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.

2013 FORD S-Max OEM Service and Repair Workshop Manual

Go to manual page

- Measure:

  Mid-Level

Positive Lead	Measurement / Action	Negative Lead
C3154A-1	Ω	C2431A-9
C3154A-11	Ω	C2431A-22

  High-Level

Positive Lead	Measurement / Action	Negative Lead
C3155A-1	Ω	C2431A-9
C3155A-11	Ω	C2431A-22

Are the resistances less than 3 ohms?

Yes	CONNECT all disconnected connectors. GO to W4

No	REPAIR the circuit in question.

W4 CHECK FOR CORRECT DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the DSP (audio digital signal processing module) connectors.
- Repair:
  - corrosion (install new connector or terminals - clean module pins)
  - damaged or bent pins - install new terminals/pins

- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2332A-4	V	Ground

Is the voltage greater than 11 volts?

Yes	GO to X2

No	VERIFY BCM (body control module) fuse 14 (15A) is OK. If OK, REPAIR the circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

X2 CHECK THE FHCM (FRONT HATCH CONTROL MODULE) GROUND CIRCUIT FOR AN OPEN

- Ignition OFF.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2332A-2	Ω	Ground

Is the resistance less than 3 ohms?

Yes	GO to X3

No	REPAIR the circuit.

X3 CHECK THE HS-CAN1 (HIGH-SPEED CONTROLLER AREA NETWORK 1) CIRCUITS BETWEEN THE FHCM (FRONT HATCH CONTROL MODULE) AND THE GWM (GATEWAY MODULE A) FOR AN OPEN

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 Y : THE GSM (GEAR SHIFT MODULE) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

Refer to Wiring Diagrams Cell 14for schematic and connector information.
Refer to Wiring Diagrams Cell 30for schematic and connector information.
Normal Operation and Fault Conditions The GSM (gear shift module) communicates on the HS-CAN2 (high-speed controller area network 2) . REFER to: Controller Area Network (CAN) Module Communications Network - System Operation and Component Description
(418-00A Controller Area Network (CAN) Module Communications Network, Description and Operation).
Possible Sources

- Fuse
- Wiring, terminals and connector
- GSM (gear shift module)

Visual Inspection and Pre-checks

- Verify BCM (body control module) fuse 7 (10A) is OK. BCM (body control module) fuse 7 is a 3-blade fuse containing fuse 6.

Y1 CHECK THE GSM (GEAR SHIFT MODULE) VOLTAGE SUPPLY CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect: GSM (gear shift module) C3245.
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C3245-1	V⎓	Ground

Is the voltage greater than 11 volts?

Yes	GO to Y2

Are the resistances less than 3 ohms?

Yes	CONNECT all disconnected connectors. GO to Y4
No	REPAIR the circuit in question.

Y4 CHECK FOR CORRECT GSM (GEAR SHIFT MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the GSM (gear shift module) connector.
- 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 GSM (gear shift module) connector. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

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 GSM (gear shift module) . REFER to: Gear Shift Module (GSM) (307-05A Automatic Transmission External Controls - 1-Speed Automatic Transmission, Removal and Installation).
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 Z : THE HCM (HEADLAMP CONTROL MODULE) DOES NOT RESPOND TO THE DIAGNOSTIC SCAN TOOL

Refer to Wiring Diagrams Cell 14for schematic and connector information.

Positive Lead	Measurement / Action	Negative Lead
C2514-16	Ω	Ground

Is the resistance less than 3 ohms?

Yes	GO to Z3

No	REPAIR the circuit.

Z3 CHECK THE FD-CAN (FLEXIBLE DATA RATE CONTROLLER AREA NETWORK) CIRCUITS BETWEEN THE HCM (HEADLAMP CONTROL MODULE) AND THE GWM (GATEWAY MODULE A) FOR AN OPEN

- Disconnect GWM (gateway module A) C2431A .
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2514-4	Ω	C2431A-4
C2514-12	Ω	C2431A-17

Are the resistances less than 3 ohms?

Yes	CONNECT all disconnected connectors. GO to Z4

No	REPAIR the circuit in question.

Z4 CHECK FOR CORRECT HCM (HEADLAMP CONTROL MODULE) OPERATION

- Verify BCM (body control module) fuse 12 (7.5A) is OK. BCM (body control module) fuse 12 is a 3-blade fuse containing fuse 13.

AA1 CHECK THE MS-CAN (MEDIUM SPEED-CONTROLLER AREA NETWORK) 1 TERMINATION RESISTANCE

- Ignition OFF.
- Disconnect negative battery cable.
- Disconnect the diagnostic scan tool cable from the remote DLC (data link connector) .
- Disconnect: GWM (gateway module A) C2431A.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2431A-3	Ω	C2431A-16

Is the resistance between 108 and 132 ohms?

Yes	GO to AA3

No	GO to AA2

AA2 CHECK THE MS-CAN (MEDIUM SPEED-CONTROLLER AREA NETWORK) 1 CIRCUITS BETWEEN THE HVAC (HEATING, VENTILATION AND AIR CONDITIONING) MODULE AND THE GWM (GATEWAY MODULE A) FOR AN OPEN

- Disconnect: HVAC (heating, ventilation and air conditioning) module C271A (15-inch display with DATC (dual automatic temperature control)) or C228A (DATC (dual automatic temperature control)).
- Measure:
  15-INCH DISPLAY WITH DATC (dual automatic temperature control)

Positive Lead	Measurement / Action	Negative Lead
C271A-20	Ω	C2431A-3

Positive Lead	Measurement / Action	Negative Lead
C228A-26	V	Ground

Is the voltage greater than 11 volts?

Yes	GO to AA4

No	VERIFY BCM (body control module) fuse 12 (7.5A) is OK. If OK, REPAIR the circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

AA4 CHECK THE HVAC (HEATING, VENTILATION AND AIR CONDITIONING) MODULE GROUND CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect negative battery cable.
- Measure:
  15-INCH DISPLAY WITH DATC (dual automatic temperature control)

Positive Lead	Measurement / Action	Negative Lead
C271A-1	Ω	Ground

DATC (dual automatic temperature control)

Positive Lead	Measurement / Action	Negative Lead
C228A-1	Ω	Ground

Is the resistance less than 3 ohms?

Yes	CONNECT all disconnected connectors. GO to AA5

Communications Network - Electric - System Operation and Component Description
(418-00A Controller Area Network (CAN) Module Communications Network, Description and Operation).

Possible Sources

- Fuse
- Wiring, terminals and connector
- IPC (instrument panel cluster)

Visual Inspection and Pre-checks

- Verify BCM (body control module) fuse 13 (7.5A) is OK. BCM (body control module) fuse 13 is a 3-blade fuse containing fuse 12.

AB1 CHECK THE HS-CAN3 (HIGH-SPEED CONTROLLER AREA NETWORK 3) TERMINATION RESISTANCE

- Ignition OFF.
- Disconnect negative battery cable.
- Disconnect the diagnostic scan tool cable from the remote DLC (data link connector) .
- Disconnect: GWM (gateway module A) C2431A.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2431A-9	Ω	C2431A-22

Is the resistance between 108 and 132 ohms?

Yes	GO to AB3

No	GO to AB2

AB2 CHECK THE HS-CAN3 (HIGH-SPEED CONTROLLER AREA NETWORK 3) CIRCUITS BETWEEN THE IPC (INSTRUMENT PANEL CLUSTER) AND THE GWM (GATEWAY MODULE A) FOR AN OPEN

- Disconnect: IPC (instrument panel cluster) C220A.
- Measure:

Positive Lead	Measurement / Action	Negative Lead

- Ignition OFF.
- Disconnect negative battery cable.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C220A-3	Ω	Ground

Is the resistance less than 3 ohms?

Yes	CONNECT all disconnected connectors. GO to AB5

No	REPAIR the circuit.

AB5 CHECK FOR CORRECT IPC (INSTRUMENT PANEL CLUSTER) OPERATION

- Ignition OFF.
- Disconnect and inspect the IPC (instrument panel cluster) connector.
- 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 IPC (instrument panel cluster) connector. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

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 IPC (instrument panel cluster) . REFER to: Instrument Panel Cluster (IPC) - Electric, Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (413-01 Instrumentation, Message Center and Warning Chimes, Removal and Installation).