Your Ultimate Source for OEM Repair Manuals

FactoryManuals.net is a great resource for anyone who wants to save money on repairs by doing their own work. The manuals provide detailed instructions and diagrams that make it easy to understand how to fix a vehicle.

1993 FORD Mondeo Hatchback OEM Service and Repair Workshop Manual

Go to manual page

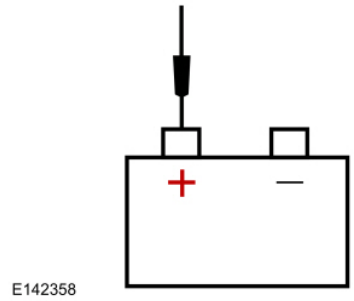
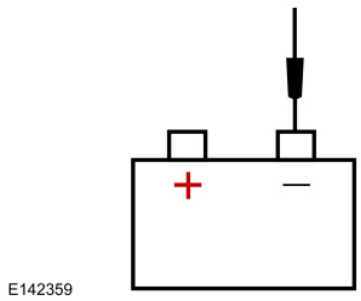
No	MEASURE and RECORD the coolant level from the MIN line. ADJUST the electric powertrain coolant level as necessary. Pressure test the engine cooling system and address any coolant leaks. REFER to: Electrified Drivetrain Cooling (302-03A Electrified Drivetrain Cooling, Diagnosis and Testing). GO to F3

F3 PERFORM THE COOLING SYSTEM FILL ROUTINE

- Ignition ON.
- CONNECT the diagnostic tool.
- Using a diagnostic scan tool, perform the cooling system fill routine and verify if the affected coolant pump is running by feeling the pump for vibration.
  REFER to: Electrified Drivetrain Cooling System Draining, Vacuum Filling and Bleeding (302-03A Electrified Drivetrain Cooling, General Procedures).
- Using a diagnostic scan tool, clear the BECM (battery energy control module) Diagnostic Trouble Codes (DTCs).
- Access the BECM (battery energy control module) and control the COOL_PMP_B_CMD (Coolant Pump - B- Control Speed - Commanded) (%) PID (parameter identification)
- Using the scan tool, active command the coolant pump to 100% for a minimum of 5 minutes. Confirm if the affected coolant pump is running by feeling the pump for vibration if the affected coolant pump is accessible.
- Using a diagnostic scan tool, perform BECM (battery energy control module) self-test.

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 coolant pump not running?

Yes	For Diagnostic Trouble Codes (DTCs) P0A06:00, P0A07:00, P0C73:00, P2D00:00, P2D02:00, P2D03:00 or if the coolant pump is not running, GO to F4 For DTC (diagnostic trouble code) P2D01:00, REPEAT pinpoint test F3, if the DTC (diagnostic trouble code) is still present, INSTALL a new motor electronics coolant pump. REFER to: Front Coolant Pump (302-03A Electrified Drivetrain Cooling, Removal and Installation). GO to F12 For DTC (diagnostic trouble code) P2D04:00, INSTALL a new motor electronics coolant pump. REFER to: Front Coolant Pump (302-03A Electrified Drivetrain Cooling, Removal and Installation).

 12V BATTERY POST (B+)	V	 12V BATTERY POST (B-)

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1860-2	V	Ground

Is voltage within 0.5V of the voltage measured at the 12V battery?

Yes	GO to F6

No	VERIFY the BCMC (body control module C) fuse 169 (10A) is OK. If the fuse is OK, REPAIR the circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

F6 CHECK THE MOTOR ELECTRONICS COOLANT PUMP CHASSIS GROUND AND CIRCUIT

- Ignition OFF.
- Measure:

Positive Lead	Measurement / Action	Negative Lead

No	GO to F8

F8 CHECK THE MOTOR ELECTRONICS COOLANT PUMP CONTROL CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1860-3	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to F9

No	REPAIR the circuit. Clear the BECM (battery energy control module) DTC's. Repeat the self-test.

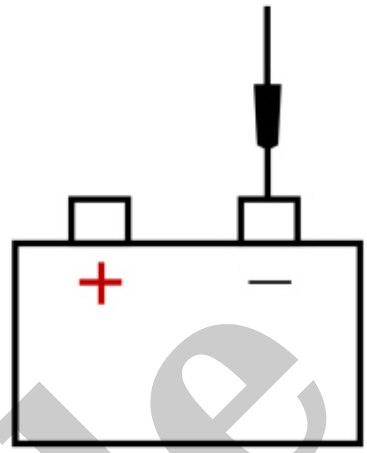
F9 CHECK THE MOTOR ELECTRONICS COOLANT PUMP CONTROL CIRCUIT FOR AN OPEN

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1860-3	Ω	C144-9 (female side)

Is the resistance less than 3 ohms?

Yes	GO to F10

Positive Lead	Measurement / Action	Negative Lead
C1860-2		 E142359 12V BATTERY POST (B-)

Does the light bulb illuminate brightly?

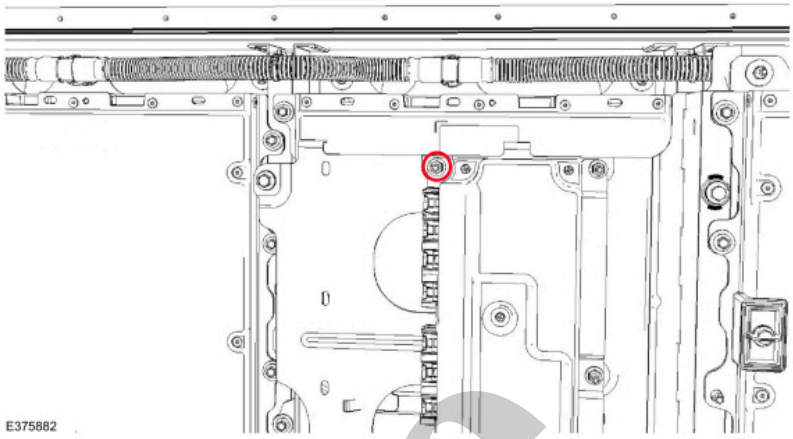
Yes	INSTALL a new motor electronics coolant pump. GO to F12

No	INSTALL a new BCMC (body control module C) . REFER to: Body Control Module C (BCMC) (419-10 Multifunction Electronic Modules, Removal and Installation). Clear the BECM (battery energy control module) DTC's. GO to F12

F12 ACTIVE COMMAND THE COOLANT PUMP ON AND REPEAT BECM (BATTERY ENERGY CONTROL MODULE) SELF TEST

- Ignition ON.
- Using the scan tool, clear the BECM (battery energy control module) Diagnostic Trouble Codes (DTCs).
- Access the BECM (battery energy control module) and control the COOL_PMP_B_CMD (Coolant Pump - B- Control Speed - Commanded) (%) PID (parameter identification)
- Using the scan tool, active command the coolant pump to 100% for a minimum of 5 minutes.
- Using a diagnostic scan tool, perform BECM (battery energy control module) self-test.

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 coolant pump not running?

C4237B-7	Ω	 CASE GROUND

Is the resistance greater than 10,000 ohms?

Yes	GO to F15

No	GO to F14

F14 CONFIRM THE LOCATION OF THE GROUNDED CIRCUIT

- Disconnect BECM (battery energy control module) low voltage inline C4239 .
- 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

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C4237B-7	Ω	C144-9 (male side)

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 BECM (battery energy control module) . REFER to: Battery Energy Control Module (BECM) - Electric (414-03A High Voltage Battery, Mounting and Cables, Removal and Installation).

No	GO to F16

F16 CONFIRM THE LOCATION OF THE OPEN CIRCUIT

- Disconnect BECM (battery energy control module) low voltage inline C4239 .
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C144-9 (male side)	Ω	C4239-9 (male side)

Is the resistance less than 3 ohms?

Yes	INSTALL a new wiring harness. REFER to: High Voltage Battery Wiring Harness - Electric (414-03A High Voltage Battery, Mounting and Cables, Removal and Installation).

Normal Operation and Fault Conditions The high voltage battery incorporates hardwired interlock staple for the high voltage battery cable connections. The interlock circuit consists of a staple at the high voltage battery cable that closes the circuit when it is fully connected and opens when the high voltage cable is disconnected. An interlock circuit fault at the high voltage battery or at the front or rear Inverter System Controller (ISC) results in power limiting if the vehicle is driving and prevents the vehicle from starting if the vehicle is shut off. This fault illuminates the stop safely hazard (red triangle) warning indicator. The interlock staples at the DCDC (direct current/direct current converter control module) and Battery Charger Control Module (BCCM) also known as the SOBDM (secondary on-board diagnostic control module A) , cabin coolant heater and and/or ACCM (air conditioning control module) high voltage connectors are not utilized. The interlock status is based on the high voltage measurement that is sent via HS-CAN (high-speed controller area network) . An interlock circuit fault at the these components does not disable the high voltage system or prevent the vehicle from starting. **DTC Fault Trigger Conditions**

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
BECM (battery energy control module) P0A0A:00	High Voltage System Interlock Circuit 'A': No Sub Type Information	Sets when BECM (battery energy control module) senses an high voltage battery interlock input or output circuit for one or both (AWD) high voltage connections going to an Inverter System Controllor (ISC) is shorted to low voltage.
BECM (battery energy control module) P0A0C:00	High Voltage System Interlock Circuit 'A' Low: No Sub Type Information	Sets when BECM (battery energy control module) senses an high voltage battery interlock circuit for one or both (AWD) high voltage connections going to an Inverter System Controllor (ISC) is shorted to ground or open.
BECM (battery energy control module) U3513:00	High Voltage System Interlock Circuit 'B' Low: No Sub Type Information	Sets when a high voltage measurement at the SOBDM (secondary on-board diagnostic control module A) and the BECM (battery energy control module) has a difference greater than 50.0V after the contactors have closed.
BECM (battery energy control module) U3517:00	High Voltage System Interlock Circuit 'C' Low: No Sub Type Information	Sets when a high voltage measurement at the DCDC (direct current/direct current converter control module) and the BECM (battery energy control module) has a difference greater than 50.0V after the contactors have closed.
BECM (battery energy control module) U3519:00	High Voltage System Interlock Circuit 'D': No Sub Type Information	Sets when BECM (battery energy control module) senses the high voltage battery interlock input or output circuit for the DC (direct current) fast charge connection is shorted to low voltage.

Yes	For DTC (diagnostic trouble code) U3012:00 ADDRESS it first, GO to Pinpoint Test AF For other BECM (battery energy control module) Diagnostic Trouble Codes (DTCs) REFER to the DTC (diagnostic trouble code) chart in this section.

No	GO to G2

G2 REVIEW THE BECM (BATTERY ENERGY CONTROL MODULE) DTCS

- REVIEW the BECM (battery energy control module) DTC (diagnostic trouble code) s.

Is DTC (diagnostic trouble code) P0A0A:00, P0A0C:00, U3513:00, U3517:00, U3519:00 and/or U351B:00 retrieved?

Yes	For BECM (battery energy control module) DTC (diagnostic trouble code) P0A0A:00 and/or P0A0C:00, GO to G11 For BECM (battery energy control module) DTC (diagnostic trouble code) U3513:00 and/or U3517:00, GO to G3 For DTC (diagnostic trouble code) U3513:00 without U3517:00, GO to G6 For DTC (diagnostic trouble code) U3519:00 and/or U351B:00, GO to G18

No	The concern is not present at this time. The concern may be have been related to prior repair that included disconnecting the service disconnect or a high voltage cable.

G3 CHECK THE HIGH VOLTAGE BATTERY CABLE CONNECTION AT THE BATTERY PACK FOR BEING FULLY SEATED

- Ignition OFF.
- Depower the high voltage system.
  REFER to: High Voltage System De-energizing - Electric(414-03A High Voltage Battery, Mounting and Cables, General Procedures).
- Check that the high voltage battery C295 is connected and fully seated.

Was the connector connected and fully seated?

Yes	GO to G4

No	RECONNECT the connector and verify it is fully seated. Repower the high voltage system. REFER to: High Voltage System De-energizing - Electric

Yes	If DTC (diagnostic trouble code) U3513:00 is present, GO to G6 If DTC (diagnostic trouble code) U3513:00 is NOT present, GO to G24

No	INSTALL a new high voltage battery cable. REFER to: High Voltage Battery Cables - Electric (414-03A High Voltage Battery, Mounting and Cables, Removal and Installation).

G6 CHECK THE SOBDM (SECONDARY ON-BOARD DIAGNOSTIC CONTROL MODULE A) HIGH VOLTAGE CABLE FOR BEING FULLY SEATED

- Ignition OFF.
- Depower the high voltage battery system (if not previously performed).
  REFER to: High Voltage System De-energizing - Electric(414-03A High Voltage Battery, Mounting and Cables, General Procedures).
- Check that the SOBDM (secondary on-board diagnostic control module A) C1821C is connected and fully seated.

Was the connector connected and fully seated?

Yes	GO to G7

No	RECONNECT the connector and verify it is fully seated. Repower the high voltage system. REFER to: High Voltage System De-energizing - Electric (414-03A High Voltage Battery, Mounting and Cables, General Procedures). Operate the system and determine if the concern is still present.

G7 CHECK THE SOBDM (SECONDARY ON-BOARD DIAGNOSTIC CONTROL MODULE A) HIGH VOLTAGE CABLE FOR BEING OPEN

- Disconnect DCDC (direct current/direct current converter control module) (if not previously performed) C1457A .
- Disconnect SOBDM (secondary on-board diagnostic control module A) C1821C .
- Measure:

Positive Lead	Measurement / Action	Negative Lead