

Auxiliary Switches

Inspection and Verification

Refer to Wiring Diagrams Cell [140](#) for schematic and connector information.

It will be necessary to refer to upfitter documentation a for additional wiring information.

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.

REFER to: Diagnostic Methods (100-00 General Information, Description and Operation).

1. Verify the customer concern.
2. Not all auxiliary switches may be used by upfitter. Confirm the auxiliary switches that are used.
3. Visually inspect for obvious signs of mechanical or electrical damage:
 - Upfitter relay(s)
 - Upfitter (auxiliary) switches
 - Wiring, terminals or connectors
4. Verify all upfitter relay box fuses.
5. Verify BCM fuse 22 (5A).
6. Verify BJB fuse 203 (200A).

Symptom Chart

Symptom	Possible Sources	Action
• All auxiliary switch controlled components are inoperative.	• Refer to the pinpoint test.	• If No auxiliary switch ON indicators operate, GO to Pinpoint Test B • If the auxiliary switch ON indicators operate, GO to Pinpoint Test A
• Some, but not all, auxiliary switch controlled component are inoperative.	• Refer to the pinpoint test.	• GO to Pinpoint Test A
• All auxiliary switch ON indicators are in operative.	• Refer to the pinpoint test.	• GO to Pinpoint Test B
• Some, but not all, auxiliary switch ON indicators are inoperative.	• Refer to the pinpoint test.	• GO to Pinpoint Test B

Pinpoint Tests

An Auxiliary Switch Controlled Component is Inoperative

Refer to Wiring Diagrams Cell [140](#) for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: Auxiliary Switches (419-10 Multifunction Electronic Modules, Description and Operation).

Possible Sources

- Upfitter (auxiliary) switch assembly
- Upfitter relay box relays or fuses

- Fuses
- Wiring terminals or connectors

PINPOINT TEST A : AN AUXILIARY SWITCH CONTROLLED COMPONENT IS INOPERATIVE

A1 PERFORM INSPECTION AND VERIFICATION

- Perform Inspection and Verification procedure in this section.

Was an obvious cause for an observed or reported concern found?

Yes	Correct the cause as necessary.
No	GO to A2

A2 CHECK THE AUXILIARY SYSTEM

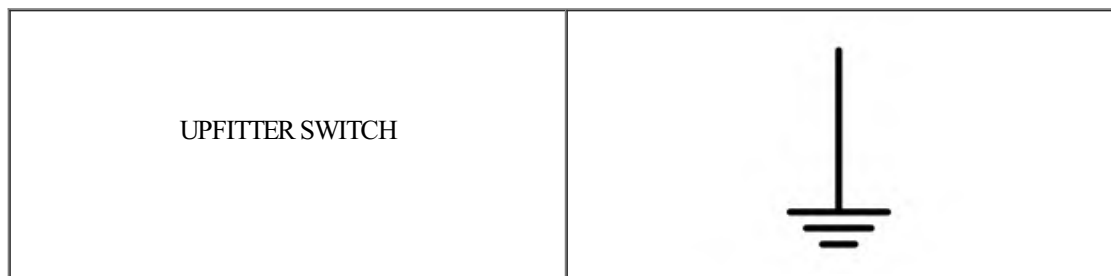
- Ignition ON.
- Operate all the upfitter accessories.

Are all the upfitter accessories inoperative?

Yes	GO to A3
No	GO to A6

A3 CHECK FOR VOLTAGE TO THE AUXILIARY SWITCH

- Ignition OFF.
- Disconnect Upfitter switch [C9120](#) .
- Ignition ON.
- Measure:



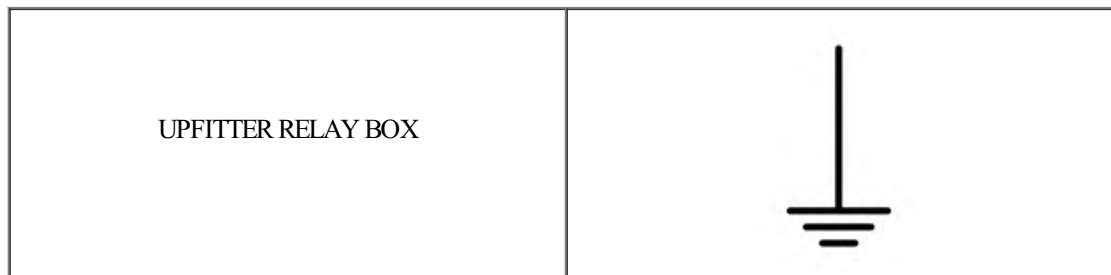
Positive Lead	Measurement / Action	Negative Lead
C9120-5	  	Ground
C9120-11	  	Ground

Is the voltage greater than 11 volts?

Yes	GO to A4
No	REPAIR the affected circuit for an open.

A4 CHECK FOR VOLTAGE TO THE UPFITTER RELAY BOX

- Ignition OFF.
- Measure:



Positive Lead	Measurement / Action	Negative Lead
C3271A-1		Ground

Is the voltage greater than 11 volts?

Yes	GO to A7
No	REPAIR the affected circuit.

A5 CHECK FOR GROUND TO THE UPFITTER RELAY BOX

- Remove upfitter relays 1 through 6.
- Measure:

NOTE: For relay and pin assignments, Refer to Wiring Diagrams Cell [11](#) for schematic and connector information.

Positive Lead	Measurement / Action	Negative Lead
Upfitter Relay 1, Pin 2	Ω	Ground
Upfitter Relay 2, Pin 2	Ω	Ground
Upfitter Relay 3, Pin 2	Ω	Ground
Upfitter Relay 4, Pin 2	Ω	Ground
Upfitter Relay 5, Pin 2	Ω	Ground
Upfitter Relay 6, Pin 2	Ω	Ground

Is the resistance less than 3 ohms?

Yes	INSTALL an new upfitter relay box.
No	REPAIR the circuit in question for an open.

A6 CHECK THE UPFITTER RELAY

- Ignition OFF.
- Substitute suspect upfitter relay with a known good relay.
- Ignition ON.
- Place the upfitter switch in question to the ON position.

Does the upfitter accessory operate?

Yes	INSTALL a new upfitter relay.
No	REMOVE the known good relay. GO to A7

A7 BYPASS THE UPFITTER RELAY

- Ignition OFF.
- Disconnect Suspect upfitter relay..
- For the upfitter system in question, connect a fused jumper wire:

NOTE: For relay and pin assignments, Refer to Wiring Diagrams Cell [11](#) for schematic and connector information.

Positive Lead	Measurement / Action	Negative Lead
Upfitter Relay Pin 3		Upfitter Relay Pin 5

Did the upfitter accessory operate?

Yes	REMOVE the jumper wire. Go to GO to A9
No	REMOVE the jumper wire. Go to GO to A8

A8 CHECK UPFITTER RELAY SUPPLY VOLTAGE

- For the auxiliary switch in question, measure:

NOTE: For relay and pin assignments, Refer to Wiring Diagrams Cell [11](#) for schematic and connector information.

Positive Lead	Measurement / Action	Negative Lead
Upfitter Relay Pin 3		Ground

Is the voltage greater than 11 volts?

Yes	GO to A9
No	REPAIR the circuit in question for an open.

A9 CHECK THE UPFITTER RELAY GROUND CIRCUITS

- For the auxiliary switch in question, measure:

NOTE: For relay and pin assignments, Refer to Wiring Diagrams Cell [11](#) for schematic and connector information.

Positive Lead	Measurement / Action	Negative Lead
Upfitter Relay Pin 2	Ω	Ground

Is the resistance less than 3 ohms?

Yes	GO to A10
No	REPAIR the upfitter relay ground circuit in question for an open.

A10 CHECK THE UPFITTER RELAY CONTROL CIRCUIT FOR OPEN

- Turn the auxiliary switch for the circuit in question ON.
- For the auxiliary switch in question, measure:

NOTE: For relay and pin assignments, Refer to Wiring Diagrams Cell [11](#) for schematic and connector information.

Positive Lead	Measurement / Action	Negative Lead
Upfitter relay pin 1		Ground

Is the voltage greater than 11 volts?

Yes	The system is operating correctly at this time. The concern may have been caused by loose or intermittent module connections. VERIFY customer concern and ADDRESS the root cause of any connector or pin issues.
No	REPAIR the circuit in question for an open.

All Auxiliary Switch ON Indicators are inoperative

Refer to Wiring Diagrams Cell [140](#) for schematic and connector information.

Normal Operation and Fault Conditions

The upfitter switch indicators have a unique ground circuit. If an upfitter device operates, but the indicator does not illuminate, then the switch or ground is bad.

REFER to: Auxiliary Switches (419-10 Multifunction Electronic Modules, Description and Operation).

Possible Sources

- Upfitter (auxiliary) switch assembly
- Wiring, terminals or connectors

PINPOINT TEST B : ALL AUXILIARY SWITCH ON INDICATORS ARE OPERATIVE

B1 PERFORM INSPECTION AND VERIFICATION

- Perform Inspection and Verification procedure in this section.

Was an obvious cause for an observed or reported concern found?

Yes	Correct the cause as necessary.
No	GO to B2

B2 CHECK THE UPFITTER SYSTEM

- Ignition ON.
- Operate all the upfitter accessories.

Do the upfitter accessories operate?

Yes	GO to B3
No	GO to B4

B3 CHECK THE UPFITTER SWITCH INDICATOR GROUND

- Ignition OFF.
- Disconnect Upfitter switch [C9120](#) .
- Measure:



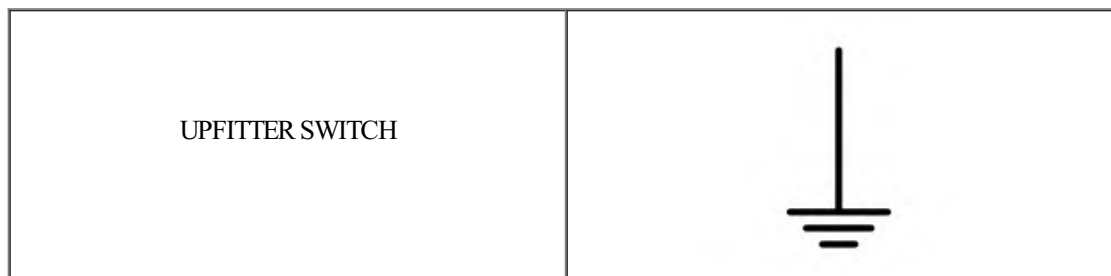
Positive Lead	Measurement / Action	Negative Lead
C9120-3	Ω	Ground

Is the resistance less than 3 ohms?

Yes	INSTALL a new upfitter switch assembly. REFER to: Auxiliary Switches (419-10 Multifunction Electronic Modules, Removal and Installation).
No	REPAIR the circuit.

B4 CHECK FOR VOLTAGE TO THE AUXILIARY SWITCH

- Ignition OFF.
- Disconnect Upfitter switch [C9120](#) .
- Ignition ON.
- Measure:



Positive Lead	Measurement / Action	Negative Lead
C9120-11		Ground
C9120-5		Ground

Is the voltages greater than 11 volts?

Yes	INSTALL a new upfitter switch assembly. REFER to: Auxiliary Switches (419-10 Multifunction Electronic Modules, Removal and Installation).
No	REPAIR the affected circuit.