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2013 FORD Mondeo Hatchback OEM Service and Repair Workshop Manual

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Normal Operation and Fault Conditions When the ignition is turned on, the SOBDMC (secondary on-board diagnostic control module C) also known as the Inverter System Controller (ISC) sends a signal via low side driver to close the contactor relay located in the BCMC (body control module C) . On PHEV (plug-in hybrid electric vehicle) when the ignition is off and an EVSE is connected to the vehicle the SOBDM (secondary on-board diagnostic control module A) also known as the Battery Charger Control Module (BCCM) sends a signal via low side driver to close the contactor relay located in the BCMC (body control module C) . The contactor relay sends a 12-volt supply voltage to the BECM (battery energy control module) and the high voltage battery junction box. The BECM (battery energy control module) monitors the contactor control supply circuit for faults. If this voltage is low or drops while the contactor close request message is being received via the HS-CAN, DTC (diagnostic trouble code) U3012:00 sets. If a fault is detected the BECM (battery energy control module) requests the stop stop safely hazard (red triangle) warning indicator illuminates and the high voltage battery will shutdown impacting electric motor propulsion and/or the vehicle will not start. **DTC Fault Trigger Conditions**

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
BECM (battery energy control module) U3012:00	Control Module Improper Wake-up Performance: No Sub Type Information	Sets when BECM (battery energy control module) senses the contactor control supply circuit voltage is low while BECM (battery energy control module) is commanding any of the contactors closed.

Possible Sources

- Low voltage service disconnect
- 12-volt battery
- Wiring, terminals or connectors
- BCMC (body control module C)
- BECM (battery energy control module)
- SOBDMC (secondary on-board diagnostic control module C)
- SOBDM (secondary on-board diagnostic control module A)

Visual Inspection and Pre-checks

- Inspect the Low Voltage Service Disconnect (LVSD) for being in the closed position.

WARNING

To prevent the risk of high-voltage shock, always follow precisely all warnings and service instructions, including instructions to depower the system. The high-voltage system utilizes approximately 450 volts DC, provided through high-voltage cables to its components and modules. The high-voltage cables and wiring are identified by orange harness tape or orange wire covering. All high-voltage components are

AF3 TEST SYSTEM WITH A KNOWN GOOD EVSE (ELECTRIC VEHICLE SUPPLY EQUIPMENT) CONNECTED TO THE VEHICLE

- Ignition OFF.
- CONNECT a known good EVSE to a AC (alternating current) power outlet and the vehicle charge port.
- Wait 1 minute.
- Ignition ON.
- Using a diagnostic scan tool, perform BECM (battery energy control module) self-test.

Is DTC (diagnostic trouble code) U3012:00 present?

Yes	GO to AF4

No	The concern is not present at this time.

AF4 CHECK FOR SOBDM (SECONDARY ON-BOARD DIAGNOSTIC CONTROL MODULE A) DTCS

- Using a diagnostic scan tool, perform SOBDM (secondary on-board diagnostic control module A) self-test.

Are any DTC (diagnostic trouble code) s present?

Yes	ADDRESS the SOBDM (secondary on-board diagnostic control module A) DTC (diagnostic trouble code) s. REFER to: High Voltage Battery Charging System - Electric (414-03B High Voltage Battery Charging System, Diagnosis and Testing).

No	GO to AF5

AF5 CHECK THE SOBDM (SECONDARY ON-BOARD DIAGNOSTIC CONTROL MODULE A) CONTACTOR CONTROL RELAY CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect BCMC (body control module C) C1035C .
- Disconnect SOBDM (secondary on-board diagnostic control module A) C1821A .
- Measure:

Positive Lead	Measurement / Action	Negative Lead

Is voltage within 0.5V of the voltage measured at the 12V battery with the ignition ON and 0V with the ignition OFF?

Yes	GO to AF18
No	GO to AF7

AF7 INSPECT THE LOW VOLTAGE SERVICE DISCONNECT FOR BEING FULLY SEATED

- Inspect the service disconnect C1001 for being fully seated.
  REFER to: High Voltage System De-energizing - Electric(414-03A High Voltage Battery, Mounting and Cables, General Procedures).

Is the service disconnect fully seated?

Yes	GO to AF9
No	Reseat the service disconnect. GO to AF8

AF8 CHECK THE BECM (BATTERY ENERGY CONTROL MODULE) DTCS

- Ignition ON.
- Using a diagnostic scan tool, clear the BECM (battery energy control module) Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Using a diagnostic scan tool, perform BECM (battery energy control module) self-test.

Is DTC (diagnostic trouble code) U3012:00 present?

Yes	GO to AF8
No	The concern is not present at this time and/or was the result of the service disconnect not being fully seated.

- Using a diagnostic scan tool, perform SOBDMC (secondary on-board diagnostic control module C) self-test.

Are any DTC (diagnostic trouble code) s present?

Yes	ADDRESS the SOBDMC (secondary on-board diagnostic control module C) DTC (diagnostic trouble code) s. REFER to: Rear Electric Drive Assembly (302-02 Rear Electric Drive Assembly, Diagnosis and Testing).

No	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 SOBDMC (secondary on-board diagnostic control module C) . REFER to: Inverter System Controller [SOBDMC] (302-02 Rear Electric Drive Assembly, Removal and Installation).

AF11 CHECK THE CONTACTOR RELAY CONTROL CIRCUIT SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect BCMC (body control module C) C1035C .
- Disconnect SOBDMC (secondary on-board diagnostic control module C) C3471A .
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1035C-35	V⎓	Ground

Is any voltage present?

Yes	REPAIR the circuit.

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1035C-35	Ω	C3471A-12

Is resistance less than 3 ohms?

Yes	GO to AF14

No	REPAIR the circuit.

AF14 CHECK THE BECM (BATTERY ENERGY CONTROL MODULE) CONTACTOR SUPPLY CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C144-8 (female side)	Ω	Ground

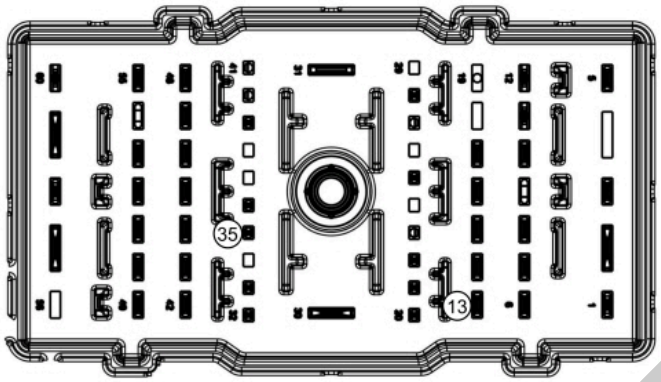
Is any voltage present?

Yes	REPAIR the circuit.

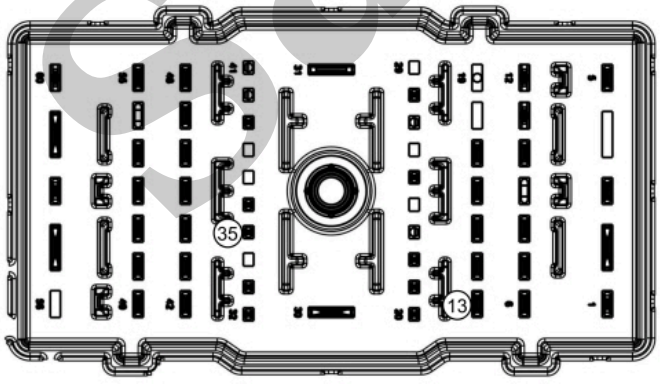
No	GO to AF15

AF15 CHECK THE CONTACTOR SUPPLY CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.

Positive Lead	Measurement / Action	Negative Lead
 E377286 C1035B - 35 (component side)		Ground

- Measure:

Positive Lead	Measurement / Action	Negative Lead
 E377286 C1035B - 13 (component side)	V	Ground

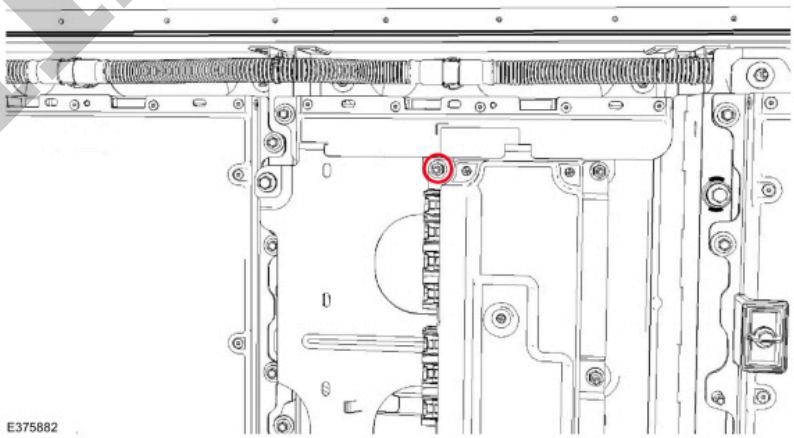
- Disconnect the 5A fused jumper.

REFER to: High Voltage Battery - Electric(414-03A High Voltage Battery, Mounting and Cables, Removal and Installation).

- Remove the high voltage battery cover.
  REFER to: High Voltage Battery Cover - Electric(414-03A High Voltage Battery, Mounting and Cables, Removal and Installation).
- Disconnect all the BECM (battery energy control module) connectors in sequence.
  REFER to: Battery Energy Control Module (BECM) - Electric(414-03A High Voltage Battery, Mounting and Cables, Removal and Installation).
- Disconnect high voltage battery junction box - negative C4815D .
- Disconnect high voltage battery junction box - positive C4815G .
- Measure:

NOTE

Any of the BECM (battery energy control module) bracket mounting nuts or high voltage battery pack case can be utilized for case ground.

Positive Lead	Measurement / Action	Negative Lead
C4816A-3	Ω	 CASE GROUND

Is the resistance greater than 10,000 ohms?

Yes	GO to AF20

	Re-install the high voltage battery cover and the high voltage battery. Repower the high voltage system. REFER to: High Voltage System De-energizing - Electric (414-03A High Voltage Battery, Mounting and Cables, General Procedures). Clear the BECM (battery energy control module) DTC's. Repeat the self-test.
No	INSTALL a new wiring harness. REFER to: High Voltage Battery Wiring Harness - Electric (414-03A High Voltage Battery, Mounting and Cables, Removal and Installation). Re-install the high voltage battery cover and the high voltage battery. Repower the high voltage system. REFER to: High Voltage System De-energizing - Electric (414-03A High Voltage Battery, Mounting and Cables, General Procedures). Clear the BECM (battery energy control module) DTC's. Repeat the self-test.

AF20 CHECK THE CONTACTOR SUPPLY CIRCUIT INSIDE THE HIGH VOLTAGE BATTERY FOR BEING OPEN

	Re-install the high voltage battery cover and the high voltage battery. Repower the high voltage system. REFER to: High Voltage System De-energizing - Electric (414-03A High Voltage Battery, Mounting and Cables, General Procedures). Clear the BECM (battery energy control module) DTC's. Repeat the self-test.
No	INSTALL a new wiring harness. REFER to: High Voltage Battery Wiring Harness - Electric (414-03A High Voltage Battery, Mounting and Cables, Removal and Installation). Re-install the high voltage battery cover and the high voltage battery. Repower the high voltage system. REFER to: High Voltage System De-energizing - Electric (414-03A High Voltage Battery, Mounting and Cables, General Procedures). Clear the BECM (battery energy control module) DTC's. Repeat the self-test.

PINPOINT TEST AG : U301B:00, U301C:00

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

Normal Operation and Fault Conditions When the ignition is turned on the SOBDMC (secondary on-board diagnostic control module C) also known as the Inverter System Controller (ISC) supplies a 12-volt wake-up signal to the BECM (battery energy control module) , DCDC (direct current/direct current converter control module) , and PCM (powertrain control module) . On PHEV (plug-in hybrid electric vehicle) or BEV (battery electric vehicle) vehicles if the ignition is off and an EVSE is connected to the vehicle the SOBDM (secondary on-board diagnostic control module A) also known as the Battery Charger Control Module (BCCM) supplies a 12-volt wake-up signal to the BECM (battery energy control module) , DCDC (direct current/direct current converter control module) , and PCM (powertrain control module) . The BECM (battery energy control module) monitors the wake-up circuit for faults setting a DTC (diagnostic trouble code) . The following Diagnostic Trouble Codes (DTCs) will illuminate the powertrain malfunction (wrench) indicator.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
BECM (battery energy control module) U301B:00	Control Module Wake-up Circuit 'A' Low: No Sub Type Information	Sets when the BECM (battery energy control module) wake-up output signal does not match the command.