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1995 FORD Scorpio Sedan OEM Service and Repair Workshop Manual

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NOTE

The Inverter System Controller (ISC) is referred to as the SOBDMC (Secondary On-Board Diagnostic Control Module C) in the scan tool.

Normal Operation and Fault Conditions

REFER to: Electric Powertrain Control - Component Location(303-14F Electric Powertrain Control - 3.5L V6 PowerBoost (CN), Description and Operation).

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
SOBDMC (secondary on-board diagnostic control module C) P0BD0:00	Generator Inverter Temperature Sensor 'A' Circuit Intermittent/Erratic: No Sub Type Information	This DTC (diagnostic trouble code) sets when generator inverter temperature sensor readings are changing at an excessive rate for too long.

Possible Sources

- Inverter System Controller (ISC)
- Motor Electronics Coolant Fluid Level Low
- Inverter System Controller (ISC) Calibration

AE1 CHECK THE INVERTER SYSTEM CONTROLLER (ISC) CALIBRATION LEVEL

- Verify the Inverter System Controller (ISC) is at the latest calibration level.

Is the Inverter System Controller (ISC) at the latest calibration level?

Yes	GO to AE2

No	UPDATE the Inverter System Controller (ISC) to the latest calibration level.

AE2 CHECK THE ELECTRIC POWERTRAIN COOLANT LEVEL

- Verify the electric powertrain coolant level, ensure there are no air bubbles in the system

Is the electric powertrain coolant level OK?

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
SOBDMC (secondary on-board diagnostic control module C) P0C03:00	Drive Motor 'B' Current Low: No Sub Type Information	This DTC (diagnostic trouble code) sets when the 3 phase current is not within the expected range.

Possible Sources

- Wiring, terminals or connectors
- Transmission
- Inverter System Controller (ISC)

AF1 CHECK THE INVERTER SYSTEM CONTROLLER (ISC) CALIBRATION LEVEL

- Verify the Inverter System Controller (ISC) is at the latest calibration level.

Is the Inverter System Controller (ISC) at the latest calibration level?

Yes	GO to AF2

No	UPDATE the Inverter System Controller (ISC) to the latest calibration level.

AF2 VISUAL INSPECTION OF THE HIGH VOLTAGE SYSTEM

- Ignition OFF.
- De-energize the high voltage system.
  REFER to: High Voltage System De-energizing - Full Hybrid Electric Vehicle (FHEV)(414-03A High Voltage Battery, Mounting and Cables, General Procedures).
- Remove the high voltage traction battery service disconnect plug.
- Visually inspect all the high voltage cables.
- Make sure all the high voltage connectors are correctly and securely connected.
- Examine all the high voltage cables and connectors for damaged, burned or overheated insulation and loose or broken connections.
- Make sure the HVDC connector cover is correctly installed and it was not removed from the vehicle.

Is a concern present?

Yes	REPAIR as necessary. CLEAR the diagnostic trouble codes (DTCs) and REPEAT the self-test.

Positive Lead	Measurement / Action	Negative Lead
C1201-1	Ω	C1201-Pin Shield
C1201-2	Ω	C1201-Pin Shield
C1201-3	Ω	C1201-Pin Shield

Are the resistances greater than 10K ohms?

Yes	GO to AF5

No	INSTALL a new high voltage harness. REFER to: High Voltage Battery Cables - Electric (414-03A High Voltage Battery, Mounting and Cables, Removal and Installation). CLEAR the Inverter System Controller (ISC) diagnostic trouble codes (DTCs). REPEAT the self-test.

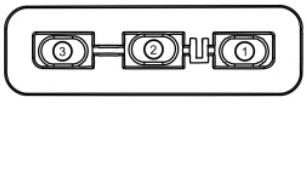
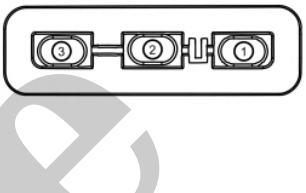
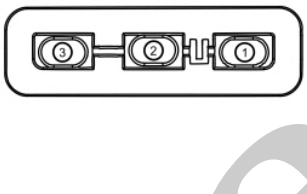
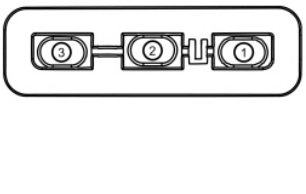
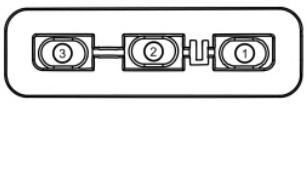
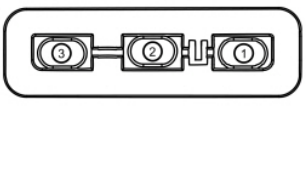
AF5 CHECK THE ELECTRIC MOTOR CIRCUITS FOR A SHORT TO GROUND

- Measure and record:

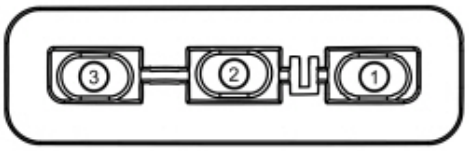
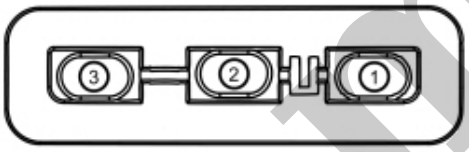
Positive Lead	Measurement / Action	Negative Lead
C1201-1	Ω	Ground
C1201-2	Ω	Ground
C1201-3	Ω	Ground

AF7 CHECK THE ELECTRIC MOTOR FOR CONTINUITY

- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
 E306586 C1201 pin 1, component side	Ω	 E306586 C1201 pin 2, component side
 E306586 C1201 pin 1, component side	Ω	 E306586 C1201 pin 3, component side
 E306586 C1201 pin 2, component side	Ω	 E306586 C1201 pin 3, component side

Are the resistances less than 5 ohms?

 E306586 C1201 pin 2, component side	Ω	Ground
 E306586 C1201 pin 3, component side	Ω	Ground

Are the resistances greater than 10K ohms?

Yes	GO to AF9

No	INSTALL a new electric motor. REFER to: Hybrid Drive Unit (303-01F Electric Motor - 3.5L V6 PowerBoost (CN), Removal and Installation). CLEAR the Inverter System Controller (ISC) diagnostic trouble codes (DTCs). REPEAT the self-test.

AF10 CHECK THE INVERTER SYSTEM CONTROLLER (ISC) CIRCUITS FOR SHORTED TOGETHER

- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
C1458A-A1	Ω	C1458A-B1
C1458A-A1	Ω	C1458A-A2
C1458A-A1	Ω	C1458A-B2
C1458A-A1	Ω	C1458A-A3
C1458A-A1	Ω	C1458A-B3
C1458A-B1	Ω	C1458A-A2
C1458A-B1	Ω	C1458A-B2
C1458A-B1	Ω	C1458A-A3
C1458A-B1	Ω	C1458A-B3

 C1280 pin 3, component side	Ω	 C1280 pin 4, component side

Is the resistance 18 ohms?

Yes	GO to AF12

No	INSTALL a new electric motor. REFER to: Hybrid Drive Unit (303-01F Electric Motor - 3.5L V6 PowerBoost (CN), Removal and Installation).

AF12 CHECK THE TRANSMISSION SENSOR SPEED RESOLVER RESISTANCE

- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
 C1280 pin 1, component side	Ω	 C1280 pin 5, component side

Is the resistance 37 ohms?

- Disconnect and inspect all Inverter System Controller (ISC) connectors.
- 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 Inverter System Controller (ISC) connectors. Make sure they seat and latch correctly.
- Connect Electric Motor C1201 .
- Connect Transmission Sensor Speed Resolver C1280 .
- Ignition ON.
- Clear the Inverter System Controller (ISC) diagnostic trouble codes (DTCs).
- Ignition OFF.
- Wait 60 seconds.
- Start the engine.
- Using a diagnostic scan tool, run the Inverter System Controller (ISC) self-test.

Is DTC (diagnostic trouble code) P0C03 still present?

Yes	INSTALL a new high voltage cable. REFER to: High Voltage Battery Cables - Electric (414-03A High Voltage Battery, Mounting and Cables, Removal and Installation). CLEAR the Inverter System Controller (ISC) diagnostic trouble codes (DTCs). REPEAT the self-test.
No	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.

PINPOINT TEST AG : P0C2F:62, P0C2F:63

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REFER to: Electric Powertrain Control - Component Location(303-14F Electric Powertrain Control - 3.5L V6 PowerBoost (CN), Description and Operation).

DTC Fault Trigger Conditions

- Verify the Inverter System Controller (ISC) is at the latest calibration level.

Is the Inverter System Controller (ISC) at the latest calibration level?

Yes	GO to AG3

No	UPDATE the Inverter System Controller (ISC) to the latest calibration level.

AG3 CHECK THE TRANSMISSION SENSOR SPEED RESOLVER FOR AN OPEN

- Ignition OFF.
- Disconnect Transmission Sensor Speed Resolver C1280 .
- Disconnect Inverter System Controller (ISC) C1458A .
- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
C1458A-A1	Ω	C1280-3
C1458A-B1	Ω	C1280-4
C1458A-A2	Ω	C1280-1
C1458A-B2	Ω	C1280-5
C1458A-A3	Ω	C1280-2
C1458A-B3	Ω	C1280-6