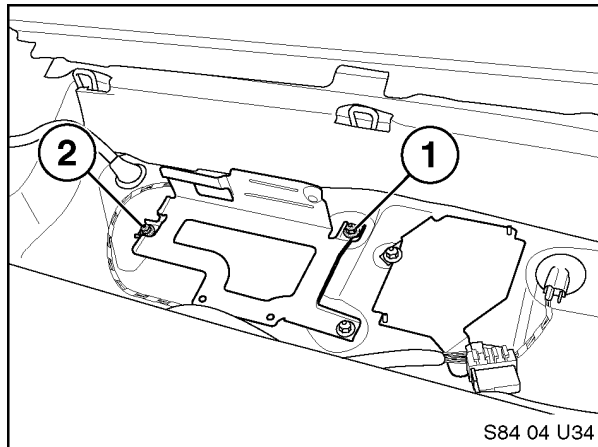


11. Secure the D-Sub connectors by sliding securing clips 1 and 3 over D-Sub connectors 2 and 4. Slide the plastic securing brace 5 and 6 under clip 1 and then under 3 to keep the connectors from separating.



12. The jumper plug should be installed onto a blue 26-pin connector that is located near the black 25-pin D-Sub connector for the ULF module.

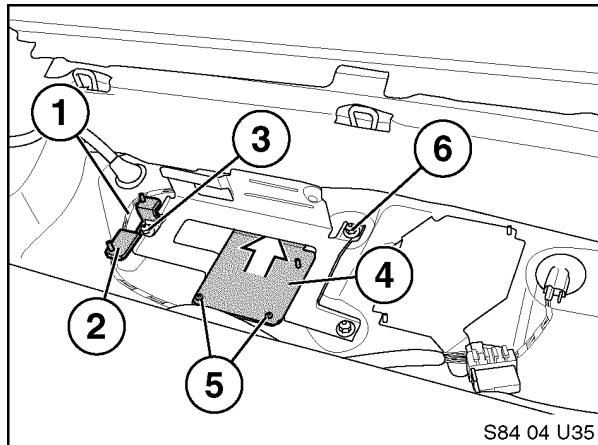
**Note:** The Jumper plug P/N 84 11 0 018 038 is not included in the kit as this plug may already be installed on some vehicles.

**E39 Sport Wagon (produced prior to 3/02)**

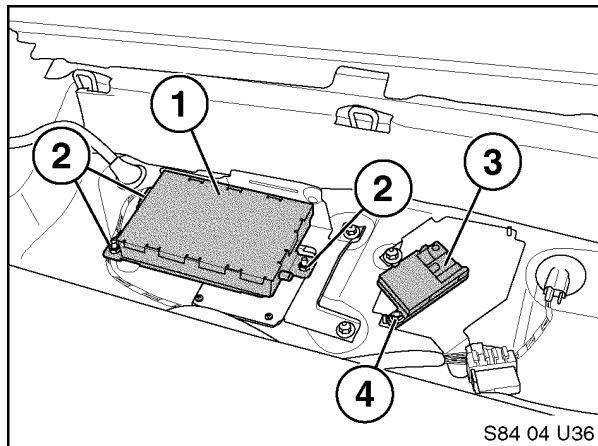
1. Remove the floor panel located directly behind the rear seats to gain access to the Control Module mounting bracket (1).

**Note: Mounting bracket, P/N 84 13 6 924 548, should be installed in all E39 Sedans as of 9/02 production until 8/03.**

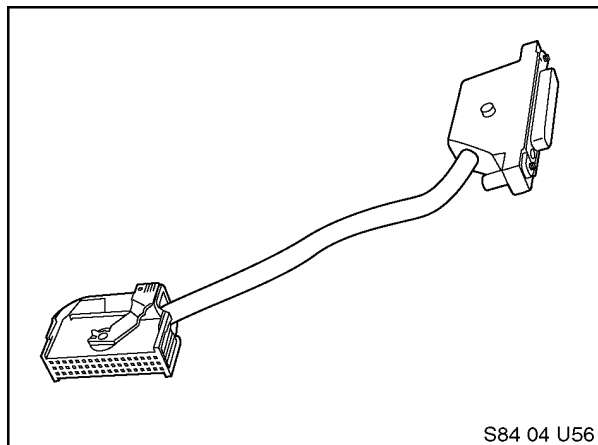
2. Remove the plastic cap nut (2) and loosen the other two nuts.



3. Install mounting bracket (2) by placing the bracket over the threaded stud (3) and underneath the main bracket; be careful not to pinch the wiring harness (1).
4. Reinstall the cap nut and tighten the remaining two.
5. Slide the mounting plate (4) partially underneath the main bracket and secure with two Phillips head screws (5).

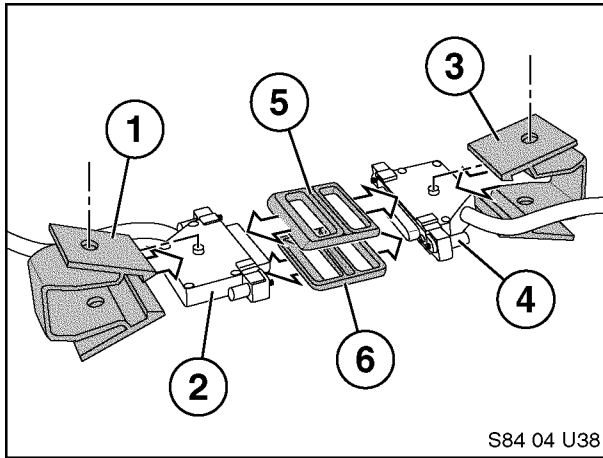


6. Secure the ULF Control Module (1) to the mounting brackets using three M5 hex nuts (2).
7. Secure the Bluetooth® Antenna (3) in place using a plastic cap nut.

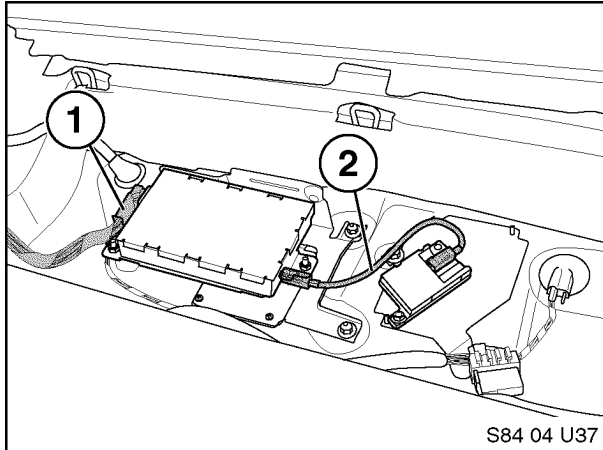


8. Connect the ULF D-Sub adapter cable, P/N 84 12 0 308 375 to the vehicle phone harness D-sub adapter.

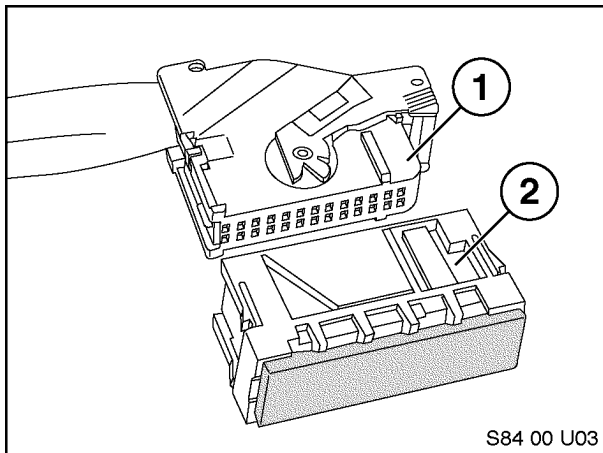
13



9. Secure the D-Sub connectors by sliding securing clips 1 and 3 over D-Sub connectors 2 and 4. Slide the plastic securing brace 5 and 6 under clip 1 and then under 3 to keep the connectors from separating.



10. Connect the 54-pin connector (1) from the adapter cable to the ULF control Module.  
11. Connect the Bluetooth antenna to the ULF module using antenna cable (2), P/N 61 12 0 137 616.



12. Check that a jumper plug (2) is installed onto the blue 26-pin connector (1) that is located near the black 25-pin D-Sub connector for the ULF module.

**Note: The Jumper plug P/N 84 11 0 018 038 is not included in the kit as this plug may already be installed on some vehicles.**

13. Reinstall the floor panel.  
14. Reconnect the Battery

## E. Retrofit Coding

After installing the ULF Kit the vehicle should be re-coded with DISPlus/GT1 SW39 or higher using the “Retrofit” path to ensure that the system works properly with the systems currently installed in the vehicle. The recoding is done automatically when using the following “retrofit” procedure:

- Connect DIS or GT1 to vehicle (with SW39 or higher installed).
- Turn on ignition.
- Select “**Coding ZCS**”.
- Series: “**E39 Series**”.
- Path: “**Retrofit**”.
- System: “**ULF Universal charging and Handsfree facility**”.
- Follow on screen requests to activate the coding procedure.

**Upon completion of retrofit, confirm successful addition of ULF (SA644) and Voice Recognition (SA620) to vehicle order.**

**Clear fault memory if not already completed during retrofit coding.**

## F. Control Module Diagnostic information

The ULF Module can be diagnosed with DIS, using Manual determination and selecting a newer model/production period (Ex. 3/02 production or newer).

## G. Function test

Upon completion of the installation, verify that the BMW Universal Hand-Free Kit w/Bluetooth® Wireless Technology is working correctly by going through the following action steps. After completing each step ensure that the desired result is obtained:

Action	Response
Pair phone to vehicle. (Refer “Pairing Procedure” information)	Phone and or Radio/MID/Board Computer should display statement indicating Pairing succeeded
Turn on radio and initiate a call using voice recognition commands by depressing/holding the Voice recognition button on steering wheel until an audible beep is heard	Radio should mute and an audible beep is heard through vehicle speakers.
Say “Dial number”	System states “Please speak the number”
Say phone number to be dialed ex”1234567890”	System states “1234567890”
If number is correct say “Dial”	Call is placed and number being dialed is displayed on phone as well as on Radio/MID/Board Computer.

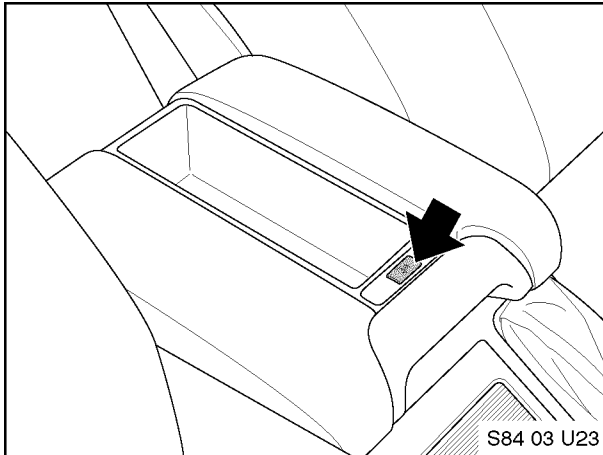
**H. Troubleshooting:**

<b>Situation</b>	<b>Correction</b>
No audio output through vehicle speakers	Check SES module jumper plug
Radio does not mute after placing a call	Check connections at rear of radio for Tel On and Tel Mute signal. Verify that connectors and pins are properly seated.
Audio quality in vehicle may not sound very good	NOTE: Audio quality in vehicle or at person being contacted, is dependent on the quality and signal strength of the wireless service provider in the area traveled.
Customer complains that the person being contacted hears a "Buzzing" noise, at times during their conversation or on voice mail message that he/she has left.	Intermittently a "Buzzing" noise is noticeable to the person being called from the vehicle. The "Buzzing" noise is a result of the GSM signal being feedback through the microphone, this usually occurs if the GSM phone is located too close to the microphone. The customer should change the location of where the phone is placed/stored.
Driver is told that the person being contacted complains that there is an echo/reverberation in the audio; person can hear his/her voice back through the phone.	Audio volume in vehicle during a call may be a bit to loud, causing the other person to hear his/her voice coming back through the phone.
A second call is received while in a call, and call cannot be accepted using MFL controls.	Use handset to expect second call and place previous called on hold. Call waiting is functional only via the handset.
The radio audio does not come back immediately if the "other" person hangs up first.	It takes approximately 15 seconds for the ULF system to recognize that the call was terminated from outside the vehicle.  If the call is terminated from outside the vehicle first, the driver can depress the button on the steering wheel to terminate the call from the vehicle and un-mute the radio quicker.
Customer is not able to pair phone to system, not able to locate ULF passkey/password reference card.	<ul style="list-style-type: none"> <li>- The "Bluetooth® Passkey" is identified on the label of the ULF Control Module located in the rear of the vehicle.</li> <li>- The "Bluetooth® Passkey" for the installed control module can be obtained by connecting the DISPlus or GT1 and accessing the diagnostics for the ULF system: <ul style="list-style-type: none"> <li>- select "Diagnostic requests"</li> <li>- select "Bluetooth code"</li> </ul> </li> </ul>
Intermittently a popping noise is audible through the vehicles speaker and there is no Bluetooth™ wireless communication established between the ULF module and the phone.	Vehicle and /or ULF Control Module are not correctly coded.  Recode module and vehicle (refer to Coding ULF Control Module to Vehicle)
Not able activate the Pairing Procedure	Connect the DISPlus or GT1 and access the diagnostics for the ULF Control Module: <ul style="list-style-type: none"> <li>- select "Component Activation"</li> <li>- select "Start Bluetooth Recognition Mode"</li> </ul>

## I. Pairing Procedure:

The pairing procedure that must be initiated through the phone will differ corresponding to the different menu configurations of the various Bluetooth® mobile phones on the market. The user's manual of the phone should always be referenced for specific steps on how to activate the Bluetooth® feature and to pair/link devices.

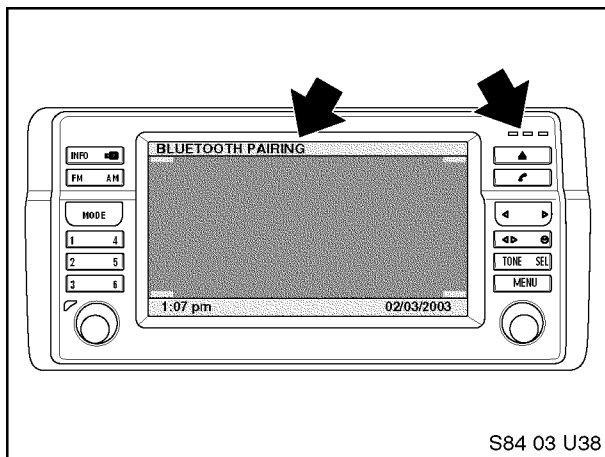
The following steps are generalized steps that should help in activating the Bluetooth® function of most phones:



### IN VEHICLE:

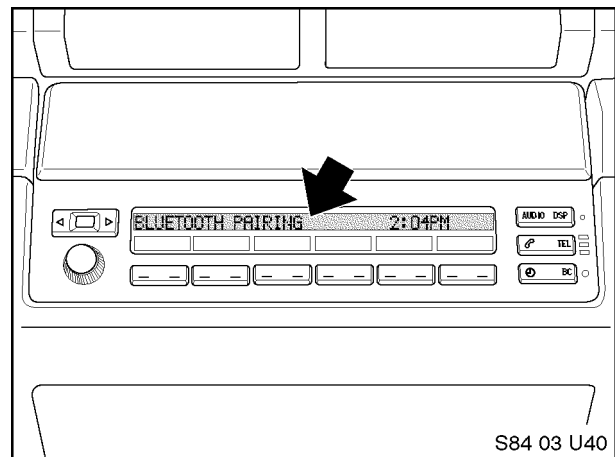
1. Depress the pairing button for at least 1 second prior to switching on the ignition and continue to hold the button down for approximately 2-3 seconds after the ignition is turned on.
2. Release the button.

3. Shortly after releasing the button the Radio or Board Monitor display should look like one of the following:



#### a. Board Monitor Display:

- "Bluetooth Pairing" displayed.
- Green, Yellow and Red LEDs on the right side of the unit are flashing which indicates that the ULF is searching for available Bluetooth™ devices



#### b. MID Display:

- "BT Pairing" display which indicates that the ULF is searching for available Bluetooth™ devices.
- Green, Yellow and Red LEDs on the right side of the unit are flashing which indicates that the ULF is searching for available Bluetooth™ devices

4. Activate the search function of the phone as indicated below.

### ON PHONE:

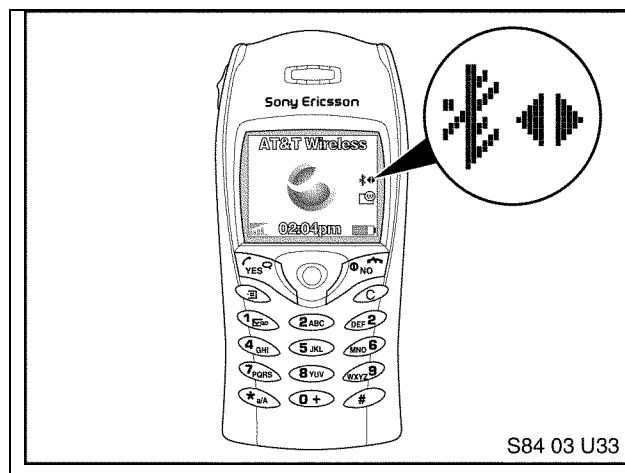
1. Locate the connection/settings menu and select Bluetooth®.
2. Select the response that will activate the Bluetooth® feature of the phone.
3. Next select a menu option that will allow you to "Discover" or "Search" for active Bluetooth® devices.



4. If the phone identifies/finds a device select it and follow the indicated steps to complete the pairing process.
5. Once the phone is successfully paired to the device cycle the ignition switch off and back on and the devices should wirelessly connect within 30 seconds. When the connection is established the phone will display a connection symbol.

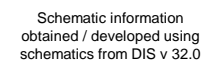
*The following steps are an example of the pairing procedure that must be initiated to pair the Sony Ericsson T68i phone to the ULF Control Module.*

1. Press the menu button.
2. Select "Connect".
3. Select option 3: "Bluetooth".
4. Select option 4: "Options".
5. Select option 1: "Operation mode" and set to "On" or "Automatic".
6. Go back one step by pressing the red phone button.
7. Select option 3: "Discover".
  - Mobile Phone display shows "Searching"
8. Select "BMW ....." in upcoming list.
9. Select option 1: "Add to paired"
10. Enter password (= ULF passkey) located on ULF Control Module in the rear of the vehicle or on the Passkey Reference Card.
  - Mobile Phone display shows 'BMW ..... Pairing'
  - Mobile Phone display shows 'Pairing Successful'
  - Board Monitor display shows 'Pairing succeeded' for 3 seconds
11. Enter device name.
12. Mobile Phone display shows "Added to paired devices".
13. Quit menu by pressing the red phone/NO button for several seconds.



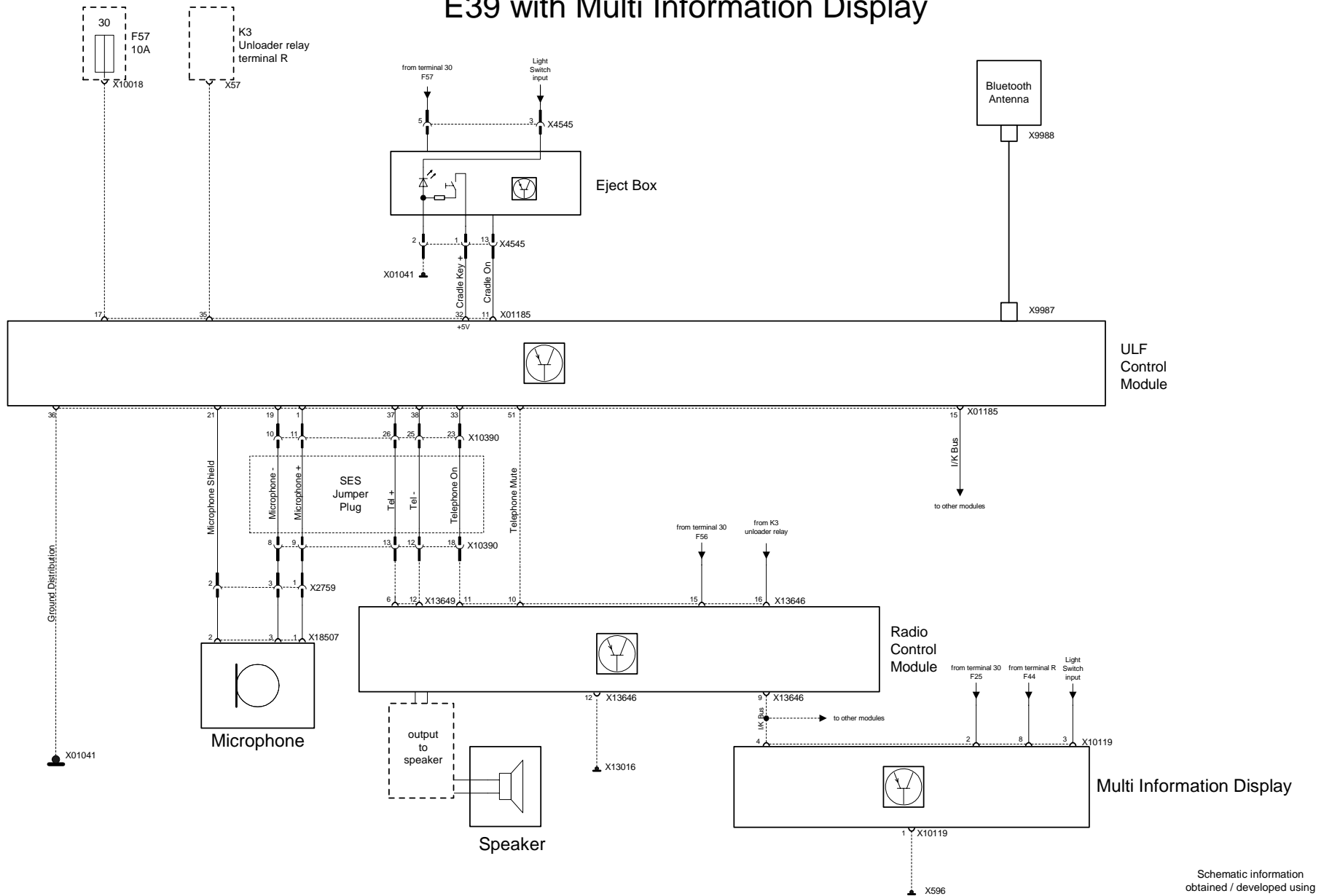
14. Once the phone is successfully paired to the device cycle the ignition switch off and back on.
15. The devices should wirelessly connect within 30 seconds. The connection is established when the phone displays the symbols indicated, on the right side of the screen.

**Note:** Shortly after turning on the ignition and the Bluetooth<sup>®</sup> connection is identified, the phone may display a message asking if the connection should be established/accepted. The connection authorization request will always occur unless the setting on the phone is modified to allow automatic connection every time, please refer to the user's manual of the phone to determine how to change this setting.



# ULF Wiring Schematic

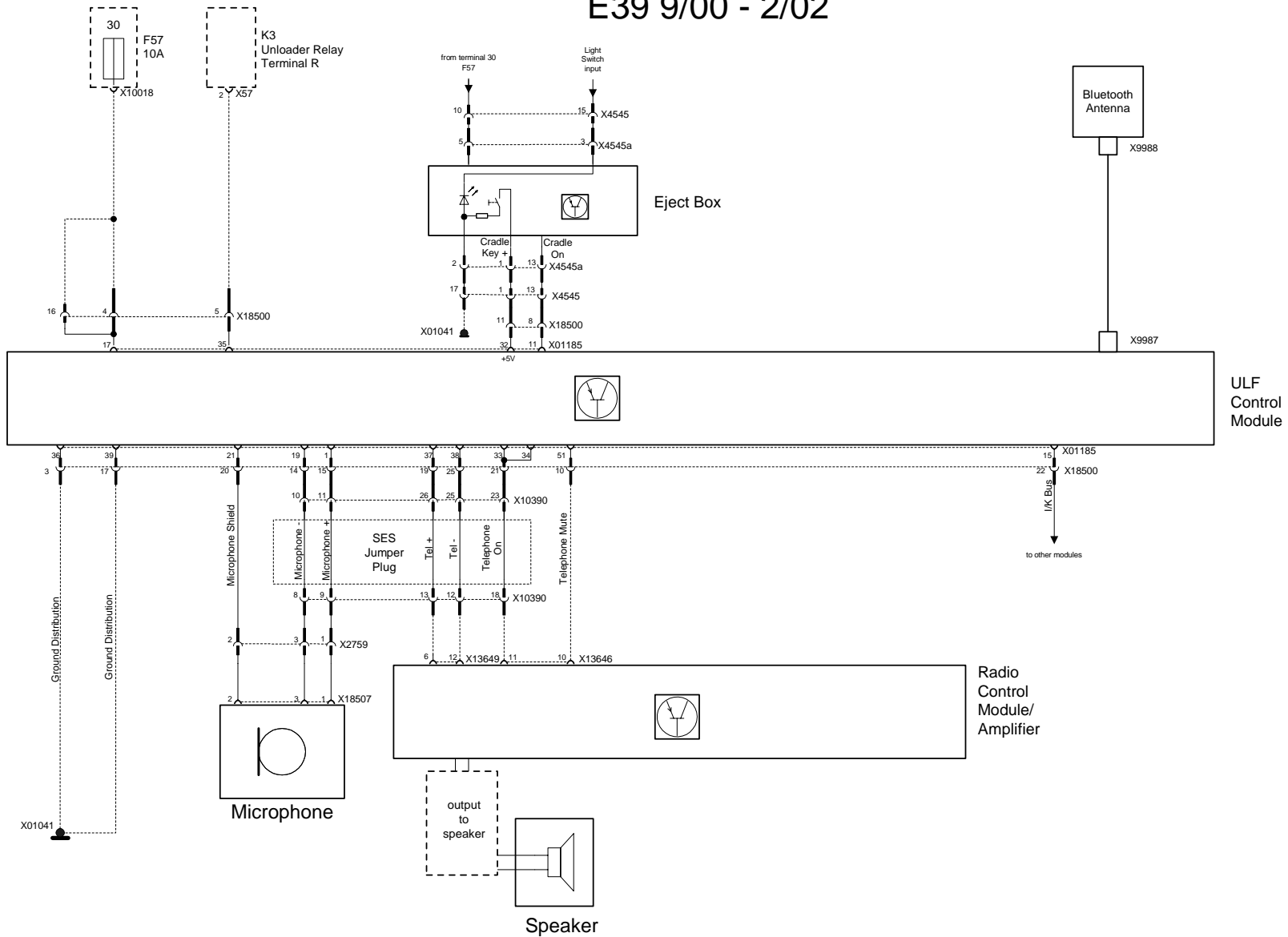
## E39 with Multi Information Display



Schematic information  
obtained / developed using  
schematics from DIS v 32.0

# ULF Wiring Schematic

## E39 9/00 - 2/02



Schematic information  
obtained / developed using  
schematics from DIS v 37.0