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2009 FORD Mondeo Sedan OEM Service and Repair Workshop Manual

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OBCC (Off-Board Charger Controller) U3000:48	Control Module: Supervision Software Failure	This DTC (diagnostic trouble code) sets if the BECM (battery energy control module) software detects the supervision software has failed.
OBCC (Off-Board Charger Controller) U3000:64	Control Module: Signal Plausibility Failure	This DTC (diagnostic trouble code) sets if the OBCC (Off-Board Charger Controller) detects an signal plausibility failure.

Possible Sources

- DC (direct current) fast charge EVSE
- OBCC (Off-Board Charger Controller)

BN1 RETRIEVE ALL THE OBCC (OFF-BOARD CHARGER CONTROLLER) DTCS

- Ignition ON.
- Using the scan tool, clear the OBCC (Off-Board Charger Controller) Diagnostic Trouble Codes (DTCs).
- CONNECT the vehicle to a known good DC (direct current) fast charge EVSE (Electric Vehicle Supply Equipment) and attempt to charge the vehicle for a minimum of 2 minutes.
- DISCONNECT the DC (direct current) fast charge EVSE (Electric Vehicle Supply Equipment) from the vehicle.
- Using the scan tool, perform OBCC (Off-Board Charger Controller) self-test.

Is DTC (diagnostic trouble code) U3000:04, U3000:16, U3000:41, U3000:45, U3000:48 and/or U3000:64 present?

Yes	CHECK OASIS (Online Automotive Service Information System) for any applicable service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new OBCC (Off-Board Charger Controller) . REFER to: Off-Board Charger Controller (OBCC) - Electric (414-03B High Voltage Battery Charging System, Removal and Installation).

No	If charging is successful and the DTC (diagnostic trouble code) does not repeat advise customer they used a malfunctioning DC (direct current) fast charge Electric Vehicle Supply Equipment (EVSE).

- Using the scan tool, clear the OBCC (Off-Board Charger Controller) Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Using the scan tool, perform OBCC (Off-Board Charger Controller) self-test.

Is DTC (diagnostic trouble code) U3000:49 present?

Yes	CHECK OASIS (Online Automotive Service Information System) for any applicable service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new OBCC (Off-Board Charger Controller) . REFER to: Off-Board Charger Controller (OBCC) - Electric (414-03B High Voltage Battery Charging System, Removal and Installation).
No	GO to BO3

BO3 CONNECT THE VEHICLE TO A KNOWN GOOD DC (DIRECT CURRENT) FAST CHARGE STATION

- CONNECT the vehicle to a known good DC (direct current) fast charge EVSE (Electric Vehicle Supply Equipment) and attempt to charge the vehicle for a minimum of 2 minutes.
- STOP the DC (direct current) fast charge session using the normal stop button and DISCONNECT the EVSE from the vehicle charge port.
- Using the scan tool, perform OBCC (Off-Board Charger Controller) self-test.

Is DTC (diagnostic trouble code) U3000:49 present?

Yes	CHECK OASIS (Online Automotive Service Information System) for any applicable service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new OBCC (Off-Board Charger Controller) . REFER to: Off-Board Charger Controller (OBCC) - Electric (414-03B High Voltage Battery Charging System, Removal and Installation).
No	If charging is successful and the DTC (diagnostic trouble code) does not repeat the concern is not present at this time.

- Ignition ON.
- Using a diagnostic scan tool, clear all CMDTCs.
- Place the vehicle into ready to drive mode. (Ready Indicator Light ON) for a minimum for 2 minutes.
- Ignition OFF.
- Ignition ON.
- Using a diagnostic scan tool, perform a CMDTCs self test.

Are DTC (diagnostic trouble code) s U3003:16 or U3003:17 present in more than 1 module?

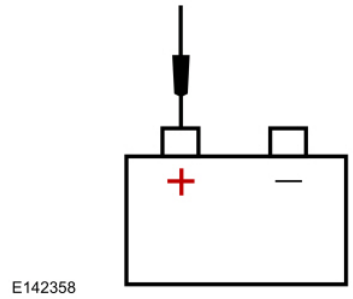
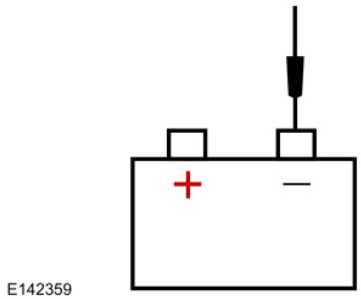
Yes	If DTC (diagnostic trouble code) s are present only in the SOBDM (secondary on-board diagnostic control module A) and OBCC (Off-Board Charger Controller) ADDRESS the SOBDM (secondary on-board diagnostic control module A) DTC (diagnostic trouble code) s first. GO to Pinpoint Test BA If DTC (diagnostic trouble code) s are present on multiple modules CARRY OUT self-test of the DCDC (direct current/direct current converter control module) . If a DTC (diagnostic trouble code) is present, REFER to: Direct Current/Direct Current (DC/DC) Converter Control Module - Electric (414-05 Voltage Converter/Inverter, Diagnosis and Testing). If the DCDC (direct current/direct current converter control module) passes the self test with no DTC (diagnostic trouble code) s, GO to BP2
No	If no DTC (diagnostic trouble code) s are present the concern is not present at this time. For DTC (diagnostic trouble code) U3003:16 or U3003:17 present only in the OBCC (Off-Board Charger Controller) , GO to BP5

BP2 CHECK THE 12-VOLT BATTERY

- Carry out the 12-volt battery condition test.
  REFER to: Battery - Electric(414-01 Battery, Mounting and Cables, Diagnosis and Testing).

Did the 12-volt battery pass the condition test?

Yes	GO to BP3
No	INSTALL a new 12-volt battery. REFER to: Battery - Electric (414-01 Battery, Mounting and Cables, Removal and Installation).

Is the voltage 13-14.9 volts?

Yes	GO to BP5

No	CARRY OUT self-test of the DCDC (direct current/direct current converter control module) . REFER to: Direct Current/Direct Current (DC/DC) Converter Control Module - Electric (414-05 Voltage Converter/Inverter, Diagnosis and Testing).

BP5 CHECK BATTERY VOLTAGE OBCC (OFF-BOARD CHARGER CONTROLLER) PID (PARAMETER IDENTIFICATION) MAIN ECU VOLTAGE SUPPLY (MAINECUV)

- Access the OBCC (Off-Board Charger Controller) and monitor the MAINECUV (Main ECU voltage supply) (V) PID (parameter identification)

Does the PID (parameter identification) read 8-16 volts?

Yes	GO to BP10

No	If the PID (parameter identification) reads less than 8 volts or greater than 16 volts, GO to BP6

BP6 MEASURE OBCC (OFF-BOARD CHARGER CONTROLLER) INPUT VOLTAGE

- Ignition OFF.
- Disconnect OBCC (Off-Board Charger Controller) C1012 .
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1012-1	Ω	C1821A-H3

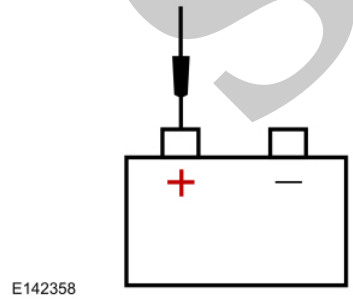
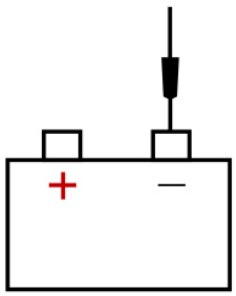
Is the resistance less than 3 ohms?

Yes	CHECK OASIS (Online Automotive Service Information System) for any applicable service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new SOBDM (secondary on-board diagnostic control module A) . REFER to: Secondary On-Board Diagnostic Control Module A (SOBDM) - Electric (414-03B High Voltage Battery Charging System, Removal and Installation).

No	REPAIR the circuit.

BP9 CHECK THE OBCC (OFF-BOARD CHARGER CONTROLLER) GROUND

- Measure:

Positive Lead	Measurement / Action	Negative Lead
 E142358	V	 E142359

- Measure:

Yes	CHECK OASIS (Online Automotive Service Information System) for any applicable service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new OBCC (Off-Board Charger Controller) . REFER to: Off-Board Charger Controller (OBCC) - Electric (414-03B High Voltage Battery Charging System, Removal and Installation).

No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

PINPOINT TEST BQ : A MODULE DOES NOT RESPOND TO A DIAGNOSTIC SCAN TOOL AFTER ATTEMPTING TO PROGRAM OR CONFIGURE THE MODULE

Normal Operation and Fault Conditions

A modules calibration file is a complex data file that tells the module how to operate similar to a computers operating system. When programming or configuring a module the scan tool erases the current file and uploads the same or newer calibration file to the module's EEPROM (electrically erasable programmable read only memory) chip. During the file upload an error occurs during the flash the module will be in an unusable state and appear to be faulty and not communicate with the scan tool. If this occurs the cause of the error or interruption either related to the vehicle or scan tool (e.g. low 12-volt battery, faulty cable etc..) must first be addressed and module programming can be attempted again. If module completes successfully the full the module will be returned to its previous functional state of operation.

Possible Sources

- 12-volt Battery
- FDRS (Ford Diagnosis and Repair System)
- VCM (Vehicle Communication Module)
- DLC (data link connector) cable

BQ1 CHECK THE MODULES ON THE COMMUNICATION NETWORK

- Ignition ON.
- Using a diagnostic scan tool, perform a network test and record the results.

Do all the vehicle equipped modules pass the network test?

Yes	The concern is not present at this time.

Normal Operation and Fault Conditions When the EVSE is plugged into the vehicle charge port the SOBDM (secondary on-board diagnostic control module A) and OBCC (Off-Board Charger Controller) monitors the charging system for faults. If a fault is detected that affects the operation of the high voltage battery charging system SOBDM (secondary on-board diagnostic control module A) or OBCC (Off-Board Charger Controller) sends a charger service required HS-CAN (high-speed controller area network) message to illuminate the Charger Service Required indicator in the IPC (instrument panel cluster) and display a message notification. **Possible Sources**

- 12-volt battery
- Wiring, terminals or connectors
- Wall power outlet
- Electric Vehicle Supply Equipment (EVSE)
- High voltage cables
- Vehicle charge port

BR1 CHECK BECM (BATTERY ENERGY CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Ignition ON.
- Using a diagnostic scan tool, perform BECM (battery energy control module) self-test.

Is BECM (battery energy control module) DTC (diagnostic trouble code) P2C85:00 present?

Yes	ADDRESS the BECM (battery energy control module) DTC (diagnostic trouble code) . REFER to: High Voltage Battery, Mounting and Cables - Electric (414-03A High Voltage Battery, Mounting and Cables, Diagnosis and Testing).

No	GO to BR2

BR2 CHECK SOBDM (SECONDARY ON-BOARD DIAGNOSTIC CONTROL MODULE A) AND OBCC (OFF-BOARD CHARGER CONTROLLER) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, perform SOBDM (secondary on-board diagnostic control module A) self-test and record any DTC (diagnostic trouble code) s.
- Using a diagnostic scan tool, perform OBCC (Off-Board Charger Controller) self-test and record any DTC (diagnostic trouble code) s

Are any DTC (diagnostic trouble code) s present?

Yes	ADDRESS the DTC (diagnostic trouble code) s. Refer to the DTC (diagnostic trouble code) chart in this section.

- CONNECT the vehicle included electric vehicle supply equipment (EVSE) and wall outlet connector to a known good 120V or 240V wall outlet and wait 1 minute.

Is the amber fault indicator - OFF, blue status indicator - OFF, and red trouble indicator - OFF when connected to power outlet?

Yes	If the blue indicator is not illuminated disconnect the EVSE from the wall outlet and connect to another wall outlet. If the concern is still present swap the EVSE cord connector from the 120V or 220V (use the 240V connector if using 120V or vise versa) and re-connect to another known good corresponding wall outlet. If the concern is corrected replaced the faulty EVSE wall plug connector. If the concern is still present replace the customers Electric Vehicle Supply Equipment (EVSE).

No	The concern is not at this time. Advise customer they may have used a faulty wall outlet or the wall plug connector was not fully seated.

PINPOINT TEST BT : ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE) DISPLAYS FOLLOWING FAULT: AMBER FAULT INDICATOR - ON, BLUE STATUS INDICATOR - OFF, RED TROUBLE INDICATOR - OFF

Refer to Wiring Diagrams Cell 12for schematic and connector information.

Normal Operation and Fault Conditions The Electric Vehicle Supply Equipment (EVSE) is supplied with the vehicle when purchased and used to charge the high voltage battery. The Electric Vehicle Supply Equipment (EVSE) monitors for faults. The blue status indicator indicates the Electric Vehicle Supply Equipment (EVSE) is receiving power from the wall outlet and during normal operation it will illuminate solid or flash every two seconds during charging. The reasons the Electric Vehicle Supply Equipment (EVSE) does illuminates a Amber fault indicator - ON, Blue status indicator - OFF, Red trouble indicator - OFF; wall outlet, 120V or 220V wall outlet connector, over temperature, or an Electric Vehicle Supply Equipment (EVSE) internal fault. **Possible Sources**

- Wall power outlet - GFI fault, voltage out of range <80V or >264V
- Vehicle charging over current fault
- 120V or 220V wall outlet connector
- Use of an extension cord
- Electric Vehicle Supply Equipment (EVSE)

NOTE

When the vehicle equipped EVSE is first plugged into a wall outlet the AMBER, BLUE and RED indicators blink once. Then the BLUE indicator turns on, followed by a blink of the RED indicator, and finally

Yes	For BECM (battery energy control module) DTC (diagnostic trouble code) s, REFER to: High Voltage Battery, Mounting and Cables - Electric (414-03A High Voltage Battery, Mounting and Cables, Diagnosis and Testing). For SOBDM (secondary on-board diagnostic control module A) DTC (diagnostic trouble code) s, REFER to the DTC (diagnostic trouble code) chart in this section.

No	GO to BT3

BT3 CONNECT THE VEHICLE INCLUDED ELECTRICAL VEHICLE SUPPLY EQUIPMENT (EVSE) TO THE VEHICLE

NOTE

The use of the included EVSE wall plug connector and a known good 240V power outlet and is recommended for this test.

- CONNECT the customer owned Electric Vehicle Supply Equipment (EVSE) to a known good power outlet and the vehicle with the high voltage battery at a recommended low state of charge (suggested below 50%) and leave the vehicle plugged in until charging is complete or until a fault occurs.

Did the amber trouble indicator illuminate solid?

Yes	The amber trouble indicator illuminates solid indicates AC (alternating current) plug temperature is above the expected limit. Repeat this pinpoint test step by connecting a known good Electric Vehicle Supply Equipment (EVSE) to the same AC (alternating current) power outlet and vehicle. If the amber trouble indicator illuminates solid the AC (alternating current) power outlet and wiring must be inspected by a licensed electrician. If the concern does not repeat replace the customers's Electric Vehicle Supply Equipment (EVSE).

No	The amber trouble indicator illuminates solid indicates AC (alternating current) plug temperature is above the expected limit. Communicate with the customer that the Electric Vehicle Supply Equipment (EVSE) is not compatible with an extension cord, power outlet adapter or any other inline device. The Electric Vehicle Supply Equipment (EVSE) requires a dedicated circuit in order to function properly. Inform the customer that a good AC (alternating current) power outlet is required to maintain the appropriate plug temperature during charging and the home outlet and