SECTION : 419-09 Bluetooth Phone Module (BPM)

VEHICLE APPLICATION : 2008.0 Falcon

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DESCRIPTION AND OPERATION

Bluetooth Phone Module

The Bluetooth Phone Module (BPM) provides “hands-free” in-vehicle communication via a bluetooth communication link between a user’s mobile phone and the vehicle in which the BPM is installed.

The Bluetooth Phone Module is a fully integrated sub-module of the Interior Command Centre (ICC). It outputs an audio signal to the Audio Control Module (ACM), which is ultimately heard by the user via the vehicle speakers. Audio input from the user is captured via the vehicle microphone which is directly connected to the BPM. The BPM is controlled via the phone button on the vehicle steering wheel and the Front Display Interface Module (FDIM), which also displays the BPM functionality to the user.

The BPM is fully compliant and qualified to the following Bluetooth specifications:

- Bluetooth Core Specification v1.2
- Hands-free profile v1.0
- GAP (Generic Access Profile) v1.1
- SPP (Serial Port Profile) v1.1.

BPM Handling and Storage

1. The BPM must be handled appropriately.
2. Warranty is void if BPM is dropped, handled roughly or treated outside of these guidelines.
3. At no stage can the BPM be shocked or excessively vibrated.
4. The BPM contains many delicate electrical components. Special care must be taken. The following are important:
   - DO NOT touch the pins of BPM connector.
   - AVOID all contact with dirt, dust, metal flakes, and metal shavings.
5. The BPM is sensitive to Electro Static Discharge. Avoid all contact with static electricity and all precautions must be undertaken to ensure adequate grounding of the repair technician and the BPM outside of the vehicle environment to avoid ESD damage.
6. Avoid all contact with any liquids: soft drinks, water, hot drinks, alcohol, etc. BPM electronic components will be damaged by any contact with liquids.
7. The BPM is not to be disassembled.
8. The BPM storage temperature is never to exceed the range -40°C to +85°C.
9. Care should be taken when removing and installing the BPM to the vehicle, as excessive force may damage the unit.

DIAGNOSIS AND TESTING

Bluetooth Phone Module

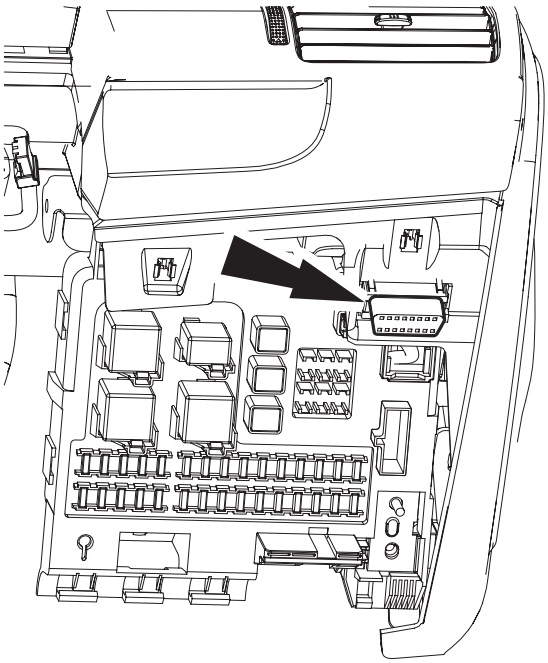
Principles of Operation

The BPM (Bluetooth Phone Module) functions are controlled by the steering wheel phone button, the piano keys on the FDIM (Front Display Interface Module) and by a paired and connected phone. The vehicle microphone is connected directly to the BPM and the BPM Audio outputs are connected directly to the Audio Control Module (ACM). The control of the BPM is accessed via the Front Display Interface Module (FDIM) and communicated to the BPM over MS-CAN.

Please refer to the Vehicle User Manual for a detailed description of the BPM functionality.

Please note this diagnostic sections is based on the assumption that no external phone kit has been fitted to the vehicle.

For detailed instructions regarding the On Demand Self Test and reading DTCs, please refer to section 415-00.



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DTC Chart

DTC	Description	Possible Causes	Action
B1342	ECU is Faulted	Internal ECU failure	Replace BPM
U0256	Lost Communication With Front Display Interface Module (FDIM)	Loss of Communications with FDIM.	Check BPM connector wiring Check FDIM functionality
U0184	Lost Communication With Radio (ACM)	Loss of Communications with Radio	Check BPM connector wiring Check ACM functionality
B1318	Battery Voltage Low	Set when Battery Voltage is below 10 volts for greater than 10 seconds.	Check BPM connector wiring Check Battery Voltage
B1038	Microphone Input Circuit Failure	Microphone is NOT connected to the BPM or the microphone is faulty	Check microphone wiring into BPM Reconnect or replace Microphone
B2477	Vehicle Configuration Failure	Set if Vehicle Configuration data has not been programmed	Check VIN number is correct. Perform BPM PMI and enter correct VIN number
C2784	RAM Checksum Failure	Set if internal BPM RAM Checksum fails	Replace BPM
B2207	ROM Checksum Failure	Set if internal BPM ROM Check fails	Replace BPM
B2900	VIN Mismatch	No VIN or Incorrect VIN has been programmed BPM or ACM	Verify correct VIN is programmed into ACM. Perform BPM PMI and enter correct VIN number

PID Chart

Command	Description
CCNT_BPM (0200)	Returns number of continuous diagnostic trouble codes (DTC) set
ODDTC_BPM (0202)	Returns number of trouble codes set during on-demand diagnostic routines
ECU_State (D100)	Returns current ECU diagnostic state
SEC_STAT_BPM (8213)	Security Status
BTH_CONTD (9103)	Bluetooth Reception Signal Strength

Symptom Chart

Condition	Possible Sources	Action
Phone Menu does not appear in FDIM Main Menu	* Wiring fault * BPM fault * FDIM fault	*Refer to service procedure Phone Menu Fault. (Test A).
Phone does not Pair to BPM	* BPM fault * Phone fault	*Refer to service procedure Pairing Fault. (Test B).
Call waiting does not work on BPM	* Phone fault * Phone Network fault	*Use a different Phone *Change Phone Network
BPM to Phone Connection drops out	* Wiring fault * BPM fault * Phone fault	*Refer to service procedure Connection Fault. (Test C).
Phone Button does not work	* Phone Button fault * Wiring fault * ACM fault * BPM fault	*Refer to service procedure Phone Button Fault. (Test D).
Microphone does not work during a call	* Wiring fault * Microphone fault * BPM fault * Phone fault * Phone Network fault	
*Far-end Phone fault	* Refer to service procedure Microphone Fault. (Test E).	
Vehicle speakers do not work during a call	* Wiring fault * ACM fault * Speaker fault * BPM fault * Phone fault * Phone Network fault * Far-end Phone fault	*Refer to service procedure Speaker Fault. (Test F).

Service Procedures

Service Procedure	Description
Phone Menu Fault (Test A)	Identifies phone menu missing faults
Pairing Fault (Test B)	Identifies pairing faults
Connection Fault (Test C)	Identifies connection faults
Phone Button Fault (Test D)	Identifies phone button faults
Microphone Fault (Test E)	Identifies microphone faults
Speaker Fault (Test F)	Identifies speaker faults

TEST A: PHONE MENU FAULT

Test Step		Result/Action to Take
A1		
	* Turn the ignition to RUN. * Is the Phone option available in the main menu?	**Yes** Perform Self test and check DTC's and PID BTH_CONTD rectify using DTC chart **No** Go to A2.
A2		
	* Check FDM and ACM are configured for Bluetooth (BPM Enabled). * Set audio system to radio selecting a strong station. * Press steering wheel Phone button. * Does radio mute?	**Yes** ACM Not configured for BPM. Rectify through Module Programming- Personalisation **No** Go to A3.
A3		
	* Using PDS/IDS Check FDM is configured for Bluetooth (BPM) * Is BPM Fitted?	**No** FDIM Not configured for BPM. Rectify through Module Programming- Personalisation **Yes** Return BPM Module

TEST B: PAIRING FAULT

Test Step		Result/Action to Take
B1		
	* Turn the ignition to RUN. * Using PDS/IDS Check for DTC's and perform BPM Selftest. * Are any DTC's set?	**Yes** Check DTC's and PID BTH_ CONTD rectify using DTC chart **No** Go to B2.
B2		
	* Try paring to the BPM using an "Approved Phone" listed on the Ford website following paring procedure in owners manual. * Does the "Approved Phone" pair?	**No** Return BPM (See Note)

NOTE: While all care and effort has been taken to ensure that the BPM is compatible with as many phones as possible, it is inevitable that some Bluetooth enabled phones will not work with the BPM.

If the BPM suffers a connection or pairing fault, with an “Approved Phone”, then the BPM shall be returned with a list of the following details of the user’s phone, securely attached to the BPM:

- Make
- Model
- Hardware Version No.
- Software Version No.
- Brief Problem Description e.g.” Connection failing after approximately 5 minutes when phone is in call, phone located in glove box.”

In the event that a user’s phone is NOT listed as an “Approved Phone” on the Ford website and the BPM will pair with a phone from the “Approved Phone” list, then the BPM shall NOT be returned.

TEST C: CONNECTION FAULT

Test Step		Result/Action to Take
C1		
	* Turn the ignition to RUN. * Using PDS/IDS Check for DTC’s and perform BPM Selftest * Are any DTC’s set?	**Yes** Check DTC’s and PID BTH_CONTD rectify using DTC chart **No** Go to C2.
C2		
	* Establish a call using the “Approved Phone” ensuring that the phone has good signal strength and full battery. Move the phone within the vehicle cabin monitoring the Bluetooth connection via the Bluetooth connection icon. * Does the “Approved Phone” suffer from Bluetooth drop outs?	**Yes** Return BPM (See Note)

If the BPM suffers a connection or pairing fault, with an “Approved Phone”, then the BPM shall be returned with a list of the following details of the user’s phone, securely attached to the BPM:

- Make
- Model
- Hardware Version No.
- Software Version No.
- Brief Problem Description e.g.” Connection failing after approximately 5 minutes when phone is in call, phone located in glove box.”

TEST D: Phone Button FAULT

Test Step		Result/Action to Take
D1		
	* Turn the ignition to RUN. * Using PDS/IDS Check for DTC's and perform BPM Selftest * Are any DTC's set?	**Yes** Check DTC's rectify using DTC chart **No** Go to D2.
D2		
	* Turn the ignition to RUN. * Using PDS/IDS Check ACM for DTC's. * Is the ACM self test ok with no DTC's set	**Yes** Go to D3. **No** Follow ACM procedures
D3		
	* Check ACM are configured for Bluetooth (BPM Enabled). * Set audio system to radio selecting a strong station. * Press steering wheel Phone button * Does radio mute?	**Yes** ACM Not configured for BPM. Rectify through Module Programming- Personalisation **No** Go to D4.
D4		
	* Try paring to the BPM using an "Approved Phone" listed on the Ford website * Does the "Approved Phone" pair?	**Yes** Go to D5. **No** Perform Test B
D5		
	* Try making a call from the BPM using the "Approved Phone" via the phone button * Does the phone button work?	**No** Return BPM

TEST E: Microphone FAULT

Test Step		Result/Action to Take
E1		
	* Turn the ignition to RUN. * Using PDS/IDS Check for DTC's and perform BPM Selftest * Are any DTC's set?	**Yes** Check DTC's rectify using DTC chart **No** Go to E2.
E2		
	* Try paring to the BPM using an "Approved Phone" listed on the Ford website * Does the "Approved Phone" pair?	**Yes** Go to E3. **No** Perform Test B
E3		
	* Try making a call from the BPM using the "Approved Phone" via the phone button * Does tbe "Far-End Phone" user hear in-vehicle voice through vehicle microphone in overhead console (Not phone microphone)?	**No** Go to E4
E4		
	* Check wiring between BPM and microphone * Check Audio wiring between BPM and ACM	**No** Return BPM

TEST F: Speaker FAULT

Test Step		Result/Action to Take
F1		
	* Turn the ignition to RUN. * Using PDS/IDS Check for DTC's and perform BPM Selftest * Are any DTC's set?	**Yes** Check DTC's rectify using DTC chart **No** Go to F2.
F2		
	* Turn the ignition to RUN. * Using PDS/IDS Check for DTC's and perform BPM Selftest * Are any DTC's set or did self test Fail?	**Yes** Follow ACM procedures **No** Go to F3.
F3		
	* Try paring to the BPM using an "Approved Phone" listed on the Ford website * Does the "Approved Phone" pair?	**Yes** Go to F4. **No** Perform Test B
F4		
	* Try making a call from the BPM using the "Approved Phone" via the phone button * Can you hear the voice from far-end telephone through speakers?	**Yes** BPM is operational **No** Go to F5.
F5		
	* Check Audio wiring between BPM and ACM * Is audio wiring ok?	**Yes** Go to F6 **No** Rectify wiring issue and retest.
F6		
	* Perform Speaker test from Audio section of the workshop manual * From this test are the speakers functional?	**Yes** Return BPM

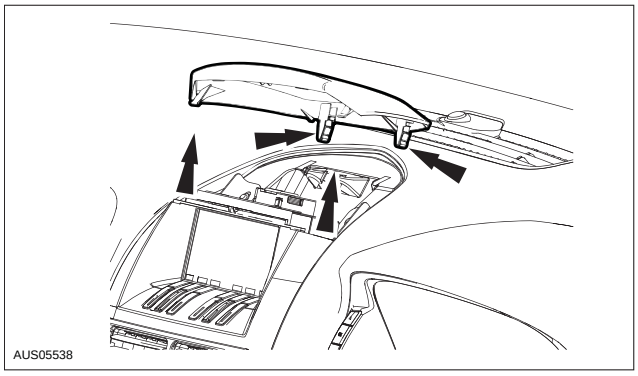
REMOVAL AND INSTALLATION

Bluetooth Module

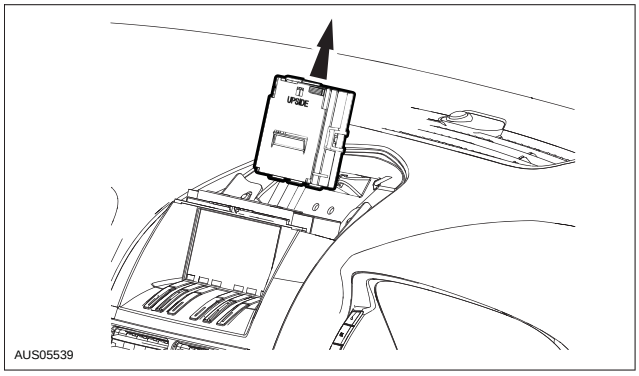
Special Tool(s)	
NOT AVAILABLE AT TIME OF PRINT TBA	ICC cap removal tool (4489-3)

Removal

1. Connect an IDS unit and perform a 'Programmable Module Installation' for the Bluetooth Phone Module (BPM). When prompted to remove the module continue on.
2. Turn off ignition and disconnect the battery.
3. Remove the ICC Cap. Refer to section 413-08.

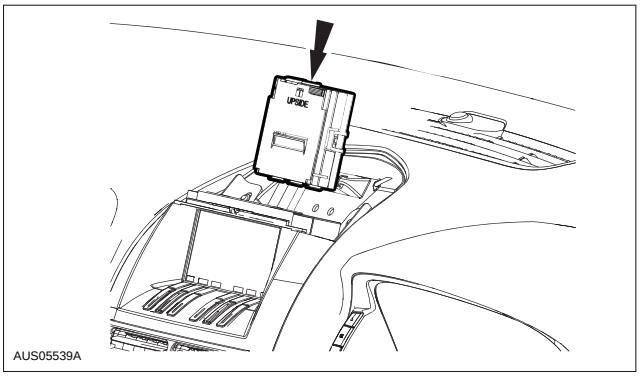


4. Disconnect the Front Display Module (FDM) connectors and move aside.
5. Disconnect the BPM connector.
6. Pull the BPM from the ICC.



Installation

1. Carefully insert Bluetooth module into position using the rails on the back of the display module as a guide. Take care that the orientation of the unit is correct as shown in diagram. When the module is seated properly, an audible click should be heard from the attachment clip.



NOTE: If installing a new BPM jumper cable, take note of the following steps:
- Pass the jumper cable down the left hand side of the display module.
- Connect the jumper cable below glove box and connect to the main harness.

2. Connect the BPM connector.
3. Connect the FDM connectors.
4. Install the ICC Cap. Refer to section 413-08.
5. Connect the battery.
6. With the IDS, wait for the VCM to reconnect and proceed with completing the 'Programmable Module Installation' for the BPM. Follow the on screen instructions and enter the vehicle VIN if prompted.