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2013 FORD F-150 Raptor SVT OEM Service and Repair Workshop Manual

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Before beginning this test, refer to Description and Operation in this section for proper DRL (daytime running lamps) operation.

A1 CHECK THE OPERATION OF THE PARKING LAMPS

- Ignition ON.
- For halogen headlamps, place the headlamp switch in the HEADLAMPS position and observe the low beam headlamps.
- For LED (light emitting diode) headlamps, place the headlamp switch in the PARKING LAMPS position and observe the LED (light emitting diode) DRL (daytime running lamps) /front park lamps.

Do the lamps operate correctly?

Yes	For halogen headlamps, if one of the DRL (daytime running lamps) are inoperative, GO to A12 For LED (light emitting diode) headlamps, if part of the LH (left-hand) headlamp or RH (right-hand) headlamp DRL (daytime running lamps) are inoperative, GO to A10 For LED (light emitting diode) headlamps, if the LH (left-hand) headlamp and auxiliary DRL (daytime running lamps) (part of the fog lamp assembly) or RH (right-hand) headlamp and auxiliary DRL (daytime running lamps) (part of the fog lamp assembly) are inoperative, GO to A4 For LED (light emitting diode) headlamps, if the LH (left-hand) headlamp only DRL (daytime running lamps) or RH (right-hand) headlamp only DRL (daytime running lamps) are inoperative, GO to A8 For LED (light emitting diode) headlamps, if the one of the auxiliary DRL (daytime running lamps) (part of the fog lamp assembly) are inoperative, GO to A9 If all of the DRL (daytime running lamps) are inoperative or always on, GO to A3 For LED (light emitting diode) headlamps, if the LH (left-hand) headlamp and auxiliary DRL (daytime running lamps) (part of the fog lamp assembly) or RH (right-hand) headlamp and auxiliary DRL (daytime running lamps) (part of the fog lamp assembly) are always on, GO to A2
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No	For halogen headlamps, REFER to: Headlamps (417-01 Exterior Lighting, Diagnosis and Testing). For LED (light emitting diode) headlamps, REFER to: Parking, Rear and License Plate Lamps (417-01 Exterior Lighting, Diagnosis and Testing).
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A2 CHECK THE BCM (BODY CONTROL MODULE) DRL (DAYTIME RUNNING LAMPS) CIRCUIT FOR A SHORT TO VOLTAGE

- Clear the Diagnostic Trouble Codes (DTCs) and repeat the self-test (required to enable the lamp output driver).
- Ignition OFF.
- Ignition ON.
- Make sure there is enough ambient lighting that the autolamps system will not automatically illuminate the headlamps.
- Place the headlamp switch in the AUTOLAMPS position.
- Measure:

LH (left-hand) Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1284-3	\bar{V}	Ground

RH (right-hand) Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1285-3	\bar{V}	Ground

Is the voltage greater than 11 volts?

Yes	GO to A10
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No	GO to A5
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A5 REPEAT THE ON-DEMAND SELF-TEST AND CHECK THE DRL (DAYTIME RUNNING LAMPS) CIRCUIT FOR VOLTAGE WITH THE FOG LAMP DISCONNECTED

- Place the headlamp switch in the OFF position.
- Ignition OFF.
- Disconnect LH (left-hand) Front Fog Lamp C1322 or RH (right-hand) Front Fog Lamp C1323 .
- Ignition ON.
- Using a diagnostic scan tool, perform the BCM (body control module) self-test.

Positive Lead	Measurement / Action	Negative Lead
C1284-3	Ω	Ground

RH (right-hand) Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1285-3	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to A7
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No	<p>REPAIR the circuit. After the repair:</p> <p>If no Diagnostic Trouble Codes (DTCs) are present, TEST the system for normal operation.</p> <p>If DTC (diagnostic trouble code) U1000:00 is present, CLEAR the Diagnostic Trouble Codes (DTCs) and REPEAT the self-test (required to enable the lamp output driver if DTC (diagnostic trouble code) U1000:00 is present).</p> <p>If DTC (diagnostic trouble code) U3000:49 is present, INSTALL a new BCM (body control module)</p> <p>·</p> <p>REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Removal and Installation).</p>
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A7 CHECK THE DRL (DAYTIME RUNNING LAMPS) CIRCUIT FOR AN OPEN

- Measure:

LH (left-hand) Headlamp

Positive Lead	Measurement / Action	Negative Lead
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Positive Lead	Measurement / Action	Negative Lead
C1285-3		Ground

Is the voltage greater than 11 volts?


Yes	GO to A10
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No	REPAIR the circuit for an open.
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A9 CHECK THE AUXILIARY DRL (DAYTIME RUNNING LAMPS) (PART OF THE FOG LAMP) CIRCUIT FOR AN OPEN

- Place the headlamp switch in the OFF position.
- Ignition OFF.
- Disconnect LH (left-hand) Front Fog Lamp C1322 or RH (right-hand) Front Fog Lamp C1323 .
- Ignition ON.
- Make sure there is enough ambient lighting that the autolamps system will not automatically illuminate the headlamps.
- Place the headlamp switch in the AUTOLAMPS position.
- Measure:

LH (left-hand) Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1322-3		Ground

RH (right-hand) Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1323-3		Ground

Before using known good LED (light emitting diode) control module, make sure the part label exactly matches the suspect LED (light emitting diode) control module. If any differences are noted, do not use the module from the opposite side of the vehicle, INSTALL a new LED (light emitting diode) control module on the suspect headlamp.

Substitute the known good LED (light emitting diode) control module from the opposite headlamp.

- Ignition ON.
- Using a diagnostic scan tool, perform the BCM (body control module) Local Interconnect Network (LIN) New Module Initialization routine.
- CLEAR the Diagnostic Trouble Codes (DTCs), REPEAT the self-test (required to enable the lamp output driver) and cycle the ignition OFF and ON. REPEAT the self-test.
- Place the headlamp switch in the HEADLAMPS position.
- Observe the system and determine if the concern is still present.

Is the concern still present or does any Diagnostic Trouble Codes (DTCs) return?

Yes	REMOVE the known good LED (light emitting diode) control module. INSTALL a new headlamp assembly. REFER to: Headlamp Assembly (417-01 Exterior Lighting, Removal and Installation).
No	REMOVE the known good LED (light emitting diode) control module. INSTALL a new LED (light emitting diode) control module. REFER to: Light Emitting Diode (LED) Control Module (417-01 Exterior Lighting, Removal and Installation).

A12 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Disconnect and inspect all BCM (body control module) and all related in-line 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 BCM (body control module) and all related in-line connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Fog Lamps

417-01 Exterior Lighting	2022 F-150
Diagnosis and Testing	Procedure revision date: 10/1/2020

Fog Lamps

Diagnostic Trouble Code (DTC) Chart

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).

Diagnostic Trouble Code Chart

Module	DTC (diagnostic trouble code)	Description	Action
BCM (body control module)	B1147:11	Left Front Fog Lamps: Circuit Short To Ground	GO to Pinpoint Test B
BCM (body control module)	B1147:15	Left Front Fog Lamps: Circuit Short To Battery or Open	GO to Pinpoint Test B
BCM (body control module)	B1148:11	Right Front Fog Lamps: Circuit Short To Ground	GO to Pinpoint Test B
BCM (body control module)	B1148:15	Right Front Fog Lamps: Circuit Short To Battery or Open	GO to Pinpoint Test B
BCM (body control module)	B1499:11	Exterior Lamps Power Supply "A": Circuit Short To Ground	GO to Pinpoint Test B

	<ul style="list-style-type: none"> Module 	
Both front fog lamps are inoperative or always on	Refer to the Pinpoint Test	GO to Pinpoint Test A
An individual front fog lamp is inoperative or always on	Refer to the Pinpoint Test	GO to Pinpoint Test B

Pinpoint Tests

PINPOINT TEST A : BOTH FRONT FOG LAMPS ARE INOPERATIVE OR ALWAYS ON

Refer to Wiring Diagrams Cell 86 for schematic and connector information.

Normal Operation and Fault Conditions REFER to: [Exterior Lighting - Overview](#) (417-01 Exterior Lighting, Description and Operation).

REFER to: [Exterior Lighting - System Operation and Component Description](#) (417-01 Exterior Lighting, Description and Operation).

Possible Sources

- Wiring, terminals or connectors
- Headlamp switch
- BCM (body control module)

Visual Inspection and Pre-checks

- Inspect the headlamp switch for damage.

A1 CHECK THE HEADLAMP SWITCH

- Ignition ON.
- Using a diagnostic scan tool, perform the BCM (body control module) self-test.


Are any headlamp switch module BCM (body control module) Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to: Headlamps (417-01 Exterior Lighting, Diagnosis and Testing).
No	<p>INSTALL a new headlamp switch.</p> <p>REFER to: Headlamp Switch (417-01 Exterior Lighting, Removal and Installation).</p> <p>TEST the system for normal operation. If the condition returns, GO to A2</p>


BCM (body control module) B1147:11	Left Front Fog Lamps: Circuit Short To Ground	A continuous memory and on-demand DTC (diagnostic trouble code) that sets when the BCM (body control module) detects a short to ground from the LH (left-hand) fog lamp output circuit.
BCM (body control module) B1147:15	Left Front Fog Lamps: Circuit Short To Battery Or Open	A continuous memory and on-demand DTC (diagnostic trouble code) that sets when the BCM (body control module) detects a short to voltage or an open from the LH (left-hand) fog lamp output circuit.
BCM (body control module) B1148:11	Right Front Fog Lamps: Circuit Short To Ground	A continuous memory and on-demand DTC (diagnostic trouble code) that sets when the BCM (body control module) detects a short to ground from the RH (right-hand) fog lamp output circuit.
BCM (body control module) B1148:15	Right Front Fog Lamps: Circuit Short To Battery Or Open	A continuous memory and on-demand DTC (diagnostic trouble code) that sets when the BCM (body control module) detects a short to voltage or an open from the RH (right-hand) fog lamp output circuit.
BCM (body control module) B1499:11	Exterior Lamps Power Supply 'A': Circuit Short To Ground	A continuous memory and on-demand DTC (diagnostic trouble code) that sets when the BCM (body control module) detects a short to ground from the LH (left-hand) fog lamp output circuit.
BCM (body control module) B1499:15	Exterior Lamps Power Supply 'A': Circuit Short To Battery Or Open	A continuous memory and on-demand DTC (diagnostic trouble code) that sets when the BCM (body control module) detects a short to voltage or an open from the LH (left-hand) fog lamp output circuit.
BCM (body control module) B149D:11	Exterior Lamps Power Supply 'B': Circuit Short To Ground	A continuous memory and on-demand DTC (diagnostic trouble code) that sets when the BCM (body control module) detects a short to ground from the RH (right-hand) fog lamp output circuit.
BCM (body control module) B149D:15	Exterior Lamps Power Supply 'B': Circuit Short To Battery Or Open	A continuous memory and on-demand DTC (diagnostic trouble code) that sets when the BCM (body control module) detects a short to voltage or an open from the RH (right-hand) fog lamp output circuit.

- Ignition ON.
- Place the headlamp switch in the PARKLAMPS position and engage the front fog lamp switch.
- For incandescent fog lamps, measure:

LH (left-hand) Front Fog Lamp


Positive Lead	Measurement / Action	Negative Lead
C152-B		Ground

RH (right-hand) Front Fog Lamp


Positive Lead	Measurement / Action	Negative Lead
C162-B		Ground

- For LED (light emitting diode) fog lamps, measure:

LH (left-hand) Front Fog Lamp

Positive Lead	Measurement / Action	Negative Lead
C1322-2		Ground

RH (right-hand) Front Fog Lamp

Positive Lead	Measurement / Action	Negative Lead
C1323-2		Ground

Is the voltage greater than 11 volts?

Yes	GO to B5
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