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1993 FORD Mondeo Sedan OEM Service and Repair Workshop Manual

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DTC (diagnostic trouble code)	Description	Fault Trigger Condition
SOBDM (secondary on-board diagnostic control module A) P0D8F:00	Battery Charger 'A' Cooling System Performance: No Sub Type Information	This DTC (diagnostic trouble code) sets when the SOBDM (secondary on-board diagnostic control module A) reaches a higher than a calibrated temperature threshold.
SOBDM (secondary on-board diagnostic control module A) P0D24:00	Battery Charger 'A' Temperature Too High: No Sub Type Information	This DTC (diagnostic trouble code) sets when the SOBDM (secondary on-board diagnostic control module A) 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.

E1 CHECK THE ELECTRIC POWERTRAIN COOLING SYSTEM COOLANT LEVEL

- Ignition OFF.
- Visually inspect the coolant level in the electric powertrain cooling system degas bottle.

Was the coolant level at specification?

Yes	GO to E2

No	Adjust the coolant level as needed and pressure test the cooling system an check for leaks. REFER to: Electrified Drivetrain Cooling

E4 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?

Yes	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).

No	GO to E5

E5 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)
- 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.

Is DTC (diagnostic trouble code) P2D05:00, P2D06:00, P2D07:00, P2D08:00, and/or P2D09:00 present OR is the affected coolant pump inoperative?

Yes	DIAGNOSE the front electric motor electronics coolant pump concern. REFER to: Front Electric Drive Assembly (302-01 Front Electric Drive Assembly, Diagnosis and Testing).

No	GO to E6

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?

Yes	GO to E9

No	REPAIR or INSTALL new components as necessary.

E9 CLEAR DIAGNOSTIC TROUBLE CODES (DTCS) AND CARRY OUT SELF-TEST OF THE SOBDM (SECONDARY ON-BOARD DIAGNOSTIC CONTROL MODULE A)

trouble code)		
SOBDM (secondary on-board diagnostic control module A) P0D27:00	Battery Charger 'A' Input Voltage Too Low: No Sub Type Information	This DTC (diagnostic trouble code) sets when the AC (alternating current) voltage input from the EVSE is lower than the operation voltage limit during power conversion which is less than 75V = level 1 (120V) or 148V = level 2 (240V) AC (alternating current) .
SOBDM (secondary on-board diagnostic control module A) P0D28:00	Battery Charger 'A' Input Voltage Too High: No Sub Type Information	This DTC (diagnostic trouble code) sets when the AC (alternating current) voltage input from the EVSE is higher than the operation voltage limit during power conversion which is greater than 143V = level 1 (120V) or 280V = level 2 (240V) AC (alternating current) .
SOBDM (secondary on-board diagnostic control module A) P0D2A:00	Battery Charger 'A' Input Current Too High: No Sub Type Information	This DTC (diagnostic trouble code) sets when the average current input from the EVSE exceeds the target input current limit 10 times within 10 minutes.
SOBDM (secondary on-board diagnostic control module A) P0D38:00	Battery Charger 'A' Input Current Sensor 'A' Circuit: No Sub Type Information	This DTC (diagnostic trouble code) sets when the SOBDM (secondary on-board diagnostic control module A) detects a current input sensor circuit fault.
SOBDM (secondary on-board diagnostic control module A) P0D3D:00	Battery Charger 'A' Input Voltage Sensor 'A' Circuit: No Sub Type Information	This DTC (diagnostic trouble code) sets when the SOBDM (secondary on-board diagnostic control module A) detects a voltage input sensor circuit fault.
SOBDM (secondary on-board diagnostic control module A) P0D5E:00	Battery Charger Hybrid/EV System Discharge Time Too Long: No Sub Type Information	This DTC (diagnostic trouble code) sets when the SOBDM (secondary on-board diagnostic control module A) stops power conversion after a charging event (S2 switch is opened) and AC (alternating current) voltage input from the EVSE is greater than 50V after 5 seconds.

Possible Sources

- EVSE
- Vehicle charge port
- High-voltage cable
- SOBDM (secondary on-board diagnostic control module A)

- Depower the high voltage battery system.
  REFER to: High Voltage System De-energizing - Electric(414-03A High Voltage Battery, Mounting and Cables, General Procedures).
- Disconnect SOBDM (secondary on-board diagnostic control module A) C1821B .
- Disconnect GFM2 (generic function module 2) C3003B (vehicles equipped with dual chargers ONLY) .
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1002-L1	Ω	C1002-L2
C1002-L1	Ω	C1002-GND
C1002-L2	Ω	C1002-GND

Are the resistances greater than 400,000 ohms?

Yes	GO to F4

No	For vehicles with a single charger, INSTALL a new charge port. REFER to: Charge Port - Electric (414-03B High Voltage Battery Charging System, Removal and Installation). For vehicles with a dual chargers, GO to F3

F3 CHECK THE VEHICLE HIGH VOLTAGE CABLE FOR BEING SHORTED

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

Positive Lead	Measurement / Action	Negative Lead

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

F4 CHECK THE CHARGE PORT TO THE SOBDM (SECONDARY ON-BOARD DIAGNOSTIC CONTROL MODULE A) FOR BEING OPEN

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1002-L1	Ω	C1821B-1
C1002-L2	Ω	C1821B-7

Are the resistances less than 3 ohms?

Yes	GO to F5

No	INSTALL a new charge port. REFER to: Charge Port - Electric (414-03B High Voltage Battery Charging System, Removal and Installation).

F5 CHECK FOR CORRECT SOBDM (SECONDARY ON-BOARD DIAGNOSTIC CONTROL MODULE A) OPERATION

- Ignition OFF.
- DISCONNECT and inspect SOBDM (secondary on-board diagnostic control module A) C1821B.
- Inspect charge port C1002.
- 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

electrical arcing of the coupler during disconnect by using a S3 switch. The S3 switch is the coupler release button that is mechanically linked to the connector latch release actuator. The S3 switch is normally closed at all times except when the connector latch release actuator is pressed to decouple the connector from the vehicle inlet. Opening of the S3 switch triggers the vehicle charge control to provide a controlled shutoff of charge power prior to disconnecting the EVSE. The proximity circuit voltage is continuously monitored for faults. Proximity faults may prevent the vehicle from charging.

- Proximity Circuit Open >4.80V
- Normal - OFF plug 4.10V - 4.79V
- Proximity Circuit Out of Range 0.71V - 1.04V; 1.98V - 2.25V; 3.27V - 4.09V
- Normal - ON Plug (S3 switch closed) 1.05V - 1.97V
- Normal - ON Plug (S3 switch open) 2.26V - 3.26V
- Proximity short to Ground 0.0V - 0.70V

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
SOBDM (secondary on-board diagnostic control module A) P0D56:24	Proximity Detection Circuit 'A': Signal Stuck High	This DTC (diagnostic trouble code) sets if the SOBDM (secondary on-board diagnostic control module A) senses the release button (S3) is pressed for 30 seconds while On-Plug. This fault exists in the EVSE. Consult with customer to determine which EVSE was used when the fault occurred. If fault occurred with a customer owned EVSE, ask customer to provide it for testing.
SOBDM (secondary on-board diagnostic control module A) P0D56:64	Proximity Detection Circuit 'A': Signal Plausibility Failure	This DTC (diagnostic trouble code) sets when the SOBDM (secondary on-board diagnostic control module A) senses if the pilot signal is present but the proximity signal is not detected for 5 seconds after 5 monitoring cycles.
SOBDM (secondary on-board diagnostic control module A) P0D57:00	Proximity Detection Circuit 'A' Range/Performance: No Sub Type Information	This DTC (diagnostic trouble code) sets when the SOBDM (secondary on-board diagnostic control module A) senses the proximity voltage range value of 0.71V-1.04V; 1.98V-2.25V; 3.27V-4.09V for 5 seconds.

- Ignition ON.
- Using a diagnostic scan tool, clear the SOBDM (secondary on-board diagnostic control module A) DTCs.
- CONNECT a known good EVSE to a 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, perform SOBDM (secondary on-board diagnostic control module A) self-test.

Is DTC (diagnostic trouble code) P0D56:24, P0D56:64, P0D57:00, P0D58:00 and/or P0D59:00 present?

Yes	GO to G3
No	GO to G2

G2 CONNECT THE CUSTOMER OWNED ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE) TO THE VEHICLE

- CONNECT the customer owned EVSE to a 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, perform SOBDM (secondary on-board diagnostic control module A) self-test.

Is DTC (diagnostic trouble code) P0D56:24, P0D56:64, P0D57:00, P0D58:00 and/or P0D59:00 present?

Yes	Replace the customers EVSE.
No	The fault is not present at this time. If the fault occurred with a level 2 (240V) EVSE repeat this step using a known good dealership equipped level 2 (240V) EVSE. If the concern is not present advise customer the concern was related to a faulty level 2 (240V) EVSE.

G3 CHECK THE PROXIMITY DETECTION STATUS

- DISCONNECT the EVSE from the vehicle charge port (if connected).
- Ignition ON.

C1821B-5	V	Ground

Is any voltage present?

Yes	Repair the circuit.

No	GO to G6

G5 CHECK THE PROXIMITY CIRCUIT 2.7K OHM RESISTOR

- Measure:

NOTE

The pins at the charge port have a protective covering around them. The center of the pin must be contacted to get a good connection.

Positive Lead	Measurement / Action	Negative Lead
C1002-CS	Ω	C1002-GND

Is the resistance between 2.4K and 3.0K ohms?

Yes	GO to G6

No	INSTALL a new charge port. REFER to: Charge Port - Electric (414-03B High Voltage Battery Charging System, Removal and Installation).

G6 CHECK PROXIMITY CIRCUIT GROUND