




Parking, Rear and License Plate Lamps



Special Tool(s)

 ST3063-A	Fluke 77-IV Digital Multimeter FLU77-4 or equivalent
 ST2834-A	Vehicle Communication Module (VCM) and Integrated Diagnostic System (IDS) software with appropriate hardware, or equivalent scan tool
 ST2574-A	Flex Probe Kit 105-R025D or equivalent

Principles of Operation

NOTE: The Smart Junction Box (SJB) is also known as the Generic Electronic Module (GEM) .

The SJB monitors the headlamp switch position by sending voltage signals on multiple circuits to the headlamp switch. There is one circuit for each headlamp switch position. At any given time, one of the signal circuits is switched to ground.

If the SJB does not detect any of the inputs to the headlamp switch is active (switched to ground) for 5 seconds, the SJB turns the parking lamps and headlamps on and keeps them on until the battery saver feature times out.

Additionally, if the SJB detects multiple headlamp switch input circuits short to ground, the SJB turns the parking lamps and headlamps on and keeps them on until the battery saver feature times out.

Refer to [Exterior Lighting](#) for information regarding the Battery Saver feature.

If the above situation occurs, the SJB **cannot** be ruled immediately as being at fault. This is normal behavior of the SJB design as it has detected a fault with the inputs from the headlamp switch.

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection Chart

Mechanical	Electrical
<ul style="list-style-type: none"> Headlamp switch 	<ul style="list-style-type: none"> Smart Junction Box (SJB) fuse 22 (15A) Bulb holder Wiring, terminals or connectors Rear lamp jumper harness LED lamp <u>SJB</u>

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.

4. **NOTE:** *Make sure to use the latest scan tool software release.*

If the cause is not visually evident, connect the scan tool to the Data Link Connector (DLC) .

5. **NOTE:** *The Vehicle Communication Module (VCM) LED prove-out confirms power and ground from the DLC are provided to the VCM .*

If the scan tool does not communicate with the VCM :

- Check the VCM connection to the vehicle.
- Check the scan tool connection to the VCM .
- Refer to [Section 418-00](#), No Power To The Scan Tool, to diagnose no power to the scan tool.

6. If the scan tool does not communicate with the vehicle:

- Verify the ignition key is in the ON position.
- Verify the scan tool operation with a known good vehicle.
- Refer to [Section 418-00](#) to diagnose no response from the PCM.

7. Carry out the network test.

- If the scan tool responds with no communication for one or more modules, refer to [Section 418-00](#).
- If the network test passes, retrieve and record the continuous memory DTCs.

8. Clear the continuous DTCs and carry out the self-test diagnostics for the SJB .

9. If the DTCs retrieved are related to the concern, go to the [Diagnostic Trouble Code \(DTC\) Chart](#) in this section. For all other DTCs, refer to the Diagnostic Trouble Code (DTC) Chart in [Section 419-10](#).

10. If no DTCs related to the concern are retrieved, GO to [Symptom Chart](#).

Symptom Chart

Symptom Chart

Condition	Possible Sources	Action
<ul style="list-style-type: none"> One or more parking, rear or license plate lamps is inoperative 	<ul style="list-style-type: none"> Fuse Wiring, terminals or connectors 	<ul style="list-style-type: none"> VERIFY the bulbs are OK. If OK, GO to Pinpoint Test Q.

- Bulb holder
- LED lamp
- Rear lamp jumper harness
- Headlamp assembly
- Smart Junction Box (SJB)

• The parking, rear or license plate lamps are on continuously

- Wiring, terminals or connectors
- Headlamp switch
- SJB

• [GO to Pinpoint Test R.](#)

Pinpoint Tests

Pinpoint Test Q: One Or More Parking, Rear or License Plate Lamps Is Inoperative

Refer to Wiring Diagrams Cell [92](#), Parking, Rear and License Lamps for schematic and connector information.

Normal Operation

When the headlamp switch is placed in the PARKING LAMPS ON position, the Smart Junction Box (SJB) energizes the parking lamp relay coil (integrated into the SJB). When the parking lamp relay is energized, voltage is routed to the rear and front parking lamps.

This pinpoint test is intended to diagnose the following:

- Fuse
- Wiring, terminals or connectors
- Bulb holder
- LED lamp
- Rear lamp jumper harness
- SJB

PINPOINT TEST Q : ONE OR MORE PARKING, REAR OR LICENSE PLATE LAMPS IS INOPERATIVE

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

Q1 DETERMINE IF ALL THE PARKING LAMPS ARE INOPERATIVE

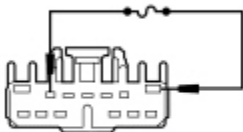
- Ignition OFF.
- Place the headlamp switch in the PARKING LAMPS ON position.

Are all the parking lamps inoperative?

Yes	PLACE the headlamp switch in the OFF position. VERIFY the <u>SJB</u> fuse 22 (15A) is OK. If OK, GO to Q6 . If not OK, REFER to the Wiring Diagrams Manual to identify the possible causes of the circuit short.
No	If all the front parking lamps are inoperative, GO to Q2 . If all the rear parking and license plate lamps are inoperative, GO to Q3 . For all others, GO to Q4 .

Q2 CHECK THE SJB PARKING LAMP OUTPUT CIRCUIT FOR AN OPEN (FRONT LAMPS)

- Disconnect: [SJB C2280E](#) .
- Connect a fused jumper wire between the [SJB C2280E](#) Pin 1, circuit CE612 (GY/VT), harness side and the [SJB C2280E](#) Pin 6, circuit CLS30 (VT/WH), harness side.



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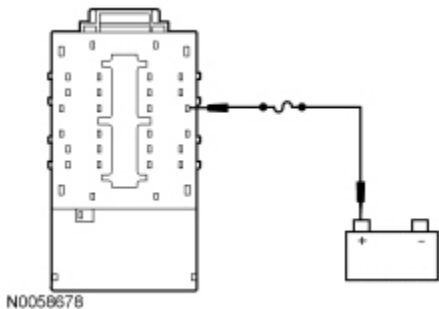
- Ignition ON.

Do the front parking lamps illuminate?

Yes	REMOVE the jumper wire. GO to Q7 .
No	REMOVE the jumper wire. REPAIR circuit CLS30 (VT/WH) for an open. TEST the system for normal operation.

Q3 CHECK THE SJB PARKING LAMP OUTPUT CIRCUIT FOR AN OPEN (REAR LAMPS)

- Disconnect: [SJB C2280D](#) .
- Connect a fused jumper wire between the positive battery terminal and the [SJB C2280D](#) Pin 20, circuit CLS30 (VT/WH), harness side.



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Do the rear parking lamps illuminate?

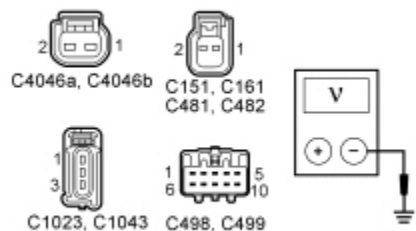
Yes	REMOVE the jumper wire. GO to Q7 .
No	REMOVE the jumper wire. REPAIR circuit CLS30 (VT/WH) for an open. TEST the system for normal operation.

Q4 CHECK FOR VOLTAGE TO THE INOPERATIVE LAMP

- Disconnect: Inoperative Lamp .
- Place the headlamp switch in the PARKING LAMPS ON position.

- Measure the voltage between the inoperative lamp, harness side and ground as follows:

Inoperative Lamp	Connector-Pin	Circuit
LH front	C1023 Pin 2	CLS30 (VT/WH)
RH front	C1043 Pin 2	CLS30 (VT/WH)
LH front side marker	C151 Pin 1	CLS30 (VT/WH)
RH front side marker	C161 Pin 1	CLS30 (VT/WH)
LH rear side marker	C481 Pin 1	CLS30 (VT/WH)
RH rear side marker	C482 Pin 1	CLS30 (VT/WH)
LH license plate	C4046B Pin 2	CLS30 (VT/WH)
RH license plate	C4046A Pin 2	CLS30 (VT/WH)
LH rear lamp	C498 Pin 2	CLS30 (VT/WH)
RH rear lamp	C499 Pin 2	CLS30 (VT/WH)



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Is the voltage greater than 10 volts?

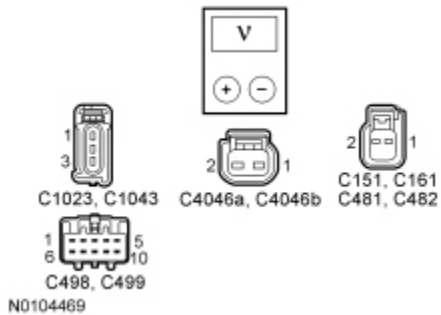
Yes	GO to Q5 .
No	REPAIR circuit CLS30 (VT/WH) for an open. TEST the system for normal operation.

Q5 CHECK THE VOLTAGE TO THE INOPERATIVE LAMP USING THE CONNECTOR GROUND

- Measure the voltage between the inoperative lamp connector, harness side as follows:

Inoperative Lamp	Connector-Pin/ Circuit	Connector-Pin/ Circuit
LH front	C1023 Pin 1 CLS30 (VT/WH)	C1023 Pin 2 GD129 (BK/YE)

Inoperative Lamp	Connector-Pin/ Circuit	Connector-Pin/ Circuit
RH front	C1043 Pin 1 CLS30 (VT/WH)	C1043 Pin 2 GD129 (BK/YE)
LH front side marker	C151 Pin 1 CLS30 (VT/WH)	C151 Pin 2 GD129 (BK/YE)
RH front side marker	C161 Pin 1 CLS30 (VT/WH)	C161 Pin 2 GD129 (BK/YE)
LH rear side marker	C481 Pin 1 CLS30 (VT/WH)	C481 Pin 2 GD110 (BK/YE)
RH rear side marker	C482 Pin 1 CLS30 (VT/WH)	C482 Pin 2 GD110 (BK/YE)
LH license plate	C4046B Pin 1 CLS30 (VT/WH)	C4046B Pin 2 GD110 (BK/YE)
RH license plate	C4046A Pin 1 CLS30 (VT/WH)	C4046A Pin 2 GD110 (BK/YE)
LH rear lamp	C498 Pin 2 CLS30 (VT/WH)	C498 Pin 6 GD109 (BK)
RH rear lamp	C499 Pin 2 CLS30 (VT/WH)	C499 Pin 6 GD110 (BK/WH)



Is the voltage greater than 10 volts?

Yes	For any front, side marker or license plate lamp, INSTALL a new bulb holder. TEST the system for normal operation. For a rear lamp, GO to Q6 .
No	REPAIR the ground circuit in question for an open. TEST the system for normal operation.

Q6 CHECK THE REAR LAMP JUMPER HARNESS

- Place the headlamp switch in the OFF position.
- Inspect the rear lamp jumper harness for opens.

Is the rear lamp jumper harness OK?

Yes	INSTALL a new LED lamp. TEST the system for normal operation.
No	REPAIR or INSTALL a new rear lamp jumper harness. TEST the system for normal operation.

Q7 CHECK FOR CORRECT SJB OPERATION

- Disconnect all the SJB connectors.
- Check for:
 - corrosion
 - damaged pins
 - pushed-out pins
- Connect all the SJB connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.

Is the concern still present?

Yes	INSTALL a new <u>SJB</u> . REFER to Section 419-10 . TEST the system for normal operation.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

Pinpoint Test R: The Parking, Rear Or License Plate Lamps Are On Continuously

Refer to Wiring Diagrams Cell [92](#), Parking, Rear and License Lamps for schematic and connector information.

Normal Operation

The Smart Junction Box (SJB) monitors the parking lamp request input from the headlamp switch. The SJB provides a ground for the parking lamp relay coil (integrated into the SJB) when a request for the parking lamps is received. When the parking lamp relay is energized, voltage is routed to the rear and front parking lamps.

- DTC B1578 (Lamp Park Input Circuit Short to Ground) — an on-demand DTC that sets when the SJB detects a short to ground from the parking lamps on input circuit.

This pinpoint test is intended to diagnose the following:

- Wiring, terminals or connectors
- Headlamp switch
- SJB

PINPOINT TEST R : THE PARKING, REAR OR LICENSE PLATE LAMPS ARE ON CONTINUOUSLY

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

R1 USE THE RECORDED DTCS FROM THE SJB SELF-TEST

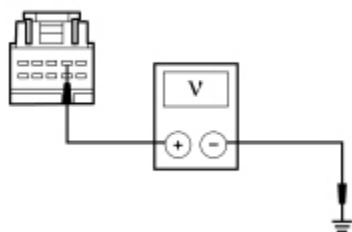
- Check the recorded results from the [SJB](#) self-test.

Was DTC B1578 recorded?

Yes	GO to R2 .
No	GO to R4 .

R2 CHECK FOR A VOLTAGE SIGNAL TO THE HEADLAMP SWITCH

- Ignition OFF.
- Disconnect: Headlamp Switch [C205](#) .
- Measure the voltage between the headlamp switch [C205](#) Pin 2, circuit CLS34 (GY), harness side and ground.



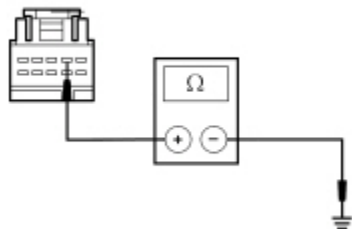
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Is the voltage greater than 10 volts?

Yes	INSTALL a new headlamp switch. REFER to Headlamp Switch in this section. CLEAR the DTCs. REPEAT the self-test.
No	GO to R3 .

R3 CHECK THE PARKING LAMP REQUEST INPUT CIRCUIT FOR A SHORT TO GROUND

- Disconnect: [SJB](#) [C2280B](#) .
- Measure the resistance between the headlamp switch [C205](#) Pin 2, circuit CLS34 (GY), harness side and ground.



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Is the resistance greater than 10,000 ohms?

Yes	GO to R6 .
No	REPAIR circuit CLS34 (GY) for a short to ground. CLEAR the DTCs. REPEAT the self-test.

R4 CHECK THE SJB PARKING LAMP OUTPUT CIRCUIT FOR A SHORT TO VOLTAGE (TO REAR LAMPS)

- Ignition OFF.
- Disconnect: [SJB C2280D](#) .
- Ignition ON.

Do the rear parking lamps continue to illuminate?

Yes	REPAIR circuit CLS30 (VT/WH) for a short to voltage. TEST the system for normal operation.
No	GO to R5 .

R5 CHECK THE SJB PARKING LAMP OUTPUT CIRCUIT FOR A SHORT TO VOLTAGE (TO FRONT LAMPS)

- Ignition OFF.
- Disconnect: [SJB C2280E](#) .
- Ignition ON.

Do the front parking lamps continue to illuminate?

Yes	REPAIR circuit CLS30 (VT/WH) for a short to voltage. TEST the system for normal operation.
No	GO to R6 .

R6 CHECK FOR CORRECT SJB OPERATION

- Disconnect all the [SJB](#) connectors.
- Check for:
 - corrosion
 - damaged pins
 - pushed-out pins
- Connect all the [SJB](#) connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.

Is the concern still present?

Yes	INSTALL a new SJB . REFER to Section 419-10 . TEST the system for normal operation.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs.

REPEAT the self-test.