For other BCM Diagnostic Trouble Codes (DTCs)	-	REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Diagnosis and Testing).

DTC Chart: HCM

DTC	Description	Action **New:** *hover over Pinpoint Test links to show title*
C1A03:29	Left Front Height Sensor: Signal Invalid	GO to Pinpoint Test I
C1A05:29	Left Rear Height Sensor: Signal Invalid	GO to Pinpoint Test I
B1041:11	Levelling Control: Circuit Short To Ground	GO to Pinpoint Test Q
B1041:54	Levelling Control: Missing Calibration	GO to Pinpoint Test Q
B1087:00	LIN Bus "A": No Sub Type Information	GO to Pinpoint Test H
B1088:00	LIN Bus "B": No Sub Type Information	GO to Pinpoint Test H
B14D9:92	Left Headlamp Light Distribution Actuator: Performance or Incorrect Operation	GO to Pinpoint Test H
B14DA:92	Right Headlamp Light Distribution Actuator: Performance or Incorrect Operation	GO to Pinpoint Test H
U0100:00	Lost Communication With ECM/PCM "A": No Sub Type Information	GO to Pinpoint Test J
U0121:00	Lost Communication With Anti-Lock Brake System (ABS) Control Module "A": No Sub Type Information	GO to Pinpoint Test K
U0140:00	Lost Communication With Body Control Module: No Sub Type Information	GO to Pinpoint Test M
U0151:00	Lost Communication With Restraints Control Module: No Sub Type Information	GO to Pinpoint Test N
U0212:00	Lost Communication With Steering Column Control Module: No Sub Type Information	GO to Pinpoint Test L
U023A:00	Lost Communication With Image Processing Module A: No Sub Type Information	GO to Pinpoint Test O
U0253:00	Lost Communication With Accessory Protocol Interface Module: No Sub Type Information	GO to Pinpoint Test P
U0401:00	Invalid Data Received from ECM/PCM A: No Sub Type Information	GO to Pinpoint Test T
U0415:00	Invalid Data Received From Anti-Lock Brake System (ABS) Control Module "A": No Sub Type Information	GO to Pinpoint Test T
U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	GO to Pinpoint Test T
U0429:00	Invalid Data received from Steering Column Control Module: No Sub Type Information	GO to Pinpoint Test T
U0452:00	Invalid Data Received From Restraints Control Module: No Sub Type Information	GO to Pinpoint Test T
U053B:00	Invalid Data Received From Image Processing Module A: No Sub Type Information	GO to Pinpoint Test T
U2100:00	Initial Configuration Not Complete: No Sub Type Information	GO to Pinpoint Test R
U2101:00	Control Module Configuration Incompatible: No Sub Type Information	GO to Pinpoint Test R
U3000:49	Control Module: Internal Electronic Failure	GO to Pinpoint Test S

DTC Chart: IPMA

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).

DTC	Description	Action **New:** *hover over Pinpoint Test links to show title*

DTC	Description	Action **New:** *hover over Pinpoint Test links to show title*
B11C7:46	High Beam Sensor: Calibration / Parameter Memory Failure	GO to Pinpoint Test F
B11C7:97	High Beam Sensor: Component or System Operation Obstructed or Blocked	GO to Pinpoint Test F
For other IPMA Diagnostic Trouble Codes (DTCs)	-	REFER to: Lane Keeping System (419-07 Lane Keeping System, Diagnosis and Testing).

DTC Chart: SCCM

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).

DTC	Description	Action **New:** *hover over Pinpoint Test links to show title*
B1007:09	High-Beam Headlamp Switch: Component Failure	GO to Pinpoint Test G
For other SCCM Diagnostic Trouble Codes (DTCs)	-	REFER to: Steering Wheel and Column Electrical Components (211-05 Steering Wheel and Column Electrical Components, Diagnosis and Testing).

Symptom Chart

Symptom Chart: Headlamps

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).

Condition	Possible Sources	Actions
A module does not respond to the diagnostic scan tool	• Fuse • Wiring, terminals or connectors • Module	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).
One or both low beams is inoperative	Refer to the Pinpoint Test	GO to Pinpoint Test A
One or both high beams is inoperative	Refer to the Pinpoint Test	GO to Pinpoint Test B
One or both low beams are on continuously	Refer to the Pinpoint Test	GO to Pinpoint Test C
One or both high beams are on continuously	Refer to the Pinpoint Test	GO to Pinpoint Test D
The flash-to-pass feature is inoperative	Refer to the Pinpoint Test	GO to Pinpoint Test E
The automatic high beam feature is inoperative	Refer to the Pinpoint Test	GO to Pinpoint Test F

Condition	Possible Sources	Actions
Automatic headlamp leveling headlamp leveling or adaptive front lighting is inoperative or does not operate correctly	Refer to the Pinpoint Test	GO to Pinpoint Test H

Pinpoint Tests

PINPOINT TEST A : ONE OR BOTH LOW BEAMS IS INOPERATIVE

Refer to Wiring Diagrams Cell 85 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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
BCM B14E0:11	Exterior Lamps Power Supply "C": Circuit Short To Ground	A continuous memory and on-demand DTC that sets when the BCM detects a short to ground from the LH low beam output circuit.
BCM B14E0:15	Exterior Lamps Power Supply "C": Circuit Short To Battery Or Open	A continuous memory and on-demand DTC that sets when the BCM detects an open from the LH low beam output circuit.
BCM B14E1:11	Exterior Lamps Power Supply "D": Circuit Short To Ground	A continuous memory and on-demand DTC that sets when the BCM detects a short to ground from the RH low beam output circuit.
BCM B14E1:15	Exterior Lamps Power Supply "D": Circuit Short To Battery Or Open	A continuous memory and on-demand DTC that sets when the BCM detects an open from the RH low beam output circuit.
BCM B1D00:11	Left Low Beam: Circuit Short To Ground	A continuous memory and on-demand DTC that sets when the BCM detects a short to ground from the LH low beam output circuit.
BCM B1D00:15	Left Low Beam: Circuit Short To Battery Or Open	A continuous memory and on-demand DTC that sets when the BCM detects an open from the LH low beam output circuit.
BCM B1D01:11	Right Low Beam: Circuit Short To Ground	A continuous memory and on-demand DTC that sets when the BCM detects a short to ground from the RH low beam output circuit.
BCM B1D01:15	Right Low Beam: Circuit Short To Battery Or Open	A continuous memory and on-demand DTC that sets when the BCM detects an open from the RH low beam output circuit.
BCM U1000:00	Solid State Driver Protection Active -Driver Disabled: No Sub Type Information	This DTC sets when the BCM has temporarily shut down the output driver. The module has temporarily disabled an output because an excessive current draw exists (such as a short to ground). The BCM cannot enable the output until the cause of the short is corrected, the Diagnostic Trouble Codes (DTCs) have been cleared and a successful self-test is run. For additional information on BCM Field Effect Transistor (FET) protection, REFER to: Module Controlled Functions - System Operation and Component Description (419-10 Multifunction Electronic Modules, Description and Operation).

BCM U3000:49	Control Module: Internal Electronic Failure	This DTC sets when the BCM has permanently shut down the output driver. The module has permanently disabled an output because an excessive current draw fault (such as a short to ground) has exceeded the limits that the BCM can withstand. CORRECT the cause of the excessive current draw before installing a new BCM. For additional information on BCM Field Effect Transistor (FET) protection, REFER to: Module Controlled Functions - System Operation and Component Description (419-10 Multifunction Electronic Modules, Description and Operation).

Possible Sources

- Headlamp assembly
- Wiring, terminals or connectors
- BCM

Visual Inspection and Pre-checks

- Inspect the headlamp assembly for damage.

A1 DETERMINE IF ONE OR BOTH LOW BEAMS ARE INOPERATIVE

- Ignition ON.
- Place the headlamp switch in the HEADLAMPS ON position.

Are both low beams inoperative?

Yes	GO to A7
No	GO to A2

A2 CHECK FOR VOLTAGE AT THE HEADLAMP

- Ignition OFF.
- Place the headlamp switch in the OFF position.
- Disconnect: Inoperative LH Headlamp C1284 or RH Headlamp C1285.
- Ignition ON.
- Place the headlamp switch in the HEADLAMPS ON position.
- Measure:

HEADLAMP ASSEMBLY LH	

LH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1284-6	V	Ground

HEADLAMP ASSEMBLY RH	

RH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1285-6		Ground

Is the voltage greater than 11 volts?

Yes	GO to A4
No	GO to A3

A3 REPEAT THE ON-DEMAND SELF-TEST AND CHECK FOR VOLTAGE TO THE HEADLAMP

- Place the headlamp switch in the OFF position.
- Using a diagnostic scan tool, perform the BCM self-test.
- Clear the Diagnostic Trouble Codes (DTCs) and repeat the self-test (required to enable the lamp output driver).
- Ignition OFF.
- Ignition ON.
- Place the headlamp switch in the HEADLAMPS ON position.
- Measure:

HEADLAMP ASSEMBLY LH	

LH Headlamp

Positive Lead	Measurement / Action	Negative Lead

Positive Lead	Measurement / Action	Negative Lead
C1284-6	V	Ground

HEADLAMP ASSEMBLY RH	

RH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1285-6	V	Ground

Is the voltage greater than 11 volts?

Yes	INSTALL a new headlamp assembly. REFER to: Headlamp Assembly (417-01 Exterior Lighting, Removal and Installation).
No	GO to A5

A4 CHECK THE HEADLAMP GROUND CIRCUIT FOR AN OPEN

- Measure:

HEADLAMP ASSEMBLY LH

LH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1284-6	V	C1284-9
C1284-6	V	C1284-12
C1284-6	V	C1284-16

HEADLAMP ASSEMBLY RH

RH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1285-6	V	C1285-9
C1285-6	V	C1285-12
C1285-6	V	C1285-16

Is the voltage greater than 11 volts?

Yes	INSTALL a new headlamp assembly. REFER to: Headlamp Assembly (417-01 Exterior Lighting, Removal and Installation).
No	REPAIR the circuit in question.

A5 CHECK THE LOW BEAM SUPPLY CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Place the headlamp switch in the OFF position.
- Disconnect: BCM C2280B.
- Measure:

HEADLAMP ASSEMBLY LH	

LH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1284-6	Ω	Ground

HEADLAMP ASSEMBLY RH	

RH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1285-6	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to A6
No	REPAIR the circuit. After the repair: If no Diagnostic Trouble Codes (DTCs) are present, TEST the system for normal operation. If DTC U1000:00 is present, CLEAR the Diagnostic Trouble Codes (DTCs) and REPEAT the self-test (required to enable the lamp output driver if DTC U1000:00 is present). If DTC U3000:49 is present, Click here to access Guided Routine (BCM).

A6 CHECK THE LOW BEAM SUPPLY CIRCUIT FOR AN OPEN

- Measure:

HEADLAMP ASSEMBLY LH	BODY CONTROL MODULE (BCM)

LH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1284-6	Ω	C2280B-4

HEADLAMP ASSEMBLY RH	BODY CONTROL MODULE (BCM)

RH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1285-6	Ω	C2280B-2

Is the resistance less than 3 ohms?

Yes	GO to A7
No	REPAIR the circuit.

A7 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Disconnect and inspect all BCM and all related in-line connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the BCM 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?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, Click here to access Guided Routine (BCM).
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 B : ONE OR BOTH HIGH BEAMS IS INOPERATIVE

Refer to Wiring Diagrams Cell 85 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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
BCM B14E2:11	Exterior Lamps Power Supply "E": Circuit Short To Ground	A continuous memory and on-demand DTC that sets when the BCM detects a short to ground from the LH high beam output circuit.
BCM B14E2:15	Exterior Lamps Power Supply "E": Circuit Short To Battery Or Open	A continuous memory and on-demand DTC that sets when the BCM detects an open from the LH high beam output circuit.
BCM B14E3:11	Exterior Lamps Power Supply "F": Circuit Short To Ground	A continuous memory and on-demand DTC that sets when the BCM detects a short to ground from the RH high beam output circuit.
BCM B14E3:15	Exterior Lamps Power Supply "F": Circuit Short To Battery Or Open	A continuous memory and on-demand DTC that sets when the BCM detects an open from the RH high beam output circuit.
BCM B1D02:11	Left High Beam Circuit: Circuit Short To Ground	A continuous memory and on-demand DTC that sets when the BCM detects a short to ground from the LH high beam output circuit.
BCM B1D02:15	Left High Beam Circuit: Circuit Short To Battery Or Open	A continuous memory and on-demand DTC that sets when the BCM detects an open from the LH high beam output circuit.
BCM B1D03:11	Right High Beam Circuit: Circuit Short To Ground	A continuous memory and on-demand DTC that sets when the BCM detects a short to ground from the RH high beam output circuit.

BCM B1D03:15	Right High Beam Circuit: Circuit Short To Battery Or Open	A continuous memory and on-demand DTC that sets when the BCM detects an open from the RH high beam output circuit.
BCM U1000:00	Solid State Driver Protection Active -Driver Disabled: No Sub Type Information	This DTC sets when the BCM has temporarily shut down the output driver. The module has temporarily disabled an output because an excessive current draw exists (such as a short to ground). The BCM cannot enable the output until the cause of the short is corrected, the Diagnostic Trouble Codes (DTCs) have been cleared and a successful self-test is run. For additional information on BCM Field Effect Transistor (FET) protection, REFER to: Module Controlled Functions - System Operation and Component Description (419-10 Multifunction Electronic Modules, Description and Operation).
BCM U3000:49	Control Module: Internal Electronic Failure	This DTC sets when the BCM has permanently shut down the output driver. The module has permanently disabled an output because an excessive current draw fault (such as a short to ground) has exceeded the limits that the BCM can withstand. CORRECT the cause of the excessive current draw before installing a new BCM. For additional information on BCM Field Effect Transistor (FET) protection, REFER to: Module Controlled Functions - System Operation and Component Description (419-10 Multifunction Electronic Modules, Description and Operation).

Possible Sources

- Fuse
- Wiring, terminals or connectors
- Headlamp assembly
- LH steering column multifunction switch
- SCCM
- BCM

Visual Inspection and Pre-checks

- Inspect the headlamp assembly for damage.

B1 CHECK THE LOW BEAM OPERATION

- Ignition ON.
- Place the headlamp switch in the HEADLAMPS position.
- Place the LH steering column multifunction switch in the HIGH BEAM position and observe the headlamps.
- Place the LH steering column multifunction switch in the LOW BEAM position and observe the headlamps.

Do the low beams illuminate?

Yes	If an individual high beam is inoperative, GO to B3 If both high beams are inoperative, GO to B2
No	GO to Pinpoint Test A

B2 CHECK THE LH (LEFT-HAND) MULTIFUNCTION SWITCH INPUT

- Using a diagnostic scan tool, view SCCM Parameter Identifications (PIDs).
- Monitor the SCCM High Beam Switch (HIGH_BEAM_SW) PID while placing the LH steering column multifunction switch in the HIGH BEAM and LOW BEAM positions.

Do the PID values agree with the LH steering column multifunction switch position?

Yes	GO to B9
No	INSTALL a new LH steering column multifunction switch. REFER to: Steering Column Multifunction Switch LH (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). TEST the system for normal operation. If the concern still exists, GO to B8

B3 CHECK FOR VOLTAGE FROM THE HEADLAMP HIGH BEAM CIRCUIT

- Ignition OFF.
- Place the LH steering column multifunction switch in the LOW BEAM position and the headlamp switch in the OFF position.
- Disconnect: Inoperative LH Headlamp C1284 or RH Headlamp C1285.
- Ignition ON.
- Place the headlamp switch in the HEADLAMPS position and the LH steering column multifunction switch in the HIGH BEAM position.
- Measure:

HEADLAMP ASSEMBLY LH	

LH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1284-2		Ground

HEADLAMP ASSEMBLY RH	

RH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1285-2		Ground

Is the voltage greater than 11 volts?

Yes	GO to B7
No	GO to B4

B4 REPEAT THE ON-DEMAND SELF-TEST AND CHECK FOR VOLTAGE HEADLAMP LOW BEAM CIRCUIT

- Place the headlamp switch in the OFF position and the LH steering column multifunction switch in the LOW BEAM position.
- Using a diagnostic scan tool, perform the BCM self-test.
- Clear the Diagnostic Trouble Codes (DTCs) and repeat the self-test (required to enable the lamp output driver).
- Ignition OFF.
- Ignition ON.
- Place the headlamp switch in the HEADLAMPS position and the LH steering column multifunction switch in the HIGH BEAM position.
- Measure:

HEADLAMP ASSEMBLY LH	

LH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1284-2		Ground

HEADLAMP ASSEMBLY RH	

RH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1285-2	V	Ground

Is the voltage greater than 11 volts?

Yes	INSTALL a new headlamp assembly. REFER to: Headlamp Assembly (417-01 Exterior Lighting, Removal and Installation).
No	GO to B5.

B5 CHECK THE HIGH BEAM CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Place the headlamp switch in the OFF position.
- Disconnect: BCM C2280B.
- Measure:

HEADLAMP ASSEMBLY LH	

LH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1284-2	Ω	Ground

HEADLAMP ASSEMBLY RH	

RH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1285-2	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to B6
No	REPAIR the circuit. After the repair: If no Diagnostic Trouble Codes (DTCs) are present, TEST the system for normal operation. If DTC U1000:00 is present, CLEAR the Diagnostic Trouble Codes (DTCs) and REPEAT the self-test (required to enable the lamp output driver if DTC U1000:00 is present). If DTC U3000:49 is present, Click here to access Guided Routine (BCM).

B6 CHECK THE HIGH BEAM SUPPLY CIRCUIT FOR AN OPEN

- Measure:

HEADLAMP ASSEMBLY LH	BODY CONTROL MODULE (BCM)

LH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1284-2	Ω	C2280B-11

HEADLAMP ASSEMBLY RH	BODY CONTROL MODULE (BCM)

RH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1285-2	Ω	C2280B-6

Is the resistance less than 3 ohms?

Yes	GO to B9
No	REPAIR the circuit.

B7 CHECK THE HEADLAMP GROUND CIRCUIT FOR AN OPEN

- Measure:

HEADLAMP ASSEMBLY LH

LH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1284-2	V	C1284-9
C1284-2	V	C1284-12
C1284-2	V	C1284-16

HEADLAMP ASSEMBLY RH

RH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1285-2	V	C1285-9
C1285-2	V	C1285-12
C1285-2	V	C1285-16

Is the voltage greater than 11 volts?

Yes	INSTALL a new headlamp assembly. REFER to: Headlamp Assembly (417-01 Exterior Lighting, Removal and Installation).
No	REPAIR the circuit in question.

B8 CHECK FOR CORRECT SCCM (STEERING COLUMN CONTROL MODULE) OPERATION

- Disconnect and inspect all SCCM connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the SCCM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. 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 SCCM. REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Active Steering (211-05 Steering Wheel and Column Electrical Components, 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.

B9 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Disconnect and inspect all BCM connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the BCM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, Click here to access Guided Routine (BCM).
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 C : ONE OR BOTH LOW BEAMS ARE ON CONTINUOUSLY

Refer to Wiring Diagrams Cell 85 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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
BCM B143B:11	Autolamp On Input: Circuit Short To Ground	An on-demand DTC that sets when the BCM detects a short to ground on the autolamp on input circuit.
BCM B143C:11	Headlamp Off Input: Circuit Short To Ground	An on-demand DTC that sets when the BCM detects a short to ground on the headlamp off input circuit.
BCM B143D:11	Headlamp On Input: Circuit Short To Ground	An on-demand DTC that sets when the BCM detects a short to ground on the headlamp on input circuit.
BCM B143E:11	Headlamp Switch Input: Circuit Short To Ground	A continuous memory DTC that sets when the BCM detects a short to ground on the headlamp switch input circuits.
BCM B143E:15	Headlamp Switch Input: Circuit Short To Battery Or Open	A continuous memory DTC that sets when the BCM detects a short to voltage or open on the headlamp switch input circuits.
BCM B1447:11	Parklamp On Switch Input: Circuit Short To Ground	An on-demand DTC that sets when the BCM detects a short to ground on the parklamps on input circuit.
BCM B14E0:15	Exterior Lamps Power Supply "C": Circuit Short To Battery Or Open	A continuous memory and on-demand DTC that sets when the BCM detects a short to voltage from the LH low beam output circuit.
BCM B14E1:15	Exterior Lamps Power Supply "D": Circuit Short To Battery Or Open	A continuous memory and on-demand DTC that sets when the BCM detects a short to voltage from the RH low beam output circuit.
BCM B1D00:15	Left Low Beam: Circuit Short To Battery Or Open	A continuous memory and on-demand DTC that sets when the BCM detects a short to voltage from the LH low beam output circuit.
BCM B1D01:15	Right Low Beam: Circuit Short To Battery Or Open	A continuous memory and on-demand DTC that sets when the BCM detects a short to voltage from the RH low beam output circuit.

Possible Sources

- Wiring, terminals or connectors
- Headlamp switch
- BCM

Visual Inspection and Pre-checks

- Inspect the headlamp switch for damage.

C1 CHECK LOW BEAMS OPERATION

- Ignition ON.
- Place the headlamp switch in the OFF position.
- Observe the operation of the LH and RH low beam.

Are both low beams illuminated?

Yes	GO to C2
No	GO to C7

C2 CHECK THE HEADLAMP SWITCH

- Ignition OFF.
- Disconnect: Headlamp Switch C205.
- Carry out the headlamp switch component test.
  Refer to Wiring Diagrams Cell 149 for schematic and connector information.

Does the headlamp switch pass the component test?

Yes	GO to C3
No	INSTALL a new headlamp switch. REFER to: Headlamp Switch (417-01 Exterior Lighting, Removal and Installation).

C3 CHECK THE HEADLAMP SWITCH GROUND CIRCUIT FOR AN OPEN

- Measure:

HEADLAMP SWITCH	

Positive Lead	Measurement / Action	Negative Lead
C205-4	Ω	Ground

Is the resistance less than 3 ohms?

Yes	GO to C4
No	REPAIR the circuit.

C4 CHECK THE HEADLAMP SWITCH CIRCUITS FOR A SHORT TO VOLTAGE

- Ignition ON.
- Disconnect: BCM C2280G.
- Measure:

HEADLAMP SWITCH

Positive Lead	Measurement / Action	Negative Lead
C205-10		C205-4
C205-11		C205-4
C205-12		C205-4
C205-13		C205-4

Is any voltage present?

Yes	REPAIR the circuit in question.
No	GO to C5

C5 CHECK THE HEADLAMP SWITCH CIRCUITS FOR A SHORT TO GROUND

- Measure:

HEADLAMP SWITCH	

Positive Lead	Measurement / Action	Negative Lead
C205-10	Ω	Ground
C205-11	Ω	Ground
C205-12	Ω	Ground
C205-13	Ω	Ground

Are the resistances greater than 10,000 ohms?

Yes	GO to C6
No	REPAIR the circuit in question.

C6 CHECK THE HEADLAMP SWITCH CIRCUITS FOR AN OPEN

- Measure:

HEADLAMP SWITCH	BODY CONTROL MODULE (BCM)

Positive Lead	Measurement / Action	Negative Lead
C205-10	Ω	C2280G-16
C205-11	Ω	C2280G-2
C205-12	Ω	C2280G-15
C205-13	Ω	C2280G-21

Are the resistances less than 3 ohms?

Yes	GO to C8
No	REPAIR the circuit in question.

C7 CHECK THE LOW BEAM CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: BCM C2280D.
- Disconnect: LH Headlamp C1284 or RH Headlamp C1285.
- Ignition ON.
- Measure:

HEADLAMP ASSEMBLY LH	

LH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1284-6		Ground

HEADLAMP ASSEMBLY RH	

RH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1285-6		Ground

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to C8

C8 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Disconnect and inspect all BCM connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the BCM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, Click here to access Guided Routine (BCM).
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 D : ONE OR BOTH HIGH BEAMS ARE ON CONTINUOUSLY

Refer to Wiring Diagrams Cell 85 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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
BCM B14E2:15	Exterior Lamps Power Supply "E": Circuit Short To Battery Or Open	A continuous memory and on-demand DTC that sets when the BCM detects a short to voltage from the LH high beam output circuit.
BCM B14E3:15	Exterior Lamps Power Supply "F": Circuit Short To Battery Or Open	A continuous memory and on-demand DTC that sets when the BCM detects a short to voltage from the RH high beam output circuit.
BCM B1D02:15	Left High Beam Circuit: Circuit Short To Battery Or Open	A continuous memory and on-demand DTC that sets when the BCM detects a short to voltage from the LH high beam output circuit.
BCM B1D03:15	Right High Beam Circuit: Circuit Short To Battery Or Open	A continuous memory and on-demand DTC that sets when the BCM detects a short to voltage from the RH high beam output circuit.

Possible Sources

- Wiring, terminals or connectors
- LH steering column multifunction switch
- SCCM
- BCM

Visual Inspection and Pre-checks

- Inspect the LH multifunction switch for damage.

D1 CHECK HIGH BEAMS OPERATION

- Ignition ON.
- Place the headlamp switch in the HEADLAMPS position.
- Place the LH steering column multifunction switch in the LOW BEAM position and observe the headlamps.
- Observe the operation of the LH and RH headlamps.

Are both high beams illuminated?

Yes	GO to D2
No	GO to D3

D2 CHECK THE LH (LEFT-HAND) MULTIFUNCTION SWITCH INPUT

- Using a diagnostic scan tool, view SCCM Parameter Identifications (PIDs).
- Monitor the SCCM High Beam Switch (HIGH_BEAM_SW) PID while placing the LH steering column multifunction switch in the HIGH BEAM and LOW BEAM positions.

Do the PID values agree with the LH steering column multifunction switch position?

Yes	GO to D5
No	INSTALL a new LH steering column multifunction switch. REFER to: Steering Column Multifunction Switch LH (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). TEST the system for normal operation. If the concern still exists, GO to D4

D3 CHECK HIGH BEAM VOLTAGE SUPPLY CIRCUITS FOR A SHORT TO VOLTAGE

- For halogen headlamps, Place the headlamp switch in the OFF position.
- Ignition OFF.
- Disconnect: BCM C2280B.
- Disconnect: LH Headlamp C1284 or RH Headlamp C1285.
- Ignition ON.
- Measure:

HEADLAMP ASSEMBLY LH	

LH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1284-6	V	Ground

HEADLAMP ASSEMBLY RH	

RH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C1285-6	V	Ground

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to D5

D4 CHECK FOR CORRECT SCCM (STEERING COLUMN CONTROL MODULE) OPERATION

- Disconnect and inspect all SCCM connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the SCCM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. 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 SCCM. REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Active Steering (211-05 Steering Wheel and Column Electrical Components, 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.

D5 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Disconnect and inspect all BCM connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the BCM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, Click here to access Guided Routine (BCM).
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 E : THE FLASH-TO-PASS FEATURE IS INOPERATIVE

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

- LH steering column multifunction switch
- SCCM

Visual Inspection and Pre-checks

- Inspect the LH steering column multifunction switch for damage.

E1 CHECK THE HIGH BEAM OPERATION

- Ignition ON.
- Place the headlamp switch in the HEADLAMPS ON position.
- Activate and deactivate the high beams using the high beam function of the LH steering column multifunction switch.

Do the high beams operate correctly?

Yes	GO to E2
No	If one or both high beams are inoperative, GO to Pinpoint Test B If one or both high beams are always on, GO to Pinpoint Test D

E2 CHECK THE LH (LEFT-HAND) MULTIFUNCTION SWITCH INPUT

- Using a diagnostic scan tool, view SCCM Parameter Identifications (PIDs).
- Monitor the SCCM Flash to Pass Switch (FLASH-to-PASS) PID while placing the LH steering column multifunction switch in the FLASH-TO-PASS position.

Does the PID value agree with the LH steering column multifunction switch position?

Yes	GO to E4
No	INSTALL a new LH steering column multifunction switch. REFER to: Steering Column Multifunction Switch LH (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). TEST the system for normal operation. If the concern still exists, GO to E3

E3 CHECK FOR CORRECT SCCM (STEERING COLUMN CONTROL MODULE) OPERATION

- Disconnect and inspect all SCCM connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the SCCM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. 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 SCCM. REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Active Steering (211-05 Steering Wheel and Column Electrical Components, 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.

E4 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Disconnect and inspect all BCM connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the BCM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, Click here to access Guided Routine (BCM).
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 F : THE AUTOMATIC HIGH BEAM FEATURE IS INOPERATIVE

Refer to Wiring Diagrams Cell 85 for schematic and connector information.

Normal Operation and Fault Conditions

The IPMA controls the automatic high beam feature when active.

The IPMA turns the high beam headlamps on when the following conditions are met:

- The feature has been enabled using the message center
- The headlamp switch is in the AUTOLAMPS position and the autolamps feature has turned the exterior lamps on
- The vehicle speed is greater than 51 km/h (32 mph)
- The IPMA determines the ambient lighting conditions are dark enough
- The IPMA does not detect any light source that can be interpreted as an illuminated vehicle lamp

The IPMA turns the high beams off if any of the following occur:

- The IPMA detects any light source that can be interpreted as an illuminated vehicle lamp
- The IPMA determines the ambient lighting conditions are not dark enough
- The vehicle speed falls below 44 km/h (27 mph)
- The autolamps are turned off
- The IPMA determines the view is blocked

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
IPMA B11C7:46	High Beam Sensor: Calibration/Parameter Memory Failure	A continuous memory DTC that sets when the IPMA detects a software problem with the calibrations.
IPMA B11C7:97	High Beam Sensor: Component Or System Operation Obstructed Or Blocked	A continuous memory and on-demand DTC that sets when the IPMA detects a blockage in front of the high beam sensor.

Possible Sources

- Windshield debris
- IPMA (part of the interior rear view mirror)

NOTE: *In cold weather conditions (4Â°C [40Â°F] or less), the auto high beams are inhibited for 10 minutes to allow the camera windshield defrost heater to clear the windshield in front of the auto high beam camera.*

F1 VERIFY THE HIGH BEAM HEADLAMP OPERATION

- Place the headlamp switch in the HEADLAMPS ON position.
- Place the RH steering column multifunction switch in the HIGH BEAM position while observing the headlamps.

Do the high beam headlamps illuminate?

Yes	GO to F2
No	GO to Pinpoint Test B

F2 CHECK FOR IPMA (IMAGE PROCESSING MODULE A) DIAGNOSTIC TROUBLE CODE (DTCS)

- Ignition ON.
- Using a diagnostic scan tool, perform the IPMA self-test.

Is DTC B11C7:97 present?

Yes	GO to F4
No	If no Diagnostic Trouble Code (DTCs) are present or only DTC B11C7:46 is present, GO to F3 If any IPMA Diagnostic Trouble Code (DTCs) are present, REFER to: Lane Keeping System (419-07 Lane Keeping System, Diagnosis and Testing).

F3 IPMA (IMAGE PROCESSING MODULE A) PMI (PROGRAMMABLE MODULE INSTALLATION)

- Carry out the IPMA PMI.
  REFER to: Module Programming (418-01 Module Configuration, General Procedures).
- Clear the Diagnostic Trouble Codes (DTCs). Repeat the self-test.

Is the concern still present?

Yes	INSTALL a new IPMA. REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by a temporary sensor obstruction.

F4 VERIFY THE AUTOMATIC HIGH BEAM SENSOR IS NOT BLOCKED

- Visually verify the automatic high beam sensor is not blocked. Sources of blockage can include:
  - stickers, window decals or tags.
  - non-OEM window tinting.

Was the automatic high beam sensor blocked?

Yes	If possible, REMOVE the blockage. If the blockage cannot be removed, REVIEW the operation of the automatic high beams with the customer.
No	INSTALL a new IPMA. REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).

PINPOINT TEST G : B1007:09

Refer to Wiring Diagrams Cell 92 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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
SCCM B1007:09	High-Beam Headlamp Switch: Component Failures	A continuous memory and on-demand DTC that sets when the SCCM detects an invalid input from the LH steering column multifunction switch.

Possible Sources

- Wiring, terminals or connectors
- LH steering column multifunction switch
- SCCM

G1 CHECK THE LH (LEFT-HAND) STEERING COLUMN MULTIFUNCTION SWITCH

- INSTALL a new LH steering column multifunction switch.
  REFER to: Steering Column Multifunction Switch LH (211-05 Steering Wheel and Column Electrical Components, Removal and Installation).
- Ignition ON.
- Using a diagnostic scan tool, perform the SCCM self-test.
- Clear the Diagnostic Trouble Codes (DTCs) and repeat the self-test.
- Ignition OFF.
- Ignition ON.
- Using a diagnostic scan tool, perform the SCCM self-test.

Does SCCM DTC B1007:09 or the condition return?

Yes	The system is operating correctly. The concern was caused by the LH steering column multifunction switch.
No	GO to G2

G2 CHECK FOR CORRECT SCCM (STEERING COLUMN CONTROL MODULE) OPERATION

- Disconnect and inspect all SCCM connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the SCCM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new SCCM. REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Active Steering (211-05 Steering Wheel and Column Electrical Components, 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 H : AUTOMATIC HEADLAMP LEVELING HEADLAMP LEVELING OR ADAPTIVE FRONT LIGHTING IS INOPERATIVE OR DOES NOT OPERATE CORRECTLY

Refer to Wiring Diagrams Cell 85 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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
HCM B1087:00	LIN Bus "A": No Sub Type Information	A continuous memory and on-demand DTC that sets when the HCM detects a fault on the LH headlamp LIN circuit.
HCM B1088:00	LIN Bus "B": No Sub Type Information	A continuous memory and on-demand DTC that sets when the HCM detects a fault on the RH headlamp LIN circuit.
HCM B14D9:92	Left Headlamp Light Distribution Actuator: Performance Or Incorrect Operation	A continuous memory and on-demand DTC that sets when the HCM has a message from the LH headlamp over the LIN circuit that the headlamp leveling or adaptive front lighting motor failed to travel when commanded.
HCM B14DA:92	Right Headlamp Light Distribution Actuator: Performance Or Incorrect Operation	A continuous memory and on-demand DTC that sets when the HCM has a message from the RH headlamp over the LIN circuit that the headlamp leveling or adaptive front lighting motor failed to travel when commanded.

Possible Sources

- Fuse
- Wiring, terminals or connectors
- Headlamp assembly
- Headlamp switch
- HCM

Visual Inspection and Pre-checks

- Inspect the BCM fuse 20 (10A).
- Inspect the headlamp for damage.

H1 CHECK HEADLAMP LEVELING OR ADAPTIVE FRONT LIGHTING OPERATION

- Ignition ON.
- Place the headlamp switch in the HEADLAMPS ON position.
- While observing both headlamps, operate the vehicle.

Does either headlamp automatically level?

Yes	GO to H3
No	VERIFY the BCM fuse 20 (10A) is OK. If OK, GO to H2 If not OK, REFER to the Wiring Diagram manual to identify the possible causes of the circuit short.

H2 CHECK THE HEADLAMP LEVELING OR ADAPTIVE FRONT LIGHTING VOLTAGE SUPPLY CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect: LH Headlamp C1284.
- Ignition ON.
- Measure:

HEADLAMP ASSEMBLY LH	

LH Motor

Positive Lead	Measurement / Action	Negative Lead
C1284-4		Ground

Is the voltage greater than 11 volts?

Yes	GO to H8
No	REPAIR the circuit.

H3 CHECK THE INOPERATIVE HEADLAMP LEVELING OR ADAPTIVE FRONT LIGHTING VOLTAGE SUPPLY CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect: Inoperative LH Headlamp C1284 or RH Headlamp C1285.
- Ignition ON.
- Measure:

HEADLAMP ASSEMBLY LH	

LH Motor

Positive Lead	Measurement / Action	Negative Lead
C1284-4		Ground

HEADLAMP ASSEMBLY RH	

RH Motor

Positive Lead	Measurement / Action	Negative Lead
C1285-4		Ground

Is the voltage greater than 11 volts?

Yes	GO to H4
No	REPAIR the circuit.

H4 CHECK THE HEADLAMP LEVELING OR ADAPTIVE FRONT LIGHTING LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: HCM C2129.
- Ignition ON.
- Measure:

HEADLAMP CONTROL MODULE (HCM)	

LH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C2129-10	V	Ground

HEADLAMP CONTROL MODULE (HCM)	

RH Headlamp

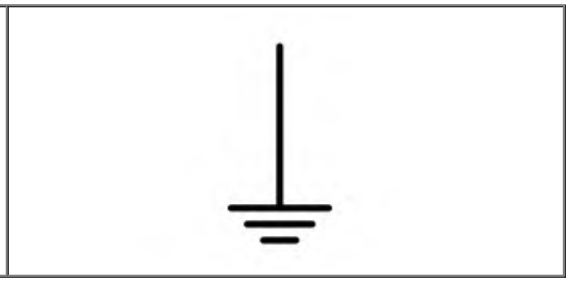
Positive Lead	Measurement / Action	Negative Lead
C2129-21	V	Ground

Is any voltage present?

Yes	REPAIR the circuit in question.
No	GO to H5

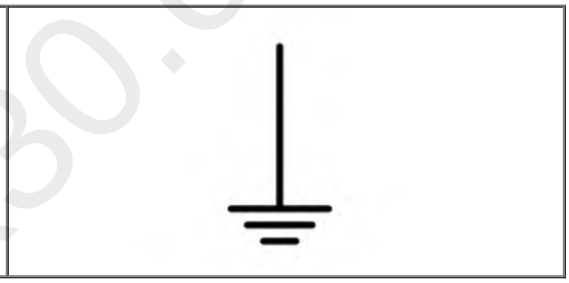
H5 CHECK THE HEADLAMP LEVELING OR ADAPTIVE FRONT LIGHTING LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Measure:

HEADLAMP CONTROL MODULE (HCM)	

LH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C2129-10	Ω	Ground

HEADLAMP CONTROL MODULE (HCM)	

RH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C2129-21	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to H6
No	REPAIR the circuit in question.

H6 CHECK THE HEADLAMP LEVELING OR ADAPTIVE FRONT LIGHTING LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR A SHORT TO THE SHIELD CIRCUIT

- Ignition OFF.
- Measure:

HEADLAMP CONTROL MODULE (HCM)

LH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C2129-10	Ω	C2129-9

HEADLAMP CONTROL MODULE (HCM)

RH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C2129-21	Ω	C2129-22

Is the resistance greater than 10,000 ohms?

Yes	GO to H7
No	REPAIR the circuit in question.

H7 CHECK THE HEADLAMP LEVELING OR ADAPTIVE FRONT LIGHTING LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR AN OPEN

- Measure:

HEADLAMP CONTROL MODULE (HCM)	HEADLAMP ASSEMBLY LH

LH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C2129-10	Ω	C1284-13

HEADLAMP CONTROL MODULE (HCM)	HEADLAMP ASSEMBLY RH

RH Headlamp

Positive Lead	Measurement / Action	Negative Lead
C2129-21	Ω	C1285-13

Is the resistance less than 3 ohms?

Yes	GO to H8
No	REPAIR the circuit in question.

H8 CHECK FOR CORRECT HCM (HEADLAMP CONTROL MODULE) OPERATION

- Disconnect and inspect the HCM and related in-line connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the HCM and related in-line connectors. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	If headlamp leveling or adaptive front lighting is inoperative in both headlamps, CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. 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 HCM. If headlamp leveling or adaptive front lighting is inoperative in only one headlamp, CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. 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 HCM. TEST the system for normal operation. If headlamp leveling or adaptive front lighting is still inoperative, INSTALL a new headlamp assembly, REFER to: Headlamp Assembly (417-01 Exterior Lighting, 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 I : FRONT OR REAR HEIGHT SENSOR INOPERATIVE

Refer to Wiring Diagrams Cell 85 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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
HCM C1A03:29	Left Front Height Sensor: Signal Invalid	A continuous memory and on-demand DTC that sets when the HCM detects an invalid input from the left front height sensor.
HCM C1A05:29	Left Rear Height Sensor: Signal Invalid	A continuous memory and on-demand DTC that sets when the HCM detects an invalid input from the left rear height sensor.

Possible Sources

- Wiring, terminals or connectors
- Headlamp leveling sensor
- HCM

Visual Inspection and Pre-checks

- Inspect the headlamp leveling sensors and linkage for damage.

I1 CHECK FOR SUPPLY VOLTAGE TO THE HEADLAMP LEVELING SENSOR

- Ignition OFF.
- Disconnect: Front Height Sensor C1153 and Rear Height Sensor C3653.
- Ignition ON.
- Measure:

HEIGHT SENSOR, LEFT FRONT	

Front Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C1153-3		Ground

HEIGHT SENSOR, LEFT REAR	

Rear Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C3653-3		Ground

Is the voltage approximately 5 volts?

Yes	GO to I5
No	If the voltage is less than 5 volts, GO to I2 If the voltage is greater than 5 volts, GO to I4

I2 CHECK THE HEADLAMP LEVELING SENSOR VOLTAGE SUPPLY CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.

- Disconnect: HCM. C2129
- Measure:

HEIGHT SENSOR, LEFT FRONT	

Front Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C1153-3	Ω	Ground

HEIGHT SENSOR, LEFT REAR	

Rear Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C3653-3	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to I3
No	REPAIR the circuit.

I3 CHECK THE HEADLAMP LEVELING SENSOR VOLTAGE SUPPLY CIRCUIT FOR AN OPEN

- Measure:

HEIGHT SENSOR, LEFT FRONT	HEADLAMP CONTROL MODULE (HCM)

Front Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C1153-3	Ω	C2129-8

HEIGHT SENSOR, LEFT REAR	HEADLAMP CONTROL MODULE (HCM)

Rear Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C3653-3	Ω	C2129-20

Is the resistance less than 3 ohms?

Yes	GO to I11
No	REPAIR the circuit.

I4 CHECK THE HEADLAMP LEVELING SENSOR VOLTAGE SUPPLY CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: HCM C2129.
- Ignition ON.
- Measure:

HEIGHT SENSOR, LEFT FRONT	

Front Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C1153-3		Ground

HEIGHT SENSOR, LEFT REAR	

Rear Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C3653-3		Ground

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to I11

I5 CHECK THE HEADLAMP LEVELING SENSOR GROUND CIRCUIT

- Measure:

HEIGHT SENSOR, LEFT FRONT

Front Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C1153-3		C1153-2

HEIGHT SENSOR, LEFT REAR

Rear Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C3653-3		C3653-2

Is the voltage approximately 5 volts?

Yes	GO to I8
No	GO to I6

I6 CHECK THE HEADLAMP LEVELING SENSOR GROUND CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: HCM C2129.
- Ignition ON.
- Measure:

HEIGHT SENSOR, LEFT FRONT	

Front Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C1153-2		Ground

HEIGHT SENSOR, LEFT REAR	

Rear Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C3653-2		Ground

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to I7

I7 CHECK THE HEADLAMP LEVELING SENSOR GROUND CIRCUIT FOR AN OPEN

- Measure:

HEIGHT SENSOR, LEFT FRONT	HEADLAMP CONTROL MODULE (HCM)

Front Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C1153-2	Ω	C2129-3

HEIGHT SENSOR, LEFT REAR	HEADLAMP CONTROL MODULE (HCM)

Rear Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C3653-2	Ω	C2129-15

Is the resistance less than 3 ohms?

Yes	GO to I11
No	REPAIR the circuit.

I8 CHECK THE HEADLAMP LEVELING SENSOR FEEDBACK CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: HCM C2129.
- Ignition ON.
- Measure:

HEIGHT SENSOR, LEFT FRONT	

Front Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C1153-1	V	Ground

HEIGHT SENSOR, LEFT REAR	

Rear Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C3653-1	V	Ground

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to I9

I9 CHECK THE HEADLAMP LEVELING SENSOR FEEDBACK CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Measure:

HEIGHT SENSOR, LEFT FRONT	

Front Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C1153-1	Ω	Ground

HEIGHT SENSOR, LEFT REAR	

Rear Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C3653-1	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to I10
No	REPAIR the circuit.

I10 CHECK THE HEADLAMP LEVELING SENSOR FEEDBACK CIRCUIT FOR AN OPEN

- Measure:

HEIGHT SENSOR, LEFT FRONT	HEADLAMP CONTROL MODULE (HCM)

Front Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C1153-1	Ω	C2129-17

HEIGHT SENSOR, LEFT REAR	HEADLAMP CONTROL MODULE (HCM)

Rear Height Sensor

Positive Lead	Measurement / Action	Negative Lead
C3653-1	Ω	C2129-5

Is the resistance less than 3 ohms?

Yes	INSTALL a new headlamp leveling sensor. REFER to: Headlamp Leveling Sensor (417-01 Exterior Lighting, Removal and Installation). CLEAR the DTC. REPEAT the self-test. If the DTC returns, INSTALL a new HCM.
No	REPAIR the circuit.

I11 CHECK FOR CORRECT HCM (HEADLAMP CONTROL MODULE) OPERATION

- Disconnect and inspect the HCM and related in-line connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the HCM and related in-line connectors. 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 for any applicable service articles: TSB, GSB, SSM or FSA. 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 HCM.
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 J : U0100:00

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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
HCM U0100:00	Lost Communication With ECM/PCM "A": No Sub Type Information	A continuous memory and on-demand DTC that sets in continuous memory in the HCM if data messages received from the PCM are missing for 5 seconds or longer.

Possible Sources

- Communication concern
- Battery voltage concern
- PCM
- HCM

J1 VERIFY THE SCAN TOOL COMMUNICATES WITH THE PCM (POWERTRAIN CONTROL MODULE)

- Ignition ON.
- Connect the scan tool.
- Using the diagnostic scan tool, verify that a vehicle session can be established.

Can a vehicle session be established?

Yes	GO to J2
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

J2 CHECK THE HEADLAMP HCM (HEADLAMP CONTROL MODULE) CONTINUOUS MEMORY DIAGNOSTIC TROUBLE CODES (CMDTCS)

- Using a diagnostic scan tool, perform the HCM self-test.
- Clear the Diagnostic Trouble Codes (DTCs).
- Wait 10 seconds.
- Repeat the HCM self-test.

Is DTC U0100:00 set again?

Yes	GO to J3
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

J3 PERFORM THE PCM (POWERTRAIN CONTROL MODULE) SELF-TEST

- Using a diagnostic scan tool, perform the PCM KOEO and KOER self-test.

Are any DTC recorded?

Yes	Diagnose the PCM DTC. Refer to the appropriate section in Group 303 for the procedure.
No	GO to J4

J4 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0100:00

- Using a diagnostic scan tool, clear all Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Retrieve the Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.

Is DTC U0100:00 set in the ABS module?

Yes	INSTALL a new PCM. REFER to: Powertrain Control Module (PCM) (303-14A Electronic Engine Controls - 2.0L EcoBoost (184kW/250PS) â€“ MI4, Removal and Installation). REFER to: Powertrain Control Module (PCM) (303-14B Electronic Engine Controls - 2.7L EcoBoost (238kW/324PS), Removal and Installation).
No	INSTALL a new HCM.

PINPOINT TEST K : U0121:00

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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
HCM U0121:00	Lost Communication With Anti-Lock Brake System (ABS) Control Module "A": No Sub Type Information	A continuous memory and on-demand DTC that sets in continuous memory if the HCM does not receive data messages from the ABS module through the GWM are missing for 5 seconds or longer.

Possible Sources

- Communication concern
- Battery voltage concern
- ABS module
- HCM
-

K1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is an observable symptom present?

Yes	GO to K2
No	The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

K2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform the network test.

Does the ABS module pass the network test?

Yes	GO to K3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

K3 PERFORM THE ABS (ANTI-LOCK BRAKE SYSTEM) MODULE SELF-TEST

- Using a diagnostic scan tool, perform the ABS module self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to: Anti-Lock Brake System (ABS) and Stability Control (206-09 Anti-Lock Brake System (ABS) and Stability Control, Diagnosis and Testing).
No	GO to K4

K4 RECHECK THE HCM (HEADLAMP CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs).
- Wait 10 seconds.
- Repeat the HCM self-test.

Is DTC U0121:00 still present?

Yes	GO to K5
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

K5 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0121:00 SET IN OTHER MODULES

- Using a diagnostic scan tool, clear all Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Retrieve the Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.

Is DTC U0121:00 set in the BCM?

Yes	INSTALL a new ABS module. REFER to: Anti-Lock Brake System (ABS) Module (206-09 Anti-Lock Brake System (ABS) and Stability Control, Removal and Installation).
No	INSTALL a new HCM.

PINPOINT TEST L : U0212:00

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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
HCM U0212:00	Lost Communication With Steering Column Control Module: No Sub Type Information	A continuous memory and on-demand DTC that sets in continuous memory if the HCM does not receive data messages from the SCCM are missing for 5 seconds or longer.

Possible Sources

- Communication concern
- Battery voltage concern
- SCCM
- HCM

L1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is an observable symptom present?

Yes	GO to L2
No	The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

L2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform the network test.

Does the SCCM pass the network test?

Yes	GO to L3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

L3 PERFORM THE SCCM (STEERING COLUMN CONTROL MODULE) SELF-TEST

- Using a diagnostic scan tool, perform the SCCM self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to: Steering Wheel and Column Electrical Components (211-05 Steering Wheel and Column Electrical Components, Diagnosis and Testing).
No	GO to L4

L4 RECHECK THE HCM (HEADLAMP CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs).
- Wait 10 seconds.
- Repeat the HCM self-test.

Is DTC U0126:00 still present?

Yes	GO to L5
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

L5 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0126:00 SET IN OTHER MODULES

- Using a diagnostic scan tool, clear all Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Retrieve the Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.

Is DTC U0126:00 set in another module?

Yes	INSTALL a new SCCM. REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Active Steering (211-05 Steering Wheel and Column Electrical Components, Removal and Installation).
No	INSTALL a new HCM.

PINPOINT TEST M : U0140:00

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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
HCM U0140:00	Lost Communication With Body Control Module: No Sub Type Information	A continuous memory and on-demand DTC that sets in continuous memory in the HCM if data messages received from the BCM are missing for 5 seconds or longer.

Possible Sources

- Communication concern
- Battery voltage concern
- BCM
- HCM

M1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is an observable symptom present?

Yes	GO to M2
No	The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

M2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform the network test.

Does the BCM pass the network test?

Yes	GO to M3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

M3 PERFORM THE BCM (BODY CONTROL MODULE) SELF-TEST

- Using a diagnostic scan tool, perform the BCM self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Diagnosis and Testing).
No	GO to M4

M4 RECHECK THE HCM (HEADLAMP CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs).
- Wait 10 seconds.
- Repeat the HCM self-test.

Is DTC U0140:00 DTC still present?

Yes	GO to M5
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

M5 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0140:00 SET IN OTHER MODULES

- Using a diagnostic scan tool, clear all Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Retrieve the Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.

Is DTC U0140:00 set in other modules?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, Click here to access Guided Routine (BCM).
No	INSTALL a new HCM.

PINPOINT TEST N : U0151:00

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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
HCM U0151:00	Lost Communication With Restraints Control Module: No Sub Type Information	A continuous memory and on-demand DTC that sets in continuous memory in the HCM if data messages received from the RCM are missing for 5 seconds or longer.

Possible Sources

- Communication concern
- Battery voltage concern
- RCM
- HCM

N1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is an observable symptom present?

Yes	GO to N2
No	The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

N2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform the network test.

Does the RCM pass the network test?

Yes	GO to N3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

N3 PERFORM THE RCM (RESTRAINTS CONTROL MODULE) SELF-TEST

- Using a diagnostic scan tool, perform the BCM self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to: Airbag Supplemental Restraint System (SRS) (501-20B Supplemental Restraint System, Diagnosis and Testing).
No	GO to N4

N4 RECHECK THE HCM (HEADLAMP CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs).
- Wait 10 seconds.
- Repeat the HCM self-test.

Is DTC U0151:00 DTC still present?

Yes	GO to N5
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

N5 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0151:00 SET IN OTHER MODULES

- Using a diagnostic scan tool, clear all Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Retrieve the Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.

Is DTC U0151:00 set in other modules?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. 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 RCM. REFER to: Restraints Control Module (RCM) (501-20B Supplemental Restraint System, Removal and Installation).
No	INSTALL a new HCM.

PINPOINT TEST O : U023A:00

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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
HCM U023A:00	Lost Communication With Image Processing Module A: No Sub Type Information	A continuous memory and on-demand DTC that sets in continuous memory in the HCM if data messages received from the IPMA are missing for 5 seconds or longer.

Possible Sources

- Communication concern
- Battery voltage concern
- IPMA
- HCM

O1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is an observable symptom present?

Yes	GO to O2
No	The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

O2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform the network test.

Does the IPMA pass the network test?

Yes	GO to O3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

O3 PERFORM THE IPMA (IMAGE PROCESSING MODULE A) SELF-TEST

- Using a diagnostic scan tool, perform the IPMA self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to: Lane Keeping System (419-07 Lane Keeping System, Diagnosis and Testing).
No	GO to O4

O4 RECHECK THE HCM (HEADLAMP CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs).
- Wait 10 seconds.
- Repeat the HCM self-test.

Is DTC U023A:00 DTC still present?

Yes	GO to O5
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

O5 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U023A:00 SET IN OTHER MODULES

- Using a diagnostic scan tool, clear all Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Retrieve the Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.

Is DTC U023A:00 set in other modules?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. 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 IPMA. REFER to: Image Processing Module A (IPMA) (419-07 Lane Keeping System, Removal and Installation).
No	INSTALL a new HCM.

PINPOINT TEST P : U0253:00

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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
HCM U0253:00	Lost Communication With Accessory Protocol Interface Module: No Sub Type Information	A continuous memory and on-demand DTC that sets in continuous memory in the HCM if data messages received from the APIM are missing for 5 seconds or longer.

Possible Sources

- Communication concern
- Battery voltage concern
- APIM
- HCM

P1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is an observable symptom present?

Yes	GO to P2
No	The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

P2 CHECK THE COMMUNICATION NETWORK

- Using a diagnostic scan tool, perform the network test.

Does the APIM pass the network test?

Yes	GO to P3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

P3 PERFORM THE APIM (SYNC MODULE) SELF-TEST

- Using a diagnostic scan tool, perform the IPMA self-test.

Are any Diagnostic Trouble Codes (DTCs) recorded?

Yes	REFER to: SYNC Module [APIM] (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	GO to P4

P4 RECHECK THE HCM (HEADLAMP CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

NOTE: *If new modules were installed prior to the DTC being set, the module configuration may be incorrectly set during the PMI, or the PMI may not have been carried out.*

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs).
- Wait 10 seconds.
- Repeat the HCM self-test.

Is DTC U0253:00 DTC still present?

Yes	GO to P5
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

P5 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0253:00 SET IN OTHER MODULES

- Using a diagnostic scan tool, clear all Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, perform the continuous memory self-test.
- Retrieve the Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.

Is DTC U0253:00 set in other modules?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, Click here to access Guided Routine (APIM).
No	INSTALL a new HCM.

PINPOINT TEST Q : B1041:04, B1041:54

Refer to Wiring Diagrams Cell 92 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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
HCM B1041:04	Levelling Control: System Internal Failures	A continuous memory and on-demand DTC that sets when the HCM detects an internal failure.
HCM B1041:54	Levelling Control: Missing Calibration	A continuous memory and on-demand DTC that sets when the HCM detects that the height sensor calibration is missing.

Possible Sources

- Wiring, terminals or connectors
- Height sensor
- HCM

Q1 CALIBRATE THE HEIGHT SENSORS

- Make sure the vehicle is unloaded and on a flat and level surface.
- Ignition ON.
- Using a diagnostic scan tool, carry out the Headlamp Align Calibration routine. Follow the scan tool directions.
- Clear the Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Using a diagnostic scan tool, perform the HCM self-test.

Does HCM DTC C1A03:29, C1A05:29, B1041:04 or B1041:54 return?

Yes	GO to Q2
No	The system is operating correctly at this time.

Q2 CHECK FOR CORRECT HCM (HEADLAMP CONTROL MODULE) OPERATION

- Disconnect and inspect the HCM and related in-line connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the HCM and related in-line connectors. 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 for any applicable service articles: TSB, GSB, SSM or FSA. 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 HCM.
No	The system is operating correctly at this time. The concern may have been caused by the module connection. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST R : U2100:00, U2101:00

Refer to Wiring Diagrams Cell 92 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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
HCM U2100:00	Initial Configuration Not Complete: No Sub Type Information	A continuous memory and on-demand DTC that sets due to incomplete or incorrect HCM configuration.
HCM U2101:00	Control Module Configuration Incompatible: No Sub Type Information	A continuous memory and on-demand DTC that sets due to incomplete or incorrect HCM configuration.

Possible Sources

- HCM

R1 CHECK VEHICLE HISTORY

- Check vehicle history for recent service actions with the HCM.

Where there any recent HCM service actions?

Yes	PERFORM the PMI procedure as directed by the scan tool. REFER to: Module Programming (418-01 Module Configuration, General Procedures).
No	GO to R2

R2 CHECK FOR CORRECT HCM (HEADLAMP CONTROL MODULE) OPERATION

- Disconnect and inspect the HCM and related in-line connectors.
- Repair:
  - corrosion (install new connector or terminals â€“ clean module pins)
  - damaged or bent pins â€“ install new terminals/pins
  - pushed-out pins â€“ install new pins as necessary
- Reconnect the HCM and related in-line connectors. 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 for any applicable service articles: TSB, GSB, SSM or FSA. 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 HCM.
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 S : U3000:49

Refer to Wiring Diagrams Cell 92 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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
HCM U3000:49	Control Module: Internal Electronic Failure	A continuous memory and on-demand DTC that sets due to internal HCM failure.

Possible Sources

- HCM

S1 REPEAT THE ON-DEMAND SELF-TEST AND CHECK FOR HCM (HEADLAMP CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) and repeat the HCM self-test.

Does HCM DTC U3000:49 return?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. 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 HCM.
No	The system is operating correctly at this time.

PINPOINT TEST T : U0401:00, U0415:00, U0422:00, U0429:00, U0452:00, U053B:00

Refer to Wiring Diagrams Cell 92 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).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
HCM U0401:00	Invalid Data Received from ECM/PCM A: No Sub Type Information	A continuous memory and on-demand DTC that sets when the HCM receives invalid network data from the PCM.
HCM U0415:00	Invalid Data Received from Anti-Lock Brake System (ABS) Control Module "A": No Sub Type Information	A continuous memory and on-demand DTC that sets when the HCM receives invalid network data from the ABS module.
HCM U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	A continuous memory and on-demand DTC that sets when the HCM receives invalid network data from the BCM.
HCM U0429:00	Invalid Data Received From Steering Column Control Module: No Sub Type Information	A continuous memory and on-demand DTC that sets when the HCM receives invalid network data from the SCCM.
HCM U0452:00	Invalid Data Received From Restraints Control Module: No Sub Type Information	A continuous memory and on-demand DTC that sets when the HCM receives invalid network data from the SASM.
HCM U053B:00	Invalid Data Received From Image Processing Module A: No Sub Type Information	A continuous memory and on-demand DTC that sets when the HCM receives invalid network data from the IPMA.

Possible Sources

- HCM

T1 REPEAT THE ON-DEMAND SELF-TEST AND CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS)

- For DTC U0401:00, Using a diagnostic scan tool, repeat the PCM self-test.
- For DTC U0415:00, Using a diagnostic scan tool, repeat the ABS module self-test.
- For DTC U0422:00, Using a diagnostic scan tool, repeat the BCM self-test.
- For DTC U0429:00, Using a diagnostic scan tool, repeat the SCCM self-test.
- For DTC U0452:00, Using a diagnostic scan tool, repeat the SCCM self-test.
- For DTC U053B:00, Using a diagnostic scan tool, repeat the IPMA self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	For DTC U0401:00, REPAIR the PCM Diagnostic Trouble Codes (DTCs). Refer to Powertrain Control/Emissions Diagnosis (PC/ED) manual. For DTC U0415:00, REPAIR the ABS Diagnostic Trouble Codes (DTCs). REFER to: Anti-Lock Brake System (ABS) and Stability Control (206-09 Anti-Lock Brake System (ABS) and Stability Control, Diagnosis and Testing). For DTC U0422:00, REPAIR the BCM Diagnostic Trouble Codes (DTCs). REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Diagnosis and Testing). For DTC U0429:00, REPAIR the SCCM Diagnostic Trouble Codes (DTCs). REFER to: Steering Wheel and Column Electrical Components (211-05 Steering Wheel and Column Electrical Components, Diagnosis and Testing). For DTC U0452:00, REPAIR the RCM Diagnostic Trouble Codes (DTCs). REFER to: Airbag Supplemental Restraint System (SRS) (501-20B Supplemental Restraint System, Diagnosis and Testing). For DTC U053B:00, REPAIR the IPMA Diagnostic Trouble Codes (DTCs). REFER to: Lane Keeping System (419-07 Lane Keeping System, Diagnosis and Testing).
No	Diagnose all network Diagnostic Trouble Codes (DTCs). REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

Parking, Rear and License Plate Lamps

DTC Charts

DTC Chart: BCM

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).

DTC	Description	Action **New:** *hover over Pinpoint Test links to show title*
B109B:11	License Plate Light: Circuit Short to Ground	GO to Pinpoint Test A
B109B:15	License Plate Light: Circuit Short to Battery or Open	• If the lamp is inoperative, GO to Pinpoint Test A • If the lamp is always on, GO to Pinpoint Test B
B10F3:11	Left Front Position Light: Circuit Short to Ground	GO to Pinpoint Test A
B10F3:15	Left Front Position Light: Circuit Short to Battery or Open	• If the lamp is inoperative, GO to Pinpoint Test A • If the lamp is always on, GO to Pinpoint Test B
B10F4:11	Right Front Position Light: Circuit Short to Ground	GO to Pinpoint Test A
B10F4:15	Right Front Position Light: Circuit Short to Battery or Open	• If the lamp is inoperative, GO to Pinpoint Test A • If the lamp is always on, GO to Pinpoint Test B
B1445:11	Rear Park Lamps Output: Circuit Short to Ground	GO to Pinpoint Test A
B1445:15	Rear Park Lamps Output: Circuit Short to Battery or Open	• If the lamp is inoperative, GO to Pinpoint Test A • If the lamp is always on, GO to Pinpoint Test B
B1446:11	Front Park Lamps Output: Circuit Short To Ground	GO to Pinpoint Test A
B1446:15	Front Park Lamps Output: Circuit Short To Battery or Open	• If the lamp is inoperative, GO to Pinpoint Test A • If the lamp is always on, GO to Pinpoint Test B
B1447:11	Parklamp On Switch Input: Circuit Short to Ground	REFER to: Headlamps (417-01 Exterior Lighting, Diagnosis and Testing).
B149E:11	Left Front Position/Sidemarker: Circuit Short To Ground	GO to Pinpoint Test A

DTC	Description	Action **New:** *hover over Pinpoint Test links to show title*
B149E:15	Left Front Position/Sidemarker: Circuit Short To Battery or Open	• If the lamp is inoperative, GO to Pinpoint Test A • If the lamp is always on, GO to Pinpoint Test B
B149F:11	Right Front Position/Sidemarker: Circuit Short To Ground	GO to Pinpoint Test A
B149F:15	Right Front Position/Sidemarker: Circuit Short To Battery or Open	• If the lamp is inoperative, GO to Pinpoint Test A • If the lamp is always on, GO to Pinpoint Test B
B14A2:11	Tailgate/Liftgate Applique Lamps: Circuit Short To Ground	GO to Pinpoint Test A
B14A2:15	Tailgate/Liftgate Applique Lamps: Circuit Short To Battery or Open	• If the lamp is inoperative, GO to Pinpoint Test A • If the lamp is always on, GO to Pinpoint Test B
B14B2:11	Left Position Lamps: Circuit Short To Ground	GO to Pinpoint Test A
B14B2:15	Left Position Lamps: Circuit Short To Battery or Open	• If the lamp is inoperative, GO to Pinpoint Test A • If the lamp is always on, GO to Pinpoint Test B
B14B3:11	Right Position Lamps: Circuit Short To Ground	GO to Pinpoint Test A
B14B3:15	Right Position Lamps: Circuit Short To Battery or Open	• If the lamp is inoperative, GO to Pinpoint Test A • If the lamp is always on, GO to Pinpoint Test B
B1538:11	Left Rear Position Lamp Output: Circuit Short To Ground	GO to Pinpoint Test A
B1538:15	Left Rear Position Lamp Output: Circuit Short To Battery or Open	• If the lamp is inoperative, GO to Pinpoint Test A • If the lamp is always on, GO to Pinpoint Test B
B1539:11	Right Rear Position Lamp Output: Circuit Short To Ground	GO to Pinpoint Test A
B1539:15	Right Rear Position Lamp Output: Circuit Short To Battery or Open	• If the lamp is inoperative, GO to Pinpoint Test A • If the lamp is always on, GO to Pinpoint Test B
U1000:00	Solid State Driver Protection Active - Driver Disabled: No Sub Type Information	The module has temporarily disabled an output because an excessive current draw exists (such as a short to ground). The BCM cannot enable the output until the cause of the short is corrected. ADDRESS all other Diagnostic Trouble Codes (DTCs) first. After the cause of the concern is corrected, CLEAR the Diagnostic Trouble Codes (DTCs). REPEAT the self-test. For additional information on BCM Field Effect Transistor (FET) protection, REFER to: Module Controlled Functions - System Operation and Component Description (419-10 Multifunction Electronic Modules, Description and Operation).