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## 2013 FORD Mondeo Sedan OEM Service and Repair Workshop Manual

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Use the correct probe adapter(s) from the Flex Probe Kit when taking measurements. Failure to use the correct probe adapter(s) may damage the connector.

#### AP1 CLEAR GFM2 (GENERIC FUNCTION MODULE 2) DIAGNOSTIC TROUBLE CODES (DTCS) AND REPEAT SELF TEST

- DISCONNECT the EVSE from the vehicle charge port (if connected).
- Ignition ON.
- Using a diagnostic scan tool, clear the GFM2 (generic function module 2) DTCs.
- CONNECT the suspect EVSE to an AC (alternating current) power outlet and the vehicle charge port for a minimum of 1 minute.
- DISCONNECT the EVSE from the vehicle charge port.
- Using a diagnostic scan tool, perform GFM2 (generic function module 2) self-test.

**Is DTC (diagnostic trouble code) P0D80:00, P0D81:24 and/or P0D81:25 present?**

<b>Yes</b>	GO to <a href="#">AP2</a>
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<b>No</b>	The concern was related to a faulty EVSE being connected to the vehicle.
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#### AP2 TEST SYSTEM WITH A KNOWN GOOD EVSE CONNECTED TO THE VEHICLE

charge port.

REFER to: [Charge Port - Electric](#)

(414-03B High Voltage Battery Charging System, Removal and Installation).

#### AP4 CHECK THE HIGH VOLTAGE CABLES FOR BEING OPEN

- Disconnect GFM2 (generic function module 2) C3003B .
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1002-L1	$\Omega$	C3003B-1
C1002-L2	$\Omega$	C3003B-7

Are the resistances less than 3 ohms?

Yes

GO to [AP6](#)

No

GO to [AP5](#)

#### AP5 CHECK THE VEHICLE HIGH VOLTAGE CABLES FOR BEING OPEN

- Disconnect GFM2 (generic function module 2) INLINE C309 .
- Measure:

Positive Lead	Measurement / Action	Negative Lead
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<b>No</b>	INSTALL a new high voltage cable. REFER to: <a href="#">High Voltage Battery Cables - Electric</a> (414-03A High Voltage Battery, Mounting and Cables, Removal and Installation).
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## AP6 CHECK FOR POTENTIAL LEAKAGE ON HIGH VOLTAGE CABLES

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1002-L1	$\Omega$	Ground
C1002-L2	$\Omega$	Ground

Are the resistances greater than 30,000 ohms?

<b>Yes</b>	GO to <a href="#">AP8</a>
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<b>No</b>	GO to <a href="#">AP7</a>
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## AP7 CHECK THE VEHICLE HIGH VOLTAGE CABLE FOR POTENTIAL LEAKAGE

- Disconnect GFM2 (generic function module 2) INLINE C309 .
- Measure:

Positive Lead	Measurement / Action	Negative Lead
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<b>No</b>	<p>INSTALL a new high voltage cable.</p> <p>REFER to: <a href="#">High Voltage Battery Cables - Electric</a> (414-03A High Voltage Battery, Mounting and Cables, Removal and Installation).</p>
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## AP8 CHECK FOR CORRECT GFM2 (GENERIC FUNCTION MODULE 2) OPERATION

- Inspect GFM2 (generic function module 2) C3003B.
- Repair:
  - corrosion (install new connector or terminals – clean module pins)
  - damaged or bent pins – install new terminals/pins
  - pushed-out pins – install new pins as necessary
- Reconnect the GFM2 (generic function module 2) connector. Make sure it seats and latches correctly. Refer to visual inspection and diagnostic pre-checks.
- Repower the high voltage system.  
REFER to: [High Voltage System De-energizing - Electric](#)(414-03A High Voltage Battery, Mounting and Cables, General Procedures).
- Ignition ON.
- Using a diagnostic scan tool, clear the GFM2 (generic function module 2) DTC (diagnostic trouble code)s.
- CONNECT a known good EVSE to the vehicle charge port and wait 2 minutes.
- DISCONNECT the EVSE from the vehicle charge port.
- Using a diagnostic scan tool, perform GFM2 (generic function module 2) self-test.

### Is DTC (diagnostic trouble code) P0D80:00 and/or P0D81:25 present?

<b>Yes</b>	<p>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 GFM2 (generic function module 2) .</p> <p>REFER to: <a href="#">Generic Function Module 2 (GFM2) - Electric</a> (414-03B High Voltage Battery Charging System, Removal and Installation).</p>
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<b>No</b>	<p>The system is operating correctly at this time. The concern may have been caused by module connections. Address the root cause of any connector or pin issues.</p>
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Use the correct probe adapter(s) from the Flex Probe Kit when taking measurements. Failure to use the correct probe adapter(s) may damage the connector.

#### AQ1 CHECK PROXIMITY CIRCUIT JUMPER FOR BEING SHORTED TO GROUND

- DISCONNECT the EVSE from the vehicle charge port (if connected).
- Depower the high voltage battery.  
REFER to: [High Voltage System De-energizing - Electric](#)(414-03A High Voltage Battery, Mounting and Cables, General Procedures).
- Disconnect GFM2 (generic function module 2) C3003B .
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C3003B-5	$\Omega$	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to <a href="#">AQ2</a>
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No	REPAIR the circuit.
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#### AQ2 CHECK PROXIMITY CIRCUIT JUMPER FOR BEING OPEN

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C3003B-5	$\Omega$	C3003B-6

Is the resistance less than 3 ohms?

Yes	GO to <a href="#">AQ3</a>
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**Normal Operation and Fault Conditions** The GFM2 (generic function module 2) is liquid cooled by the motor electronics cooling system that consists of a radiator, coolant hoses, and a coolant pump. The GFM2 (generic function module 2) monitors its temperature internally. GFM2 (generic function module 2) requests a coolant flow speed and monitors the coolant pump status from the BECM (battery energy control module) via HS-CAN (high-speed controller area network) . If the temperature increases higher than a calibrated threshold, a P0D8F:00 sets and charging is derated. This DTC (diagnostic trouble code) is often the result of high environmental temperatures. If the temperature becomes excessive, DTC (diagnostic trouble code) P0D24:00 sets. The GFM2 (generic function module 2) stops charging and goes to a fault status until the over-temperature condition clears. Presence of this DTC (diagnostic trouble code) illuminates the Charger Service Required indicator in the IPC (instrument panel cluster) . **DTC Fault Trigger Conditions**

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
GFM2 (generic function module 2) P0D8F:00	Battery Charger 'A' Cooling System Performance: No Sub Type Information	This DTC (diagnostic trouble code) sets when the GFM2 (generic function module 2) reaches a higher than a calibrated temperature threshold.
GFM2 (generic function module 2) P0D24:00	Battery Charger 'A' Temperature Too High: No Sub Type Information	This DTC (diagnostic trouble code) sets when the GFM2 (generic function module 2) senses high internal temperature.

#### Possible Sources

- Low coolant level
- Airlock in system
- Coolant flow restriction
- Front motor electronics coolant pump
- Rear motor electronics coolant pump
- Radiator
- Restricted airflow through radiator
- BECM (battery energy control module)
- Electric radiator cooling fan

#### Visual Inspection and Pre-checks

- Verify no front end damage is present.
- Verify the coolant level is not low.
- Inspect coolant pipes and hoses for kinks, leaks or other damage.
- Inspect for air flow restrictions.

#### AR1 CHECK THE ELECTRIC POWERTRAIN COOLING SYSTEM COOLANT LEVEL

**Is DTC (diagnostic trouble code) P0A06:00, P0A07:00, P0C73:00, P2D00:00, P2D01:00, P2D02:00, P2D03:00, and/or P2D04:00 present OR is the affected coolant pump inoperative?**

<b>Yes</b>	DIAGNOSE the rear motor electronics coolant pump concern. REFER to: <a href="#">High Voltage Battery, Mounting and Cables - Electric</a> (414-03A High Voltage Battery, Mounting and Cables, Diagnosis and Testing).
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<b>No</b>	GO to <a href="#">AR4</a>
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#### **AR4 CHECK SOBDMB (SECONDARY ON-BOARD DIAGNOSTIC CONTROL MODULE B (SOBDMB)) DIAGNOSTIC TROUBLE CODES (DTCs)**

- Ignition ON.
- Using a diagnostic scan tool, clear the SOBDMB (Secondary On-Board Diagnostic Control Module B (SOBDMB)) DTCs.
- Using a diagnostic scan tool, perform SOBDMB (Secondary On-Board Diagnostic Control Module B (SOBDMB)) self-test.

**Are DTCs P2D05:00, P2D06:00, P2D07:00, P2D08:00 and/or P2D09:00 present?**

<b>Yes</b>	DIAGNOSE the SOBDMB (Secondary On-Board Diagnostic Control Module B (SOBDMB)) DTCs. REFER to: Front Electric Drive Assembly (302-01 Front Electric Drive Assembly, Diagnosis and Testing).
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<b>No</b>	GO to <a href="#">AR5</a>
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#### **AR5 ACTIVE COMMAND THE FRONT MOTOR ELECTRONICS COOLANT PUMP ON AND REPEAT BECM (BATTERY ENERGY CONTROL MODULE) SELF TEST**

- Ignition ON.
- Access the SOBDMB (Secondary On-Board Diagnostic Control Module B (SOBDMB)) and control the COOL\_PMP\_A\_CMD (%) PID (parameter identification)
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- Using the scan tool, active command the coolant pump to 100% for 5 minutes. Confirm if the affected coolant pump is running by feeling the pump for vibration.
- Using a diagnostic scan tool, perform BECM (battery energy control module) self-test.



<b>No</b>	<p>DIAGNOSE the electric cooling fan operation.</p> <p>REFER to:</p> <p>Electrified Drivetrain Control</p> <p>(302-14 Electrified Drivetrain Control, Diagnosis and Testing).</p>
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## AR8 CHECK FOR A COOLANT FLOW RESTRICTION

- Ignition OFF.
- Verify there are no obvious coolant flow restrictions in the coolant hoses for the SOBDM (secondary on-board diagnostic control module A) .  
REFER to: Electrified Drivetrain Cooling (302-03A Electrified Drivetrain Cooling, Description and Operation).
- Inspect the coolant hoses and pipes for:
  - damage
  - kinks

**Are the cooling system hoses and components free any kinks or damage?**

<b>Yes</b>	GO to <a href="#">AR9</a>
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<b>No</b>	REPAIR or INSTALL new components as necessary.
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## AR9 CLEAR DIAGNOSTIC TROUBLE CODES (DTCs) AND CARRY OUT SELF-TEST OF THE GFM2 (GENERIC FUNCTION MODULE 2)

- Using a diagnostic scan tool, clear the GFM2 (generic function module 2) DTCs.
- Using a diagnostic scan tool, view SOBDM (secondary on-board diagnostic control module A) PIDs.
- Access the SOBDM (secondary on-board diagnostic control module A) and monitor the BAT\_CHA\_DISPL (Hybrid/EV Battery State of Charge - Displayed) (%) PID (parameter identification)  
If the value is above 85% SOC discharge the high voltage battery until value is 85% or less by turning on electrical loads and/or turning on the climate control.
- CONNECT a known good level 2 (240V) EVSE into the vehicle charge port and wait 45 minutes.
- Using a diagnostic scan tool, perform GFM2 (generic function module 2) self-test.

**Is DTC (diagnostic trouble code) P0D8F:00 or P0D24:00 present?**

<b>Yes</b>	<p>For P0D24:00, INSTALL a new GFM2 (generic function module 2) .</p> <p>REFER to: <a href="#">Generic Function Module 2 (GFM2) - Electric</a></p>
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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 300 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 marked with high-voltage warning labels with a high-voltage symbol. Failure to follow these instructions may result in serious personal injury or death.

#### AS1 TEST SYSTEM WITH A KNOWN GOOD AC (ALTERNATING CURRENT) OUTLET WALL PLUG

- Ignition ON.
- Using a diagnostic scan tool, clear the GFM2 (generic function module 2) DTCs.
- CONNECT a EVSE to a known good AC (alternating current) power outlet and the vehicle charge port and wait 1 minute.
- DISCONNECT the EVSE from the vehicle charge port.
- Ignition ON.
- Using a diagnostic scan tool, clear the GFM2 (generic function module 2) DTC (diagnostic trouble code) s.
- Using a diagnostic scan tool, perform GFM2 (generic function module 2) self-test.

##### Is DTC (diagnostic trouble code) P0D90:00 present?

Yes	GO to <a href="#">AS2</a>
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No	DTC (diagnostic trouble code) was the result of a faulty AC (alternating current) power source.
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#### AS2 CHECK FOR CORRECT GFM2 (GENERIC FUNCTION MODULE 2) OPERATION

- Ignition OFF.
- Disconnect GFM2 (generic function module 2) C3003B .
- Inspect GFM2 (generic function module 2) C3003B.
- Repair:
  - corrosion (install new connector or terminals – clean module pins)
  - damaged or bent pins – install new terminals/pins
  - pushed-out pins – install new pins as necessary
- Reconnect the SOBDM (secondary on-board diagnostic control module A) C1821B. Make sure it seats and latches correctly.
- Ignition ON.
- Using a diagnostic scan tool, clear the GFM2 (generic function module 2) DTCs.