

LAMPS

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LAMPS/LIGHTING - EXTERIOR - ELECTRICAL DIAGNOSTICS

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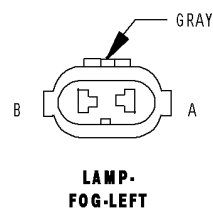
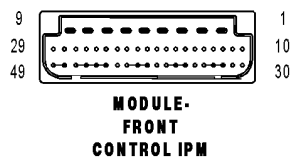
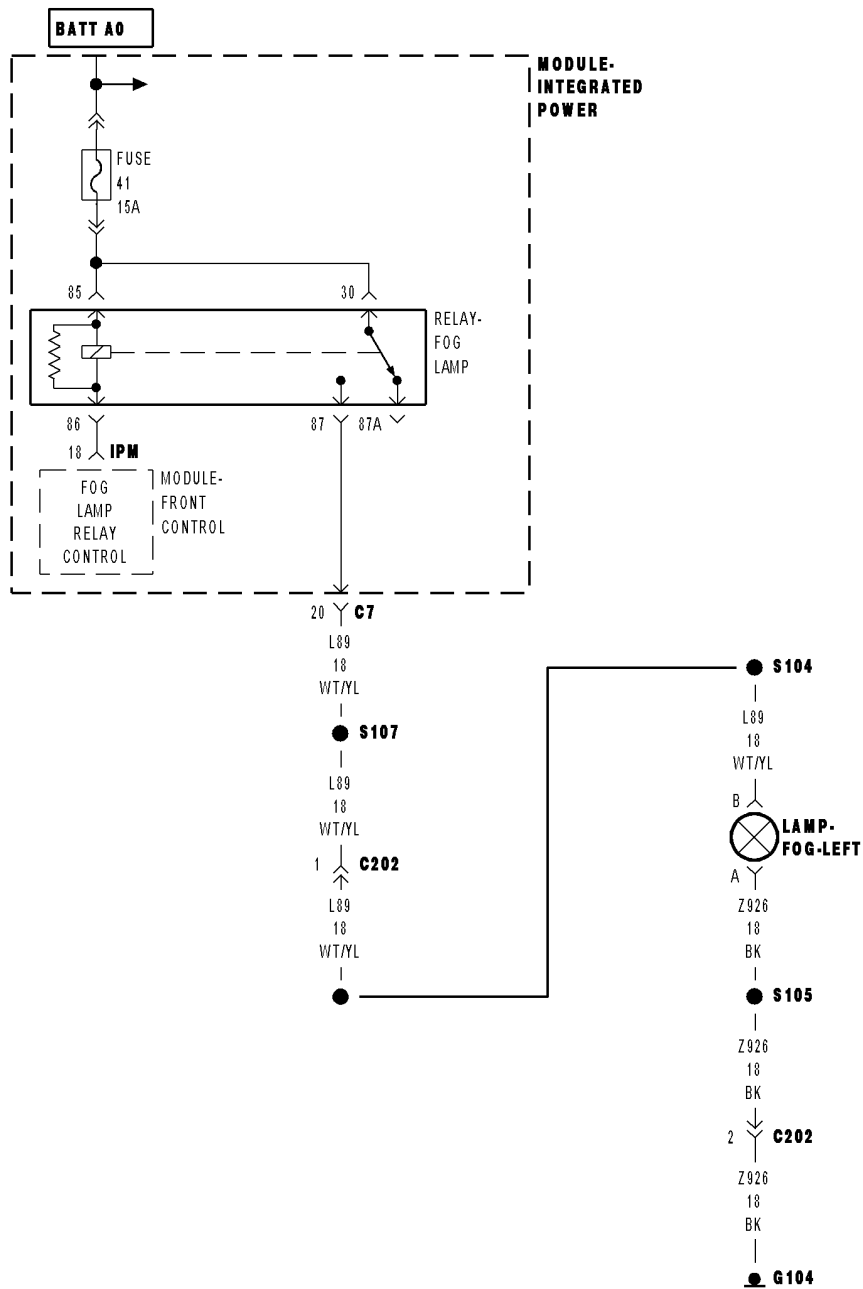
8L - 2 LAMPS/LIGHTING - EXTERIOR - ELECTRICAL DIAGNOSTICS _____ **DR/DH**

FCM-RIGHT TRAILER RELAY OUTPUT		MIC-TURN HAZARD SWITCH INPUT	
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LAMPS/LIGHTING - EXTERIOR - ELECTRICAL DIAGNOSTICS

DIAGNOSIS AND TESTING

FCM-FRONT FOG LAMP RELAY OUTPUT CIRCUIT HIGH



FCM-FRONT FOG LAMP RELAY OUTPUT CIRCUIT HIGH (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a HIGH condition

Possible Causes

FOG LAMP RELAY
INTEGRATED POWER MODULE
FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

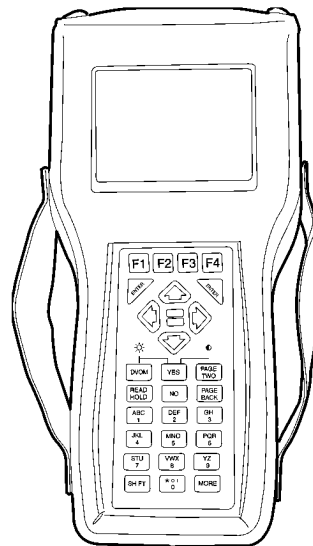
Turn the Fog Lamps on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Front Fog Lamp Relay Output Circuit High?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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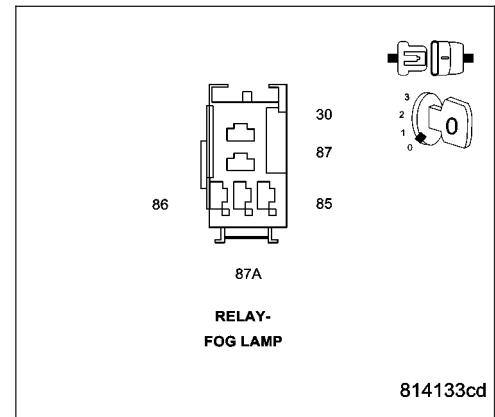
FCM-FRONT FOG LAMP RELAY OUTPUT CIRCUIT HIGH (CONTINUED)**2. FOG LAMP RELAY**

Turn the ignition off.

Remove and install a known good relay in place of the Fog Lamp Relay.

Do the Fog Lamps operate normally?

- Yes** >> Replace the Fog Lamp Relay.
Perform BODY VERIFICATION TEST - VER 1.
- No** >> Go To 3

**3. FRONT CONTROL MODULE**

Turn the ignition off.

Remove the Fog Lamp Relay from the IPM.

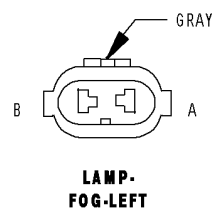
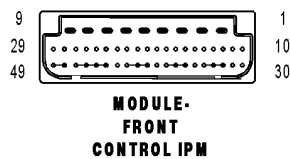
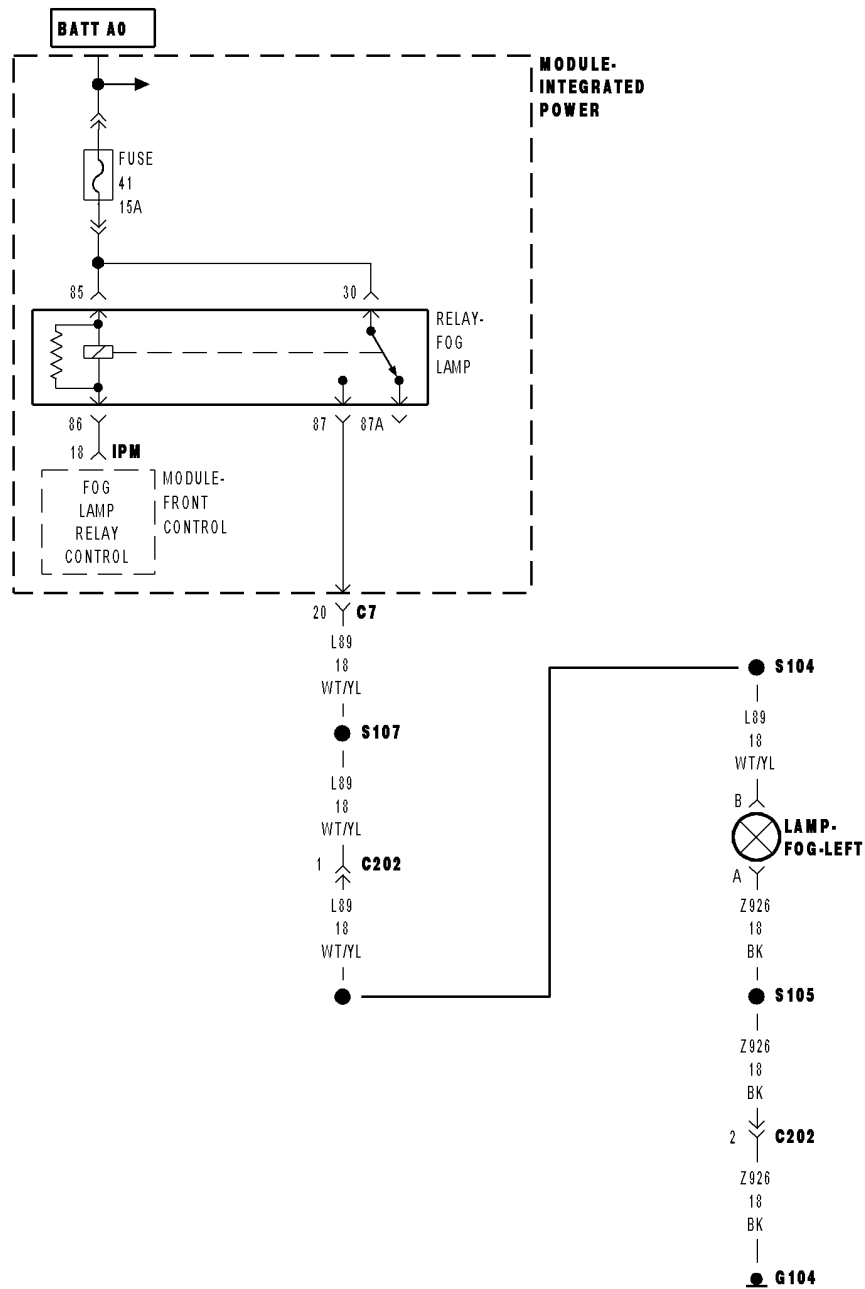
Remove the Front Control Module from the IPM.

Measure the voltage of the Fog Lamp Relay Control circuit and ground.

Is the voltage above 1.0 volts?

- Yes** >> Replace the Integrated Power Module.
Perform BODY VERIFICATION TEST - VER 1.
- No** >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-FRONT FOG LAMP RELAY OUTPUT CIRCUIT LOW



FCM-FRONT FOG LAMP RELAY OUTPUT CIRCUIT LOW (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a short to ground condition

Possible Causes
FOG LAMP RELAY POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

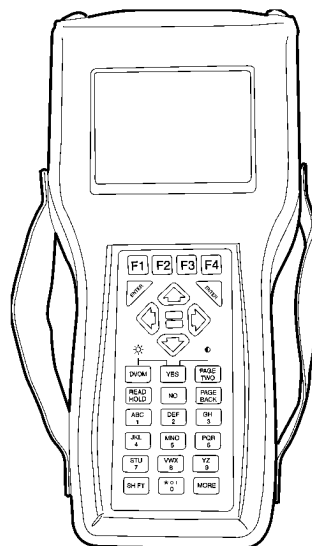
Turn the Front Fog Lamps on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Front Fog Lamp Relay Output Circuit Low?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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FCM-FRONT FOG LAMP RELAY OUTPUT CIRCUIT LOW (CONTINUED)

2. FOG LAMP RELAY

Turn the ignition off.

Install a know good relay in place of the Fog Lamp Relay.

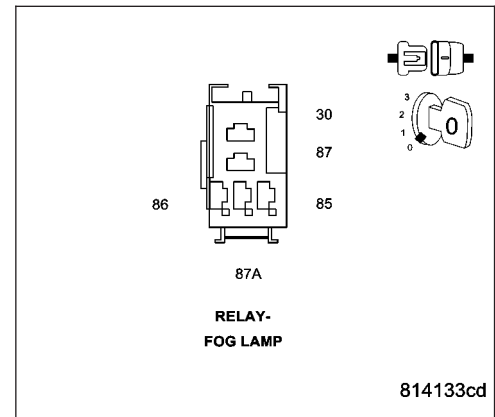
Turn the ignition on.

Actuate the Fog Lamps.

Do the Fog Lamps operate normally?

Yes >> Go To 3

No >> Replace the Fog Lamp Relay.
Perform BODY VERIFICATION TEST - VER 1.

**3. FRONT CONTROL MODULE**

Turn the ignition off

Remove the Fog Lamp Relay.

Remove the FCM from the IPM.

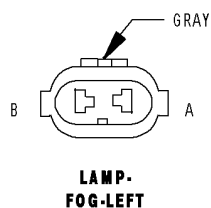
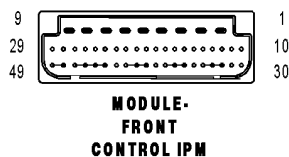
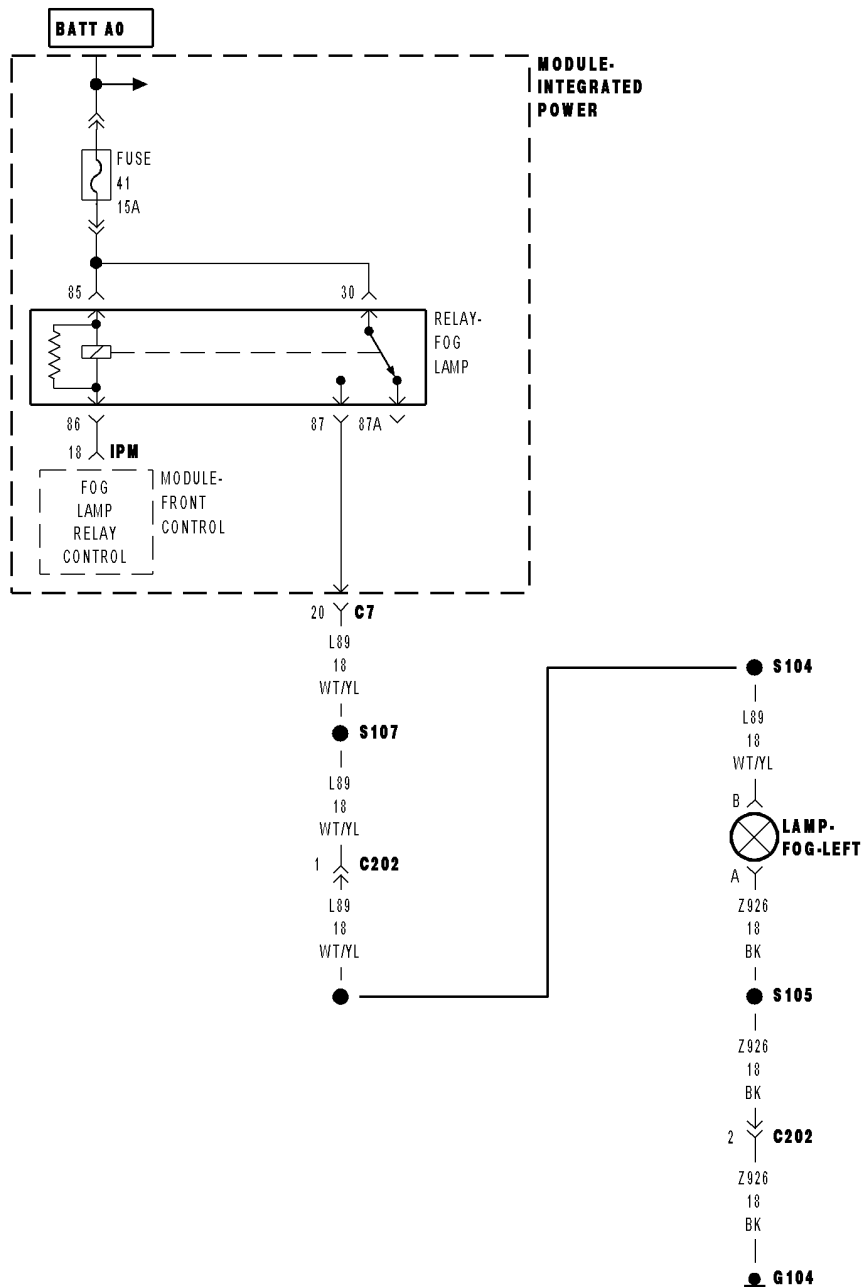
Measure the resistance between ground and the Fog Lamp Relay control circuit in the IPM.

Is the resistance below 5.0 ohms?

Yes >> Replace the Power Distribution Center(PDC).
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-FRONT FOG LAMP RELAY OUTPUT CIRCUIT OPEN



FCM-FRONT FOG LAMP RELAY OUTPUT CIRCUIT OPEN (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects an OPEN condition

Possible Causes
MISSING RELAY FOG LAMP RELAY OUTPUT CIRCUIT OPEN FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

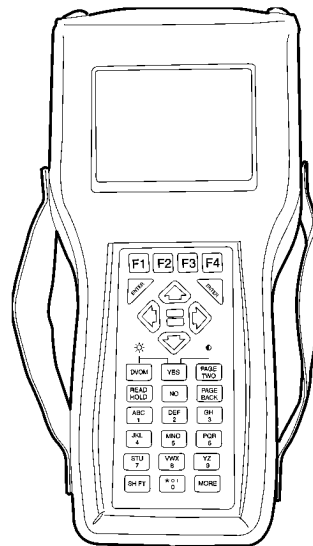
Turn the Front Fog Lamps on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Front Fog Lamp Relay Output Circuit Open.

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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2. MISSING RELAY

Turn the ignition off.

Check the IPM to make certain the Fog Lamp Relay is present.

Is the Fog Lamp Relay present?

Yes >> Go To 3

No >> Replace the missing Fog Lamp Relay.
Perform BODY VERIFICATION TEST - VER 1.

FCM-FRONT FOG LAMP RELAY OUTPUT CIRCUIT OPEN (CONTINUED)**3. FOG LAMP RELAY**

Turn the ignition off.

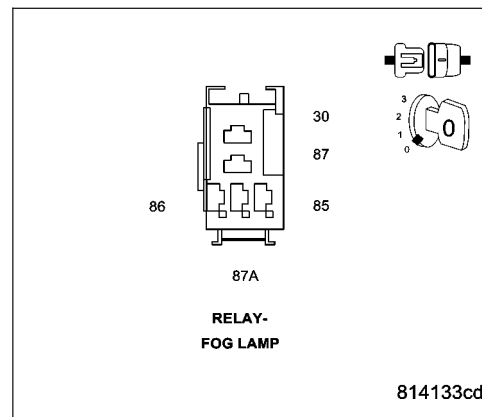
Install a known good relay in place of the fog lamp relay.

Turn the Fog Lamps On.

Do the Fog Lamps operate normally?

Yes >> Replace the Fog Lamp Relay.
Perform BODY VERIFICATION TEST - VER 1.

No >> Go To 4

**4. FRONT CONTROL MODULE**

Turn the ignition off

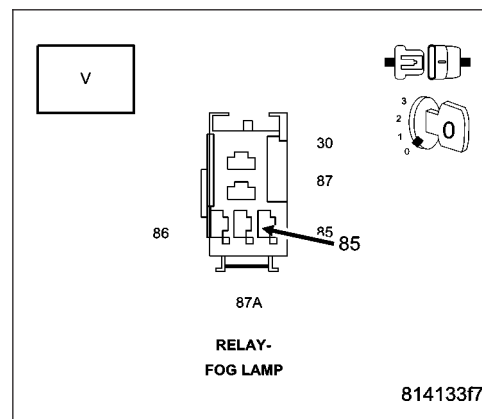
Remove the Fog Lamp Relay.

Measure the voltage of the Fused B+ circuit of the fog lamp relay.

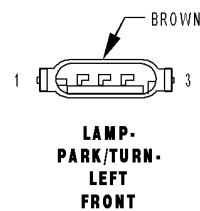
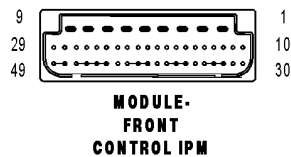
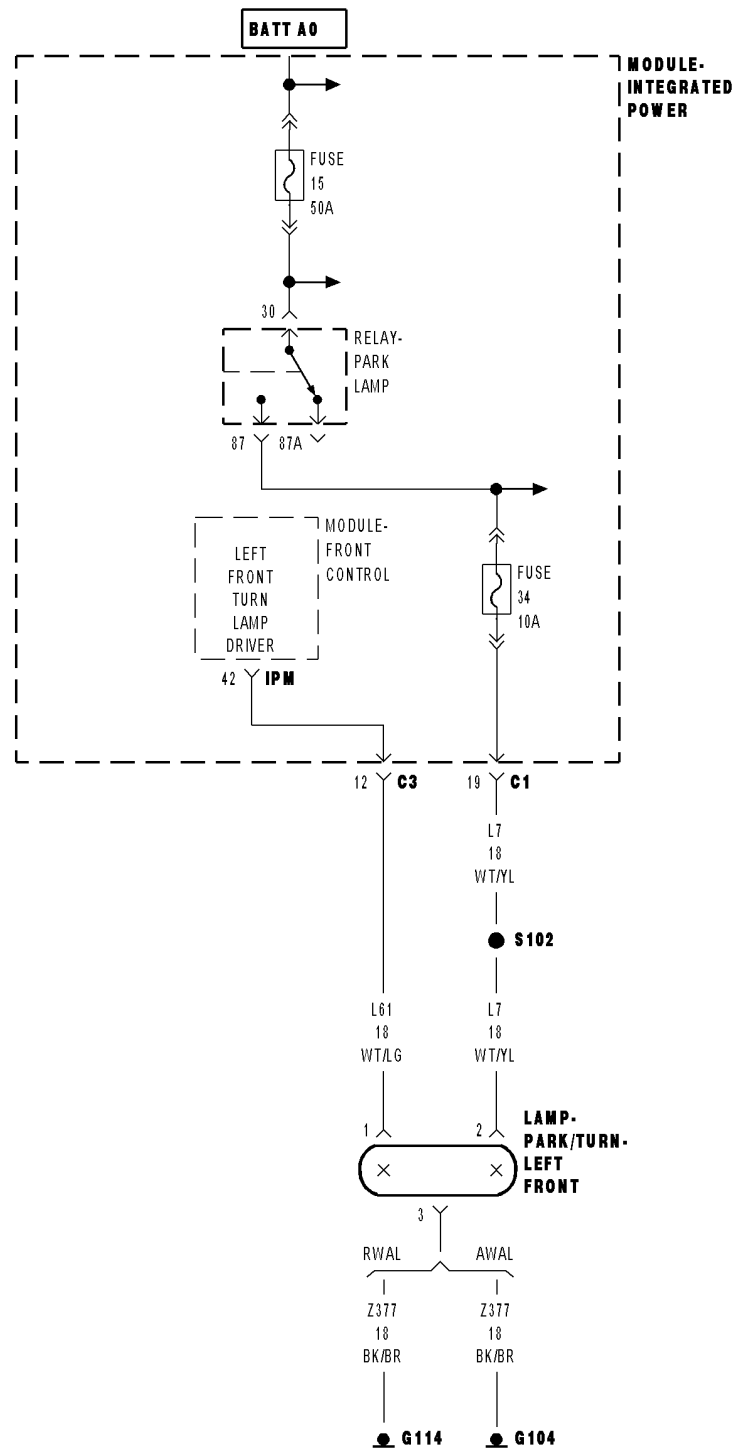
Is the voltage above 10 volts?

Yes >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

No >> Repair the Fog Lamp Relay Output Circuit.
Perform BODY VERIFICATION TEST - VER 1.



FCM-FRONT LEFT TURN OUTPUT CIRCUIT LOW



FCM-FRONT LEFT TURN OUTPUT CIRCUIT LOW (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a short to ground condition

Possible Causes
LEFT FRONT TURN LAMP DRIVER CIRCUIT SHORT TO GROUND POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

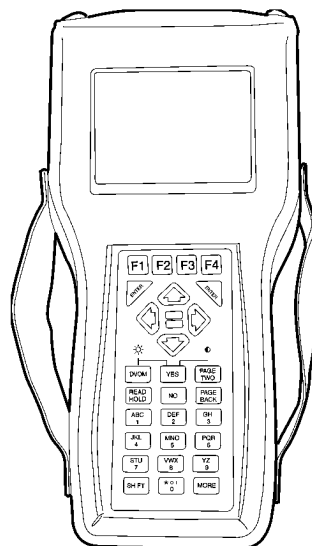
Turn the Left Front Turn Signal on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Front Left Turn Output Circuit Low?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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FCM-FRONT LEFT TURN OUTPUT CIRCUIT LOW (CONTINUED)**2. LEFT FRONT TURN LAMP DRIVER CIRCUIT SHORT TO GROUND**

Turn the ignition off.

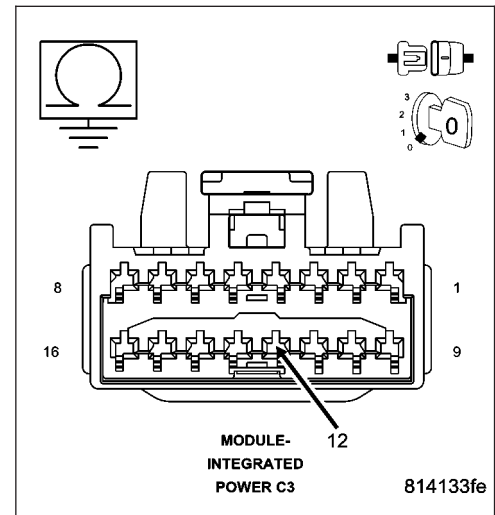
Disconnect the IPM C3 harness connector.

Measure the resistance between ground and the Left Front Turn Lamp Driver circuit.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the Left Front Turn Lamp Driver circuit for a short to ground.
Perform BODY VERIFICATION TEST - VER 1.

**3. FRONT CONTROL MODULE**

Turn the ignition off

Disconnect the FCM connector.

Disconnect the IPM C3 harness connector.

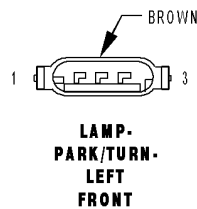
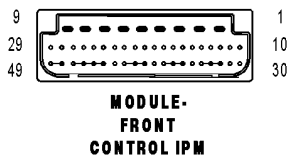
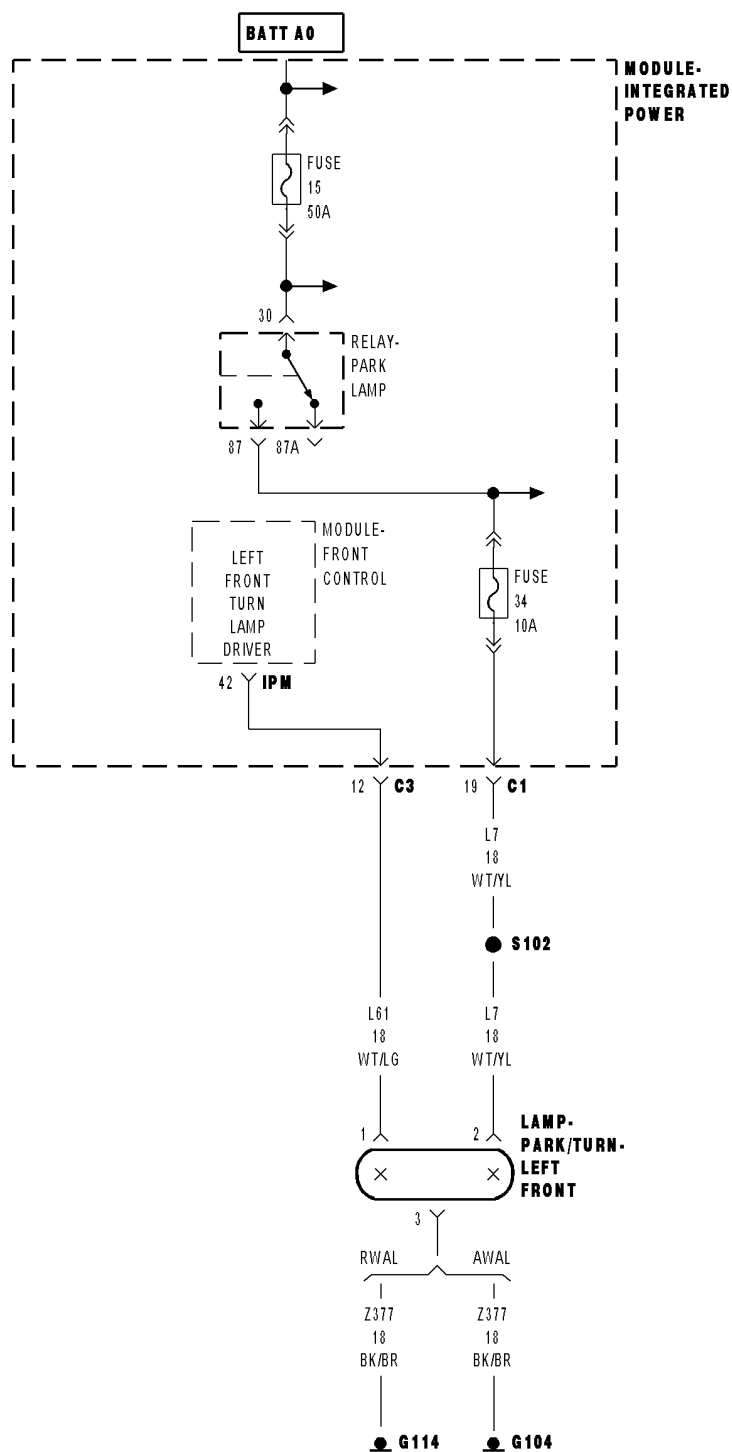
Measure the resistance between ground and the Left Front Turn Lamp Driver circuit in the IPM.

Is the resistance below 5.0 ohms?

Yes >> Replace the Power Distribution Center(PDC).
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-FRONT LEFT TURN OUTPUT CIRCUIT OPEN



FCM-FRONT LEFT TURN OUTPUT CIRCUIT OPEN (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects an OPEN condition

Possible Causes
LEFT FRONT TURN SIGNAL OUTPUT CIRCUIT OPEN POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

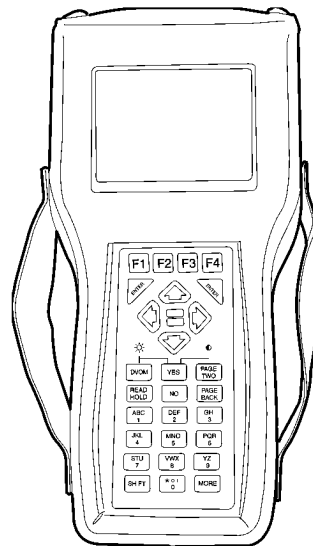
Turn the Left Front Turn Signal on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Front Left Turn Output Circuit Open?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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FCM-FRONT LEFT TURN OUTPUT CIRCUIT OPEN (CONTINUED)**2. LEFT FRONT TURN SIGNAL OUTPUT CIRCUIT OPEN**

Turn the ignition off.

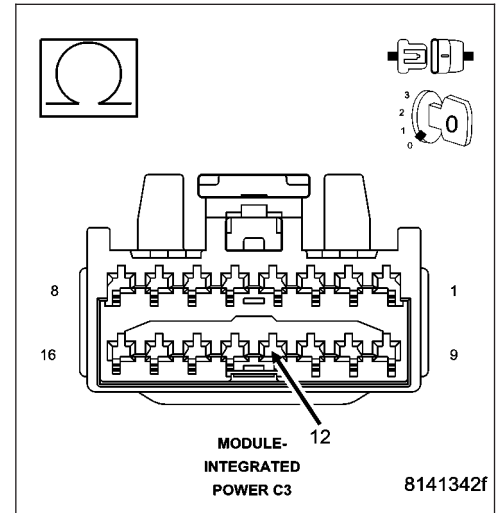
Disconnect the IPM C3 harness connector

Measure the resistance of the Left Front Turn Signal Output circuit.

Is the resistance above 5.0 ohms?

Yes >> Repair the Left Front Turn Signal Output circuit for an open.
Perform BODY VERIFICATION TEST - VER 1.

No >> Go To 3

**3. FRONT CONTROL MODULE**

Turn the ignition off

Disconnect the FCM harness connector.

Disconnect the IPM C3 harness connector.

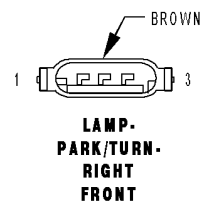
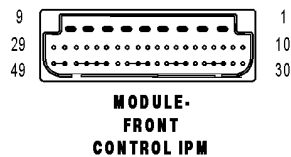
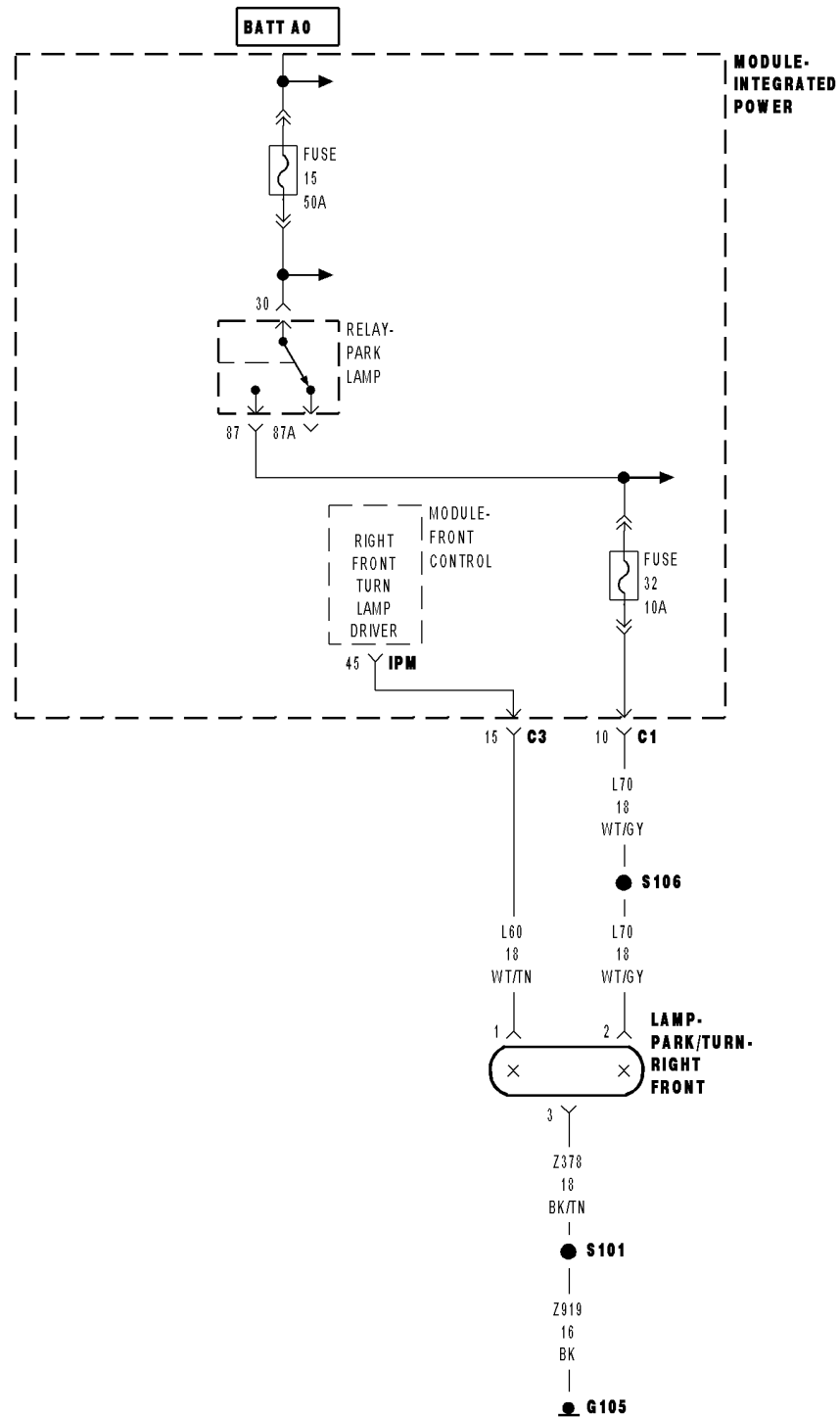
Measure the resistance between ground and the Left Front Turn Signal Output circuit.

Is the resistance above 5.0 ohms?

Yes >> Replace the Power Distribution Center..
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-FRONT RIGHT TURN OUTPUT CIRCUIT LOW



FCM-FRONT RIGHT TURN OUTPUT CIRCUIT LOW (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a short to ground condition

Possible Causes
RIGHT FRONT TURN LAMP DRIVER CIRCUIT SHORT TO GROUND POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

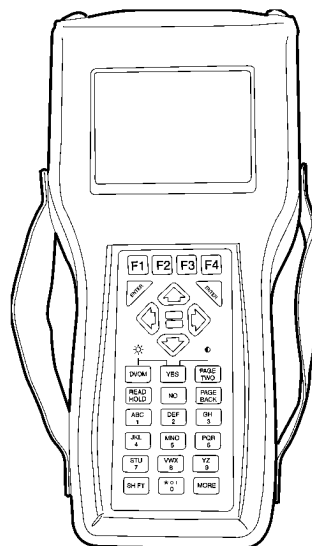
Turn the Right Front Turn Signal on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Front Right Turn Output Circuit Low?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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FCM-FRONT RIGHT TURN OUTPUT CIRCUIT LOW (CONTINUED)

2. RIGHT FRONT TURN LAMP DRIVER CIRCUIT SHORT TO GROUND

Turn the ignition off.

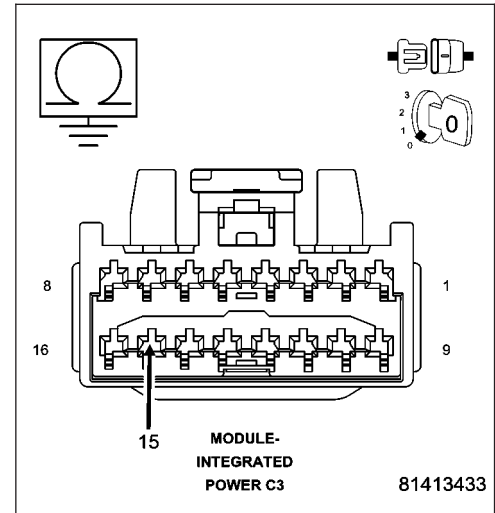
Disconnect the IPM C3 harness connector.

Measure the resistance between ground and the Right Front Turn Lamp Driver circuit.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the Right Front Turn Lamp Driver circuit for a short to ground.
Perform BODY VERIFICATION TEST - VER 1.



3. FRONT CONTROL MODULE

Turn the ignition off

Disconnect the FCM connector.

Disconnect the IPM C3 harness connector.

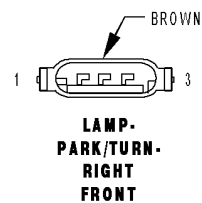
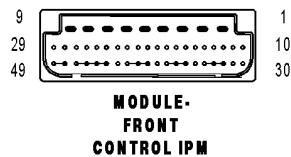
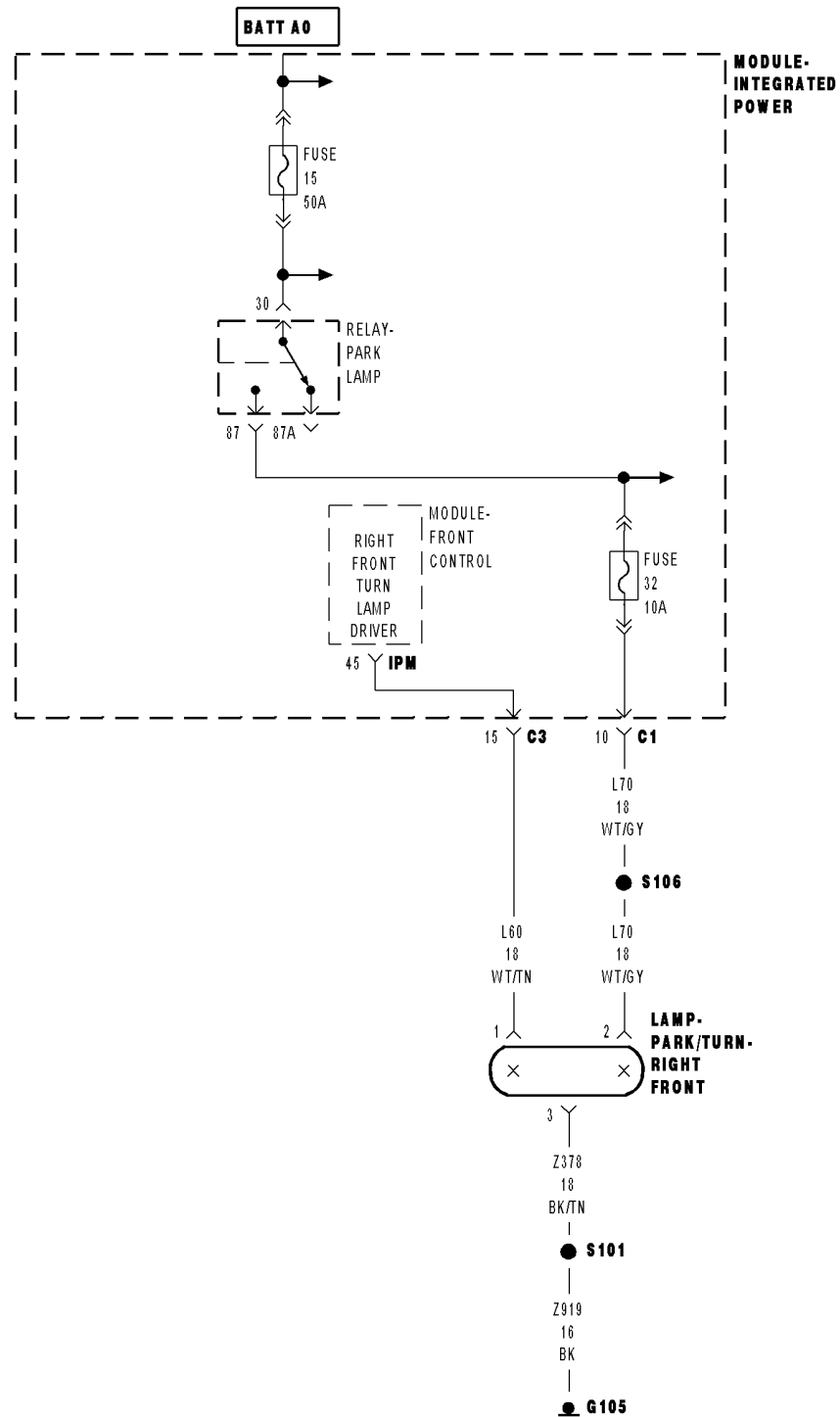
Measure the resistance between ground and the Right Front Turn Lamp Driver circuit in the IPM.

Is the resistance below 5.0 ohms?

Yes >> Replace the Power Distribution Center(PDC).
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-FRONT RIGHT TURN OUTPUT CIRCUIT OPEN



FCM-FRONT RIGHT TURN OUTPUT CIRCUIT OPEN (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects an OPEN condition

Possible Causes
RIGHT FRONT TURN SIGNAL OUTPUT CIRCUIT OPEN POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

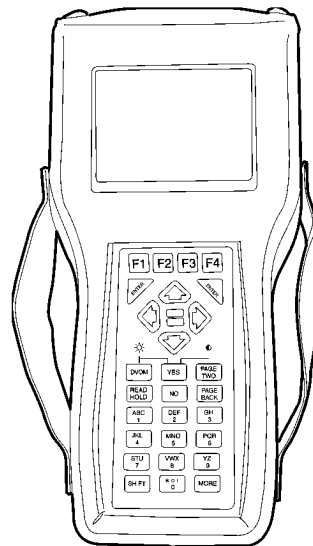
Turn the Right Front Turn Signal on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Front Right Turn Output Circuit Open?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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FCM-FRONT RIGHT TURN OUTPUT CIRCUIT OPEN (CONTINUED)**2. RIGHT FRONT TURN SIGNAL OUTPUT CIRCUIT OPEN**

Turn the ignition off.

Disconnect the IPM C3 harness connector

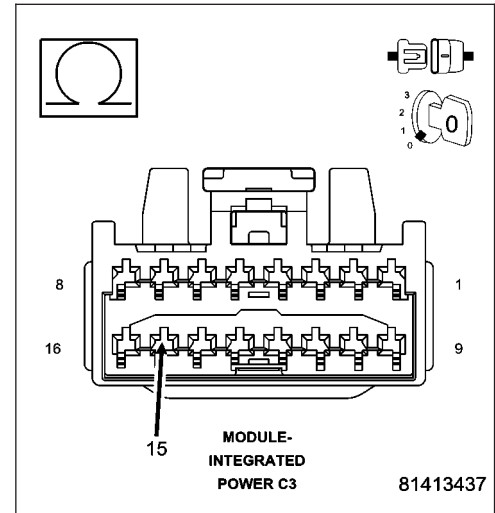
Measure the resistance of the Right Front Turn Signal Output circuit.

Is the resistance above 5.0 ohms?

Yes >> Repair the Right Front Turn Signal Output circuit for an open.

Perform BODY VERIFICATION TEST - VER 1.

No >> Go To 3

**3. FRONT CONTROL MODULE**

Turn the ignition off

Disconnect the FCM from the IPM.

Disconnect the IPM C3 harness connector.

Measure the resistance of the Right Front Turn Signal Output circuit.

Is the resistance above 5.0 ohms?

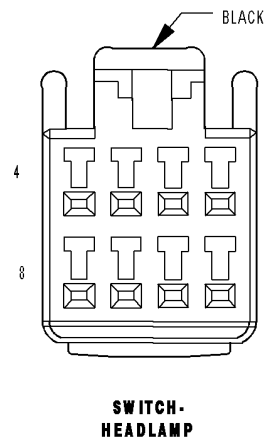
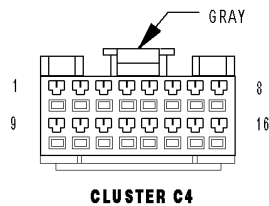
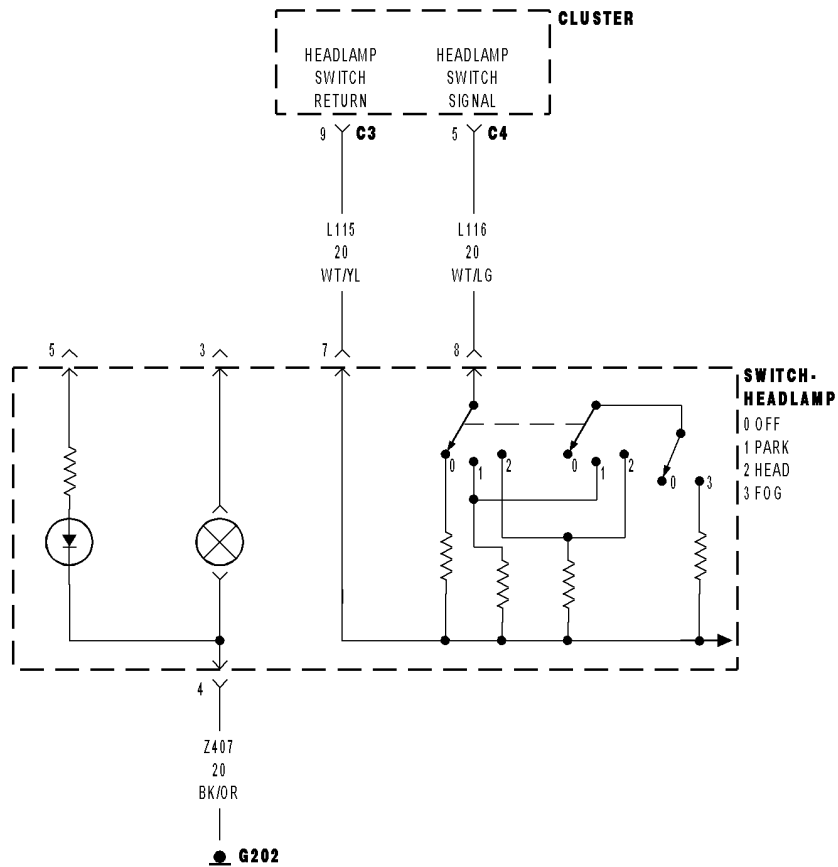
Yes >> Replace the Power Distribution Center..

Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.

Perform BODY VERIFICATION TEST - VER 1.

MIC-HEADLAMP SWITCH INPUT CIRCUIT OPEN



MIC-HEADLAMP SWITCH INPUT CIRCUIT OPEN (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The CCN detects an open condition

Possible Causes
HEADLAMP SWITCH
HEADLAMP SWITCH MUX CIRCUIT OPEN
HEADLAMP SWITCH SENSE CIRCUIT OPEN
INSTRUMENT CLUSTER

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all MIC DTC's.

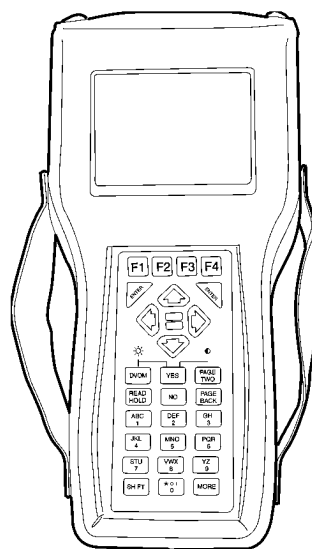
Turn the Headlamps on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Headlamp Switch Input Circuit Open?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



8136f94b

2. HEADLAMP SWITCH

Disconnect the Headlamp Switch connector.

Turn the ignition on.

Connect a jumper between the Headlamp Switch MUX and Sense circuit of the multifunction switch.

With the DRBIII®, read the headlamp switch voltage.

Does the DRBIII® display 0.0 volts?

Yes >> Replace the Headlamp Switch.

Perform BODY VERIFICATION TEST - VER 1.

No >> Go To 3

MIC-HEADLAMP SWITCH INPUT CIRCUIT OPEN (CONTINUED)

3. HEADLAMP SWITCH MUX CIRCUIT OPEN

Turn the ignition off.

Disconnect the left side multifunction switch connector.

Disconnect the instrument cluster C2 connector.

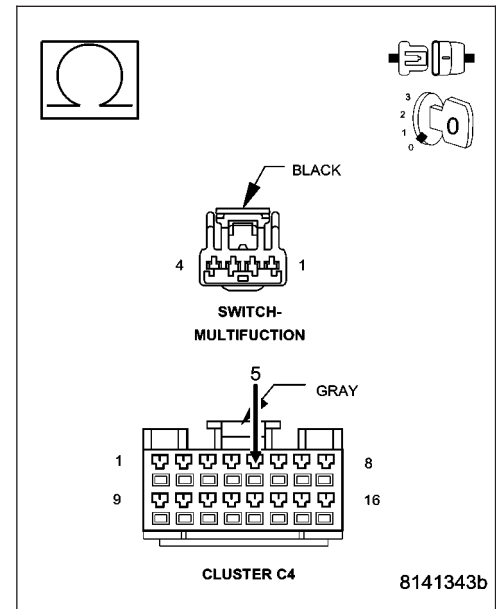
Measure the resistance of the Headlamp Switch MUX circuit.

Is the resistance below 5.0 ohms?

Yes >> Go To 4

No >> Repair the Headlamp Switch MUX circuit for an open condition.

Perform BODY VERIFICATION TEST - VER 1.



4. INSTRUMENT CLUSTER

Turn the ignition off

Disconnect the left side Multifunction Switch connector.

Disconnect the Instrument Cluster C2 connector.

Measure the resistance of the Headlamp Switch Sense circuit.

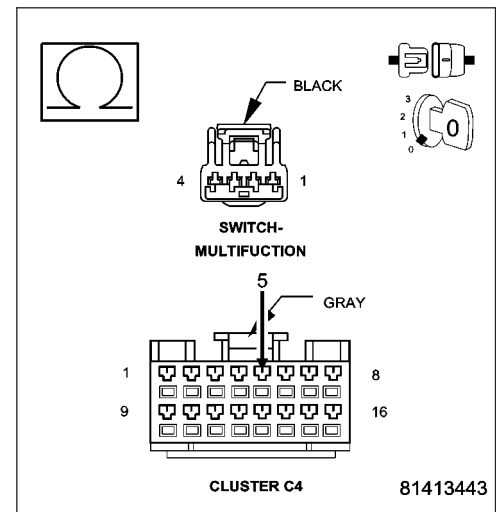
Is the resistance below 5.0 ohms?

Yes >> Replace the Instrument Cluster.

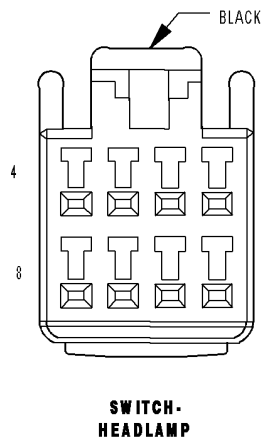
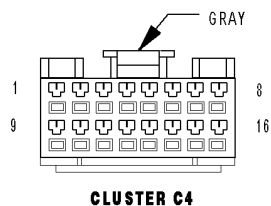
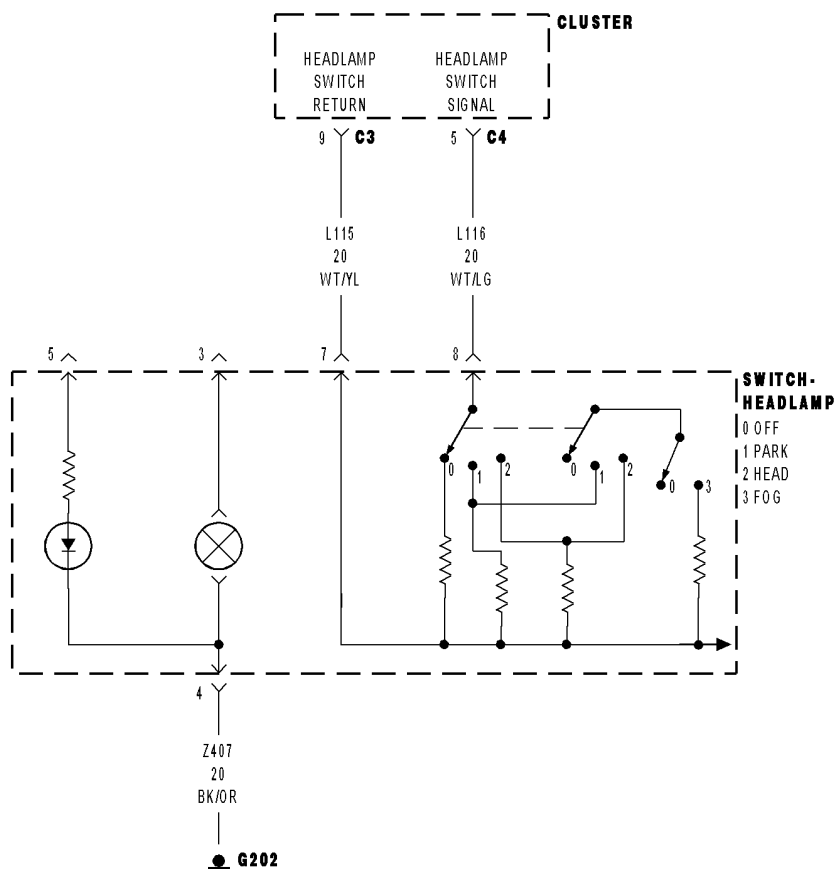
Perform BODY VERIFICATION TEST - VER 1.

No >> Repair the Headlamp Switch Sense circuit for an open condition.

Perform BODY VERIFICATION TEST - VER 1.



MIC-HEADLAMP SWITCH INPUT CIRCUIT SHORTED



MIC-HEADLAMP SWITCH INPUT CIRCUIT SHORTED (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The CCN detects a short to ground condition

Possible Causes
HEADLAMP SWITCH
HEADLAMP SWITCH MUX CIRCUIT SHORT TO GROUND
INSTRUMENT CLUSTER

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all MIC DTC's.

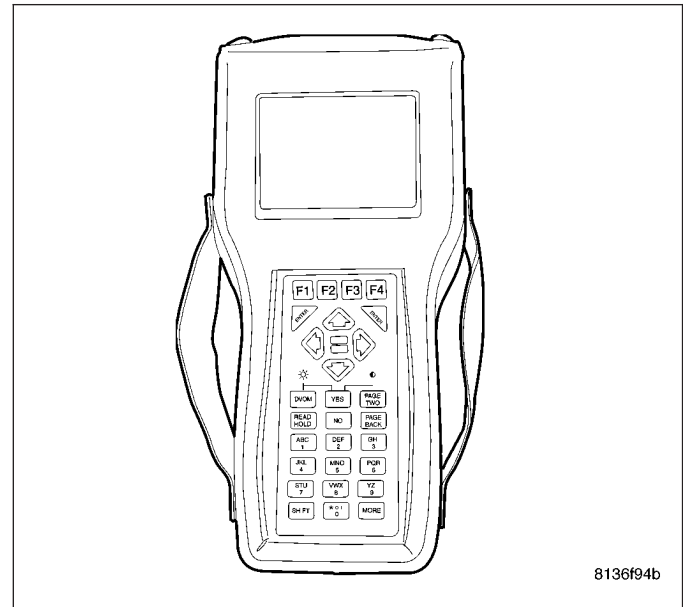
Turn the Headlamps on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Headlamp Switch Input Circuit Short?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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2. HEADLAMP SWITCH

Disconnect the Headlamp Switch connector.

Turn the ignition on.

Does the DRBIII® display Headlamp Switch 5.0 volts?

Yes >> Go To 3

No >> Replace the Headlamp Switch.
Perform BODY VERIFICATION TEST - VER 1.

MIC-HEADLAMP SWITCH INPUT CIRCUIT SHORTED (CONTINUED)**3. HEADLAMP SWITCH MUX CIRCUIT SHORT TO GROUND**

Turn the ignition off.

Disconnect the Headlamp Switch connector.

Disconnect the instrument cluster C3 connector.

Measure the resistance of the Headlamp Switch MUX circuit to ground.

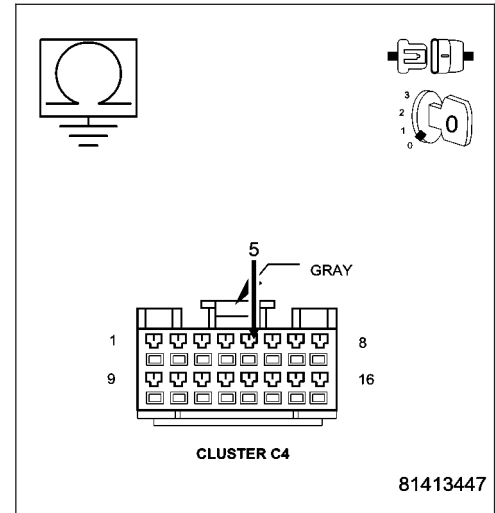
Is the resistance below 5.0 ohms?

Yes >> Repair the Headlamp Switch MUX circuit for a short to ground condition.

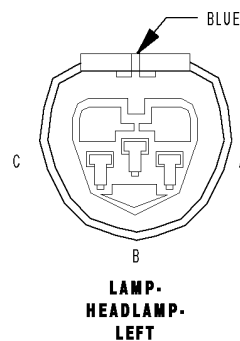
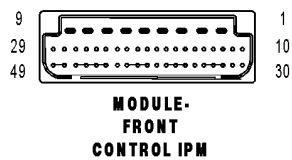
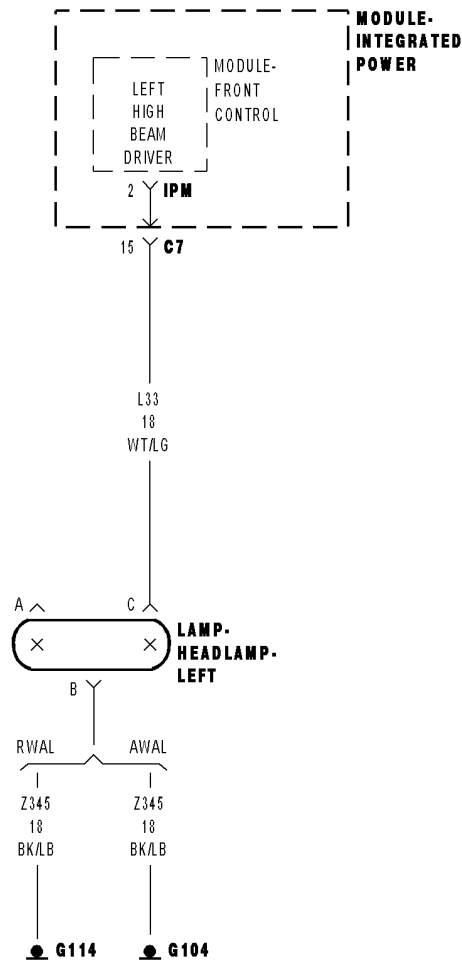
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Instrument Cluster.

Perform BODY VERIFICATION TEST - VER 1.



FCM-LEFT HIGHBEAM OUTPUT CIRCUIT LOW



FCM-LEFT HIGHBEAM OUTPUT CIRCUIT LOW (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a short to ground condition

Possible Causes
LEFT HIGHBEAM OUTPUT CIRCUIT SHORT TO GROUND POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

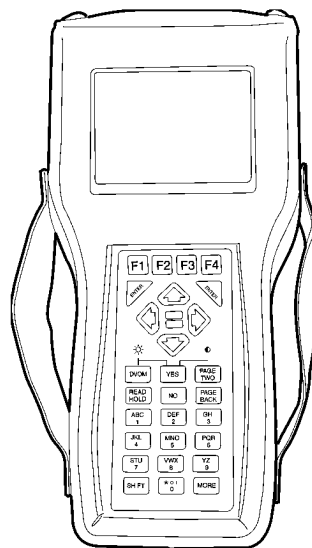
Turn the High Beams Lamps on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Left Highbeam Output Circuit Low?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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FCM-LEFT HIGHBEAM OUTPUT CIRCUIT LOW (CONTINUED)**2. LEFT HIGHBEAM OUTPUT CIRCUIT SHORT TO GROUND**

Turn the ignition off.

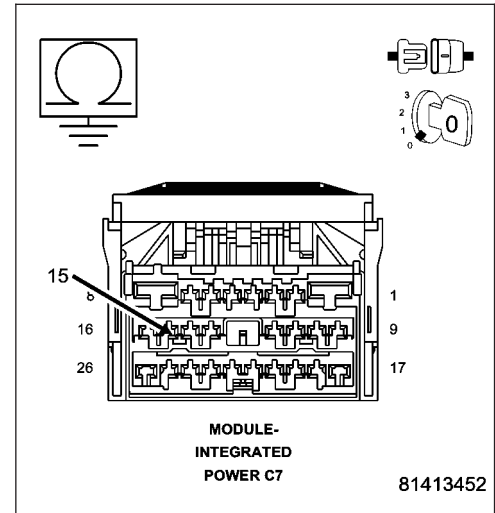
Disconnect the IPM C7 harness connector.

Measure the resistance between ground and the Left Highbeam Output circuit.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the Left Highbeam Output circuit for a short to ground.
Perform BODY VERIFICATION TEST - VER 1.

**3. FRONT CONTROL MODULE**

Turn the ignition off

Disconnect the FCM connector.

Disconnect the IPM C7 harness connector.

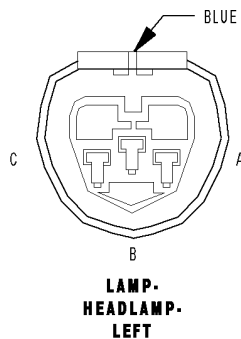
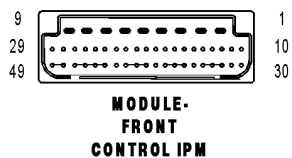
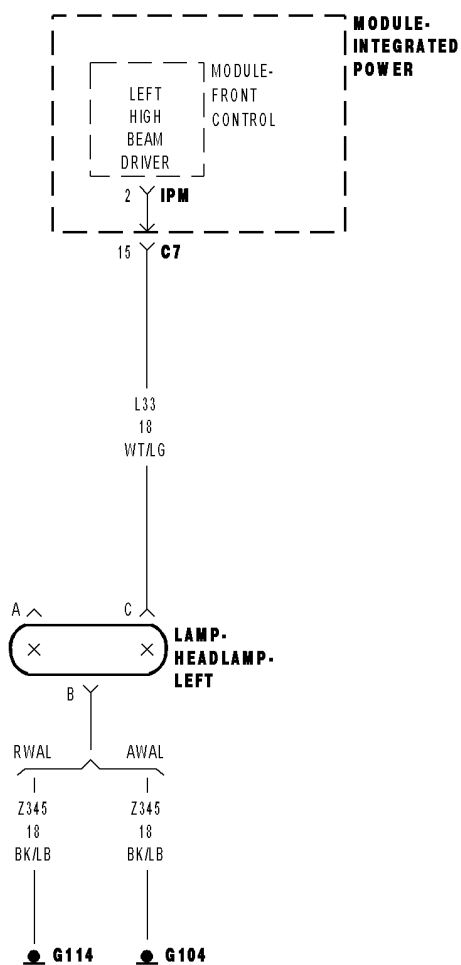
Measure the resistance between ground and the Left Highbeam Output circuit in the IPM.

Is the resistance below 5.0 ohms?

Yes >> Replace the Power Distribution Center(PDC).
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-LEFT HIGHBEAM OUTPUT CIRCUIT OPEN



FCM-LEFT HIGHBEAM OUTPUT CIRCUIT OPEN (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects an OPEN condition

Possible Causes
LEFT HIGHBEAM OUTPUT CIRCUIT OPEN POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

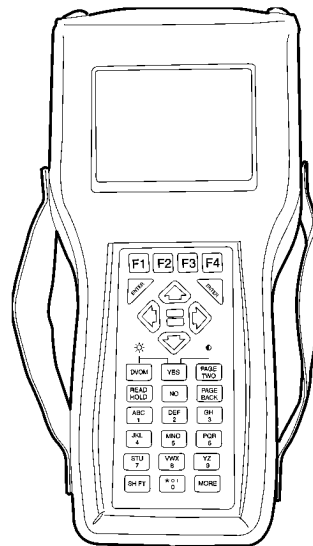
Turn the Highbeam Lamps on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Left Highbeam Output Circuit Open?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



8136f94b

FCM-LEFT HIGHBEAM OUTPUT CIRCUIT OPEN (CONTINUED)**2. LEFT HIGHBEAM OUTPUT CIRCUIT OPEN**

Turn the ignition off.

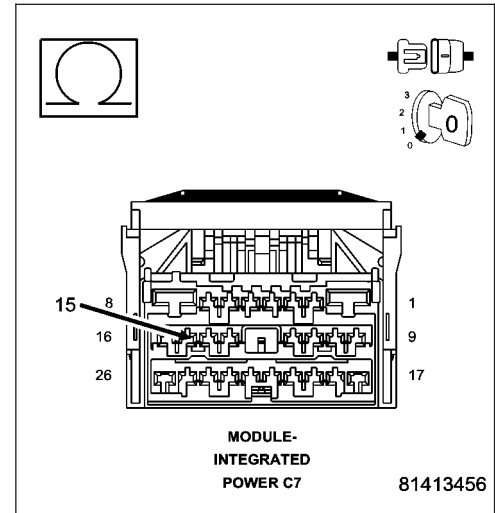
Disconnect the IPM C7 harness connector

Measure the resistance of the Left Highbeam Output circuit.

Is the resistance above 5.0 ohms?

Yes >> Repair the Left Highbeam Output circuit for an open.
Perform BODY VERIFICATION TEST - VER 1.

No >> Go To 3

**3. FRONT CONTROL MODULE**

Turn the ignition off

Disconnect the FCM from the IPM.

Disconnect the IPM C7 harness connector.

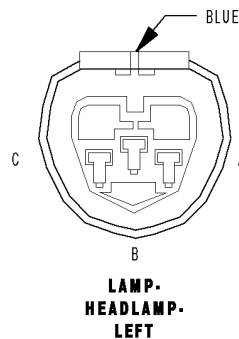
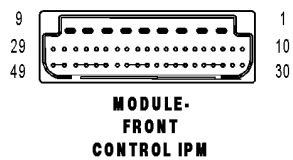
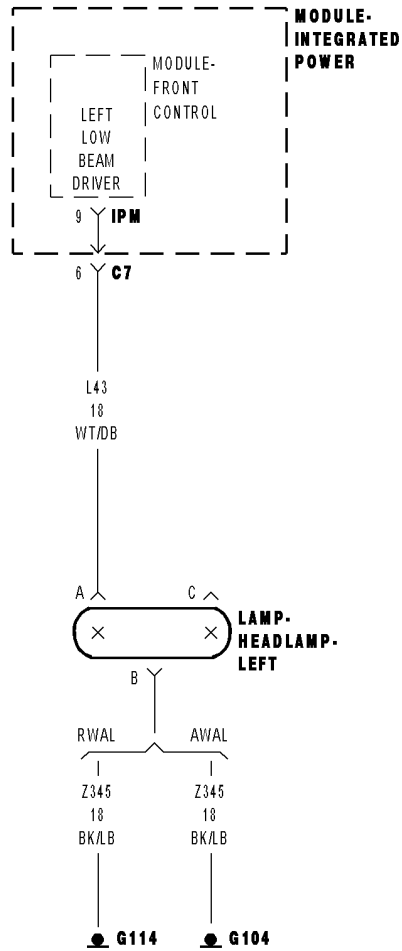
Measure the resistance of the Left Highbeam Output circuit.

Is the resistance above 5.0 ohms?

Yes >> Replace the Power Distribution Center..
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-LEFT LOWBEAM OUTPUT CIRCUIT LOW



FCM-LEFT LOWBEAM OUTPUT CIRCUIT LOW (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a short to ground condition

Possible Causes
LEFT LOWBEAM OUTPUT CIRCUIT SHORT TO GROUND POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

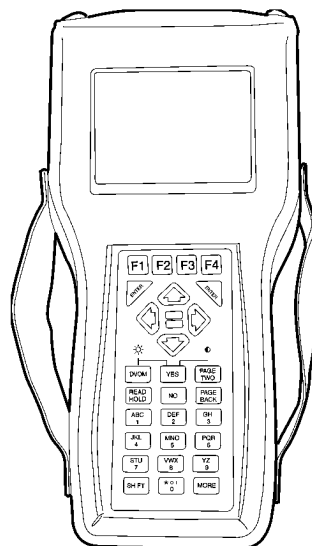
Turn the Lowbeam Lamps on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Left Lowbeam Output Circuit Low?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



8136f94b

FCM-LEFT LOWBEAM OUTPUT CIRCUIT LOW (CONTINUED)**2. LEFT LOWBEAM OUTPUT CIRCUIT SHORT TO GROUND**

Turn the ignition off.

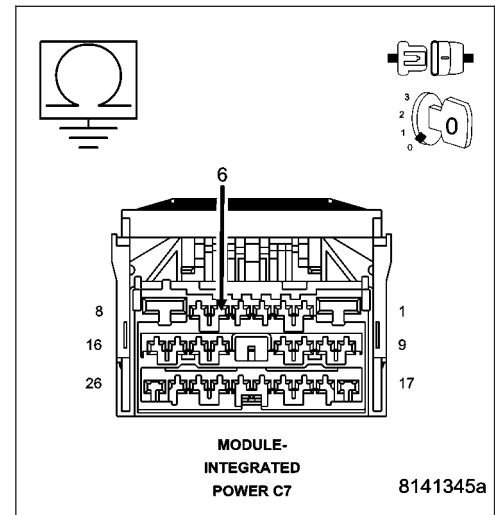
Disconnect the IPM C7 harness connector.

Measure the resistance between ground and the Left Lowbeam Output circuit.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the Left Lowbeam Output circuit for a short to ground.
Perform BODY VERIFICATION TEST - VER 1.

**3. FRONT CONTROL MODULE**

Turn the ignition off

Disconnect the FCM connector.

Disconnect the IPM C7 harness connector.

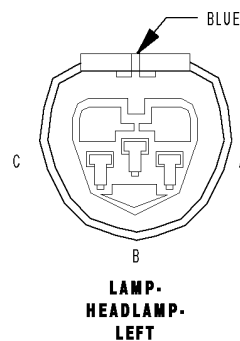
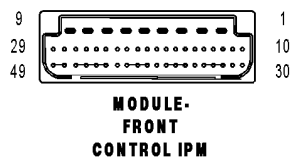
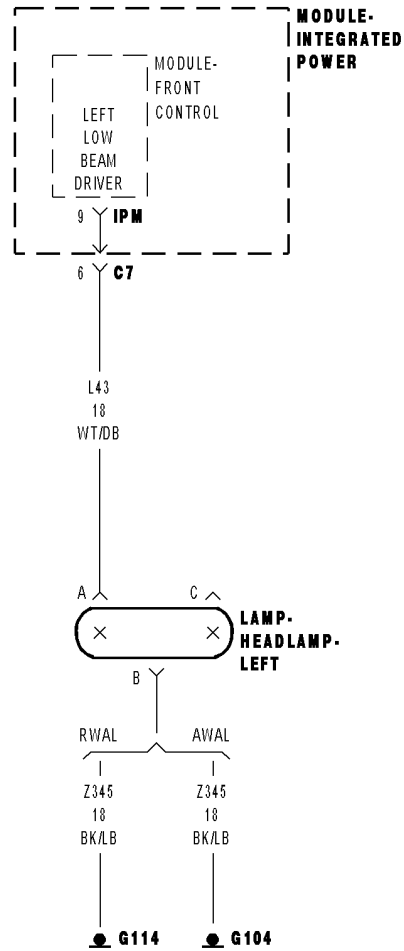
Measure the resistance between ground and the Left Lowbeam Output circuit in the IPM.

Is the resistance below 5.0 ohms?

Yes >> Replace the Power Distribution Center(PDC).
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-LEFT LOWBEAM OUTPUT CIRCUIT OPEN



FCM-LEFT LOWBEAM OUTPUT CIRCUIT OPEN (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects an OPEN condition

Possible Causes
LEFT LOWBEAM OUTPUT CIRCUIT OPEN POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

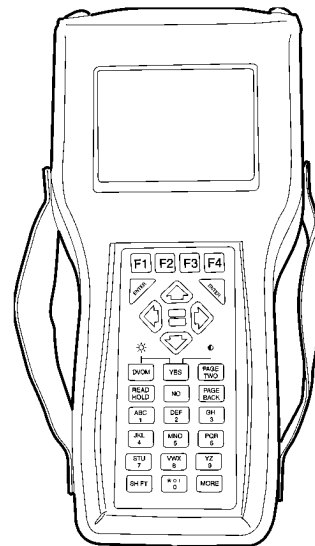
Turn the Lowbeam Lamps on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Left Lowbeam Output Circuit Open?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



8136f94b

FCM-LEFT LOWBEAM OUTPUT CIRCUIT OPEN (CONTINUED)**2. LEFT LOWBEAM OUTPUT CIRCUIT OPEN**

Turn the ignition off.

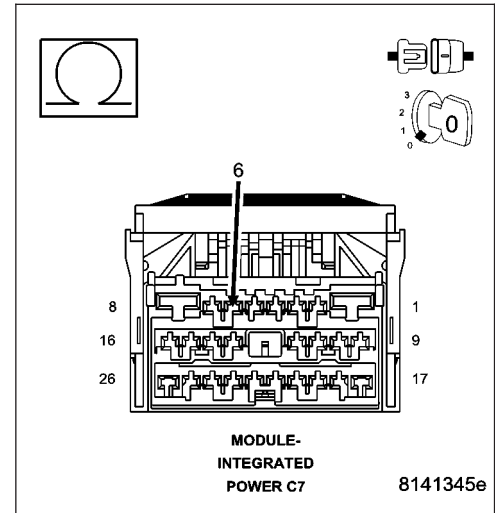
Disconnect the IPM C7 harness connector

Measure the resistance of the Left Lowbeam Output circuit.

Is the resistance above 5.0 ohms?

Yes >> Repair the Left Lowbeam Output circuit for an open.
Perform BODY VERIFICATION TEST - VER 1.

No >> Go To 3

**3. FRONT CONTROL MODULE**

Turn the ignition off

Disconnect the FCM from the IPM.

Disconnect the IPM C7 harness connector.

Measure the resistance of the Left Lowbeam Output circuit.

Is the resistance above 5.0 ohms?

Yes >> Replace the Power Distribution Center..
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-LEFT STOP LAMP OUTPUT CIRCUIT LOW (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a short to ground condition

Possible Causes
LEFT BRAKE LAMP FEED CIRCUIT SHORT TO GROUND POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

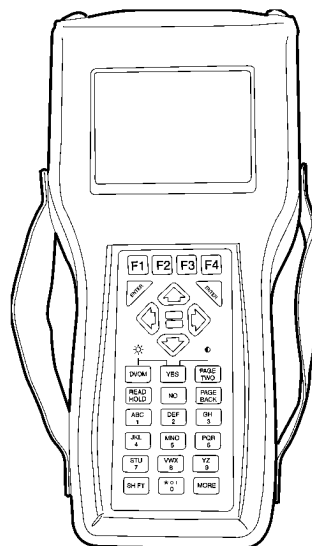
Actuate the Stop Lamps.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Left Stop Lamp Output Circuit Low?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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FCM-LEFT STOP LAMP OUTPUT CIRCUIT LOW (CONTINUED)**2. LEFT BRAKE LAMP FEED CIRCUIT SHORT TO GROUND**

Turn the ignition off.

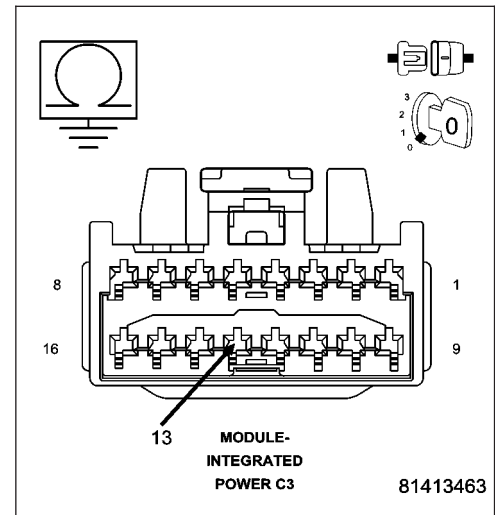
Disconnect the IPM C3 harness connector.

Measure the resistance between ground and the Left Brake Lamp Feed circuit.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the Left Brake Lamp Feed circuit for a short to ground.
Perform BODY VERIFICATION TEST - VER 1.

**3. FRONT CONTROL MODULE**

Turn the ignition off

Disconnect the FCM connector.

Disconnect the IPM C3 harness connector.

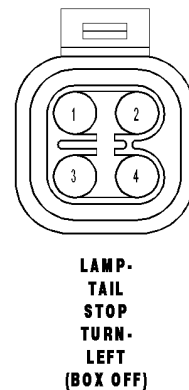
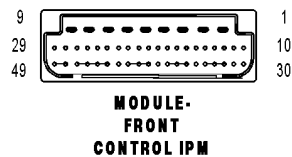
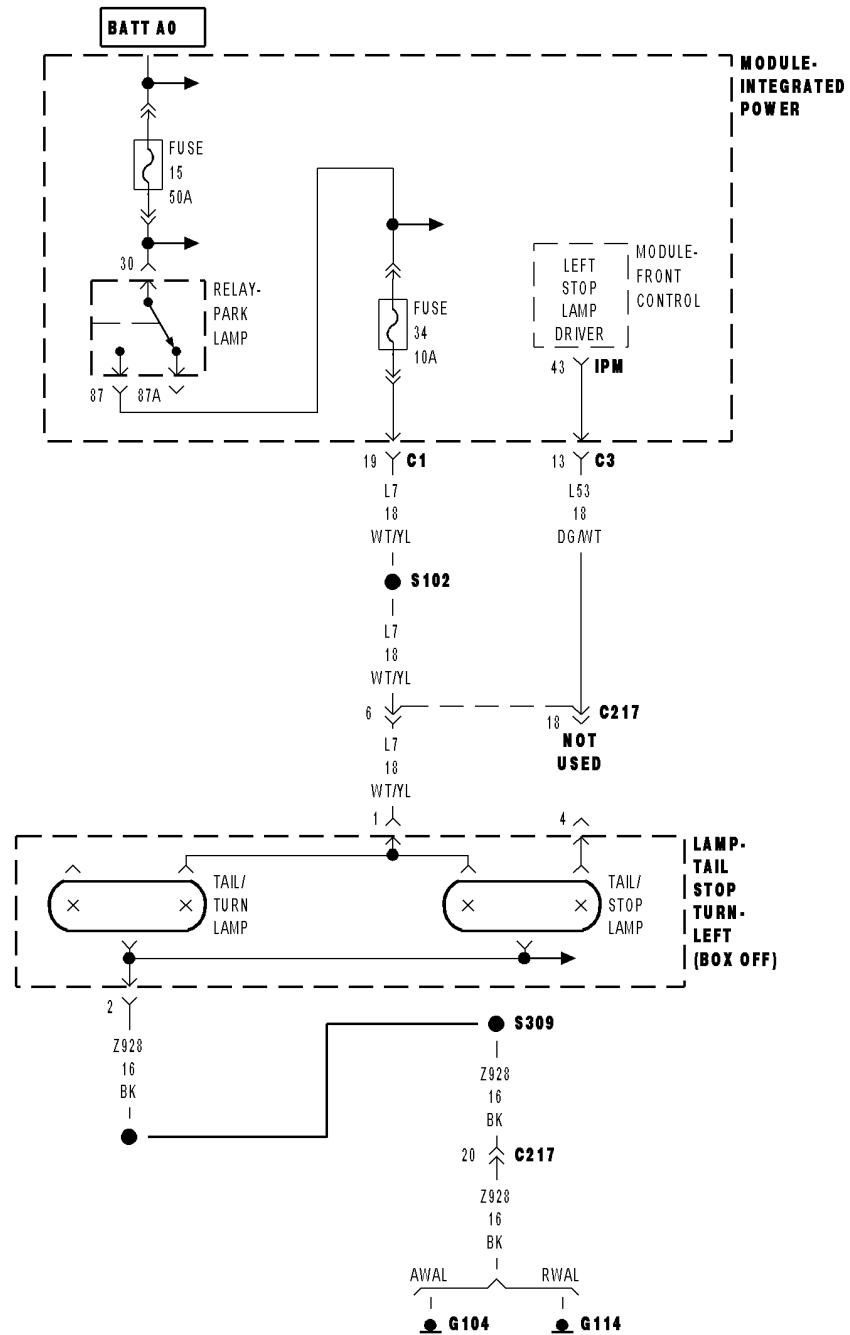
Measure the resistance between ground and the Left Brake Lamp Feed circuit in the IPM.

Is the resistance below 5.0 ohms?

Yes >> Replace the Power Distribution Center(PDC).
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-LEFT STOP LAMP OUTPUT CIRCUIT OPEN



FCM-LEFT STOP LAMP OUTPUT CIRCUIT OPEN (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects an OPEN condition

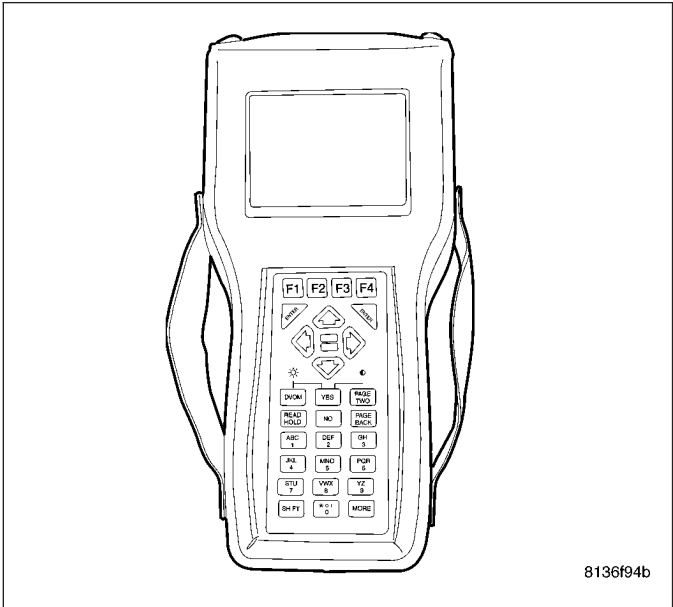
Possible Causes
LEFT BRAKE LAMP FEED CIRCUIT OPEN POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.
With the DRBIII®, clear all FCM DTC's.
Actuate the Stop Lamps.
With the DRBIII®, read the DTC information.

Does the DRBIII® read: Left Stop Lamp Output Circuit Open?

- Yes** >> Go To 2
- No** >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



FCM-LEFT STOP LAMP OUTPUT CIRCUIT OPEN (CONTINUED)**2. LEFT BRAKE LAMP FEED CIRCUIT OPEN**

Turn the ignition off.

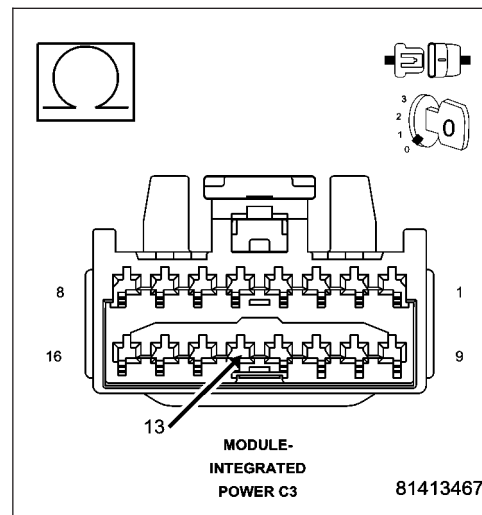
Disconnect the IPM C3 harness connector

Measure the resistance of the Left Brake Lamp Feed circuit.

Is the resistance above 5.0 ohms?

Yes >> Repair the Left Brake Lamp Feed circuit for an open.
Perform BODY VERIFICATION TEST - VER 1.

No >> Go To 3

**3. FRONT CONTROL MODULE**

Turn the ignition off

Disconnect the FCM from the IPM.

Disconnect the IPM C3 harness connector.

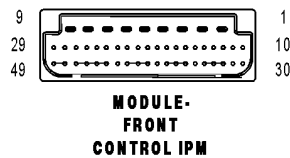
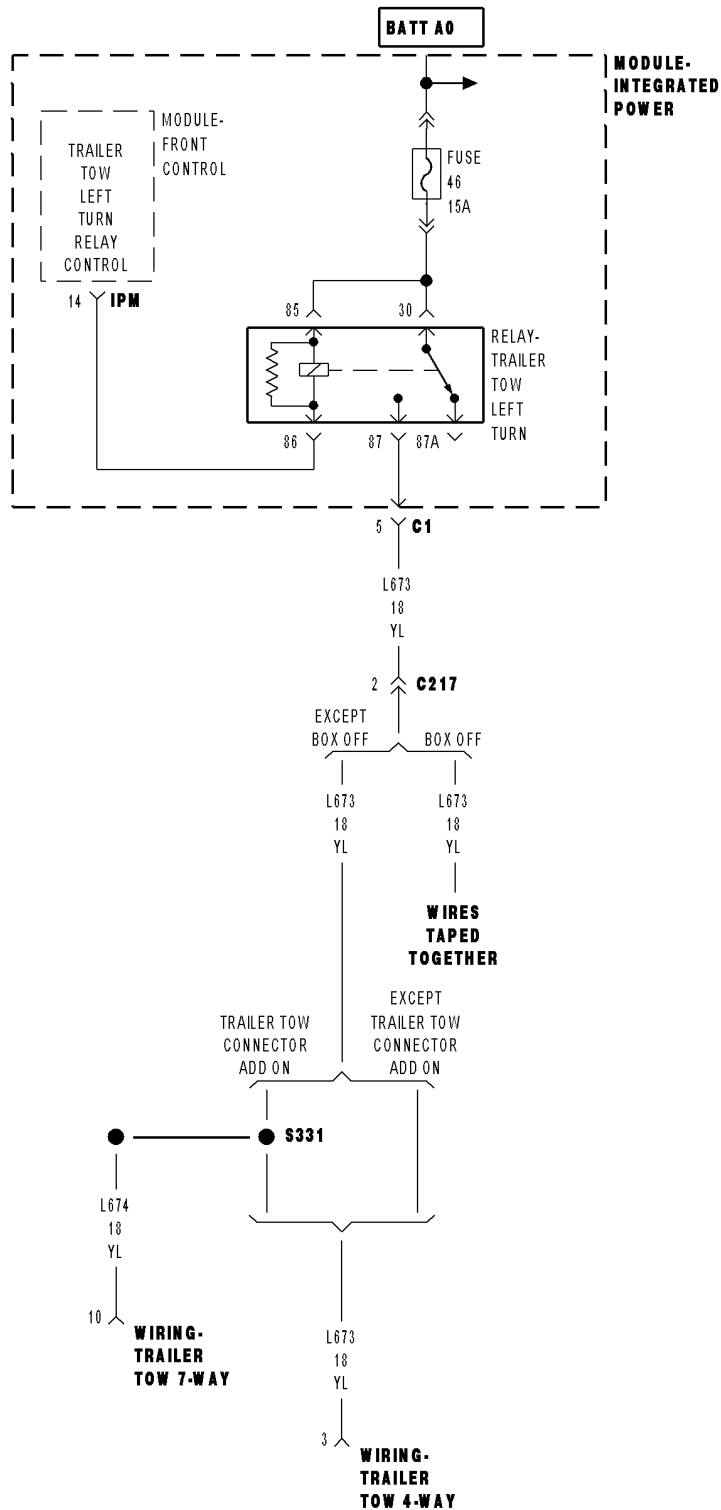
Measure the resistance of the Left Brake Lamp Feed circuit.

Is the resistance above 5.0 ohms?

Yes >> Replace the Power Distribution Center..
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-LEFT TRAILER RELAY OUTPUT CIRCUIT HIGH



FCM-LEFT TRAILER RELAY OUTPUT CIRCUIT HIGH (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a HIGH condition

Possible Causes
INTEGRATED POWER MODULE
FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

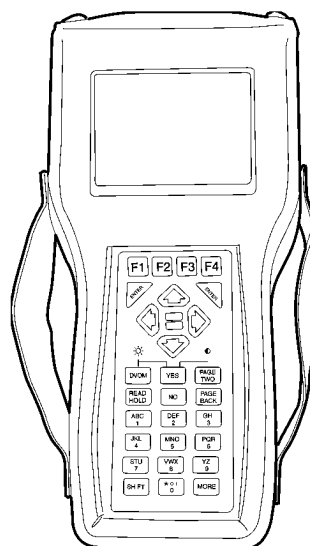
Actuate the Trailer Tow Lamps.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Left Trailer Relay Output Circuit High?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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2. FRONT CONTROL MODULE

Turn the ignition off.

Remove the Front Control Module from the IPM.

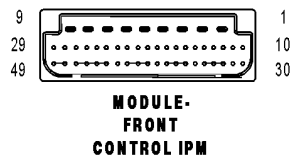
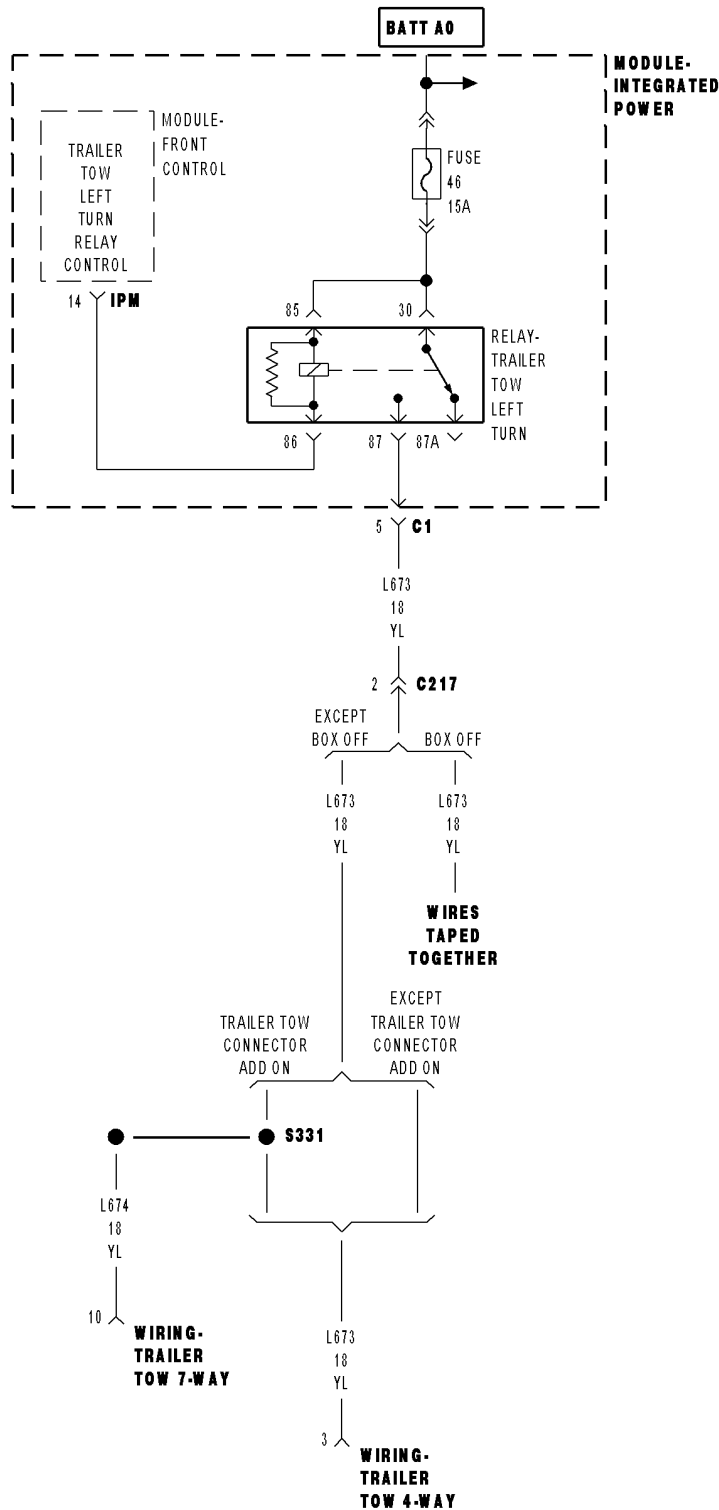
Measure the voltage of the Trailer Tow Relay Control circuit and ground.

Is the voltage above 1.0 volts?

Yes >> Replace the Integrated Power Module.
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-LEFT TRAILER RELAY OUTPUT CIRCUIT LOW



FCM-LEFT TRAILER RELAY OUTPUT CIRCUIT LOW (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a LOW condition

Possible Causes
POWER DISTRIBUTION CENTER
FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

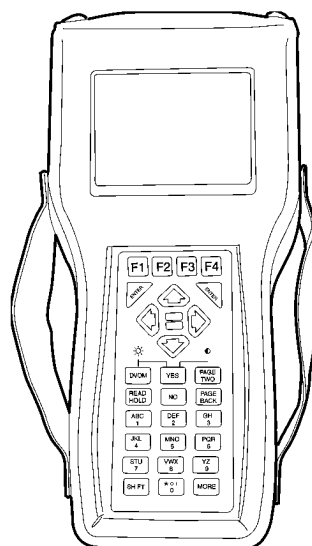
Actuate the Trailer Tow Lamps.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Left Trailer Relay Output Circuit Low?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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2. FRONT CONTROL MODULE

Turn the ignition off

Remove the FCM from the IPM.

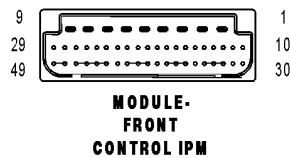
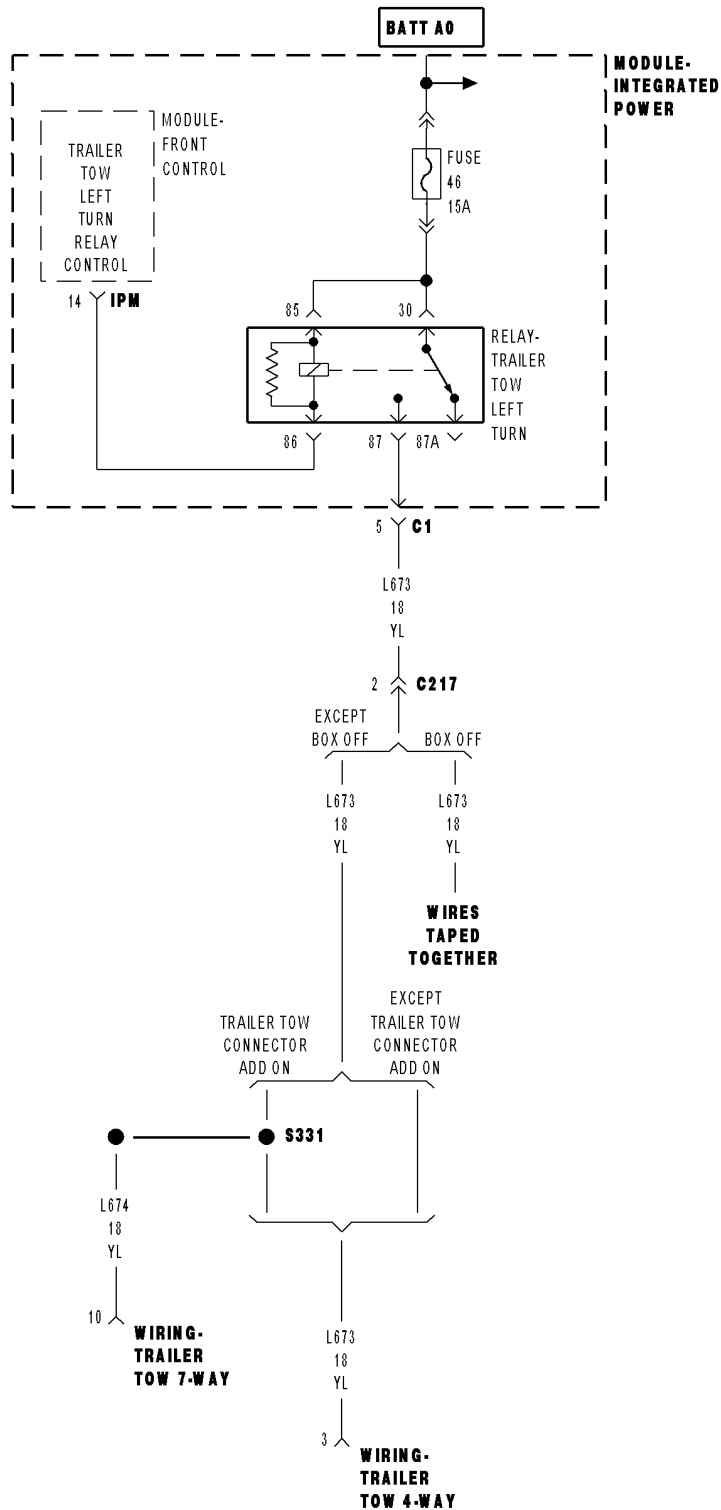
Measure the resistance between ground and the Trailer Tow Relay control circuit in the IPM.

Is the resistance below 5.0 ohms?

Yes >> Replace the Power Distribution Center(PDC).
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-LEFT TRAILER RELAY OUTPUT CIRCUIT OPEN



FCM-LEFT TRAILER RELAY OUTPUT CIRCUIT OPEN (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects an OPEN condition

Possible Causes
INTEGRATED POWER MODULE FRONT CONTROL MODULE TRAILER RELAY OUTPUT CIRCUIT OPEN

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

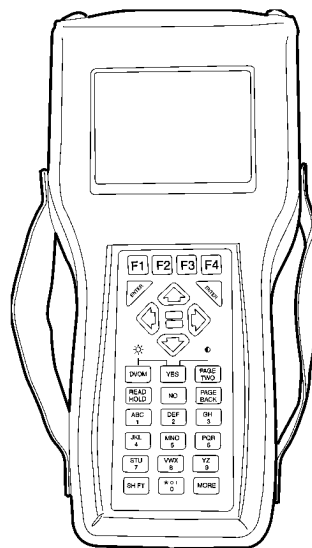
Actuate the Trailer Tow Lamps.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Left Trailer Relay Output Circuit Open?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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2. INTEGRATED POWER MODULE

Turn the ignition off.

Check the IPM to make certain the Left Trailer Tow Relay is present.

Is the Trailer Tow Relay present?

Yes >> Go To 3

No >> Replace the Integrated Power Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-LEFT TRAILER RELAY OUTPUT CIRCUIT OPEN (CONTINUED)

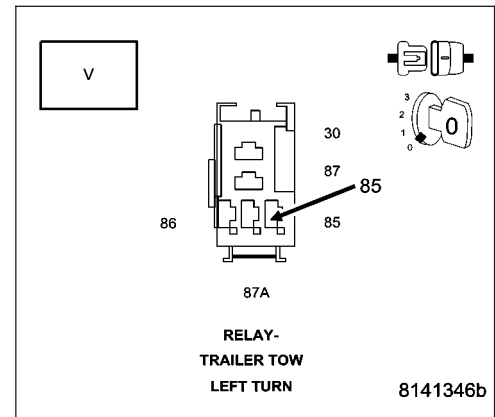
3. FRONT CONTROL MODULE

Turn the ignition off

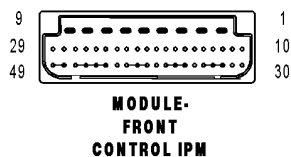
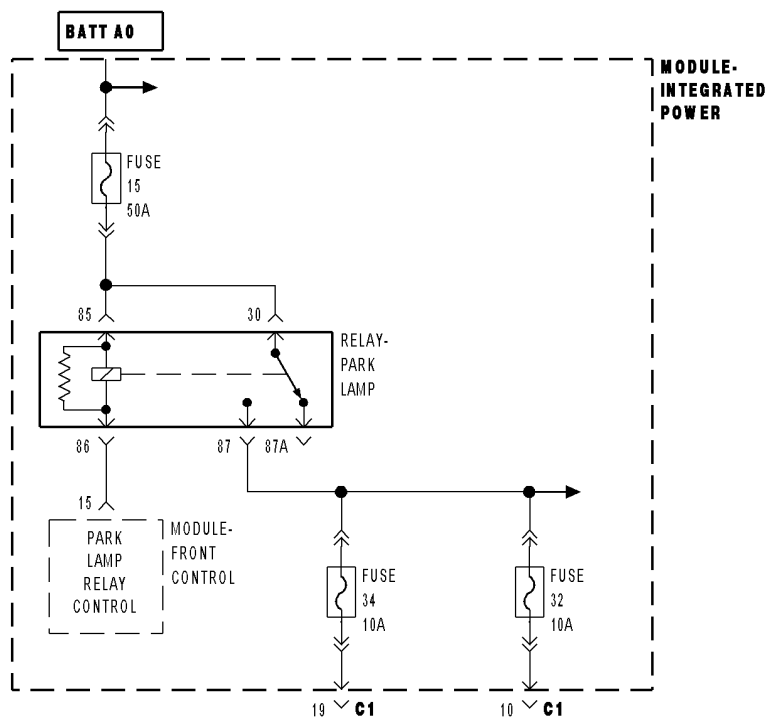
Measure the voltage of the Fused B+ circuit of the Trailer Tow Relay in the IPM.

Is the voltage above 10 volts?

- Yes** >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.
- No** >> Repair the Trailer Lamp Relay Output Circuit.
Perform BODY VERIFICATION TEST - VER 1.



FCM-PARK LAMP RELAY OUTPUT CIRCUIT HIGH



FCM-PARK LAMP RELAY OUTPUT CIRCUIT HIGH (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a HIGH condition

Possible Causes
PARK LAMP RELAY INTEGRATED POWER MODULE FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

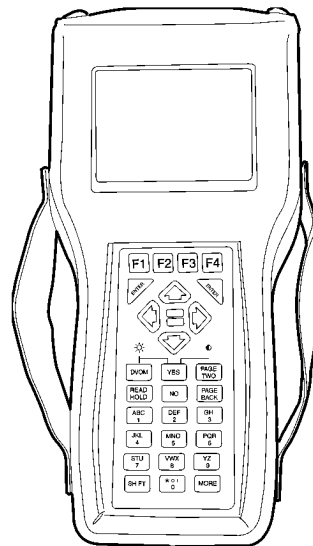
Turn the Park Lamps on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Park Lamp Relay Output Circuit High?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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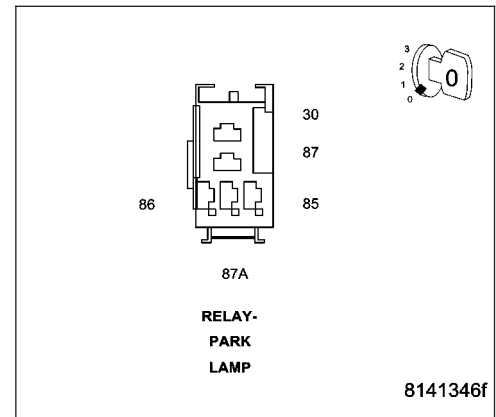
FCM-PARK LAMP RELAY OUTPUT CIRCUIT HIGH (CONTINUED)**2. PARK LAMP RELAY**

Turn the ignition off.

Remove and install a known good relay in place of the Park Lamp Relay.

Do the Park Lamps operate normally?

- Yes** >> Replace the Park Lamp Relay.
Perform BODY VERIFICATION TEST - VER 1.
- No** >> Go To 3

**3. FRONT CONTROL MODULE**

Turn the ignition off.

Remove the Park Lamp Relay from the IPM.

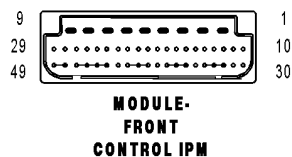
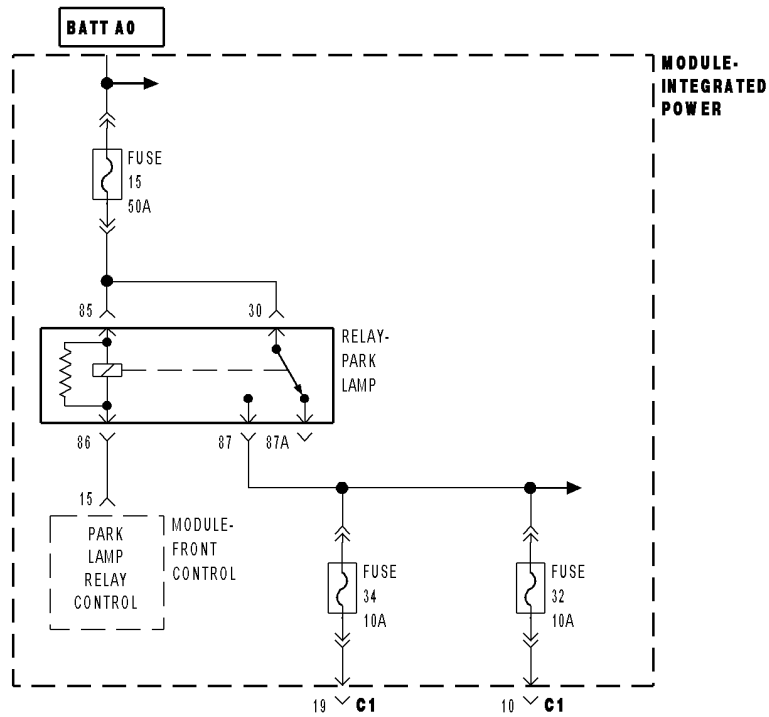
Remove the Front Control Module from the IPM.

Measure the voltage of the Park Lamp Relay Control circuit and ground.

Is the voltage above 1.0 volts?

- Yes** >> Replace the Integrated Power Module.
Perform BODY VERIFICATION TEST - VER 1.
- No** >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-PARK LAMP RELAY OUTPUT CIRCUIT LOW



FCM-PARK LAMP RELAY OUTPUT CIRCUIT LOW (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a LOW condition.

Possible Causes
PARK LAMP RELAY
POWER DISTRIBUTION CENTER
FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

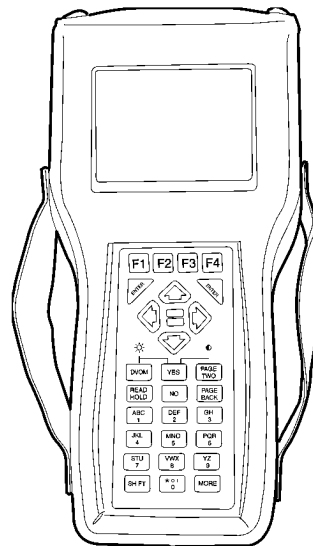
Turn the Park Lamps on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Park Lamp Relay Output Circuit Low?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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FCM-PARK LAMP RELAY OUTPUT CIRCUIT LOW (CONTINUED)

2. PARK LAMP RELAY

Turn the ignition off.

Install a know good relay in place of the Park Lamp Relay.

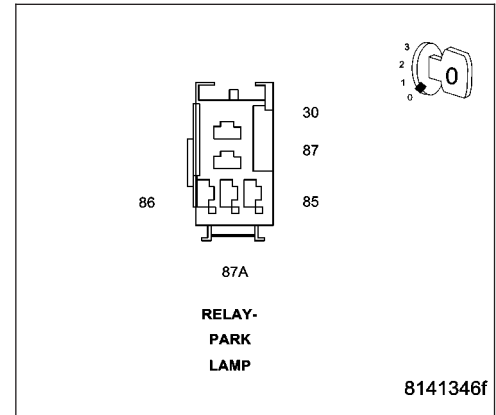
Turn the ignition on.

Actuate the Park Lamps.

Do the Park Lamps operate normally?

Yes >> Go To 3

No >> Replace the Park Lamp Relay.
Perform BODY VERIFICATION TEST - VER 1.



3. FRONT CONTROL MODULE

Turn the ignition off

Remove the Park Lamp Relay.

Remove the FCM from the IPM.

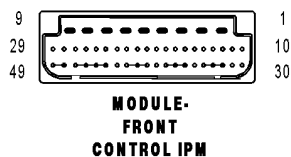
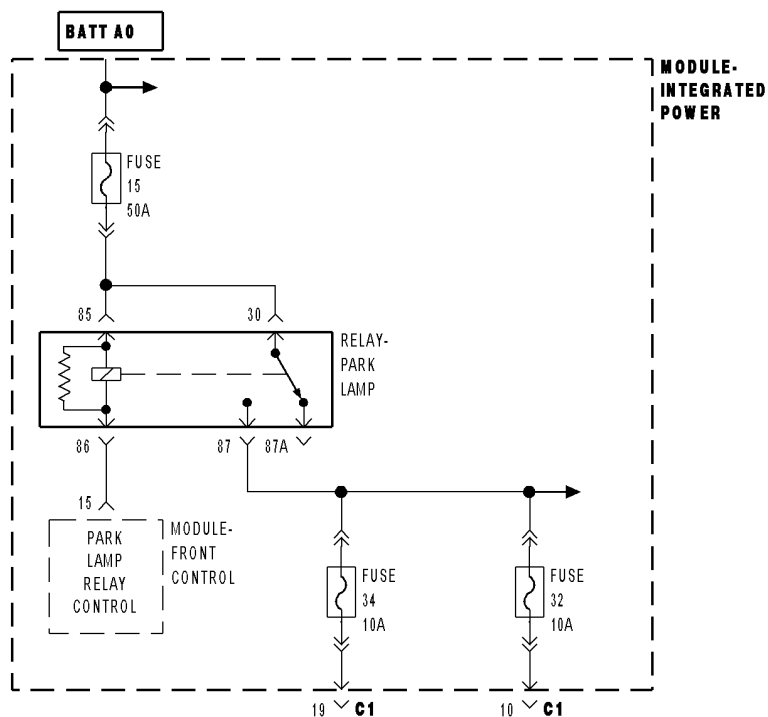
Measure the resistance between ground and the Park Lamp Relay control circuit in the IPM.

Is the resistance below 5.0 ohms?

Yes >> Replace the Power Distribution Center(PDC).
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-PARK LAMP RELAY OUTPUT CIRCUIT OPEN



FCM-PARK LAMP RELAY OUTPUT CIRCUIT OPEN (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects an open condition

Possible Causes
PARK LAMP RELAY OUTPUT CIRCUIT OPEN MISSING RELAY PARK LAMP RELAY FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

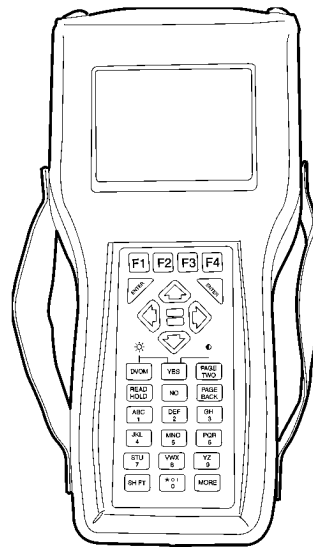
Turn the Park Lamps on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Park Lamp Relay Output Circuit Open?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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2. MISSING RELAY

Turn the ignition off.

Check the IPM to make certain the Park Lamp Relay is present.

Is the Park Lamp Relay present?

Yes >> Go To 3

No >> Replace the missing Park Lamp Relay.
Perform BODY VERIFICATION TEST - VER 1.

FCM-PARK LAMP RELAY OUTPUT CIRCUIT OPEN (CONTINUED)**3. PARK LAMP RELAY**

Turn the ignition off.

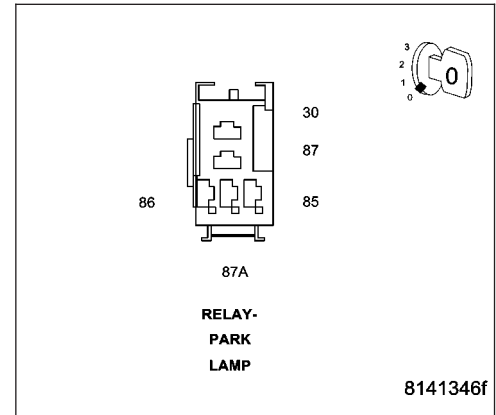
Install a known good relay in place of the park lamp relay.

Turn the Park Lamps On.

Do the Park Lamps operate normally?

Yes >> Replace the Park Lamp Relay.
Perform BODY VERIFICATION TEST - VER 1.

No >> Go To 4

**4. FRONT CONTROL MODULE**

Turn the ignition off

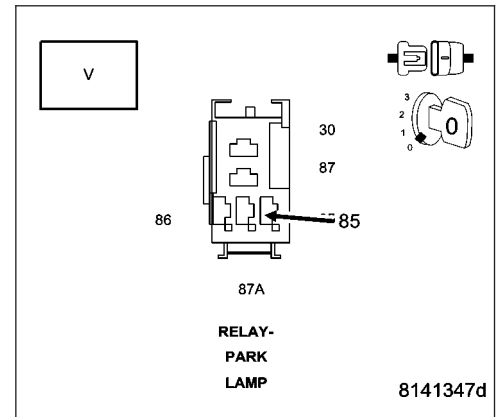
Remove the Park Lamp Relay.

Measure the voltage of the Fused B+ circuit of the park lamp relay.

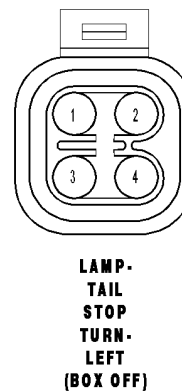
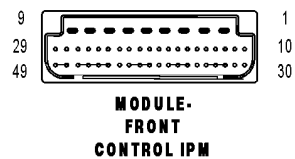
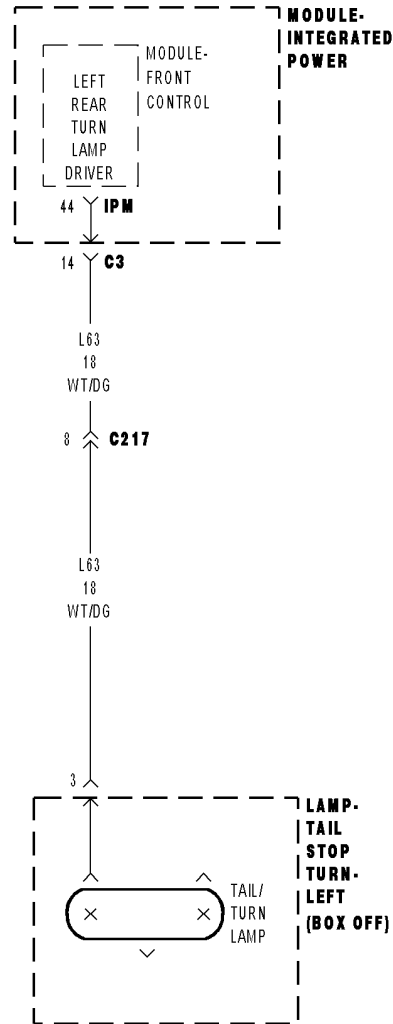
Is the voltage above 10 volts?

Yes >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

No >> Repair the Park Lamp Relay Output Circuit.
Perform BODY VERIFICATION TEST - VER 1.



FCM-REAR LEFT TURN OUTPUT CIRCUIT LOW



FCM-REAR LEFT TURN OUTPUT CIRCUIT LOW (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a short to ground condition

Possible Causes
REAR LEFT TURN LAMP DRIVER CIRCUIT SHORT TO GROUND POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

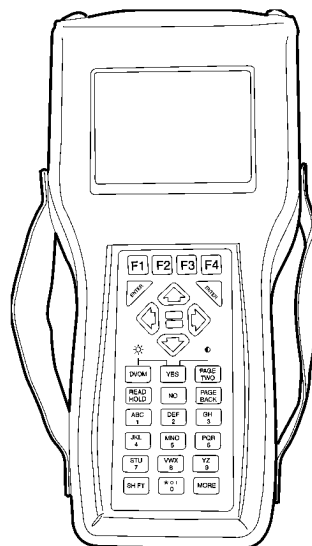
Actuate the Left Turn signal lamp.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Rear Left Turn Output Circuit Low?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



8136f94b

FCM-REAR LEFT TURN OUTPUT CIRCUIT LOW (CONTINUED)**2. REAR LEFT TURN LAMP DRIVER CIRCUIT SHORT TO GROUND**

Turn the ignition off.

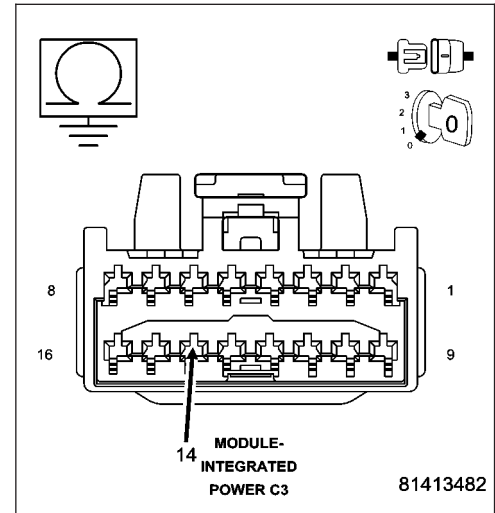
Disconnect the IPM C3 harness connector.

Measure the resistance between ground and the Rear Left Turn Lamp Driver circuit.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the Rear Left Turn Lamp Driver circuit for a short to ground.
Perform BODY VERIFICATION TEST - VER 1.

**3. FRONT CONTROL MODULE**

Turn the ignition off

Disconnect the FCM connector.

Disconnect the IPM C3 harness connector.

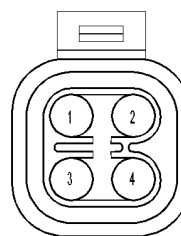
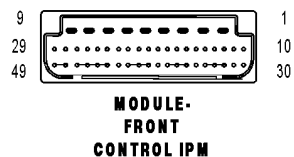
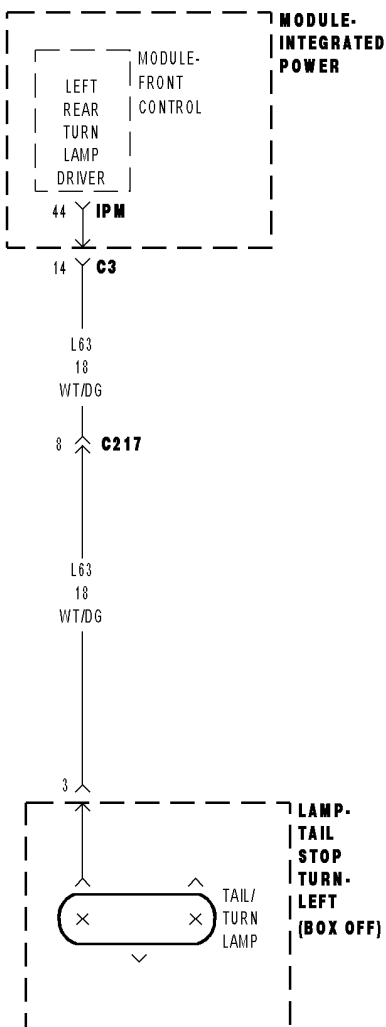
Measure the resistance between ground and the Rear Left Turn Lamp Driver circuit in the IPM.

Is the resistance below 5.0 ohms?

Yes >> Replace the Power Distribution Center(PDC).
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-REAR LEFT TURN OUTPUT CIRCUIT OPEN



FCM-REAR LEFT TURN OUTPUT CIRCUIT OPEN (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects an open condition

Possible Causes
REAR LEFT TURN SIGNAL OUTPUT CIRCUIT OPEN POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

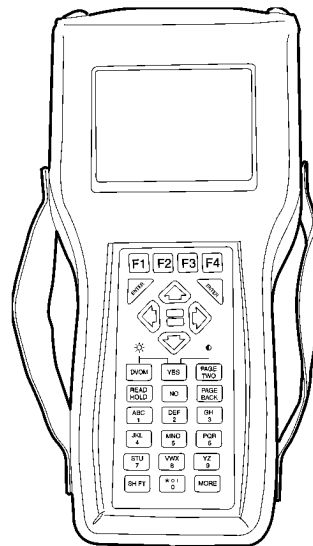
Actuate the Left Rear Turn Signal lamp.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Rear Left Turn Output Circuit Open?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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FCM-REAR LEFT TURN OUTPUT CIRCUIT OPEN (CONTINUED)**2. REAR LEFT TURN SIGNAL OUTPUT CIRCUIT OPEN**

Turn the ignition off.

Disconnect the IPM C3 harness connector

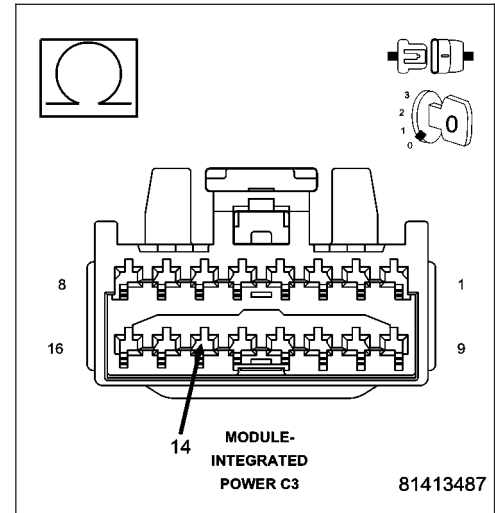
Measure the resistance of the Rear Left Turn Signal Output circuit.

Is the resistance above 5.0 ohms?

Yes >> Repair the Rear Left Turn Signal Output circuit for an open.

Perform BODY VERIFICATION TEST - VER 1.

No >> Go To 3

**3. FRONT CONTROL MODULE**

Turn the ignition off

Disconnect the FCM harness connector.

Disconnect the IPM C3 harness connector.

Measure the resistance between ground and the Rear Left Turn Signal Output circuit.

Is the resistance above 5.0 ohms?

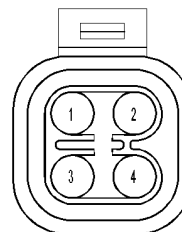
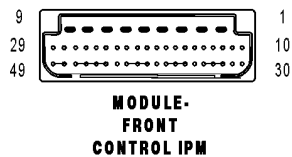
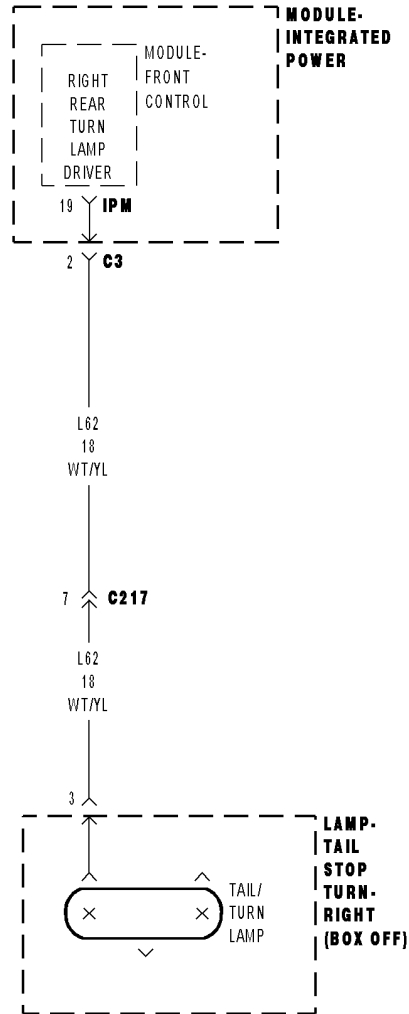
Yes >> Replace the Power Distribution Center..

Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.

Perform BODY VERIFICATION TEST - VER 1.

FCM-REAR RIGHT TURN OUTPUT CIRCUIT LOW



LAMP- TAIL STOP TURN- RIGHT (BOX OFF)

FCM-REAR RIGHT TURN OUTPUT CIRCUIT LOW (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a short to ground condition

Possible Causes
REAR RIGHT TURN LAMP DRIVER CIRCUIT SHORT TO GROUND POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

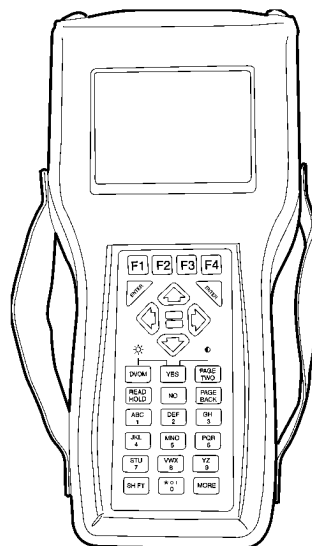
Actuate the Right Rear Turn Signal lamp.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Rear Right Turn Output Circuit Low?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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FCM-REAR RIGHT TURN OUTPUT CIRCUIT LOW (CONTINUED)**2. REAR RIGHT TURN LAMP DRIVER CIRCUIT SHORT TO GROUND**

Turn the ignition off.

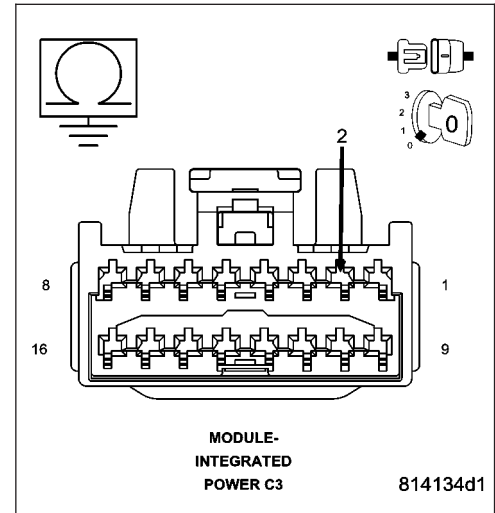
Disconnect the IPM C3 harness connector.

Measure the resistance between ground and the Rear Right Turn Lamp Driver circuit.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the Rear Right Turn Lamp Driver circuit for a short to ground.
Perform BODY VERIFICATION TEST - VER 1.

**3. FRONT CONTROL MODULE**

Turn the ignition off

Disconnect the FCM connector.

Disconnect the IPM C3 harness connector.

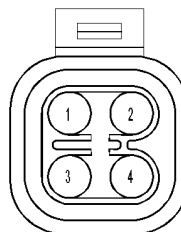
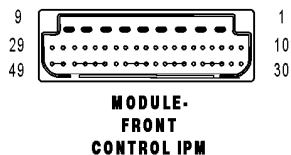
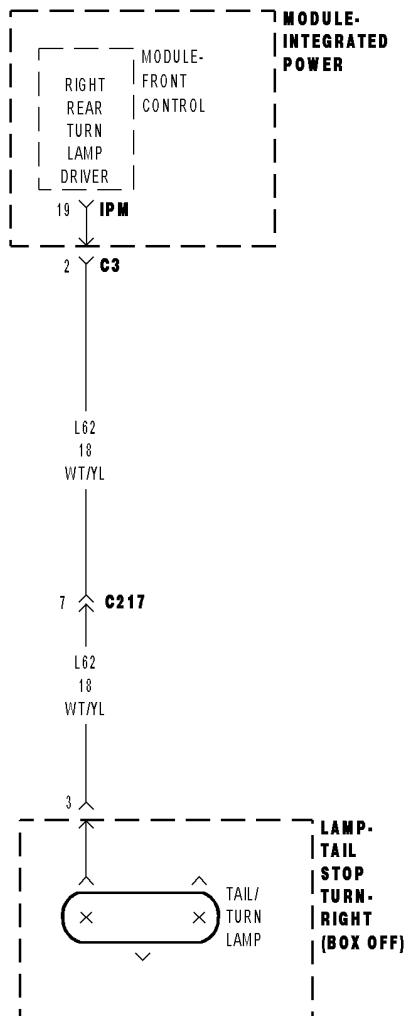
Measure the resistance between ground and the Rear Right Turn Lamp Driver circuit in the IPM.

Is the resistance below 5.0 ohms?

Yes >> Replace the Power Distribution Center(PDC).
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-REAR RIGHT TURN OUTPUT CIRCUIT OPEN



LAMP- TAIL STOP TURN- RIGHT (BOX OFF)

FCM-REAR RIGHT TURN OUTPUT CIRCUIT OPEN (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects an open condition

Possible Causes
REAR RIGHT TURN SIGNAL OUTPUT CIRCUIT OPEN POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

Actuate the Right Rear Turn Signal lamp.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Rear Right Turn Output Circuit Open?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.

2. REAR RIGHT TURN SIGNAL OUTPUT CIRCUIT OPEN

Turn the ignition off.

Disconnect the IPM C3 harness connector

Measure the resistance of the Rear Right Turn Signal Output circuit.

Is the resistance above 5.0 ohms?

Yes >> Repair the Rear Right Turn Signal Output circuit for an open.
Perform BODY VERIFICATION TEST - VER 1.

No >> Go To 3

FCM-REAR RIGHT TURN OUTPUT CIRCUIT OPEN (CONTINUED)

3. FRONT CONTROL MODULE

Turn the ignition off

Disconnect the FCM harness connector.

Disconnect the IPM C3 harness connector.

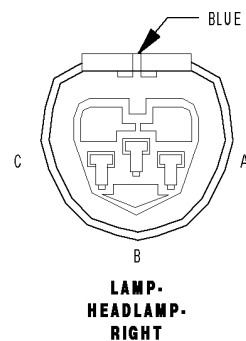
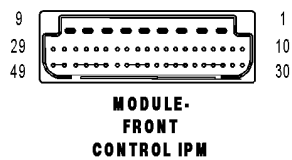
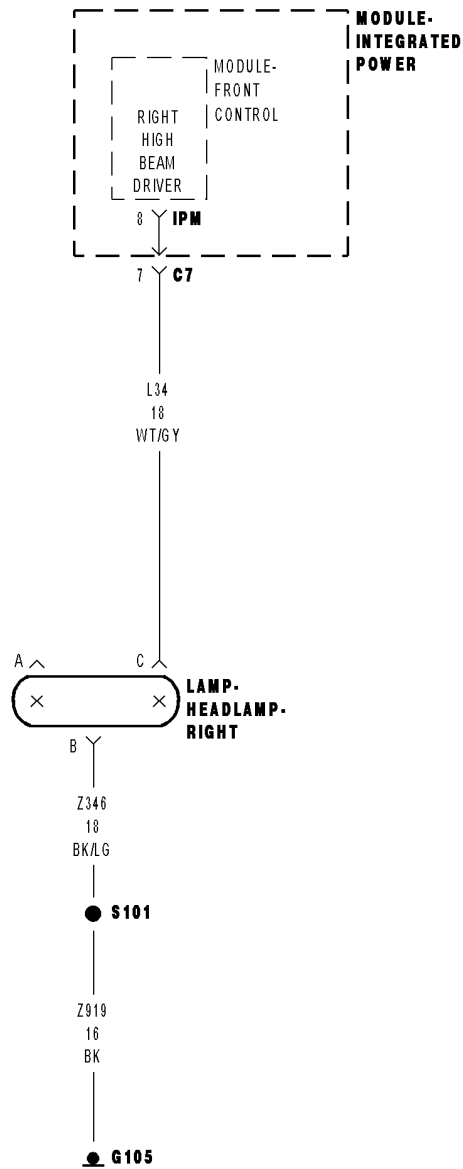
Measure the resistance between ground and the Rear Right Turn Signal Output circuit.

Is the resistance above 5.0 ohms?

Yes >> Replace the Power Distribution Center..
 Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
 Perform BODY VERIFICATION TEST - VER 1.

FCM-RIGHT HIGHBEAM OUTPUT CIRCUIT LOW



FCM-RIGHT HIGHBEAM OUTPUT CIRCUIT LOW (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCMK detects a short to ground condition

Possible Causes
RIGHT HIGHBEAM OUTPUT CIRCUIT SHORT TO GROUND POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

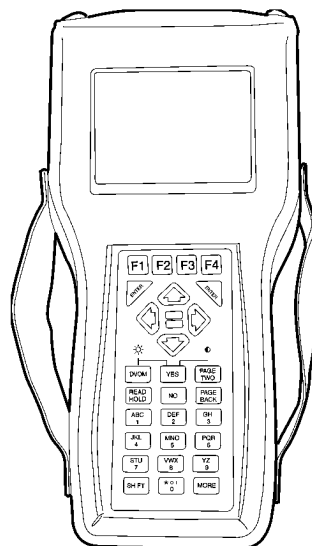
Actuate the Highbeams headlamps.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Right Highbeam Output Circuit Low?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



8136f94b

FCM-RIGHT HIGHBEAM OUTPUT CIRCUIT LOW (CONTINUED)**2. RIGHT HIGHBEAM OUTPUT CIRCUIT SHORT TO GROUND**

Turn the ignition off.

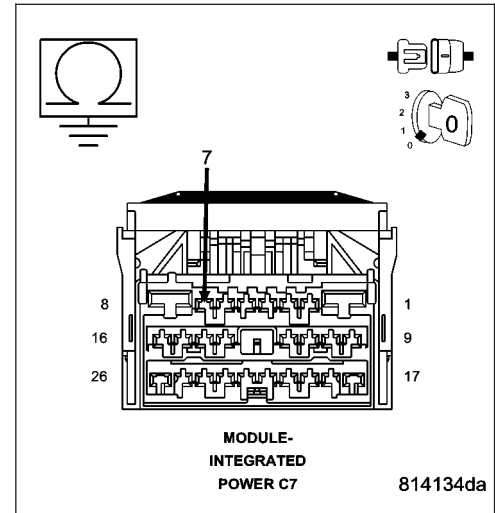
Disconnect the IPM C7 harness connector.

Measure the resistance between ground and the Right Highbeam Output circuit.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the Right Highbeam Output circuit for a short to ground.
Perform BODY VERIFICATION TEST - VER 1.

**3. FRONT CONTROL MODULE**

Turn the ignition off

Disconnect the FCM connector.

Disconnect the IPM C7 harness connector.

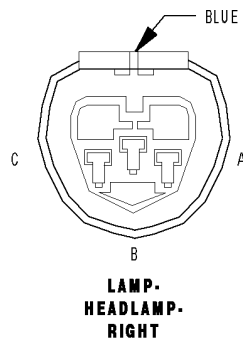
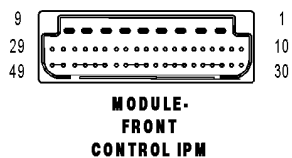
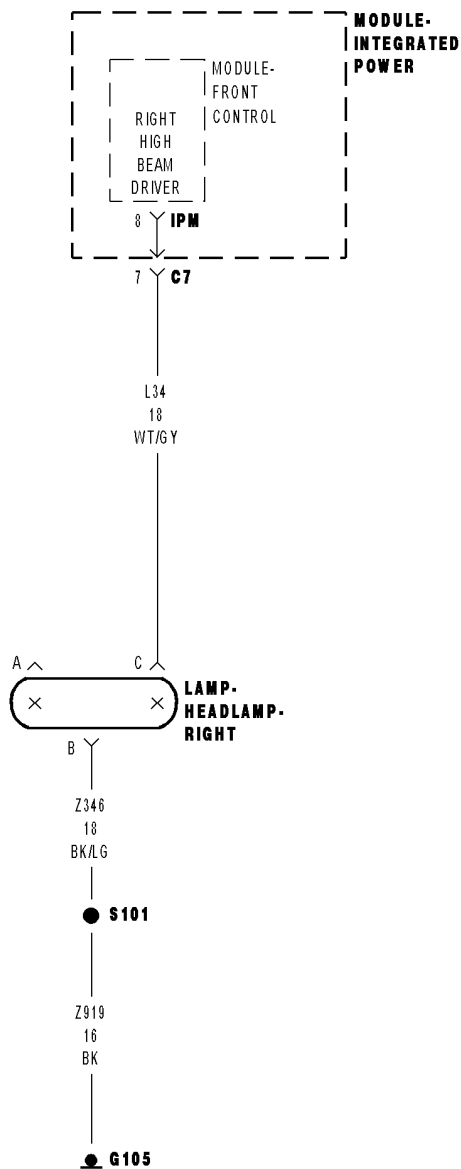
Measure the resistance between ground and the Right Highbeam Output circuit in the IPM.

Is the resistance below 5.0 ohms?

Yes >> Replace the Power Distribution Center(PDC).
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-RIGHT HIGHBEAM OUTPUT CIRCUIT OPEN



FCM-RIGHT HIGHBEAM OUTPUT CIRCUIT OPEN (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects an open condition

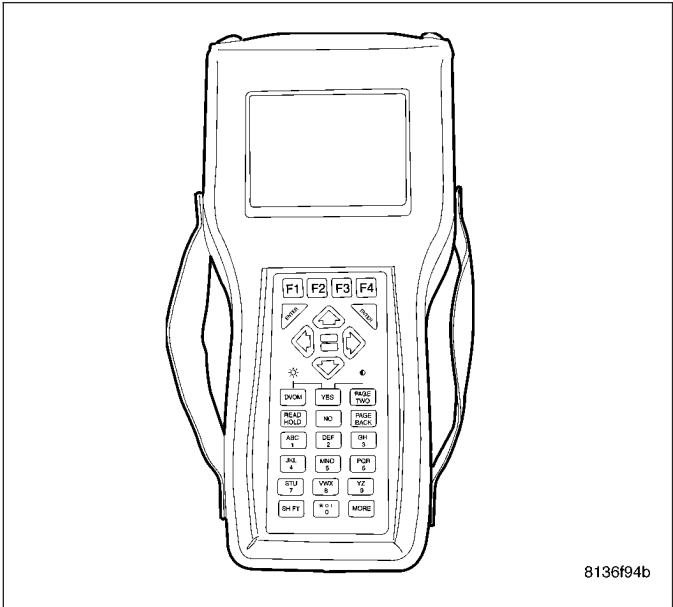
Possible Causes
RIGHT HIGHBEAM OUTPUT CIRCUIT OPEN POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.
With the DRBIII®, clear all FCM DTC's.
Actuate the Highbeam headlamps.
With the DRBIII®, read the DTC information.

Does the DRBIII® read: Right Highbeam Output Circuit Open?

- Yes** >> Go To 2
- No** >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



FCM-RIGHT HIGHBEAM OUTPUT CIRCUIT OPEN (CONTINUED)**2. RIGHT HIGHBEAM OUTPUT CIRCUIT OPEN**

Turn the ignition off.

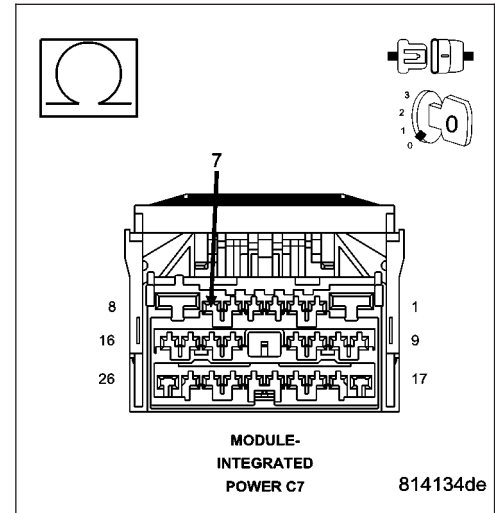
Disconnect the IPM C7 harness connector

Measure the resistance of the Right Highbeam Output circuit.

Is the resistance above 5.0 ohms?

Yes >> Repair the Right Highbeam Output circuit for an open.
Perform BODY VERIFICATION TEST - VER 1.

No >> Go To 3

**3. FRONT CONTROL MODULE**

Turn the ignition off

Disconnect the FCM from the IPM.

Disconnect the IPM C7 harness connector.

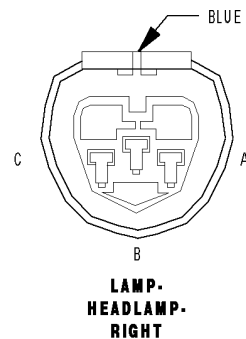
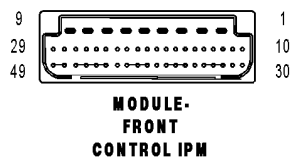
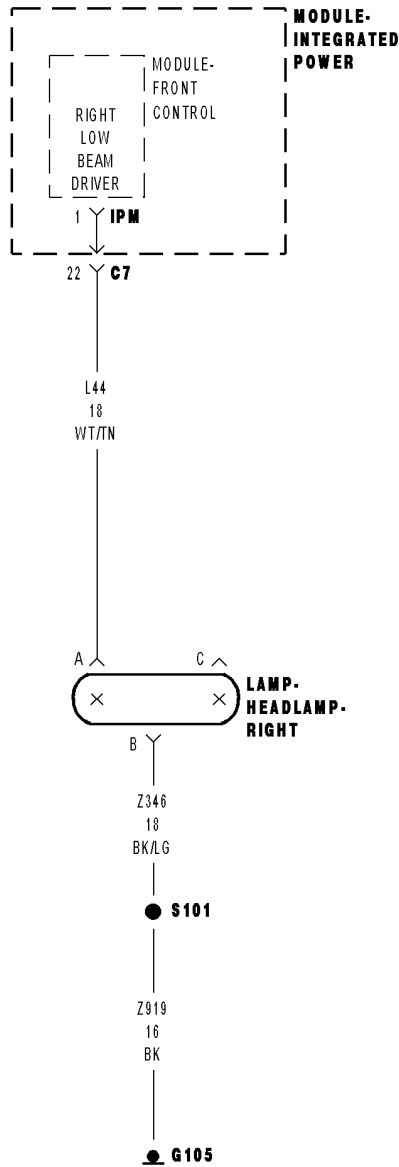
Measure the resistance of the Right Highbeam Output circuit.

Is the resistance above 5.0 ohms?

Yes >> Replace the Power Distribution Center..
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-RIGHT LOWBEAM OUTPUT CIRCUIT LOW



FCM-RIGHT LOWBEAM OUTPUT CIRCUIT LOW (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a short condition

Possible Causes

RIGHT LOWBEAM OUTPUT CIRCUIT SHORT TO GROUND
POWER DISTRIBUTION CENTER
FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

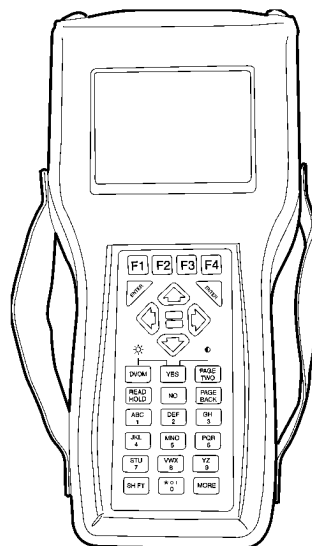
Actuate the Lowbeam headlamps.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Right Lowbeam Output Circuit Low?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



8136f94b

FCM-RIGHT LOWBEAM OUTPUT CIRCUIT LOW (CONTINUED)

2. RIGHT LOWBEAM OUTPUT CIRCUIT SHORT TO GROUND

Turn the ignition off.

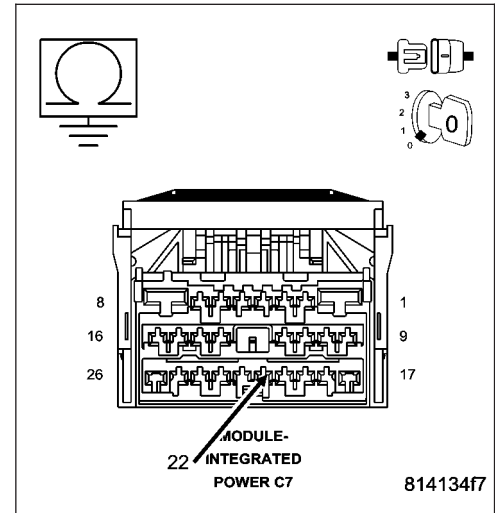
Disconnect the IPM C7 harness connector.

Measure the resistance between ground and the Right Lowbeam Output circuit.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the Right Lowbeam Output circuit for a short to ground.
Perform BODY VERIFICATION TEST - VER 1.



3. FRONT CONTROL MODULE

Turn the ignition off

Disconnect the FCM connector.

Disconnect the IPM C7 harness connector.

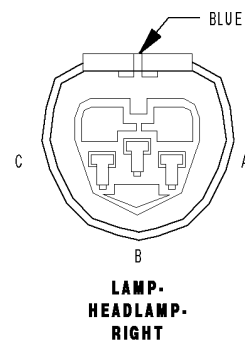
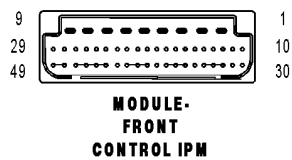
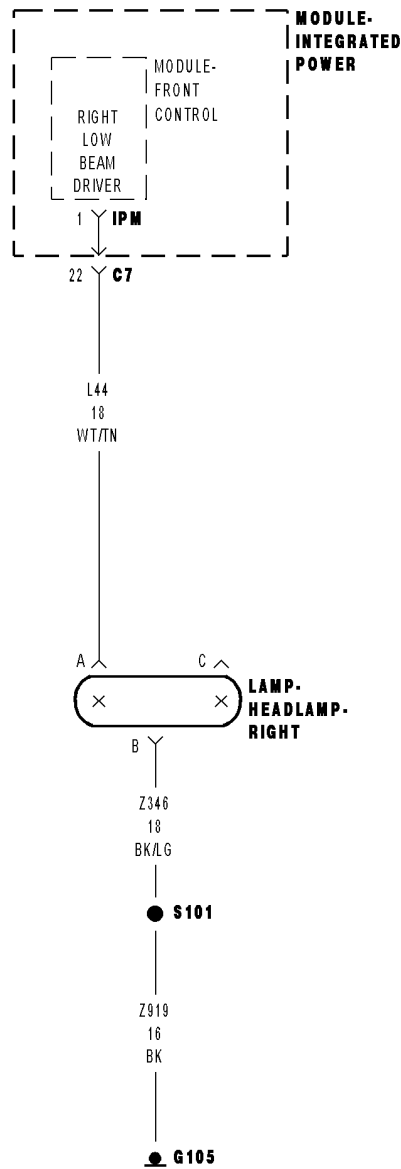
Measure the resistance between ground and the Right Lowbeam Output circuit in the IPM.

Is the resistance below 5.0 ohms?

Yes >> Replace the Power Distribution Center(PDC).
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-RIGHT LOWBEAM OUTPUT CIRCUIT OPEN



FCM-RIGHT LOWBEAM OUTPUT CIRCUIT OPEN (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects an open condition

Possible Causes
RIGHT LOWBEAM OUTPUT CIRCUIT OPEN POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

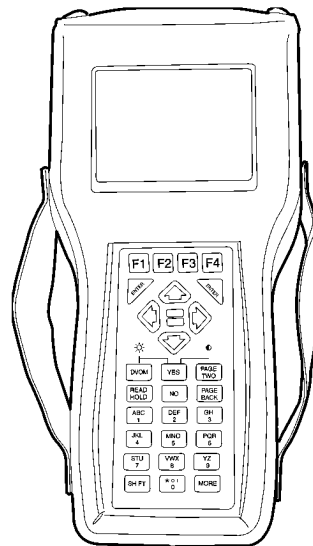
Actuate the Lowbeam headlamps.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Right Lowbeam Output Circuit Open?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



8136f94b

FCM-RIGHT LOWBEAM OUTPUT CIRCUIT OPEN (CONTINUED)**2. RIGHT LOWBEAM OUTPUT CIRCUIT OPEN**

Turn the ignition off.

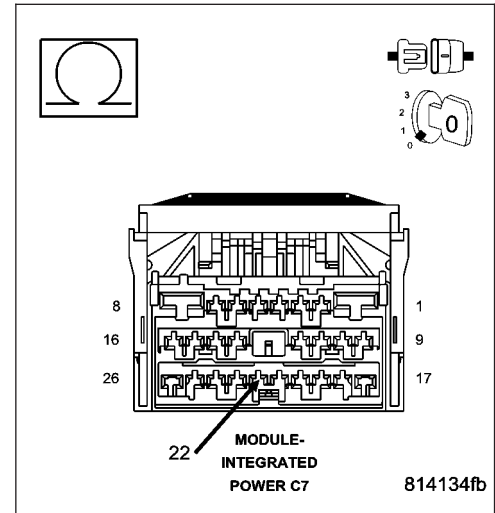
Disconnect the IPM C7 harness connector

Measure the resistance of the Right Lowbeam Output circuit.

Is the resistance above 5.0 ohms?

Yes >> Repair the Right Lowbeam Output circuit for an open.
Perform BODY VERIFICATION TEST - VER 1.

No >> Go To 3

**3. FRONT CONTROL MODULE**

Turn the ignition off

Disconnect the FCM from the IPM.

Disconnect the IPM C7 harness connector.

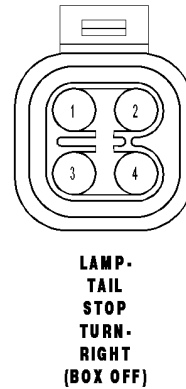
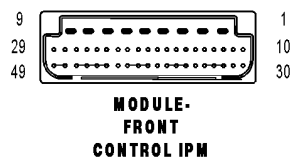
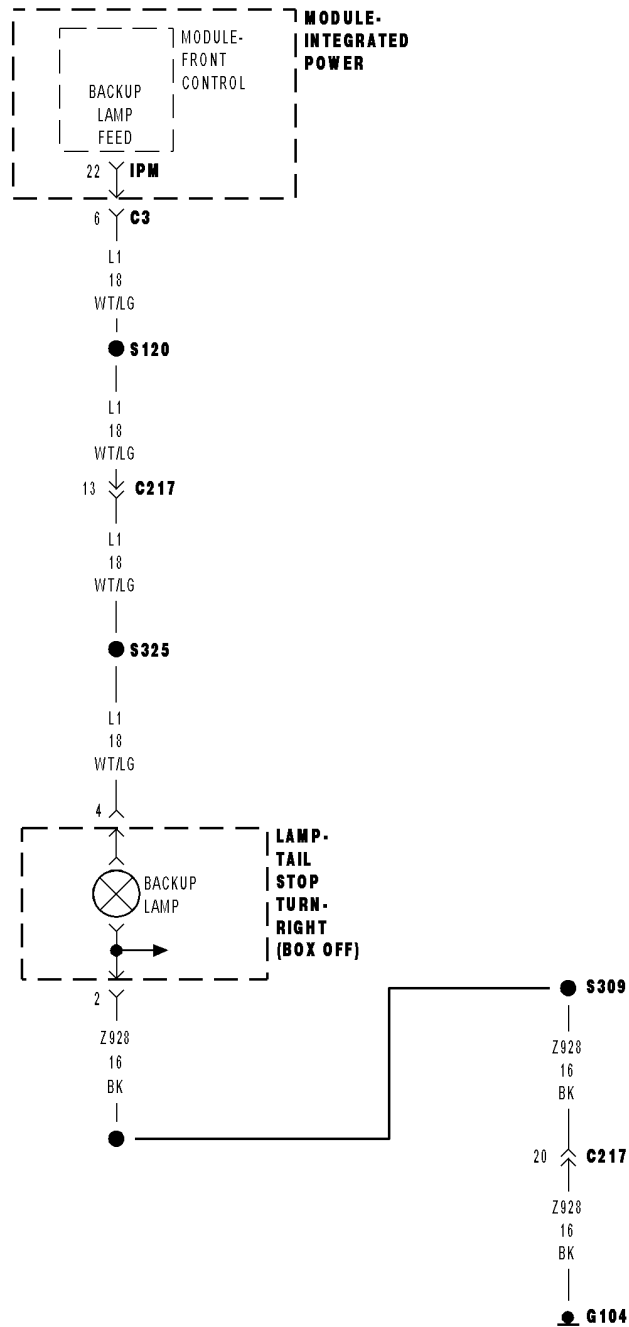
Measure the resistance of the Right Lowbeam Output circuit.

Is the resistance above 5.0 ohms?

Yes >> Replace the Power Distribution Center.
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-RIGHT STOP LAMP OUTPUT CIRCUIT LOW



FCM-RIGHT STOP LAMP OUTPUT CIRCUIT LOW (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a short to ground condition

Possible Causes

RIGHT BRAKE LAMP FEED CIRCUIT SHORT TO GROUND
FRONT CONTROL MODULE
POWER DISTRIBUTION CENTER (PDC)

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

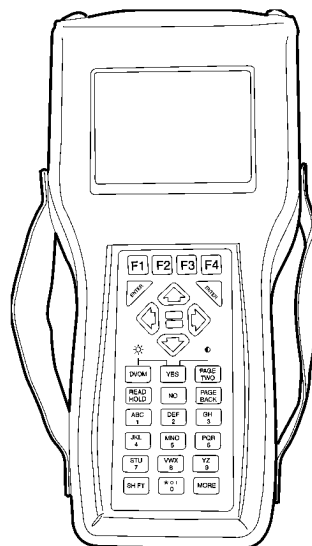
Actuate the Stop Lamps.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Right Stop Lamp Output Circuit Low?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



8136f94b

FCM-RIGHT STOP LAMP OUTPUT CIRCUIT LOW (CONTINUED)

2. RIGHT BRAKE LAMP FEED CIRCUIT SHORT TO GROUND

Turn the ignition off.

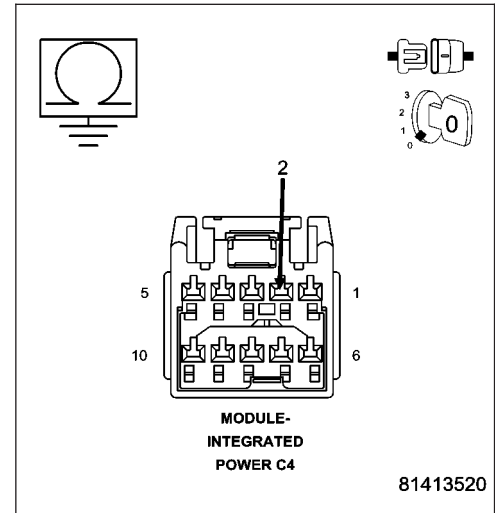
Disconnect the IPM C4 harness connector.

Measure the resistance between ground and the Right Brake Lamp Feed circuit.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the Right Brake Lamp Feed circuit for a short to ground.
Perform BODY VERIFICATION TEST - VER 1.



3. FRONT CONTROL MODULE

Turn the ignition off

Disconnect the FCM connector.

Disconnect the IPM C4 harness connector.

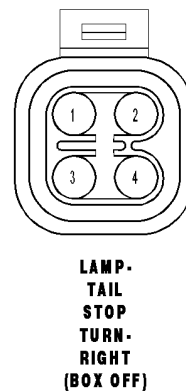
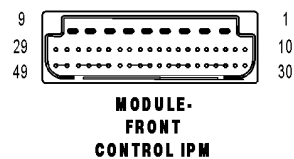
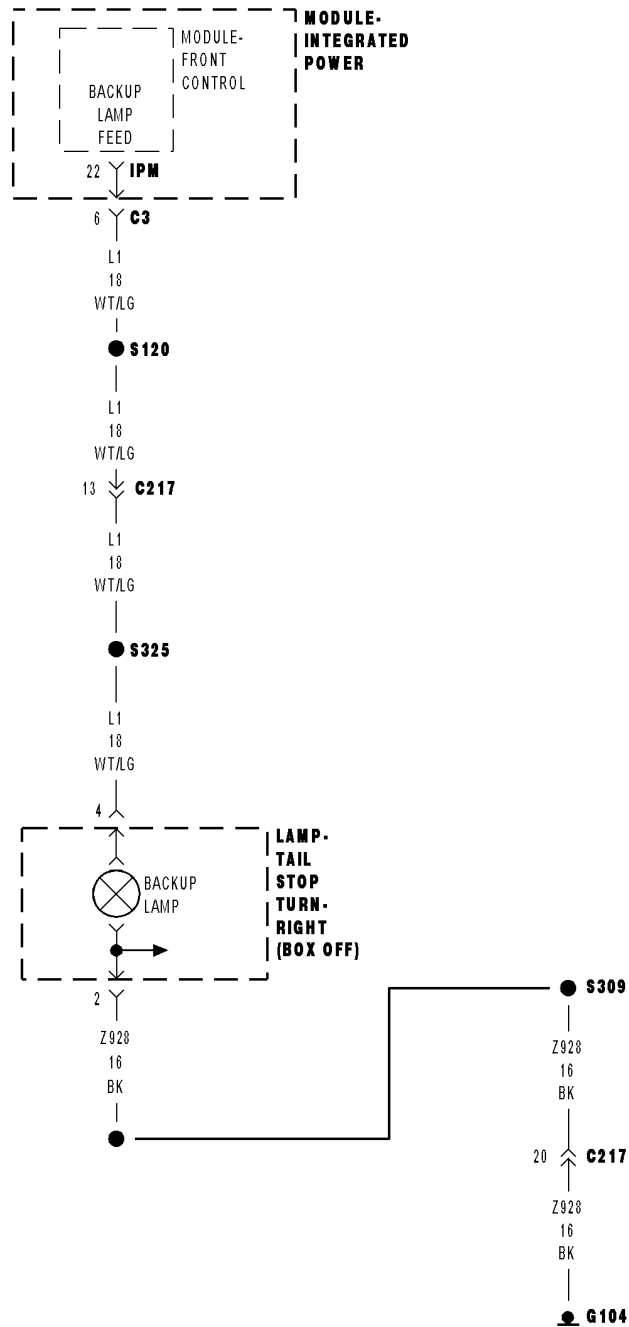
Measure the resistance between ground and the Right Brake Lamp Feed circuit in the IPM.

Is the resistance below 5.0 ohms?

Yes >> Replace the Power Distribution Center(PDC).
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-RIGHT STOP LAMP OUTPUT CIRCUIT OPEN



FCM-RIGHT STOP LAMP OUTPUT CIRCUIT OPEN (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects an open condition

Possible Causes
RIGHT BRAKE LAMP FEED CIRCUIT OPEN POWER DISTRIBUTION CENTER FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

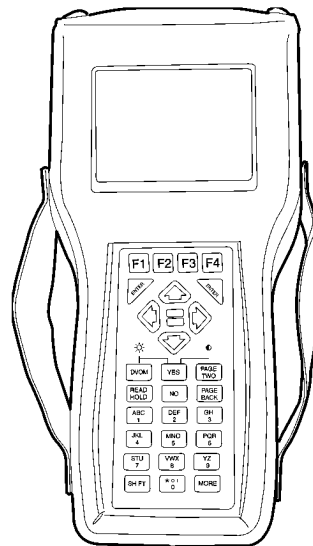
Actuate the Stop Lamps.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Right Stop Lamp Output Circuit Open?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



8136f94b

FCM-RIGHT STOP LAMP OUTPUT CIRCUIT OPEN (CONTINUED)**2. RIGHT BRAKE LAMP FEED CIRCUIT OPEN**

Turn the ignition off.

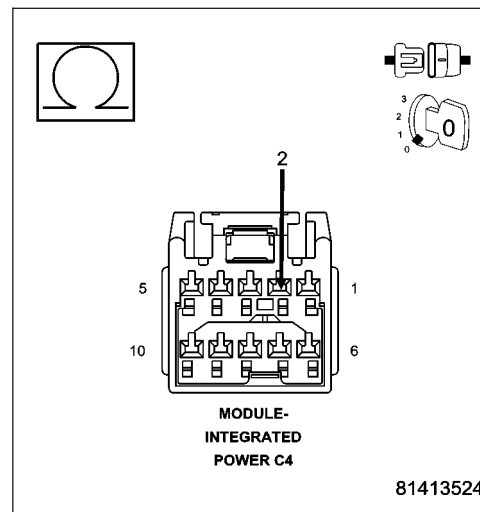
Disconnect the IPM C4 harness connector

Measure the resistance of the Right Brake Lamp Feed circuit.

Is the resistance above 5.0 ohms?

Yes >> Repair the Right Brake Lamp Feed circuit for an open.
Perform BODY VERIFICATION TEST - VER 1.

No >> Go To 3

**3. FRONT CONTROL MODULE**

Turn the ignition off

Disconnect the FCM from the IPM.

Disconnect the IPM C4 harness connector.

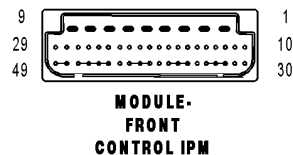
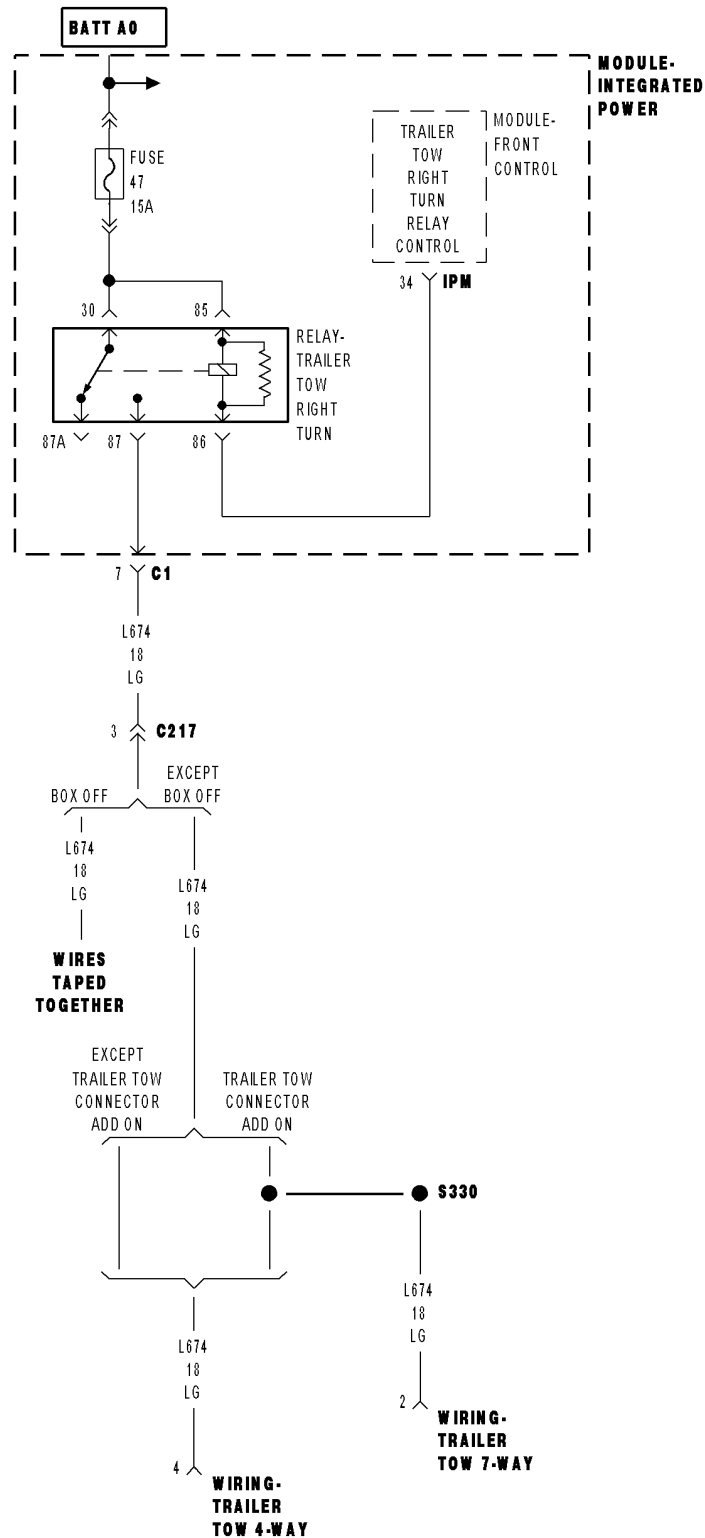
Measure the resistance of the Right Brake Lamp Feed circuit.

Is the resistance above 5.0 ohms?

Yes >> Replace the Power Distribution Center.
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-RIGHT TRAILER RELAY OUTPUT CIRCUIT HIGH



FCM-RIGHT TRAILER RELAY OUTPUT CIRCUIT HIGH (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a high condition

Possible Causes
FRONT CONTROL MODULE
INTEGRATED POWER MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

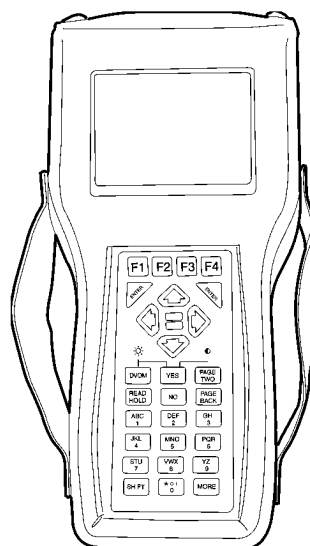
Actuate the Trailer Tow Lamps.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Right Trailer Relay Output Circuit High?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



8136f94b

2. FRONT CONTROL MODULE

Turn the ignition off.

Remove the Front Control Module from the IPM.

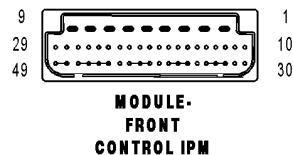
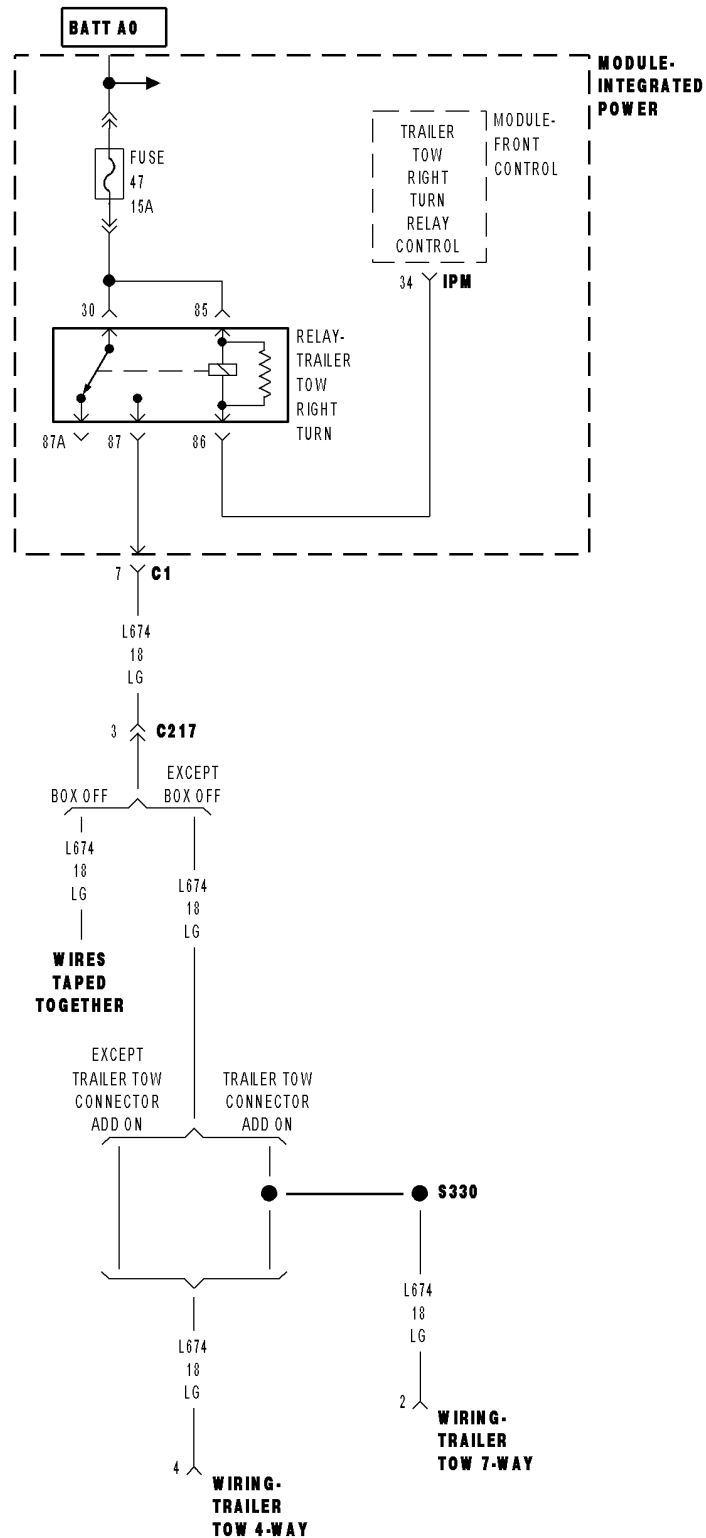
Measure the voltage of the Accessory Relay Control circuit and ground.

Is the voltage above 1.0 volts?

Yes >> Replace the Integrated Power Module.
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-RIGHT TRAILER RELAY OUTPUT CIRCUIT LOW



FCM-RIGHT TRAILER RELAY OUTPUT CIRCUIT LOW (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects a low condition

Possible Causes
POWER DISTRIBUTION CENTER (PDC)
FRONT CONTROL MODULE

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

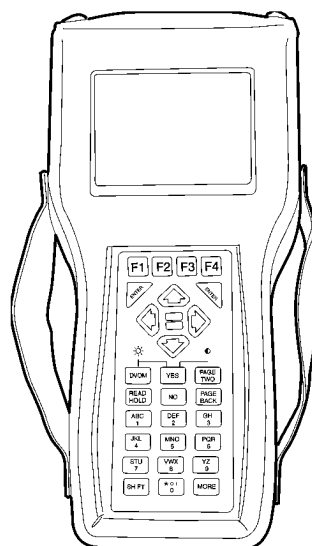
Actuate the Trailer Tow Lamps.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Right Trailer Relay Output Circuit Low?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



8136f94b

2. FRONT CONTROL MODULE

Turn the ignition off

Remove the FCM from the IPM.

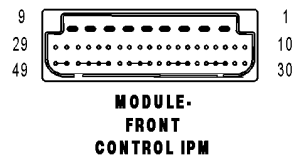
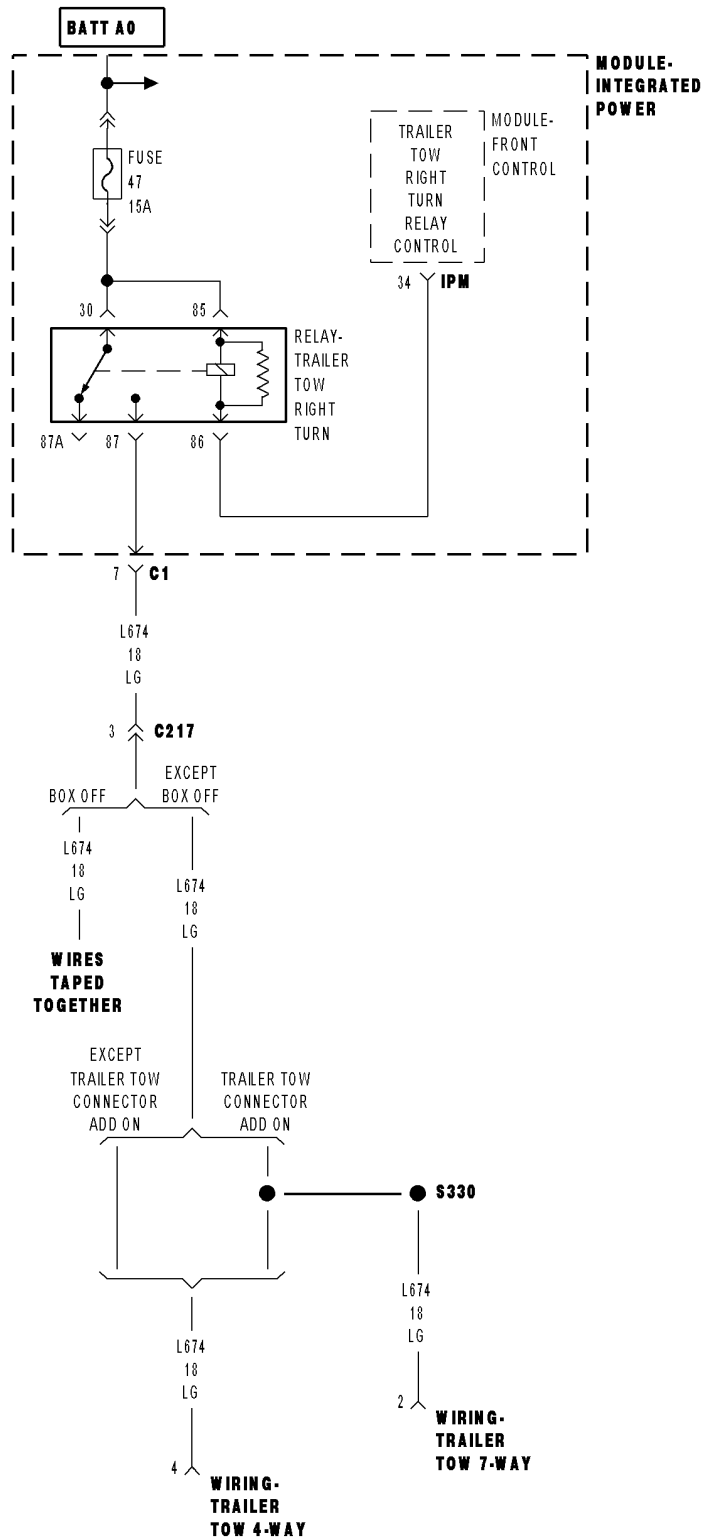
Measure the resistance between ground and the Right Trailer Tow Relay control circuit in the IPM.

Is the resistance below 5.0 ohms?

Yes >> Replace the Power Distribution Center(PDC).
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-RIGHT TRAILER RELAY OUTPUT CIRCUIT OPEN



FCM-RIGHT TRAILER RELAY OUTPUT CIRCUIT OPEN (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The FCM detects an open condition

Possible Causes
INTEGRATED POWER MODULE FRONT CONTROL MODULE TRAILER LAMP RELAY OUTPUT CIRCUIT OPEN

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all FCM DTC's.

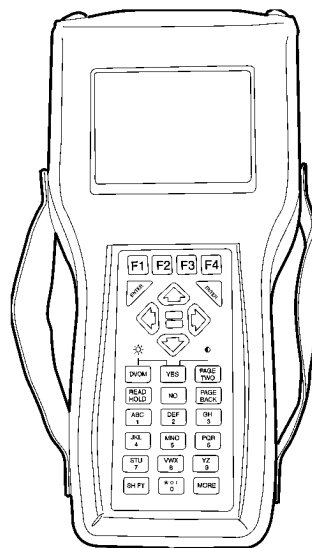
Actuate the Trailer Tow Lamps.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Right Trailer Relay Output Circuit Open?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



8136f94b

2. INTEGRATED POWER MODULE

Turn the ignition off.

Check the IPM to make certain the Right Trailer Tow Relay is present.

Is the Trailer Tow Relay present?

Yes >> Go To 3

No >> Replace the Integrated Power Module.
Perform BODY VERIFICATION TEST - VER 1.

FCM-RIGHT TRAILER RELAY OUTPUT CIRCUIT OPEN (CONTINUED)

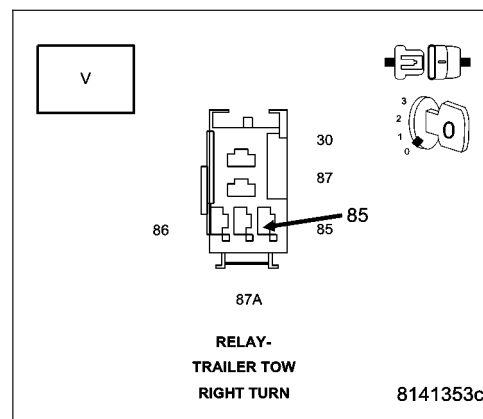
3. FRONT CONTROL MODULE

Turn the ignition off

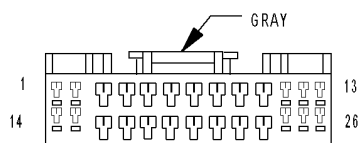
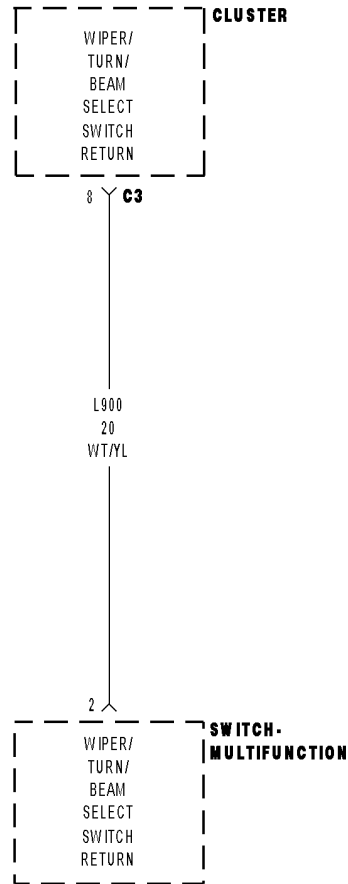
Measure the voltage of the Fused B+ circuit of the Trailer Tow relay in the IPM.

Is the voltage above 10 volts?

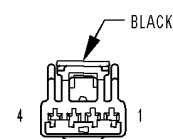
- Yes** >> Replace the Front Control Module.
Perform BODY VERIFICATION TEST - VER 1.
- No** >> Repair the Trailer Lamp Relay Output Circuit.
Perform BODY VERIFICATION TEST - VER 1.



MIC-TURN HAZARD SWITCH INPUT CIRCUIT OPEN



CLUSTER C3



SWITCH-
MULTIFUNCTION

MIC-TURN HAZARD SWITCH INPUT CIRCUIT OPEN (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the Ignition on
- **Set Condition:**
The CCN detects an open condition

Possible Causes

MULTIFUNCTION SWITCH
WIPER/TURN/BEAM SELECT SWITCH SENSE
TURN LAMPS SWITCH FEED CIRCUIT
INSTRUMENT CLUSTER

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all MIC DTC's.

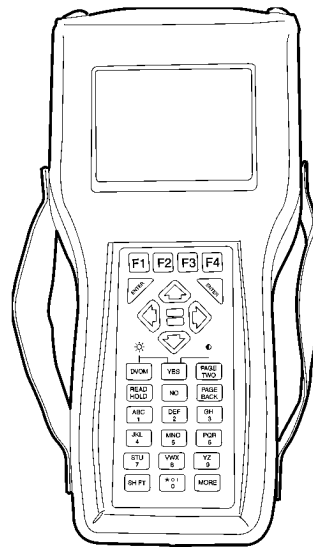
Actuate the Hazard Lamps.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Turn Hazard Switch Input Circuit Open?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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2. MULTIFUNCTION SWITCH

Disconnect the Multifunction Switch connector.

Turn the ignition on.

Measure the voltage of the Multifunction Switch between the Sense circuit and the Feed circuit.

Does the voltage read 0.0volts?

Yes >> Replace the Multifunction Switch.

Perform BODY VERIFICATION TEST - VER 1.

No >> Go To 3

MIC-TURN HAZARD SWITCH INPUT CIRCUIT OPEN (CONTINUED)**3. WIPER/TURN/BEAM SELECT SWITCH SENSE**

Turn the ignition off.

Disconnect the Multifunction Switch connector.

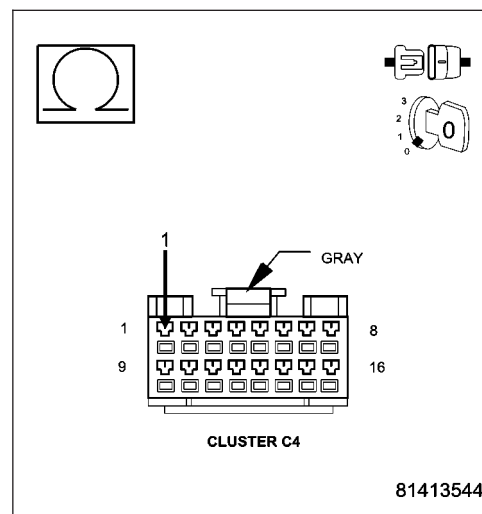
Disconnect the Instrument Cluster C4 connector.

Measure the resistance of the Wipe/Turn/Beam select sense circuit.

Is the resistance below 5.0 ohms?

Yes >> Go To 4

No >> Repair the Wiper/Turn/Beam Select Switch Sense circuit.
Perform BODY VERIFICATION TEST - VER 1.

**4. INSTRUMENT CLUSTER**

Turn the ignition off

Disconnect the Multifunction Switch connector.

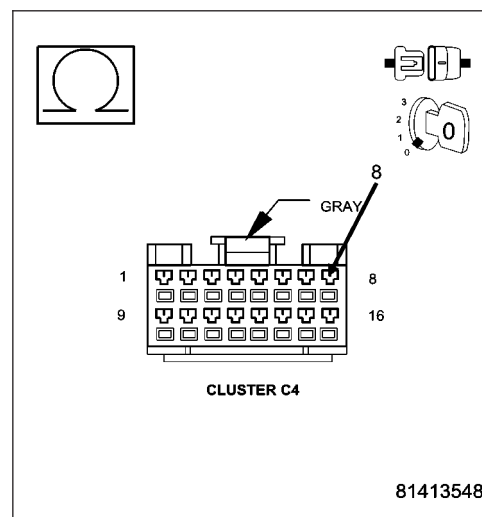
Disconnect the Instrument Cluster C4 connector.

Measure the resistance of the Turn Lamps Switch Feed circuit.

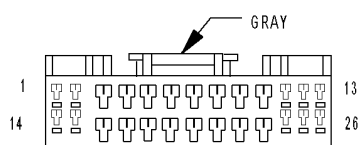
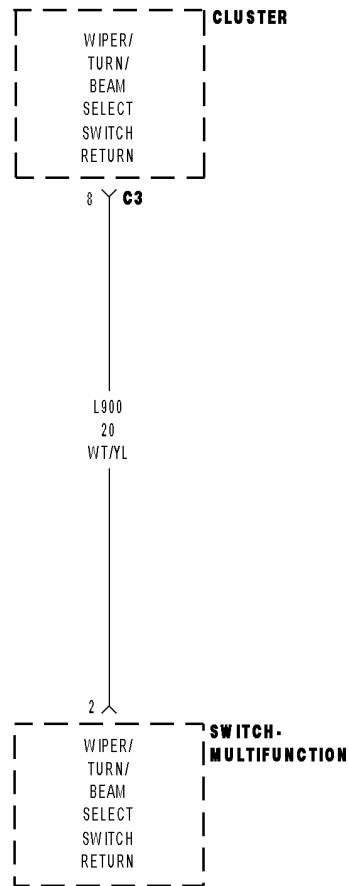
Is the resistance below 5.0 ohms?

Yes >> Replace the Instrument Cluster.
Perform BODY VERIFICATION TEST - VER 1.

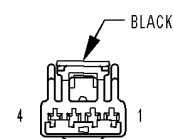
No >> Repair the Turn Lamps Switch Feed circuit.
Perform BODY VERIFICATION TEST - VER 1.



MIC-TURN HAZARD SWITCH INPUT CIRCUIT SHORTED



CLUSTER C3



SWITCH-MULTIFUNCTION

MIC-TURN HAZARD SWITCH INPUT CIRCUIT SHORTED (CONTINUED)

For the Exterior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the Exterior Lights active
- **Set Condition:**
The CCN detects a short condition

Possible Causes
MULTIFUNCTION SWITCH WIPER/TURN/BEAM SELECT SWITCH SENSE CIRCUIT SHORT TO GROUND INSTRUMENT CLUSTER

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all MIC DTC's.

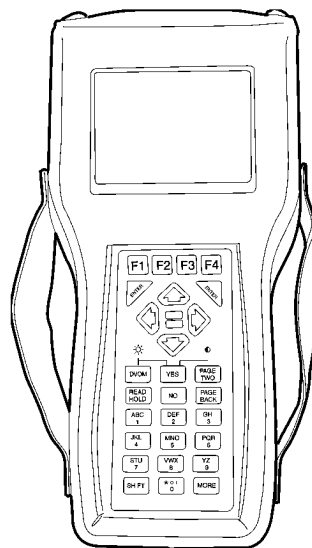
Actuate the Hazard Lamps.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Turn Hazard Switch Input Circuit Short?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



8136f94b

2. MULTIFUNCTION SWITCH

Disconnect the Multifunction Switch connector.

Turn the ignition on.

Does the DRBIII® display Multifunction Switch 5.0 volts?

Yes >> Go To 3

No >> Replace the Multifunction Switch.
Perform BODY VERIFICATION TEST - VER 1.

MIC-TURN HAZARD SWITCH INPUT CIRCUIT SHORTED (CONTINUED)

3. WIPER/TURN/BEAM SELECT SWITCH SENSE CIRCUIT SHORT TO GROUND

Turn the ignition off.

Disconnect the Multifunction Switch connector.

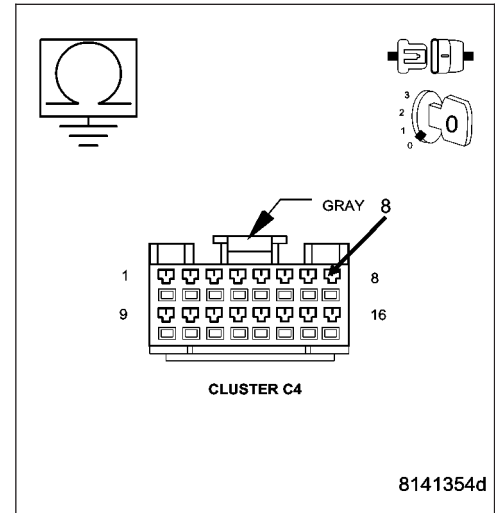
Disconnect the Instrument Cluster C4 connector.

Measure the resistance of the Wiper/Turn/Beam Select Switch Sense circuit to ground.

Is the resistance below 5.0 ohms?

Yes >> Repair the Wiper/Turn/Beam select switch sense circuit..
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Instrument Cluster.
Perform BODY VERIFICATION TEST - VER 1.



LAMPS/LIGHTING - EXTERIOR - SERVICE INFORMATION

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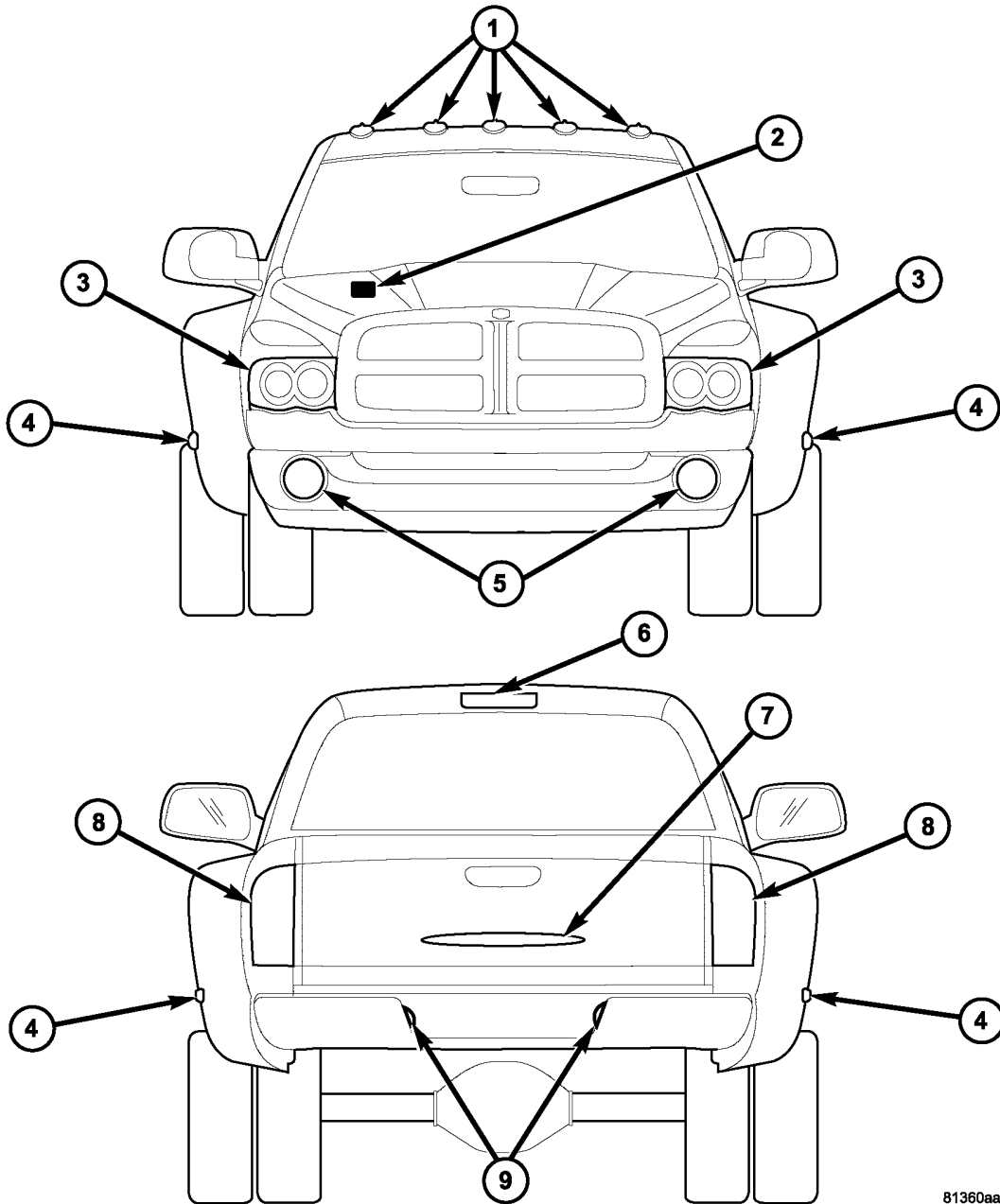
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LAMPS/LIGHTING - EXTERIOR - SERVICE INFORMATION

DESCRIPTION



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The exterior lighting system for this model includes the following exterior lamp units:

- **Cab Clearance Lamps (1)** - Vehicles equipped with this option have five individual amber clearance lamp units mounted across the roof panel just rearward of the upper windshield header.
- **Center High Mounted Stop Lamp (6)** - A standard equipment Center High Mounted Stop Lamp (CHMSL) is centered on the vertical surface at the rear of the roof panel just above the back glass opening at the rear of the truck cab. This CHMSL also incorporates two integral cargo lamps, one located at each outboard side of the CHMSL.
- **Front Fog Lamps (5)** - Vehicles equipped with this option have a fog lamp unit mounted near each outboard end of the front bumper support, behind the lower portion of the front fascia.

- **Front Lamp Units (3)** - A standard equipment front lamp unit is mounted to the front of each front fender panel on either side of the grille opening.
- **License Plate Lamps (9)** - A standard equipment rear license plate lamp unit is mounted to each outboard vertical surface of the license plate tub formation in the center of the rear bumper on pickup models. On cab and chassis models the license plate lamp function is integral to the rear lamp unit.
- **Rear Fender Marker Lamps (4)** - Vehicles equipped with dual rear wheels have four individual rear fender marker lamp units mounted to the rear fenders. An amber lamp is located forward of each rear wheel opening and a red lamp is located rearward of each rear wheel opening.
- **Rear Lamp Units (8)** - On pick-up models a standard equipment rear lamp unit is mounted to the rear of each quarter panel on either side of the tailgate opening. On cab and chassis models a rear lamp unit is mounted on the outboard side of each frame rail near the rear of the vehicle.
- **Tailgate Marker Lamp (7)** - Vehicles equipped with dual rear wheels have a single red tailgate marker lamp unit mounted to the center of the outer tailgate panel below the tailgate latch release handle.
- **Underhood Lamp (2)** - Vehicles equipped with this option have a single underhood lamp unit with an integral automatic mechanical (non-mercury) switch. The lamp and switch unit is mounted to the underside of the inner hood reinforcement above the right side of the engine compartment.

These exterior lighting lamp units and their controls are combined to provide the following exterior lighting features:

- **Backup Lamps** - The backup (or reverse) lamps include a bulb, reflector and lens that are integral to each rear lamp unit.
- **Brake Lamps** - The brake (or stop) lamps include a bulb, reflector and lens that are integral to each rear lamp unit, and the CHMSL bulb and lens.
- **Daytime Running Lamps** - Vehicles manufactured for sale in Canada illuminate the high beam filament of the headlamp bulb in each front lamp unit to serve as the Daytime Running Lamps (DRL).
- **Exterior Lamp Fail-Safe Operation** - The EMIC provides a fail-safe feature which will automatically turn on all exterior lamps when the ignition switch is in the On position and there is no detected input from the headlamp switch.
- **Exterior Lamp Load Shedding** - The EMIC provides a battery saver feature which will automatically turn off all exterior lamps that remain on with the ignition switch in the Off position after a timed interval of about five minutes.
- **Front Fog Lamps** - The optional front fog lamps include the bulb, reflector and lens of each adjustable front fog lamp unit.
- **Hazard Warning Lamps** - The hazard warning lamps include the right and left turn signal bulbs, reflectors and lenses of each front and rear lamp unit.
- **Headlamp Delay** - On vehicles equipped with this optional feature, the low or high beam headlamps remain illuminated for a dealer-programmable delay period of 30, 60 or 90 seconds when the headlamp switch is turned to the Off position after the ignition switch has been turned to the Off position.
- **Headlamps** - The headlamps include a single, dual filament halogen bulb, an adjustable reflector and a clear lens integral to each front lamp unit.
- **Optical Horn** - Also known as flash-to-pass, the beam selection function of the multi-function switch control stalk has a momentary intermediate position that allows the headlamp high beams to be flashed momentarily, without changing the headlamp beam selection.
- **Park Lamps** - The park lamps include the park and side marker bulbs, reflectors and lenses integral to each front and rear lamp unit as well as the bulbs, reflectors and lenses of the rear license plate lamps. The cab clearance lamps, the dual rear wheel rear fender marker lamps and tailgate marker lamp are also included in the park lamps circuit of vehicles equipped with these optional exterior lamps.
- **Turn Signal Lamps** - The turn signal lamps include the turn signal bulbs, reflectors and lenses that are integral to the right and left front and rear lamp units.

Other components of the exterior lighting system for this model include:

- **Backup Lamp Switch** - A plunger-type backup lamp switch is installed through the transmission housing of vehicles equipped with a manual transmission and is actuated by the shifter mechanism within the transmission when Reverse gear is selected. Depending upon the transmission model, either a stand-alone Transmission Range Sensor (TRS), or a TRS that is integral to the solenoid pack on the valve body performs the backup lamp switch function on vehicles with an automatic transmission.
- **Brake Lamp Switch** - A plunger-type brake lamp switch is located on the steering column support bracket under the instrument panel and is actuated by the brake pedal arm.

- **Front Control Module** - The Front Control Module (FCM) is integral to the Integrated Power Module (IPM). The FCM/IPM is located in the engine compartment, near the battery and the Power Distribution Center (PDC). (Refer to 8 - ELECTRICAL/POWER DISTRIBUTION - DESCRIPTION).
- **Front Fog Lamp Relay** - Vehicles equipped with optional front fog lamps have a front fog lamp relay located in the Power Distribution Center (PDC).
- **Headlamp Switch** - A headlamp switch is located on the left side of the instrument panel, below and outboard of the steering column. The headlamp switch includes a rotary knob for the park lamps and headlamps On or Off. This rotary knob is pulled outward for selecting the optional front fog lamps on vehicles so equipped. The headlamp switch also features a vertical thumbwheel for selecting the panel lamps dimming level, a Parade mode to illuminate all Vacuum Fluorescent Display (VFD) units at full brightness for visibility when driving in daylight with the exterior lighting turned On, for cargo lamp control and for interior lighting control.
- **Instrument Cluster** - The ElectroMechanical Instrument Cluster (EMIC) is also known as the Cab Control Node (CCN) in this vehicle. The EMIC/CCN is located in the instrument panel above the steering column opening, directly in front of the driver. (Refer to 8 - ELECTRICAL/INSTRUMENT CLUSTER - DESCRIPTION).
- **Multi-Function Switch** - The multi-function switch is located on the steering column, just below the steering wheel. A control stalk that extends from the left side of the switch is used to select the turn signal lamps (right or left) and to select the headlamp beam (low, high or optical horn). A push button that extends from the top of the switch is used to select the hazard warning lamps.
- **Park Brake Switch** - A park brake switch is located on the park brake lever mechanism on the cowl side inner panel below the instrument panel, to the left of the steering column.
- **Park Lamp Relay** - A park lamp relay is located in the Power Distribution Center (PDC) of all vehicles.
- **Trailer Tow Relays** - All vehicles are equipped with trailer tow relays installed in the Power Distribution Center (PDC) in the engine compartment, one for the trailer right turn and brake lamps and the other for the trailer left turn and brake lamps.
- **Trailer Tow Wiring** - Standard equipment in all vehicles is a 4-way trailer tow wire harness take out and a 4-pin light duty trailer tow connector that is located behind the rear bumper. An optional factory-installed trailer tow package supplements the 4-way harness and connector with a 7-way trailer tow wire harness and a sealed, heavy duty 7-pin trailer tow connector installed in the left side of the forward vertical surface of the license plate tub formation in the center of the rear bumper. This optional trailer tow package also includes a 4-way electric trailer brake wiring provision and connector located on top of the large body harness connection under the instrument panel to the left of the brake pedal, as well as an electric trailer brake pigtail harness and an instruction card that are stored in the glove box when the vehicle is shipped from the factory.

Hard wired circuitry connects the exterior lighting system components to the electrical system of the vehicle. These hard wired circuits are integral to several wire harnesses, which are routed throughout the vehicle and retained by many different methods. These circuits may be connected to each other, to the vehicle electrical system and to the exterior lighting components through the use of a combination of soldered splices, splice block connectors, and many different types of wire harness terminal connectors and insulators. Refer to the appropriate wiring information. The wiring information includes wiring diagrams, proper wire and connector repair procedures, further details on wire harness routing and retention, as well as pin-out and location views for the various wire harness connectors, splices and grounds.

OPERATION

Following are paragraphs that briefly describe the operation of each of the major exterior lighting systems. The hard wired circuits and components of the exterior lighting systems may be diagnosed and tested using conventional diagnostic tools and methods. Refer to the appropriate wiring information.

However, conventional diagnostic methods may not prove conclusive in the diagnosis of the ElectroMechanical Instrument Cluster (EMIC) (also known as the Cab Control Node/CCN), the Front Control Module (FCM) (also known as the Integrated Power Module/IPM), the Powertrain Control Module (PCM) or the Programmable Communications Interface (PCI) data bus. The most reliable, efficient, and accurate means to diagnose the EMIC, the FCM, the PCM, the PCI data bus or the electronic bus message inputs and outputs related to the various exterior lighting systems requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

BACKUP LAMPS

The backup (or reverse) lamps have a path to ground at all times through a takeout and eyelet terminal of the left headlamp and dash wire harness that is secured by a ground screw to the left inner fender support within the

engine compartment. On vehicles with a manual transmission, the backup lamp switch provides battery voltage to the backup lamps on the backup lamp feed circuit whenever the ignition switch is in the On position and the Reverse position is selected with the transmission shift linkage. On vehicles with an automatic transmission, the Transmission Range Sensor (TRS) provides battery voltage to the backup lamps on the backup lamp feed circuit whenever the ignition switch is in the On position and the Reverse position is selected with the transmission shift linkage.

BRAKE LAMPS

The brake (or stop) lamps each have a path to ground at all times through a takeout and eyelet terminal of the left headlamp and dash wire harness that is secured by a ground screw to the left inner fender support within the engine compartment. The Center High Mounted Stop Lamp (CHMSL) has a path to ground at all times through a takeout and eyelet terminal of the instrument panel wire harness that is secured by a ground screw to the back of the support structure of the instrument panel near the center. The brake lamps receive battery voltage from the Front Control Module (FCM) on the right and left brake lamp feed circuits and the CHMSL receives battery voltage from the brake lamp switch output circuit when the brake lamp switch is closed by the brake pedal arm.

DAYTIME RUNNING LAMPS

Vehicles manufactured for sale in Canada illuminate the high beam filament of both headlamp bulbs at a reduced intensity when the engine is running and the exterior lamps are turned off. The FCM must be programmed with the appropriate country code for this feature to be enabled. Once enabled, anytime the FCM receives electronic messages over the PCI data bus from the PCM indicating the engine is running and from the EMIC indicating the status of the headlamp switch exterior lighting input is Off, the FCM provides a pulse width modulated voltage output to the proper headlamp bulb filaments through the right and left high beam output circuits to produce illumination at a reduced intensity.

FRONT FOG LAMPS

Vehicles equipped with optional front fog lamps include a front fog lamp relay installed in the PDC, and a front fog lamp switch integral to the headlamp switch on the instrument panel. The front fog lamps have a path to ground at all times through their connection to the headlamp and dash wire harness. The left headlamp and dash wire harness has takeouts with eyelet terminals that are secured by ground screws to the left inner fender support within the engine compartment. The EMIC monitors a hard wired multiplex input from the headlamp switch to determine whether the fog lamps are selected, then sends electronic fog lamp switch status messages to the FCM over the PCI data bus.

When the FCM receives a fog lamp status message it then controls front fog lamp operation by energizing or de-energizing the front fog lamp relay control coil. The FCM also sends the appropriate electronic message back to the EMIC to illuminate or extinguish the front fog lamp indicator. When the front fog lamp relay is energized, it provides battery voltage from a fused B(+) fuse in the PDC to the fog lamps through the fog lamp relay output circuit. The FCM will automatically de-energize the front fog lamps relay any time the headlamp high beams are selected. The EMIC also provides a battery saver (load shedding) feature for the front fog lamps, which will turn these lamps off if they are left on for more than about five minutes with the ignition switch in the Off position. Each front fog lamp includes an integral adjustment screw to be used for static aiming of the fog lamp beams.

HAZARD WARNING LAMPS

The hazard warning system includes the EMIC, the FCM and the multi-function switch on the steering column. The EMIC monitors a hard wired multiplex input from the multi-function switch to determine the status of the hazard warning switch, then sends the appropriate electronic hazard switch status messages to the FCM over the PCI data bus. The FCM responds to these messages by controlling a battery voltage output and the flash rate for each of the right and left turn signal lamps. The FCM also sends the appropriate electronic messages back to the EMIC to control the illumination and flash rate of the right and left turn signal indicators, as well as to control the click rate of an electromechanical relay soldered onto the EMIC electronic circuit board that emulates the sound emitted by a conventional hazard warning flasher.

HEADLAMPS

The headlamp system includes the EMIC, the FCM, the multi-function switch on the steering column and the headlamp switch on the instrument panel. The headlamp bulbs have a path to ground at all times through their connection to the headlamp and dash wire harness. The headlamp and dash wire harness has takeouts with eyelet terminals that are secured by ground screws to the right (right headlamp bulb) and left (left headlamp bulb) inner

fender support within the engine compartment. The EMIC monitors a hard wired multiplex input to determine the status of the headlamp switch, and a hard wired multiplex input from the multi-function switch to determine whether the high or low beams are selected. The EMIC then sends the appropriate electronic headlamp switch and headlamp beam select switch status messages to the FCM over the PCI data bus.

The FCM responds to these messages by providing a pulse width modulated voltage output to the proper headlamp bulb through the right and left low and high beam output circuits to illuminate the selected headlamp filaments. The FCM also remembers which beams (low or high) were selected when the headlamps were last turned Off, and energizes those beams again the next time the headlamps are turned On. The EMIC provides a battery saver (load shedding) feature for the headlamps, which will turn these lamps off if they are left on for more than about five minutes with the ignition switch in the Off position. The EMIC provides a fail-safe feature for the headlamps, which will send an electronic message to the FCM to turn the low beam headlamps On automatically if it detects no input from the headlamp switch. Each headlamp includes an integral reflector adjustment screw to be used for static aiming of the headlamps.

PARK LAMPS

The park lamps system includes the EMIC, the FCM, a park lamp relay installed in the PDC, and the headlamp switch on the instrument panel. The front park lamp and side marker lamp bulbs each have a path to ground at all times through their connection to the headlamp and dash wire harness. The headlamp and dash wire harness has takeouts with eyelet terminals that are secured by ground screws to the right (right park lamp and side marker lamp bulbs) and left (left park lamp and side marker lamp bulbs) inner fender support within the engine compartment. The rear park lamp, side marker lamp, license plate lamp and the optional fender and tailgate marker lamp bulbs have a path to ground at all times through a takeout and eyelet terminal of the left headlamp and dash wire harness that is secured by a ground screw to the left inner fender support within the engine compartment. The optional cab clearance lamps each have a path to ground at all times through a takeout and eyelet terminal of the instrument panel wire harness that is secured by a ground screw to the back of the support structure of the instrument panel near the center.

The EMIC monitors a hard wired multiplex input from the headlamp switch, then sends the appropriate electronic headlamp switch status messages to the FCM over the PCI data bus. The FCM responds to these messages by energizing or de-energizing the park lamp relay. When the park lamp relay is energized, it provides battery voltage from a fuse in the PDC through a park lamp relay output circuit to the appropriate lamp bulbs. The FCM provides a battery saver (load shedding) feature for the park lamps, which will turn these lamps off if they are left on for more than about five minutes with the ignition switch in the Off position. The EMIC provides a fail-safe feature for the park lamps, which will send an electronic message to the FCM to turn these lamps on automatically if it detects no input from the headlamp switch.

TRAILER TOW WIRING

In addition to the trailer tow wiring provisions, all vehicles include right and left trailer tow stop/turn relays installed in the PDC. When the FCM receives the appropriate inputs for normal turn signal, hazard warning or brake lamp operation, it responds by also energizing or de-energizing these trailer tow relays. When a trailer tow relay is energized, it provides battery voltage from a fused B(+) fuse to the trailer lamps through the trailer tow wiring to synchronize the illumination and flash rate of the trailer brake and turn signal lamps with those of the tow vehicle.

TURN SIGNAL LAMPS

The turn signal lamps system includes the EMIC, the FCM and the multi-function switch on the steering column. The front turn signal lamp bulbs each have a path to ground at all times through their connection to the headlamp and dash wire harness. The headlamp and dash wire harness has takeouts with eyelet terminals that are secured by ground screws to the right (right front turn signal lamp bulb) and left (left front turn signal lamp bulb) inner fender supports within the engine compartment. The rear turn signal lamp bulbs have a path to ground at all times through a takeout and eyelet terminal of the left headlamp and dash wire harness that is secured by a ground screw to the left inner fender support within the engine compartment.

The EMIC monitors a hard wired multiplex input from the multi-function switch to determine the status of the turn signal switch, then sends the appropriate electronic turn signal switch status messages to the FCM over the PCI data bus. The FCM responds to these messages by controlling a battery voltage output and the flash rate for either the right or left turn signal lamps. The FCM also sends the appropriate electronic messages back to the EMIC to control the illumination and flash rate of the right or left turn signal indicators, as well as to control the click rate of an electromechanical relay soldered onto the EMIC electronic circuit board that emulates the sound emitted by a conventional turn signal flasher.

The EMIC also provides a “turn signal on warning” that will generate repetitive chimes to indicate that a turn signal has been active continuously for 1.6 kilometers (1 mile) with the vehicle speed greater than 22 kilometers-per-hour (15 miles-per hour). Vehicles built for markets other than the United States and Canada have a revised distance threshold of 4 kilometers for this feature. The chime will continue until the turn signal input becomes inactive or until the vehicle speed message indicates that the speed is less than 22 kilometers-per-hour (15 miles-per-hour), whichever occurs first.

WARNING

WARNINGS - LAMPS/LIGHTING - EXTERIOR

WARNING:: To avoid personal injury or death, eye protection should be used when servicing any glass components.

CAUTION: Do not contaminate the glass of halogen bulbs with fingerprints or allow contact with other possibly oily surfaces. Reduced bulb life will result.

CAUTION: Do not use bulbs with higher candle power than indicated in the Bulb Application table (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - SPECIFICATIONS). In addition, do not use fuses, circuit breakers or relays having greater amperage value than indicated on the fuse panel or in the Owner's Manual. Damage to lamps, lenses, wiring and other related electrical components can result.

DIAGNOSIS AND TESTING

LAMPS/LIGHTING - EXTERIOR

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

NOTE: When diagnosing the exterior lighting circuits, remember that high generator output can burn out bulbs rapidly and repeatedly; and, that dim or flickering bulbs can be caused by low generator output or poor battery condition. If one of these symptoms is a problem on the vehicle, be certain to diagnose the battery and charging system, then repair as necessary.

NOTE: A good ground is necessary for proper lighting operation. If a lighting problem is being diagnosed that involves multiple symptoms, systems, or components, the problem can often be traced to a loose, corroded, or open ground.

The hard wired exterior lamp and lighting circuits may be diagnosed and tested using conventional diagnostic tools and methods. Refer to the appropriate wiring information. The wiring information includes wiring diagrams, proper wire and connector repair procedures, details of wire harness routing and retention, connector pin-out information and location views for the various wire harness connectors, splices and grounds.

However, conventional diagnostic methods may not prove conclusive in the diagnosis of the ElectroMechanical Instrument Cluster (EMIC), the Front Control Module (FCM), the Integrated Power Module (IPM), the Power Distribution Center (PDC), the Powertrain Control Module (PCM), the Programmable Communications Interface (PCI) data bus, or the electronic message inputs used to provide exterior lamp and lighting service or many of the electronic features of the exterior lamp and lighting systems. The most reliable, efficient, and accurate means to diagnose the EMIC, the FCM, the IPM, the PDC, the PCM, the PCI data bus, and the electronic message inputs for the exterior lamps and lighting system requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

BACKUP LAMPS

CONDITION	POSSIBLE CAUSES	CORRECTION
BACKUP LAMP DOES NOT ILLUMINATE	1. Faulty or missing fuse. 2. Faulty or missing bulb. 3. Faulty ground circuit. 4. Faulty supply circuit. 5. Faulty switch.	1. Test and replace backup lamp fuse as required. 2. Test and replace backup lamp bulb as required. 3. Test and repair backup lamp ground circuit as required. 4. Test and repair open back-up lamp supply circuit as required. 5. Test and replace backup lamp switch (manual transmission) or transmission range sensor (automatic transmission) as required.
BACKUP LAMP DOES NOT EXTINGUISH	1. Faulty supply circuit. 2. Faulty switch.	1. Test and repair shorted back-up lamp supply circuit as required. 2. Test and replace backup lamp switch (manual transmission) or transmission range sensor (automatic transmission) as required.

BRAKE LAMPS

CONDITION	POSSIBLE CAUSES	CORRECTION
BRAKE LAMP DOES NOT ILLUMINATE	1. Faulty or missing fuse. 2. Faulty or missing bulb. 3. Faulty ground circuit. 4. Faulty supply circuit. 5. Faulty switch.	1. Test and replace brake lamp fuse as required. 2. Test and replace brake lamp bulb as required. 3. Test and repair brake lamp ground circuit as required. 4. Test and repair open brake lamp switch output circuit as required. 5. Test and replace brake lamp switch as required.
BRAKE LAMP DOES NOT EXTINGUISH	1. Faulty supply circuit. 2. Faulty switch.	1. Test and repair shorted brake lamp switch output circuit as required. 2. Test and replace brake lamp switch as required.

DAYTIME RUNNING LAMPS

NOTE: Before performing the following tests, determine whether the headlamp low and high beams operate. If the headlamp low and high beams are also inoperative, diagnose and repair that problem before attempting to repair the Daytime Running Lamps.

CONDITION	POSSIBLE CAUSES	CORRECTION
DAYTIME RUNNING LAMPS WILL NOT ILLUMINATE	1. Incorrect FCM programming. 2. Faulty FCM inputs or outputs.	1. Use a diagnostic scan tool to check and program correct country code into FCM as required. 2. Use a diagnostic scan tool to test the FCM inputs or outputs. Refer to the appropriate diagnostic information.

FRONT FOG LAMPS

CONDITION	POSSIBLE CAUSES	CORRECTION
FRONT FOG LAMP DOES NOT ILLUMINATE	1. Faulty or missing fuse. 2. Faulty or missing bulb. 3. Faulty ground circuit. 4. Faulty supply circuit. 5. Faulty or missing relay. 6. Faulty switch.	1. Test and replace front fog lamp fuse as required. 2. Test and replace front fog lamp bulb as required. 3. Test and repair front fog lamp ground circuit as required. 4. Test and repair open front fog lamp relay output circuit as required. 5. Test and replace front fog lamp relay as required. 6. Test and replace headlamp switch as required.
FRONT FOG LAMP DOES NOT EXTINGUISH	1. Faulty supply circuit. 2. Faulty relay. 3. Faulty switch.	1. Test and repair shorted front fog lamp relay output circuit as required. 2. Test and replace front fog lamp relay as required. 3. Test and replace headlamp switch as required.

HAZARD WARNING LAMPS

NOTE: Before performing the following tests, confirm whether the left and right turn signals operate satisfactorily. If the turn signals are inoperative or operate improperly, diagnose and repair that problem before attempting to repair the Hazard Warning Lamps.

CONDITION	POSSIBLE CAUSES	CORRECTION
HAZARD WARNING LAMPS DO NOT FLASH	1. Faulty switch.	1. Test and replace multi-function switch as required.
HAZARD WARNING LAMPS DO NOT STOP FLASHING	1. Faulty switch.	1. Test and replace multi-function switch as required.

HEADLAMPS

NOTE: As part of the exterior lighting failsafe feature, upon ignition On all exterior park lamps and the headlamp low beams will illuminate regardless of the headlamp switch position if the instrument cluster cannot detect an input from the headlamp switch, or if there is a loss of data bus communication.

CONDITION	POSSIBLE CAUSES	CORRECTION
HEADLAMP DOES NOT ILLUMINATE	1. Faulty or missing bulb. 2. Faulty ground circuit. 3. Faulty supply circuit. 4. Faulty switch.	1. Test and replace headlamp bulb as required. 2. Test and repair open headlamp ground circuit as required. 3. Test and repair open headlamp low beam or high beam circuit as required. 4. Test and replace headlamp switch as required.
HEADLAMP DOES NOT EXTINGUISH	1. Faulty supply circuit. 2. Faulty switch.	1. Test and repair shorted headlamp low beam or high beam circuit as required. 2. Test and replace headlamp switch as required.
HEADLAMPS ILLUMINATE WITH IGNITION ON AND HEADLAMP SWITCH OFF (FAIL-SAFE OPERATION)	1. Faulty circuits between headlamp switch and instrument cluster. 2. Loss of data bus communication. 3. Faulty switch.	1. Test and repair headlamp switch mux and return circuits as required. 2. Use a diagnostic scan tool to test the data bus. Refer to the appropriate diagnostic information. 3. Test and replace headlamp switch as required.
HEADLAMPS WILL NOT SWITCH FROM HIGH TO LOW BEAMS, OR FROM LOW TO HIGH BEAMS	1. Faulty circuits between multi-function switch and instrument cluster. 2. Faulty switch.	1. Test and repair wash/beam select mux and multi-function switch return circuits as required. 2. Test and replace multi-function switch as required.

PARK LAMPS

NOTE: As part of the exterior lighting failsafe feature, upon ignition On all exterior park lamps and the headlamp low beams will illuminate regardless of the headlamp switch position if the instrument cluster cannot detect an input from the headlamp switch, or if there is a loss of data bus communication.

CONDITION	POSSIBLE CAUSES	CORRECTION
PARK LAMP DOES NOT ILLUMINATE	1. Faulty or missing fuse. 2. Faulty or missing bulb. 3. Faulty or missing relay. 4. Faulty ground circuit. 5. Faulty supply circuit. 6. Faulty switch.	1. Test and replace park lamp fuse as required. 2. Test and replace park lamp bulb as required. 3. Test and replace park lamp relay as required. 4. Test and repair open park lamp ground circuit as required. 5. Test and repair open park lamp relay output circuit as required. 6. Test and replace headlamp switch as required.
PARK LAMP DOES NOT EXTINGUISH	1. Faulty supply circuit. 2. Faulty relay. 3. Faulty switch.	1. Test and repair shorted park lamp relay output circuit as required. 2. Test and replace park lamp relay as required. 3. Test and replace headlamp switch as required.

TURN SIGNAL LAMPS

CONDITION	POSSIBLE CAUSES	CORRECTION
ONE TURN SIGNAL LAMP DOES NOT ILLUMINATE	1. Faulty or missing bulb. 2. Faulty ground circuit. 3. Faulty supply circuit.	1. Test and replace turn signal bulb as required. 2. Test and repair open ground circuit as required. 3. Test and repair open right or left turn signal circuit as required.
ALL RIGHT SIDE AND/OR ALL LEFT SIDE TURN SIGNAL LAMPS DO NOT FLASH	1. Faulty switch. 2. Faulty signal circuit.	1. Test and replace multi-function switch as required. 2. Test and repair open right or left turn signal circuit as required.
ALL RIGHT SIDE OR ALL LEFT SIDE TURN SIGNALS FLASH TOO RAPIDLY (MORE THAN 100 FLASHES PER MINUTE)	1. Faulty or missing bulb. 2. Faulty ground circuit. 3. Faulty signal circuit.	1. Test and replace faulty bulb as required. 2. Test and repair open ground circuit as required. 3. Test and repair open right or left turn signal circuit as required.

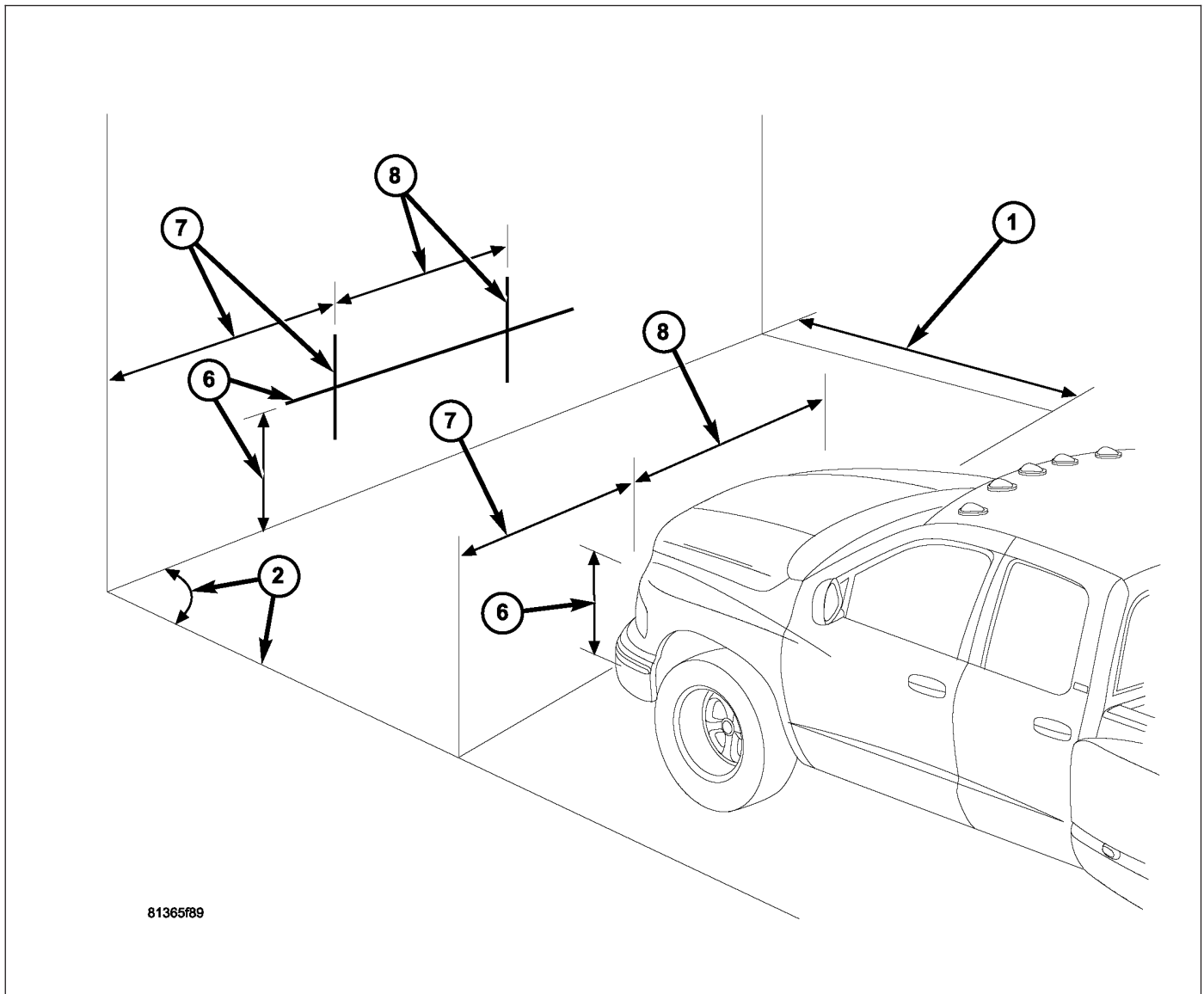
STANDARD PROCEDURE

FRONT LAMP AIMING

VEHICLE PREPARATION FOR LAMP ALIGNMENT

1. Check for and correct any burnt out bulbs.
2. Repair or replace any faulty, worn or damaged body or suspension components that could hinder proper lamp alignment.
3. Verify proper tire inflation pressures.
4. Remove any accumulations of mud, snow or ice from the vehicle underbody and clean the front lamp lenses.
5. Verify that there is no load in the vehicle (cargo or passengers), except for the driver.
6. The fuel tank should be Full. Add 2.94 kilograms (6.5 pounds) of weight over the fuel tank for each estimated gallon of missing fuel.
7. Verify correct vehicle suspension height.

LAMP ALIGNMENT SCREEN PREPARATION



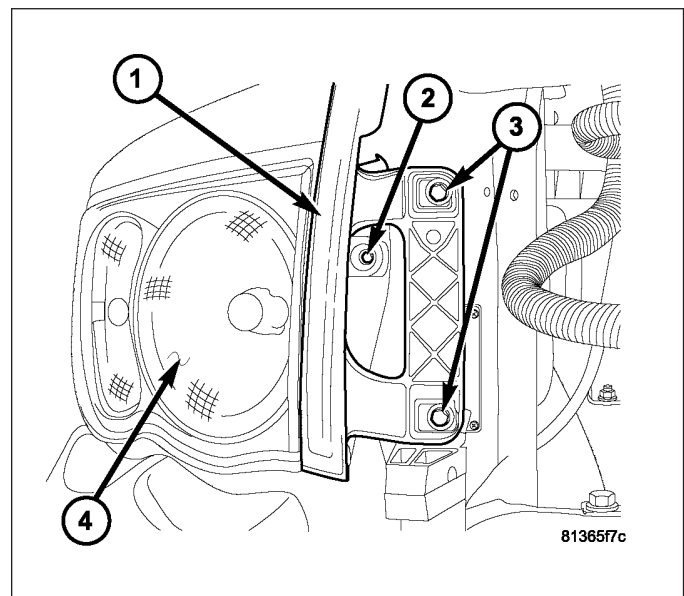
The procedure that follows will prepare a suitable front lamp alignment screen.

1. Tape a line on a level floor 7.62 meters (25 feet) away from and parallel to the flat wall that will be used as the lamp alignment screen. The level floor will be used as the horizontal zero reference.
2. An adjacent wall or floor member that is perpendicular to the alignment screen can be used as the vertical zero reference. If there is no adjacent wall or floor member that is perpendicular to the screen, tape a second line on the floor perpendicular to both the alignment screen and the first line, and outboard of either side of where the vehicle will be positioned. This will be used as the vertical zero reference.
3. Position the vehicle so that the side of the vehicle is parallel to the vertical zero reference, and so that the front of the lamp lenses are in the vertical plane of the parallel line taped on the floor 7.62 meters (25 feet) away from the screen.
4. Rock the vehicle side-to-side three times to allow the suspension to stabilize.
5. Jounce the front suspension three times by pushing downward on the front bumper and releasing.
6. Measure the distance between the optical center of one of the lamps being aimed (head or fog) and the floor (horizontal zero reference). Transfer this measurement to the alignment screen with a piece of tape placed horizontally to the floor. This line will be used as the lamp horizontal reference.
7. Measure the distance between the vertical zero reference and the optical center of the nearest lamp being aimed (head or fog). Transfer this measurement to the alignment screen with a piece of tape placed vertically across the appropriate (head or fog) lamp horizontal reference. This is the centerline reference for the first lamp.
8. Measure the distance on center between the first and the second lamp being aimed. Transfer this measurement to the alignment screen with a second piece of tape placed vertically across the appropriate (head or fog) lamp horizontal reference. This is the centerline reference for the second lamp.

HEADLAMP ALIGNMENT

NOTE: Due to the linear nature of the headlamp cutoff, a properly aimed low beam headlamp will project the top edge of the high intensity pattern on the alignment screen from the horizontal line to 50 millimeters (2 inches) below the horizontal line. No horizontal (right/left) adjustment is required for this headlamp beam pattern. The high beam pattern will be correct when the low beams are properly aimed.

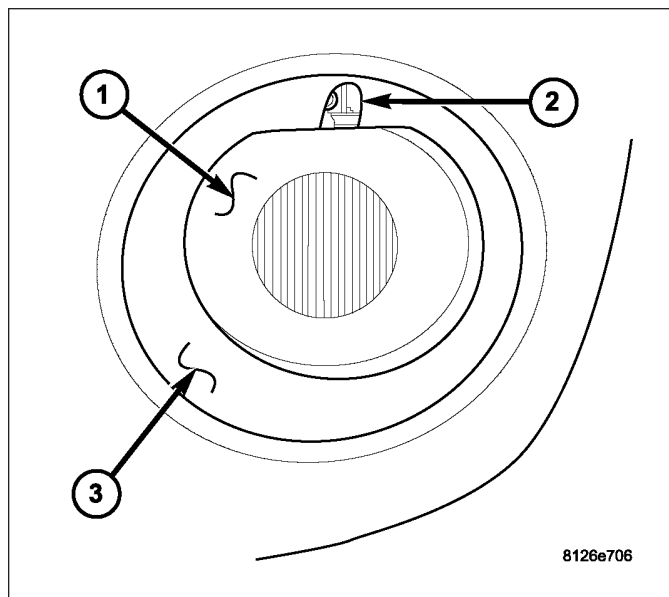
1. Turn the headlamps On and select the Low beams.
2. Rotate the headlamp vertical adjustment screw (2) on each lamp to adjust the beam height as required.



FOG LAMP ALIGNMENT

NOTE: A properly aimed front fog lamp will project a pattern on the alignment screen 100 millimeters (4 inches) below the fog lamp centerline and straight ahead of the lamp.

1. Turn the fog lamps On.
2. Rotate the fog lamp vertical adjustment screw (2) on each lamp to adjust the beam height as required.



SPECIFICATIONS

LAMPS/LIGHTING - EXTERIOR

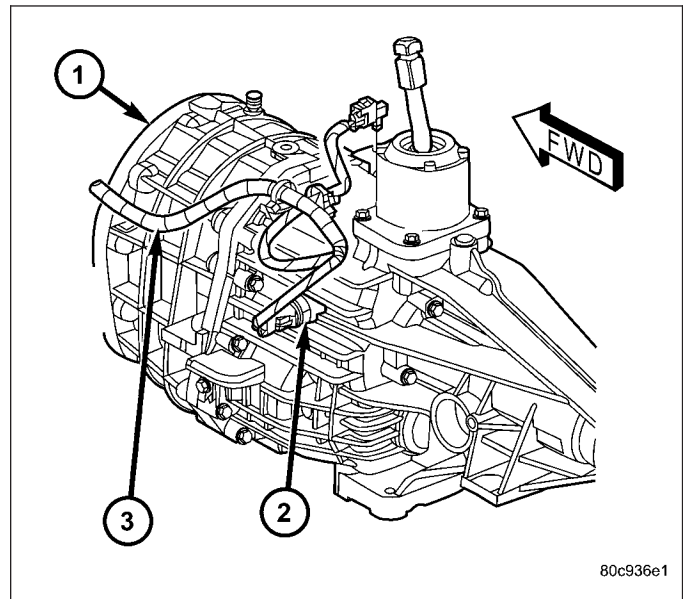
BULB APPLICATION TABLE	
LAMP	BULB
BACKUP (PICK-UP)	3057K
BACKUP (CAB & CHASSIS)	1156
BRAKE (PICK-UP)	3057K
BRAKE (CAB & CHASSIS)	1157
CAB CLEARANCE	168
CENTER HIGH MOUNTED STOP	912
FRONT FOG	9006LL
FRONT PARK	3157NA
FRONT SIDE MARKER	3157NA
FRONT TURN SIGNAL	3157NA
HEADLAMP	9007QL
LICENSE (PICK-UP)	168
LICENSE (CAB & CHASSIS)	1157
REAR FENDER MARKER (DUAL REAR WHEEL PICK-UP)	168
REAR PARK (PICK-UP)	3057K
REAR PARK (CAB & CHASSIS)	1157
REAR SIDE MARKER (PICK-UP)	3057K
REAR TAIL (PICK-UP BOX)	3057K
REAR TAIL (CAB & CHASSIS)	1157
REAR TURN SIGNAL (PICK-UP)	3057K
REAR TURN SIGNAL (CAB & CHASSIS)	1157
TAILGATE MARKER (DUAL REAR WHEEL PICK-UP)	168
UNDERHOOD	561

SWITCH-BACK UP LAMP

DESCRIPTION

Vehicles equipped with a manual transmission have a normally open, spring-loaded plunger type backup lamp switch (2). Vehicles with an optional electronic automatic transmission have a Transmission Range Sensor (TRS) that is used to perform several functions, including that of the backup lamp switch. The TRS is described in further detail elsewhere in this service information.

The backup lamp switch is located in a threaded hole on the side of the manual transmission housing. The switch has a threaded body and a hex formation near the plunger end of the switch. An integral connector receptacle at the end of the switch opposite the plunger connects the switch to the vehicle electrical system through a take out and connector of the engine wire harness. When installed, only the switch connector and the hex formation are visible on the outside of the transmission housing. The backup lamp switch cannot be adjusted or repaired and, if faulty or damaged, the entire switch unit must be replaced.



OPERATION

The backup lamp switch controls the flow of battery voltage to the backup lamp bulbs through an output on the backup lamp feed circuit. The switch plunger is mechanically actuated by the gearshift mechanism within the transmission, which will depress the switch plunger and close the switch contacts whenever the reverse gear has been selected. The switch receives battery voltage through a fuse in the Integrated Power Module (IPM) on a fused ignition switch output (run) circuit whenever the ignition switch is in the On position. The backup lamp switch and circuits can be tested using conventional diagnostic tools and methods.

DIAGNOSIS AND TESTING

BACKUP LAMP SWITCH

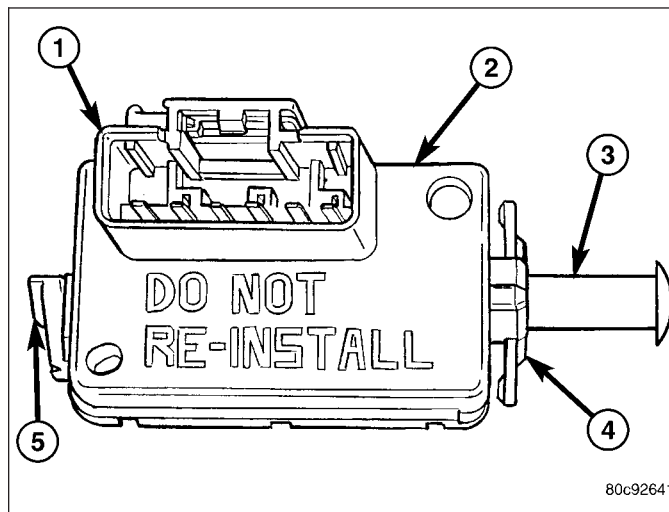
1. Disconnect and isolate the battery negative cable.
2. Raise and support the vehicle.
3. Locate and disconnect the engine wire harness connector for the backup lamp switch.
4. Check for continuity between the two terminal pins in the backup lamp switch connector receptacle.
 - a. With the gear selector lever in the Reverse position, there should be continuity.
 - b. With the gear selector lever in any position other than Reverse, there should be no continuity.
5. If the switch fails either of these two continuity tests, replace the faulty backup lamp switch.

SWITCH-STOP LAMP

DESCRIPTION

The brake lamp switch (2) is a three circuit, spring-loaded plunger actuated switch that is secured to the steering column support bracket under the instrument panel on the driver side of the vehicle. The molded plastic switch housing has an integral connector receptacle (1) containing six terminal pins and featuring a Connector Position Assurance (CPA) lock. The switch is connected to the vehicle electrical system through a dedicated take out of the instrument panel wire harness.

The switch plunger (3) extends through a mounting collar (4) on one end of the switch housing. The plunger has a one time telescoping self-adjustment feature that is activated after the switch is installed by moving an adjustment release lever (5) on the opposite end of the switch housing clockwise, until it locks into a position that is horizontal and parallel to the connector receptacle.



An installed brake lamp switch cannot be readjusted or repaired. If the switch is damaged, faulty, or removed from its mounting position for any reason, it must be replaced with a new unit.

OPERATION

The brake lamp switch controls three independent circuits. These circuits are described as follows:

- **Brake Lamp Switch Circuit** - A normally open brake lamp switch circuit receives a battery voltage input, and supplies this battery voltage to the brake lamps and the Controller Antilock Brake (CAB) on a brake lamp switch output circuit only when the brake pedal is depressed (brake lamp switch plunger released).
- **Brake Lamp Switch Signal Circuit** - A normally closed brake lamp switch signal circuit receives a direct path to ground, and supplies this ground input to the Powertrain Control Module (PCM) on a brake lamp switch sense circuit only when the brake pedal is released (brake lamp switch plunger is depressed).
- **Speed Control Circuit** - A normally closed speed control circuit receives a battery voltage input from the Powertrain Control Module on a speed control supply circuit, and supplies this battery voltage to the speed control servo solenoids (dump, vacuum, and vent) on a speed control brake switch output circuit only when the speed control system is turned On and the brake pedal is released (brake lamp switch plunger is depressed).

The components of the self-adjusting brake switch plunger consist of a two-piece telescoping plunger, a split plunger locking collar, and a release wedge. The release lever has a shaft with a wedge that spreads the plunger locking collar to an open or released position. After the switch is installed and the brake pedal is released, the plunger telescopes to the correct adjustment position. When the release lever is moved to the release position, the wedge is disengaged from the locking collar causing the collar to apply a clamping pressure to the two plunger halves, fixing the plunger length.

The brake lamp switch is diagnosed using conventional diagnostic tools and methods.

DIAGNOSIS AND TESTING

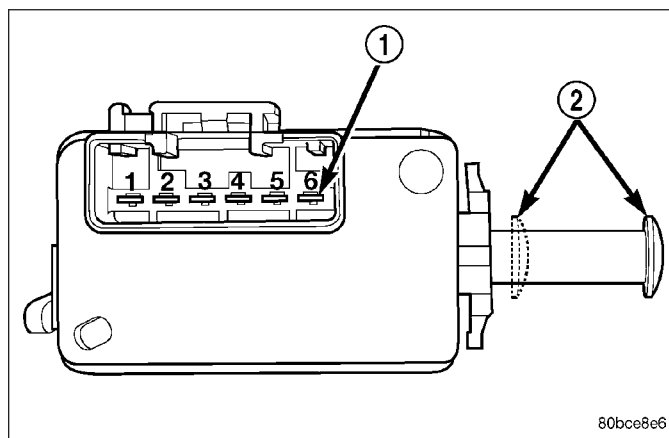
BRAKE LAMP SWITCH

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

1. Disconnect and isolate the battery negative cable.

CAUTION: Do not remove the brake lamp switch from the mounting bracket. The self-adjusting switch plunger is a one time only feature. If the switch is removed from the mounting bracket, it **MUST** be replaced with a new switch.

2. Disconnect the wire harness connector from the brake lamp switch.
3. Using an ohmmeter, perform the continuity tests at the terminal pins (1) in the brake lamp switch connector receptacle as shown in the Brake Lamp Switch Tests table.



BRAKE LAMP SWITCH TESTS	
PLUNGER POSITION (2)	CONTINUITY BETWEEN
Released (Extended)	Pins 1 & 2
Compressed (Depressed)	Pins 3 & 4, 5 & 6

4. If the switch fails any of the continuity tests, replace the faulty brake lamp switch as required.

REMOVAL

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

1. Disconnect and isolate the battery negative cable.
2. Locate the brake lamp switch (1) near the support bracket on the lower steering column (3).
3. Disconnect the wire harness connector (5) from the brake lamp switch.
4. Rotate the brake lamp switch housing clockwise about 30 degrees to align the tabs on the switch locking collar with the keyed hole in the switch mounting bracket (4).
5. Pull the switch straight back from the keyed hole to remove it from the bracket.

CAUTION: The brake lamp switch self-adjusting switch plunger is a one time only feature. If the switch is removed from the mounting bracket, it **MUST** be replaced with a new switch.

6. Discard the removed brake lamp switch

INSTALLATION

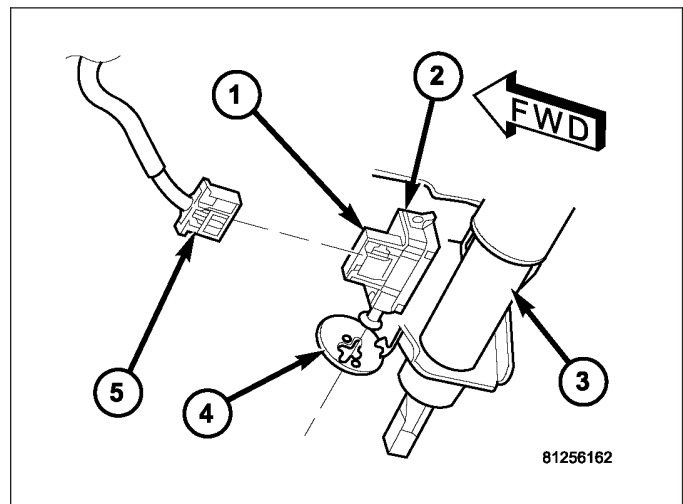
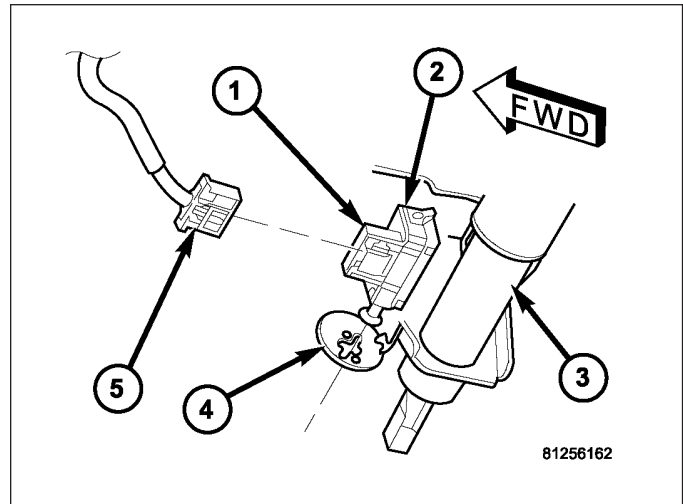
WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

CAUTION: The brake lamp switch self-adjusting switch plunger is a one time only feature. If the switch is removed from the mounting bracket, it **MUST** be replaced with a new switch.

1. Depress and hold the brake pedal in the depressed position.
2. Align the tabs on the brake lamp switch locking collar with the keyed hole in the switch mounting bracket (4) on the lower steering column (3).
3. Insert the tabs on the brake lamp switch locking collar through the keyed hole in the switch mounting bracket until the switch housing (1) is firmly seated against the bracket.
4. Rotate the switch housing counterclockwise about 30 degrees to engage the tabs on the locking collar with the switch mounting bracket.

CAUTION: Do not release or pull up on the brake pedal before the switch plunger adjustment has been completed.

5. Release the brake pedal, but do not pull it upward.
6. Rotate the plunger adjustment release lever (2) clockwise until it locks into place. The lever should be parallel to the brake lamp switch connector receptacle. This action will set the switch plunger length to a final adjustment position and cannot be undone. If not performed properly the first time, a new brake lamp switch **must** be installed.
7. Reconnect the wire harness connector (5) to the brake lamp switch.



8. Reconnect the battery negative cable.

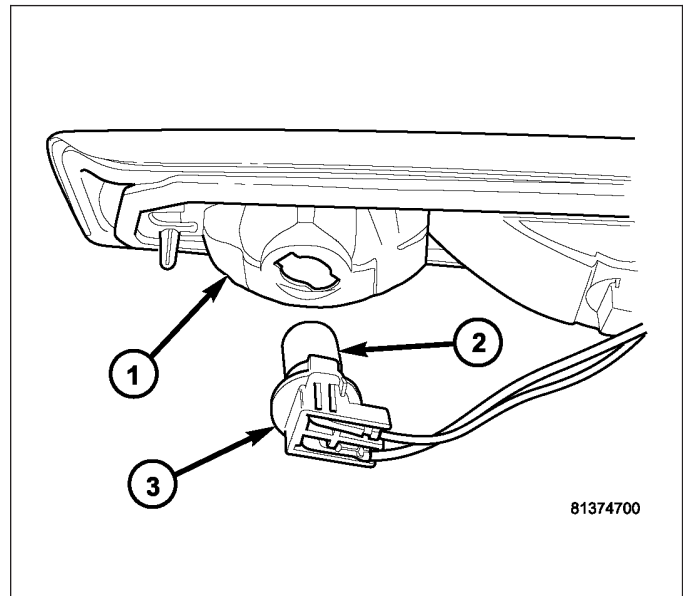
LAMP-HIGH MOUNTED STOP

REMOVAL

BULB

NOTE: The Center High Mounted Stop Lamp (CHMSL) houses three bulbs. The center bulb is the CHMSL bulb and illuminates through a red lens, while the two outboard bulbs are for the cargo lamps and illuminate through clear lenses. The bulb types and service procedures are identical for all three of these bulbs.

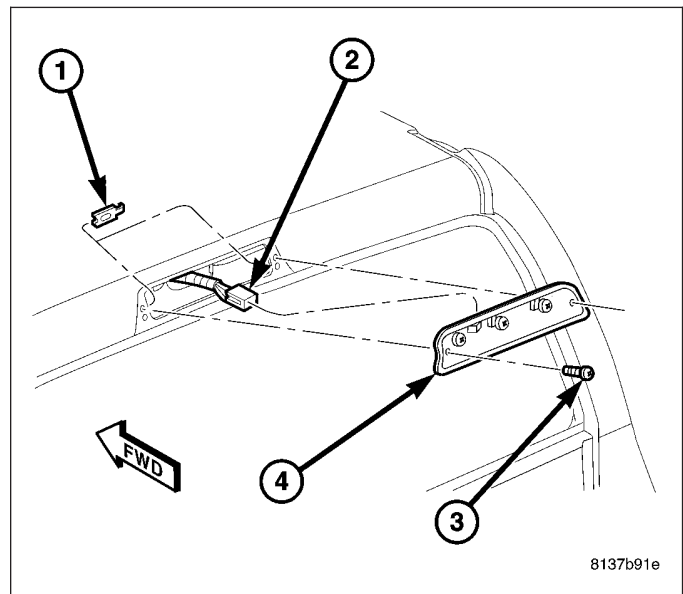
1. Disconnect and isolate the battery negative cable.
2. Remove the two screws that secure the CHMSL to the rear cab roof header panel.
3. Pull the CHMSL lens and housing (1) away from the header panel far enough to access the lamp wiring and bulb sockets on the back of the lamp.
4. Firmly grasp the socket (3) on the back of the lamp housing and rotate it counterclockwise about 30 degrees to unlock it.
5. Pull the socket and bulb straight out from the keyed opening in the housing.
6. Pull the base of the bulb (2) straight out of the socket.



LAMP

NOTE: The Center High Mounted Stop Lamp (CHMSL) for this model incorporates two integral cargo lamps. The center bulb is the CHMSL bulb and illuminates through a red lens, while the two outboard bulbs are for the cargo lamps and illuminate through clear lenses.

1. Disconnect and isolate the battery negative cable.
2. Remove the two screws (3) that secure the Center High Mounted Stop Lamp (CHMSL) (4) to the rear roof header panel.
3. Pull the CHMSL away from the opening in the roof header far enough to access and disconnect the wire harness connector (2) from the pigtail connector on the back of the lamp housing.
4. Remove the CHMSL from the roof header.



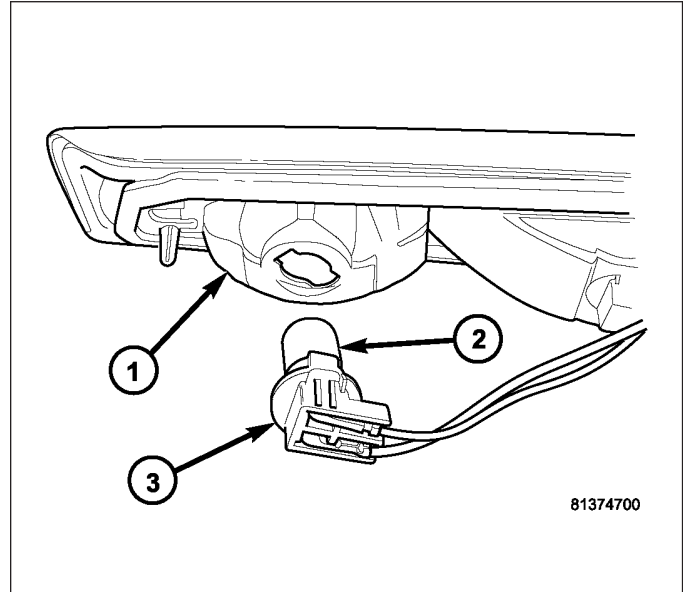
INSTALLATION

BULB

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

NOTE: The Center High Mounted Stop Lamp (CHMSL) houses three bulbs. The center bulb is the CHMSL bulb and illuminates through a red lens, while the two outboard bulbs are for the cargo lamps and illuminate through clear lenses. The bulb types and service procedures are identical for all three of these bulbs.

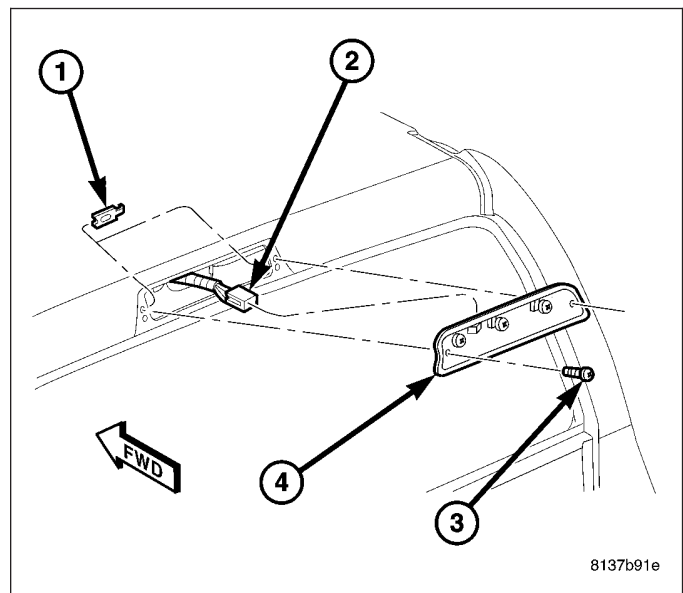
1. Align the base of the bulb (2) with the socket (3).
2. Push the bulb straight into the socket until the base is firmly seated.
3. Align the socket and bulb with the keyed opening on the back of CHMSL housing (1).
4. Insert the socket and bulb into the housing until the socket is firmly seated.
5. Rotate the socket clockwise about 30 degrees to lock it into place.
6. Position the CHMSL into the opening in the rear cab roof header panel.
7. Install and tighten the two screws (passenger side first) that secure the CHMSL to the header panel. Tighten the screws to 2 N·m (20 in. lbs.).
8. Reconnect the battery negative cable.



LAMP

NOTE: The Center High Mounted Stop Lamp (CHMSL) for this model incorporates two integral cargo lamps. The center bulb is the CHMSL bulb and illuminates through a red lens, while the two outboard bulbs are for the cargo lamps and illuminate through clear lenses.

1. Check to be certain that the two J-nuts (1) are properly positioned on the rear roof header inner panel.
2. Position the Center High Mounted Stop Lamp (CHMSL) (4) near the rear roof header panel opening.
3. Reconnect the wire harness connector (2) to the pigtail connector on the back of the CHMSL housing.
4. Install and tighten the two screws (3) that secure the CHMSL to the rear roof header inner panel. Install the screw on the right side of the lamp first, followed by the screw on the left side of the lamp. Tighten the screws to 2 N·m (20 in. lbs.).
5. Reconnect the battery negative cable.

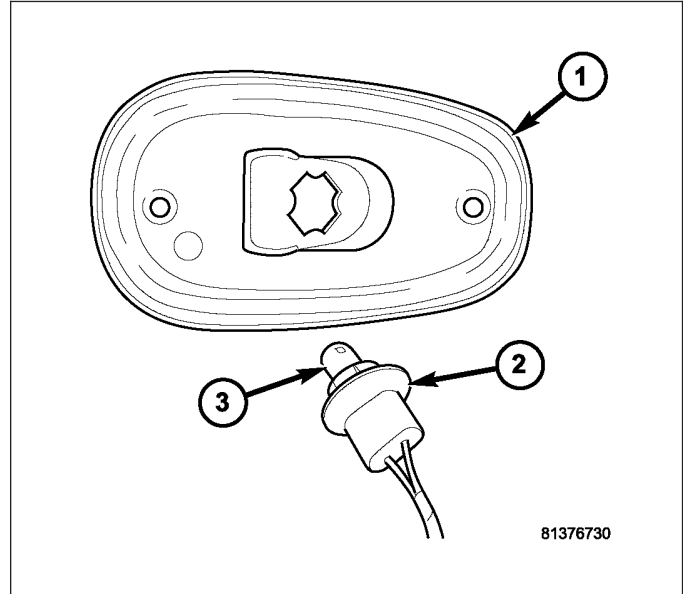


CLEARANCE LAMP

REMOVAL

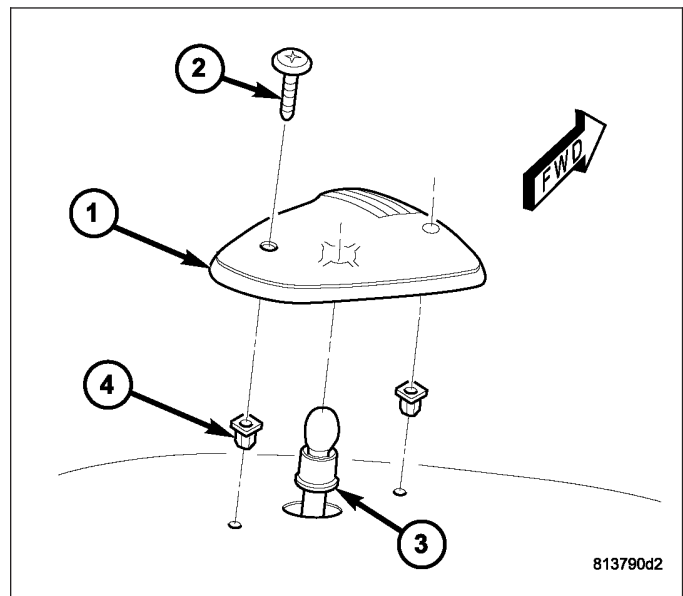
BULB

1. Disconnect and isolate the battery negative cable.
2. Remove the cab clearance lamp (1) from the roof panel. (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR/CAB CLEARANCE LAMP - REMOVAL).
3. Pull the base of the bulb (3) straight out of the socket (2).



LAMP

1. Disconnect and isolate the battery negative cable.
2. Remove the two screws (2) that secure the cab clearance lamp lens/housing (1) to the outer roof panel.
3. Pull the lamp away from the roof panel far enough to access the socket (3) on the underside of the lamp lens/housing.
4. Firmly grasp the lamp socket on the underside of the lamp housing and rotate it counterclockwise about 30 degrees to unlock it.
5. Pull the socket and bulb straight out from the keyed opening in the housing.
6. Remove the cab clearance lamp lens/housing from the roof panel.

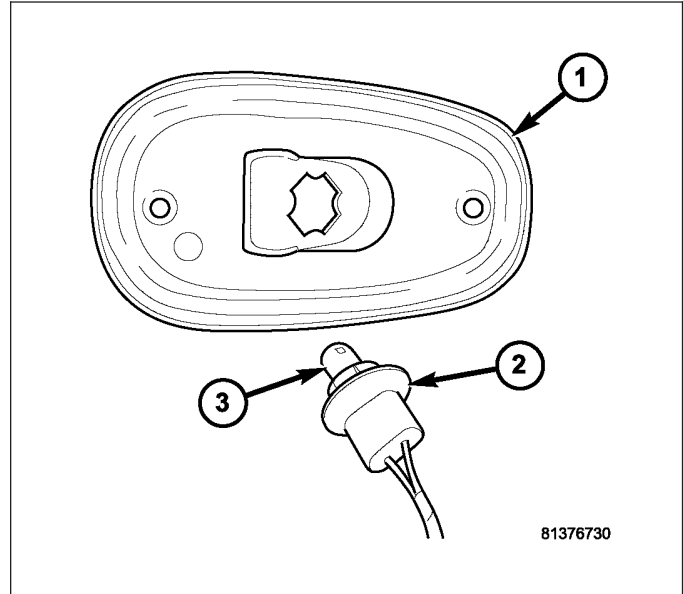


INSTALLATION

BULB

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

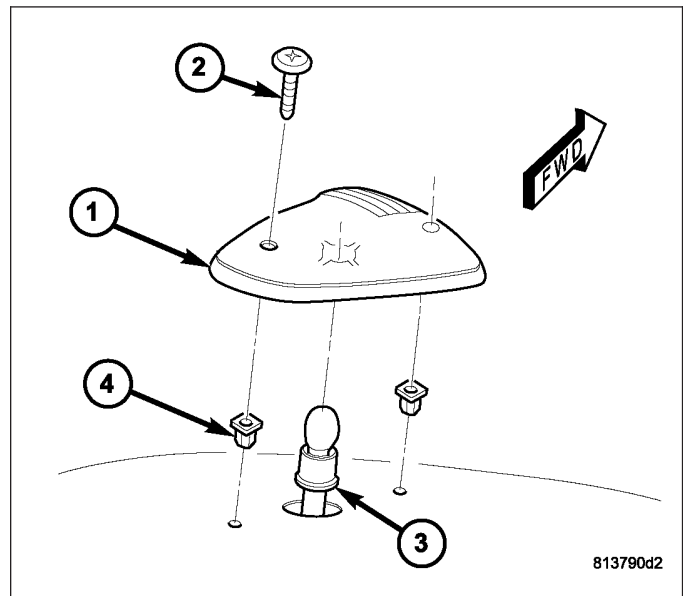
1. Align the base of the bulb (3) with the socket (2).
2. Push the bulb straight into the socket until the base is firmly seated.
3. Reinstall the cab clearance lamp (1) onto the roof panel. (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR/CAB CLEARANCE LAMP - INSTALLATION).
4. Reconnect the battery negative cable.



LAMP

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

1. Check to be certain that the two plastic nuts (4) are in good condition and properly installed in the roof panel.
2. Align the socket and bulb (3) with the keyed opening on the underside of the cab clearance lamp lens/housing (1).
3. Insert the socket and bulb into the housing until the socket is firmly seated.
4. Rotate the socket clockwise about 30 degrees to lock it into place.
5. Position the cab clearance lamp to the outer roof panel.
6. Install and tighten the two screws (2) that secure the lamp lens/housing to the roof panel. Tighten the screws to 2 N·m (15 in. lbs.).
7. Reconnect the battery negative cable.



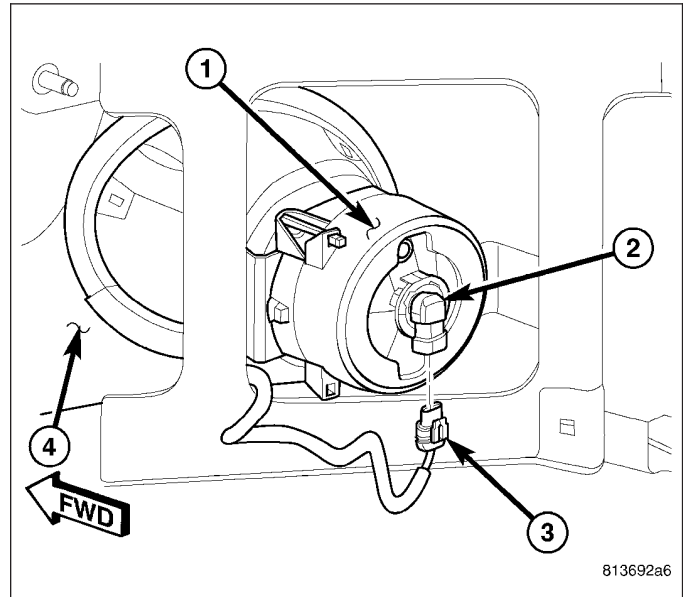
LAMP-FOG

REMOVAL

BULB

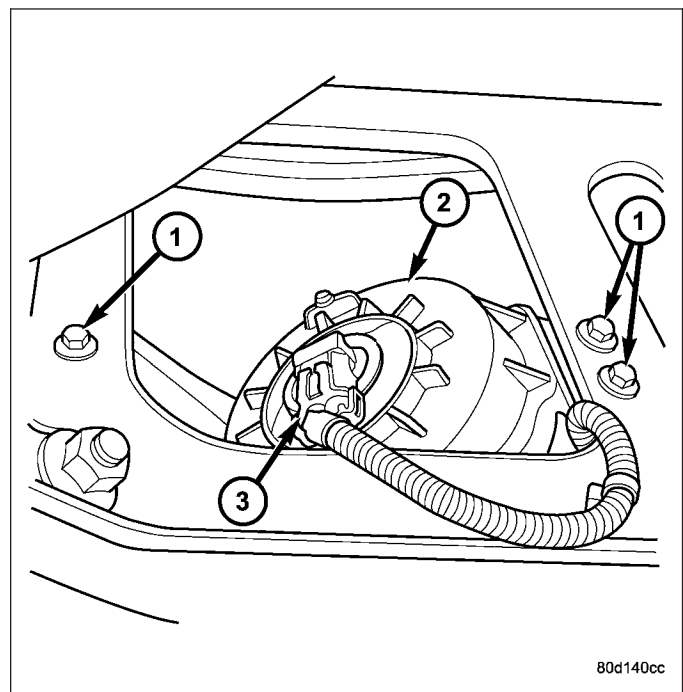
CAUTION: Do not contaminate the bulb glass by touching it with your fingers or by allowing it to contact other oily surfaces. Shortened bulb life will result.

1. Disconnect and isolate the battery negative cable.
2. Reach under and behind the front fascia to access the front fog lamp housing (1) on the back of the front bumper (4).
3. Disconnect the wire harness connector (3) from the fog lamp bulb (2).
4. Firmly grasp the bulb on the back of the housing and rotate it counterclockwise about 30 degrees to unlock it.
5. Pull the bulb straight out from the keyed opening in the housing.



LAMP

1. Disconnect and isolate the battery negative cable.
2. Reach under and behind the front bumper to access and disconnect the headlamp and dash wire harness connector (3) from the front fog lamp socket connector.
3. Remove the three screws (1) that secure the front fog lamp housing (2) to the front bumper support.
4. Remove the front fog lamp from behind the front bumper.



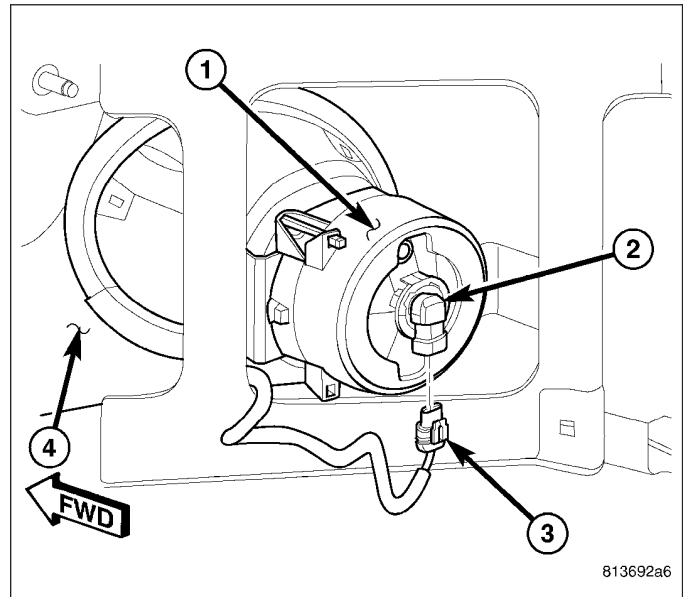
INSTALLATION

BULB

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

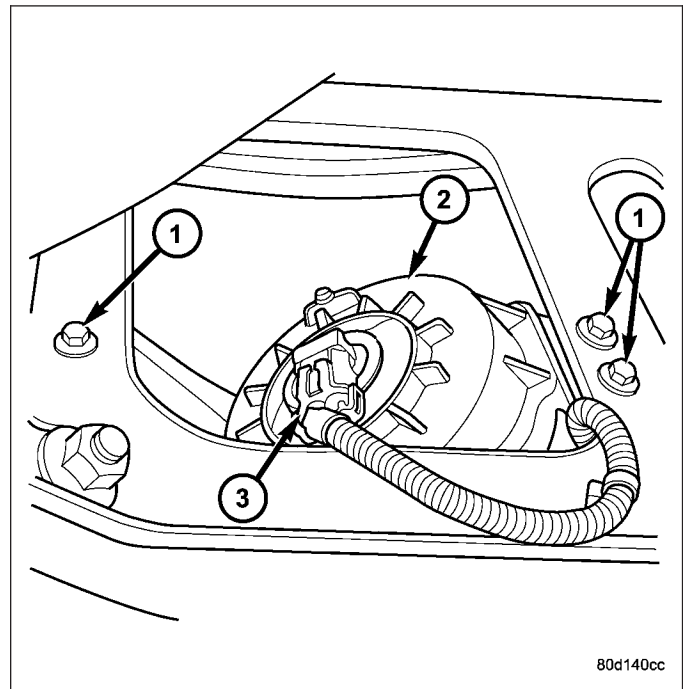
CAUTION: Do not contaminate the bulb glass by touching it with your fingers or by allowing it to contact other oily surfaces. Shortened bulb life will result.

1. Align the fog lamp bulb (2) with the keyed opening on the back of the front fog lamp housing (1).
2. Insert the bulb into the housing until it is firmly seated.
3. Rotate the bulb clockwise about 30 degrees to lock it into place. The bulb connector receptacle should be pointed straight downward.
4. Reconnect the wire harness connector (3) to the bulb.
5. Reconnect the battery negative cable.



LAMP

1. Reach under and behind the front bumper to position the front fog lamp (2) to the front bumper support.
2. Install and tighten the three screws (1) that secure the front fog lamp housing to the bumper support. Tighten the screws to 5 N·m (40 in. lbs.).
3. Reconnect the headlamp and dash wire harness connector (3) to the front fog lamp socket connector.
4. Reconnect the battery negative cable.
5. Confirm proper front fog lamp alignment. (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - STANDARD PROCEDURE - FRONT LAMP AIMING).

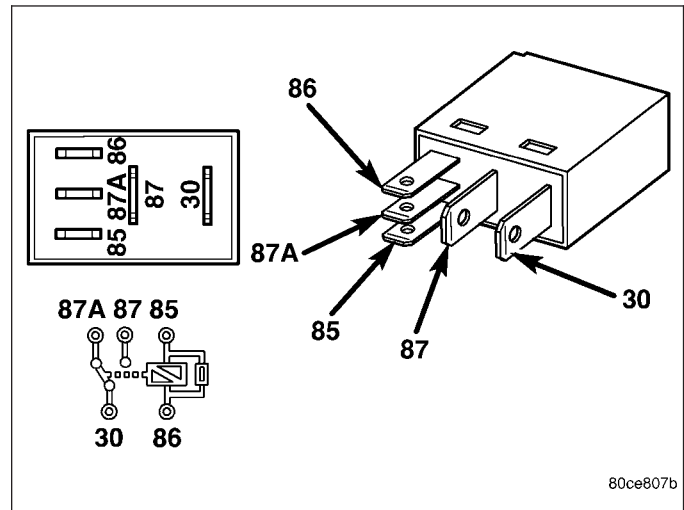


RELAY-FOG LAMP

DESCRIPTION

The front fog lamp relay is a conventional International Standards Organization (ISO) micro relay. Relays conforming to the ISO specifications have common physical dimensions, current capacities, terminal patterns, and terminal functions. The relay is contained within a small, rectangular, molded plastic housing and is connected to all of the required inputs and outputs through five integral male spade-type terminals that extend from the relay base plate.

The front fog lamp relay is located in the Power Distribution Center (PDC) in the engine compartment near the battery. Refer to the layout label on the underside of the PDC cover for specific relay cavity assignment information. The front fog lamp relay cannot be adjusted or repaired and, if faulty or damaged, the unit must be replaced.



OPERATION

The front fog lamp relay is an electromechanical switch that uses a low current input from the Front Control Module (FCM) (also referred to as the Integrated Power Module/IPM) to control a high current output to the front fog lamps. Within the relay are an electromagnetic coil, a movable contact and two fixed contact points. A resistor is connected in parallel with the coil, and helps to dissipate voltage spikes and electromagnetic interference that can be generated as the field of the relay coil collapses.

The movable common supply contact point is held against the fixed normally closed contact point by spring pressure. When the relay coil is energized, an electromagnetic field is produced by the coil windings. This field draws the movable contact away from the normally closed contact, and holds it against the normally open contact. When the relay coil is de-energized, spring pressure returns the movable contact back against the normally closed contact.

The inputs and outputs of the front fog lamp relay include:

- **Common Supply Terminal (30)** - The common feed terminal is connected to a fused B(+) circuit at all times.
- **Coil Ground Terminal (85)** - The coil ground terminal is connected to a fused B(+) circuit at all times.
- **Coil Battery Terminal (86)** - The coil battery terminal is connected to a control output of the FCM through a fog lamp relay control circuit. The FCM controls front fog lamp operation by controlling a ground path through this circuit.
- **Normally Open Terminal (87)** - The normally open terminal is connected to the front fog lamps through a fog lamp relay output circuit and provides battery voltage to the front fog lamps whenever the relay is energized.
- **Normally Closed Terminal (87A)** - The normally closed terminal is not connected to any circuit in this application, but will have battery voltage present whenever the relay is de-energized.

The front fog lamp relay can be diagnosed using conventional diagnostic tools and methods. Refer to the appropriate wiring information.

FRONT LAMP UNIT

STANDARD PROCEDURE

FRONT LAMP UNIT MOISTURE CLEARING

Some moisture accumulation inside a vented front lamp unit is normal. This normal moisture will appear as a fogging on the inside of the lamp lens, similar to the fog that sometimes appears on the inside of a windshield. This moisture may be removed by activating the headlamps on high beam for 15 minutes.

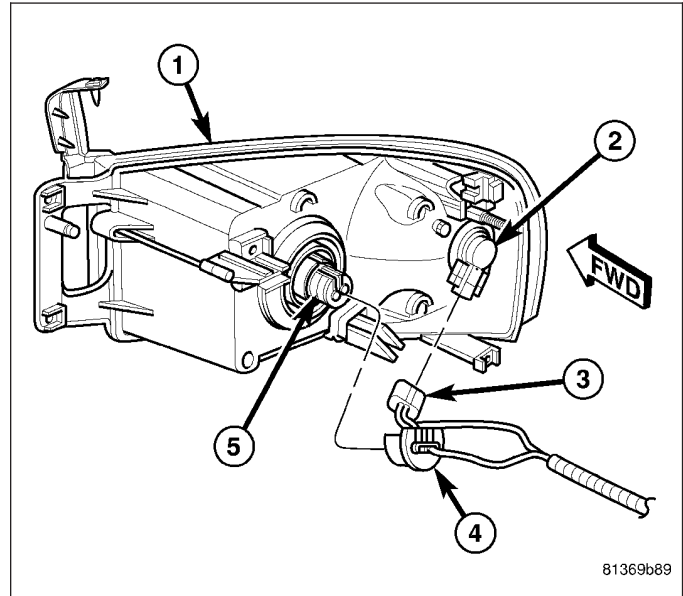
If water droplets larger than 1 millimeter in size have accumulated on the inside of the lamp lens, the front lamp unit should be replaced.

REMOVAL

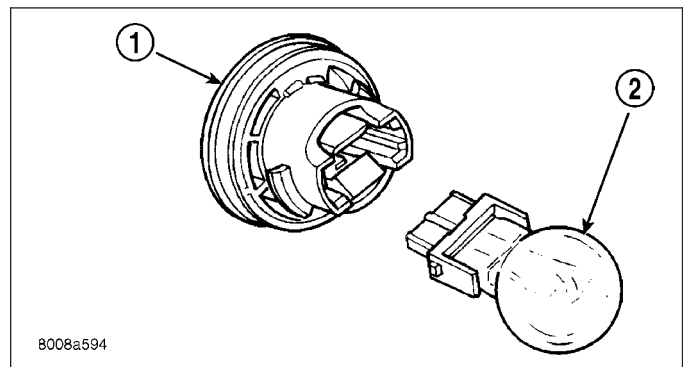
BULB - PARK/TURN SIGNAL

NOTE: The front park/turn signal bulb also provides illumination for the front side marker lamp function.

1. Disconnect and isolate the battery negative cable.
2. Remove the front lamp unit (1) from the front fender. (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR/FRONT LAMP UNIT - REMOVAL).
3. Firmly grasp the park/turn signal bulb socket (2) on the back of the front lamp unit housing and rotate it counterclockwise about 30 degrees to unlock it.
4. Pull the socket and bulb straight out from the keyed opening in the housing.



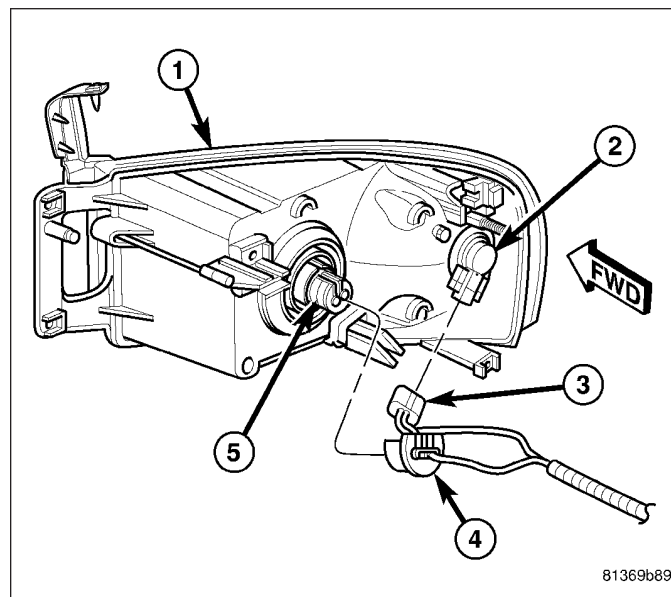
5. Pull the base of the bulb (2) straight out of the socket (1).



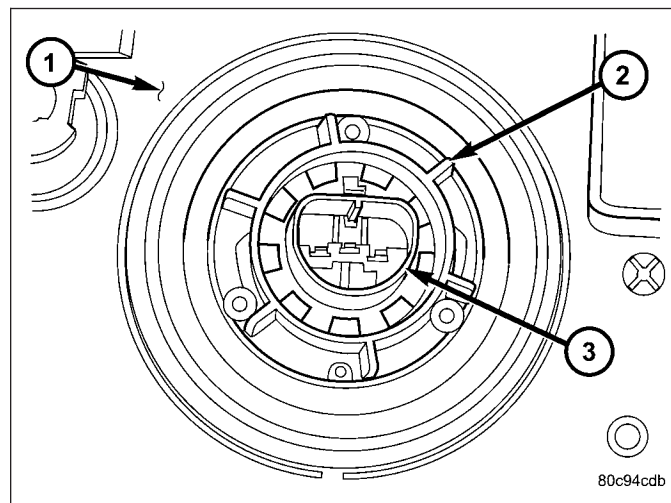
BULB - HEADLAMP

CAUTION: Do not contaminate the bulb glass by touching it with your fingers or by allowing it to contact other oily surfaces. Shortened bulb life will result.

1. Disconnect and isolate the battery negative cable.
2. Remove the front lamp unit (1) from the front fender. (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR/FRONT LAMP UNIT - REMOVAL).

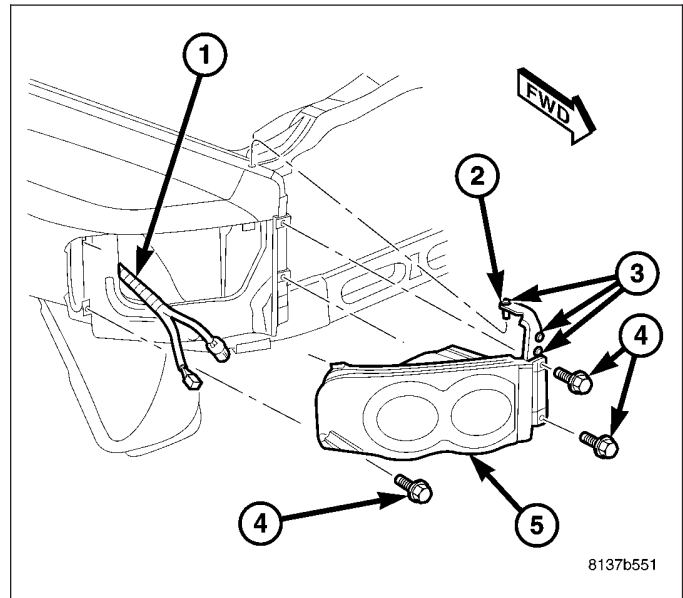


3. Firmly grasp the lock ring (2) that secures the headlamp bulb socket (3) on the back of the front lamp unit housing (1) and rotate it counterclockwise about 30 degrees to unlock it.
4. Pull the lock ring, socket and bulb straight out from the keyed opening in the housing.
5. Remove the socket and bulb from the lock ring.

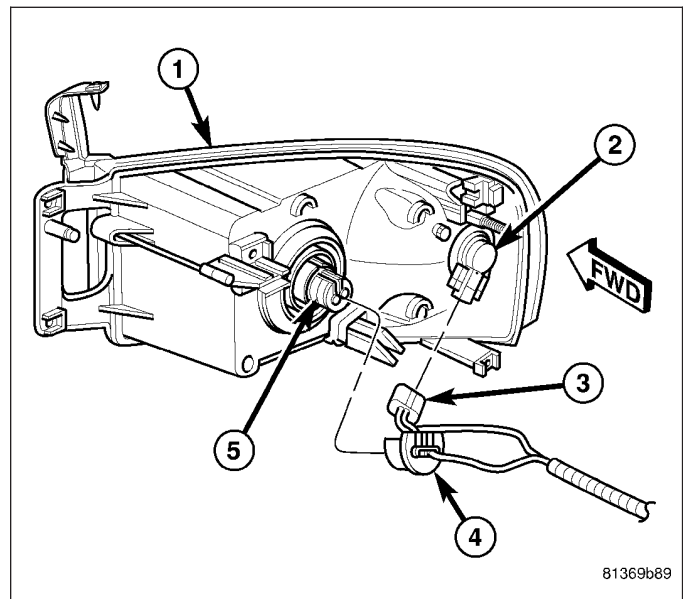


LAMP

1. Disconnect and isolate the battery negative cable.
2. Disengage the three plastic retainers (3) that secure the rubber welt (2) on the inboard side of the front lamp unit (5) to the fender ledge.
3. Remove the three screws (4) that secure the front lamp unit to the fender.
4. Pull the lamp away from the fender far enough to access the wire harness connections (1) on the back of the lamp housing.



5. Disconnect the headlamp wire harness connector (4) from the headlamp bulb socket (5).
6. Disconnect the park and turn signal lamp wire harness connector (3) from the park and turn signal bulb socket (2).
7. Remove the front lamp unit from the fender.



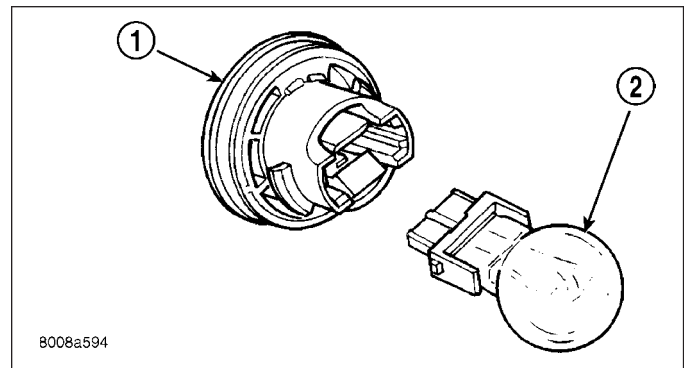
INSTALLATION

BULB - PARK/TURN SIGNAL

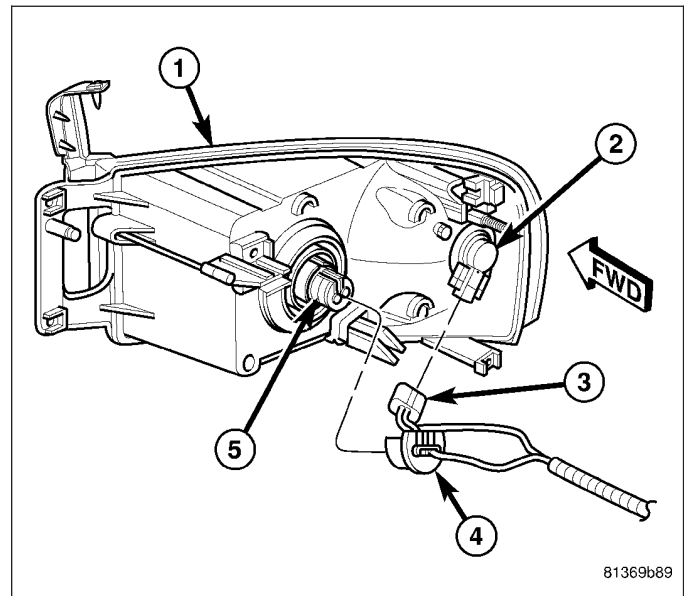
CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

NOTE: The front park/turn signal bulb also provides illumination for the front side marker lamp function.

1. Align the base of the bulb (2) with the park/turn signal bulb socket (1).
2. Push the bulb straight into the socket until the base is firmly seated.



3. Align the socket and bulb (2) with the keyed opening on the back of the front lamp unit housing (1).
4. Insert the socket and bulb into the housing until the socket is firmly seated.
5. Rotate the socket clockwise about 30 degrees to lock it into place.
6. Reinstall the front lamp unit onto the front fender. (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR/FRONT LAMP UNIT - INSTALLATION).
7. Reconnect the battery negative cable.

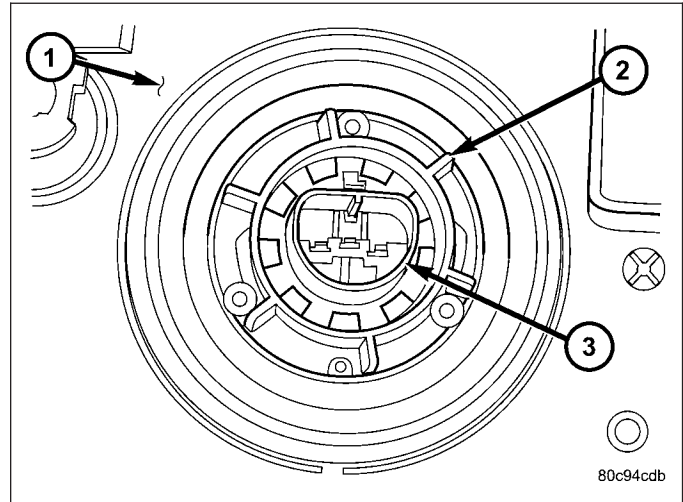


BULB - HEADLAMP

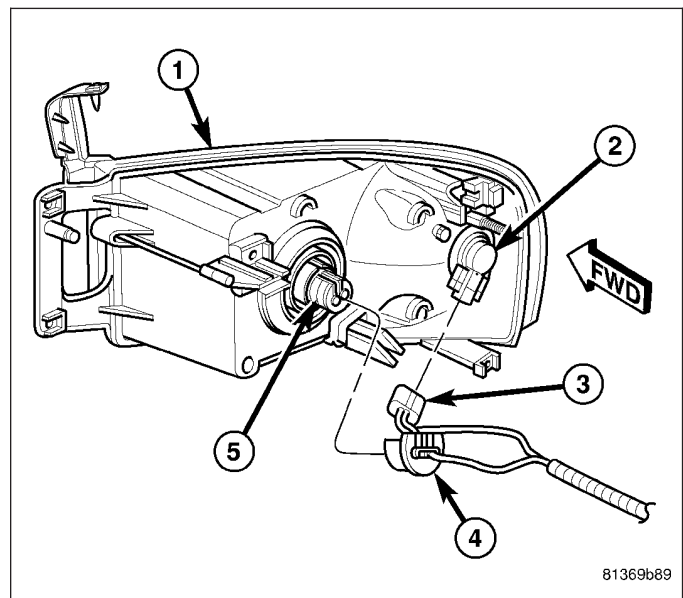
CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

CAUTION: Do not contaminate the bulb glass by touching it with your fingers or by allowing it to contact other oily surfaces. Shortened bulb life will result.

1. Position the headlamp socket and bulb (3) into the keyed opening on the back of the front lamp unit housing (1) until it is firmly seated.
2. Install the lock ring (2) over the base of the socket and bulb (3).
3. Push the lock ring down over the socket and bulb until it is firmly seated.
4. Rotate the lock ring clockwise about 30 degrees to lock it into place.

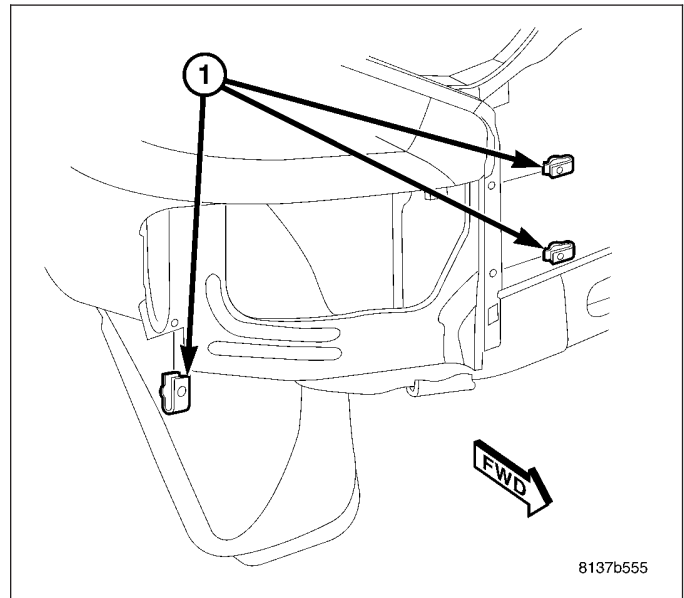


5. Reinstall the front lamp unit (1) onto the front fender. (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR/FRONT LAMP UNIT - INSTALLATION).
6. Reconnect the battery negative cable.

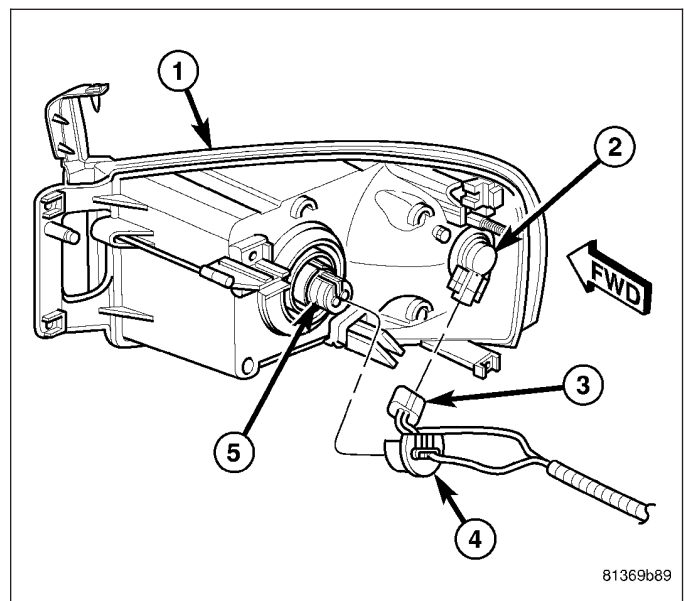


LAMP

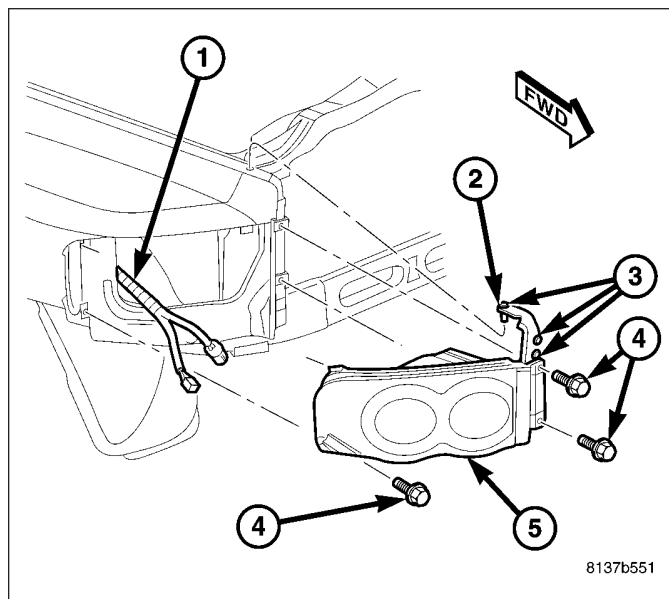
1. Check to be certain that the three front lamp unit U-nuts (1) are properly positioned on the fender.



2. Position the front lamp unit (1) close enough to the front fender to access and reconnect the park and turn signal lamp wire harness connection (3) to the park and turn signal bulb socket (2) on the back of the lamp housing.
3. Reconnect the headlamp wire harness connection (4) to the headlamp bulb socket (5) on the back of the lamp housing.



4. Position the front lamp unit (5) to the fender panel opening.
5. Rearrange the wire harness (1) as necessary to prevent it from becoming pinched between the back of the lamp housing and the fender.
6. Insert the two alignment pins on the back of the lamp housing into the two alignment holes in the fender lamp mounting panel and, using hand pressure, push the lamp into the fender until it is fully seated.
7. Install and tighten the three screws (4) that secure the lamp to the U-nuts on the fender ledge in the following sequence: outboard screw, inboard lower screw, inboard upper screw. Tighten the screws to 7 N·m (65 in. lbs.).
8. Engage the three plastic retainers (3) that secure the rubber welt (2) on the inboard side of the lamp to the holes in the fender ledge.
9. Reconnect the battery negative cable.
10. Confirm proper headlamp alignment. (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR - STANDARD PROCEDURE - FRONT LAMP AIMING).

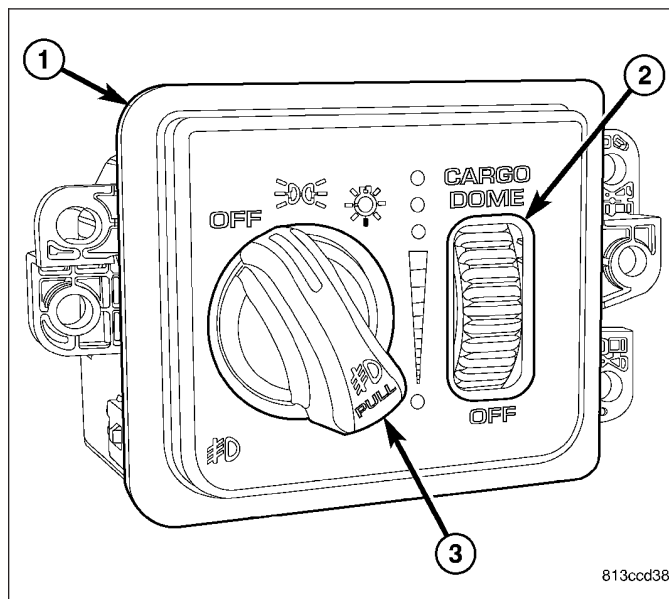


SWITCH-HEADLAMP

DESCRIPTION

The headlamp switch (1) is located on the instrument panel, to the left of the steering column. Two different switches are used. The standard switch features a three-position rotary knob (3) for exterior lighting control and a thumbwheel (2) for panel lamps dimming and interior lighting control. An optional switch has the same thumbwheel, but has an additional "Pull" function added to the rotary knob for selecting the optional front fog lamps.

Each of these switches is constructed of molded plastic. The rotary knob is molded plastic and has a raised center lever to ease operator control. The thumbwheel is also plastic and knurled. The optional front fog lamp rotary knob is plastic with a smooth finish and an International Control and Display Symbol icon for "Front Fog Light" applied to it. The switch face plate is also labeled with graphics and icons to clearly identify the many functions of the rotary knob and thumbwheel.



Three screws secure the switch to the back of the cluster bezel through integral mounting flanges that are molded to each side of the switch housing. The back of the switch housing has an integral connector receptacle containing terminal pins that connect the switch to the vehicle electrical system through a dedicated take out and connector of the instrument panel wire harness. A panel dimmer controlled incandescent bulb soldered to the circuit board within the switch provides back lighting for visibility at night, but is not serviceable. The headlamp switch cannot be repaired and, if faulty or damaged, it must be replaced.

OPERATION

The headlamp switch uses two resistor multiplexed outputs to control the many functions and features it provides. The switch receives a clean ground from the ElectroMechanical Instrument Cluster (EMIC) (also sometimes referred to as the Cab Control Node/CCN) on a headlamp switch return circuit. It then provides outputs to the EMIC on a headlamp switch signal circuit to control exterior lighting functions, and on a panel lamps dimmer signal circuit to control panel dimmer and interior lighting functions.

The switch illumination circuit receives a path to ground at all times through the left instrument panel ground circuit. The illumination level is controlled by a Pulse-Width Modulated (PWM) output received from the EMIC on a headlamp switch illumination control circuit. The EMIC controls this output based upon the dimmer signal select mux input from the headlamp switch.

The headlamp switch operates as follows:

- **Front Fog Lamps Control** - For vehicles so equipped, the rotary knob on the headlamp switch is pulled out to activate or pushed in to deactivate the optional front fog lamps. The headlamp switch provides an output to the EMIC, and the EMIC responds by sending electronic fog lamp switch status messages to the Front Control Module (FCM) over the Programmable Communications Interface (PCI) data bus. The FCM responds by energizing or de-energizing the front fog lamp relay in the Power Distribution Center (PDC).
- **Exterior Lighting Control** - The rotary knob on the headlamp switch is rotated to a detent position to activate or deactivate the exterior lighting. The headlamp switch provides an output to the EMIC, and the EMIC responds by sending electronic exterior lighting switch status messages to the FCM over the PCI data bus. The FCM responds by energizing or de-energizing the park lamp relay in the PDC and the high or low beam headlamp circuits. The FCM remembers which headlamp beams were last selected using the multi-function switch, and energizes those beams by default the next time the headlamps are turned On.
- **Interior Lighting Control** - The thumbwheel on the headlamp switch is rotated to the dome defeat, dome on, parade/funeral mode, or one of the six panel dimmer detent positions to control the interior courtesy/dome and panel lamps. The headlamp switch provides an output to the EMIC, and the EMIC responds by providing the appropriate interior lighting control outputs through its internal courtesy lamp driver circuits, electronic dimming level messages to other modules over the PCI data bus, and/or the proper PWM outputs to control dimming levels through several panel dimmer illumination control driver circuits.

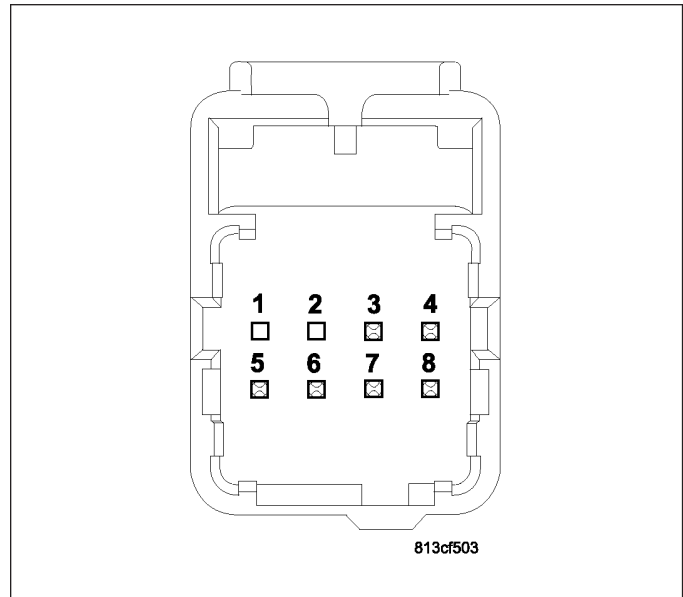
The headlamp switch can be diagnosed using conventional diagnostic tools and methods. However, proper testing of the multiplexed inputs to and PWM processing of the EMIC requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

DIAGNOSIS AND TESTING

HEADLAMP SWITCH

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

1. Remove the left bezel and the headlamp switch from the instrument panel as a unit. (Refer to 23 - BODY/INSTRUMENT PANEL/INSTRUMENT PANEL SWITCH BEZEL - REMOVAL).
2. Disconnect the instrument panel wire harness connector from the back of the headlamp switch.
3. Using an ohmmeter, test the resistance or continuity between the terminals of the switch as shown in the Headlamp Switch Tests table.



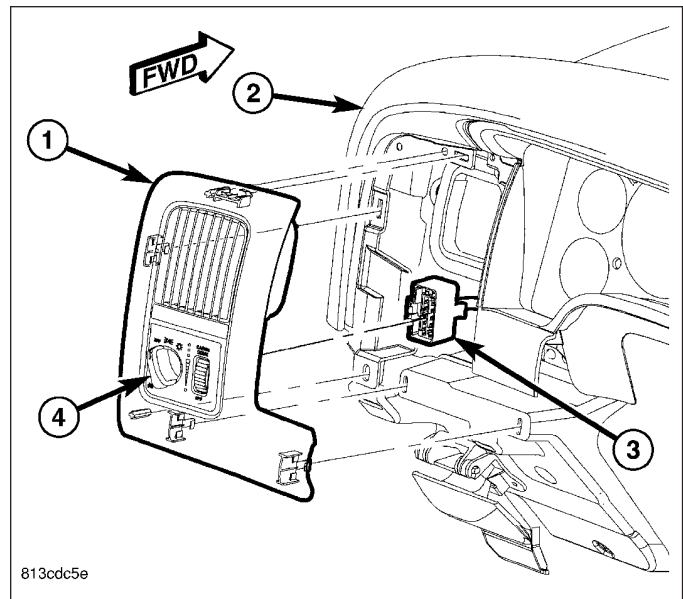
HEADLAMP SWITCH TESTS	
SWITCH POSITION (PINS)	RESISTANCE RANGE (OHMS)
OFF (7 & 8)	4484.70 - 4575.30
HEADLAMP (7 & 8)	1089.00 - 1111.00
PARK (7 & 8)	584.10 - 595.90
FOG LAMP - HEADLAMP (7 & 8)	416.39 - 424.81
FOG LAMP - PARK (7 & 8)	312.94 - 319.26
DOMES DEFEAT (6 & 7)	4593.60 - 4686.40
PANEL DIMMER 1 (6 & 7)	1316.70 - 1343.30
PANEL DIMMER 2 (6 & 7)	797.94 - 814.06
PANEL DIMMER 3 (6 & 7)	530.64 - 541.36
PANEL DIMMER 4 (6 & 7)	371.25 - 378.75
PANEL DIMMER 5 (6 & 7)	264.33 - 269.67
PANEL DIMMER 6 (6 & 7)	185.13 - 188.87
PARADE/FUNERAL MODE (6 & 7)	128.70 - 131.30
DOMES ON (6 & 7)	85.73 - 87.47
CARGO (6 & 7)	51.78 - 52.82
SWITCH ILLUMINATION (3 & 4)	CONTINUITY AT ALL TIMES
FOG LAMP INDICATOR (4 & 5)	CONTINUITY AT ALL TIMES

4. If the switch fails any of the tests, replace the faulty headlamp switch as required.

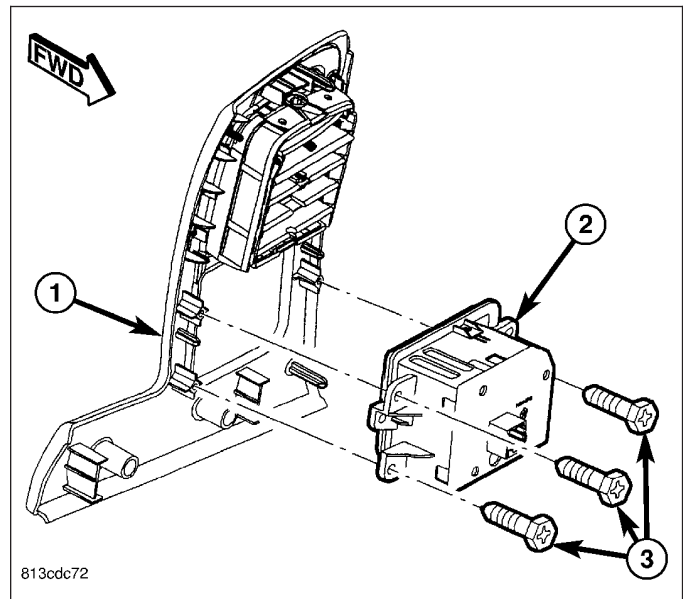
REMOVAL

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

1. Disconnect and isolate the battery negative cable.
2. Remove the headlamp switch (4) and the left bezel (1) from the instrument panel (2) as a unit. (Refer to 23 - BODY/INSTRUMENT PANEL/INSTRUMENT PANEL SWITCH BEZEL - REMOVAL).
3. Disconnect the instrument panel wire harness connector (3) from the back of the headlamp switch.



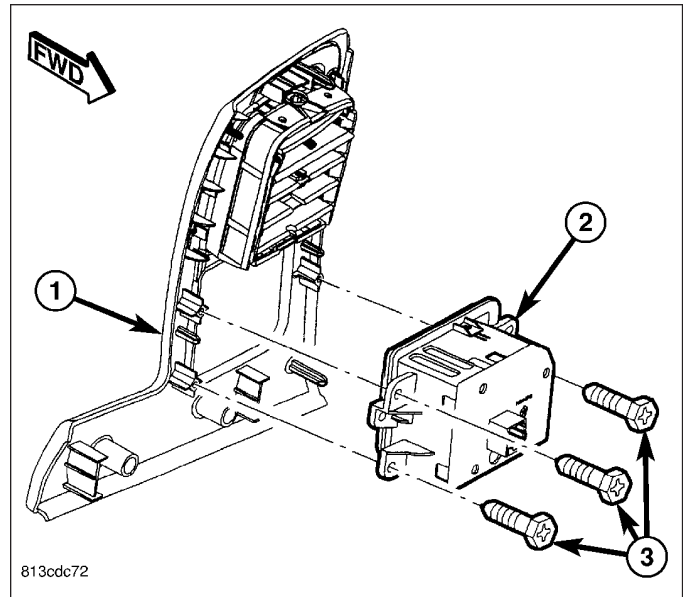
4. Remove the three screws (3) that secure the headlamp switch (2) to the back of the instrument panel bezel (1).
5. Remove the headlamp switch from the instrument panel bezel.



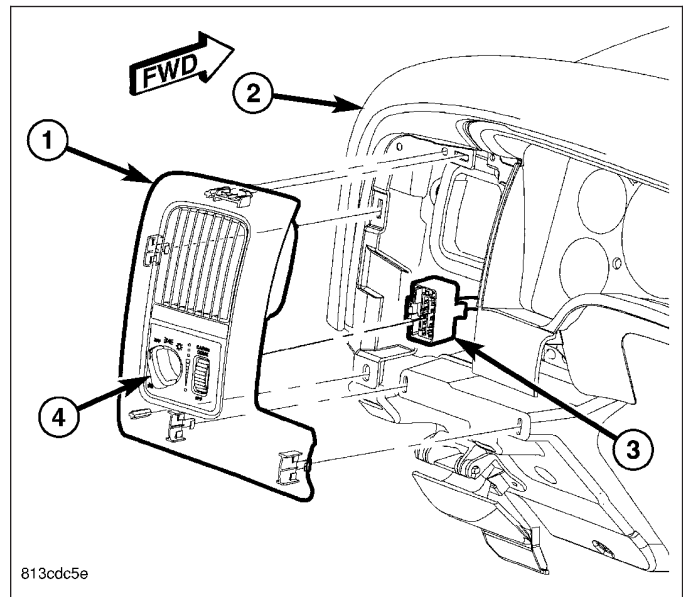
INSTALLATION

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

1. Position the headlamp switch (2) to the back of the left instrument panel bezel (1).
2. Install and tighten the three screws (3) that secure the headlamp switch to the instrument panel bezel. Tighten the screws to 2 N·m (20 in. lbs.).



3. Position the left bezel (1) close enough to the instrument panel (2) to reconnect the instrument panel wire harness connector (3) to the back of the headlamp switch (4).
4. Reinstall the left bezel and the headlamp switch onto the instrument panel as a unit. (Refer to 23 - BODY/INSTRUMENT PANEL/INSTRUMENT PANEL SWITCH BEZEL - INSTALLATION).
5. Reconnect the battery negative cable.



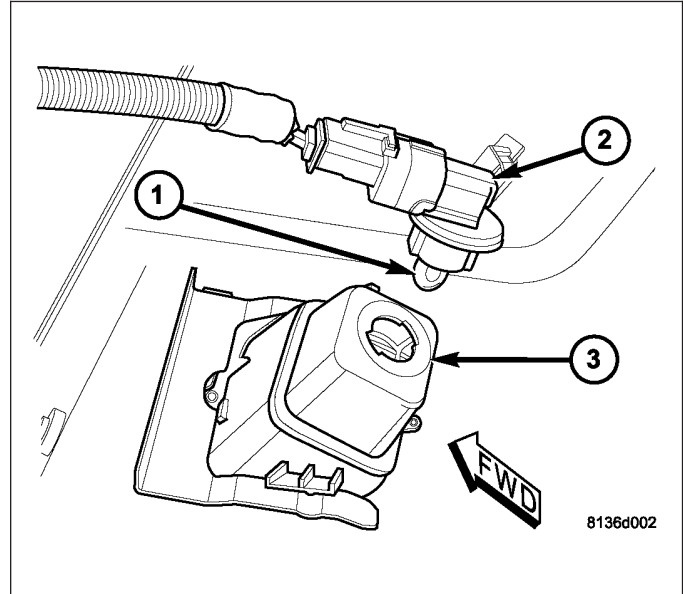
LICENSE PLATE LAMP

REMOVAL

BULB

NOTE: This procedure is for pick-up models only. On cab and chassis models the license plate lamp is integral to the left rear lamp unit. The park/brake/turn signal bulb within the left rear lamp unit provides illumination for the license plate lamp function on all cab and chassis models.

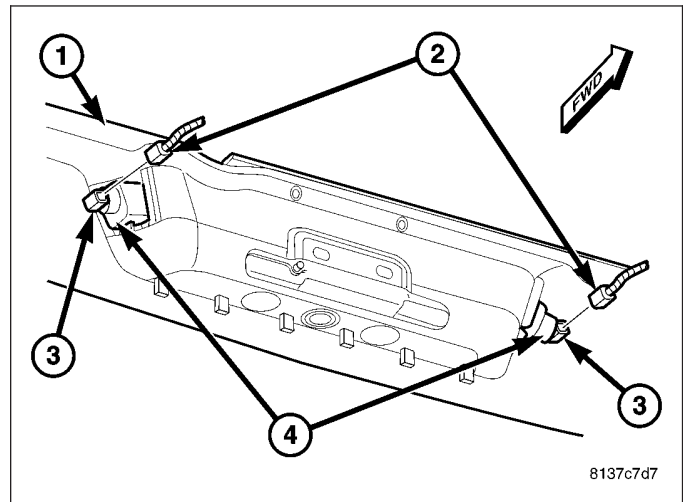
1. Disconnect and isolate the battery negative cable.
2. Reach under the rear bumper near the center to access the back of either of the two license plate lamp housings (3).
3. Firmly grasp the socket (2) on the back of the housing and rotate it counterclockwise about 30 degrees to unlock it.
4. Pull the socket and bulb (1) straight out from the keyed opening in the housing.
5. Pull the base of the bulb straight out of the socket.



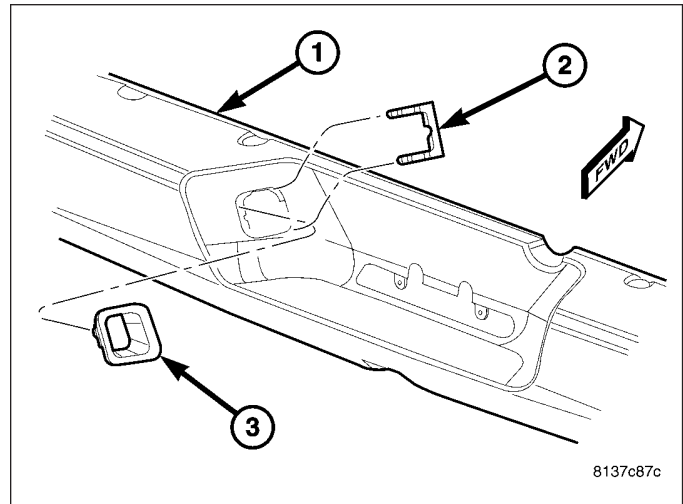
LAMP

NOTE: This procedure is for pick-up models only. On cab and chassis models the license plate lamp is integral to the left rear lamp unit. The park/brake/turn signal bulb within the left rear lamp unit provides illumination for the license plate lamp function on all cab and chassis models.

1. Disconnect and isolate the battery negative cable.
2. Reach under and behind the rear bumper or fascia (1) near the center to access the back of either of the two license plate lamp housings (4).
3. Disconnect the wire harness connector (2) from the license plate bulb socket (3).



4. Remove the stamped metal retaining clip (2) that secures the license plate lamp housing (3) from the back of the rear bumper or fascia (1).
5. Push the license plate lamp unit out through the mounting hole to the outer face of the rear bumper or fascia.



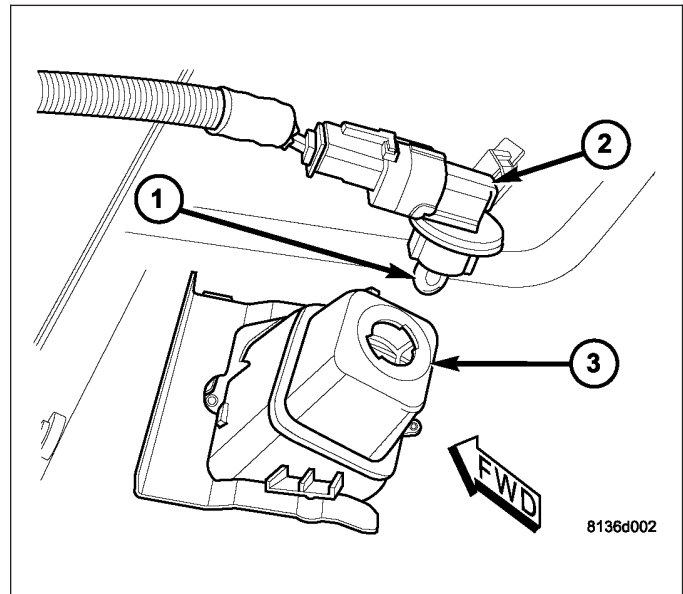
INSTALLATION

BULB

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

NOTE: This procedure is for pick-up models only. On cab and chassis models the license plate lamp is integral to the left rear lamp unit. The park/brake/turn signal bulb within the left rear lamp unit provides illumination for the license plate lamp function on all cab and chassis models.

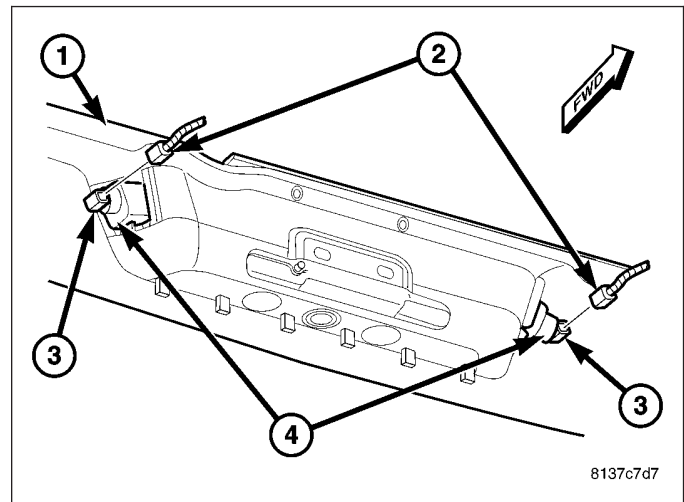
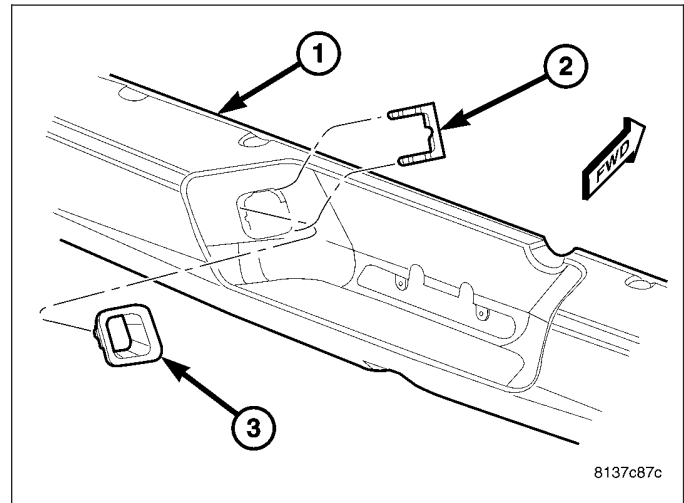
1. Align the base of the bulb (1) with the license plate lamp socket (2).
2. Push the bulb straight into the socket until the base is firmly seated.
3. Align the socket and bulb with the keyed opening on the back of the license plate lamp housing (3).
4. Insert the socket and bulb into the housing until the socket is firmly seated.
5. Rotate the socket clockwise about 30 degrees to lock it into place.
6. Reconnect the battery negative cable.



LAMP

NOTE: This procedure is for pick-up models only. On cab and chassis models the license plate lamp is integral to the left rear lamp unit. The park/brake/turn signal bulb within the left rear lamp unit provides illumination for the license plate lamp function on all cab and chassis models.

1. Position the license plate lamp unit (3) through the mounting hole from the outer face of the rear bumper or fascia (1).
2. Reach under and behind the rear bumper or fascia (1) near the center to install the stamped metal retaining clip (2) that secures the license plate lamp housing to the back of the rear bumper or fascia.
3. Reconnect the wire harness connector (2) to the license plate bulb socket (3).
4. Reconnect the battery negative cable.



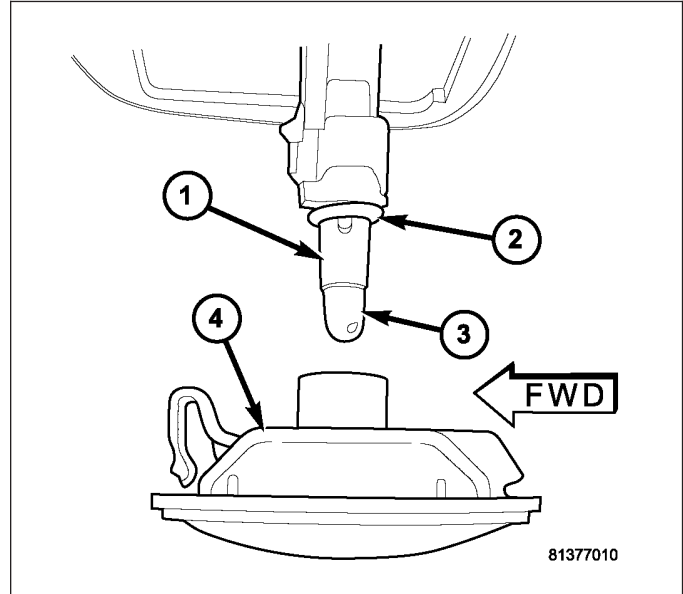
LAMP-MARKER

REMOVAL

BULB - REAR FENDER

NOTE: These lamps are used on pick-up models with dual rear wheels. A lamp with an amber lens is located on the rear fender ahead of each rear wheel opening, and a lamp with a red lens is located on the rear fender behind each rear wheel opening. The bulb types and service procedures are identical for all four of these lamps.

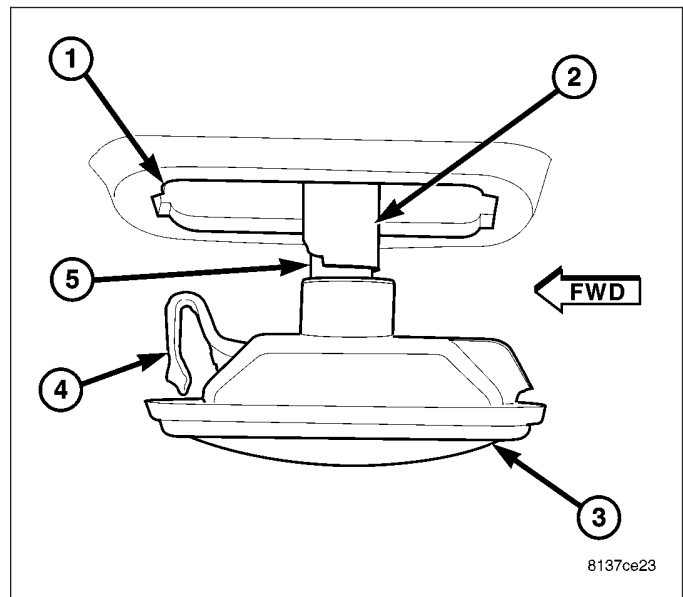
1. Disconnect and isolate the battery negative cable.
2. Using hand pressure, press the rear edge of the rear fender marker lamp lens/housing (4) toward the front of the vehicle against the spring pressure of the retaining clip, then pull the rear edge of the lamp outward to disengage it from the mounting hole in the rear fender.
3. Pull the lamp out from the rear fender far enough to access the bulb socket (1) on the back of the lamp lens/housing.
4. Firmly grasp the bulb socket on the back of the lamp lens/housing and rotate it counterclockwise about 30 degrees to unlock it.
5. Pull the socket and bulb straight out from the keyed opening in the housing.
6. Pull the base of the bulb (3) straight out of the socket.



LAMP - REAR FENDER

NOTE: These lamps are used on pick-up models with dual rear wheels. A lamp with an amber lens is located on the rear fender ahead of each rear wheel opening, and a lamp with a red lens is located on the rear fender behind each rear wheel opening. The service procedures are identical for all four of these lamps.

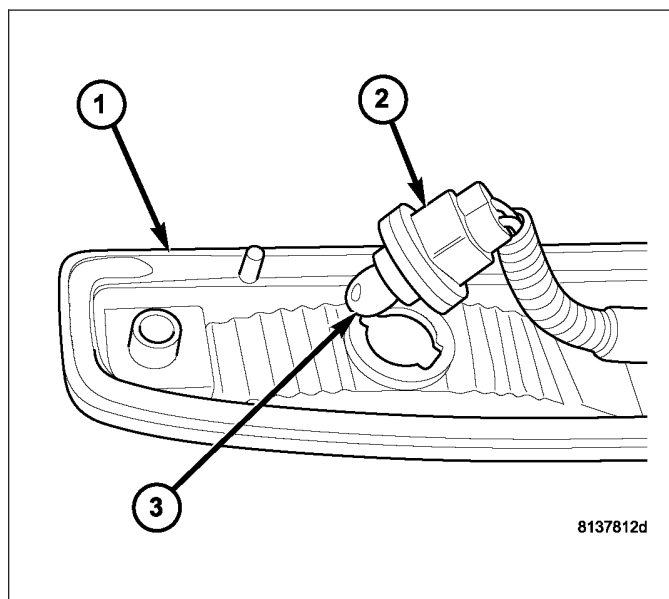
1. Disconnect and isolate the battery negative cable.
2. Using hand pressure, press the rear edge of the rear fender marker lamp lens/housing (3) toward the front of the vehicle against the spring pressure of the retaining clip (4), then pull the rear edge of the lamp outward to disengage it from the mounting hole (1) in the rear fender.
3. Pull the marker lamp out from the rear fender far enough to access and disconnect the wire harness connector (2) from the bulb socket (5) on the back of the lamp lens/housing.
4. Remove the marker lamp from the rear fender.



BULB - TAILGATE

NOTE: This lamp is used on pick-up models with dual rear wheels. A lamp with a red lens and containing three bulbs is located on the outside of the tailgate below the tailgate latch release handle. The bulb types and service procedures are identical for all three of these bulbs.

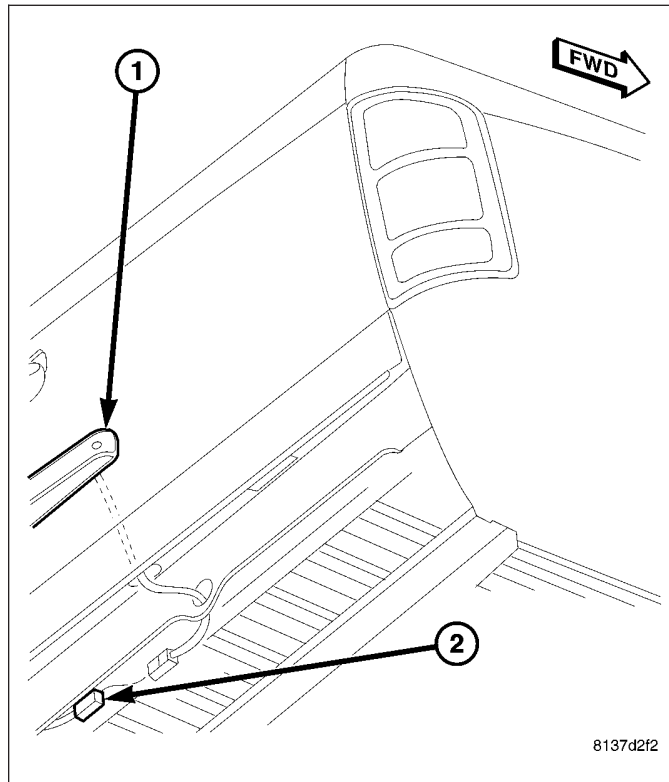
1. Disconnect and isolate the battery negative cable.
2. Remove the two screws that secure the outboard ends of the tailgate marker lamp lens/housing (1) to the outer tailgate panel.
3. Pull the marker lamp out from the tailgate far enough to access the sockets (2) on the back of the lamp housing.
4. Firmly grasp the marker lamp socket on the back of the lamp housing and rotate it counterclockwise about 30 degrees to unlock it.
5. Pull the socket and bulb straight out from the keyed opening in the housing.
6. Pull the base of the bulb (3) straight out of the socket.



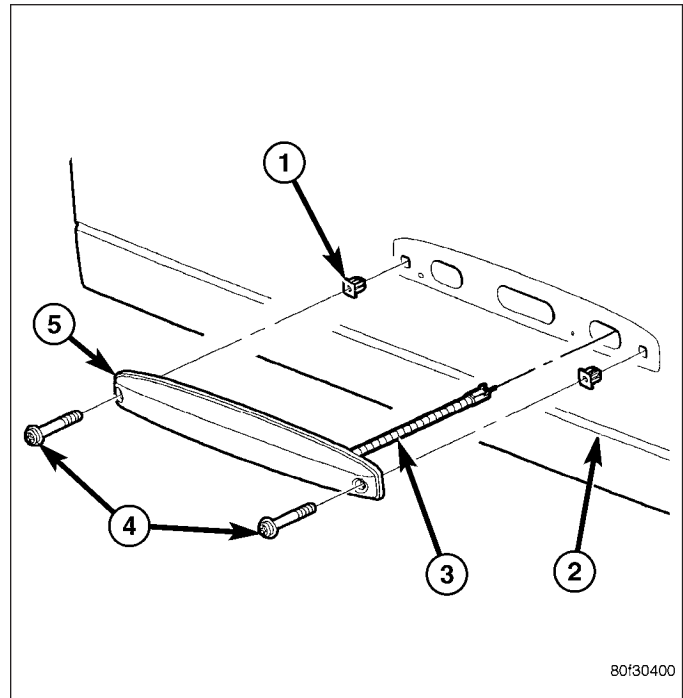
LAMP - TAILGATE

NOTE: This lamp is used on pick-up models with dual rear wheels. This lamp has a red lens, contains three bulbs and is located on the outside of the tailgate below the tailgate latch release handle.

1. Disconnect and isolate the battery negative cable.
2. Reach under and behind the rear bumper near the center to access and disconnect the tailgate marker lamp (1) pigtail wire connector from the wire harness connector (2).
3. Carefully pull the pigtail wire through the routing hole in the valance panel beneath the tailgate.



4. Remove the two screws (4) that secure the tailgate marker lamp (5) to the outer tailgate panel (2).
5. Carefully pull the marker lamp lens/housing away from the tailgate while feeding the pigtail wire (3) through the routing hole on the bottom of the tailgate.
6. Remove the lamp from the tailgate.



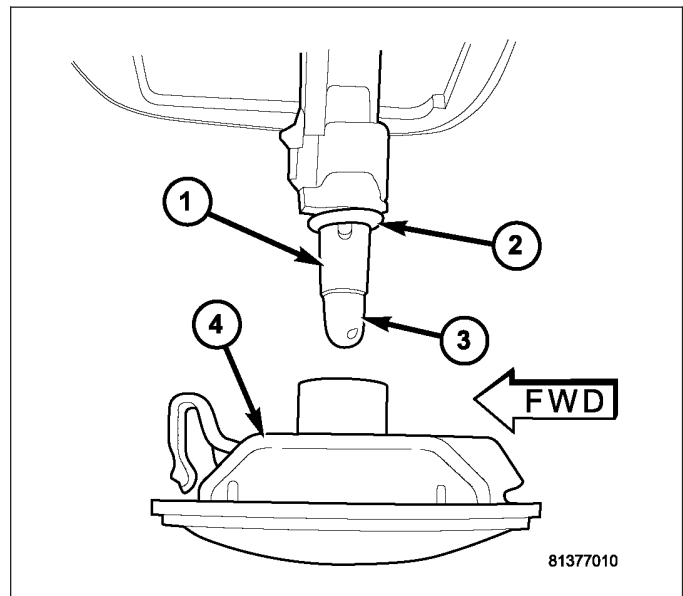
INSTALLATION

BULB - REAR FENDER

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

NOTE: These lamps are used on pick-up models with dual rear wheels. A lamp with an amber lens is located on the rear fender ahead of each rear wheel opening, and a lamp with a red lens is located on the rear fender behind each rear wheel opening. The bulb types and service procedures are identical for all four of these lamps.

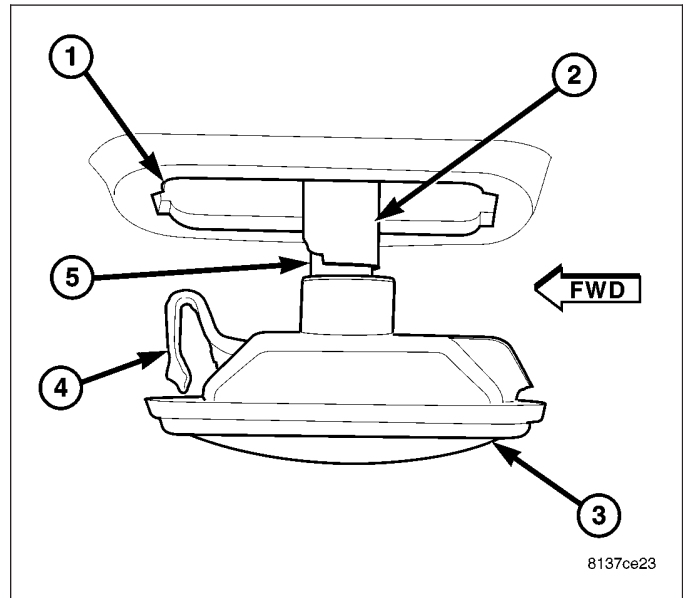
1. Align the base of the bulb (3) with the socket (1).
2. Push the bulb straight into the socket until the base is firmly seated.
3. Be certain that a rubber O-ring seal (2) is properly installed and in good condition around the base of the bulb socket.
4. Align the socket and bulb with the keyed opening on the back of the rear fender marker lamp lens/housing (4).
5. Insert the socket and bulb into the housing until the socket is firmly seated.
6. Rotate the socket clockwise about 30 degrees to lock it into place.
7. Engage the front edge of the marker lamp into the front edge of the mounting hole in the rear fender.
8. Using hand pressure, press the rear edge of the marker lamp lens/housing toward the front of the vehicle against the spring pressure of the retaining clip, then push the rear edge of the lamp into the rear of the mounting hole in the rear fender.
9. Reconnect the battery negative cable.



LAMP - REAR FENDER

NOTE: These lamps are used on pick-up models with dual rear wheels. A lamp with an amber lens is located on the rear fender ahead of each rear wheel opening, and a lamp with a red lens is located on the rear fender behind each rear wheel opening. The service procedures are identical for all four of these lamps.

1. Position the marker lamp (3) close enough to the mounting hole (1) to access and reconnect the wire harness connector (2) to the bulb socket (5) on the back of the lamp lens/housing.
2. Engage the retaining clip (4) on the front edge of the marker lamp into the front edge of the mounting hole in the rear fender.
3. Using hand pressure, press the rear edge of the marker lamp lens/housing toward the front of the vehicle against the spring pressure of the retaining clip, then push the rear edge of the lamp into the rear of the mounting hole in the rear fender.
4. Reconnect the battery negative cable.

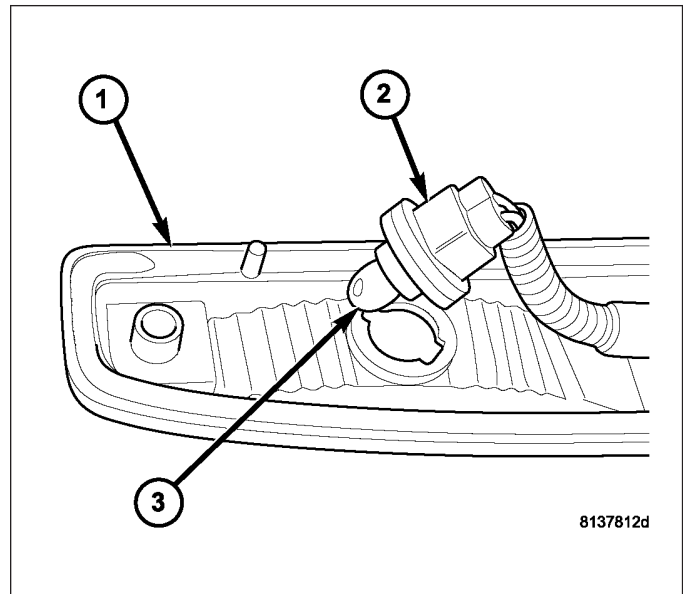


BULB - TAILGATE

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

NOTE: This lamp is used on pick-up models with dual rear wheels. A lamp with a red lens and containing three bulbs is located on the outside of the tailgate below the tailgate latch release handle. The bulb types and service procedures are identical for all three of these bulbs.

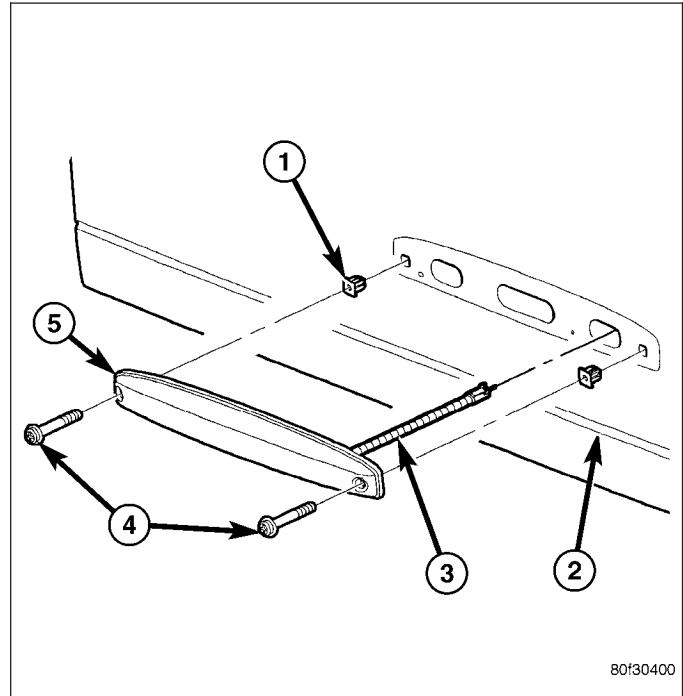
1. Align the base of the bulb (3) with the socket (2).
2. Push the bulb straight into the socket until the base is firmly seated.
3. Align the socket and bulb with the keyed opening on the back of the tailgate marker lamp lens/housing (1).
4. Insert the socket and bulb into the housing until the socket is firmly seated.
5. Rotate the socket clockwise about 30 degrees to lock it into place.
6. Position the marker lamp to the outer tailgate panel.
7. Install and tighten the two screws that secure the marker lamp lens/housing to the tailgate panel. Tighten the screws to 1 N·m (11 in. lbs.).
8. Reconnect the battery negative cable.



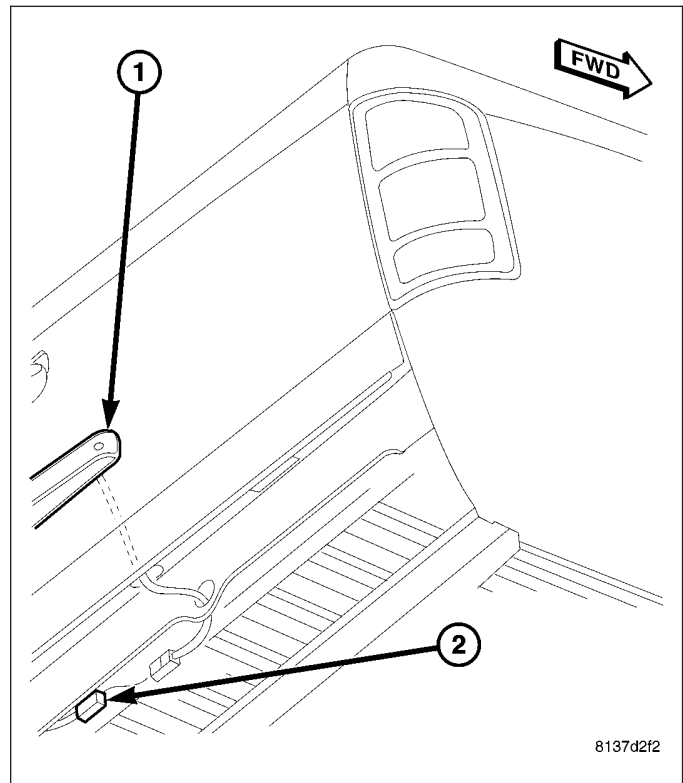
LAMP - TAILGATE

NOTE: This lamp is used on pick-up models with dual rear wheels. This lamp has a red lens, contains three bulbs and is located on the outside of the tailgate below the tailgate latch release handle.

1. Check to be certain that the two plastic nuts (1) are properly installed and in good condition on the tailgate outer panel.
2. Position the marker lamp (5) close enough to the tailgate to feed the pigtail wire (3) through the routing holes on the tailgate outer panel (2) and at the bottom of the tailgate.
3. Position the marker lamp to the tailgate outer panel.
4. Install and tighten the two screws that secure the marker lamp lens/housing to the tailgate panel. Tighten the screws to 1 N·m (11 in. lbs.).



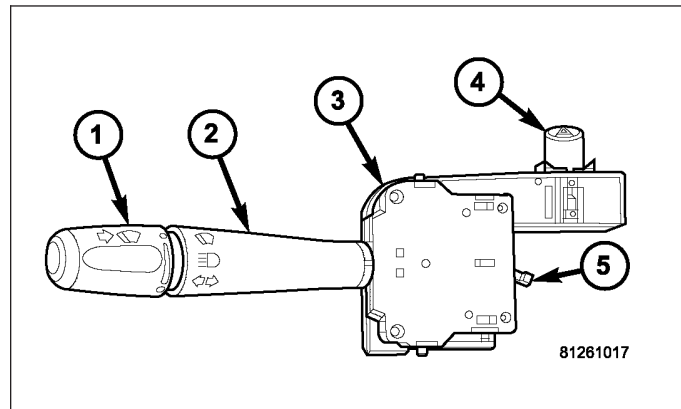
5. Route the tailgate marker lamp (1) pigtail wire through the routing hole in the valance panel beneath the tailgate.
6. Reach under and behind the rear bumper near the center to access and reconnect the tailgate marker lamp pigtail wire connector from the wire harness connector (2).
7. Reconnect the battery negative cable.



SWITCH-MULTIFUNCTION

DESCRIPTION

The multi-function switch (3) is located on the steering column, just below the steering wheel. The only visible components of the multi-function switch are the control stalk (2) and control knob (1) that extend through the steering column shrouds on the left side of the column, and the hazard warning push button (4) that extends through the shroud on the top of the column. The remainder of the switch including its mounting provisions, its electrical connection, and the turn signal cancel actuator (5) are concealed beneath the shrouds.



The switch housing and controls are constructed of molded black plastic. Each of the switch controls has white International Control and Display Symbol graphics applied to it, which clearly identify its many functions. Three integral locating posts on the switch housing, one on the top and two on the bottom, slide into channels in a receptacle on the left side of the multi-function switch mounting housing near the top of the steering column to ensure proper positioning of the switch. Then two screws secure the switch to the mounting housing. A single integral connector receptacle containing four terminal pins on the back of the switch housing connects the switch to the vehicle electrical system through a dedicated take out and connector of the instrument panel wire harness.

The multi-function switch provides the vehicle operator with a control interface for the following functions:

- **Hazard Warning Control** - The multi-function switch hazard warning push button provides two detent positions (On and Off) to control the hazard warning lamps.
- **Headlamp Beam Selection** - The multi-function switch control stalk provides detent switching for selection of the headlamp high or low beams. There is also an intermediate momentary position that allows the headlamp high beam circuits to be momentarily flashed to provide an optical horn feature (sometimes referred to as flash-to-pass) as an optical signalling device.
- **Turn Signal Control** - The multi-function switch control stalk provides momentary non-detent (lane change) switching or detent switching with automatic cancellation for both the left and right turn signal lamps.
- **Washer Control** - The multi-function switch control knob provides a momentary position for washer system operation.
- **Wiper Control** - The multi-function switch control knob provides two continuous wipe switch positions, low speed or high speed; and, an intermittent wipe mode with five delay interval positions.

The multi-function switch cannot be adjusted or repaired. If any function of the switch is faulty, or if the switch is damaged, the entire switch must be replaced as a unit.

OPERATION

The multi-function switch uses resistor multiplexing to control the many functions and features it provides using only three hard wired output circuits. The switch receives a clean ground from the ElectroMechanical Instrument Cluster (EMIC) (also sometimes referred to as the Cab Control Node/CCN) on a multi-function switch return circuit. It then provides outputs to the EMIC on a wash/beam select switch signal circuit to control washer and headlamp beam selection, on an intermittent wiper switch signal circuit to control wipers, and on a turn lamps switch signal circuit to control turn signal and hazard warning functions.

The multi-function switch operates as follows:

- **Hazard Warning Control** - The hazard warning push button of the multi-function switch is depressed to activate the hazard warning system, and depressed again to turn the system Off. When the push button is actuated, the multi-function switch provides an output to the EMIC, and the EMIC responds by sending electronic hazard switch status messages to the FCM over the PCI data bus. The FCM then energizes and flashes or de-energizes both the left and right turn signal circuits to provide the visual hazard warning.

- **Headlamp Beam Selection** - The control stalk of the multi-function switch is pulled towards the steering wheel past a detent to actuate the integral beam select switch circuitry, or to an intermediate, momentary position before the detent to actuate the optical horn feature. Each time the control stalk is actuated to a detent position, the opposite headlamp beam from what is currently selected will be energized. Each time the control stalk is actuated to the momentary position with the headlamps turned off, the headlamp high beams will be illuminated for as long as the control stalk is held in this position. The multi-function switch provides an output to the EMIC, and the EMIC responds by sending electronic beam select switch status messages to the FCM over the PCI data bus. The FCM energizes or de-energizes the selected low or high beam circuits.
- **Turn Signal Control** - The control stalk of the multi-function switch is moved upward to activate the right turn signal circuitry, and, downward to activate the left turn signal circuitry. The turn signal switch has a detent position in each direction that provides turn signals with automatic cancellation, and an intermediate, momentary position in each direction that provides turn signals only until the control stalk is released. When the control stalk is moved to a detent turn signal switch position, the cancel actuator extends toward the center of the steering column. A turn signal cancel cam that is integral to the clockspring rotates with the steering wheel and the cam lobes contact the cancel actuator when it is extended from the multi-function switch. When the steering wheel is rotated during a turning maneuver, one of the two turn signal cancel cam lobes will contact the turn signal cancel actuator. The cancel actuator latches against the cancel cam rotation in the direction opposite that which is signaled. If the left turn signal detent is selected, the lobes of the cancel cam will ratchet past the cancel actuator when the steering wheel is rotated to the left, but will unlatch the cancel actuator as the steering wheel rotates to the right and returns to center, which will cancel the turn signal event and release the control stalk from the detent so it returns to the neutral Off position. When a turn signal is activated, the multi-function switch provides an output to the EMIC, and the EMIC responds by sending electronic turn signal switch status messages to the FCM over the PCI data bus. The FCM energizes and flashes or de-energizes the selected left or right turn signal circuits.
- **Washer Control** - The control knob on the end of the multi-function switch control stalk is depressed towards the steering column to momentarily activate the washer pump in the washer mode. The washer pump will continue to operate in the washer mode until the control knob is released. The multi-function switch provides an output to the EMIC, and the EMIC responds by sending electronic washer switch status messages to the Front Control Module (FCM) over the Programmable Communications Interface (PCI) data bus. The FCM responds by energizing or de-energizing the washer pump in the washer mode.
- **Wiper Control** - The control knob on the end of the multi-function switch control stalk is rotated to one of the continuous wiper detents, to one of five intermittent wiper detents, or to the Off position to select the wiper mode. The multi-function switch provides an output to the EMIC, and the EMIC responds by sending electronic wiper switch status messages to the FCM over the PCI data bus. The FCM responds by energizing or de-energizing the wiper on/off and high/low relays in the Power Distribution Center (PDC) for wiper system control.

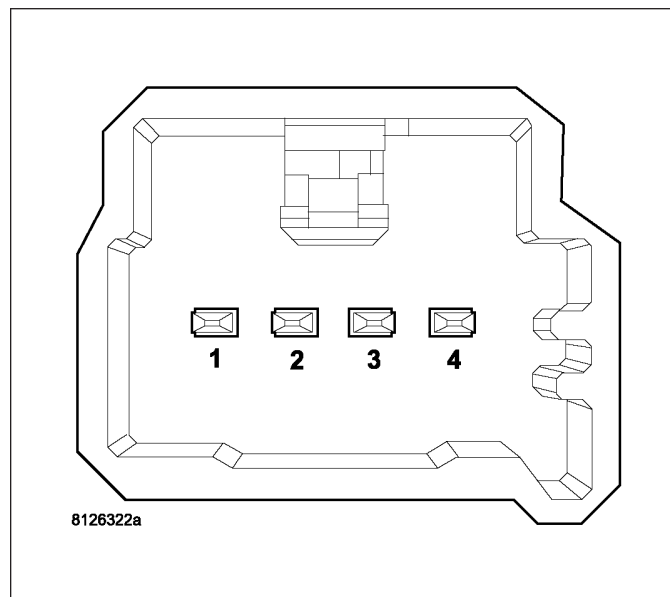
The multi-function switch can be diagnosed using conventional diagnostic tools and methods. However, proper testing of the multiplexed inputs to the EMIC requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

DIAGNOSIS AND TESTING

MULTI-FUNCTION SWITCH

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

1. Remove the multi-function switch from the switch mounting housing on the steering column. (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR/MULTI-FUNCTION SWITCH - REMOVAL).
2. Disconnect the wire harness connector from the back of the multi-function switch.
3. Using an ohmmeter, test the resistance between the terminals of the switch as shown in the Multi-Function Switch Tests table.



MULTI-FUNCTION SWITCH TESTS	
SWITCH POSITION (PINS)	*RESISTANCE RANGE (OHMS)
BEAM SELECT/WASHER NEUTRAL (1 & 2)	OPEN CIRCUIT
BEAM SELECT ON (1 & 2)	518 - 575
OPTICAL HORN ON (1 & 2)	1257 - 1397
FRONT WASHER ON (1 & 2)	2584 - 2871
TURN/HAZARD OFF (2 & 3)	2643 - 2937
HAZARD ON (2 & 3)	115 - 128
LEFT TURN SIGNAL ON (2 & 3)	345 - 384
RIGHT TURN SIGNAL ON (2 & 3)	786 - 873
FRONT WIPER OFF (2 & 4)	6910 - 7678
FRONT WIPER DELAY 1 (2 & 4)	2128 - 2365
FRONT WIPER DELAY 2 (2 & 4)	1089 - 1210
FRONT WIPER DELAY 3 (2 & 4)	627 - 697
FRONT WIPER DELAY 4 (2 & 4)	388 - 431
FRONT WIPER DELAY 5 (2 & 4)	234 - 261
FRONT WIPER LOW (2 & 4)	125 - 140
FRONT WIPER HIGH (2 & 4)	50 - 56
* All Resistance Values Given Are ± 10 Percent	

4. If the switch fails any of the tests, replace the faulty multi-function switch as required.

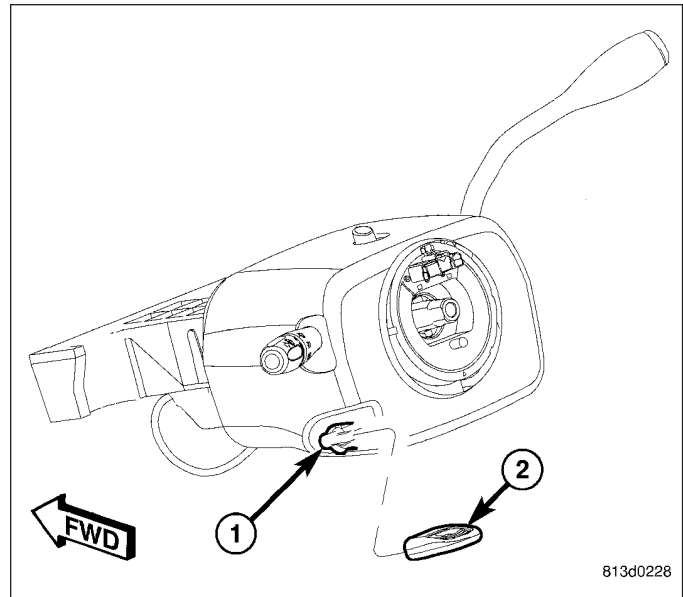
REMOVAL

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

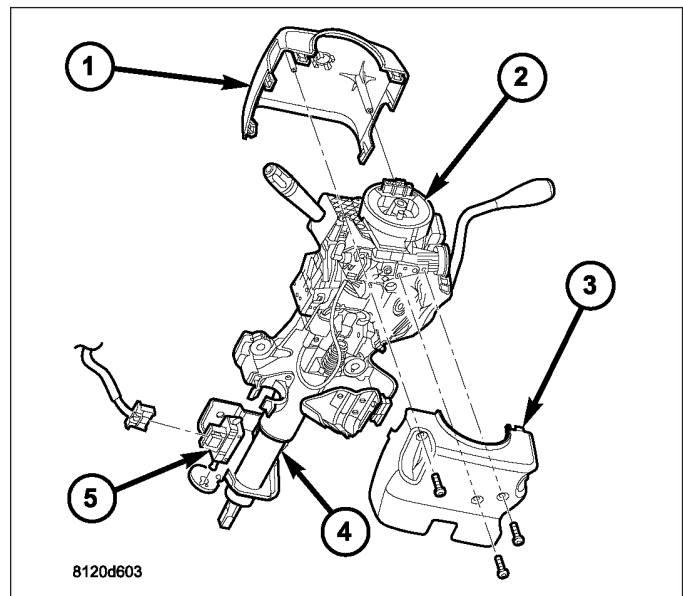
1. Disconnect and isolate the battery negative cable.
2. Remove the driver airbag from the steering wheel. (Refer to 8 - ELECTRICAL/RESTRAINTS/DRIVER AIRBAG - REMOVAL).
3. Disconnect the steering wheel wire harness connectors from the upper clockspring connector receptacles.

CAUTION: Be certain that the screws that secure the steering wheel puller to the steering wheel are fully engaged in the steering wheel armature without passing through the steering wheel and damaging the clockspring.

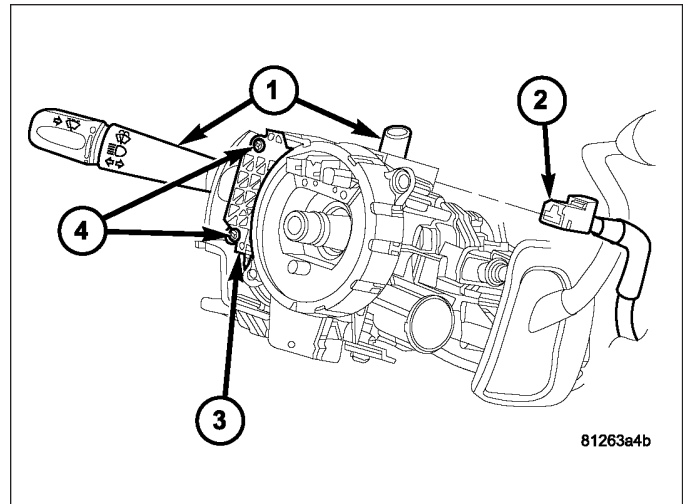
4. Remove the steering wheel from the steering column. (Refer to 19 - STEERING/COLUMN/STEERING WHEEL - REMOVAL).
5. Grasp the tilt steering column knob (2) firmly and pull it straight rearward to remove it from the tilt adjuster lever (1) on the left side of the column.



6. From below the steering column, remove the two outboard screws that secure the upper column shroud (1) to the lower shroud (3).
7. Using hand pressure, press inward on both sides of the upper shroud above the parting line of the lower shroud to release the snap features that secure the two shroud halves to each other.
8. Remove the upper shroud from the lower shroud and the steering column.
9. Remove the one center screw that secures the lower shroud to the steering column (4).
10. Remove the lower shroud from the steering column.



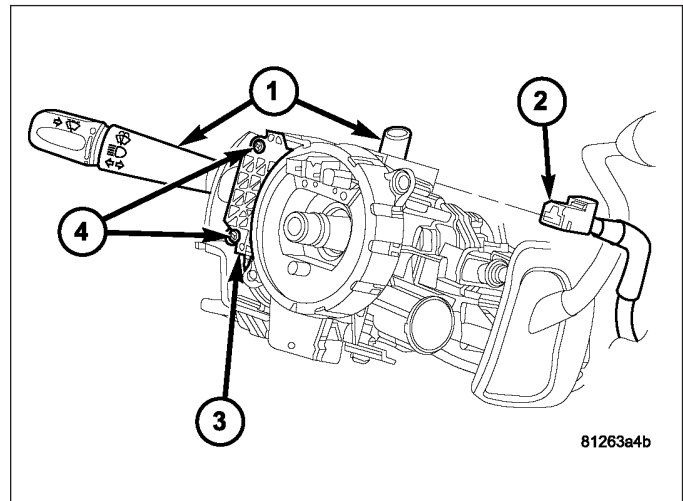
11. Disconnect the wire harness connector (2) from the back of the multi-function switch housing (1).
12. Remove the two screws (4) that secure the switch to the multi-function switch mounting housing (3).
13. Grasp the switch control stalk and pull it toward the left side of the vehicle to remove the switch from the mounting housing.



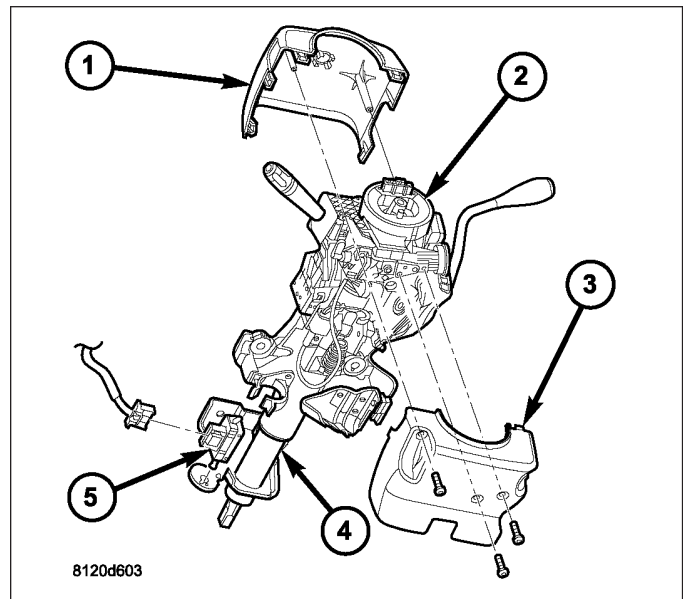
INSTALLATION

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

1. Slide the multi-function switch (1) into the multi-function switch mounting housing (3) from the left side. Be certain that the alignment pins on the top and bottom of the switch are properly engaged in the channels of the mounting housing.
2. Install and tighten the two screws (4) that secure the switch to the mounting housing. Tighten the screws to 2 N·m (20 in. lbs.).
3. Reconnect the wire harness connector (2) to the back of the switch housing.



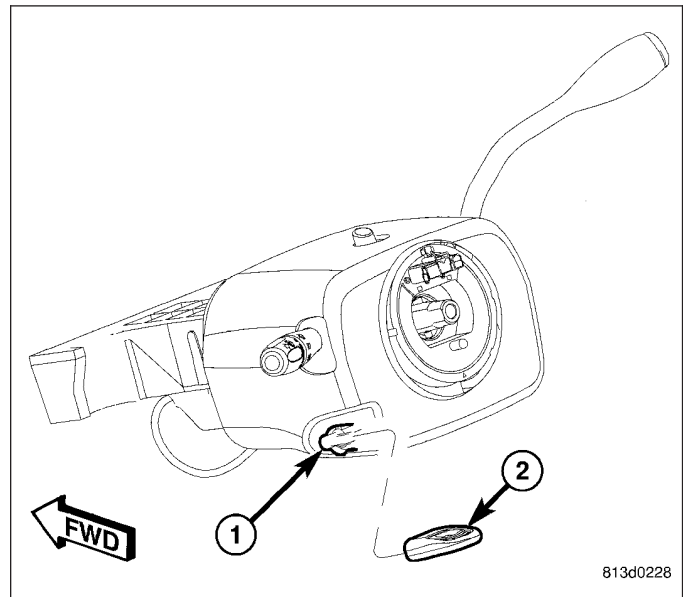
4. Position the lower shroud (3) onto the steering column (4).
5. From below the steering column, install and tighten the one center screw that secures the lower shroud to the steering column. Tighten the screw to 2 N·m (20 in. lbs.).
6. Position the upper shroud (1) onto the steering column over the lower shroud. On vehicles equipped with an automatic transmission, be certain to engage the gearshift lever gap hider into the opening in the right side of both shroud halves.
7. Align the snap features on the upper shroud with the receptacles in the lower shroud and apply hand pressure to snap them together.
8. Install and tighten the two outboard screws that secure the upper shroud to the lower shroud. Tighten the screws to 2 N·m (20 in. lbs.).



9. Align the tilt steering column knob (2) with the tilt adjuster lever (1) on the left side of the steering column and use hand pressure to snap it back into place.

NOTE: When reinstalling the steering wheel, be certain to index the yellow rubber booted engagement dowel on the upper surface of the clockspring rotor between the two fins cast into the lower surface of the steering wheel armature hub.

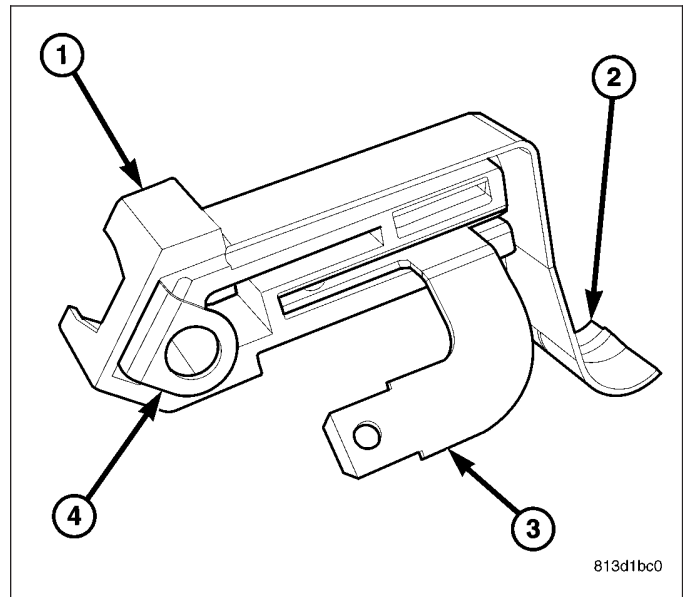
10. Reinstall the steering wheel onto the steering column. (Refer to 19 - STEERING/COLUMN/STEERING WHEEL - INSTALLATION).
11. Reconnect the steering wheel wire harness connectors to the upper clockspring connector receptacles. Be certain that the steering wheel wire harness is routed between the steering wheel back trim cover and the steering wheel armature.
12. Reinstall the driver airbag onto the steering wheel. (Refer to 8 - ELECTRICAL/RESTRAINTS/DRIVER AIRBAG - INSTALLATION).
13. Reconnect the battery negative cable.



PARK BRAKE SWITCH

DESCRIPTION

The park brake switch (1) is located on the park brake lever mechanism on the cowl side inner panel below the instrument panel, to the left of the steering column. This switch includes a spade-type output terminal (3) that connects the switch to the vehicle electrical system through a dedicated take out and connector of the body wire harness. The output terminal is integral to the stationary contact within a molded plastic insulator.



A locating tab on the insulator engages a slot in the park brake lever mechanism for positive switch location. External to the insulator is a movable leaf contact with an integral grounding lug (4) on one end and an integral actuating lever and follower (2) on the opposite end. The switch is secured to and grounded by a single screw to the park brake lever mechanism. The park brake switch cannot be adjusted or repaired and, if faulty or damaged, it must be replaced.

OPERATION

The park brake switch is a normally closed, mechanically actuated leaf contact switch that is operated by the park brake lever mechanism. The switch is grounded through its mounting to the park brake lever mechanism and provides a ground input to the ElectroMechanical Instrument Cluster (EMIC) (also sometimes referred to as the Cab Control Node/CCN) on a park brake switch sense circuit whenever the park brake is applied, and opens this circuit whenever the park brake is released. The park brake switch sense input to the EMIC is used for control of the brake indicator and may also be used as a logic input for other electronic features in the vehicle.

The park brake switch can be diagnosed using conventional diagnostic tools and methods. However, proper testing of the EMIC processing of the park brake switch sense input requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

DIAGNOSIS AND TESTING

PARK BRAKE SWITCH

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

NOTE: If the brake indicator stays on with the ignition switch in the On position and the park brake released, or comes on while driving, the brake system must be diagnosed and repaired prior to performing the following tests. (Refer to 5 - BRAKES - DIAGNOSIS AND TESTING). If no brake system problem is found, the following procedures will help to locate a shorted or open park brake switch sense circuit, or a faulty park brake switch.

INDICATOR ILLUMINATES DURING BULB TEST, BUT DOES NOT WHEN PARK BRAKE APPLIED

1. Disconnect and isolate the battery negative cable. Disconnect the body wire harness connector for the park brake switch from the switch terminal. Apply the parking brake. Check for continuity between the park brake switch terminal and a good ground. There should be continuity. If OK, go to Step 2. If not OK, replace the faulty park brake switch.
2. Disconnect the instrument panel wire harness connector (Connector C1) for the instrument cluster from the cluster connector receptacle. Check for continuity between the park brake switch sense circuit cavities of the body wire harness connector for the park brake switch and the instrument panel wire harness connector for the instrument cluster. There should be continuity. If not OK, repair the open park brake switch sense circuit between the park brake switch and the instrument cluster as required.

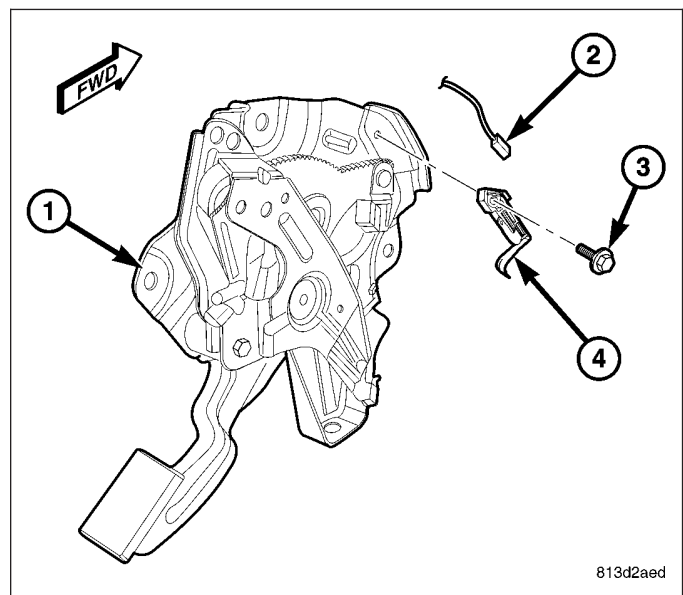
INDICATOR REMAINS ILLUMINATED - BRAKE SYSTEM CHECKS OK

1. Disconnect and isolate the battery negative cable. Disconnect the body wire harness connector for the park brake switch from the switch terminal. Check for continuity between the terminal of the park brake switch and a good ground. There should be no continuity with the park brake released, and continuity with the park brake applied. If OK, go to Step 2. If not OK, replace the faulty park brake switch.
2. Disconnect the instrument panel wire harness connector (Connector C1) for the instrument cluster from the cluster connector receptacle. Check for continuity between the park brake switch sense circuit cavity of the body wire harness connector for the park brake switch and a good ground. There should be no continuity. If not OK, repair the shorted park brake switch sense circuit between the park brake switch and the instrument cluster as required.

REMOVAL

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

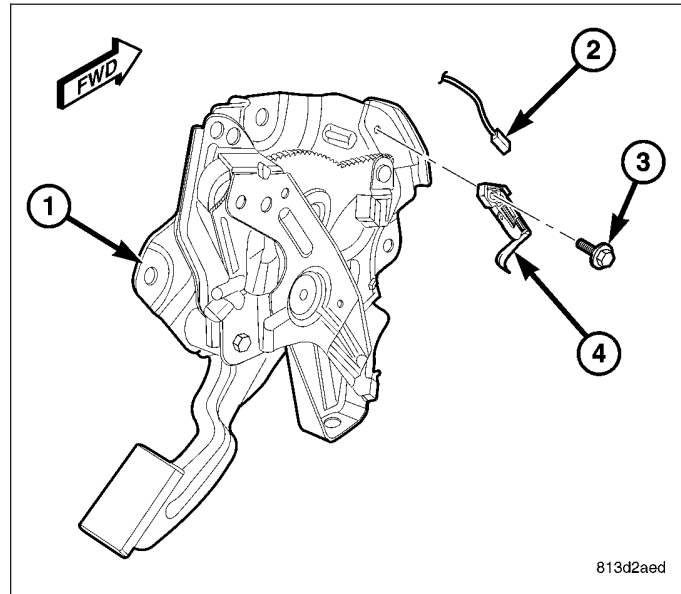
1. Disconnect and isolate the battery negative cable.
2. Apply the parking brake.
3. Reach under the left end of the instrument panel to access and disconnect the body wire harness connector (2) from the terminal of the park brake switch (4) located on the park brake lever mechanism (1) on the left cowl side inner panel.
4. Remove the screw (3) that secures the park brake switch to the park brake lever mechanism.
5. Remove the switch from the park brake lever mechanism.



INSTALLATION

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

1. Reach under the left end of the instrument panel to position park brake switch (4) onto the park brake lever mechanism (1) on the left cowl side inner panel. Be certain to engage the locating pin on the back of the switch insulator into the locating slot in the lever mechanism bracket.
2. Install and tighten the screw (3) that secures the park brake switch to the park brake lever mechanism. Tighten the screw to 3 N·m (24 in. lbs.).
3. Reconnect the body wire harness connector (2) to the terminal of the park brake switch.
4. Reconnect the battery negative cable.
5. Turn the ignition switch to the On position and check for proper brake indicator operation with the parking brake applied, then release the parking brake and check that the brake indicator extinguishes.

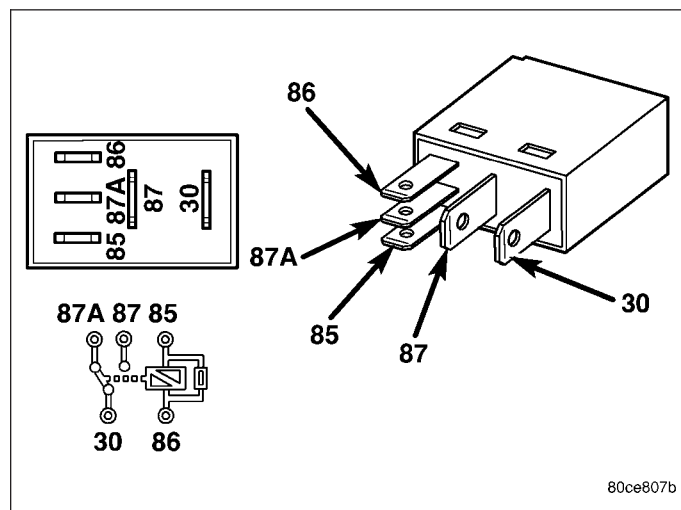


RELAY-PARK LAMP

DESCRIPTION

The park lamp relay is a conventional International Standards Organization (ISO) micro relay. Relays conforming to the ISO specifications have common physical dimensions, current capacities, terminal patterns, and terminal functions. This relay is contained within a small, rectangular, molded plastic housing and is connected to all of the required inputs and outputs through five integral male spade-type terminals that extend from the relay base plate.

The park lamp relay is located in the Power Distribution Center (PDC) in the engine compartment near the battery. Refer to the layout label on the underside of the PDC cover for specific relay cavity assignment information. The park lamp relay cannot be adjusted or repaired and, if faulty or damaged, the unit must be replaced.



OPERATION

The park lamp relay is an electromechanical switch that uses a low current input from the Front Control Module (FCM) (also referred to as the Integrated Power Module/IPM) to control a high current output to the park lamps. Within the relay are an electromagnetic coil, a movable contact and two fixed contact points. A resistor is connected

in parallel with the coil, and helps to dissipate voltage spikes and electromagnetic interference that can be generated as the field of the relay coil collapses.

The movable common supply contact point is held against the fixed normally closed contact point by spring pressure. When the relay coil is energized, an electromagnetic field is produced by the coil windings. This field draws the movable contact point away from the normally closed contact, and holds it against the normally open contact. When the relay coil is de-energized, spring pressure returns the movable contact back against the normally closed contact.

The inputs and outputs of the park lamp relay include:

- **Common Supply Terminal (30)** - The common feed terminal is connected to a fused B(+) circuit at all times.
- **Coil Ground Terminal (85)** - The coil ground terminal is connected to a fused B(+) circuit at all times.
- **Coil Battery Terminal (86)** - The coil battery terminal is connected to a control output of the FCM through a park lamp relay control circuit. The FCM controls park lamp operation by controlling a ground path through this circuit.
- **Normally Open Terminal (87)** - The normally open terminal is connected to the park lamps through a park lamp relay output circuit and provides battery voltage to the park lamps whenever the relay is energized.
- **Normally Closed Terminal (87A)** - The normally closed terminal is not connected to any circuit in this application, but will have battery voltage present whenever the relay is de-energized.

The park lamp relay can be diagnosed using conventional diagnostic tools and methods. Refer to the appropriate wiring information.

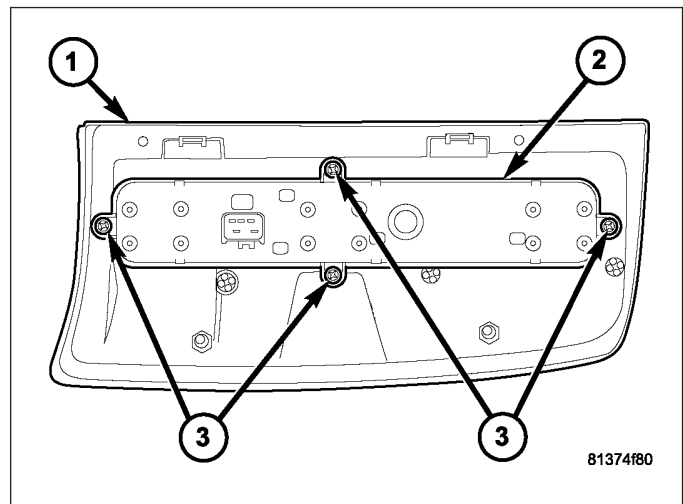
LAMP-TAIL/STOP/TURN

REMOVAL

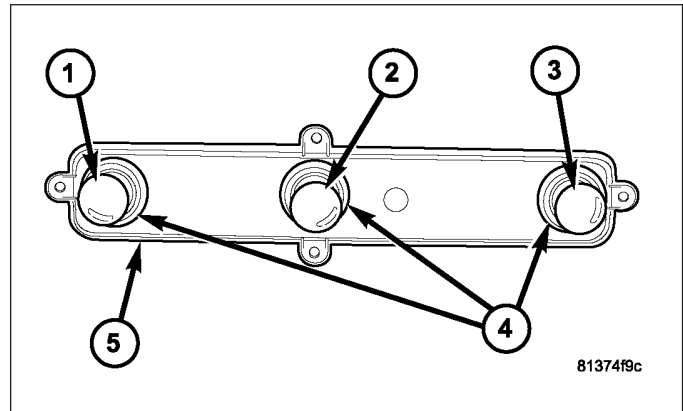
BULB - PICK-UP

NOTE: The rear lamp unit contains three bulbs: park/turn, park/brake/side marker, and backup. The service procedures for each bulb are the same, only the bulb sizes and types may differ.

1. Disconnect and isolate the battery negative cable.
2. Remove the rear lamp unit (1) from the end of the quarter panel. (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR/REAR LAMP - REMOVAL - PICK-UP).
3. Remove the four screws (3) that secure the socket plate (2) to the back of the rear lamp unit housing.
4. Remove the socket plate from the rear lamp unit.

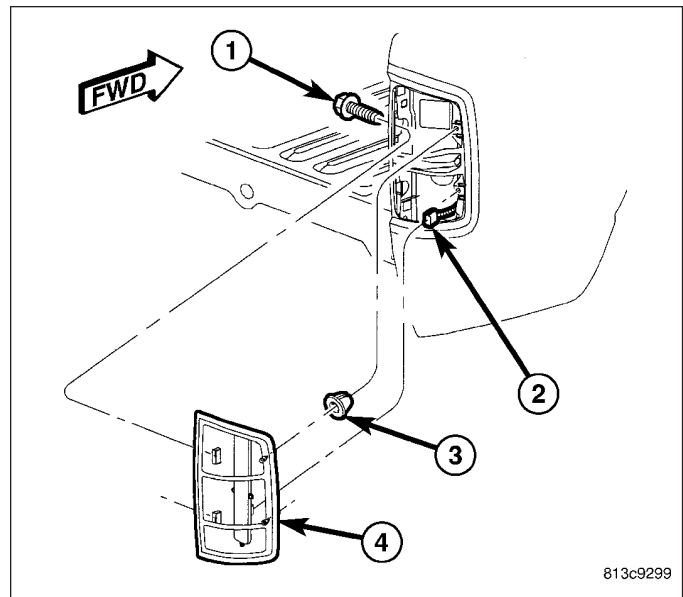


5. Pull the base of the backup (1), park/brake/side marker (2), or park/turn (3) lamp bulb straight out of the appropriate socket in the socket plate (5).

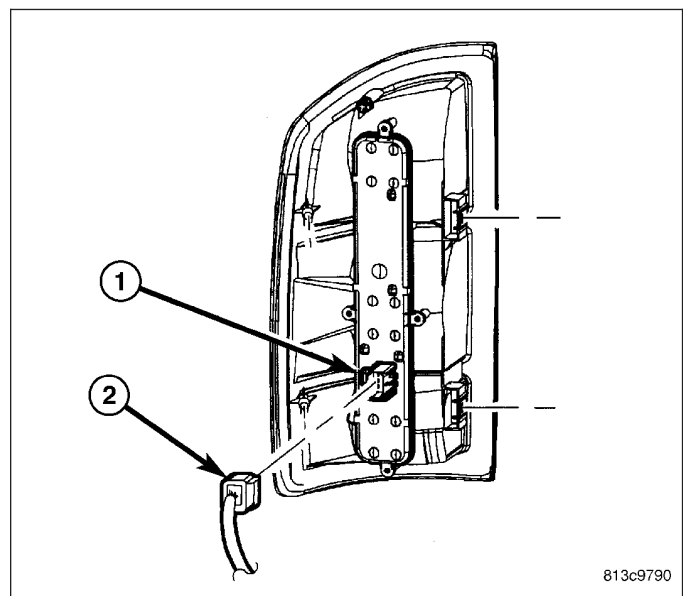


LAMP - PICK-UP

1. Disconnect and isolate the negative battery cable.
2. Lower the tailgate to access and remove the two screws (1) that secure the rear lamp unit (4) to the side jamb of the tailgate opening.
3. Pull the outboard side of the rear lamp unit rearward far enough to unsnap the two snap posts on the outboard side of the lamp housing from the two round clips (3) in the outer box side panel.



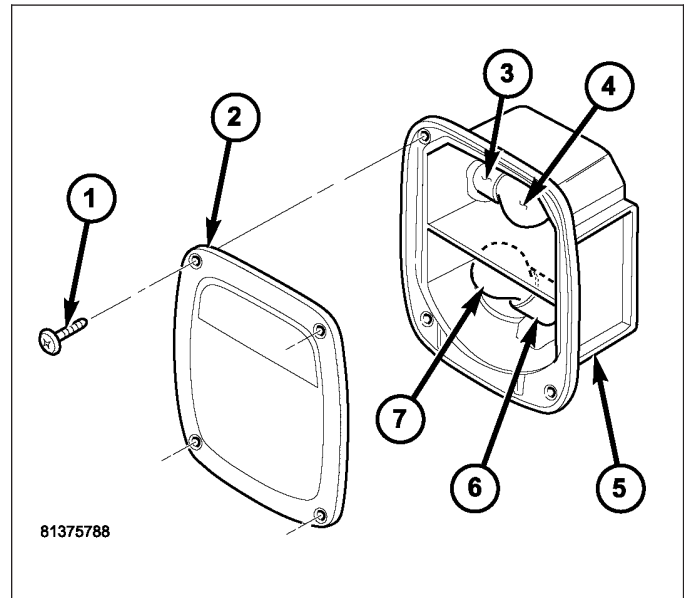
4. Disengage the lock feature and disconnect the wire harness connector (2) from the lamp socket plate connector (1).
5. Remove the lamp from the lamp opening of the outer box side panel.



BULB - CAB & CHASSIS

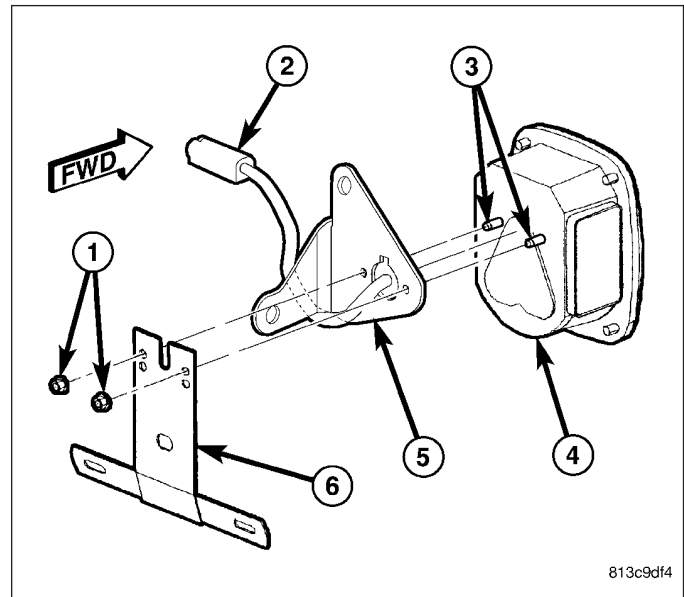
NOTE: The rear lamp unit contains two bulbs: the park/turn/brake/license plate, and the backup. The service procedures for each bulb are the same, only the bulb sizes and types may differ.

1. Disconnect and isolate the battery negative cable.
2. Remove the four screws (1) that secure the lens (2) to the rear lamp unit housing (5).
3. Push the backup lamp bulb (4), or the park/turn/brake/license plate bulb (7) slightly into its socket (3) or (6), then rotate the bulb counterclockwise about 30 degrees to unlock it.
4. Pull the base of the bulb straight out of the socket.



LAMP - CAB & CHASSIS

1. Disconnect and isolate the negative battery cable.
2. Disconnect the rear lamp unit pigtail wire connector (2) from the chassis wire harness connector for the rear lamp.
3. Disengage the rear lamp unit pigtail wire and connector from the rear frame rail.
4. Remove the two nuts (1) that secure the studs (3) on the rear lamp unit housing (4) to the lamp mounting bracket (5) on the rear frame rail.
5. For the left side lamp only, remove the license plate mounting bracket (6) from the rear lamp unit studs.
6. Remove the rear lamp unit from the mounting bracket while feeding the pigtail wire and connector through the bracket.



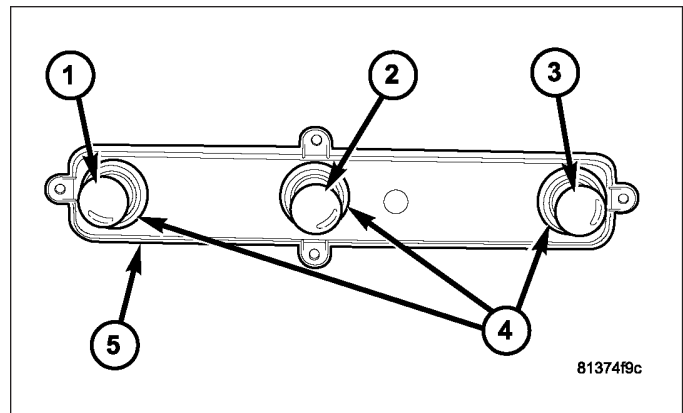
INSTALLATION

BULB - PICK-UP

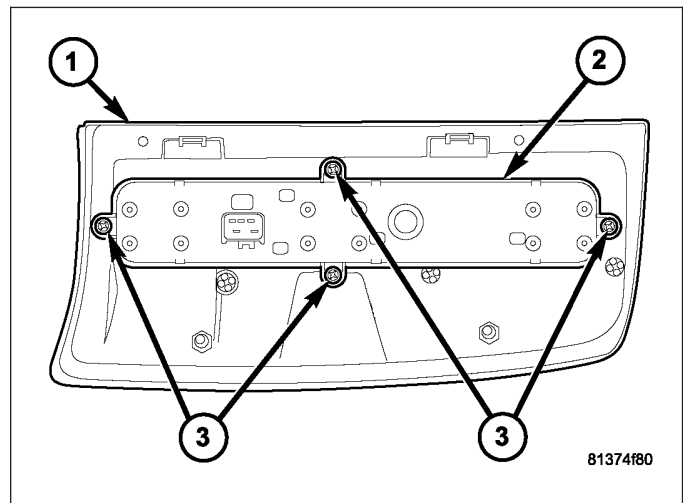
CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

NOTE: The rear lamp unit contains three bulbs: park/turn, park/brake/side marker, and backup. The service procedures for each bulb are the same, only the bulb sizes and types may differ.

1. Align the base of the backup (1), park/brake/side marker (2), or park/turn (3) lamp bulb with the appropriate socket in the socket plate (5).
2. Push the bulb straight into the socket until the base is firmly seated.
3. Be certain that a rubber sealing washer (4) is properly installed and in good condition around the base of each bulb on the socket plate.

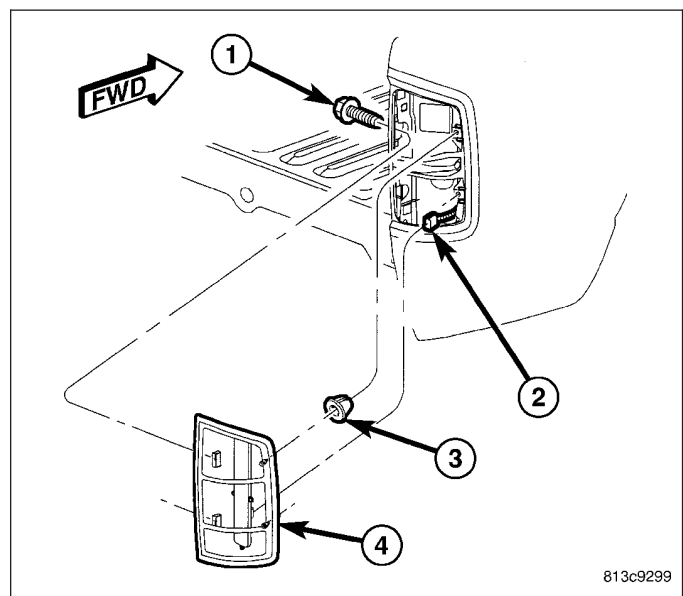


4. Align the socket plate (2) and bulbs with the openings on the back of the rear lamp unit housing (1).
5. Insert the socket plate and bulbs straight into the housing until the plate is firmly seated.
6. Install and tighten the four screws (3) that secure the socket plate to the housing. Tighten the screws to 1 N·m (12 in. lbs.).
7. Reinstall the rear lamp unit onto the end of the quarter panel. (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR/REAR LAMP - INSTALLATION - PICK-UP).
8. Reconnect the battery negative cable.

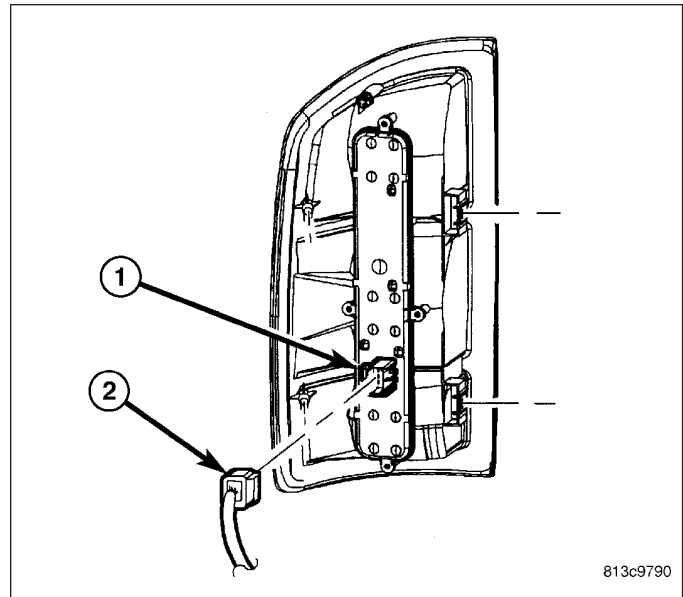


LAMP - PICK-UP

1. Check to be certain that the two round clips (3) are in good condition and properly installed in the outer box side panel.
2. Position the rear lamp unit (4) to the lamp opening of the outer box side panel.



3. Reconnect the wire harness connector (2) to the lamp socket plate connector (1) and engage the lock feature.
4. Align the two snap posts on the outboard side of the rear lamp housing with the two round clips in the outer box side panel.
5. Using hand pressure, push firmly and evenly on the outboard side of the lamp until both snap studs snap into the round clips.
6. Install and tighten the two screws (1) (upper screw first) that secure the rear lamp unit to the side jamb of the tailgate opening. Tighten the screws to 2 N·m (19 in. lbs.).
7. Close the tailgate.
8. Reconnect the battery negative cable.

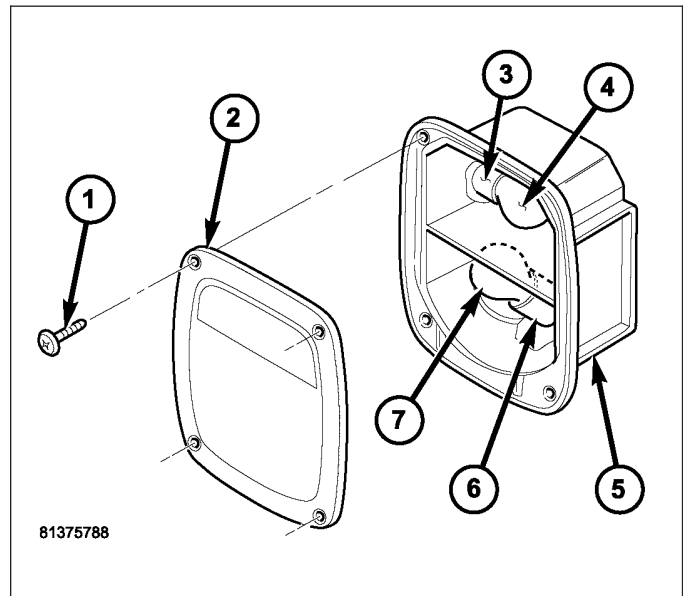


BULB - CAB & CHASSIS

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

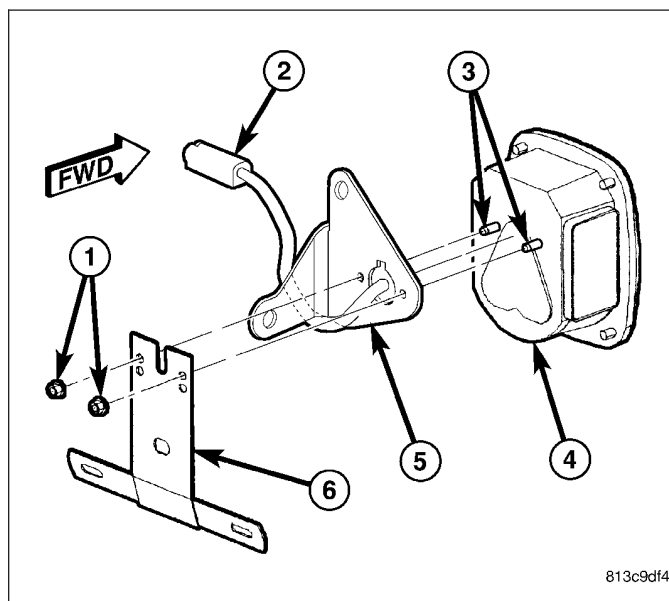
NOTE: The rear lamp unit contains two bulbs: the park/turn/brake/license plate, and the backup. The service procedures for each bulb are the same, only the bulb sizes and types may differ.

1. Align the base of the backup lamp bulb (4), or the park/turn/brake/license plate lamp bulb (7) with its socket (3) or (6).
2. Push the bulb straight into the socket until the base is firmly seated, then rotate the bulb clockwise about 30 degrees to lock it into place.
3. Position the lens (2) to the rear lamp unit housing (5).
4. Install and tighten the four screws (1) that secure the lens to the housing. Tighten the screws to 2 N·m (20 in. lbs.).
5. Reconnect the battery negative cable.



LAMP - CAB & CHASSIS

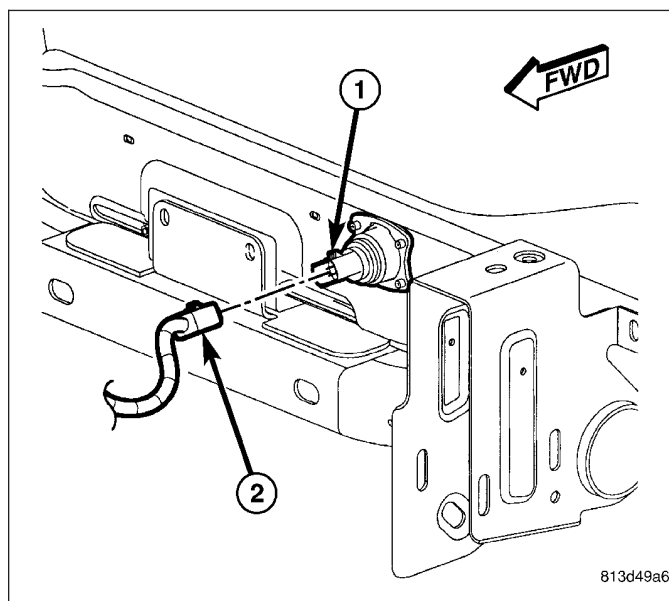
1. Feed the pigtail wire and connector (2) of the rear lamp unit (4) through the lamp mounting bracket and position the lamp studs (3) through the mounting holes in the bracket.
2. For the left side lamp only, position the license plate mounting bracket (6) onto the rear lamp unit studs.
3. Install and tighten the two nuts (1) that secure the rear lamp unit housing to the mounting bracket. Tighten the nuts to 5 N·m (47 in. lbs.).
4. Reconnect the rear lamp unit pigtail wire connector to the chassis wire harness connector for the rear lamp.
5. Engage the rear lamp connector retainer into the rear frame rail.
6. Reconnect the negative battery cable.



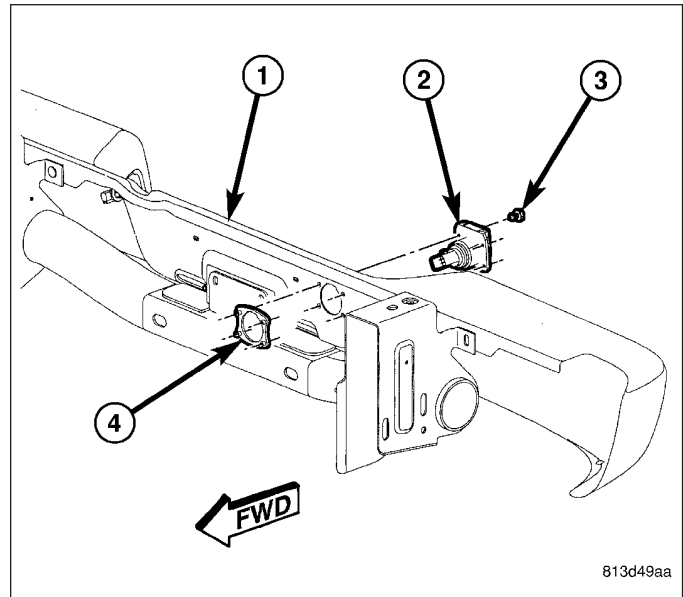
TRAILER TOW CONNECTOR

REMOVAL

1. Disconnect and isolate the battery negative cable.
2. Reach behind the center of the rear bumper to access and disconnect the connector (2) of the body wire harness from the 7-way trailer tow connector (1).

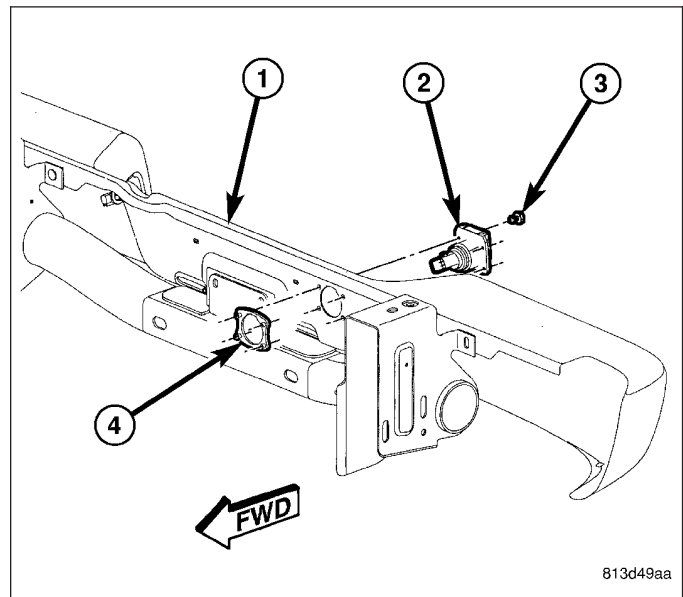


3. Remove the four screws (3) that secure the 7-way trailer tow connector (2) to the tapping plate (4) behind the rear bumper.
4. Remove the 7-way trailer tow connector from the face of the rear bumper and the tapping plate from behind the rear bumper.

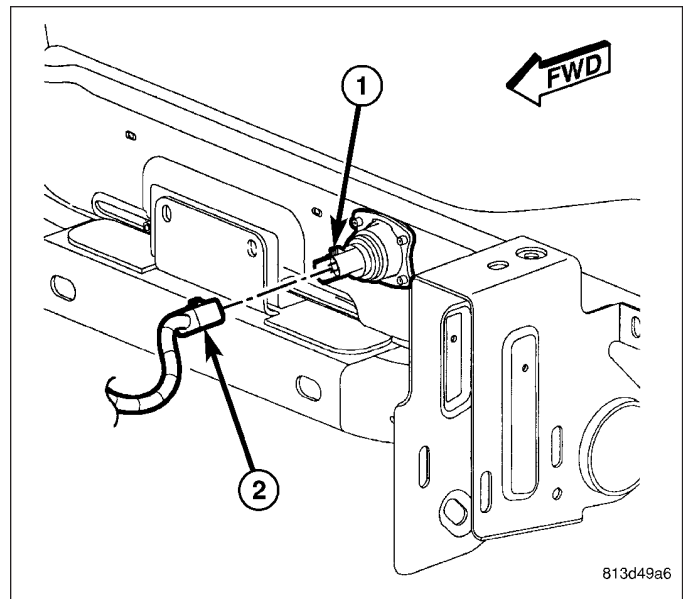


INSTALLATION

1. Position the 7-way trailer tow connector (2) into the mounting hole on the face of the rear bumper (1).
2. Position the tapping plate (4) over the 7-way trailer tow connector on the back of the rear bumper.
3. Install and tighten the four screws (3) that secure the 7-way trailer tow connector to the tapping plate. Tighten the screws to 2 N·m (17 in. lbs.).



4. Reach behind the center of the rear bumper to access and reconnect the connector (2) of the body wire harness to the 7-way trailer tow connector (1).
5. Reconnect the battery negative cable.

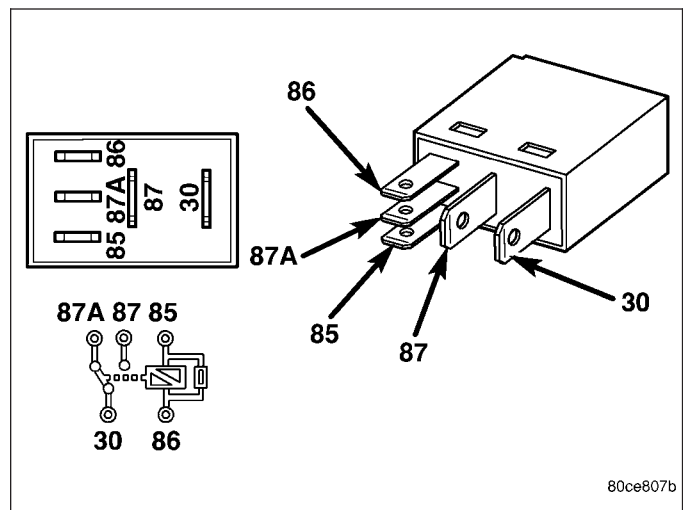


RELAY-TRAILER TOW

DESCRIPTION

All vehicles are equipped with two trailer tow relays, one for the trailer right turn and brake lamps and the other for the trailer left turn and brake lamps. The trailer tow relays are conventional International Standards Organization (ISO) micro relays. Relays conforming to the ISO specifications have common physical dimensions, current capacities, terminal patterns, and terminal functions. Each relay is contained within a small, rectangular, molded plastic housing and is connected to all of the required inputs and outputs through five integral male spade-type terminals that extend from the relay base plate.

The trailer tow relays are located in the Power Distribution Center (PDC) in the engine compartment near the battery. Refer to the layout label on the underside of the PDC cover for specific relay cavity assignment information. A trailer tow relay cannot be adjusted or repaired and, if faulty or damaged, the unit must be replaced.



OPERATION

The trailer tow relays are electromechanical switches that use a low current input from the Front Control Module (FCM) (also referred to as the Integrated Power Module/IPM) to control a high current output to trailer brake and turn signal lamps. Within each relay are an electromagnetic coil, a movable contact and two fixed contact points. A resistor is connected in parallel with the coil, and helps to dissipate voltage spikes and electromagnetic interference that can be generated as the field of the relay coil collapses.

The movable common supply contact point is held against the fixed normally closed contact point by spring pressure. When the relay coil is energized, an electromagnetic field is produced by the coil windings. This field draws the movable contact away from the normally closed contact, and holds it against the normally open contact. When the relay coil is de-energized, spring pressure returns the movable contact back against the normally closed contact.

The inputs and outputs of the trailer tow relays include:

- **Common Supply Terminal (30)** - The common feed terminal is connected to a fused B(+) circuit at all times.

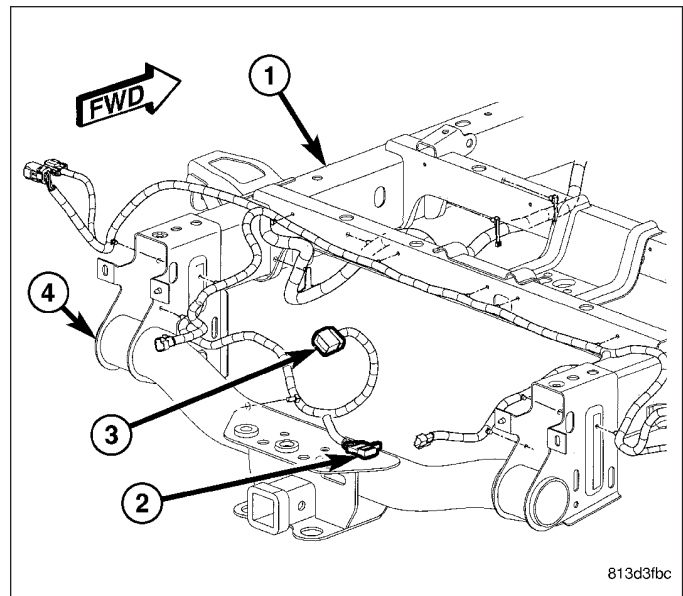
- **Coil Ground Terminal (85)** - The coil ground terminal is connected to a fused B(+) circuit at all times.
- **Coil Battery Terminal (86)** - The coil battery terminal is connected to a control output of the FCM through a right or left trailer tow turn relay control circuit. The FCM controls trailer brake and turn lamp operation by controlling a ground path through this circuit.
- **Normally Open Terminal (87)** - The normally open terminal is connected to the trailer lamps through a right or left trailer tow turn relay output circuit and provides battery voltage to the right or left trailer brake and turn lamps whenever the relay is energized.
- **Normally Closed Terminal (87A)** - The normally closed terminal is not connected to any circuit in this application, but will have battery voltage present whenever the relay is de-energized.

The trailer tow relays can be diagnosed using conventional diagnostic tools and methods. Refer to the appropriate wiring information.

WIRING-TRAILER TOW

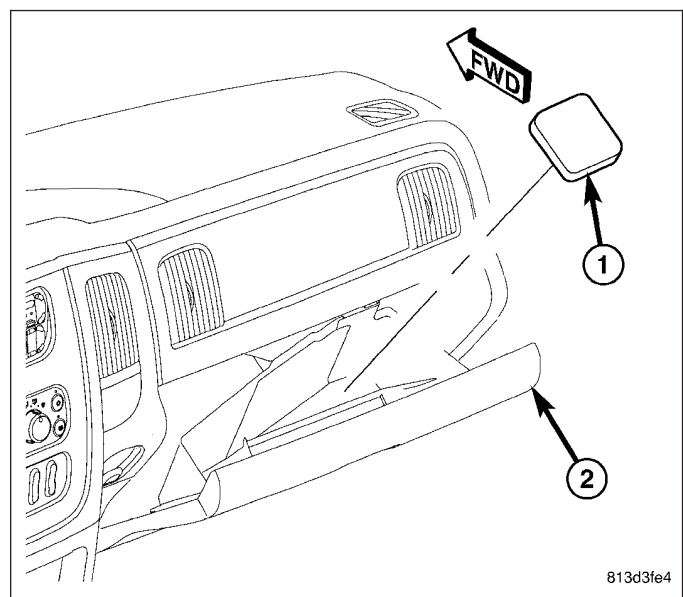
DESCRIPTION

The rear body wire harness on the rear frame (1) of all vehicles is equipped with a take out with a standard, light-duty 4-pin trailer tow connector (2) that is secured to the top of the trailer hitch platform (4) behind the rear bumper. Vehicles equipped with an optional factory-installed trailer towing package have a second take out with a connector (3) that plugs into a receptacle in the back of a heavy duty, sealed, 7-pin trailer tow connector that is located near the center of the rear bumper.



Vehicles equipped with the trailer tow package also include an electric trailer brake wiring provision that terminates at a connector located on top of the large body harness connection under the instrument panel to the left of the brake pedal, as well as an electric trailer brake pigtail harness and an instruction card (1) that are stored in the glove box (2) when the vehicle is shipped from the factory.

Refer to the appropriate wiring information. The wiring information includes wiring diagrams, proper wire and connector repair procedures, further details on wire harness routing and retention, as well as pin-out and location views for the various wire harness connectors, splices and grounds.



OPERATION

The standard 4-pin trailer tow connector contains the following vehicle circuits: park/tail lamps, left stop/turn lamp, right stop/turn lamp, and ground. The optional trailer towing package 7-way connector contains the same circuits as the 4-pin connector plus the following additional circuits: backup lamp, trailer battery and electric brake.

If an aftermarket electric brake controller is used, the electric brake pigtail harness supplied will make installation easier. The connection (blue 4-way connector) for the harness is located under the instrument panel to the left of the brake pedal on top of the large body harness connection. Refer to the appropriate wiring information.

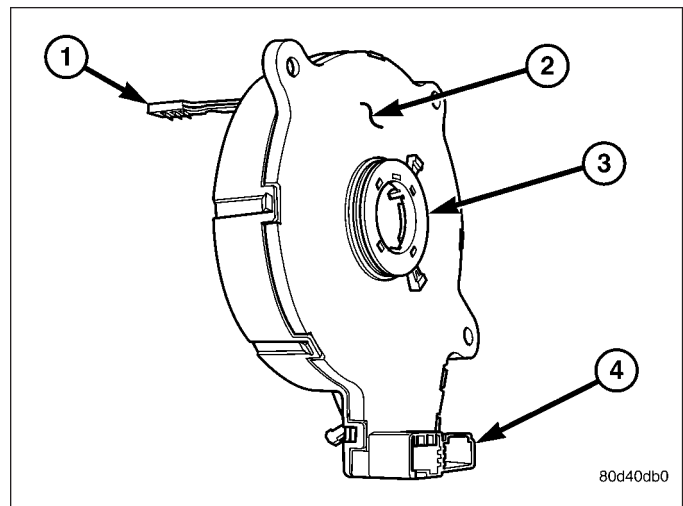
The battery line of this harness may be used to charge the trailer battery. However, a battery isolation unit is not supplied and the trailer battery may discharge the truck battery while the engine is not running. The battery line is protected by a fuse or a circuit breaker. Refer to the owner's manual in the vehicle glove box for type, location, and ampere rating of the fuse or circuit breaker.

CAM-TURN SIGNAL CANCEL

DESCRIPTION

The turn signal cancel cam (3) is concealed within the steering column. The turn signal cancel cam consists of two lobes on a molded plastic ring that is snapped into the lower hub of the clockspring rotor. The clockspring mechanism provides turn signal cancellation as well as a constant electrical connection between the horn switch, driver airbag, speed control switches, and remote radio switches on the steering wheel and the instrument panel wire harness on the steering column. The housing of the clockspring (2) is secured to the multi-function switch mounting housing on the steering column and remains stationary. The rotor of the clockspring, including the turn signal cancel cam lobes rotate with the steering wheel.

The turn signal cancel cam is serviced as a unit with the clockspring and cannot be repaired. If faulty or damaged, the entire clockspring unit must be replaced. (Refer to 8 - ELECTRICAL/RESTRAINTS/CLOCKSPRING - REMOVAL).



OPERATION

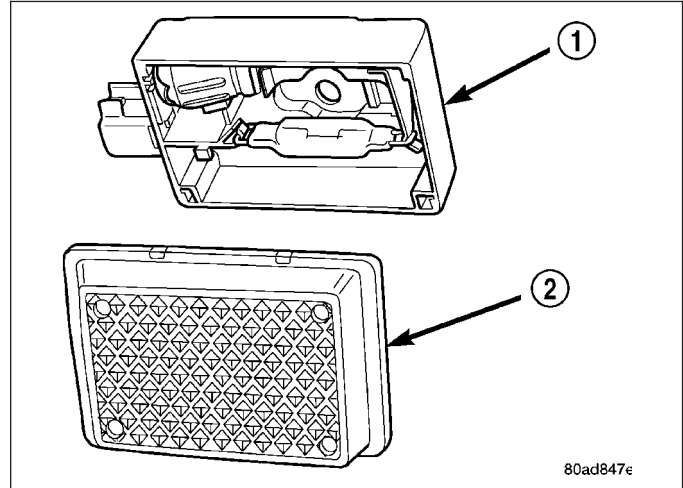
When the multi-function switch control stalk is moved to a latched turn signal position, a turn signal cancel actuator is extended from the inside surface of the switch housing toward the turn signal cancel cam. As the steering wheel is rotated to complete the turn, one of the two cam lobes will contact the actuator, automatically cancelling the turn signal event and releasing the latched multi-function switch control stalk to the neutral position.

LAMP-UNDERHOOD

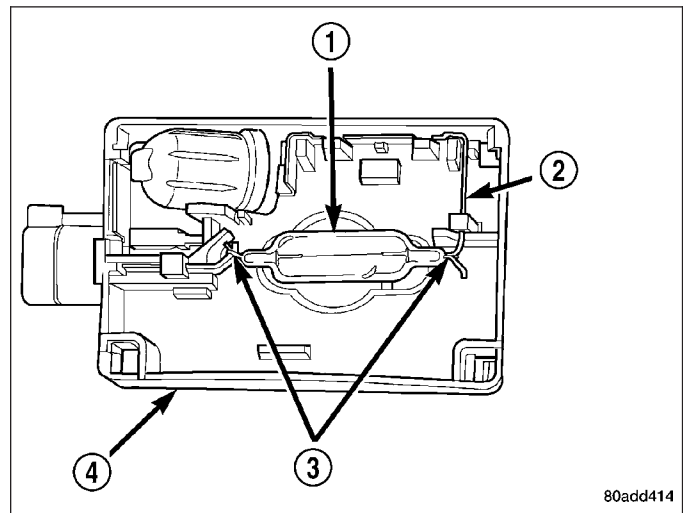
REMOVAL

BULB

1. Disconnect and isolate the battery negative cable.
2. Insert a small flat bladed tool in the access slot between the underhood lamp housing (1) and the lamp lens (2).
3. Gently pry the lens until it unsnaps from the lamp housing.

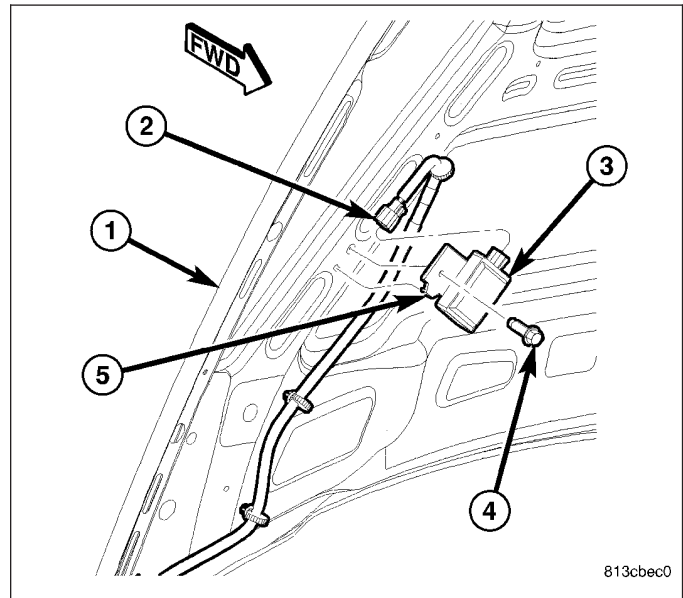


4. Depress the bulb holder (2) inward far enough to disengage the terminals (3) of the bulb (1) and remove the bulb from the lamp housing (4).



LAMP

1. Disconnect and isolate the battery negative cable.
2. Disconnect the headlamp and dash jumper harness connector (2) from the underhood lamp (3) connector receptacle.
3. Remove the screw (4) that secures the underhood lamp mounting bracket to the inner hood panel (1).
4. Remove the underhood lamp and bracket from the inner hood panel as a unit.

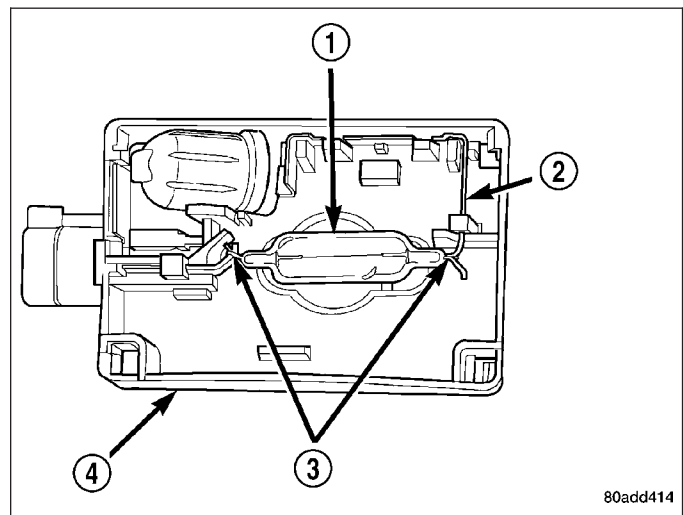


INSTALLATION

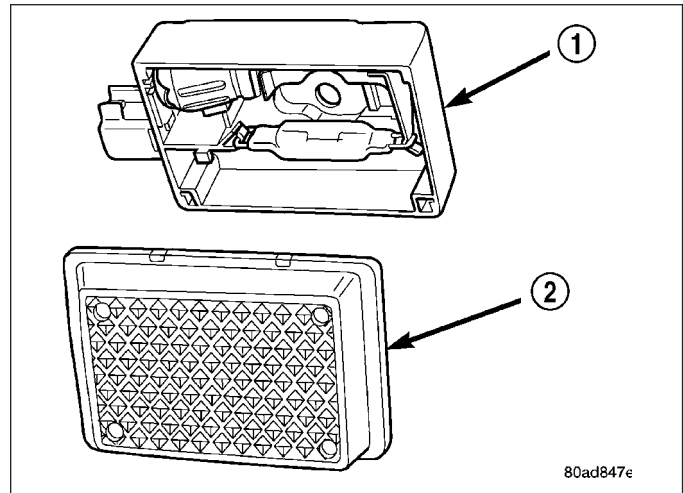
BULB

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

1. Engage one of the terminals (3) of the bulb (1) over the bulb holder closest to the connector receptacle on the underhood lamp housing (4).
2. Depress the other bulb holder (2) inward far enough to engage the remaining bulb terminal.

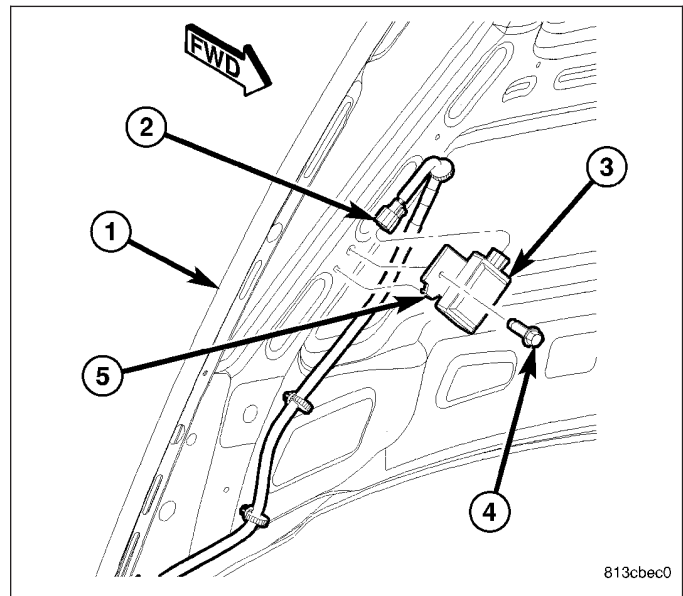


3. Position the lens (2) over the lamp housing and use hand pressure to press the lens firmly and evenly onto the housing until it snaps into place.
4. Reconnect the battery negative cable.



LAMP

1. Position the underhood lamp and bracket (3) to the underside of the hood panel (1) as a unit. Be certain that the locating tab (5) on the bracket is engaged into the locating hole in the hood inner panel.
2. Install the tighten the screw (4) that secures the underhood lamp mounting bracket to the inner hood panel. Tighten the screw to 5 N·m (45 in. lbs.).
3. Reconnect the headlamp and dash jumper harness connector (2) to the underhood lamp connector receptacle.
4. Reconnect the battery negative cable.



LAMPS/LIGHTING - INTERIOR - ELECTRICAL DIAGNOSTICS

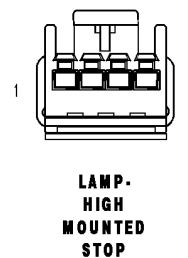
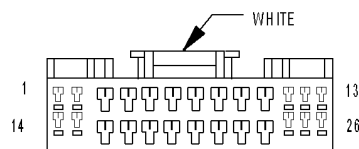
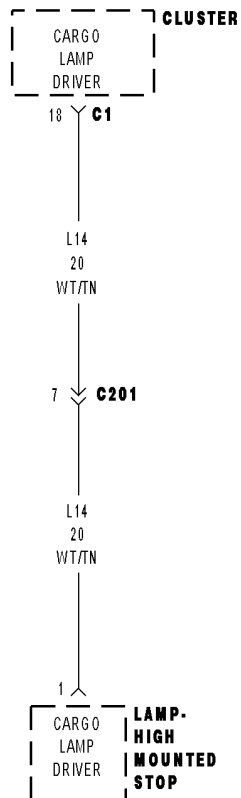
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LAMPS/LIGHTING - INTERIOR - ELECTRICAL DIAGNOSTICS

CAUTION

MIC-CARGO LAMP OUTPUT CIRCUIT SHORTED OR OPEN



MIC-CARGO LAMP OUTPUT CIRCUIT SHORTED OR OPEN (CONTINUED)

For the Interior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - INTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
With the ignition on
- **Set Condition:**
The CCN detects a short condition

Possible Causes
HEADLAMP SWITCH
CARGO LAMP OUTPUT CIRCUIT SHORT TO GROUND
INSTRUMENT CLUSTER

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all MIC DTC's.

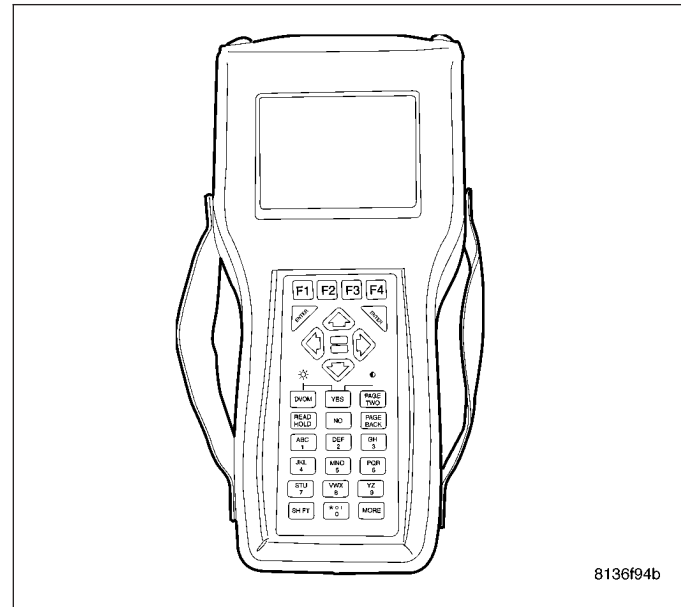
Turn the Cargo Lamps on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Cargo Lamp Output Circuit Short/Open?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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2. HEADLAMP SWITCH

Disconnect the Headlamp Switch connector.

Turn the ignition on.

Does the DRBIII® display Headlamp Switch 5.0 volts?

Yes >> Replace the Headlamp Switch.

Perform BODY VERIFICATION TEST - VER 1.

No >> Go to 3

MIC-CARGO LAMP OUTPUT CIRCUIT SHORTED OR OPEN (CONTINUED)**3. CARGO LAMP OUTPUT CIRCUIT SHORT TO GROUND**

Turn the ignition off.

Disconnect the Headlamp Switch connector.

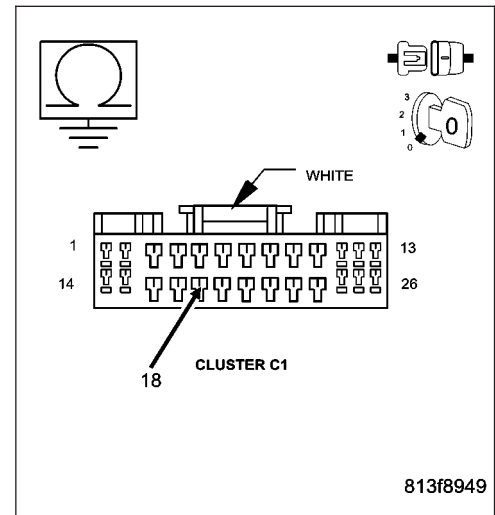
Disconnect the Instrument Cluster C1 connector.

Measure the resistance of the Cargo Lamp Output circuit to ground.

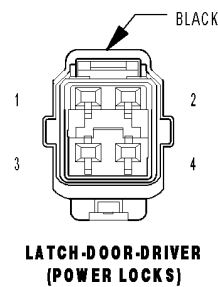
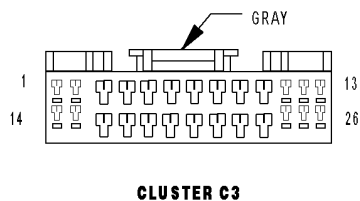
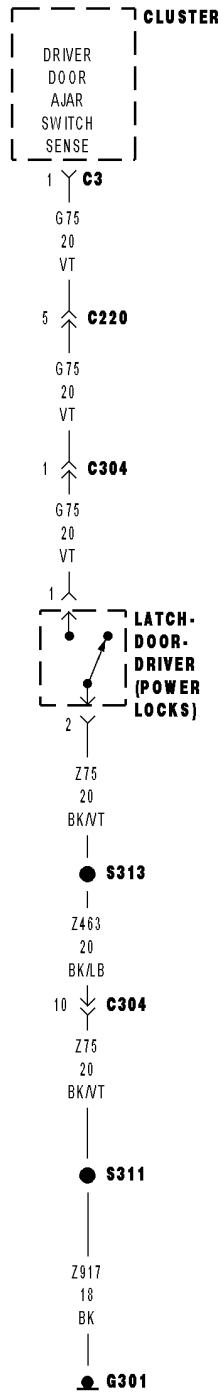
Is the resistance below 5.0 ohms?

Yes >> Repair the Cargo Lamp Output circuit..
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Instrument Cluster.
Perform BODY VERIFICATION TEST - VER 1.



***DRIVER DOOR AJAR CIRCUIT OPEN**



***DRIVER DOOR AJAR CIRCUIT OPEN (CONTINUED)**

For the Door Ajar System circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - INTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

Possible Causes
OPEN (Z75) DRIVER DOOR AJAR SWITCH GROUND CIRCUIT OPEN (G75) DRIVER DOOR AJAR SWITCH SENSE CIRCUIT OPEN DRIVER DOOR AJAR SWITCH INSTRUMENT CLUSTER

Diagnostic Test**1. OPEN DRIVER DOOR AJAR SWITCH**

Disconnect the Driver Door Latch connector.

Connect a jumper wire between the (G75) Sense circuit and the (Z75) Ground circuit.

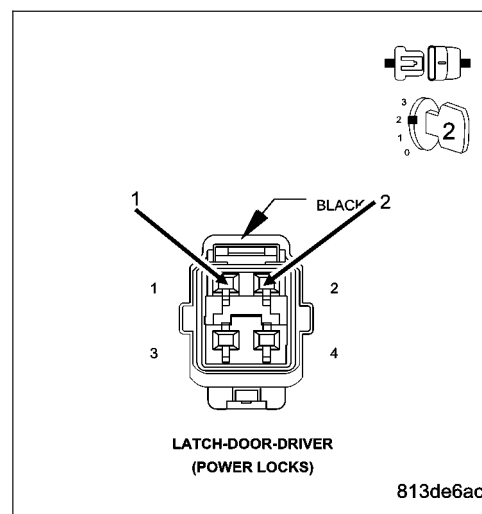
With the DRBIII® in Inputs/Outputs, read the DRV DOOR AJAR SW state.

Does the DRBIII® display CLOSED?

Yes >> Replace the Driver Door Latch.

Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)

No >> Go To 2

**2. OPEN (Z75) DRIVER DOOR AJAR SWITCH GROUND CIRCUIT**

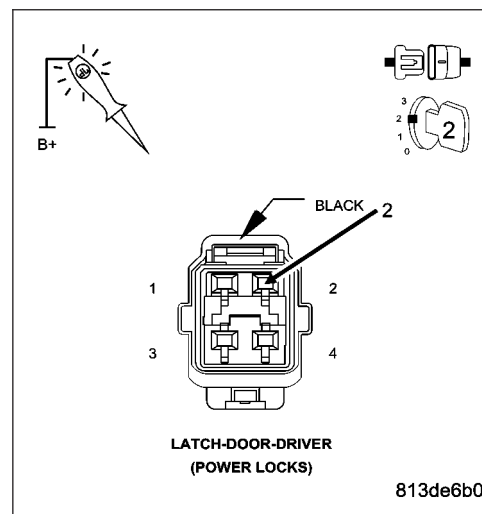
Using a 12-volt Test Light connected to 12-volts, test the (Z75) Ground circuit in the Door Latch connector.

Does the test light illuminate brightly?

Yes >> Go To 3

No >> Repair the (Z75) Driver Door Ajar Switch Ground circuit for an open.

Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)



DRIVER DOOR AJAR CIRCUIT OPEN (CONTINUED)*3. OPEN (G75) DRIVER DOOR AJAR SWITCH SENSE CIRCUIT**

Turn the ignition off.

Disconnect the Instrument Cluster C3 harness connector.

Measure the resistance of the (G75) Driver Door Ajar Switch Sense circuit between the Instrument Cluster connector and the Door Latch connector.

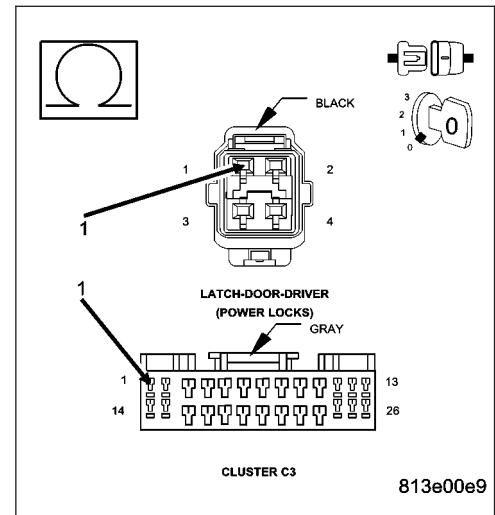
Is the resistance below 5.0 ohms?

Yes >> Replace the Instrument Cluster.

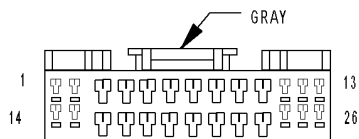
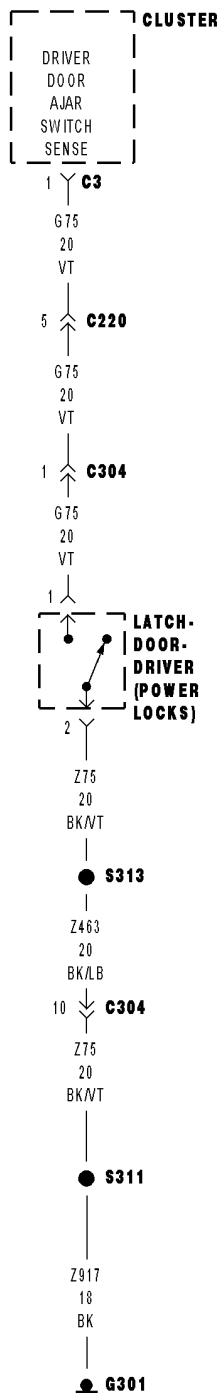
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)

No >> Repair the (G75) Driver Door Ajar Switch Sense circuit for an open.

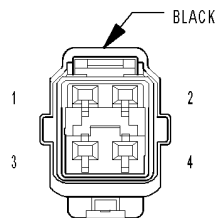
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)



***DRIVER DOOR AJAR CIRCUIT SHORTED TO GROUND**



CLUSTER C3



**LATCH-DOOR-DRIVER
(POWER LOCKS)**

***DRIVER DOOR AJAR CIRCUIT SHORTED TO GROUND (CONTINUED)**

For the Door Ajar System circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - INTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

Possible Causes
(G75) DRIVER DOOR AJAR SWITCH SENSE CIRCUIT SHORT TO GROUND
DRIVER DOOR AJAR SWITCH
INSTRUMENT CLUSTER

Diagnostic Test**1. DRIVER DOOR AJAR SWITCH SHORT TO GROUND**

With the DRBIII® in Inputs/Outputs, read the DRV DOOR AJAR SW state.

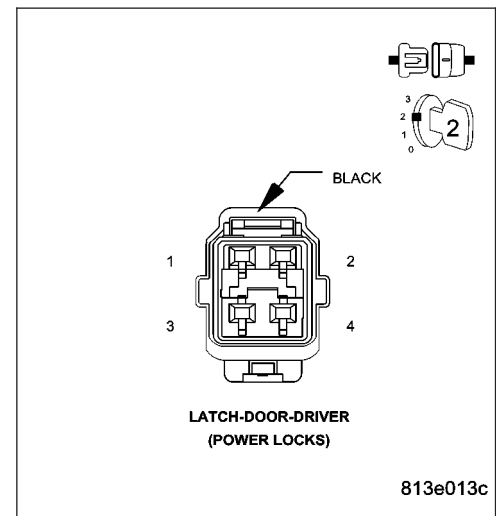
While monitoring the DRBIII®, disconnect the Driver Door Latch connector.

Did the Switch State change from CLOSED to OPEN?

Yes >> Replace the Driver Door Latch.

Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING).

No >> Go To 2

**2. (G75) DRIVER DOOR AJAR SWITCH SENSE CIRCUIT SHORT TO GROUND**

Turn the ignition off.

Disconnect the Instrument Cluster C3 harness connector.

Using a 12-volt test light connected to 12-volts, probe the (G75) Driver Door Ajar Switch Sense circuit and test for a short to ground.

Turn the ignition on.

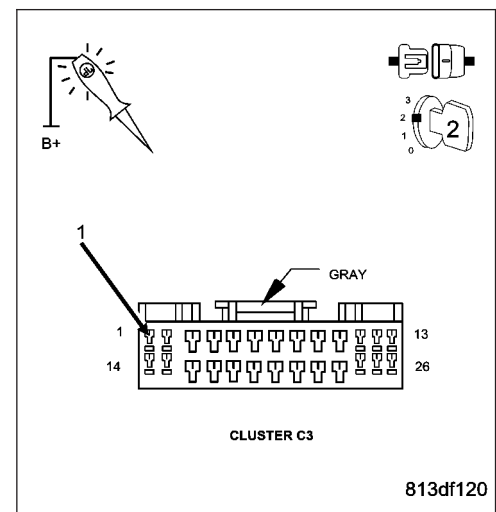
Does the test light illuminate brightly?

Yes >> Repair the (G75) Driver Door Ajar Switch Sense circuit for a short to ground.

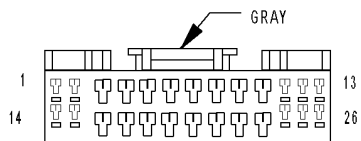
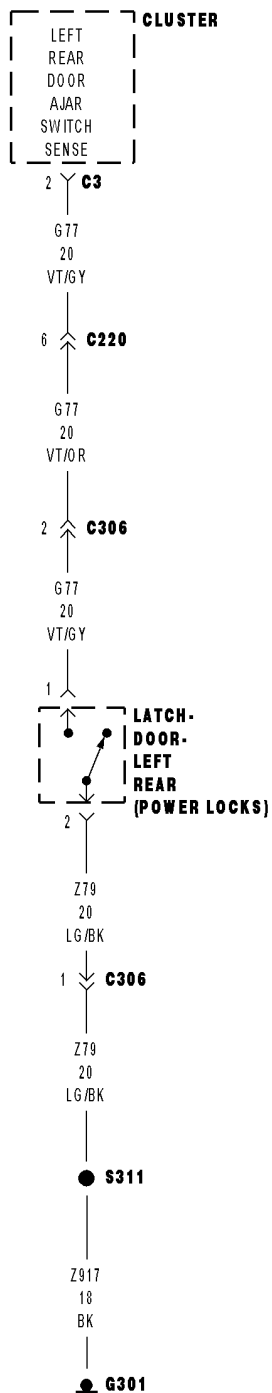
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)

No >> Replace the Instrument Cluster.

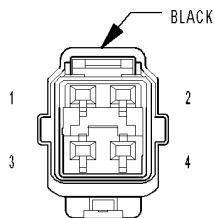
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING).



***LEFT REAR DOOR AJAR CIRCUIT OPEN**



CLUSTER C3



**LATCH-DOOR-LEFT REAR
(POWER LOCKS)**

***LEFT REAR DOOR AJAR CIRCUIT OPEN (CONTINUED)**

For the Door Ajar System circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - INTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

Possible Causes
OPEN (Z79) LEFT REAR DOOR AJAR SWITCH GROUND CIRCUIT OPEN (G77) LEFT REAR DOOR AJAR SWITCH SENSE CIRCUIT OPEN LEFT REAR DOOR AJAR SWITCH INSTRUMENT CLUSTER

Diagnostic Test**1. OPEN LEFT REAR DOOR AJAR SWITCH**

Disconnect the Left Rear Door Latch connector.

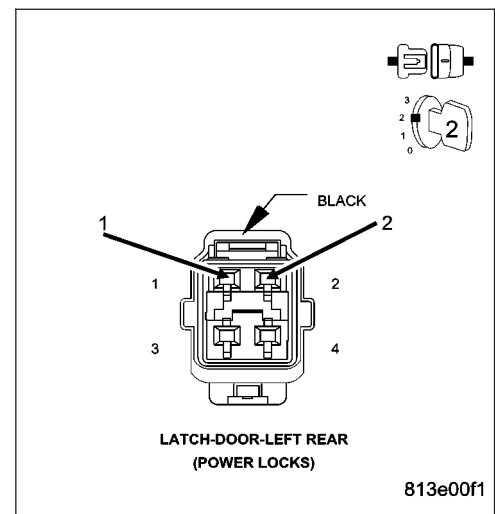
Connect a jumper wire between the (G77) Sense circuit and the Ground circuit.

With the DRBIII® in Inputs/Outputs, read the L R DOOR AJAR SW state.

Does the DRBIII® display CLOSED?

Yes >> Replace the Left Rear Door Latch.
 Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)

No >> Go To 2

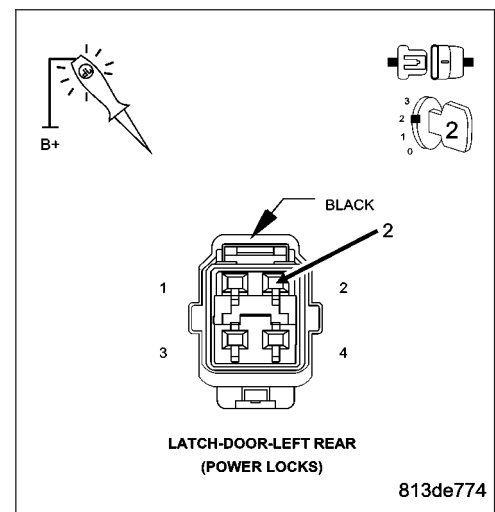
**2. OPEN (Z79) LEFT REAR DOOR AJAR SWITCH GROUND CIRCUIT**

Using a 12-volt Test Light connected to 12-volts, test the (Z79) Ground circuit in the Door Latch connector.

Does the test light illuminate brightly?

Yes >> Go To 3

No >> Repair the (Z79) Left Rear Door Ajar Switch Ground circuit for an open.
 Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)



LEFT REAR DOOR AJAR CIRCUIT OPEN (CONTINUED)*3. OPEN (G77) LEFT REAR DOOR AJAR SWITCH SENSE CIRCUIT**

Turn the ignition off.

Disconnect the Instrument Cluster C3 harness connector.

Measure the resistance of the (G77) Left Rear Door Ajar Switch Sense circuit between the Instrument Cluster connector and the Door Latch connector.

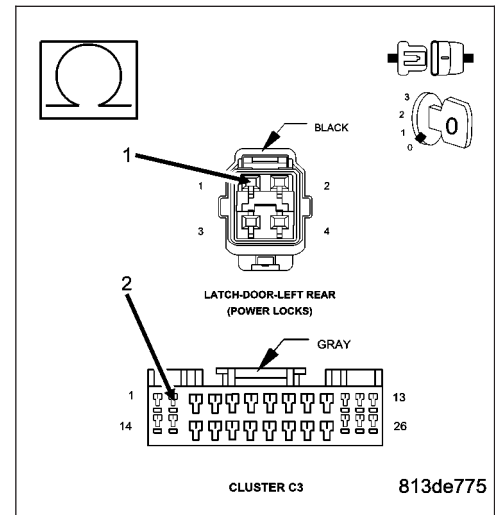
Is the resistance below 5.0 ohms?

Yes >> Replace the Instrument Cluster.

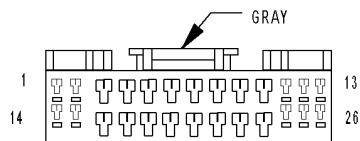
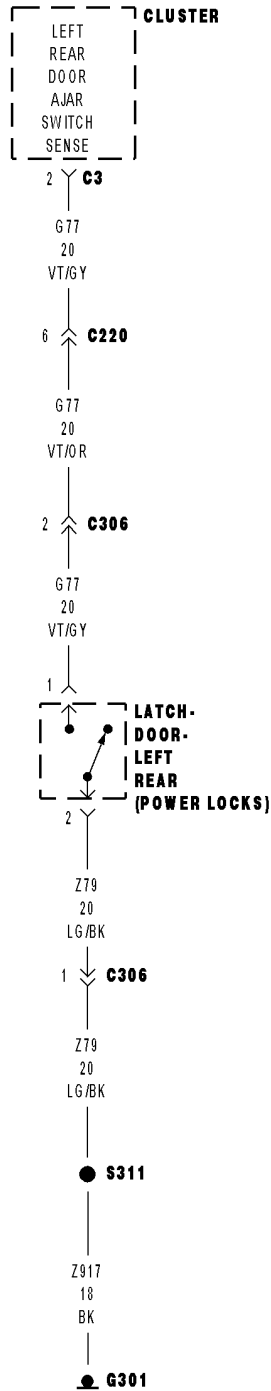
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)

No >> Repair the (G77) Left Rear Door Ajar Switch Sense circuit for an open.

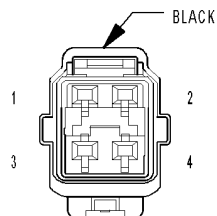
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)



***LEFT REAR DOOR AJAR CIRCUIT SHORTED TO GROUND**



CLUSTER C3



**LATCH-DOOR-LEFT REAR
(POWER LOCKS)**

***LEFT REAR DOOR AJAR CIRCUIT SHORTED TO GROUND (CONTINUED)**

For the Door Ajar System circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - INTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

Possible Causes
(G77) LEFT REAR DOOR AJAR SWITCH SENSE CIRCUIT SHORT TO GROUND
LEFT REAR DOOR AJAR SWITCH
INSTRUMENT CLUSTER

Diagnostic Test**1. LEFT REAR DOOR AJAR SWITCH SHORT TO GROUND**

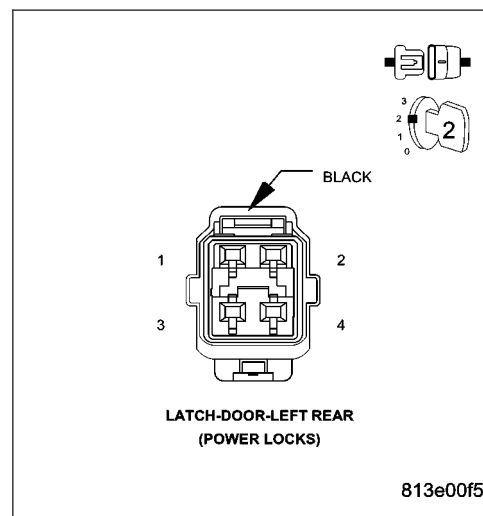
With the DRBIII® in Inputs/Outputs, read the L R DOOR AJAR SW state.

While monitoring the DRBIII®, disconnect the Left Rear Door Latch connector.

Did the Switch State change from CLOSED to OPEN?

Yes >> Replace the Left Rear Door Latch.
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING).

No >> Go To 2

**2. (G77) LEFT REAR DOOR AJAR SWITCH SENSE CIRCUIT SHORT TO GROUND**

Turn the ignition off.

Disconnect the Instrument Cluster C3 harness connector.

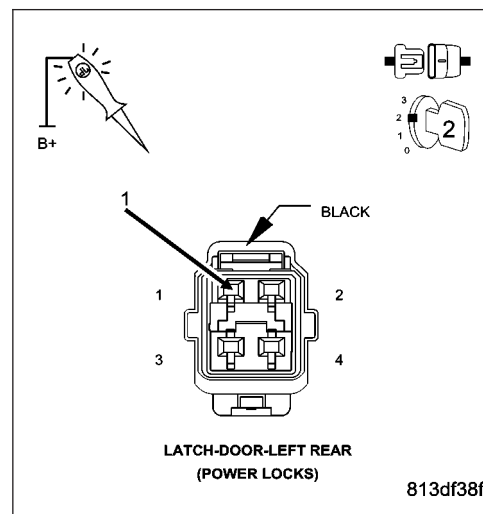
Using a 12-volt test light connected to 12-volts, probe the (G77) Left Rear Door Ajar Switch Sense circuit and test for a short to ground.

Turn the ignition on.

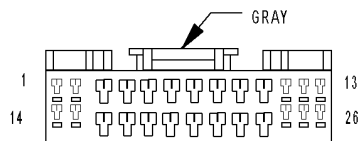
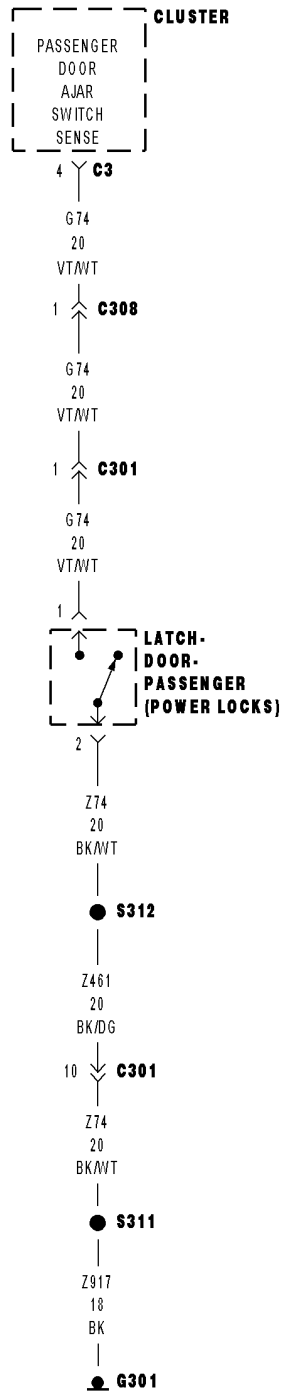
Does the test light illuminate brightly?

Yes >> Repair the (G77) Left Rear Door Ajar Switch Sense circuit for a short to ground.
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)

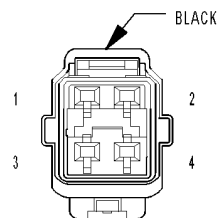
No >> Replace the Instrument Cluster.
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING).



***PASSENGER DOOR AJAR CIRCUIT OPEN**



CLUSTER C3



**LATCH-DOOR-PASSENGER
(POWER LOCKS)**

***PASSENGER DOOR AJAR CIRCUIT OPEN (CONTINUED)**

For the Door Ajar System circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - INTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

Possible Causes
OPEN (Z74) PASSENGER DOOR AJAR SWITCH GROUND CIRCUIT OPEN (G74) PASSENGER DOOR AJAR SWITCH SENSE CIRCUIT OPEN PASSENGER DOOR AJAR SWITCH INSTRUMENT CLUSTER

Diagnostic Test**1. OPEN PASSENGER DOOR AJAR SWITCH**

Disconnect the Passenger Door Latch connector.

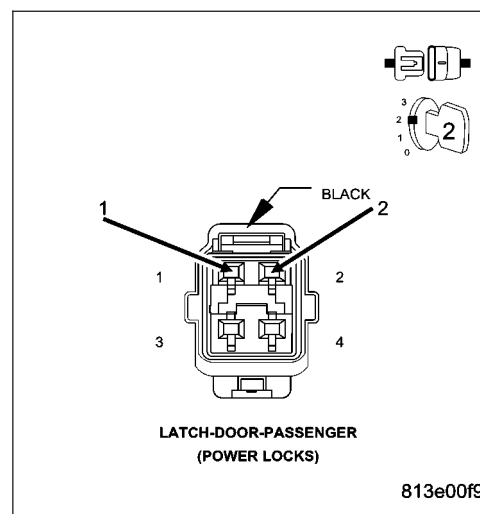
Connect a jumper wire between the (G74) Sense circuit and the (Z74) Ground circuit.

With the DRBIII® in Inputs/Outputs, read the PASS DOOR AJAR SW state.

Does the DRBIII® display CLOSED?

Yes >> Replace the Passenger Door Latch.
 Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)

No >> Go To 2

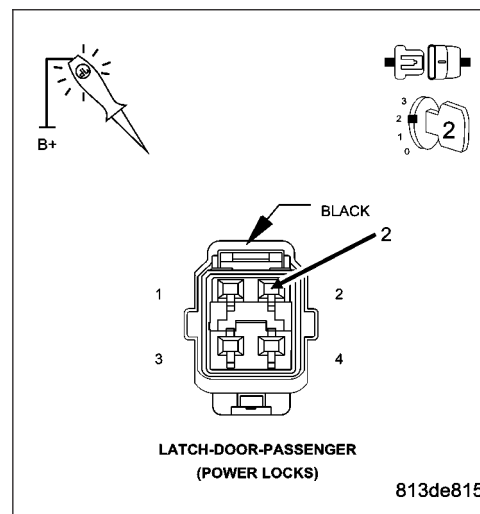
**2. OPEN (Z74) PASSENGER DOOR AJAR SWITCH GROUND CIRCUIT**

Using a 12-volt Test Light connected to 12-volts, test the (Z74) Ground circuit in the Door Latch connector.

Does the test light illuminate brightly?

Yes >> Go To 3

No >> Repair the (Z74) Passenger Door Ajar Switch Ground circuit for an open.
 Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)



PASSENGER DOOR AJAR CIRCUIT OPEN (CONTINUED)*3. OPEN (G74) PASSENGER DOOR AJAR SWITCH SENSE CIRCUIT**

Turn the ignition off.

Disconnect the Instrument Cluster C3 harness connector.

Measure the resistance of the (G74) Passenger Door Ajar Switch Sense circuit between the Instrument Cluster connector and the Door Latch connector.

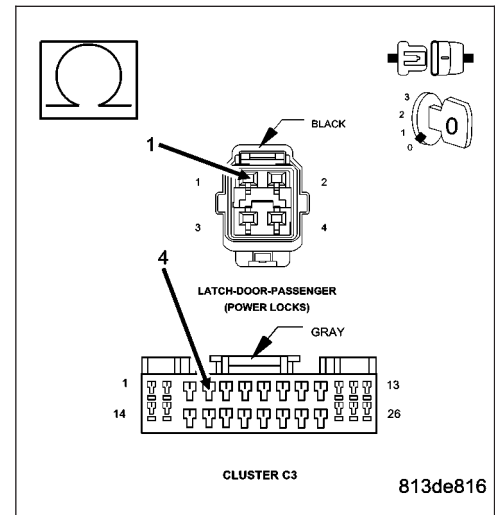
Is the resistance below 5.0 ohms?

Yes >> Replace the Instrument Cluster.

Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)

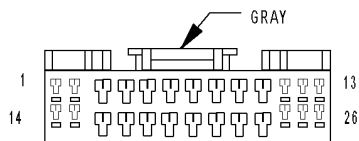
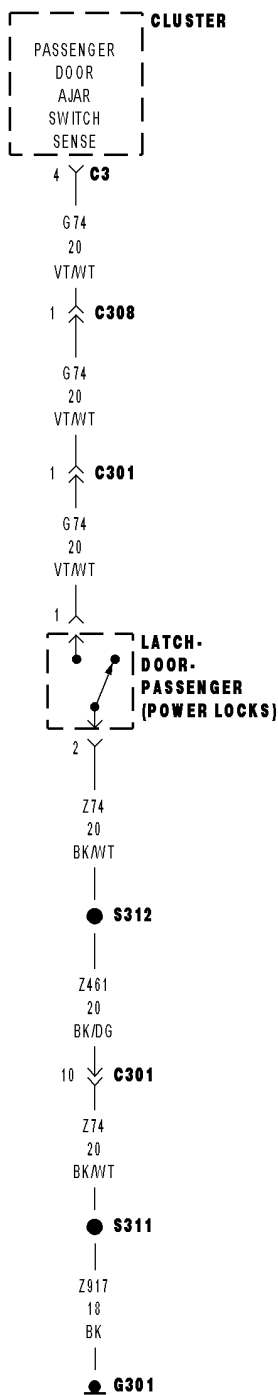
No >> Repair the (G74) Passenger Door Ajar Switch Sense circuit for an open.

Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)

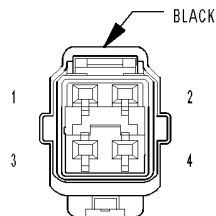


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***PASSENGER DOOR AJAR CIRCUIT SHORTED TO GROUND**



CLUSTER C3



**LATCH-DOOR-PASSENGER
(POWER LOCKS)**

***PASSENGER DOOR AJAR CIRCUIT SHORTED TO GROUND (CONTINUED)**

For the Door Ajar System circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - INTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram Refer to Section 8W.

Possible Causes
(G74) PASSENGER DOOR AJAR SWITCH SENSE CIRCUIT SHORT TO GROUND PASSENGER DOOR AJAR SWITCH INSTRUMENT CLUSTER

Diagnostic Test**1. PASSENGER DOOR AJAR SWITCH SHORT TO GROUND**

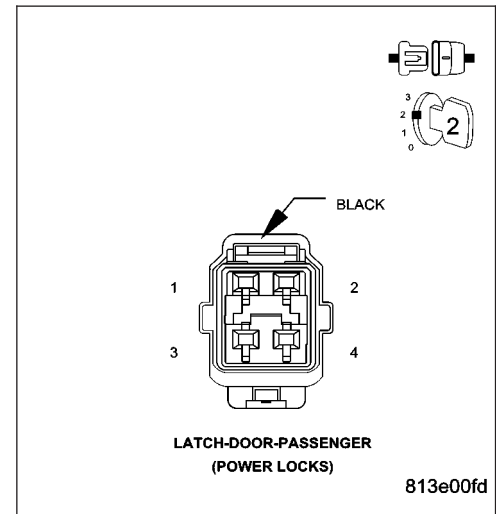
With the DRBIII® in Inputs/Outputs, read the PASS DOOR AJAR SW state.

While monitoring the DRBIII®, disconnect the Passenger Door Latch connector.

Did the Switch State change from CLOSED to OPEN?

Yes >> Replace the Passenger Door Latch.
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING).

No >> Go To 2

**2. (G74) PASSENGER DOOR AJAR SWITCH SENSE CIRCUIT SHORT TO GROUND**

Turn the ignition off.

Disconnect the Instrument Cluster C3 harness connector.

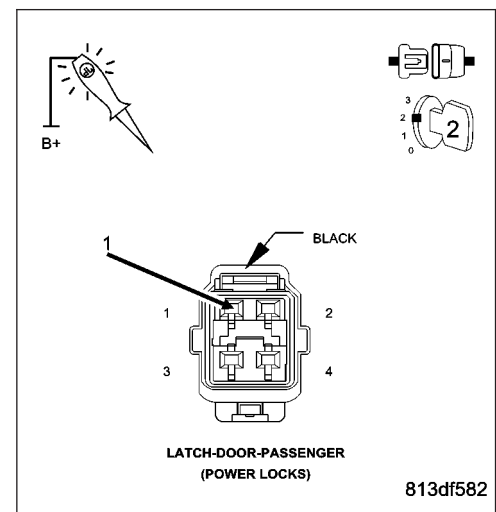
Using a 12-volt test light connected to 12-volts, probe the (G74) Passenger Door Ajar Switch Sense circuit and test for a short to ground.

Turn the ignition on.

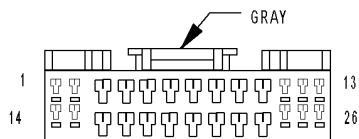
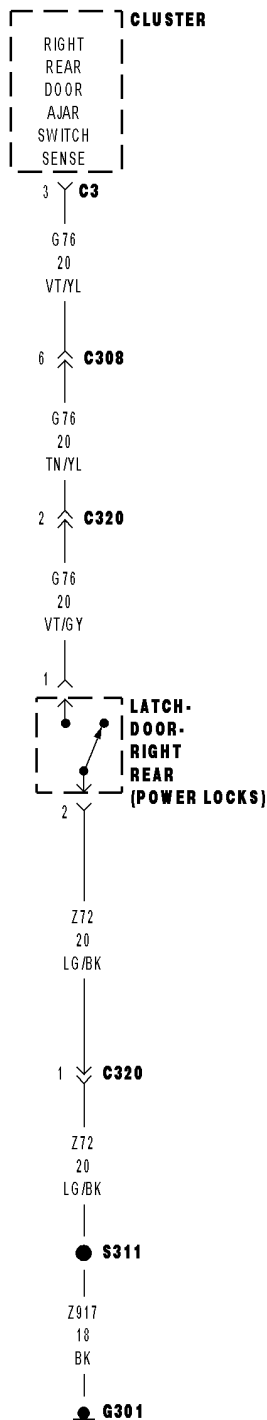
Does the test light illuminate brightly?

Yes >> Repair the (G74) Passenger Door Ajar Switch Sense circuit for a short to ground.
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)

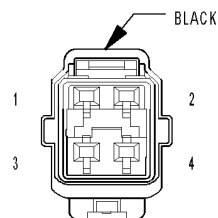
No >> Replace the Instrument Cluster.
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING).



***RIGHT REAR DOOR AJAR CIRCUIT OPEN**



CLUSTER C3



LATCH-DOOR-RIGHT REAR (POWER LOCKS)

***RIGHT REAR DOOR AJAR CIRCUIT OPEN (CONTINUED)**

For the Door Ajar System circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - INTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

Possible Causes
OPEN (Z72) RIGHT REAR DOOR AJAR SWITCH GROUND CIRCUIT
OPEN (G76) RIGHT REAR DOOR AJAR SWITCH SENSE CIRCUIT
OPEN RIGHT REAR DOOR AJAR SWITCH
INSTRUMENT CLUSTER

Diagnostic Test**1. OPEN RIGHT REAR DOOR AJAR SWITCH**

Disconnect the Right Rear Door Latch connector.

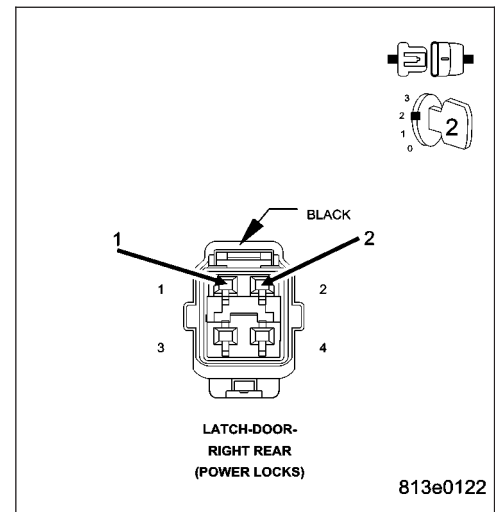
Connect a jumper wire between the (G76) Sense circuit and the (Z72) Ground circuit.

With the DRBIII® in Inputs/Outputs, read the R R DOOR AJAR SW state.

Does the DRBIII® display CLOSED?

Yes >> Replace the Right Rear Door Latch.
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)

No >> Go To 2

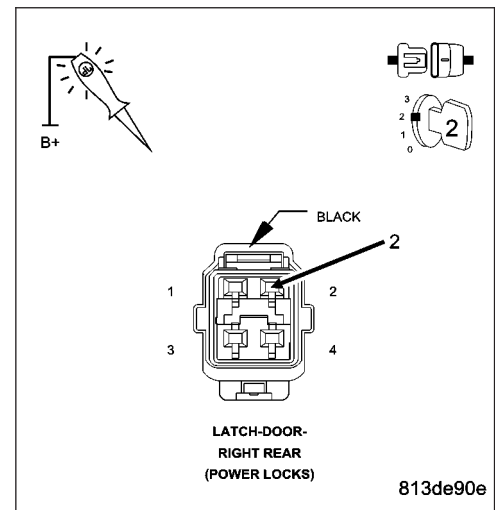
**2. OPEN (Z72) RIGHT REAR DOOR AJAR SWITCH GROUND CIRCUIT**

Using a 12-volt Test Light connected to 12-volts, test the (Z72) Ground circuit in the Door Latch connector.

Does the test light illuminate brightly?

Yes >> Go To 3

No >> Repair the (Z72) Right Rear Door Ajar Switch Ground circuit for an open.
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)



RIGHT REAR DOOR AJAR CIRCUIT OPEN (CONTINUED)*3. OPEN (G76) RIGHT REAR DOOR AJAR SWITCH SENSE CIRCUIT**

Disconnect the Instrument Cluster C3 harness connector.

Measure the resistance of the (G76) Right Rear Door Ajar Switch Sense circuit between the Instrument Cluster connector and the Door Latch connector.

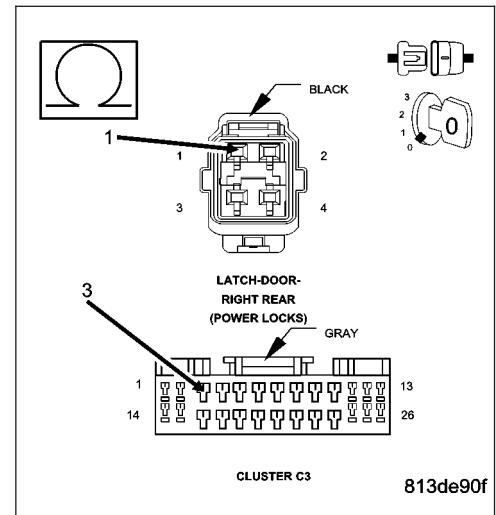
Is the resistance below 5.0 ohms?

Yes >> Replace the Instrument Cluster.

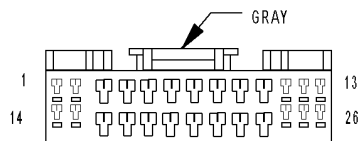
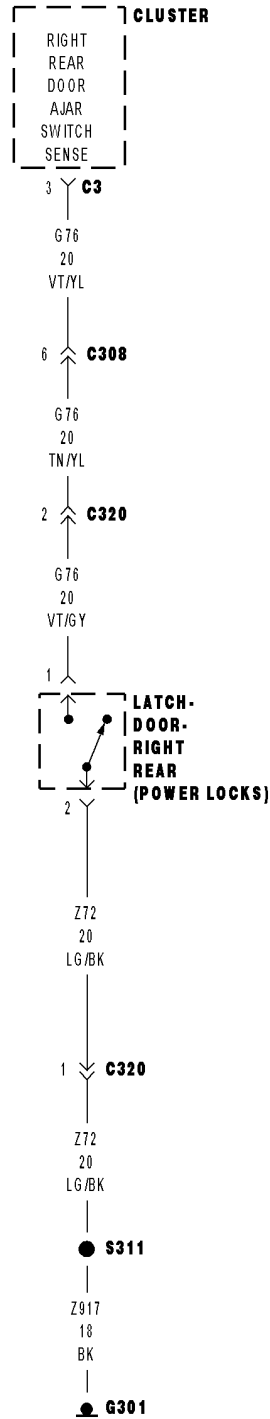
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)

No >> Repair the (G76) Right Rear Door Ajar Switch Sense circuit for an open.

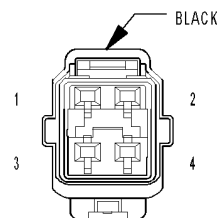
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)



***RIGHT REAR DOOR AJAR CIRCUIT SHORTED TO GROUND**



CLUSTER C3



**LATCH-DOOR-
RIGHT REAR
(POWER LOCKS)**

***RIGHT REAR DOOR AJAR CIRCUIT SHORTED TO GROUND (CONTINUED)**

For the Door Ajar System circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - INTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

Possible Causes
(G76) RIGHT REAR DOOR AJAR SWITCH SENSE CIRCUIT SHORT TO GROUND
RIGHT REAR DOOR AJAR SWITCH
INSTRUMENT CLUSTER

Diagnostic Test**1. RIGHT REAR DOOR AJAR SWITCH SHORT TO GROUND**

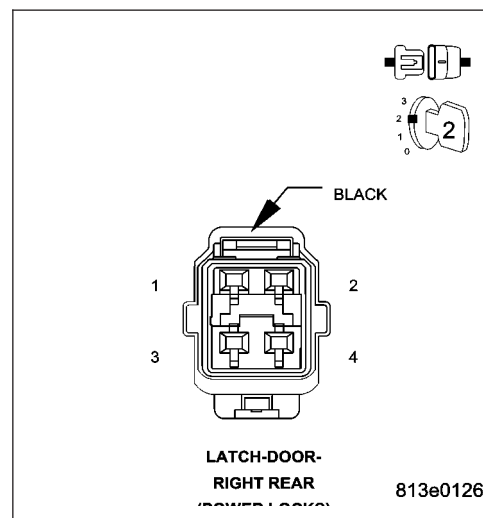
With the DRBIII® in Inputs/Outputs, read the R R DOOR AJAR SW state.

While monitoring the DRBIII®, disconnect the Right Rear Door Latch connector.

Did the Switch State change from CLOSED to OPEN?

Yes >> Replace the Right Rear Door Ajar Switch.
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING).

No >> Go To 2

**2. (G76) RIGHT REAR DOOR AJAR SWITCH SENSE CIRCUIT SHORT TO GROUND**

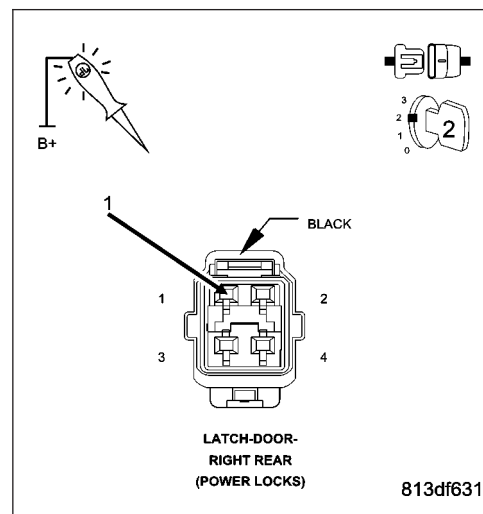
Disconnect the Instrument Cluster C3 harness connector.

Using a 12-volt test light connected to 12-volts, probe the (G76) Right Rear Door Ajar Switch Sense circuit and test for a short to ground.

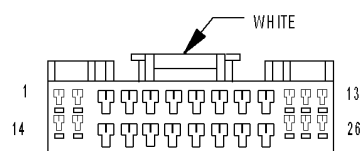
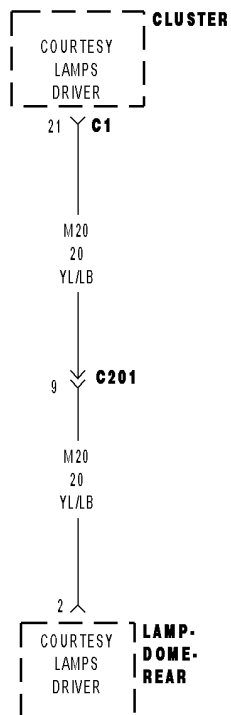
Does the test light illuminate brightly?

Yes >> Repair the (G76) Right Rear Door Ajar Switch Sense circuit for a short to ground.
Perform BODY VERIFICATION TEST - VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING)

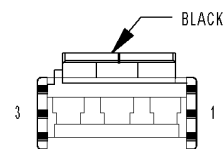
No >> Replace the Instrument Cluster.
Perform BODY VERIFICATION TEST - VER 1 (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/ FRONT CONTROL MODULE - DIAGNOSIS AND TESTING).



MIC-COURTESY LAMP OUTPUT CIRCUIT SHORTED OR OPEN



CLUSTER C1



LAMP-DOME-REAR

MIC-COURTESY LAMP OUTPUT CIRCUIT SHORTED OR OPEN (CONTINUED)

For the Interior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - INTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
Continuously
- **Set Condition:**
When the CCN detects a short condition

Possible Causes
HEADLAMP SWITCH COURTESY LAMP OUTPUT CIRCUIT SHORT TO GROUND INSTRUMENT CLUSTER

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all MIC DTC's.

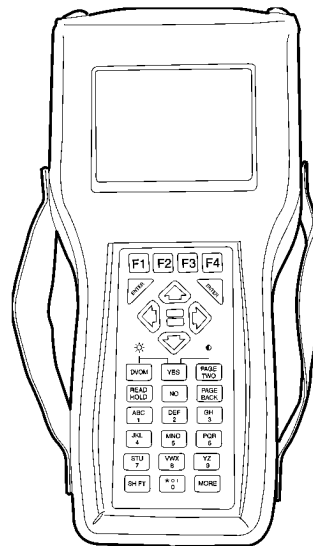
Turn the Dome Lamps on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Courtesy/Dome Lamp Output Circuit Short/Open?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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2. HEADLAMP SWITCH

Disconnect the Headlamp Switch connector.

Turn the ignition on.

Does the DRBIII® display Headlamp Switch 5.0 volts?

Yes >> Replace the Headlamp Switch.

Perform BODY VERIFICATION TEST - VER 1.

No >> Go to 3

MIC-COURTESY LAMP OUTPUT CIRCUIT SHORTED OR OPEN (CONTINUED)

3. COURTESY LAMP OUTPUT CIRCUIT SHORT TO GROUND

Turn the ignition off.

Disconnect the Headlamp Switch connector.

Disconnect the Instrument Cluster C1 connector.

Measure the resistance of the Courtesy Lamp Output circuit to ground.

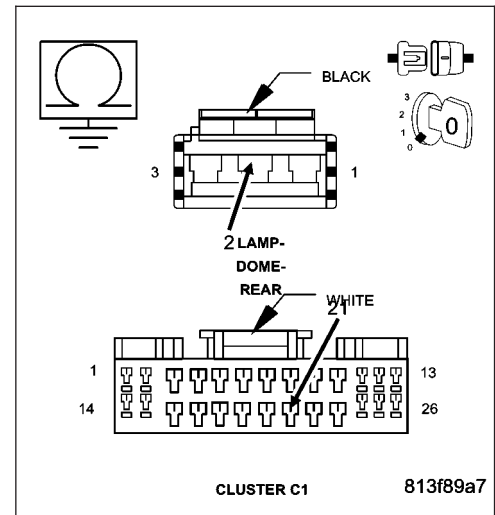
Is the resistance below 5.0 ohms?

Yes >> Repair the Courtesy Lamp Output circuit for a short to ground.

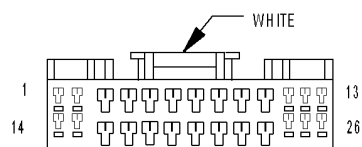
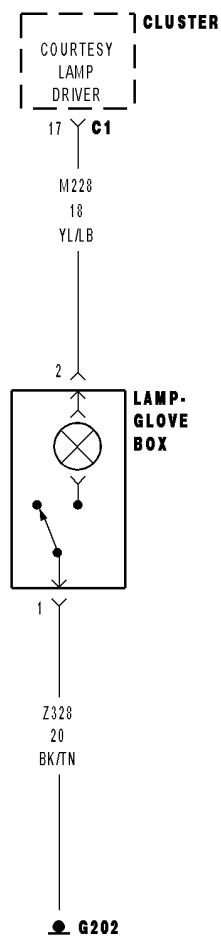
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Instrument Cluster in accordance with the service information.

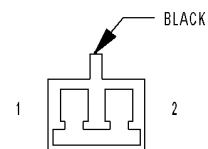
Perform BODY VERIFICATION TEST - VER 1.



MIC-GLOVEBOX-MAP LAMP OUTPUT CIRCUIT SHORTED OR OPEN



CLUSTER C1



LAMP-GLOVE BOX

MIC-GLOVEBOX-MAP LAMP OUTPUT CIRCUIT SHORTED OR OPEN (CONTINUED)

For the Interior Lighting system circuit diagram (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - INTERIOR - SCHEMATICS AND DIAGRAMS).

For a complete wiring diagram **Refer to Section 8W.**

- **When Monitored:**
Continuously
- **Set Condition:**
The CCN detects a short condition

Possible Causes
GLOVEBOX-MAP LAMP OUTPUT CIRCUIT SHORT TO GROUND INSTRUMENT CLUSTER

1. INTERMITTENT CONDITION

Turn the ignition on.

With the DRBIII®, clear all MIC DTC's.

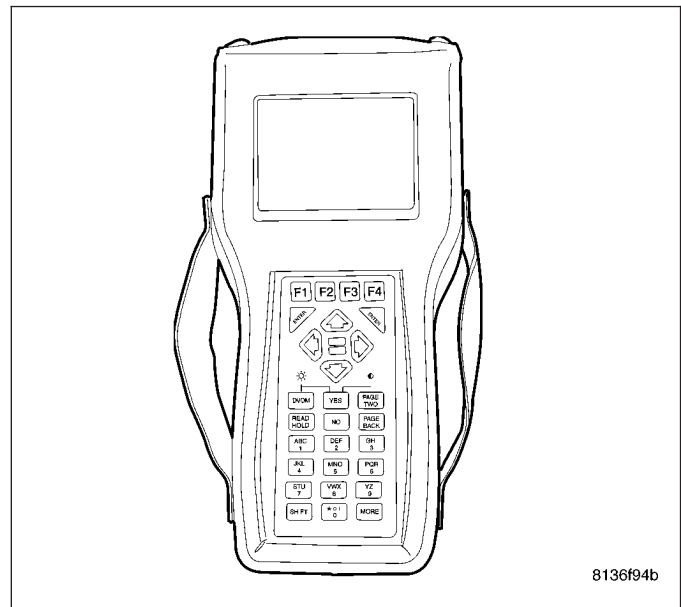
Turn the Glove Box Lamps on.

With the DRBIII®, read the DTC information.

Does the DRBIII® read: Glove box/Map Lamp Output Circuit Short/Open?

Yes >> Go To 2

No >> The condition that caused the symptom is currently not present. Inspect the related wiring for a possible intermittent condition. Look for any chafed, pierced, pinched, or partially broken wires.
Perform BODY VERIFICATION TEST - VER 1.



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MIC-GLOVEBOX-MAP LAMP OUTPUT CIRCUIT SHORTED OR OPEN (CONTINUED)**2. GLOVEBOX-MAP LAMP OUTPUT CIRCUIT SHORT TO GROUND**

Turn the ignition off.

Disconnect the Glovebox Lamp Switch Harness connector.

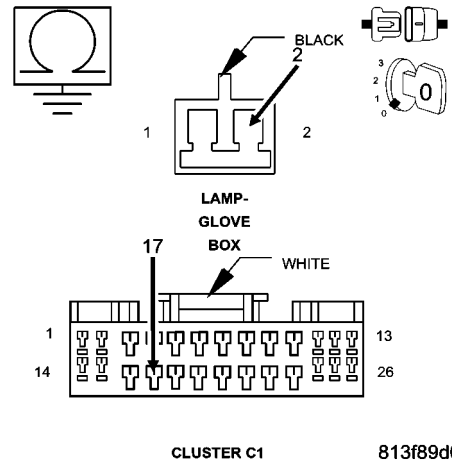
Disconnect the Instrument Cluster C1 connector.

Measure the resistance of the Glovebox Lamp Output circuit to ground.

Is the resistance below 5.0 ohms?

Yes >> Repair the Glovebox-Map Lamp Output circuit..
Perform BODY VERIFICATION TEST - VER 1.

No >> Replace the Instrument Cluster in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1.



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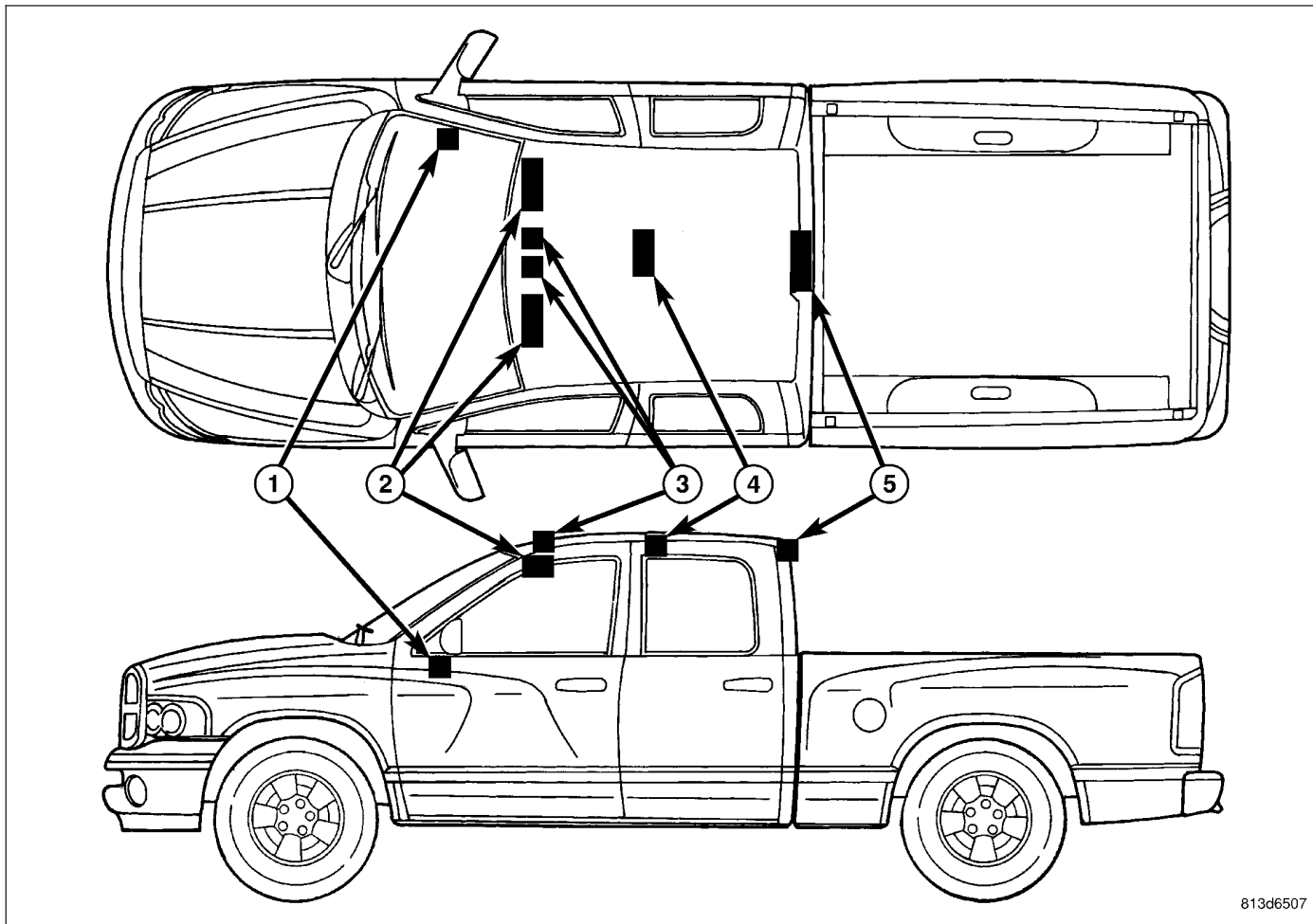


LAMPS/LIGHTING - INTERIOR - SERVICE INFORMATION**TABLE OF CONTENTS**

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LAMPS/LIGHTING - INTERIOR - SERVICE INFORMATION

DESCRIPTION



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The interior lighting system for this model includes incandescent lighting on two separate circuits: the dome/courtesy lamp circuit and the panel lamps dimmer circuit. The lamps on the dome/courtesy lamp circuit include:

- **Cargo Lamps (5)** - The standard equipment cargo lamps are integral to the Center High Mounted Stop Lamp (CHMSL) located on the roof rear header above the rear glass on the back of the cab. One cargo lamp bulb is behind a clear lens on each outboard side of the center red lens of the CHMSL. The cargo lamps are manually activated by selecting a detent position of the panel lamps dimmer thumbwheel of the headlamp switch on the instrument panel to illuminate the cargo area of the pick-up box.
- **Dome/Reading Lamps (Overhead Console) (3)** - In vehicles equipped with an optional overhead console there are two dome/reading lamps that are integral to the overhead console, which is centered in the headliner near the windshield header. The overhead console lamps have switches that are individually actuated by depressing their respective lamp lenses.
- **Front Dome Lamp (5 - Standard Cab or 3 - Quad Cab)** - On standard cab models the dome lamp is centered in the headliner near the back of the cab. On quad cab models the front dome lamp is centered in the headliner near the windshield header. The standard (base) dome lamp has a single bulb and is switched by the door ajar switches or the interior lighting thumbwheel of the headlamp switch. The optional dome/reading lamps are mounted in the same location but include an integral switch that is actuated by depressing the lamp lens.
- **Glove Box Lamp (1)** - A standard glove box lamp with an integral switch is located at the upper right corner of the instrument panel glove box opening and illuminates whenever the glove box is opened.
- **Rear Dome/Reading Lamp (Quad Cab Only) (4 - Without Sunroof or 5 - With Sunroof)** - The rear dome/reading lamp on quad cab models includes a single bulb and a switch that is actuated by depressing the lamp lens. In vehicles without an optional sunroof the rear dome/reading lamp is located in the center of the head-

liner between the front and rear seating. On vehicles with a sunroof the dome/reading lamp is centered in the headliner near the back of the cab.

- **Vanity Lamps (2)** - Optional single intensity vanity lamps are located on each side of a covered mirror on both the right and left sun visors, and are controlled by an integral vanity mirror cover-actuated switch.

Most controls on the instrument panel and other controls located elsewhere on the interior of the vehicle are illuminated for night visibility. Some have miniature incandescent bulbs or Light-Emitting Diode (LED) units that are soldered to internal circuit boards and are not serviceable. The replaceable incandescent bulbs or bulb/bulb holder units in this vehicle include:

- **Compass Mini-Trip Control Illumination Lamps** - The optional Compass Mini-Trip Computer (CMTc) has three replaceable bulb/bulb holder units to illuminate its controls.
- **Heater-Air Conditioner Control Illumination Lamps** - The heater-air conditioner control panel has two replaceable bulb/bulb holder units to illuminate its controls.

Other components of the interior lighting system for this model include:

- **Door Ajar Switches** - A door ajar switch is integral to the door latch mechanism of each front and rear door.
- **Headlamp Switch** - A headlamp switch is located on the left side of the instrument panel, below and outboard of the steering column. The headlamp switch includes a vertical thumbwheel for selecting the panel lamps dimming level and for interior lighting control. A Parade position of the thumbwheel illuminates all Vacuum Fluorescent Display (VFD) units at full brightness for visibility when driving in daylight with the exterior lighting turned On. There are also detent positions to turn on all interior courtesy lighting, to turn on the rear cargo lamps, and a Defeat position that overrides door ajar switch control of interior lighting. (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - EXTERIOR/HEADLAMP SWITCH - DESCRIPTION).
- **Instrument Cluster** - The ElectroMechanical Instrument Cluster (EMIC) is also known as the Cab Control Node (CCN) in this vehicle. The EMIC/CCN is located in the instrument panel above the steering column opening, directly in front of the driver. (Refer to 8 - ELECTRICAL/INSTRUMENT CLUSTER - DESCRIPTION).

Hard wired circuitry connects the interior lighting system components to the electrical system of the vehicle. These hard wired circuits are integral to several wire harnesses, which are routed throughout the vehicle and retained by many different methods. These circuits may be connected to each other, to the vehicle electrical system and to the interior lighting components through the use of a combination of soldered splices, splice block connectors, and many different types of wire harness terminal connectors and insulators. Refer to the appropriate wiring information. The wiring information includes wiring diagrams, proper wire and connector repair procedures, further details on wire harness routing and retention, as well as pin-out and location views for the various wire harness connectors, splices and grounds.

OPERATION

The interior lighting systems can be divided into two general classifications based upon the circuit that controls their operation: The courtesy lamp circuit, or the panel lamps dimmer circuit. The hard wired circuits and components of the interior lighting systems may be diagnosed and tested using conventional diagnostic tools and methods. Refer to the appropriate wiring information. However, conventional diagnostic methods may not prove conclusive in the diagnosis of the ElectroMechanical Instrument Cluster (EMIC), or the Programmable Communications Interface (PCI) data bus. The most reliable, efficient, and accurate means to diagnose the EMIC, the PCI data bus, or the electronic bus message inputs and outputs related to the various interior lighting systems requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

COURTESY LAMP CIRCUIT

Depending upon the selected vehicle options the courtesy lamp circuit may include the dome and dome/reading lamps located in the headliner near the windshield and between the front and rear seating, the cargo lamps located near the center of the rear roof header, the glove box lamp in the top of the glove box opening in the instrument panel, and the vanity lamps located in the sun visors. The lamps in the courtesy lamp circuit are provided with a path to ground at all times. The EMIC controls the output of battery voltage for the courtesy lamps in this circuit based upon hard wired inputs from the door ajar switches, the headlamp switch and the ignition switch.

After all of the ajar switch inputs to the EMIC transition to open, the EMIC will keep the courtesy lamps illuminated for about 30 seconds, then fade the lamps to off (theater dimming) over about three seconds. The EMIC also provides courtesy lamp operation based upon a resistor multiplexed input from the vertical thumbwheel on the headlamp switch, and provides an illuminated entry feature in response to certain electronic message inputs received from the Remote Keyless Entry (RKE) module and the Airbag Control Module (ACM) over the PCI data bus. A

resistor multiplexed courtesy lamp defeat input from the vertical thumbwheel of the headlamp switch will cause the EMIC to override normal courtesy lamp operation based upon inputs from all of the ajar switches.

For those lamps on the courtesy lamp circuit with independent switching such as the optional switched dome lamp, the optional dome/reading lamps, the optional vanity lamps, and for the glove box lamp the EMIC provides a battery voltage output to the switches through a separate circuit. The EMIC provides a battery saver (load shedding) feature for all courtesy lamps, which will automatically turn these lamps off if they are left on for more than about eight minutes with the ignition switch in the Off position.

PANEL LAMPS DIMMER CIRCUIT

The panel lamps dimmer circuit actually includes several circuits. These circuits control the illumination and dimming level of the headlamp switch, the heater-air conditioner controls and the four-wheel drive selector switch. All lamps in the panel lamps dimmer circuits are provided a path to ground at all times through a hard wired ground circuit. These lamps illuminate based upon inputs to the EMIC from the rotary control knob and vertical thumbwheel of the headlamp switch. The control knob on the headlamp switch selects the exterior lights, while the thumbwheel selects the panel lamps intensity (dimming) level.

When the exterior lighting is turned On, the EMIC provides electronic dimming level messages to the radio and the Compass Mini-Trip Computer (CMTc) over the PCI data bus. The EMIC also supplies a 12-volt Pulse Width Modulated (PWM) output to all of the incandescent lamps in the panel lamps dimmer circuits through several panel lamps dimmer circuits. This shared PWM output synchronizes the selected illumination intensity level of all of the lamps in the panel lamps dimmer circuit.

The radio and the CMTc each use the dimming level messages to control the illumination intensity of both their Vacuum Fluorescent Display (VFD) units and their control lighting. In addition, when the thumbwheel of the headlamp switch is moved to the Parade/Funeral Mode detent position, all of the VFD units are illuminated at their full intensity levels for increased visibility when the vehicle is driven during daylight hours with the exterior lights turned On.

WARNING

WARNINGS - LAMPS/LIGHTING - INTERIOR

WARNING:: To avoid personal injury or death, eye protection should be used when servicing any glass components.

CAUTION: Do not use bulbs with higher candle power than indicated in the Bulb Application table (Refer to 8 - ELECTRICAL/LAMPS/LIGHTING - INTERIOR - SPECIFICATIONS). In addition, do not use fuses, circuit breakers or relays having greater amperage value than indicated on the fuse panel or in the Owner's Manual. Damage to lamps, lenses, wiring and other related electrical components can result.

DIAGNOSIS AND TESTING

LAMPS/LIGHTING - INTERIOR

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

NOTE: When diagnosing the interior lighting circuits, remember that high generator output can burn out bulbs rapidly and repeatedly; and, that dim or flickering bulbs can be caused by low generator output or poor battery condition. If one of these symptoms is a problem on the vehicle, be certain to diagnose the battery and charging system, then repair as necessary.

NOTE: A good ground is necessary for proper lighting operation. If a lighting problem is being diagnosed that involves multiple symptoms, systems, or components, the problem can often be traced to a loose, corroded, or open ground.

The hard wired interior lamp and lighting circuits may be diagnosed and tested using conventional diagnostic tools and methods. Refer to the appropriate wiring information. The wiring information includes wiring diagrams, proper wire and connector repair procedures, details of wire harness routing and retention, connector pin-out information and location views for the various wire harness connectors, splices and grounds.

However, conventional diagnostic methods may not prove conclusive in the diagnosis of the ElectroMechanical Instrument Cluster (EMIC), the Programmable Communications Interface (PCI) data bus, or the electronic message inputs used to provide interior lamp and lighting service or many of the electronic features of the interior lamp and lighting systems. The most reliable, efficient, and accurate means to diagnose the EMIC, the PCI data bus, and the electronic message inputs for the interior lamps and lighting system requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

COURTESY LAMP CIRCUIT

CONDITION	POSSIBLE CAUSES	CORRECTION
A SINGLE LAMP IN THE COURTESY LAMP CIRCUIT DOES NOT ILLUMINATE	1. Faulty or missing bulb. 2. Faulty lamp switch. 3. Faulty ground circuit. 4. Faulty feed circuit.	1. Test and replace the courtesy lamp bulb as required. 2. Test and replace a faulty dome lamp switch, dome/reading lamp switch, glove box lamp switch, or sunvisor (vanity lamp switch) as required. 3. Test and repair the open ground circuit as required. 4. Test and repair the open feed circuit as required.
ALL LAMPS IN THE COURTESY LAMP CIRCUIT DO NOT ILLUMINATE	1. Faulty or missing fuse. 2. Faulty ground circuit. 3. Courtesy defeat feature turned On. 4. Faulty courtesy lamp control circuit. 5. Faulty headlamp switch. 6. Faulty ElectroMechanical Instrument Cluster (EMIC), EMIC input, or EMIC output.	1. Test and replace the fuse as required. 2. Test and repair the open ground circuit as required. 3. Turn courtesy defeat feature Off. 4. Test and repair the courtesy lamp control circuit as required. 5. Test and replace the headlamp switch as required. 6. Use a diagnostic scan tool to test the EMIC, its inputs, and its outputs. Refer to the appropriate diagnostic information.
A SINGLE LAMP IN THE COURTESY LAMP CIRCUIT DOES NOT EXTINGUISH	1. Faulty lamp switch.	1. Test and replace a faulty dome lamp switch, dome/reading lamp switch, glove box lamp switch, or sunvisor (vanity lamp switch) as required.
ALL LAMPS IN THE COURTESY LAMP CIRCUIT DO NOT EXTINGUISH	1. Faulty ajar switch. 2. Faulty ajar switch sense circuit. 3. Faulty ElectroMechanical Instrument Cluster (EMIC), EMIC input, or EMIC output.	1. Test and replace a faulty door ajar switch as required. 2. Test and repair the shorted ajar switch sense circuit as required. 3. Use a diagnostic scan tool to test the EMIC, its inputs, and its outputs. Refer to the appropriate diagnostic information.

PANEL LAMPS DIMMER CIRCUIT

NOTE: As part of the exterior lighting failsafe feature, upon ignition On all of the panel lamps dimmer circuit lamps will illuminate at full intensity and the exterior park lamps and headlamp low beams will illuminate regardless of the headlamp switch position if the instrument cluster cannot detect an input from the headlamp switch, or if there is a loss of data bus communication.

CONDITION	POSSIBLE CAUSES	CORRECTION
A SINGLE LAMP DOES NOT ILLUMINATE	1. Faulty or missing bulb. 2. Faulty ground circuit. 3. Faulty feed circuit.	1. Test and replace lamp bulb as required. 2. Test and repair lamp ground circuit as required. 3. Test and repair open feed circuit as required.
A SINGLE LAMP DOES NOT EXTINGUISH	1. Faulty feed circuit.	1. Test and repair shorted feed circuit as required.
ALL LAMPS DO NOT ILLUMINATE	1. Faulty headlamp switch. 2. Faulty ElectroMechanical Instrument Cluster (EMIC), EMIC input, or EMIC output.	1. Test and replace the headlamp switch as required. 2. Use a diagnostic scan tool to test the EMIC, its inputs, and its outputs. Refer to the appropriate diagnostic information.
ALL LAMPS ILLUMINATE AT FULL INTENSITY AT IGNITION ON	1. Loss of data bus communication.	1. Use a diagnostic scan tool to test the data bus. Refer to the appropriate diagnostic information.

SPECIFICATIONS

LAMPS/LIGHTING - INTERIOR

COURTESY LAMPS

BULB APPLICATION TABLE	
LAMP	BULB
CARGO LAMP	912
DOVE LAMP (NON-SWITCHED OR SWITCHED)	578
FRONT DOVE/READING WITH OVERHEAD CONSOLE AND WITHOUT SUNROOF	212-2
FRONT DOVE/READING WITH OVERHEAD CONSOLE AND WITH SUNROOF	192
GLOVE BOX LAMP	194
VANITY LAMP	37

PANEL LAMPS

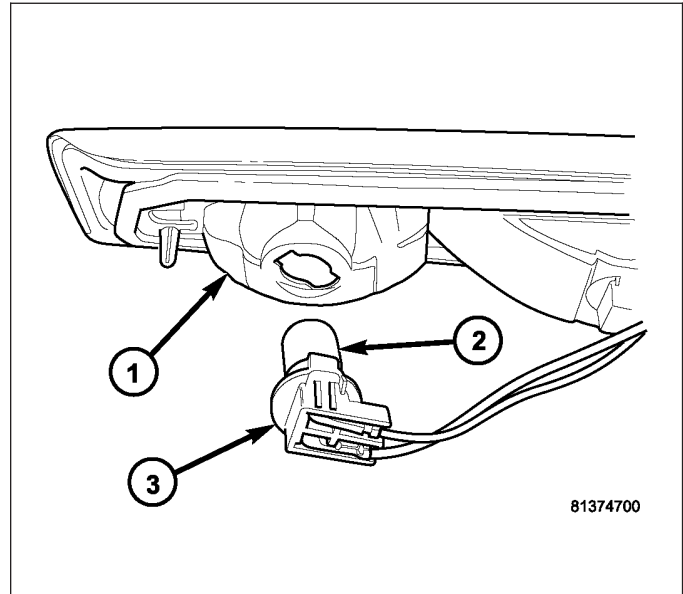
BULB APPLICATION TABLE	
LAMP	BULB
COMPASS MINI-TRIP CONTROL	MOPAR 04437661
A/C-HEAT CONTROL	MOPAR 05135537AA

CARGO LAMP

REMOVAL

NOTE: The Center High Mounted Stop Lamp (CHMSL) houses three bulbs. The center bulb is the CHMSL bulb and illuminates through a red lens, while the two outboard bulbs are for the cargo lamps and illuminate through clear lenses. The bulb types and service procedures are identical for all three of these bulbs.

1. Disconnect and isolate the battery negative cable.
2. Remove the two screws that secure the CHMSL to the rear cab roof header panel.
3. Pull the CHMSL lens and housing (1) away from the header panel far enough to access the lamp wiring and bulb sockets on the back of the lamp.
4. Firmly grasp the socket (3) on the back of the lamp housing and rotate it counterclockwise about 30 degrees to unlock it.
5. Pull the socket and bulb straight out from the keyed opening in the housing.
6. Pull the base of the bulb (2) straight out of the socket.

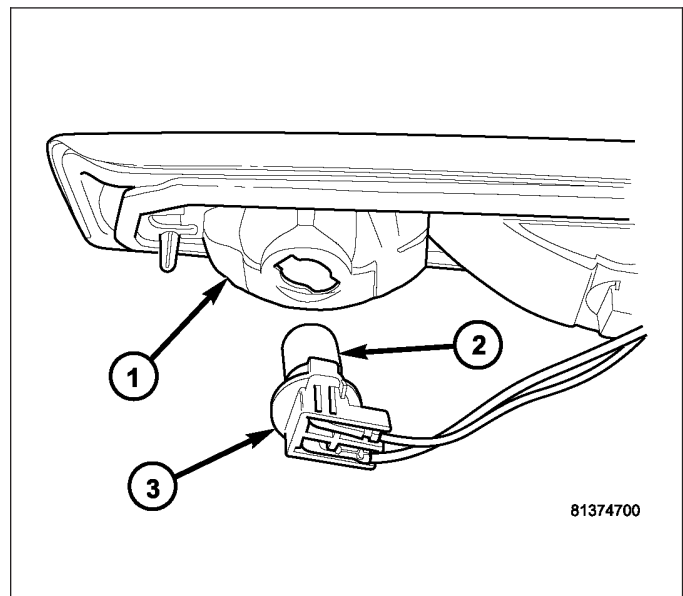


INSTALLATION

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

NOTE: The Center High Mounted Stop Lamp (CHMSL) houses three bulbs. The center bulb is the CHMSL bulb and illuminates through a red lens, while the two outboard bulbs are for the cargo lamps and illuminate through clear lenses. The bulb types and service procedures are identical for all three of these bulbs.

1. Align the base of the bulb (2) with the socket (3).
2. Push the bulb straight into the socket until the base is firmly seated.
3. Align the socket and bulb with the keyed opening on the back of CHMSL housing (1).
4. Insert the socket and bulb into the housing until the socket is firmly seated.
5. Rotate the socket clockwise about 30 degrees to lock it into place.
6. Position the CHMSL into the opening in the rear cab roof header panel.
7. Install and tighten the two screws (passenger side first) that secure the CHMSL to the header panel. Tighten the screws to 2 N·m (20 in. lbs.).
8. Reconnect the battery negative cable.



ILLUMINATION LAMP

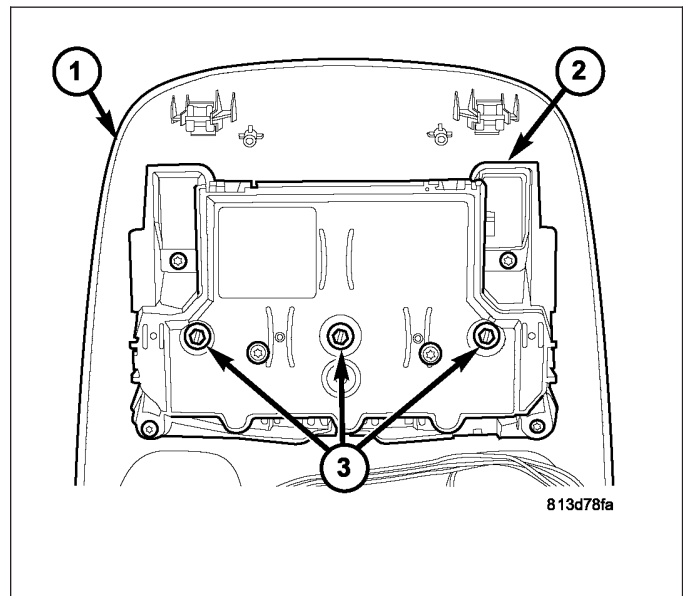
REMOVAL

BULB - CMTC CONTROL

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

NOTE: There are provisions for three bulb/bulb holder units on the Compass Mini-Trip Computer (CMTC) circuit board. The two outboard bulbs illuminate the CMTC push buttons, while the center bulb illuminates the optional universal transmitter push buttons. Therefore, the center bulb location is only populated on vehicles equipped with the optional universal transmitter.

1. Disconnect and isolate the battery negative cable.
2. Remove the overhead console (1) from the headliner. (Refer to 8 - ELECTRICAL/OVERHEAD CONSOLE - REMOVAL).
3. Use a small thin-bladed screwdriver to rotate the bulb holder (3) counterclockwise about 30 degrees to unlock it from the keyed opening in the Compass Mini-Trip Computer (CMTC) unit (2) circuit board.
4. Pull the bulb holder and bulb straight out of the circuit board.

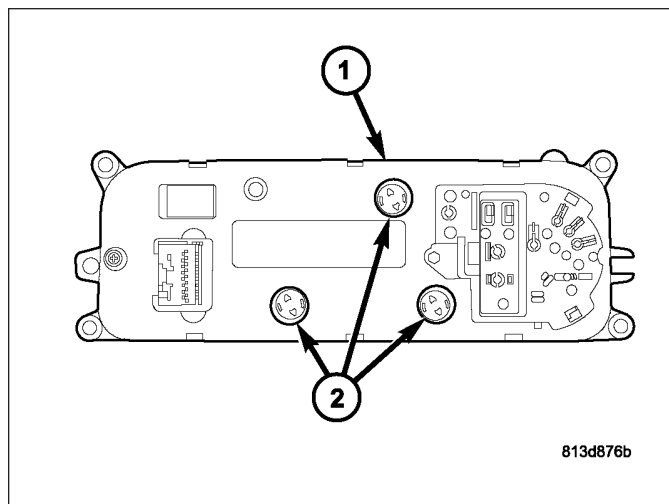


BULB - A/C-HEAT CONTROL

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

NOTE: There may be minor variations in the locations of the bulb/bulb holder units on the back of the A/C-heater control as a result of various optional A/C-heater control units. However, the bulb types and service procedures are identical for all of these bulbs.

1. Disconnect and isolate the battery negative cable.
2. Remove the center bezel from the instrument panel. (Refer to 23 - BODY/INSTRUMENT PANEL/ INSTRUMENT PANEL CENTER BEZEL - REMOVAL).
3. Use a small thin-bladed screwdriver to rotate the bulb holder (2) counterclockwise about 30 degrees to unlock it from the keyed opening in the A/C-heater control (1) circuit board.
4. Pull the bulb holder and bulb straight out of the circuit board.



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INSTALLATION

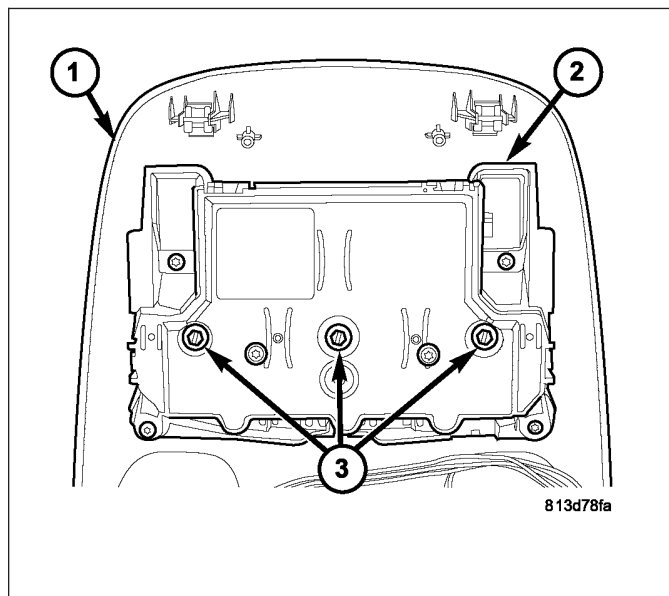
BULB - CMTC CONTROL

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

NOTE: There are provisions for three bulb/bulb holder units on the Compass Mini-Trip Computer (CMTC) circuit board. The two outboard bulbs illuminate the CMTC push buttons, while the center bulb illuminates the optional universal transmitter push buttons. Therefore, the center bulb location is only populated on vehicles equipped with the optional universal transmitter.

1. Align the bulb holder and bulb (3) with the keyed opening in the circuit board of the Compass Mini-Trip Computer (CMTC) (2).
2. Insert the bulb holder and bulb straight into the circuit board until the bulb holder is firmly seated.
3. Using a small thin-bladed screwdriver, rotate the bulb holder clockwise about 30 degrees on the circuit board to lock it into place.
4. Reinstall the overhead console (1) onto the headliner. (Refer to 8 - ELECTRICAL/OVERHEAD CONSOLE - INSTALLATION).
5. Reconnect the battery negative cable.



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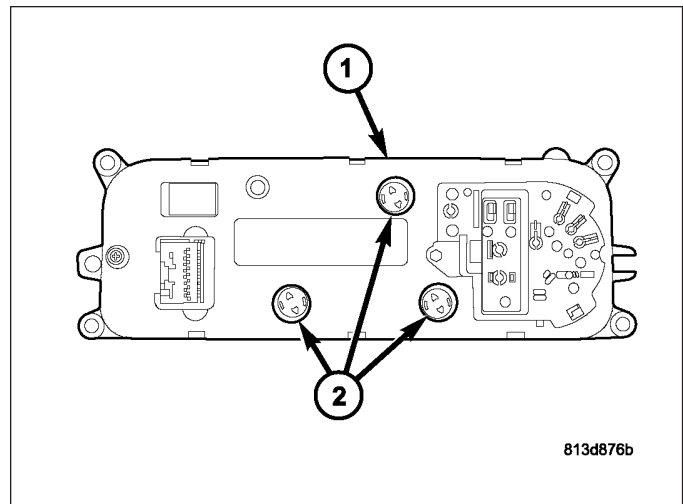
BULB - A/C-HEAT CONTROL

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

NOTE: There may be minor variations in the locations of the bulb/bulb holder units on the back of the A/C-heater control as a result of various optional A/C-heater control units. However, the bulb types and service procedures are identical for all of these bulbs.

1. Align the bulb holder and bulb (2) with the keyed opening in the circuit board of the A/C-heater control (1).
2. Insert the bulb holder and bulb straight into the circuit board until the bulb holder is firmly seated.
3. Using a small thin-bladed screwdriver, rotate the bulb holder clockwise about 30 degrees on the circuit board to lock it into place.
4. Reinstall the center bezel onto the instrument panel. (Refer to 23 - BODY/INSTRUMENT PANEL/INSTRUMENT PANEL CENTER BEZEL - INSTALLATION).
5. Reconnect the battery negative cable.



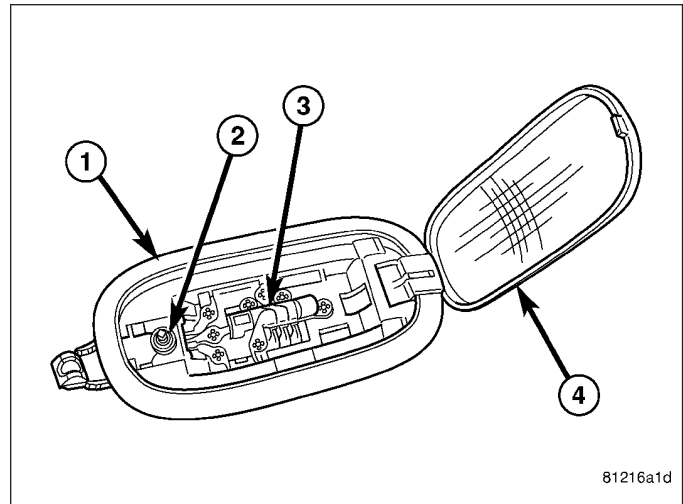
LAMP-DOME

REMOVAL

BULB

NOTE: There are two types of dome lamps available in this model: one with a switch (2) that is activated by depressing the lamp lens, and one without a switch. The bulb types and service procedures are identical for both of these lamps.

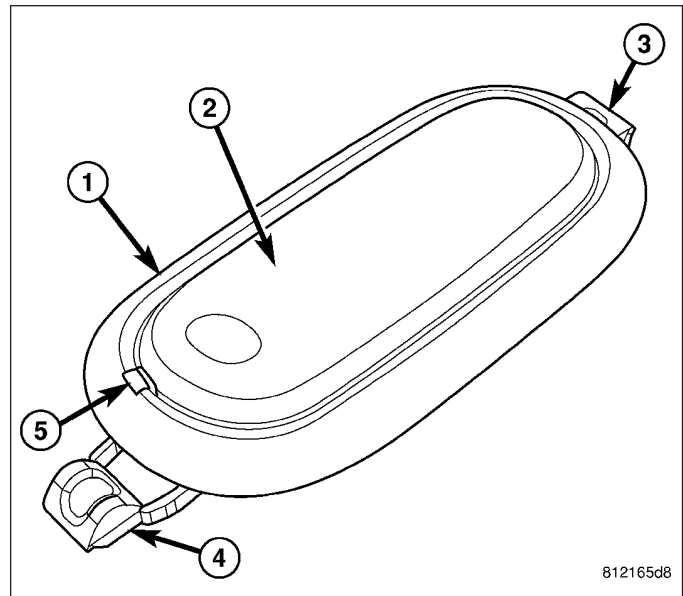
1. Disconnect and isolate the battery negative cable.
2. Insert the tip of a small flat-bladed screwdriver into the notch on one side of the dome lamp between the lens (4) and the lamp housing (1).
3. Gently pry the notched edge of the lens downward until it unsnaps from the housing.
4. Swing the notched end of the lens downward far enough to access the bulb (3).
5. Carefully unsnap the bulb from the two bulb holders within the dome lamp housing.



LAMP

NOTE: There are two types of dome lamps available in this model: one with a switch that is activated by depressing the lamp lens, and one without a switch. The bulb types and service procedures are identical for both of these lamps.

1. Disconnect and isolate the battery negative cable.
2. Insert the tip of a small flat bladed screwdriver into the notch (5) between the lens (2) and the housing (1) on one side of the dome lamp unit.
3. Gently pry the end of the lens outward until it unsnaps from the housing.
4. Swing the lens outward until it is perpendicular to the housing.
5. Pull the lens hinge/retainer end (3) of the housing outward slightly from the headliner, then slide the exposed end of the housing away from the mounting hole far enough to disengage the fixed retainer (4) on the notched end from the headliner.
6. Pull the lamp away from the headliner mounting hole far enough to access and disconnect the wire harness connector from the back of the lamp.
7. Remove the lamp from the vehicle.



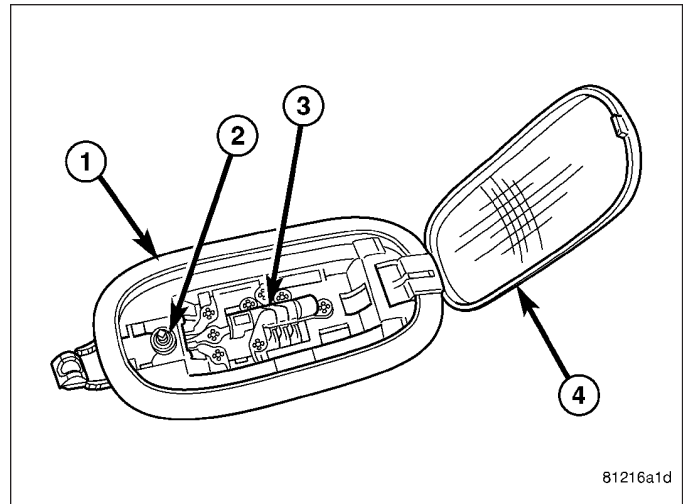
INSTALLATION

BULB

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

NOTE: There are two types of dome lamps available in this model: one with a switch (2) that is activated by depressing the lamp lens, and one without a switch. The bulb types and service procedures are identical for both of these lamps.

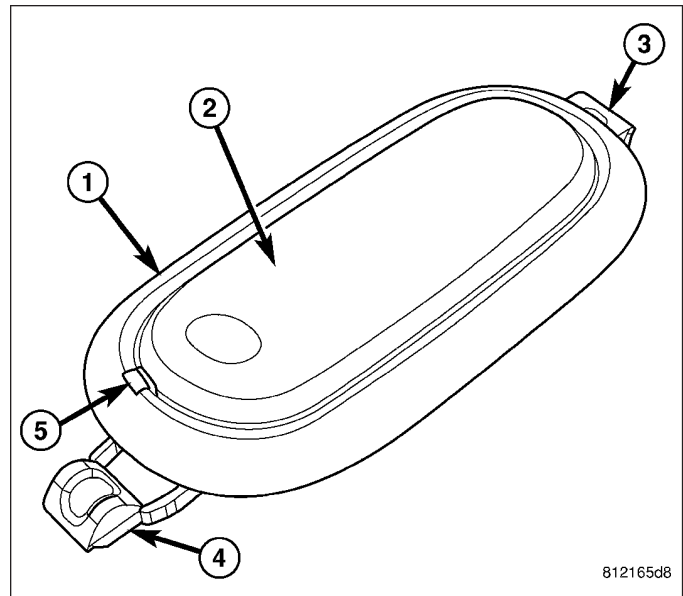
1. Align the ends of the bulb (3) with the two bulb holders within the dome lamp housing (1).
2. Carefully press the bulb firmly and evenly into the bulb holders until it snaps into place.
3. Swing the notched end of the lens (4) up into position against the housing, then press upward on the lens firmly and evenly until it snaps into the housing.
4. Reconnect the battery negative cable.



LAMP

NOTE: There are two types of dome lamps available in this model: one with a switch that is activated by depressing the lamp lens, and one without a switch. The bulb types and service procedures are identical for both of these lamps.

1. Position the dome lamp unit (1) to the mounting hole in the headliner.
2. Reconnect the wire harness connector to the connector on the back of the lamp.
3. Insert the fixed retainer on the notched end (4) of the lamp housing up into one side of the mounting hole in the headliner.
4. Slide the notched end of the housing into the mounting hole far enough to engage the lens hinge/retainer (3) into the opposite side of the hole in the headliner.
5. Gently and evenly press the lens hinge/retainer end of the lamp into the mounting hole until the bezel of the lamp housing is flush with the headliner.
6. Swing the notched end of the lamp lens (2) into position against the lamp housing, then press on the lens firmly and evenly until it snaps into the housing.
7. Reconnect the battery negative cable.



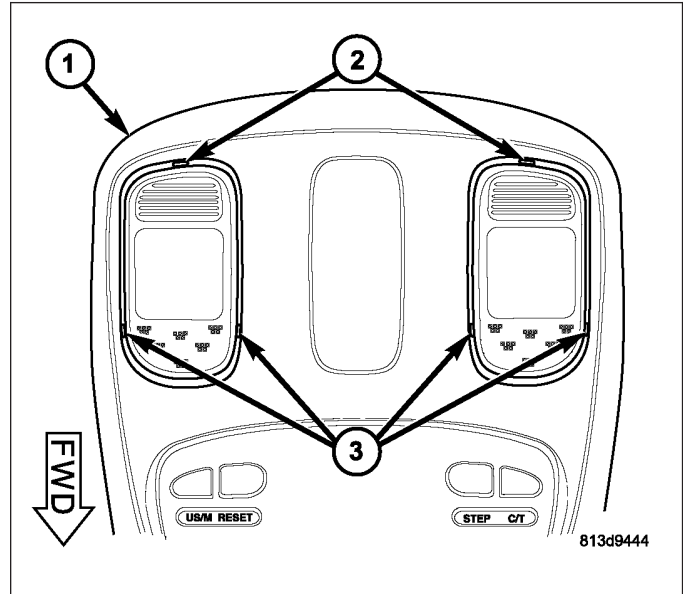
LAMP-READING

REMOVAL

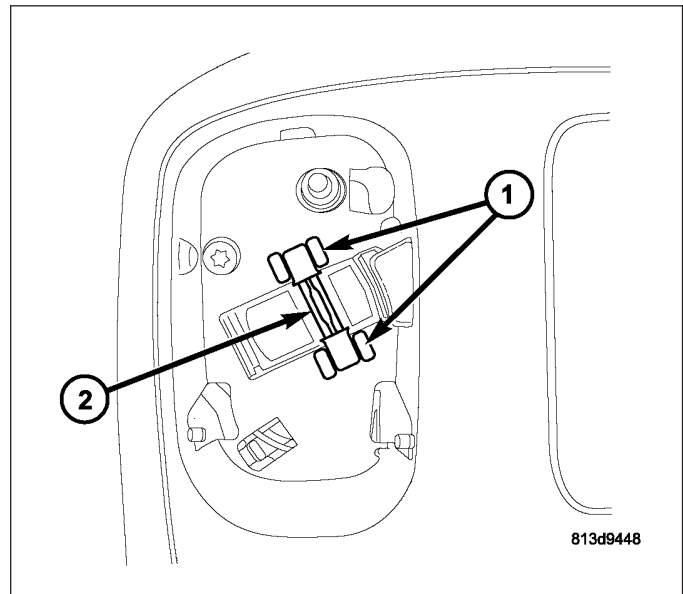
BULB - WITHOUT SUNROOF

NOTE: On vehicles equipped with an optional overhead console the standard front dome lamp is replaced by two combination dome and reading lamps that are integral to the console housing. Each of these lamps is controlled by the door ajar switches on the courtesy lamp circuit, but also are independently controlled by a switch that is activated by depressing the lamp lens. The bulb types and service procedures are identical for both of these lamps.

1. Disconnect and isolate the battery negative cable.
2. Using a small thin-bladed screwdriver, gently pry between each side of the lamp lens and the overhead console housing (1) to unsnap the pivot tabs (3) on the lens from the pivots in the lamp housing.
3. With the lens disengaged from both pivots, pull the front of the lens forward far enough to disengage the tab (2) on the rear edge of the lens from the slot in the rear of the overhead console lamp housing.
4. Remove the lens from the housing.



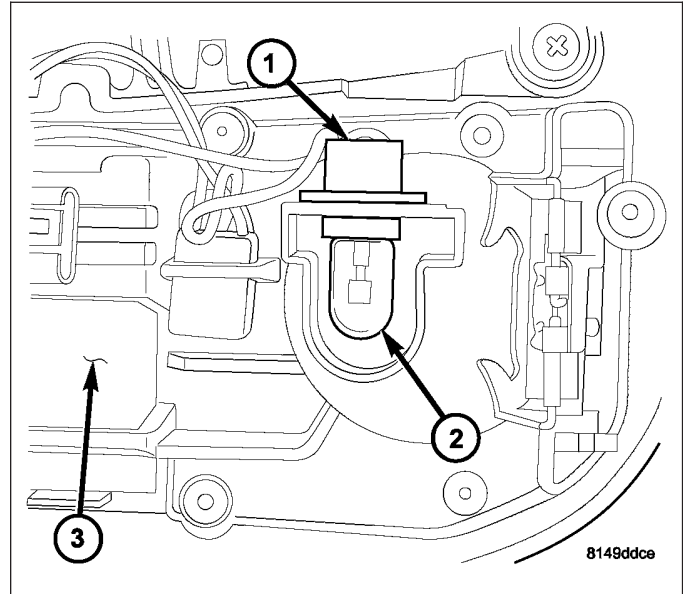
5. Carefully unsnap the bulb (2) from the two bulb holders (1) within the overhead console lamp housing.



BULB - WITH SUNROOF

NOTE: On vehicles equipped with an optional overhead console the standard front dome lamp is replaced by two combination dome and reading lamps that are integral to the console housing. Each of these lamps is controlled by the door ajar switches on the courtesy lamp circuit, but also are independently controlled by a switch that is activated by depressing the lamp lens. The bulb types and service procedures are identical for both of these lamps.

1. Disconnect and isolate the battery negative cable.
2. Remove the overhead console (3) from the headliner. (Refer to 8 - ELECTRICAL/OVERHEAD CONSOLE - REMOVAL).
3. Firmly grasp the back of the reading lamp bulb socket (1) and unsnap it from the overhead console lamp housing.
4. Pull the socket and bulb (2) straight out from the keyed opening in the lamp housing.
5. Pull the base of the bulb straight out of the socket.



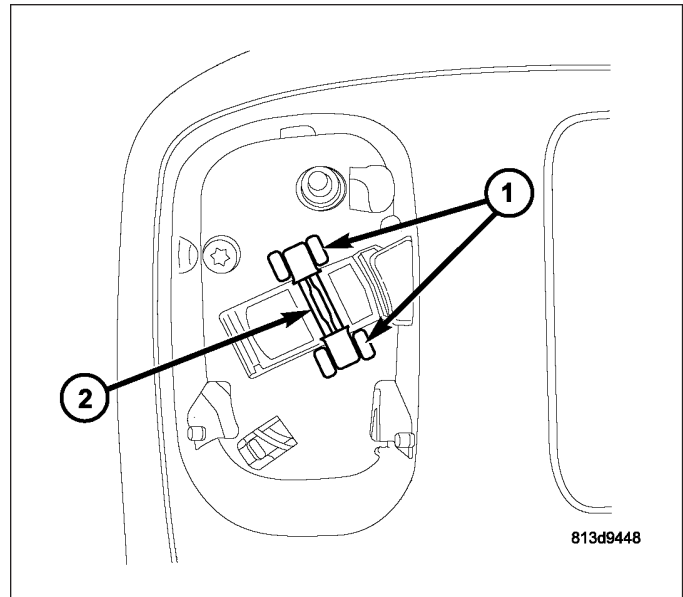
INSTALLATION

BULB - WITHOUT SUNROOF

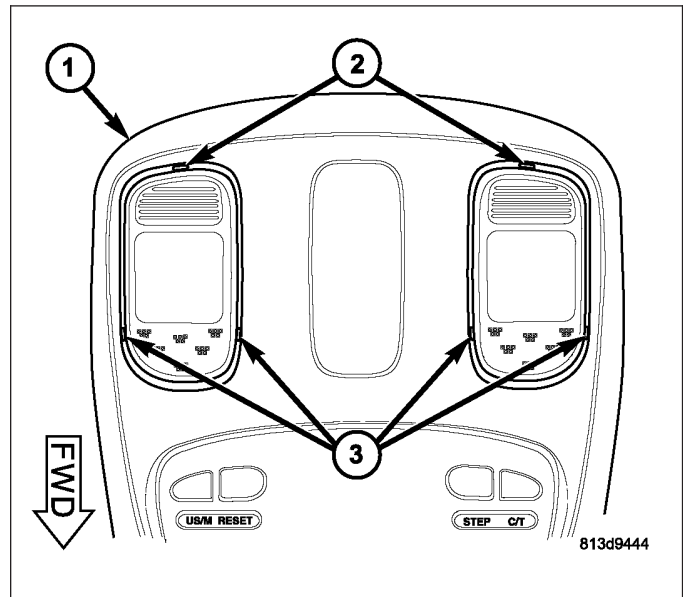
CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

NOTE: On vehicles equipped with an optional overhead console the standard front dome lamp is replaced by two combination dome and reading lamps that are integral to the console housing. Each of these lamps is controlled by the door ajar switches on the courtesy lamp circuit, but also are independently controlled by a switch that is activated by depressing the lamp lens. The bulb types and service procedures are identical for both of these lamps.

1. Align the ends of the bulb (2) with the two bulb holders (1) within the overhead console lamp housing.
2. Carefully press the bulb firmly and evenly into the bulb holders until it snaps into place.



3. Position the lens tab (2) into the slot in the rear of the overhead console (1) lamp housing.
4. Align the pivot tabs (3) on each side of the lens with the pivots within the overhead console lamp housing.
5. Press firmly and evenly on the lens over both pivot locations until both pivot tabs snap back onto the pivots within the housing.
6. Reconnect the battery negative cable.

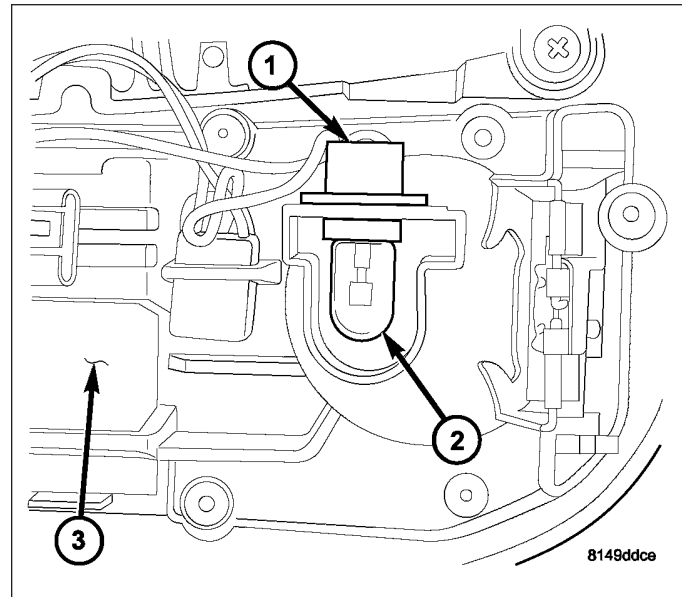


BULB - WITH SUNROOF

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

NOTE: On vehicles equipped with an optional overhead console the standard front dome lamp is replaced by two combination dome and reading lamps that are integral to the console housing. Each of these lamps is controlled by the door ajar switches on the courtesy lamp circuit, but also are independently controlled by a switch that is activated by depressing the lamp lens. The bulb types and service procedures are identical for both of these lamps.

1. Align the base of the overhead console reading lamp bulb (2) with the socket (1).
2. Push the bulb straight into the socket until the base is firmly seated.
3. Align the socket and bulb with the keyed opening on the back of lamp housing in the overhead console.
4. Insert the socket and bulb into the housing and press firmly on the back of the socket until it snaps into place and is firmly seated.
5. Reinstall the overhead console onto the headliner. (Refer to 8 - ELECTRICAL/OVERHEAD CONSOLE - INSTALLATION).
6. Reconnect the battery negative cable.



DOOR AJAR SWITCH

DESCRIPTION

This vehicle has up to four door ajar switches, one for each door. Each switch is concealed within and integral to its respective door latch unit. The switches are momentary leaf contact-type units that are actuated by the mechanisms internal to the door latch. A short pigtail wire and connector on each door latch connects the door ajar switch to the vehicle electrical system through its respective door wire harness. The door ajar switches cannot be adjusted or repaired and, if faulty or damaged, the door latch unit must be replaced. (Refer to 23 - BODY/DOOR - FRONT/LATCH - REMOVAL) or (Refer to 23 - BODY/DOOR - REAR/LATCH - REMOVAL).

OPERATION

The door ajar switches are actuated by the mechanisms internal to the door latch. When a door is closed and properly latched, its door ajar switch is an open circuit. When a door is open or only partially latched, the door ajar switch is a closed circuit. The door ajar switches are hard wired in series between a body ground and the Electro-Mechanical Instrument Cluster (EMIC). The EMIC reads the hard wired door ajar switch inputs through internal pull-ups, then uses these inputs to control many electronic functions and features of the vehicle.

The EMIC also sends the proper switch status messages to other electronic modules over the Programmable Communications Interface (PCI) data bus network. The door ajar switches can be diagnosed and tested using conventional diagnostic tools and methods. Refer to the appropriate wiring information. However, conventional diagnostic methods may not prove conclusive in the diagnosis of the EMIC, the PCI data bus, or the electronic messaging used to convey door ajar switch status to other modules in the vehicle. The most reliable, efficient, and accurate means to diagnose the EMIC, the PCI data bus, and both the hard wired and electronic message inputs and outputs affected by the door ajar switch inputs requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

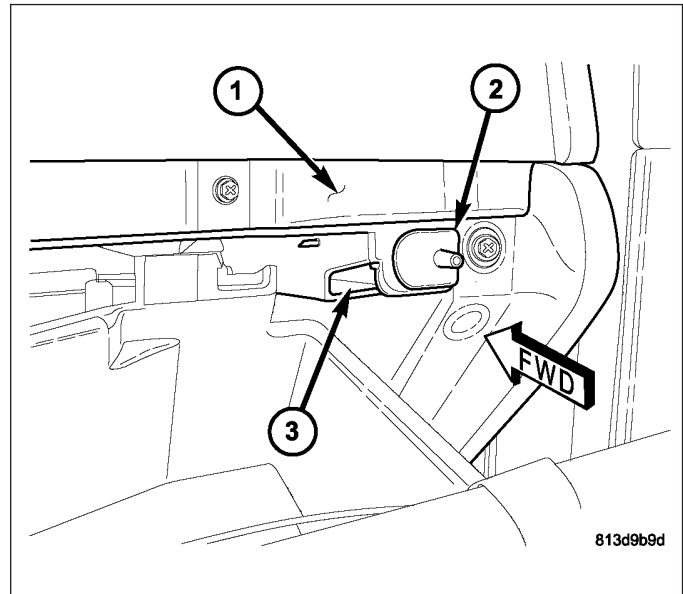
LAMP-GLOVE BOX

REMOVAL

BULB

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

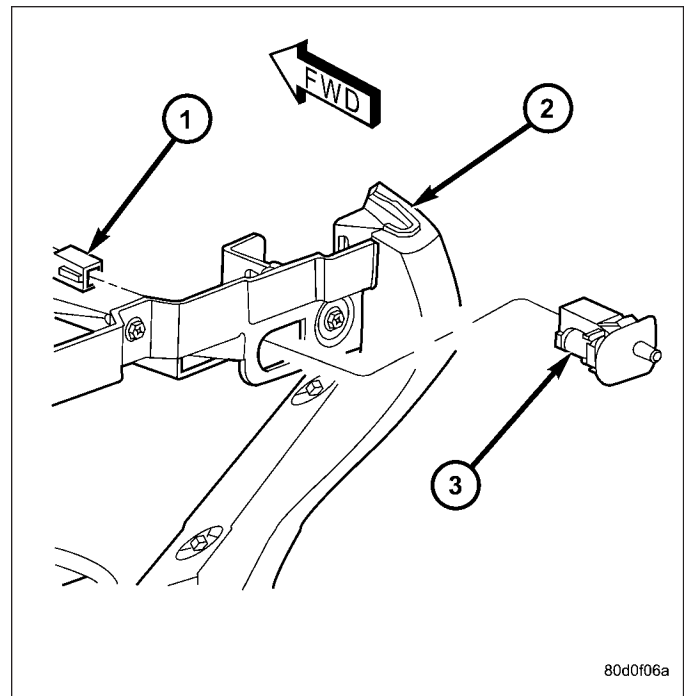
1. Disconnect and isolate the battery negative cable.
2. Open the glove box door.
3. Reach through the window (3) in the instrument panel glove box opening (1) to access the bulb on the side of the glove box lamp and switch unit (2).
4. Pull the base of the bulb straight out of the bulb holder.



LAMP/SWITCH

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

1. Disconnect and isolate the battery negative cable.
2. Open the glove box door.
3. Reach through the window in the instrument panel (2) glove box opening behind the switch to access and depress the retaining latch on either side of the glove box lamp and switch unit (3).
4. While holding the retaining latch depressed, push the glove box lamp and switch unit out through the mounting hole in the face of the instrument panel.
5. Disconnect the wire harness connector (1) from the glove box lamp and switch.
6. Remove the lamp and switch unit from the instrument panel.



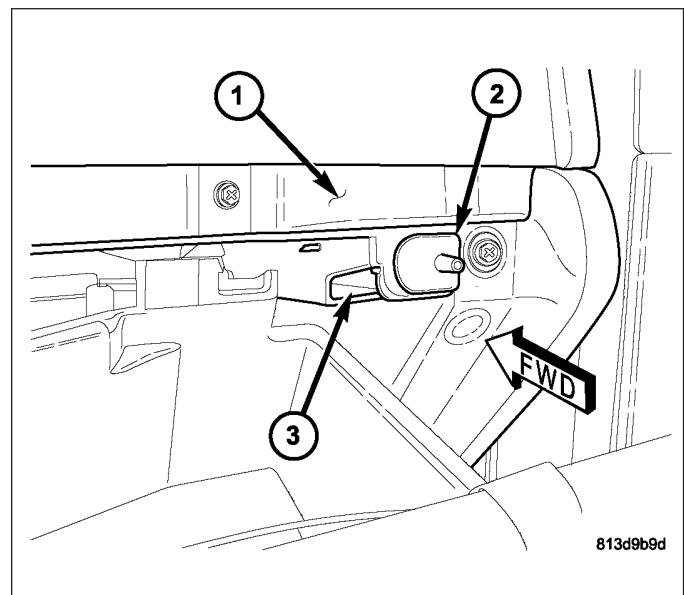
INSTALLATION

BULB

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

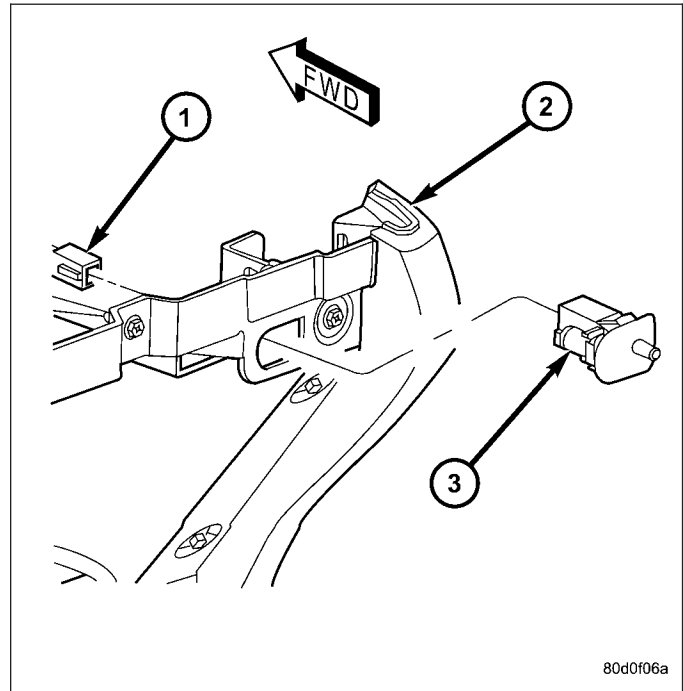
1. Reach through the window (3) in the instrument panel glove box opening (1) to align the base of the bulb with the bulb holder on the side of the glove box lamp and switch unit (2).
2. Push the bulb straight into the bulb holder until the base is firmly seated.
3. Close the glove box door.
4. Reconnect the battery negative cable.



LAMP/SWITCH

WARNING: To avoid personal injury or death, on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

1. Position the glove box lamp and switch unit (3) to the instrument panel (2) glove box opening.
2. Reconnect the wire harness connector (1) to the lamp and switch unit.
3. Feed the wire harness back through the switch mounting hole.
4. Align the lamp and switch unit with the mounting hole in the instrument panel.
5. Using hand pressure, push the lamp and switch unit firmly and evenly into the mounting hole until it is fully seated.
6. Close the glove box door.
7. Reconnect the battery negative cable.

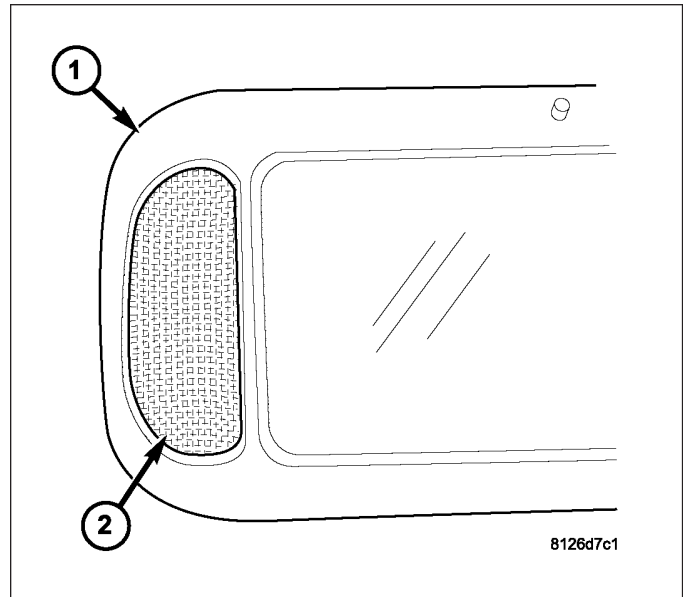


VANITY LAMP

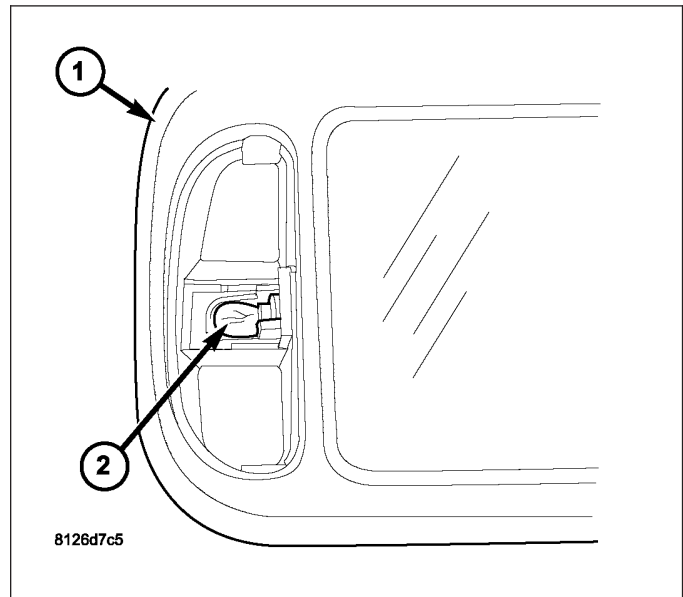
REMOVAL - BULB

NOTE: Vehicles equipped with optional vanity lamps have a mirror with a lamp that is integral to each sun visor. Each lamp is independently controlled by an integral switch that is automatically actuated by the mirror cover. The bulb types and service procedures are identical for both of these lamps.

1. Disconnect and isolate the battery negative cable.
2. Insert a small flat-bladed screwdriver on either side near the top or the bottom between the vanity lamp lens (2) and the lamp housing of the sun visor (1).
3. Carefully pry the lens outward until it unsnaps from the lamp housing.



4. Using small needle-nose pliers, carefully grasp the bulb (2) and pull the base out of the lamp socket.

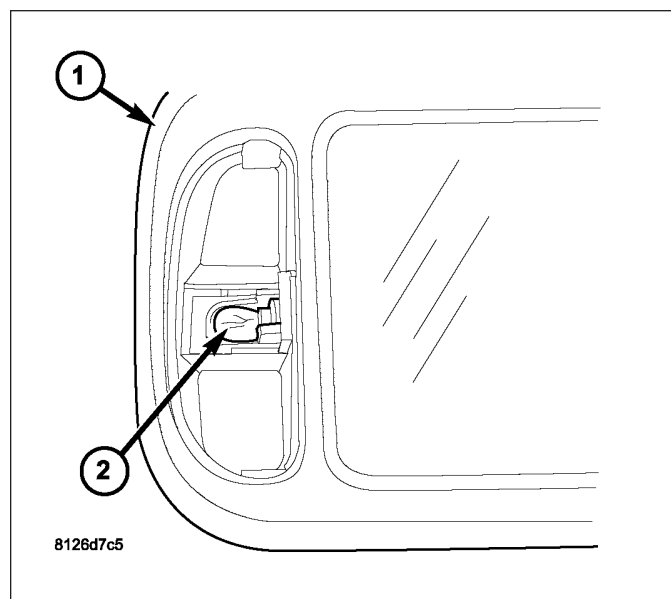


INSTALLATION - BULB

CAUTION: Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the lamp, the socket and/or the lamp wiring.

NOTE: Vehicles equipped with optional vanity lamps have a mirror with a lamp that is integral to each sun visor. Each lamp is independently controlled by an integral switch that is automatically actuated by the mirror cover. The bulb types and service procedures are identical for both of these lamps.

1. Using small needle-nose pliers, carefully grasp the vanity lamp bulb (2) and align the base of the bulb with the socket in the lamp housing of the sun visor (1).
2. Push the bulb straight into the socket until the base is fully seated.



3. Insert one tab on the top or the bottom of the lens (2) into the appropriate slot at the top or bottom of the lamp housing.
4. Flex the lens far enough to engage the loose tab into its slot in the lamp housing.
5. Reconnect the battery negative cable.

