

2005 Ford Focus ZX5 S

2005 ACCESSORIES & BODY, CAB Exterior Lighting - Focus

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Exterior Lighting - Focus

SPECIFICATIONS

TORQUE SPECIFICATIONS

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Description	Nm	lb-in
Headlamp assembly retaining bolts	5	44
Instrument panel lower panel	9	80

DESCRIPTION AND OPERATION

EXTERIOR LIGHTING

Conventional Headlamp System

The front side lamps are built into the headlamp housing and cannot be removed separately. The headlamp assembly is equipped with a H4L-50/55W bulb for low beam and high beam.

The headlamp system consists of:

- Two headlamp assemblies
- Lamp switch
- Relay for switching between main and low beam
- Direction indicator/low beam switch
- High beam display
- Wiring
- Fuses

The voltage is supplied to the lamp switch through a fuse. This fuse is located in the central junction box (CJB) in the left footwell.

When the headlamps are switched on, a voltage is supplied to the multifunction switch and to the low beam relay. The relay for the low beam is located in the battery junction box (BJB) in the engine compartment.

If the multifunction switch is set to low beam, then voltage is supplied through the low beam relay to the low beam filament of the headlamp bulb. The left and right-hand low beams are fused separately. The fuses are located in the BJB.

If the multifunction switch is set to high beam, then voltage is supplied through the high beam relay to the high beam filament of the headlamp bulb. The left and right-hand high beams are fused separately. The fuses are located in the BJB.

Headlamp Switch

The headlamp switch has up to four positions:

- Off
- Parking lamps
- Headlamps
- Fog lamps (if equipped)

When the headlamp switch is set to the parking lamp position, a voltage is supplied to the front and rear side lamps, as well as to the license plate lamp. The fuses are located in the CJB.

When the switch is set to the headlamps position, the fog lamps (if equipped) can be switched on by pulling the switch.

Stoplamps

The stoplamps are part of the rear lamp assembly. When the brake pedal is applied, the stoplamp switch supplies voltage to the generic electronic module (GEM) and the high mounted stoplamp. The GEM then supplies voltage to the rear lamps.

Reversing Lamps

The reversing lamp system consists of:

- Reversing lamp
- Digital transmission range (TR) sensor (automatic transmission)
- Reversing lamp switch (manual transmission)
- Wiring
- Fuse

The voltage supply to the reversing lamps is provided by the reversing lamp switch on vehicles equipped with a manual transmission and by the digital TR sensor on vehicles equipped with an automatic transmission. There is a fuse for this circuit in the CJB.

Turn Signal Lamps and Hazard Warning Lamps

The turn signal lamps and hazard warning lamps system consists of:

- Hazard switch
- Multifunction switch
- GEM
- Turn signal lamps

When the multifunction switch is placed in the LH or RH turn positions, a voltage signal from the GEM is routed to ground. When the GEM detects the multifunction switch in the LH or RH turn position, the GEM supplies voltage to the appropriate turn lamps in a flashing manner. When operating correctly, the turn lamps flash approximately 80 times per minute.

When the hazard warning switch (located in the upper part of the center console) is switched on, a voltage signal from the GEM is routed to ground. When the GEM detects that the hazard switch is switched on, the GEM supplies voltage to all the turn signal lamps in a flashing manner. When operating correctly, the hazard lamps flash approximately 80 times per minute.

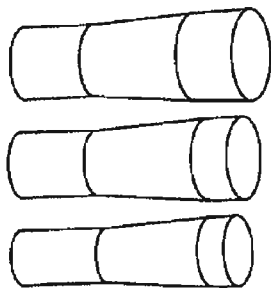
DIAGNOSIS AND TESTING

HEADLAMPS

Refer to **HEADLIGHTS** in SYSTEM WIRING DIAGRAMS article for schematic and connector information.

Special Tool(s)

SPECIAL TOOLS DESCRIPTION



ST1444-A

73III Automotive Meter 105-R0057 or equivalent

Inspection and Verification

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

VISUAL INSPECTION CHART

Mechanical	Electrical
<ul style="list-style-type: none"> • Headlamp switch • Multifunction switch 	<ul style="list-style-type: none"> • Central junction box (CJB) fuse 59 (7.5A) (low beam and high beam relay) • Battery junction box (BJB) fuses: <ul style="list-style-type: none"> ○ 6 (10A) (LH low beam) ○ 17 (10A) (RH low beam) ○ 26 (10A) (LH high beam) ○ 27 (10A) (RH high beam) • Relays • Bulbs • Circuitry

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the concern is not visually evident, verify the symptom and GO to **SYMPTOM CHART**.

Symptom Chart**SYMPTOM CHART**

Condition	Possible Sources	Action
<ul style="list-style-type: none"> • Both headlamps are inoperative 	<ul style="list-style-type: none"> • Circuitry • Headlamp switch • Multifunction switch • Central junction box (CJB) 	<ul style="list-style-type: none"> • GO to <u>PINPOINT TEST A.</u>
<ul style="list-style-type: none"> • The low beams are inoperative 	<ul style="list-style-type: none"> • Circuitry • Low beam relay • Multifunction switch 	<ul style="list-style-type: none"> • GO to <u>PINPOINT TEST B.</u>

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	<ul style="list-style-type: none"> • Battery junction box (BJB) 	
<ul style="list-style-type: none"> • The high beams are inoperative 	<ul style="list-style-type: none"> • Circuitry • High beam relay • Multifunction switch BJB • BJB 	<ul style="list-style-type: none"> • GO to <u>PINPOINT TEST C.</u>
<ul style="list-style-type: none"> • One low beam headlamp is inoperative 	<ul style="list-style-type: none"> • Circuitry • Headlamp assembly • BJB 	<ul style="list-style-type: none"> • GO to <u>PINPOINT TEST D.</u>
<ul style="list-style-type: none"> • One high beam headlamp is inoperative 	<ul style="list-style-type: none"> • Circuitry • Headlamp assembly • BJB 	<ul style="list-style-type: none"> • GO to <u>PINPOINT TEST E.</u>
<ul style="list-style-type: none"> • The headlamps are on continuously 	<ul style="list-style-type: none"> • Circuitry • Low beam relay • High beam relay • Headlamp switch • Multifunction switch • BJB • CJB 	<ul style="list-style-type: none"> • GO to <u>PINPOINT TEST F.</u>
<ul style="list-style-type: none"> • The flash-to-pass feature is inoperative 	<ul style="list-style-type: none"> • Circuitry • Multifunction switch 	<ul style="list-style-type: none"> • CARRY OUT the multifunction switch component test. <ul style="list-style-type: none"> ○ If the multifunction switch is OK, REPAIR circuit 15-LEI 4 (GN/RD). TEST the system for normal operation. ○ If the multifunction switch is not OK, INSTALL a new multifunction switch. REFER to <u>STEERING COLUMN SWITCHES</u> . TEST

the system for normal operation.

Pinpoint Tests

PINPOINT TEST A: BOTH HEAD LAMPS ARE INOPERATIVE

A1 CHECK THE HIGH BEAMS

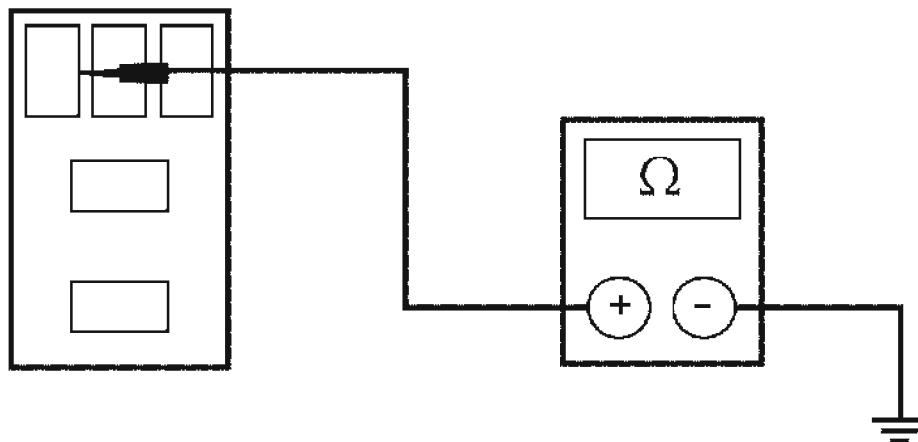
- Key in ON position.
- Place the headlamp switch in the headlamps ON position.
- Place the multifunction switch in the high beam position.
- **Do the high beams illuminate?**

Yes : GO to **PINPOINT TEST B.**

No : GO to A2.

A2 CHECK THE RELAY GROUND CIRCUIT FOR AN OPEN

- Key in OFF position.
- Disconnect: Low Beam Relay C1049.
- Measure the resistance between the low beam relay C1049-2, circuit 91-DA3 (BK/OG), harness side and ground.



GN1455-A

Fig. 1: Measuring Resistance Between Low Beam Relay C1049-2, Circuit 91-DA3 (BK/OG), Harness Side And Ground
Courtesy of FORD MOTOR CO.

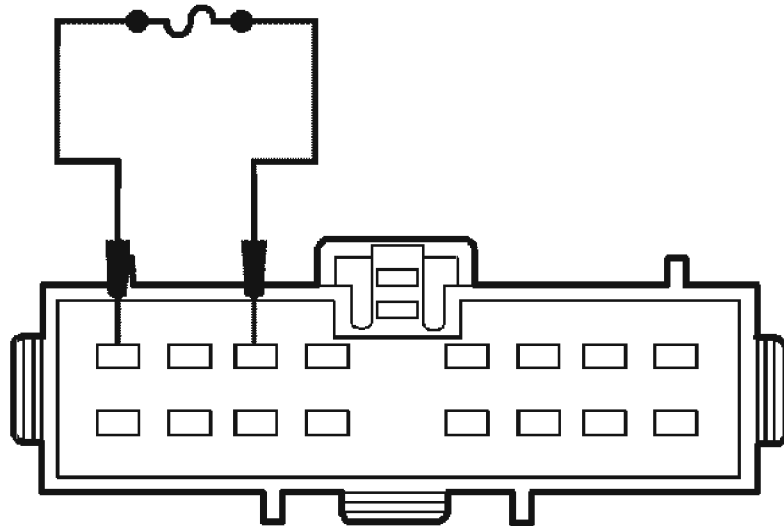
- Is the resistance less than 5 ohms?

Yes : GO to A3.

No : REPAIR the relay ground circuit. TEST the system for normal operation.

A3 BYPASS THE HEADLAMP SWITCH

- Connect: Low Beam Relay C1049.
- Disconnect: Headlamp Switch C205.
- Connect a fused (7.5A) jumper wire between the headlamp switch C205-6, circuit 15S-LE14 (GN/RD), harness side and the headlamp switch C205-8, circuit 15-LE29 (GN/BK), harness side.



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Fig. 2: Bypassing Headlamp Switch
Courtesy of FORD MOTOR CO.

- Key in ON position.
- Do the headlamps illuminate?

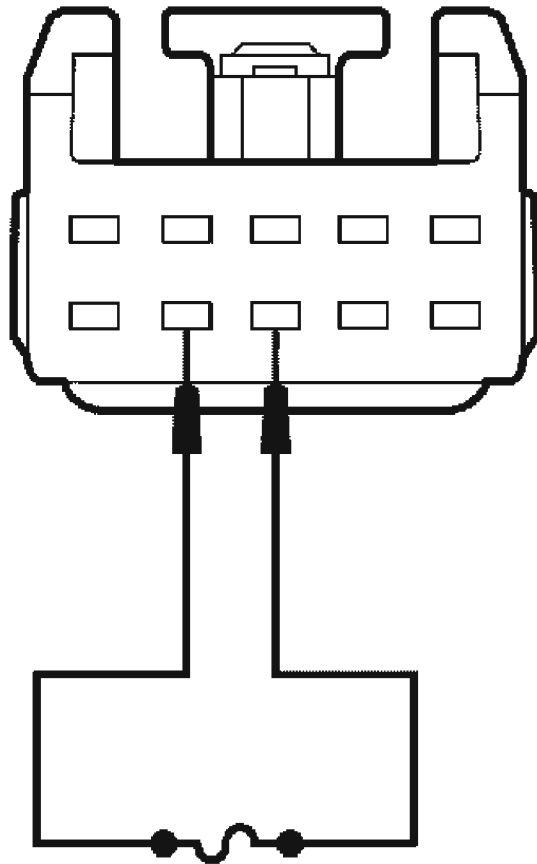
Yes : INSTALL a new headlamp switch. REFER to HEADLAMP SWITCH. TEST the system for normal operation.

No : GO to A4.

A4 BYPASS THE MULTIFUNCTION SWITCH

- Key in OFF position.

- Disconnect: Multifunction Switch C202.
- Connect a fused (7.5A) jumper wire between the multifunction switch C202-8, circuit 15S-LE14 (GN/RD), harness side and the multifunction switch C202-9, circuit 15S-LE19 (GN/BU), harness side.



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Fig. 3: Bypassing Multifunction Switch
Courtesy of FORD MOTOR CO.

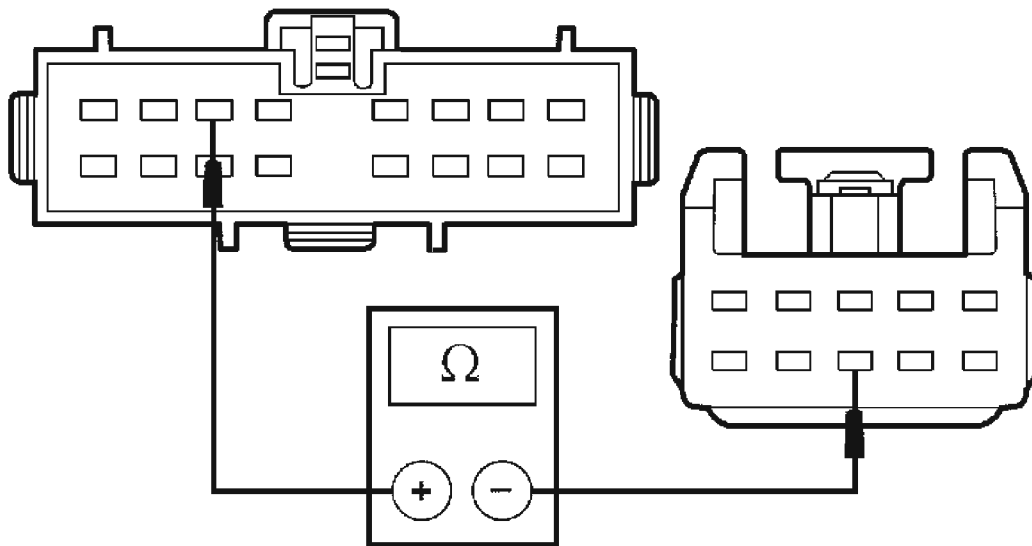
- Key in ON position.
- **Do the headlamps illuminate?**

Yes : INSTALL a new multifunction switch. REFER to STEERING COLUMN SWITCHES . TEST the system for normal operation.

No : GO to A5.

A5 CHECK CIRCUIT 15S-LE14 (GN/RD) FOR AN OPEN

- Key in OFF position.
- Remove the fused jumper wires.
- Measure the resistance between the headlamp switch C205-6, circuit 15S-LE14 (GN/RD), harness side and the multifunction switch C202-8, circuit 15S-LE14 (GN/RD), harness side.



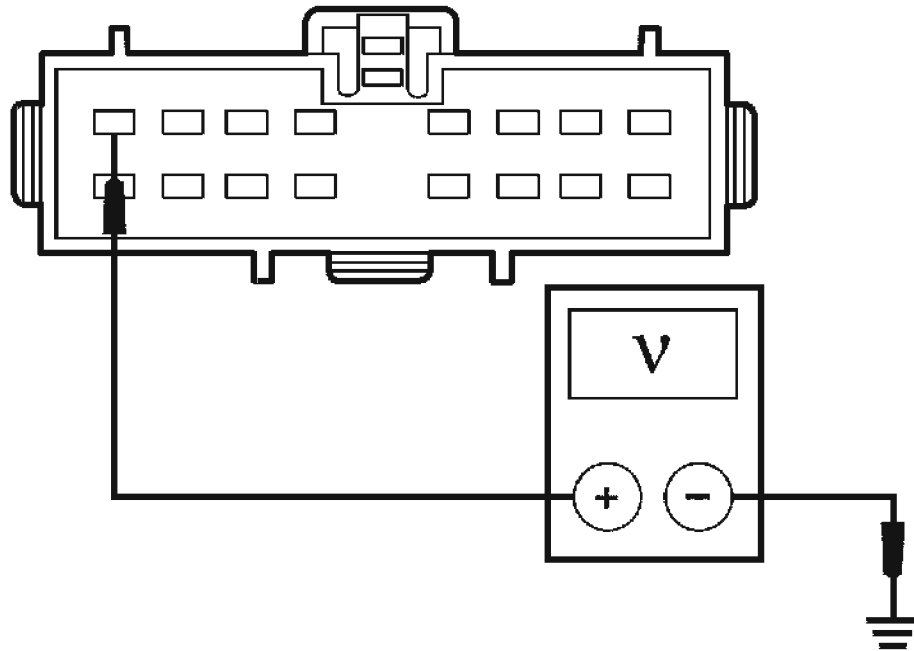
A0094047

Fig. 4: Checking Circuit 15S-LE14 (GN/RD) For An Open
Courtesy of FORD MOTOR CO.

- **Is the resistance less than 5 ohms?**
Yes : GO to A6
No : REPAIR the circuit. TEST the system for normal operation.

A6 CHECK FOR VOLTAGE TO THE HEADLAMP SWITCH

- Key in ON position.
- Measure the voltage between the headlamp switch C205-8, circuit 15-LE29 (GN/BK), harness side and ground.



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Fig. 5: Measuring Voltage Between Headlamp Switch C205-8, Circuit 15-LE29 (GN/BK), Harness Side And Ground
Courtesy of FORD MOTOR CO.

- **Is the voltage greater than 10 volts?**

Yes : REPAIR or INSTALL a new BJB. TEST the system for normal operation.

No : GO to A7.

A7 CHECK THE FLASH-TO-PASS OPERATION

- Key in OFF position.
- Connect: Multifunction Switch C202.
- Key in ON position.
- While observing the headlamps, engage the flash-to-pass feature of the multifunction switch.
- **Do the headlamps illuminate?**

Yes : REPAIR circuit 15-LE29 (GN/BK). TEST the system for normal operation.

No : REPAIR or INSTALL a new CJB. TEST the system for normal operation.

PINPOINT TEST B: THE LOW BEAMS ARE INOPERATIVE

B1 CHECK CIRCUIT 30-DA6 (RD) FOR VOLTAGE

- Key in OFF position.

- Disconnect: Low Beam Relay C1049.
- If not equipped with daytime running lamps (DRL), measure the voltage between the low beam relay C1049-3, circuit 30-DA6 (RD), harness side and ground.

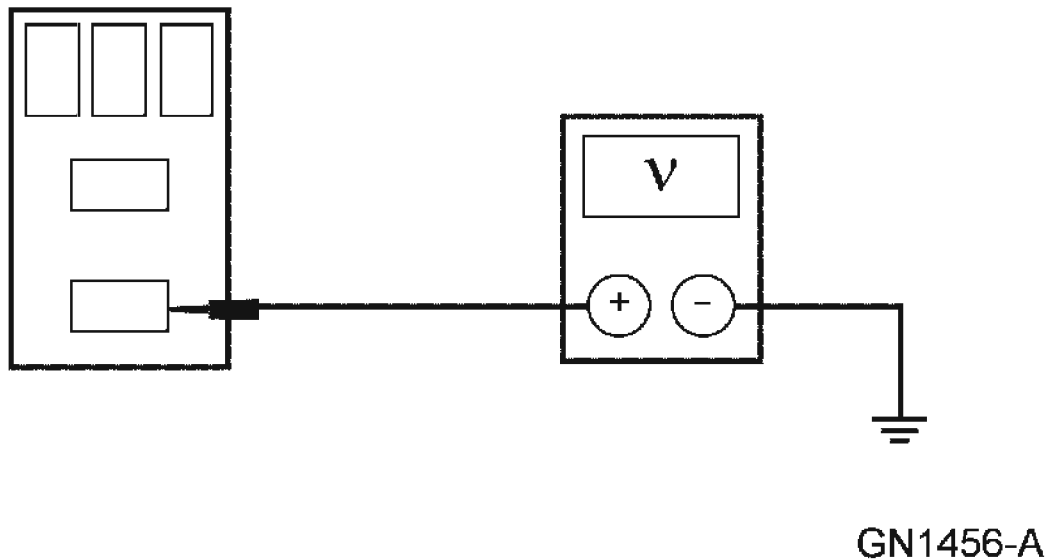
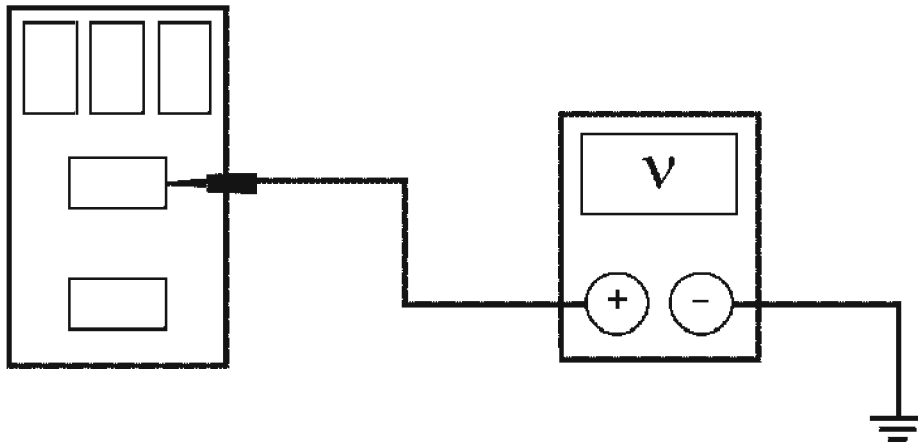


Fig. 6: Checking Relay Power Supply
Courtesy of FORD MOTOR CO.

- If equipped with DRL, measure the voltage between the low beam relay C1049-5, circuit 30-DA6 (RD), harness side and ground.



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Fig. 7: Measuring Voltage Between Low Beam Relay C1049-5, Circuit 30-DA6 (RD), Harness Side And Ground
Courtesy of FORD MOTOR CO.

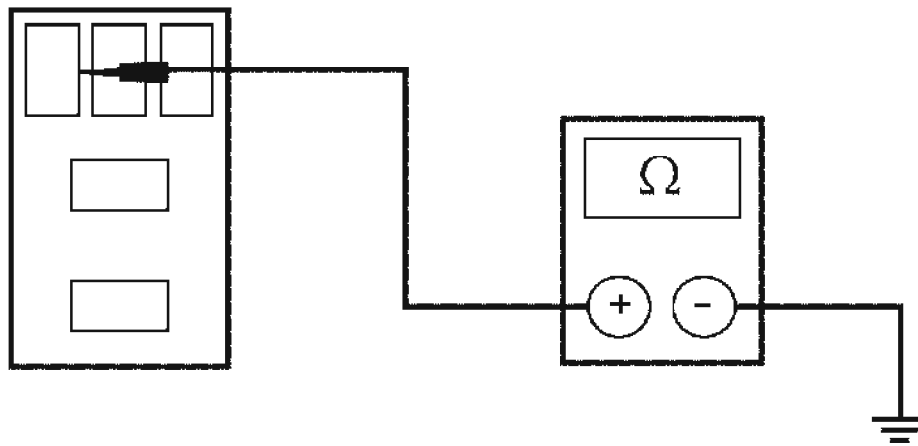
- **Is the voltage greater than 10 volts?**

Yes : GO to B2.

No : REPAIR or INSTALL a new BJB. TEST the system for normal operation.

B2 CHECK CIRCUIT 91-DA3 (BK/OG) FOR AN OPEN

- Measure the resistance between the low beam relay C1049-2, circuit 91-DA3 (BK/OG), harness side and ground.



GN1455-A

Fig. 8: Measuring Resistance Between Low Beam Relay C1049-2, Circuit 91-DA3 (BK/OG), Harness Side And Ground
Courtesy of FORD MOTOR CO.

- Is the resistance less than 5 ohms?

Yes : GO to B3.

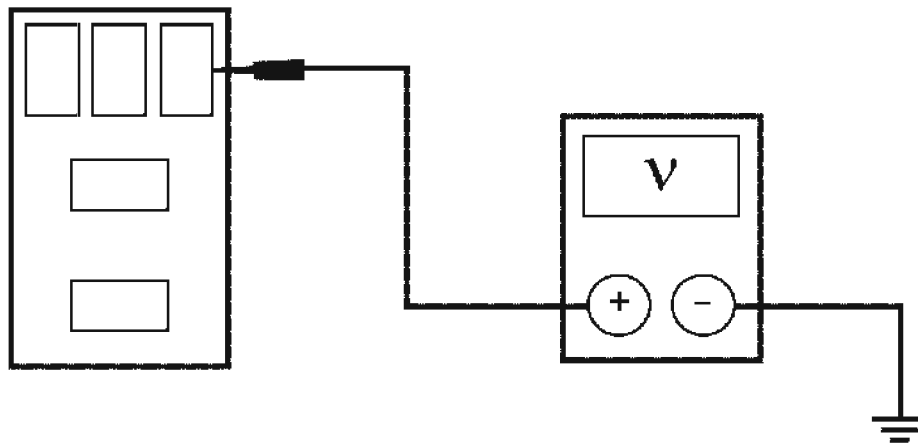
No : REPAIR or INSTALL a new BJB. TEST the system for normal operation.

B3 CHECK CIRCUIT 15S-LE19 (GN/BU) FOR VOLTAGE

- Key in ON position.

NOTE: **Make sure the headlamp switch is in the low beam position.**

- Place the headlamp switch in the headlamps ON position.
- Measure the voltage between the low beam relay C1049-1, circuit 15S-LE19 (GN/BU), harness side and ground.



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Fig. 9: Measuring Voltage Between Low Beam Relay C1049-1, Circuit 15S-LE19 (GN/BU), Harness Side And Ground
Courtesy of FORD MOTOR CO.

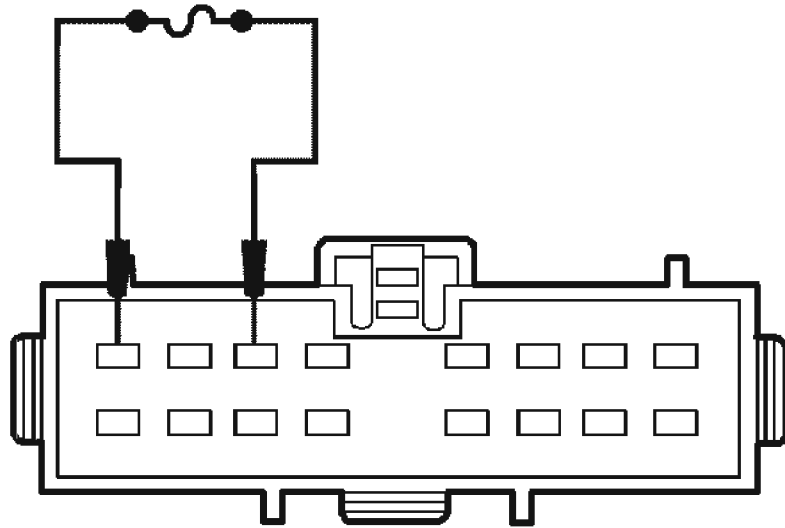
- **Is the voltage greater than 10 volts?**

Yes : INSTALL a new low beam relay. TEST the system for normal operation.

No : GO to B4.

B4 BYPASS THE HEADLAMP SWITCH

- Key in OFF position.
- Connect: Low Beam Relay C1049.
- Disconnect: Headlamp Switch C205.
- Key in ON position.
- Connect a fused (7.5A) jumper wire between the headlamp switch C205-6, circuit 15S-LE14 (GN/RD), harness side and the headlamp switch C205-8, circuit 15-LE29 (GN/BK), harness side.



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Fig. 10: Bypassing Headlamp Switch
Courtesy of FORD MOTOR CO.

- **Do the headlamps illuminate?**

Yes : INSTALL a new headlamp switch. REFER to **HEADLAMP SWITCH**.
TEST the system for normal operation.

No : GO to B5.

B5 CHECK THE VOLTAGE AT THE MULTIFUNCTION SWITCH

- Key in OFF position.
- Disconnect: Multifunction Switch C202.
- Key in ON position.
- Measure the voltage between multifunction switch C202-8, circuit 15S-LE14 (GN/RD), harness side and ground.

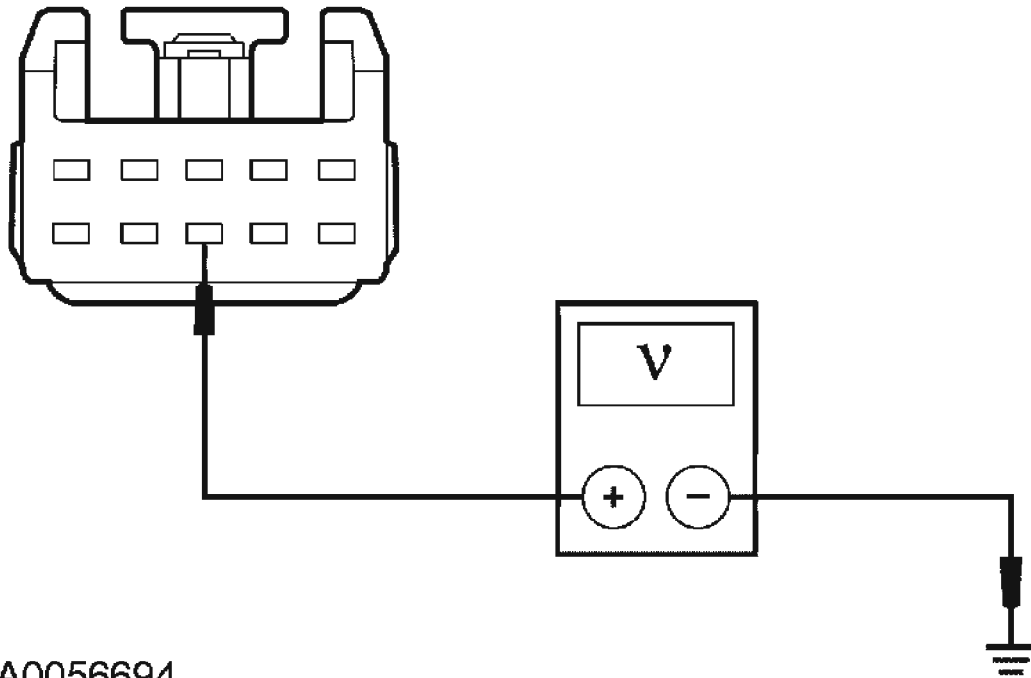


Fig. 11: Measuring Voltage Between Multifunction Switch C202-8, Circuit 15S-LE14 (GN/RD), Harness Side And Ground
 Courtesy of FORD MOTOR CO.

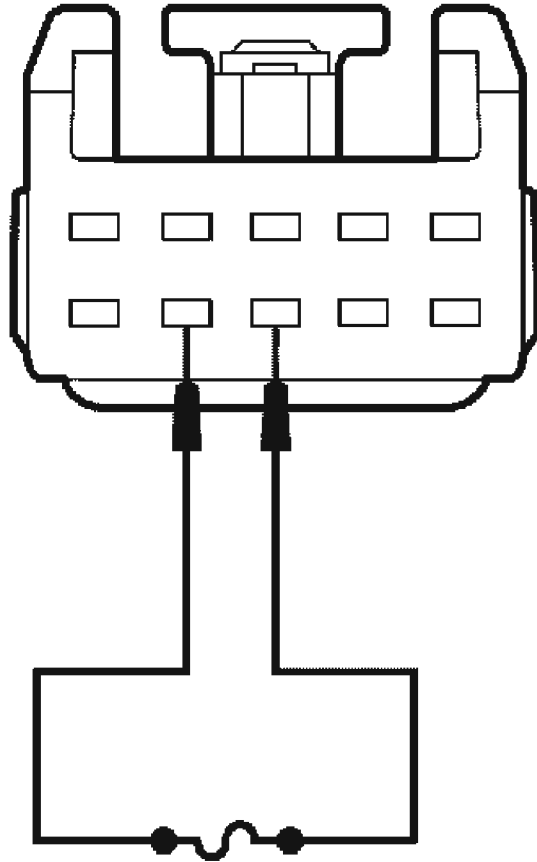
- Is the voltage greater than 10 volts?

Yes : GO to B6.

No : REPAIR circuit 15S-LE14 (GN/RD). TEST the system for normal operation.

B6 BYPASS THE MULTIFUNCTION SWITCH

- Key in OFF position.
- Connect a 7.5A fused jumper wire between the multifunction switch C202-8, circuit 15S-LE14 (GN/RD), harness side and the multifunction switch C202-9, circuit 15S-LE19 (GN/BU), harness side.



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Fig. 12: Bypassing Multifunction Switch
Courtesy of FORD MOTOR CO.

- Key in ON position.
- **Do the headlamps illuminate?**

Yes : INSTALL a new multifunction switch. REFER to **STEERING COLUMN SWITCHES** . TEST the system for normal operation.

No : REPAIR circuit 15S-LE19 (GN/BU). TEST the system for normal operation.

PINPOINT TEST C: THE HIGH BEAMS ARE INOPERATIVE

C1 CHECK THE FLASH-TO-PASS FEATURE

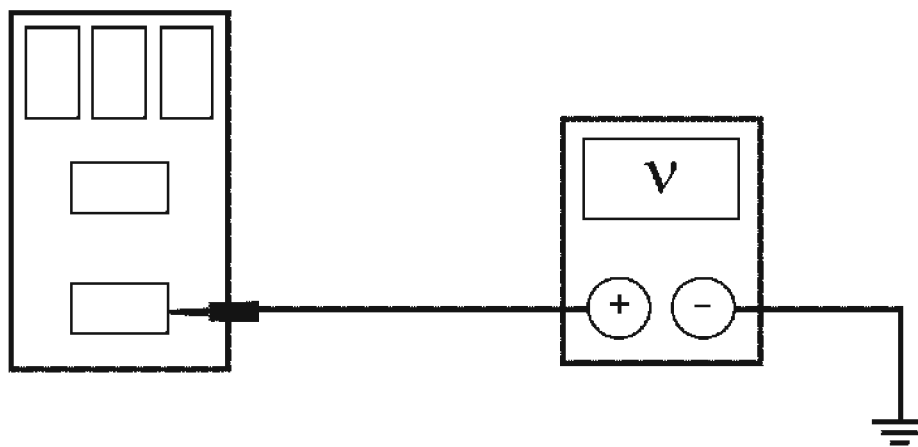
- Key in ON position.
- Operate the flash-to-pass feature.
- **Does the flash-to-pass feature operate correctly?**

Yes : INSTALL a new multifunction switch. REFER to **STEERING COLUMN SWITCHES** . TEST the system for normal operation

No : GO to C2.

C2 CHECK CIRCUIT 30-LE13 (RD) FOR VOLTAGE

- Key in OFF position.
- Disconnect: High Beam Relay C1050.
- Measure the voltage between the high beam relay C1050-3, circuit 30-LE13 (RD), harness side and ground.



GN1456-A

Fig. 13: Checking Relay Power Supply
Courtesy of FORD MOTOR CO.

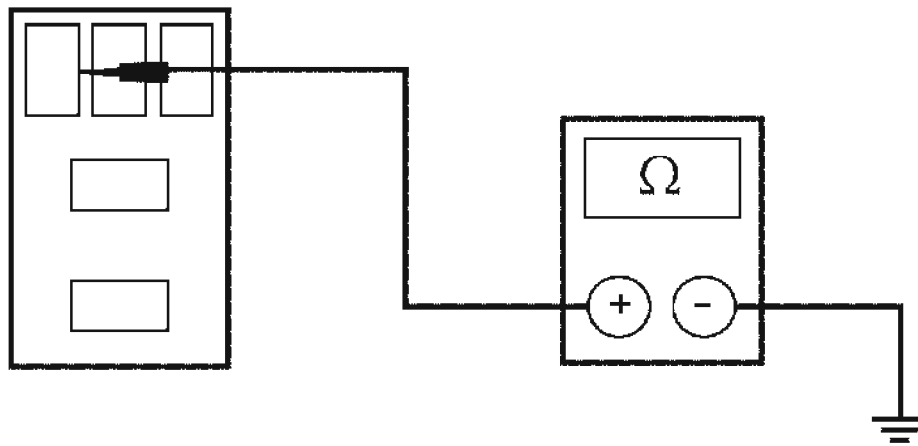
- **Is the voltage greater than 10 volts?**

Yes : GO to C3.

No : REPAIR or INSTALL a new BJB. TEST the system for normal operation.

C3 CHECK CIRCUIT 91-LE12 (BK/YE) FOR AN OPEN

- Measure the resistance between the high beam relay C1050-2, circuit 91-LE12 (BK/YE), harness side and ground.



GN1455-A

Fig. 14: Measuring Resistance Between High Beam Relay C1050-2, Circuit 91-LE12 (BK/YE), Harness Side And Ground
Courtesy of FORD MOTOR CO.

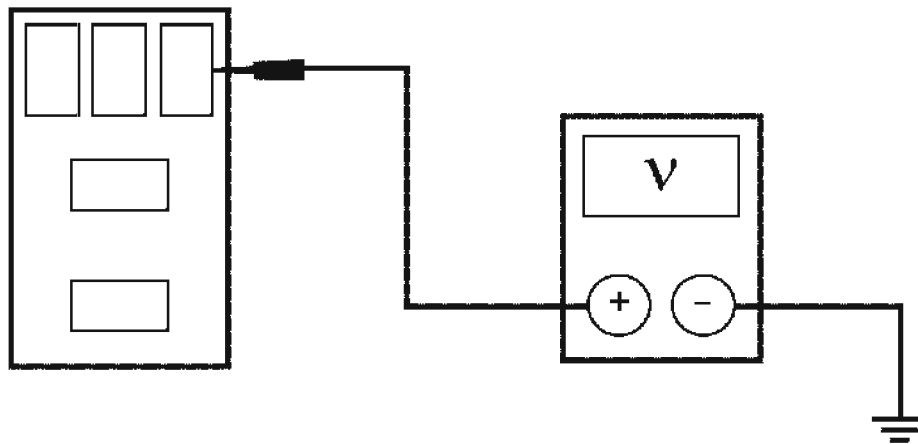
- Is the resistance less than 5 ohms?

Yes : GO to C4.

No : REPAIR or INSTALL a new BJB. TEST the system for normal operation.

C4 CHECK CIRCUIT 15S-LE12 (GN/YE) FOR VOLTAGE

- Key in ON position.
- Place the headlamp switch in the headlamps ON position.
- Place the multifunction switch in the high beam position.
- Measure the voltage between the high beam relay C1050-1, circuit 15S-LE12 (GN/YE), harness side and ground.



GN1458-A

Fig. 15: Measuring Voltage Between High Beam Relay C1050-1, Circuit 15S-LE12 (GN/YE), Harness Side And Ground
 Courtesy of FORD MOTOR CO.

- **Is the voltage greater than 10 volts?**

Yes : INSTALL a new high beam relay. TEST the system for normal operation.

No : GO to C5.

C5 CHECK THE MULTIFUNCTION SWITCH

- Carry out the multifunction switch component test. Refer to **COMPONENT TESTING** article .

- **Is the multifunction switch OK?**

Yes : REPAIR circuit 15S-LE12 (GN/YE). TEST the system for normal operation.

No : INSTALL a new multifunction switch. REFER to **STEERING COLUMN SWITCHES** . TEST the system for normal operation.

PINPOINT TEST D: ONE LOW BEAM HEADLAMP IS INOPERATIVE

D1 CHECK THE VOLTAGE AT BJB FUSE 16 OR 17

- Key in ON position.
- Place the headlamp switch in the headlamps ON position.
- Measure the voltage between the BJB fuse 16 (10A) (LH low beam), input side and ground; or between the BJB fuse 17 (10A) (RH low beam), input side and ground.

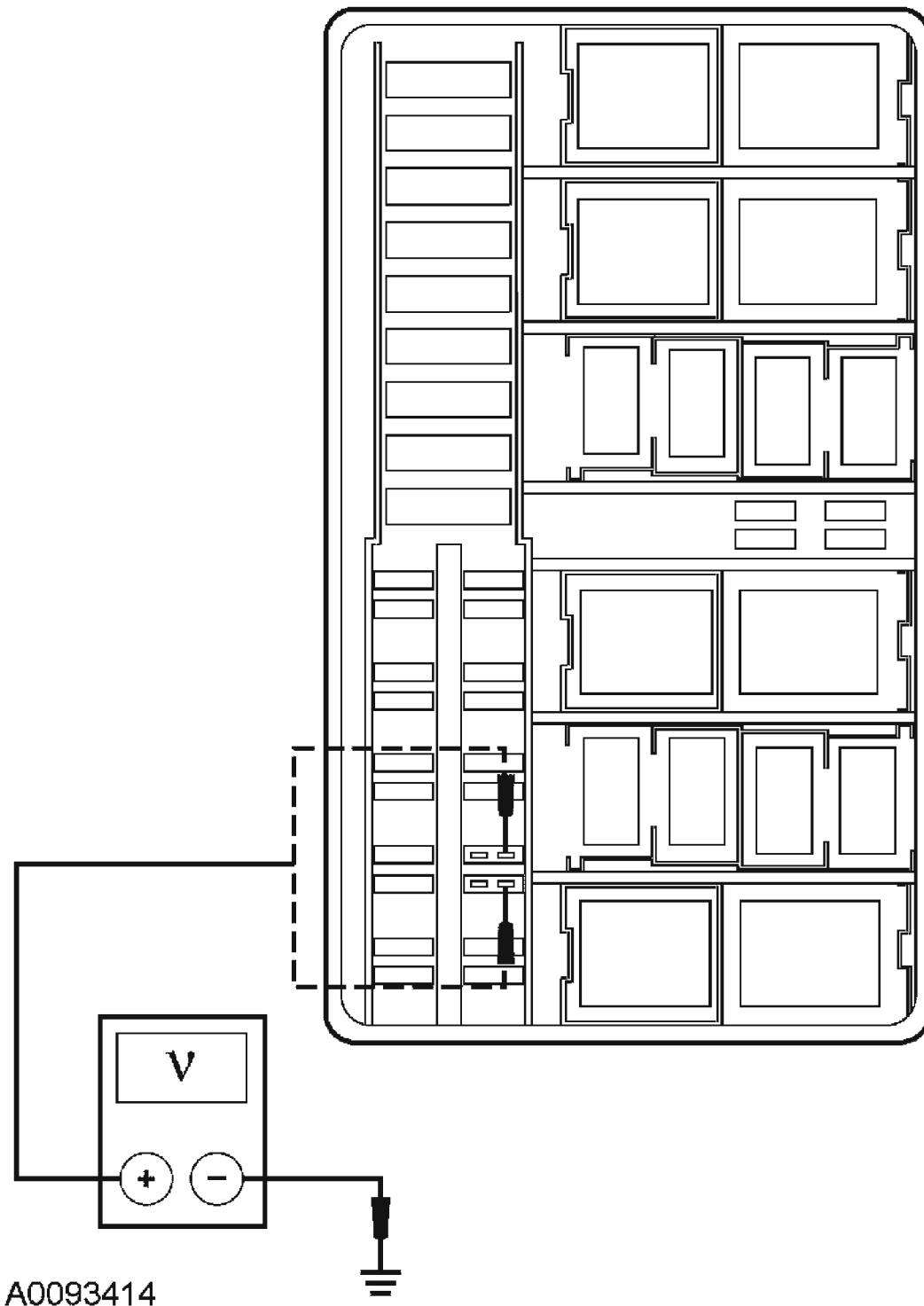


Fig. 16: Checking Voltage At BJB Fuse 16 Or 17
Courtesy of FORD MOTOR CO.

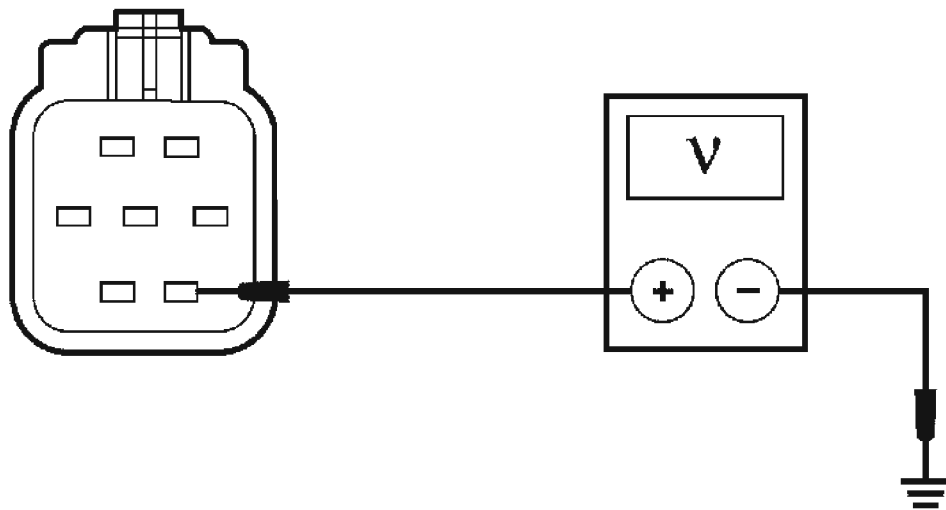
- Is the voltage greater than 10 volts?

Yes : GO to D2.

No : REPAIR or INSTALL a new BJB. TEST the system for normal operation.

D2 CHECK THE VOLTAGE AT THE LOW BEAM

- Key in OFF position.
- Disconnect: Inoperative Headlamp.
- Key in ON position.
- Measure the voltage between the LH headlamp C1021-7, circuit 15S-LE16 (GN/OG), harness side and ground; or between the RH headlamp C1041-7, circuit 15S-LE23 (GN/WH), harness side and ground.



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Fig. 17: Checking Voltage At Low Beam
Courtesy of FORD MOTOR CO.

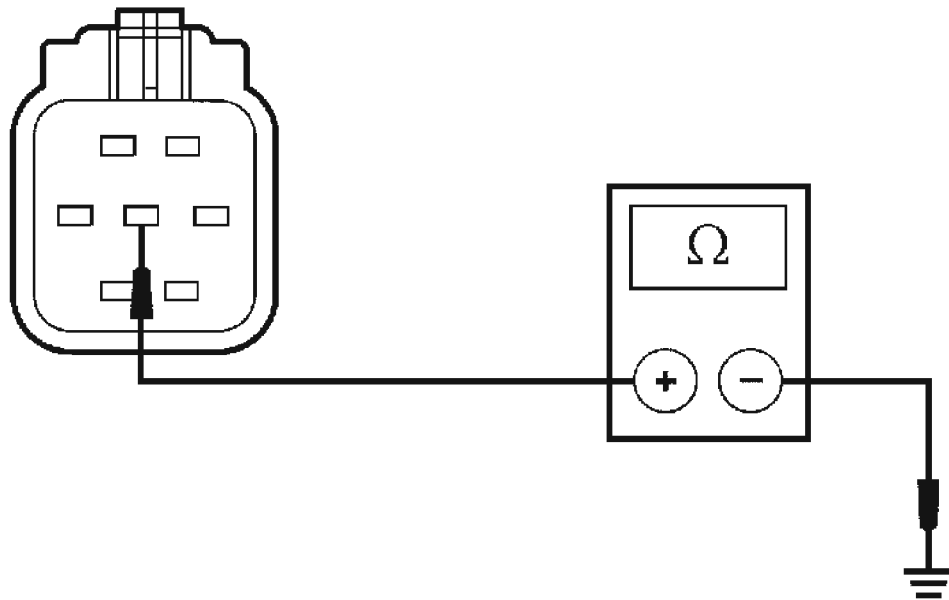
- Is the voltage greater than 10 volts?

Yes : GO to D3.

No : REPAIR the circuit in question. TEST the system for normal operation.

D3 CHECK THE HEADLAMP GROUND CIRCUIT

- Measure the resistance between the LH headlamp C1021-4, circuit 31-LE31 (BK), harness side and ground; or between the RH headlamp C1041-4, circuit 31-LE30 (BK), harness side and ground.



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Fig. 18: Checking Headlamp Ground Circuit
Courtesy of FORD MOTOR CO.

- **Is the resistance less than 5 ohms?**

Yes : REPAIR or INSTALL a new headlamp assembly. REFER to **HEADLAMP ASSEMBLY**. TEST the system for normal operation.

No : REPAIR the headlamp ground circuit. TEST the system for normal operation.

PINPOINT TEST E: ONE HIGH BEAM HEADLAMP IS INOPERATIVE

E1 CHECK THE VOLTAGE AT BJB FUSE 26 OR 27

- Key in ON position.
- Place the headlamp switch in the headlamps ON position.
- Place the multifunction switch in the high beam position.
- Measure the voltage between the BJB fuse 26 (10A) (LH headlamp) input side and ground; or between the BJB fuse 27(10A) (RH headlamp) input side and ground.

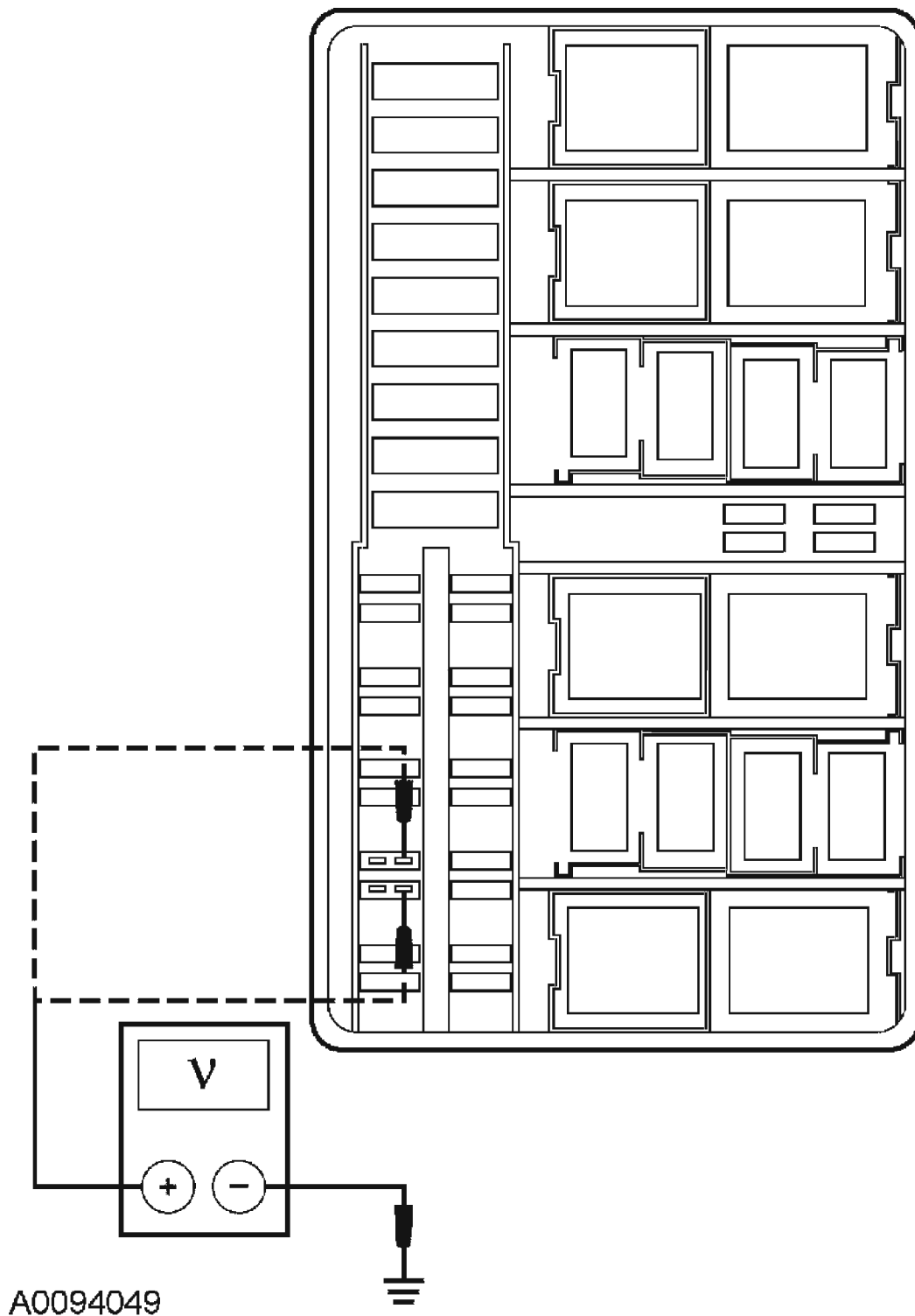


Fig. 19: Checking Voltage At BJB Fuse 26 Or 27
Courtesy of FORD MOTOR CO.

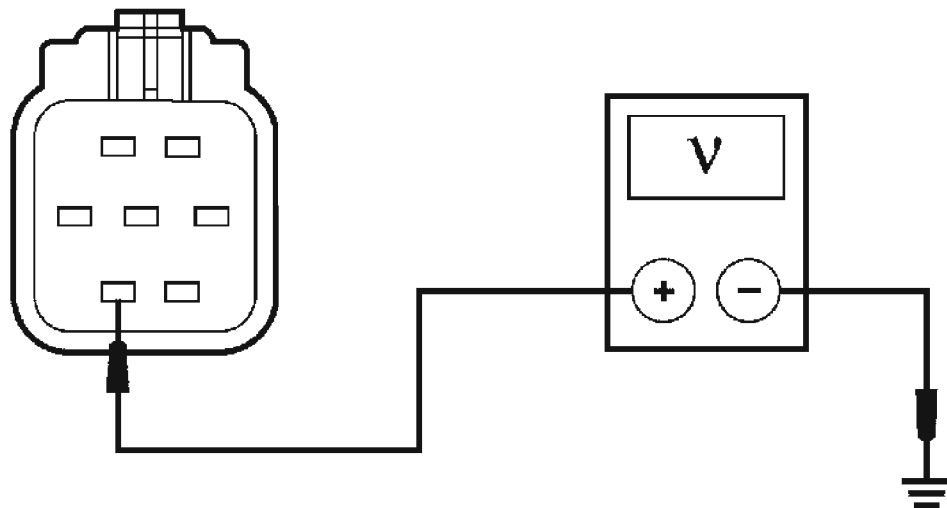
- Is the voltage greater than 10 volts?

Yes : GO to E2.

No : REPAIR or INSTALL a new BJB. TEST the system for normal operation.

E2 CHECK THE VOLTAGE AT THE HEADLAMP

- Key in OFF position.
- Disconnect: Inoperative Headlamp.
- Key in ON position.
- Measure the voltage between the LH headlamp C1021-6, circuit 15S-LE15 (GN/BK), harness side and ground; or between the RH headlamp C1041-6, circuit 15S-LE22 (GN/OG), harness side and ground.



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Fig. 20: Checking Voltage At Headlamp
Courtesy of FORD MOTOR CO.

- Is the voltage greater than 10 volts?

Yes : REPAIR or INSTALL a new headlamp assembly. REFER to **HEADLAMP ASSEMBLY**. TEST the system for normal operation.

No : REPAIR the circuit in question. TEST the system for normal operation.

PINPOINT TEST F: THE HEADLAMPS ARE ON CONTINUOUSLY

F1 DETERMINE THE CONDITION

- Key in ON position.

NOTE: Make sure the multifunction switch is in the low beam position.

- Observe the headlamps.
- **Are the high beams continuously illuminated?**
Yes : GO to F9.
No : GO to F2.

F2 CHECK THE HEADLAMP SWITCH

- Key in OFF position.
- Disconnect: Headlamp Switch C205.
- Key in ON position.
- **Do the headlamps continue to illuminate?**
Yes : GO to F3.
No : INSTALL a new headlamp switch. REFER to HEADLAMP SWITCH. TEST the system for normal operation.

F3 CHECK CIRCUIT 15S-LE19 (GN/BU) FOR A SHORT TO POWER

- Key in OFF position.
- Disconnect: Multifunction Switch C202.
- Key in ON position.
- **Do the headlamps continue to illuminate?**
Yes : GO to F5.
No : GO to F4.

F4 CHECK THE MULTIFUNCTION SWITCH (LOW BEAMS)

- Key in OFF position.
- Carry out the multifunction switch component test. Refer to COMPONENT TESTING article .
- **Is the multifunction switch OK?**
Yes : REPAIR circuit 15S-LE14 (GN/RD). TEST the system for normal operation.
No : INSTALL a new multifunction switch. REFER to STEERING COLUMN SWITCHES . TEST the system for normal operation.

F5 CHECK CIRCUITS 15S-LE16 (GN/OG) (LH HEADLAMP) AND 15S-LE23 (GN/WH) (RH HEADLAMP) FOR A SHORT TO POWER

- Key in OFF position.
- Disconnect: BJB Fuse 16.
- Disconnect: BJB Fuse 17.
- Key in ON position.

- **Do the headlamps continue to illuminate?**

Yes : REPAIR the circuit in question. TEST the system for normal operation.

No : GO to F6.

F6 CHECK CIRCUITS 15S-LE16 (GN/OG) (LH HEADLAMP) AND 15S-LE23 (GN/WH) (RH HEADLAMP) FOR A SHORT TO POWER

- Key in OFF position.
- Connect: BJB Fuse 16.
- Connect: BJB Fuse 17.
- Disconnect: Low Beam Relay C1049.
- Key in ON position.

- **Do the headlamps continue to illuminate?**

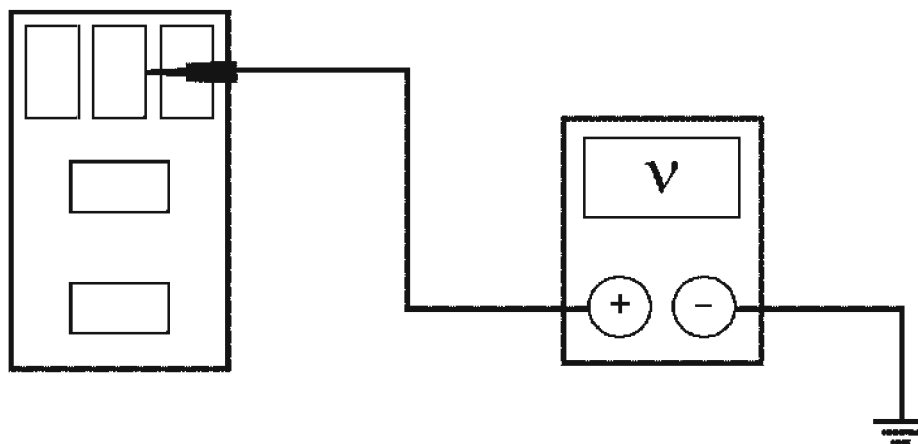
Yes : REPAIR or INSTALL a new BJB. TEST the system for normal operation.

No : If equipped with DRL, GO to F7.

If not equipped with DRL, GO to F8.

F7 CHECK CIRCUIT 15S-LE8 (GN/RD) FOR VOLTAGE

- Key in OFF position.
- Measure the voltage between the low beam relay C1049-4, circuit 15S-LE8 (GN/RD), harness side and ground.



GN1459-A

Fig. 21: Measuring Voltage Between Low Beam Relay C1049-4, Circuit 15S-LE8 (GN/RD), Harness Side And Ground

Courtesy of FORD MOTOR CO.

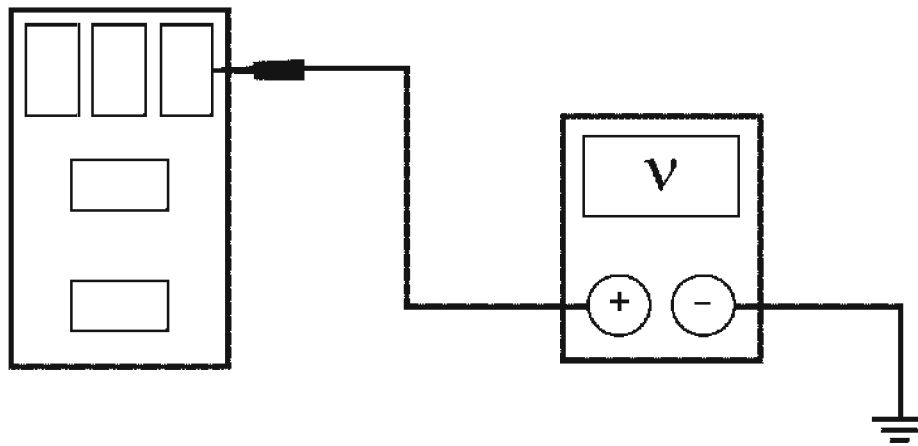
- **Is any voltage present?**

Yes : REFER to DAYTIME RUNNING LAMPS to continue diagnosis of the DRL.

No : GO to F8.

F8 CHECK CIRCUIT 15S-LE19 (GN/BU) FOR VOLTAGE

- Measure the voltage between the low beam relay C1049-1, circuit 15S-LE19 (GN/BU), harness side and ground.



GN1458-A

Fig. 22: Measuring Voltage Between Low Beam Relay C1049-1, Circuit 15S-LE19 (GN/BU), Harness Side And Ground

Courtesy of FORD MOTOR CO.

- **Is any voltage present?**

Yes : REPAIR the circuit. TEST the system for normal operation.

No : INSTALL a new low beam relay. TEST the system for normal operation.

F9 CHECK THE MULTIFUNCTION SWITCH (HIGH BEAMS)

- Key in OFF position.
- Disconnect: Multifunction Switch C202.
- Key in ON position.
- **Do the headlamps continue to illuminate?**

Yes : GO to F10.

No : INSTALL a new multifunction switch. REFER to **STEERING COLUMN SWITCHES** . TEST the system for normal operation.

F10 CHECK CIRCUITS 15S-LE15 (GN/BK) (LH HEADLAMP) AND 15S-LE22 (GN/OG) (RH HEADLAMP) FOR A SHORT TO POWER

- Key in OFF position.
- Disconnect: BJB Fuse 26.
- Disconnect: BJB Fuse 27.
- Key in ON position.
- **Do the headlamps continue to illuminate?**

Yes : REPAIR the circuit in question. TEST the system for normal operation.

No : GO to F11.

F11 CHECK CIRCUITS 15S-LE15 (GN/BU) AND 15S-LE22 (GN/BU) FOR A SHORT TO POWER

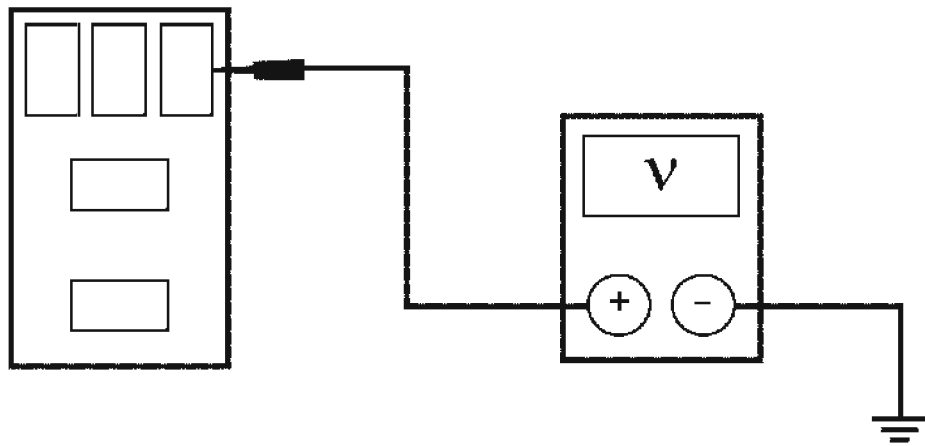
- Key in OFF position.
- Connect: BJB Fuse 26.
- Connect: BJB Fuse 27.
- Disconnect: High Beam Relay C1050.
- Key in ON position.
- **Do the headlamps continue to illuminate?**

Yes : REPAIR or INSTALL a new BJB. TEST the system for normal operation.

No : GO to F12.

F12 CHECK CIRCUIT 15S-LE12 (GN/YE) FOR A SHORT TO POWER

- Measure voltage between the high beam relay C1050-1, circuit 15S-LE12 (GN/YE), harness side and ground.



GN1458-A

Fig. 23: Measuring Voltage Between High Beam Relay C1050-1, Circuit 15S-LE12 (GN/YE), Harness Side And Ground
Courtesy of FORD MOTOR CO.

- **Is any voltage present?**

Yes : REPAIR the circuit. TEST the system for normal operation.

No : INSTALL a new high beam relay. TEST the system for normal operation.

STOPLAMPS

Refer to **SYSTEM WIRING DIAGRAMS** for schematic and connector information.

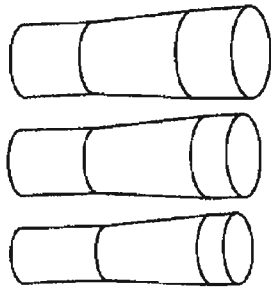
Special Tool(s)

SPECIAL TOOLS DESCRIPTION

	73III Automotive Meter 105-R0057 or equivalent
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2005 Ford Focus ZX5 S

2005 ACCESSORIES & BODY, CAB Exterior Lighting - Focus



ST1444-A

Inspection and Verification

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

VISUAL INSPECTION CHART

Mechanical	Electrical
<ul style="list-style-type: none">• Stoplamp switch	<ul style="list-style-type: none">• Central junction box (CJB) fuse(s):<ul style="list-style-type: none">○ 42 (15A) (stoplamp switch)○ 32 (15A) (generic electronic module [GEM])• GEM• Bulb(s)• Circuitry

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the concern is not visually evident, verify the symptom and GO to **SYMPTOM CHART**.

Symptom Chart

SYMPTOM CHART

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Condition	Possible Sources	Action
<ul style="list-style-type: none">• The stoplamps are inoperative	<ul style="list-style-type: none">• Circuitry• Stoplamp switch• Central junction box (CJB)	<ul style="list-style-type: none">• GO to <u>PINPOINT TEST G.</u>
<ul style="list-style-type: none">• One or more stoplamps are inoperative	<ul style="list-style-type: none">• Circuitry• Generic electronic module (GEM)	<ul style="list-style-type: none">• GO to <u>PINPOINT TEST H.</u>
<ul style="list-style-type: none">• The stoplamps are on continuously	<ul style="list-style-type: none">• Circuitry• Stoplamp switch• GEM• Speed control module• Powertrain control module (PCM)	<ul style="list-style-type: none">• GO to <u>PINPOINT TEST I.</u>

Pinpoint Tests

PINPOINT TEST G: THE STOPLAMPS ARE INOPERATIVE

G1 CHECK THE VOLTAGE AT CJB FUSE 42

- Key in ON position.
- Measure the voltage between the CJB fuse 42 and ground.

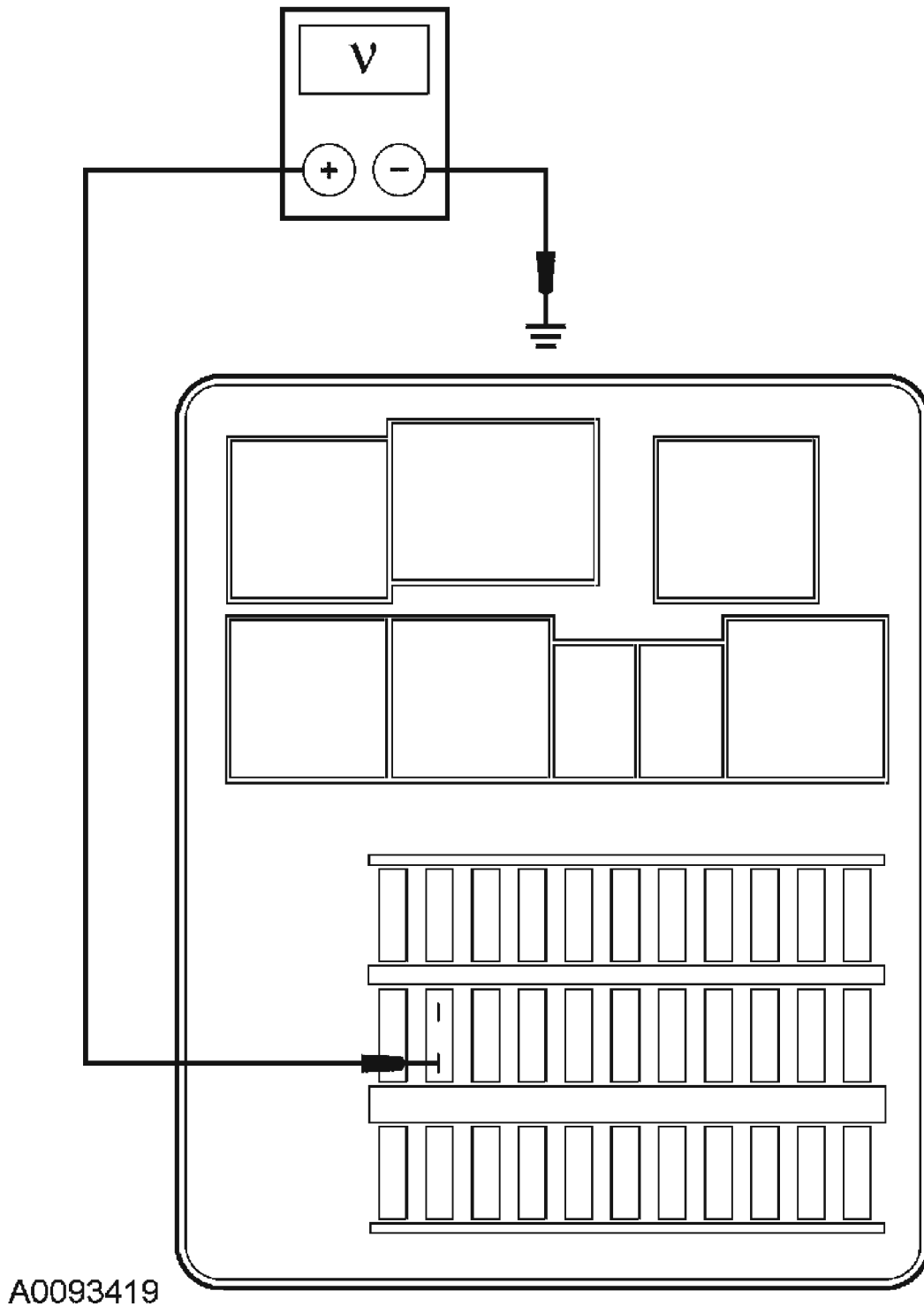


Fig. 24: Measuring Voltage Between CJB Fuse 42 And Ground
Courtesy of FORD MOTOR CO.

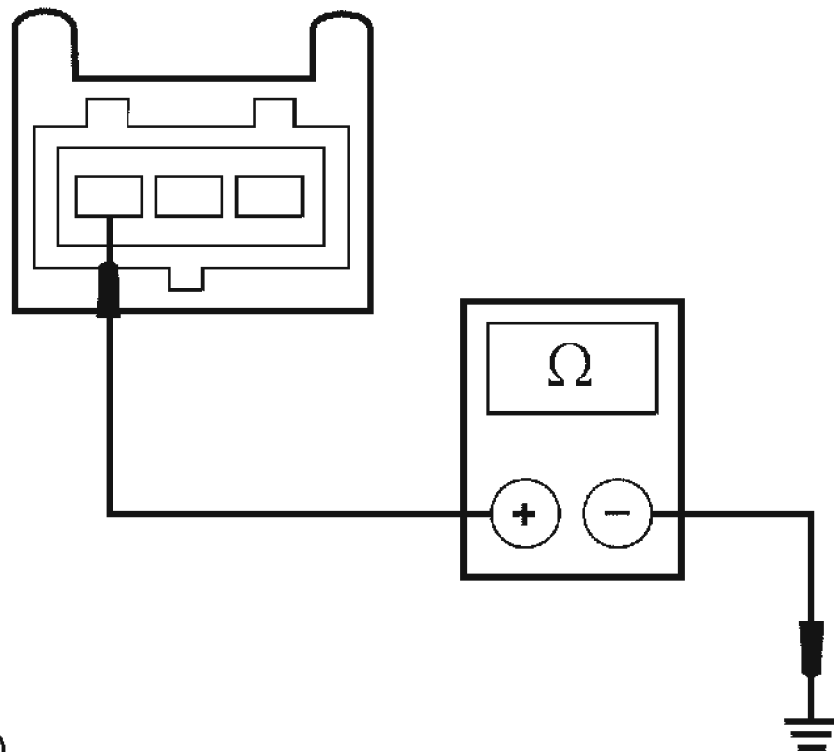
- Is the voltage greater than 10 volts?

Yes : GO to G2.

No : REPAIR or INSTALL a new CJB. TEST the system for normal operation.

G2 CHECK CIRCUIT 15S-LG14B (GN/RD) FOR AN OPEN

- Key in OFF position.
- Disconnect: Stoplamp Switch C2314.
- Key in ON position.
- Measure the resistance between the stoplamp switch C2314-1, circuit 15S-LG14B (GN/RD), harness side and ground.



A0093420

Fig. 25: Measuring Resistance Between Stoplamp Switch C2314-1, Circuit 15S-LG14B (GN/RD), Harness Side And Ground
Courtesy of FORD MOTOR CO.

- **Is the resistance less than 5 ohms?**

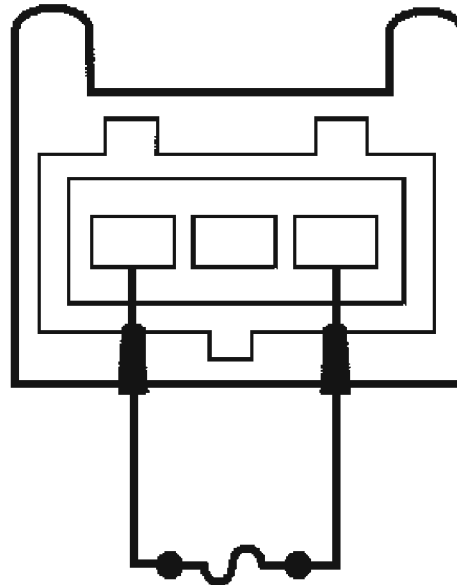
Yes : GO to G3.

No : REPAIR the circuit. TEST the system for normal operation.

G3 CHECK THE STOPLAMP SWITCH

- Key in OFF position.

- Connect a fused (15A) jumper wire between the stoplamp switch C2314-3, circuit 15-LG23 (GN/WH), harness side and the stoplamp switch C2314-1, circuit 15S-LG14B (GN/RD), harness side.



A0094050

Fig. 26: Checking Stoplamp Switch
Courtesy of FORD MOTOR CO.

- **Do the stoplamps illuminate?**

Yes : INSTALL a new stoplamp switch. REFER to **STOPLAMP SWITCH**. TEST the system for normal operation.

No : REPAIR circuit 15S-LG14B (GN/RD). TEST the system for normal operation.

PINPOINT TEST H: ONE OR MORE STOPLAMPS ARE INOPERATIVE

H1 DETERMINE THE FAULT CONDITION

- Key in ON position.
- Apply the brake pedal while observing the stoplamps.

- **Are all the stoplamps inoperative?**

Yes : GO to **PINPOINT TEST G**.

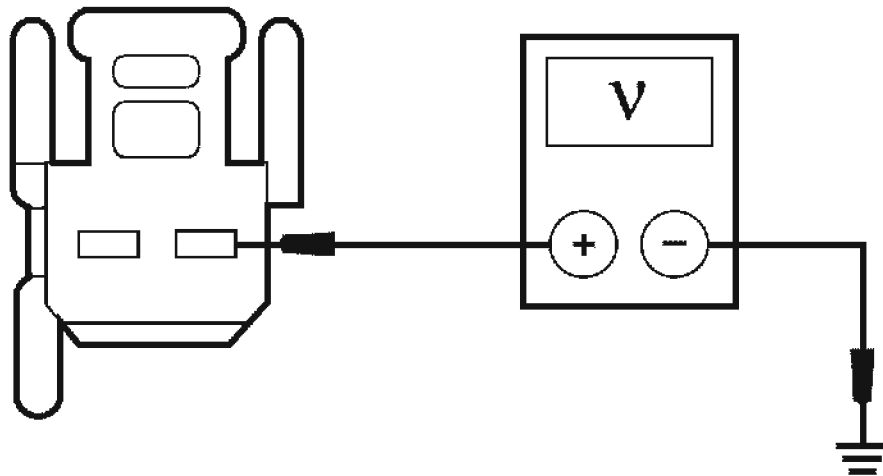
No : If the high mounted stoplamp is inoperative, GO to H2.

If one rear stoplamp is inoperative, GO to H3.

If both rear stoplamps are inoperative, GO to H6.

H2 CHECK CIRCUIT 15S-LG6 (GN/YE) FOR AN OPEN

- Key in OFF position.
- Disconnect: High Mounted Stoplamp C475.
- Key in ON position.
- Measure the voltage between the high mounted stoplamp C475-1, circuit 15S-LG6 (GN/YE), harness side and ground while applying the brake pedal.



A0093461

Fig. 27: Measuring Voltage Between High Mounted Stoplamp C475-1, Circuit 15S-LG6 (GN/YE), Harness Side And Ground
Courtesy of FORD MOTOR CO.

- **Is the voltage greater than 10 volts?**

Yes : REPAIR the high mounted stoplamp ground circuit. TEST the system for normal operation.

No : REPAIR circuit 15S-LG6 (GN/YE). TEST the system for normal operation.

H3 CHECK CIRCUIT 49S-LG12 (BU) OR 49S-LG19 (BU/RD) FOR AN OPEN

- Key in OFF position.
- Disconnect: GEM C201a.
- Disconnect: GEM C201b.
- Measure the resistance between the GEM C201a, pin 2, circuit 49S-LG12 (BU), harness side and ground (LH stoplamp); or between the GEM C201b, pin 4, circuit 49S-LG19 (BU/RD), harness side and ground (RH stoplamp).

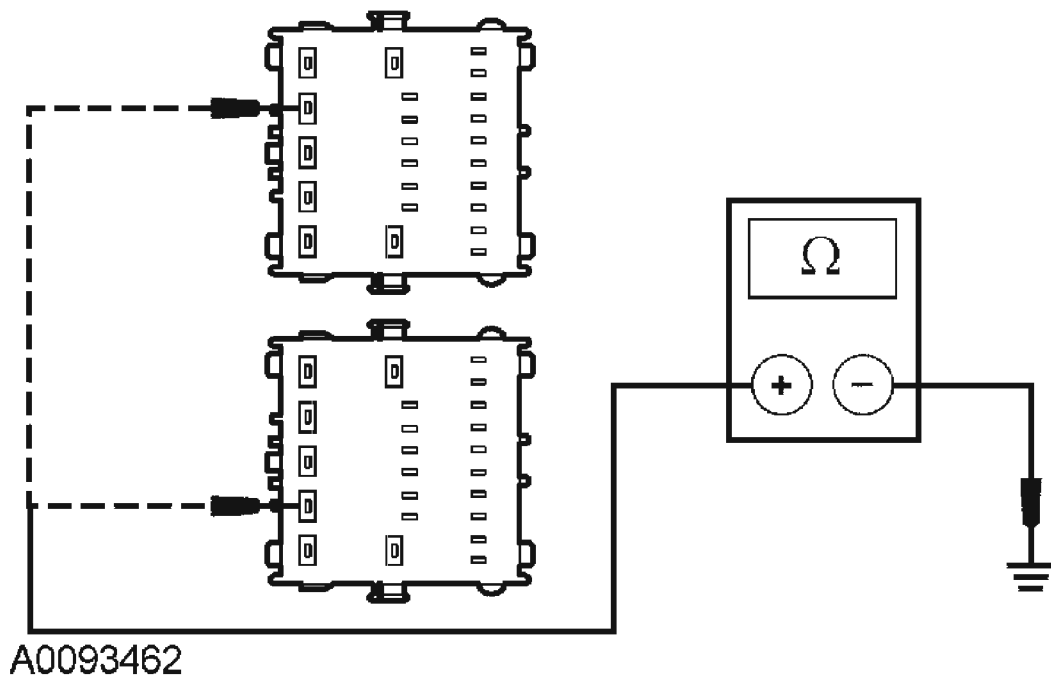


Fig. 28: Checking Circuit 49S-LG12 (BU) Or 49S-LG19 (BU/RD) For An Open

Courtesy of FORD MOTOR CO.

- Is the resistance less than 5 ohms?
Yes : GO to H4.
No : GO to H5.

H4 CHECK CIRCUIT 49S-LG12 (BU) OR 49S-LG19 (BU/RD) FOR A SHORT TO GROUND

- Disconnect: Inoperative Rear Lamp.
- Measure the resistance between the GEM C201a, pin 2, circuit 49S-LG12 (BU), harness side and ground (LH stoplamp); or between the GEM C201b, pin 4, circuit 49S-LG19 (BU/RD), harness side and ground (RH stoplamp).

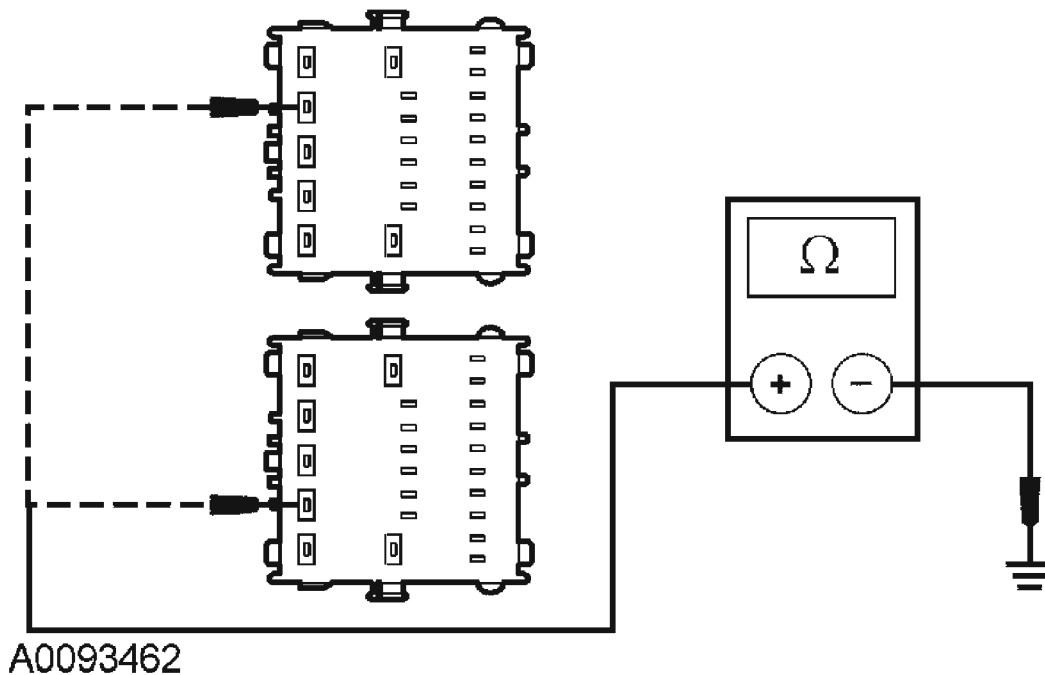


Fig. 29: Checking Circuit 49S-LG12 (BU) Or 49S-LG19 (BU/RD) For A Short To Ground

Courtesy of FORD MOTOR CO.

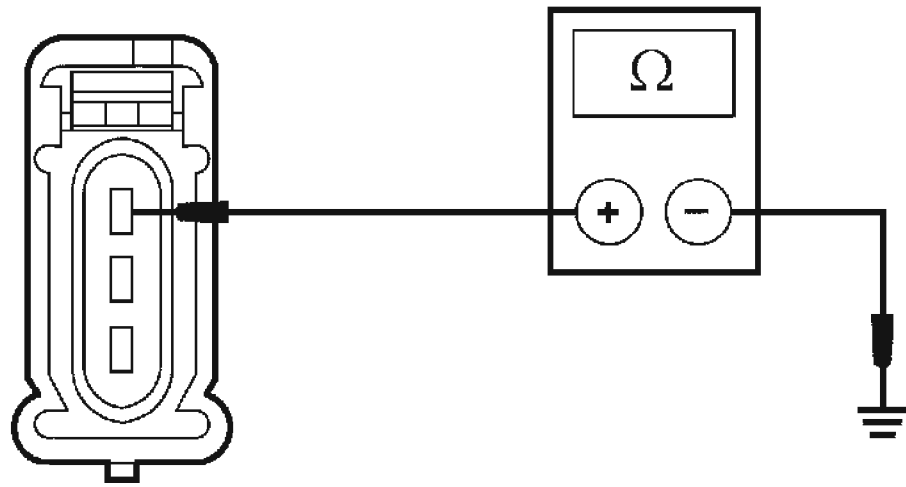
- Is the resistance greater than 10,000 ohms?

Yes : GO to H7.

No : REPAIR the circuit in question. TEST the system for normal operation.

H5 CHECK THE REAR LAMP GROUND CIRCUIT FOR AN OPEN

- Measure the resistance between the LH rear lamp C498 pin 1, circuit 31-LF23 (BK), harness side and ground; or between the RH rear lamp C499-1, circuit 31-LF24 (BK), harness side and ground.



A0093463

Fig. 30: Checking Rear Lamp Ground Circuit For An Open
Courtesy of FORD MOTOR CO.

- **Is the resistance less than 5 ohms?**

Yes : REPAIR circuit 49S-LG12 (BU) (LH rear lamp) or 49S-LG19 (BU/RD) (RH rear lamp). TEST the system for normal operation.

No : REPAIR the rear lamp ground circuit. TEST the system for normal operation.

H6 MEASURE THE VOLTAGE AT THE GEM

- Key in OFF position.
- Disconnect: GEM C201d.
- Key in ON position.
- Measure the voltage between the GEM C201d pin 9, circuit 15S-AA72 (GN/YE), harness side and ground while applying the brake pedal.

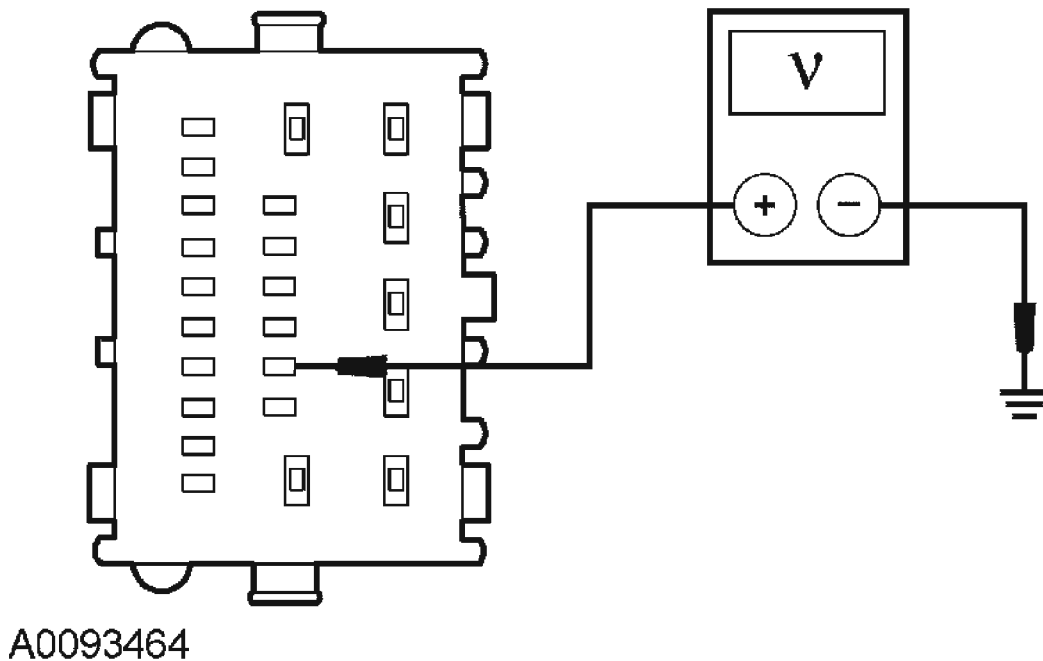


Fig. 31: Measuring Voltage Between GEM C201d Pin 9, Circuit 15S-AA72 (GN/YE), Harness Side And Ground
Courtesy of FORD MOTOR CO.

• **Is the voltage greater than 10 volts?**

Yes : GO to H7.

No : REPAIR the circuit. TEST the system for normal operation.

H7 CHECK FOR CORRECT GEM OPERATION

- Disconnect the GEM connectors.
- Check for:
 - Corrosion
 - Pushed-out pins
- Connect the GEM connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.
- **Is the concern still present?**

Yes : INSTALL a new GEM. REFER to **MULTIFUNCTION ELECTRONIC MODULES** . TEST the system for normal operation.

No : The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. TEST the system for normal operation.

PINPOINT TEST I: THE STOPLAMPS ARE ON CONTINUOUSLY

I1 DETERMINE THE CONDITION

- Key in ON position.
- **Are all the stoplamps on continuously?**
Yes : GO to I2.
No : GO to I5.

I2 CHECK THE STOPLAMP SWITCH

- Key in OFF position.
- Disconnect: Stoplamp Switch C2314.
- Key in ON position.
- **Do the stoplamps continue to illuminate?**
Yes : GO to I3.
No : INSTALL a new stoplamp switch. REFER to **STOPLAMP SWITCH**.
TEST the system for normal operation.

I3 CHECK THE PCM

- Key in OFF position.
- Disconnect: PCM.
- Key in ON position.
- **Do the stoplamps continue to illuminate?**
Yes : GO to I4.
No : GO to I7.

I4 CHECK THE SPEED CONTROL MODULE

- Key in OFF position.
- Disconnect: Speed Control Module.
- Key in ON position.
- **Do the stoplamps continue to illuminate?**
Yes : REPAIR the stoplamp switch output circuit. TEST the system for normal operation.
No : GO to I8.

I5 ISOLATE THE SHORT TO THE POWER CIRCUIT

- Key in OFF position.
- Disconnect: GEM C201a.
- Disconnect: GEM C201b.
- Key in ON position.
- **Do the stoplamps continue to illuminate?**
Yes : REPAIR circuit 49S-LG12 (BU) (LH rear lamp) or 49S-LG19 (BU/RD)

(RH rear lamp). TEST the system for normal operation.

No : GO to I6.

I6 CHECK FOR CORRECT GEM OPERATION

- Disconnect the GEM connectors.
- Check for:
 - Corrosion
 - Pushed-out pins
- Connect the GEM connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.
- **Is the concern still present?**

Yes : INSTALL a new GEM. REFER to **MULTIFUNCTION ELECTRONIC MODULES** . TEST the system for normal operation.

No : The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. TEST the system for normal operation.

I7 CHECK FOR CORRECT PCM OPERATION

- Disconnect the PCM connectors.
- Check for:
 - Corrosion
 - Pushed-out pins
- Connect the PCM connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.
- **Is the concern still present?**

Yes : INSTALL a new PCM. REFER to **ELECTRONIC ENGINE CONTROLS** . TEST the system for normal operation.

No : The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. TEST the system for normal operation.

I8 CHECK FOR CORRECT SPEED CONTROL MODULE OPERATION

- Disconnect the speed control module connector.
- Check for:
 - Corrosion
 - Pushed-out pins
- Connect the speed control module connector and make sure it seats correctly.
- Operate the system and verify the concern is still present.
- **Is the concern still present?**

Yes : INSTALL a new speed control module. REFER to **SPEED CONTROL** .

TEST the system for normal operation.

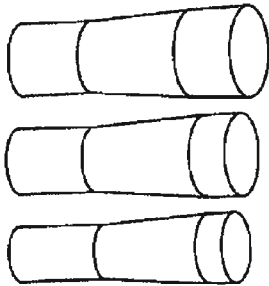
No : The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. TEST the system for normal operation.

TURN SIGNAL AND HAZARD LAMPS

Refer to **SYSTEM WIRING DIAGRAMS** for schematic and connector information.

Special Tool(s)

SPECIAL TOOLS DESCRIPTION

 <p>ST1444-A</p>	<p>73III Automotive Meter 105-R0057 or equivalent</p>
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Inspection and Verification

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

VISUAL INSPECTION CHART

Mechanical	Electrical
<ul style="list-style-type: none"> • Hazard switch • Multifunction switch 	<ul style="list-style-type: none"> • Central junction box (CJB) fuse 32 (15A) • Bulb(s) • Circuitry

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, connect the diagnostic tool to the data link connector (DLC) and select the vehicle to be tested from the diagnostic tool menu. If the diagnostic tool does not communicate with the vehicle:
 - Check that the program card is correctly installed.

- Check the connections to the vehicle.
 - Check the ignition switch position.
5. If the diagnostic tool still does not communicate with the vehicle, refer to the diagnostic tool operating manual.
 6. Carry out the diagnostic tool data link test. If the diagnostic tool responds with:
 - CAN circuit fault; all electronic units no communication/not equipped, refer to **MODULE COMMUNICATIONS NETWORK**.
 - No response/not equipped for the GEM, refer to **MULTIFUNCTION ELECTRONIC MODULES**.
 - System passed, retrieve and record the continuous DTCs, erase the continuous DTCs and carry out self-test diagnostics for the GEM.
 7. If the DTCs retrieved are related to the concern, go to the **GENERIC ELECTRONIC MODULE (GEM) DIAGNOSTIC TROUBLE CODE (DTC) INDEX**.
 8. If no DTCs related to the concern are retrieved, GO to **SYMPTOM CHART** to continue diagnostics.

Generic Electronic Module (GEM) Diagnostic Trouble Code (DTC) Index

GENERIC ELECTRONIC MODULE DIAGNOSTIC TROUBLE CODE INDEX

DTC	Description	Source	Action
B1499	Lamp Turn Signal Left Circuit Failure	GEM	GO to PINPOINT TEST L.
B1503	Lamp Turn Signal Right Circuit Failure	GEM	GO to PINPOINT TEST L.
B1875	Turn Signal/Hazard Switch Signal Circuit Failure	GEM	GO to PINPOINT TEST M.
B2281	Right Turn Switch Short To Ground	GEM	GO to PINPOINT TEST K.
B2282	Left Turn Switch Short To Ground	GEM	GO to PINPOINT TEST K.

Symptom Chart

SYMPTOM CHART

Condition	Possible Sources	Action
<ul style="list-style-type: none"> • The turn signal lamps are inoperative 	<ul style="list-style-type: none"> • Circuitry • Multifunction switch • Generic electronic module (GEM) 	<ul style="list-style-type: none"> • GO to PINPOINT TEST J.

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<ul style="list-style-type: none">• The turn signal lamps are always on	<ul style="list-style-type: none">• Circuitry• Multifunction switch• GEM	<ul style="list-style-type: none">• GO to <u>PINPOINT TEST K.</u>
<ul style="list-style-type: none">• One turn signal lamp is inoperative	<ul style="list-style-type: none">• Circuitry• Multifunction switch• GEM	<ul style="list-style-type: none">• GO to <u>PINPOINT TEST L.</u>
<ul style="list-style-type: none">• The hazard lamps are inoperative/always on	<ul style="list-style-type: none">• Circuitry• Hazard switch• GEM	<ul style="list-style-type: none">• GO to <u>PINPOINT TEST M.</u>

Pinpoint Tests

PINPOINT TEST J: THE TURN SIGNAL LAMPS ARE INOPERATIVE

J1 CHECK THE STOPLAMPS

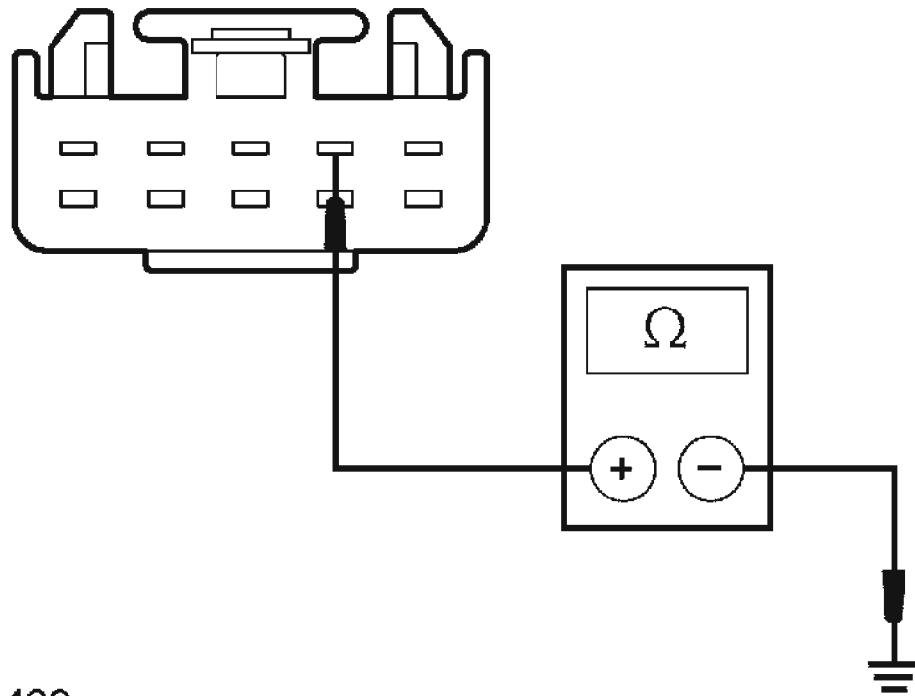
- Key in ON position.
- Apply and release the brake pedal while observing the rear lamps.
- **Do the stoplamps operate correctly?**

Yes : GO to J2.

No : REFER to **STOPLAMPS** to continue diagnosis of the stoplamps.

J2 CHECK CIRCUIT 91-LG27 (BK/GN) FOR AN OPEN

- Key in OFF position.
- Disconnect: Multifunction Switch C202.
- Measure the resistance between the multifunction switch C202-2, circuit 91-LG27 (BK/GN), harness side and ground.



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Fig. 32: Measuring Resistance Between Multifunction Switch C202-2, Circuit 91S-LG27 (BK/GN), Harness Side And Ground
Courtesy of FORD MOTOR CO.

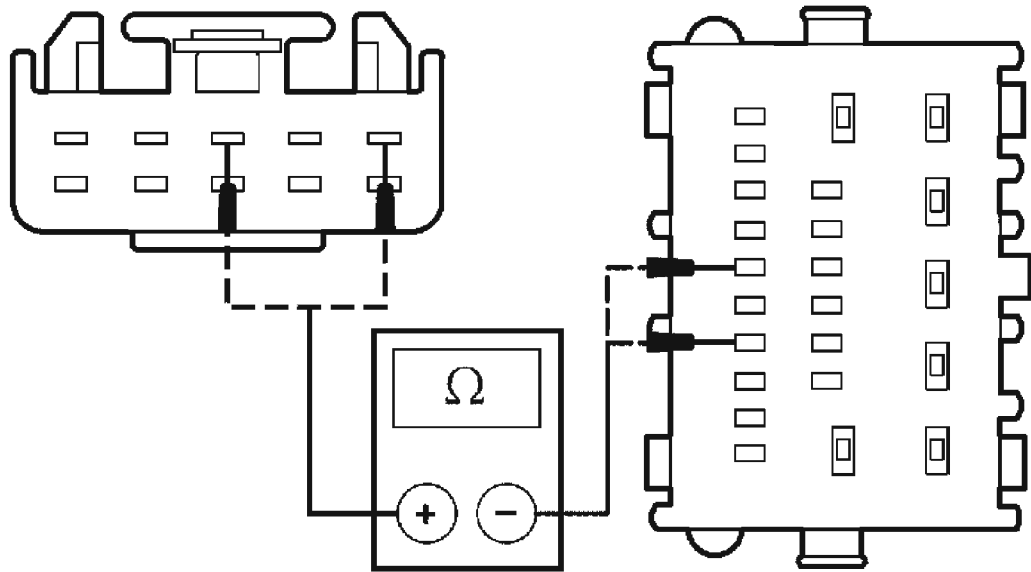
- Is the resistance less than 5 ohms?

Yes : GO to J3.

No : REPAIR the circuit. TEST the system for normal operation.

J3 CHECK CIRCUIT 91S-LG1 (BK/YE) (LH TURN) AND 91S-LG2 (BK/BU) (RH TURN) FOR AN OPEN

- Disconnect: GEM C201d.
- Measure the resistance between the multifunction switch C202-1, circuit 91S-LG1 (BK/YE), harness side and the GEM C201d pin 17, circuit 91S-LG1 (BK/YE), harness side; and between the multifunction switch C202-3, circuit 91S-LG2 (BK/BU), harness side and the GEM C201d pin 19, circuit 91S-LG2 (BK/BU), harness side.



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Fig. 33: Checking Circuit 91S-LG1 (BK/YE) (LH Turn) And 91S-LG2 (BK/BU) (RH Turn) For An Open
 Courtesy of FORD MOTOR CO.

- **Are the resistances less than 5 ohms?**

Yes : GO to J4.

No : REPAIR the circuit in question. TEST the system for normal operation.

J4 CHECK THE MULTIFUNCTION SWITCH

- Carry out the multifunction switch component test. Refer to COMPONENT TESTING article .
- **Is the multifunction switch OK?**

Yes : GO to J5.

No : INSTALL a new multifunction switch. REFER to STEERING COLUMN SWITCHES . TEST the system for normal operation.

J5 CHECK FOR CORRECT GEM OPERATION

- Disconnect the GEM connectors.
- Check for:
 - Corrosion
 - Pushed-out pins
- Connect the GEM connectors and make sure they seat correctly. Operate the system and verify the concern is still present.
- **Is the concern still present?**

Yes : INSTALL a new GEM. REFER to **MULTIFUNCTION ELECTRONIC MODULES** . TEST the system for normal operation.

No : The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. TEST the system for normal operation.

PINPOINT TEST K: THE TURN SIGNAL LAMPS ARE ALWAYS ON

K1 CHECK THE STOPLAMPS

- Key in ON position.
- Apply and release the brake pedal while observing the rear lamps.
- **Do the stoplamps operate correctly?**

Yes : GO to K2.

No : REFER to **STOPLAMPS** to continue diagnosis of the stoplamps.

K2 DETERMINE THE CONDITION

- Use the recorded results from the GEM self-test.
- **Are any DTCs present?**

Yes : If DTC B2281 or B2282, GO to K3.

All other DTCs, REFER to the **GENERIC ELECTRONIC MODULE (GEM) DIAGNOSTIC TROUBLE CODE (DTC) CHART**.

No : GO to K5.

K3 CHECK THE MULTIFUNCTION SWITCH

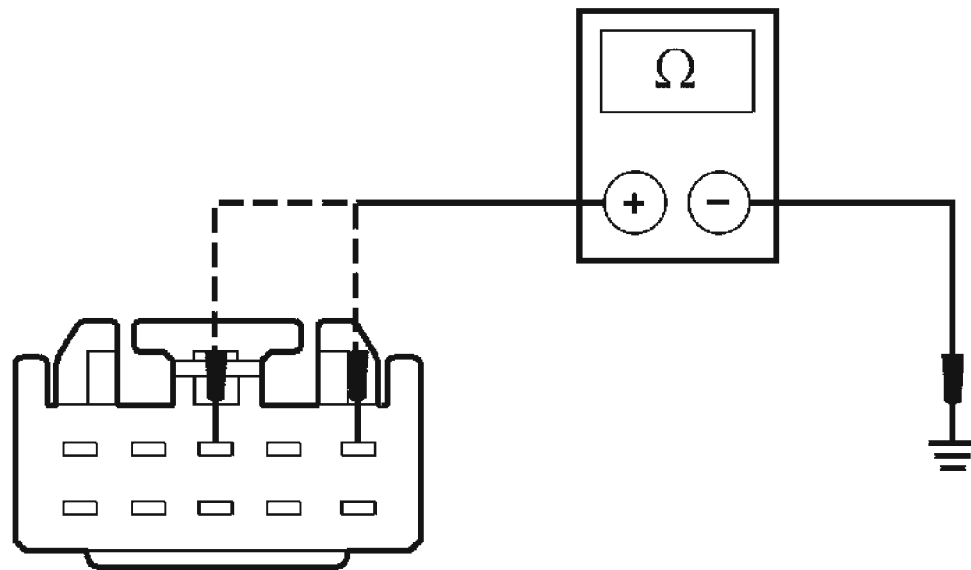
- Key in OFF position.
- Disconnect: Multifunction Switch C202.
- Key in ON position.
- **Do the turn lamps continue to flash?**

Yes : GO to K4.

No : INSTALL a new multifunction switch. REFER to **STEERING COLUMN SWITCHES** . TEST the system for normal operation.

K4 CHECK CIRCUIT 91S-LG1 (BK/YE) (LH TURN LAMPS) OR 91S-LG2 (BK/BU) (RH TURN LAMPS) FOR A SHORT TO GROUND

- Key in OFF position.
- Disconnect: GEM C201d.
- Measure the resistance between the multifunction switch C202-1, circuit 91S-LG1 (BK/YE), harness side and ground; or between the multifunction switch C202-3, circuit 91S-LG2 (BK/BU), harness side and ground.



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Fig. 34: Checking Circuit 91S-LG1 (BK/YE) (LH Turn Lamps) Or 91S-LG2 (BK/BU) (RH Turn Lamps) For A Short To Ground
 Courtesy of FORD MOTOR CO.

- Is the resistance greater than 10,000 ohms?

Yes : GO to K6.

No : REPAIR the circuit in question. TEST the system for normal operation.

K5 CHECK CIRCUIT 49S-LG4 (BU/RD) OR 49S-LG5 (BU/WH) FOR A SHORT TO POWER

- Key in OFF position.
- Disconnect: GEM C201c.
- Do the turn lamps continue to illuminate?

Yes : REPAIR the circuit in question. TEST the system for normal operation.

No : GO to K6.

K6 CHECK FOR CORRECT GEM OPERATION

- Disconnect the GEM connectors.
- Check for:
 - Corrosion
 - Pushed-out pins
- Connect the GEM connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.

- **Is the concern still present?**

Yes : INSTALL a new GEM. REFER to **MULTIFUNCTION ELECTRONIC MODULES** . TEST the system for normal operation.

No : The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. TEST the system for normal operation.

PINPOINT TEST L: ONE TURN SIGNAL/HAZARD LAMP IS INOPERATIVE

L1 CHECK THE STOPLAMPS

- Key in ON position.
- Apply and release the brake pedal while observing the rear lamps.
- **Do the stoplamps operate correctly?**

Yes : GO to L2.

No : REFER to **STOPLAMPS** to continue diagnosis of the stoplamps.

L2 CHECK THE TURN LAMPS GROUND CIRCUITRY

- Key in OFF position.
- Disconnect: Inoperative Turn Lamp.
- Measure the resistance between the LH front turn lamp C1023-1, circuit 31-LG11 (BK), harness side and ground; or between the RH front turn lamp C1043-1, circuit 31-LG18 (BK), harness side and ground.

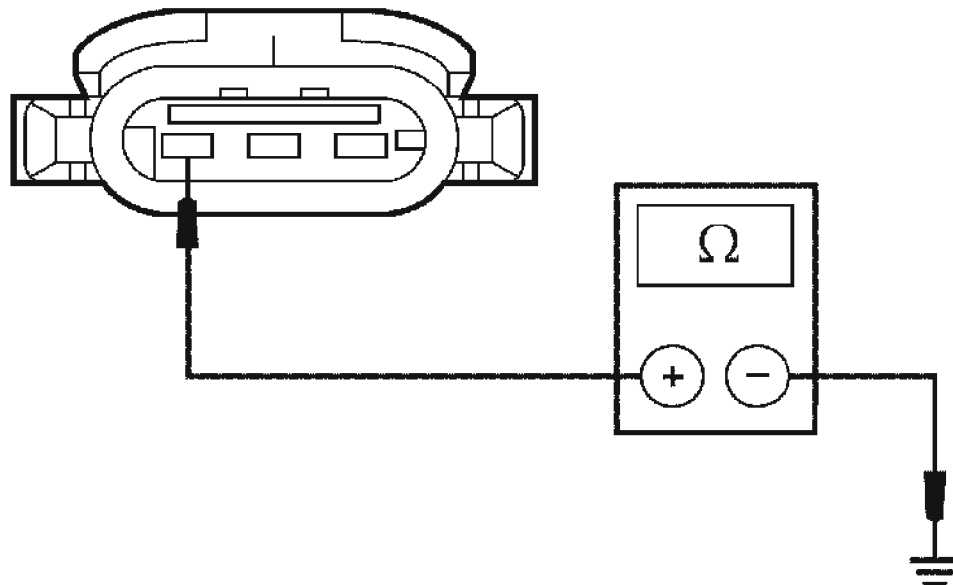


Fig. 35: Checking Turn Lamps Ground Circuitry
Courtesy of FORD MOTOR CO.

- **Is the resistance less than 5 ohms?**

Yes : GO to L3.

No : REPAIR the turn lamp ground circuit. TEST the system for normal operation.

L3 CHECK CIRCUITS 49S-LG11 (BU/OG) AND 49S-LG18 (BU) FOR AN OPEN

- Disconnect: GEM C201c.
- Measure the resistance between the GEM connector, harness side and the inoperative turn lamp connector, harness side; and between the GEM connector, harness side and ground as follows:

**GEM CONNECTOR-PIN, INOPERATIVE LAMP CONNECTOR-PIN
 AND CIRCUIT REFERENCE**

GEM Connector- Pin	Circuit	Inoperative Lamp Connector- Pin	Circuit
C201c-4	49S-LG5 (BU/WH)	LH front C1023-3	49S-LG11 (BU/OG)
C201c-3	49S-LG4 (BU/RD)	RH front C1043-3	49S-LG18 (BU)

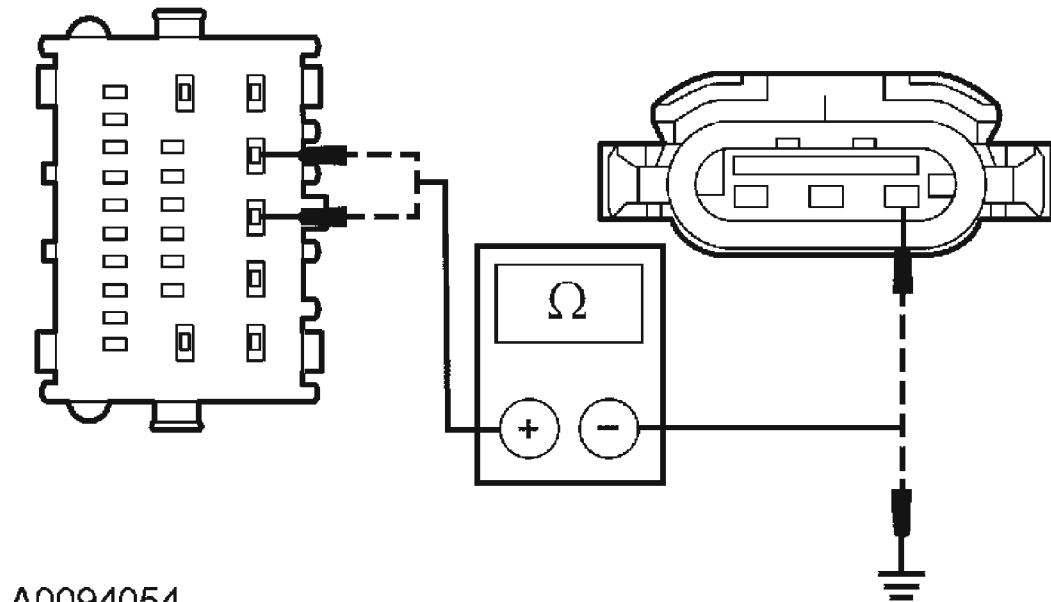


Fig. 36: Checking Circuits 49S-LG11 (BU/OG) And 49S-LG18 (BU) For An Open

Courtesy of FORD MOTOR CO.

- Is the resistance less than 5 ohms between the GEM and the turn lamp; and greater than 10,000 ohms between the GEM and ground?

Yes : GO to L4.

No : REPAIR the circuit(s) in question. TEST the system for normal operation.

L4 CHECK FOR CORRECT GEM OPERATION

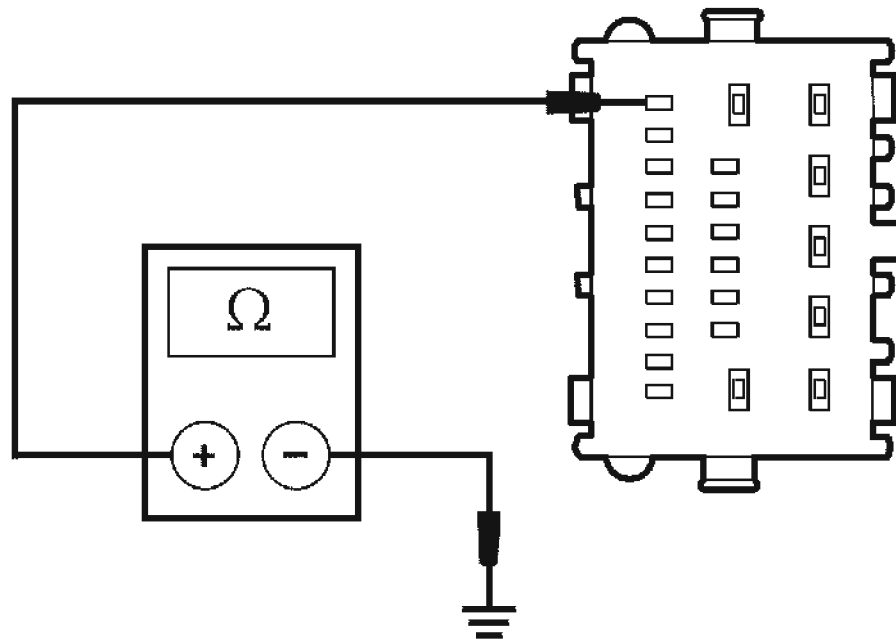
- Disconnect the GEM connectors.
- Check for:
 - Corrosion
 - Pushed-out pins
- Connect the GEM connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.
- **Is the concern still present?**

Yes : INSTALL a new GEM. REFER to **MULTIFUNCTION ELECTRONIC MODULES** . TEST the system for normal operation.

No : The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. TEST the system for normal operation.

M1 CHECK THE HAZARD LAMP SWITCH CIRCUITRY

- Key in OFF position.
- Disconnect: GEM C201d.
- Measure the resistance between the GEM C201d pin 23, circuit 91S-LG8 (BK/OG), harness side and ground while pressing and releasing the hazard lamp switch.



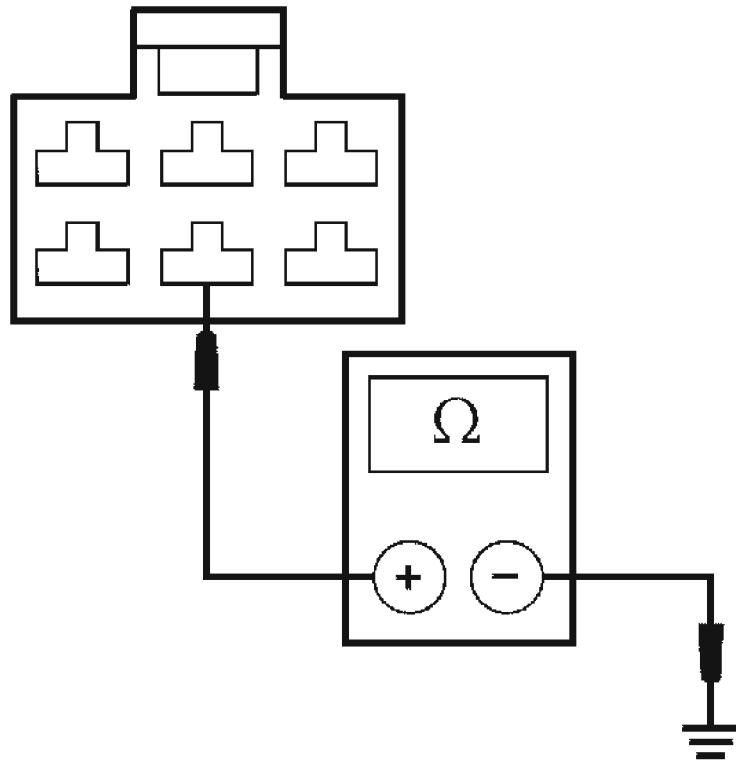
A0094055

Fig. 37: Measuring Resistance Between Gem C201d Pin 23, Circuit 91S-LG8 (BK/OG), Harness Side And Ground
Courtesy of FORD MOTOR CO.

- Is the resistance less than 5 ohms with the switch pressed and greater than 10,000 ohms with the switch released?
Yes : GO to M4.
No : GO to M2.

M2 CHECK THE HAZARD LAMP GROUND CIRCUIT FOR AN OPEN

- Disconnect: Hazard Switch C2039.
- Measure the resistance between the hazard switch C2039-5, circuit 91-LG8 (BK/OG), harness side and ground.



A0094056

Fig. 38: Measuring Resistance Between Hazard Switch C2039-5, Circuit 91-LG8 (BK/OG), Harness Side And Ground
Courtesy of FORD MOTOR CO.

- Is the resistance less than 5 ohms?

Yes : GO to M3.

No : REPAIR the hazard lamp ground circuit. TEST the system for normal operation.

M3 CHECK CIRCUIT 91S-LG8 (BK/OG) FOR AN OPEN OR A SHORT TO GROUND

- Measure the resistance between the hazard switch C2039-5, circuit 91S-LG8 (BK/OG), harness side and the GEM C201d pin 23, circuit 91S-LG8 (BK/OG), harness side; and between the hazard switch C2039-5, circuit 91S-LG8 (BK/OG), harness side and ground.

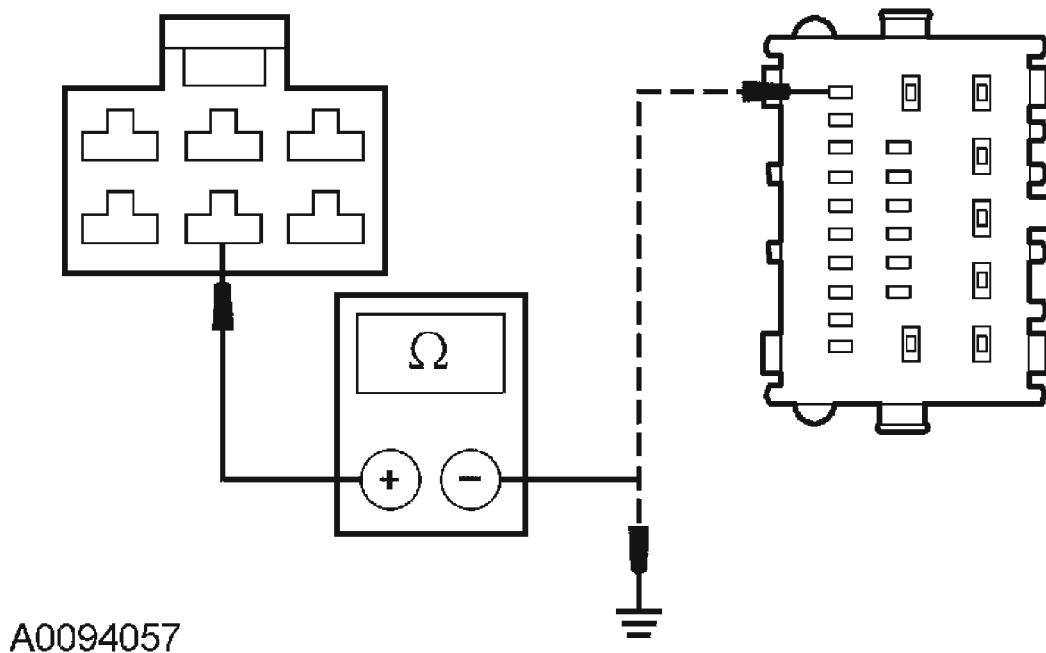


Fig. 39: Checking Circuit 91S-LG8 (BK/OG) For An Open Or A Short To Ground

Courtesy of FORD MOTOR CO.

- Is the resistance less than 5 ohms between the hazard switch and the GEM; and greater than 10,000 ohms between the hazard switch and ground?

Yes : GO to M4.

No : REPAIR the circuit. TEST the system for normal operation.

M4 CHECK FOR CORRECT GEM OPERATION

- Disconnect the GEM connectors.
- Check for:
 - Corrosion
 - Pushed-out pins
- Connect the GEM connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.
- Is the concern still present?

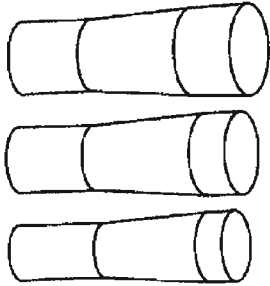
Yes : INSTALL a new GEM. REFER to **MULTIFUNCTION ELECTRONIC MODULES** . TEST the system for normal operation.

No : The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. TEST the system for normal operation.

PARKING, REAR AND LICENSE LAMPS

Refer to **SYSTEM WIRING DIAGRAMS** for schematic and connector information.

Special Tool(s)**SPECIAL TOOLS DESCRIPTION**

 <p>ST1444-A</p>	<p>73III Automotive Meter 105-R0057 or equivalent</p>
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Inspection and Verification

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

VISUAL INSPECTION CHART

Mechanical	Electrical
<ul style="list-style-type: none"> • Headlamp switch 	<ul style="list-style-type: none"> • Central junction box (CJB) fuse(s): <ul style="list-style-type: none"> ○ 30 (10A) (headlamp switch) ○ 57 (7.5A) (RH parking lamps) ○ 58 (7.5A) (LH parking lamps) • Bulb(s) • Circuitry

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the concern is not visually evident, verify the symptom. GO to **SYMPTOM CHART**.

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Symptom Chart

SYMPTOM CHART

Condition	Possible Sources	Action
<ul style="list-style-type: none">One or more parking, rear, or license lamp(s) is/are inoperative	<ul style="list-style-type: none">CircuitryCentral junction box (CJB)Headlamp switch	<ul style="list-style-type: none">GO to <u>PINPOINT TEST N.</u>
<ul style="list-style-type: none">The parking, rear, or license lamps are on continuously	<ul style="list-style-type: none">CircuitryHeadlamp switchCJBGEM	<ul style="list-style-type: none">GO to <u>PINPOINT TEST O.</u>

Pinpoint Tests

PINPOINT TEST N: ONE OR MORE PARKING, REAR OR LICENSE LAMP(S) IS/ARE INOPERATIVE

N1 DETERMINE THE FAULT CONDITION

- Key in OFF position.
- Place the headlamp switch in the parking lamps ON position.
- Are all the parking lamps inoperative?**

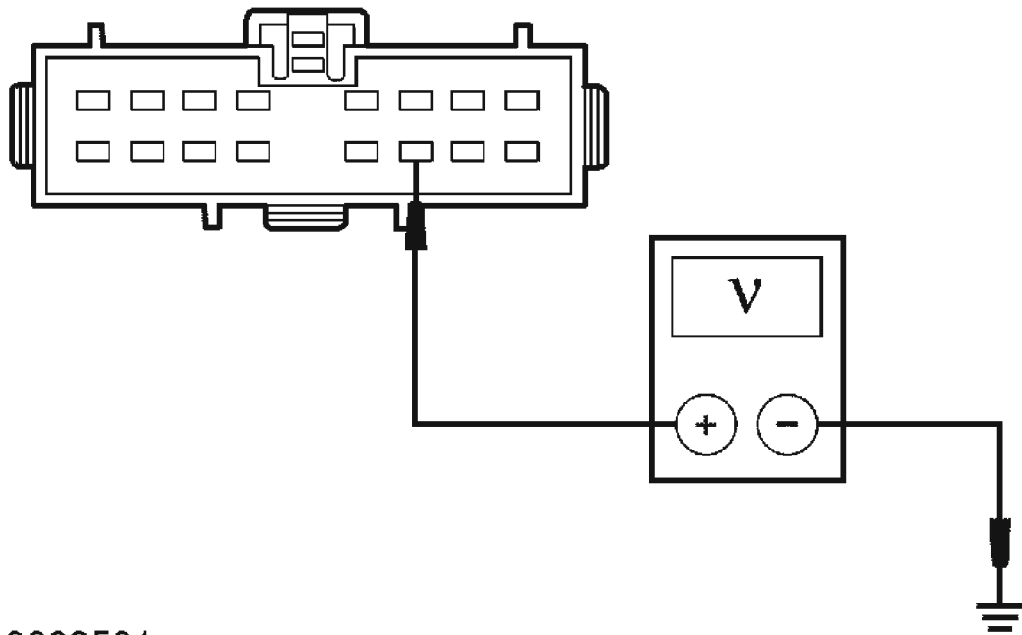
Yes : GO to N2.

No : If only the entire RH side or the entire LH side parking lamps are inoperative, REPAIR or INSTALL a new CJB. TEST the system for normal operation.

If one or more parking lamps are inoperative, GO to N6.

N2 CHECK THE VOLTAGE AT THE HEADLAMP SWITCH

- Disconnect: Headlamp Switch C205.
- Measure the voltage between the headlamp switch C205-11, circuit 29-LE29 (OG/BK), harness side and ground.



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Fig. 40: Measuring Voltage Between Headlamp Switch C205-11, Circuit 29-LE29 (OG/BK), Harness Side And Ground
Courtesy of FORD MOTOR CO.

- Is the voltage greater than 10 volts?

Yes : GO to N4.

No : GO to N3.

N3 CHECK CIRCUIT 29-LE29 (OG/BK) FOR AN OPEN

- Disconnect: CJB C270d.
- Measure the resistance between the CJB C270d-9, circuit 29-LE29 (OG/BK), harness side and the headlamp switch C205, pin 11, circuit 29-LE29 (OG/BK), harness side.

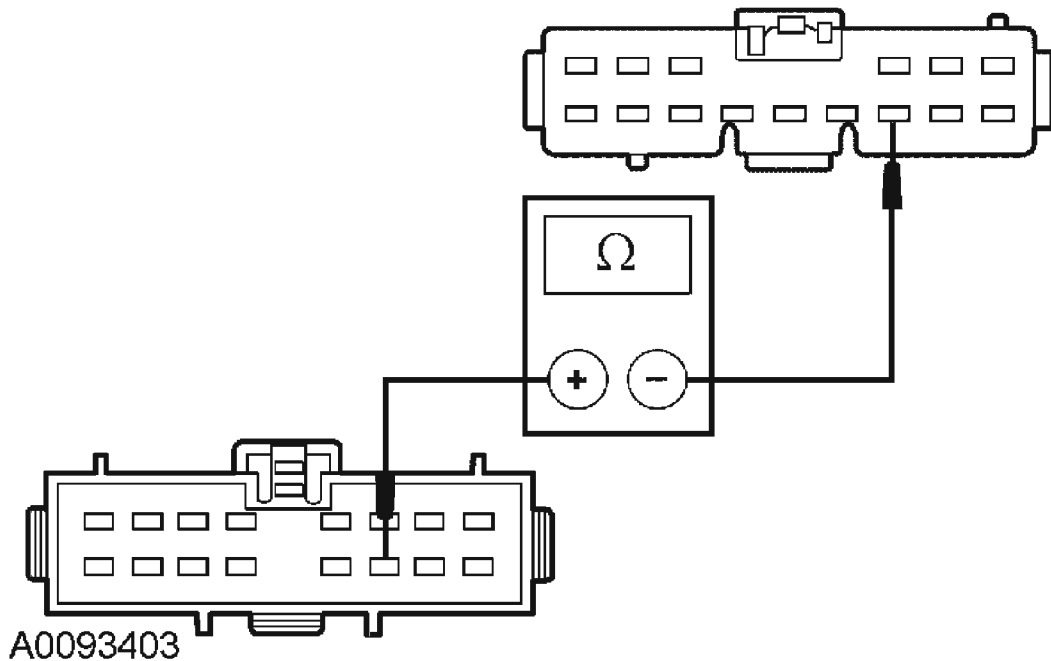


Fig. 41: Checking Circuit 29-LE29 (OG/BK) For An Open
 Courtesy of FORD MOTOR CO.

- **Is the resistance less than 5 ohms?**

Yes : REPAIR or INSTALL a new CJB. TEST the system for normal operation.

No : REPAIR the circuit. TEST the system for normal operation.

N4 CHECK THE HEADLAMP SWITCH

- Carry out the headlamp switch component test. Refer to **COMPONENT TESTING** .

- **Is the headlamp switch OK?**

Yes : GO to N5.

No : INSTALL a new headlamp switch. REFER to **HEADLAMP SWITCH**. TEST the system for normal operation.

N5 CHECK CIRCUIT 29S-LF1 (OG/YE) FOR AN OPEN

- Disconnect: CJB C270e.
- Measure the resistance between CJB connector C270e, pin 8, circuit 29-LF1 (OG/YE), harness side and the headlamp switch C205, pin 13, circuit 29-LF1 (OG/YE), harness side.

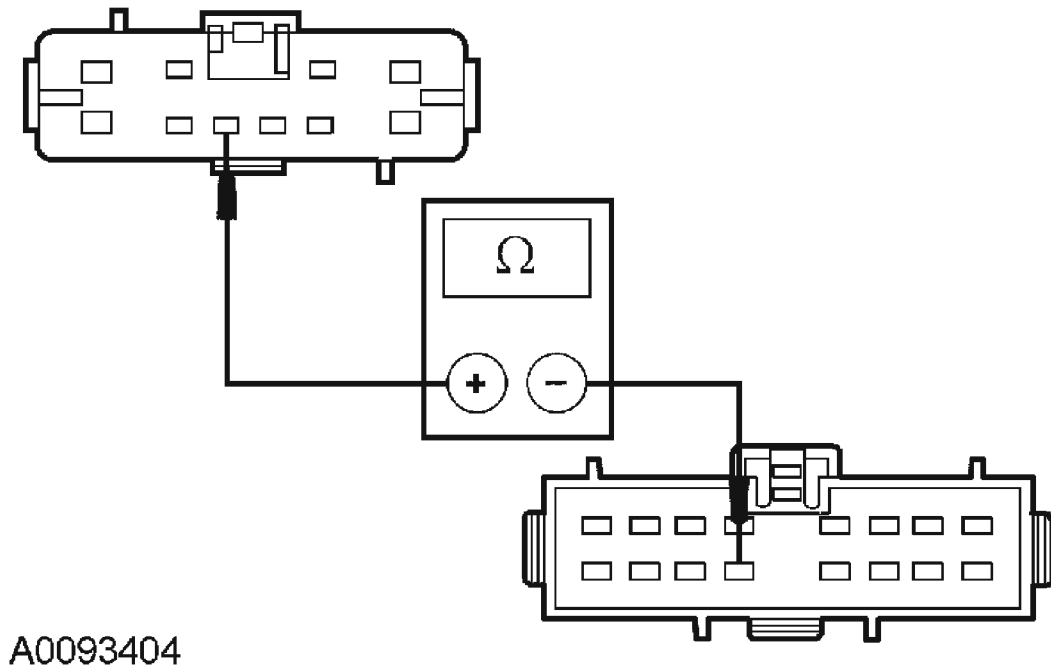


Fig. 42: Checking Circuit 29S-LF1 (OG/YE) For An Open
 Courtesy of FORD MOTOR CO.

- **Is the resistance less than 5 ohms?**

Yes : REPAIR or INSTALL a new CJB. TEST the system for normal operation.

No : REPAIR the circuit. TEST the system for normal operation.

N6 CHECK FOR VOLTAGE AT THE INOPERATIVE PARKING LAMP

- Disconnect: Inoperative Parking Lamp.
- Measure the voltage between the inoperative parking lamp connector, harness side and ground as follows:

INOPERATIVE LAMP CONNECTOR-PIN AND CIRCUIT REFERENCE

Inoperative Lamp	Connector-Pin	Circuit
LH front	C1023-2	29S-LF7 (OG/BU)
LH front side marker	C151-2	29S-LF8 (OG)
RH front	C1043-2	29S-LF16 (OG/GN)
RH front side marker	C161-2	29S-LF17 (OG/WH)

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LH rear	C498-2	29S-LF11 (OG/WH)
RH rear	C499-2	29S-LF20 (OG) (29S-LF11 [OG/WH] [3 door only])
LH license	C452b-1	29S-LF21 (OG/BK)
RH license	C462b-1	29S-LF22 (OG/BK)

- **Is the voltage greater than 10 volts?**

Yes : REPAIR the parking lamp power supply circuit in question. TEST the system for normal operation.

No : REPAIR the parking lamp ground circuit in question. TEST the system for normal operation.

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

O1 CHECK THE HEADLAMP SWITCH

- Key in OFF position.
- Disconnect: Headlamp Switch C205.
- **Do the parking lamps continue to illuminate?**

Yes : GO to O2.

No : INSTALL a new headlamp switch. REFER to **HEADLAMP SWITCH**. TEST the system for normal operation.

O2 CHECK THE POWER SUPPLY CIRCUIT FOR A SHORT TO POWER

- Disconnect: CJB C270e.
- **Do all of the parking lamps turn off?**

Yes : GO to O3.

No : REPAIR the parking lamp power supply circuit. TEST the system for normal operation.

O3 CHECK THE CJB

- Measure the voltage between the CJB fuse 57 and ground.

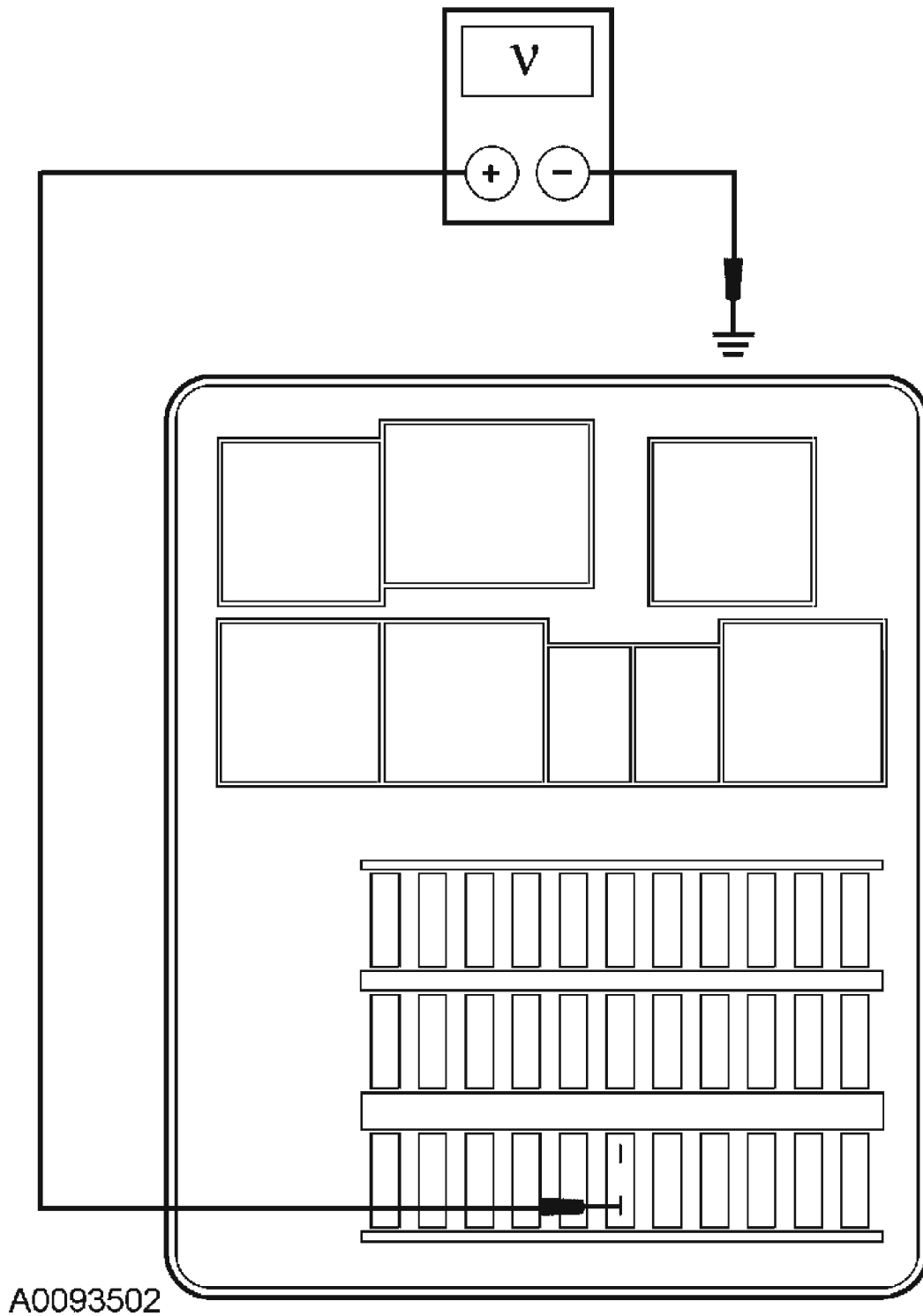


Fig. 43: Measuring Voltage Between CJB Fuse 57 And Ground
Courtesy of FORD MOTOR CO.

- Is any voltage present?

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Yes : REPAIR or INSTALL a new CJB. TEST the system for normal operation.

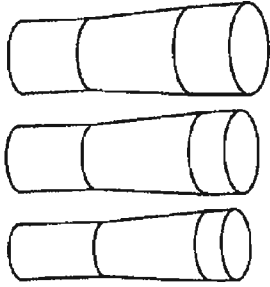
No : REPAIR circuit 29S-LF1 (OG/YE). TEST the system for normal operation

Fog Lamps

Refer to for schematic and connector information.

Special Tool(s)

SPECIAL TOOLS DESCRIPTION

 ST1444-A	73III Automotive Meter 105-R0057 or equivalent
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Inspection and Verification

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

VISUAL INSPECTION CHART

Mechanical	Electrical
<ul style="list-style-type: none">• Headlamp switch	<ul style="list-style-type: none">• Central junction box (CJB) fuse(s):<ul style="list-style-type: none">○ 44 (20A) (fog lamps)○ 59 (7.5A) (headlamp relay)• Bulb(s)• Circuitry• Fog lamp relay

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

4. If the concern is not visually evident, verify the symptom. GO to **SYMPTOM CHART**.

Symptom Chart

SYMPTOM CHART

Condition	Possible Sources	Action
<ul style="list-style-type: none"> The fog lamps are inoperative 	<ul style="list-style-type: none"> Circuitry Fog lamp relay Headlamp switch Central junction box (CJB) Battery junction box (BJB) 	<ul style="list-style-type: none"> GO to <u>PINPOINT TEST P</u>.
<ul style="list-style-type: none"> The individual fog lamp is inoperative 	<ul style="list-style-type: none"> Circuitry 	<ul style="list-style-type: none"> MEASURE the resistance between the LH fog lamp C152 pin 2, circuit 31-LD11 (BK), harness side and ground; or between the RH fog lamp C162 pin 2, circuit 31-LD17 (BK), harness side and ground. <ul style="list-style-type: none"> If the resistance is less than 5 ohms, REPAIR circuit 15S-LD11 (GN/WH) (LH fog lamp) or 15S-LD17 (GN/WH) (RH fog lamp). TEST the system for normal operation. If the resistance is not less than 5 ohms, REPAIR the fog lamp ground circuit. TEST the system for normal operation.
<ul style="list-style-type: none"> The fog lamps are on 	<ul style="list-style-type: none"> Circuitry 	<ul style="list-style-type: none"> GO to <u>PINPOINT TEST</u>

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continuously

- Fog lamp relay
- Headlamp switch
- CJB

Q.

Pinpoint Tests

PINPOINT TEST P: THE FOG LAMPS ARE INOPERATIVE

P1 CHECK THE LOW BEAM HEADLAMP OPERATION

- Key in ON position.
- Place the headlamp switch in the headlamps ON position.
- **Do the headlamps illuminate?**

Yes : GO to P2.

No : REFER to HEADLAMPS to continue diagnosis of the headlamps.

P2 CHECK THE FOG LAMP INDICATOR LAMP

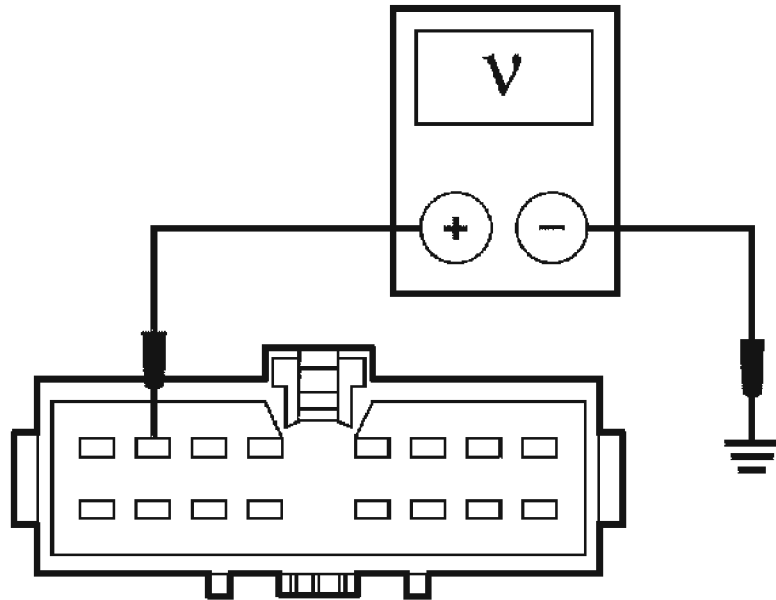
- Engage the fog lamp switch.
- **Is the front fog lamp indicator lamp illuminated?**

Yes : LEAVE the fog lamp switch engaged. GO to P5.

No : GO to P3.

P3 CHECK CIRCUIT 15-LD16 (GN/RD) FOR VOLTAGE

- Key in OFF position.
- Disconnect: Headlamp Switch C205.
- Key in ON position.
- Measure the voltage between the headlamp switch C205-7, circuit 15-LD16 (GN/RD), harness side and ground.



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Fig. 44: Measuring Voltage Between Headlamp Switch C205-7, Circuit 15-LD16 (GN/RD), Harness Side And Ground
Courtesy of FORD MOTOR CO.

- Is the voltage greater than 10 volts?

Yes : INSTALL a new headlamp switch. REFER to **HEADLAMP SWITCH**. TEST the system for normal operation.

No : GO to P4.

P4 CHECK CIRCUIT 15-LD16 (GN/RD) FOR AN OPEN

- Key in OFF position.
- Disconnect: CJB C270f.
- Measure the resistance between the headlamp switch C205-7, circuit 15-LD16 (GN/RD), harness side and the CJB C270f-4, circuit 15-LD16 (GN/RD), harness side.

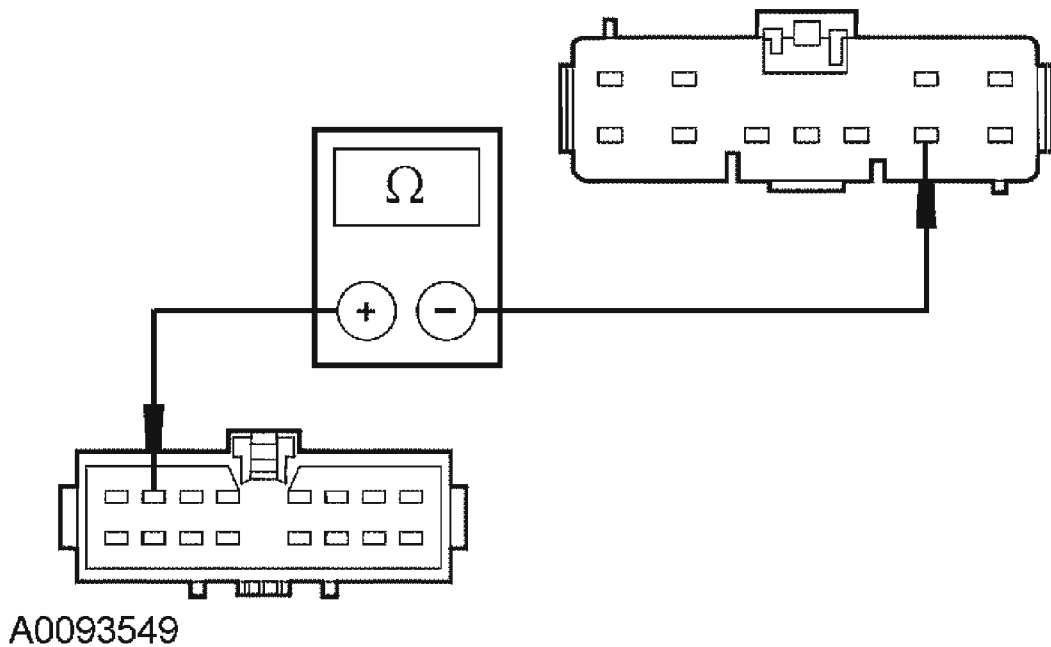


Fig. 45: Checking Circuit 15-LD16 (GN/RD) For An Open
 Courtesy of FORD MOTOR CO.

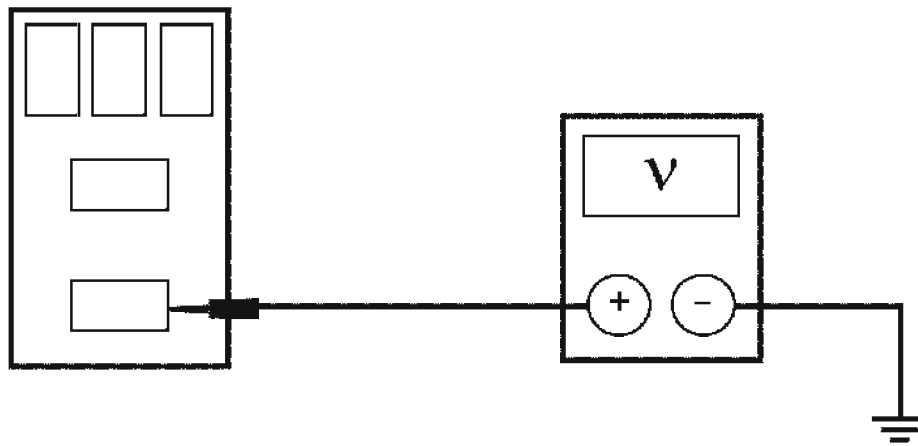
- **Is the resistance less than 5 ohms?**

Yes : REPAIR or INSTALL a new CJB. TEST the system for normal operation.

No : REPAIR the circuit. TEST the system for normal operation.

P5 CHECK CIRCUIT 15S-LD16 (GN/RD) FOR AN OPEN

- Key in OFF position.
- Disconnect: Fog Lamp Relay C1007.
- Key in ON position.
- Measure the voltage between the fog lamp relay C1007-3, circuit 15S-LD9 (GN/BK), harness side and ground.



GN1456-A

Fig. 46: Checking Relay Power Supply
Courtesy of FORD MOTOR CO.

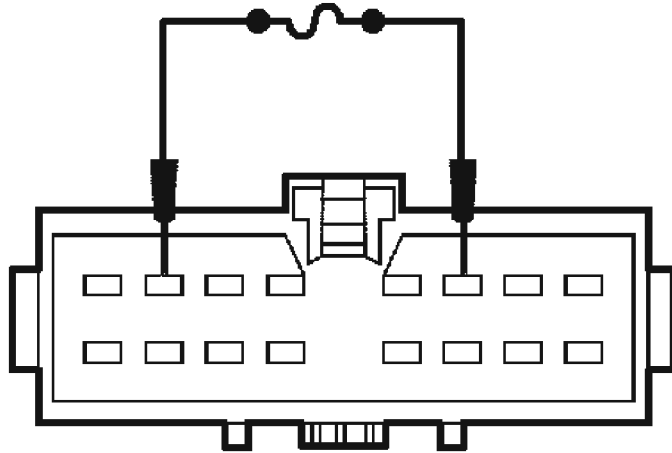
- Is the voltage greater than 10 volts?

Yes : GO to P7.

No : GO to P6.

P6 CHECK THE HEADLAMP SWITCH

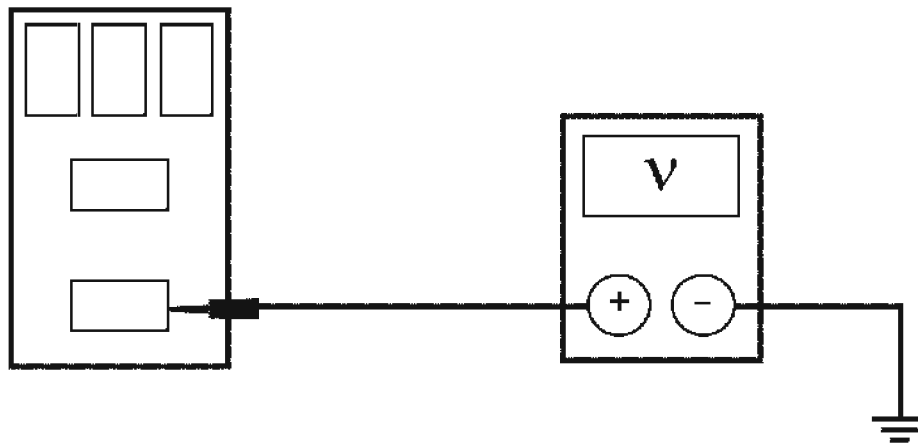
- Key in OFF position.
- Connect a fused (20A) jumper wire between the headlamp switch C205-7, circuit 15S-LD16 (GN/RD), harness side and the headlamp switch C205-3, circuit 15S-LD9 (GN/BK), harness side.



A0093503

Fig. 47: Checking Headlamp Switch
Courtesy of FORD MOTOR CO.

- Key in ON position.
- Measure the voltage between the fog lamp relay C1007-3, circuit 15S-LD9 (GN/BK), harness side and ground.



GN1456-A

Fig. 48: Checking Relay Power Supply
Courtesy of FORD MOTOR CO.

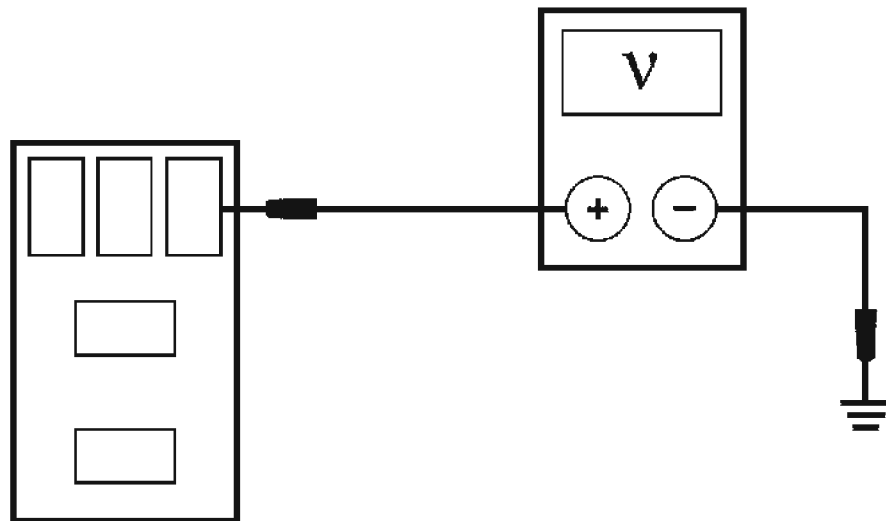
- **Is the voltage greater than 10 volts?**

Yes : INSTALL a new headlamp switch. REFER to **HEADLAMP SWITCH**.
TEST the system for normal operation.

No : REPAIR the circuit. TEST the system for normal operation.

P7 CHECK CIRCUIT 15S-LD19 (GN/BU) FOR AN OPEN

- Measure the voltage between the fog lamp relay C1007-1, circuit 15S-LD19 (GN/BU), harness side and ground.



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Fig. 49: Measuring Voltage Between Fog Lamp Relay C1007-1, Circuit 15S-LD19 (GN/BU), Harness Side And Ground
 Courtesy of FORD MOTOR CO.

- Is the voltage greater than 10 volts?

Yes : GO to P8.

No : REPAIR or INSTALL a new BJB. TEST the system for normal operation.

P8 CHECK CIRCUIT 91-DA 3 (BK/OG) FOR AN OPEN

- Key in OFF position.
- Measure the resistance between the fog lamp relay C1007-2, circuit 91-DA3 (BK/OG), harness side and ground.

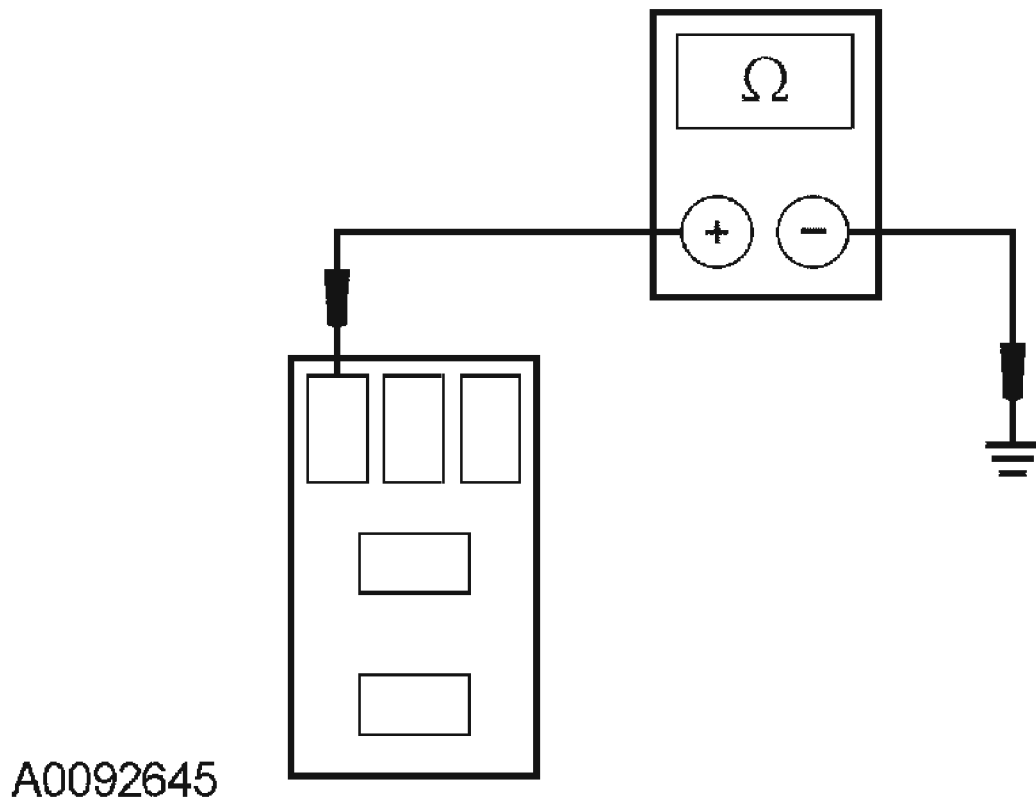


Fig. 50: Measuring Resistance Between Fog Lamp Relay C1007-2, Circuit 91-DA3 (BK/OG), Harness Side And Ground
Courtesy of FORD MOTOR CO.

- Is the resistance less than 5 ohms?

Yes : GO to P9.

No : REPAIR the circuit. TEST the system for normal operation.

P9 CHECK THE FOG LAMP RELAY

- Carry out the fog lamp relay component test. Refer to **COMPONENT TESTING** for component testing.
- Is the fog lamp relay OK?
 - Yes : REPAIR circuit 15S-LD1 (GN/YE). TEST the system for normal operation.
 - No : INSTALL a new fog lamp relay. TEST the system for normal operation.

PINPOINT TEST Q: THE FOG LAMPS ARE ON CONTINUOUSLY

Q1 CHECK THE HEADLAMP SWITCH

- Key in OFF position.

- Disconnect: Headlamp Switch C205.
- Key in ON position.
- **Do the fog lamps continue to illuminate?**

Yes : GO to Q2.

No : INSTALL a new headlamp switch. REFER to **HEADLAMP SWITCH**.
TEST the system for normal operation.

Q2 CHECK THE FOG LAMP POWER SUPPLY CIRCUIT FOR A SHORT TO POWER

- Key in OFF position.
- Disconnect: Fog Lamps Relay C1007.
- Key in ON position.
- **Do the fog lamps continue to illuminate?**

Yes : REPAIR the fog lamp power supply circuit. TEST the system for normal operation.

No : GO to Q3.

Q3 CHECK THE FOG LAMP RELAY

- Carry out the fog lamp relay component test. Refer to **COMPONENT TESTING** for component testing.
- **Is the fog lamp relay OK?**

Yes : REPAIR circuit 15S-LD9 (GN/BK). TEST the system for normal operation.

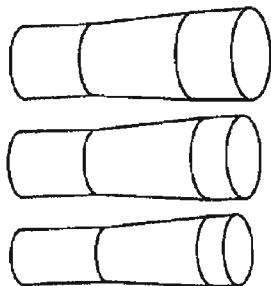
No : INSTALL a new fog lamp relay. TEST the system for normal operation.

REVERSING LAMPS

Refer to **SYSTEM WIRING DIAGRAMS** article for schematic and connector information.

Special Tool(s)

SPECIAL TOOLS DESCRIPTION



ST1444-A

73III Automotive Meter 105-R0057 or equivalent

Inspection and Verification

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

VISUAL INSPECTION CHART

Mechanical	Electrical
<ul style="list-style-type: none"> • Reversing lamp switch (manual transmission) • Digital transmission range (TR) sensor (automatic transmission) 	<ul style="list-style-type: none"> • Central junction box (CJB) fuse(s): <ul style="list-style-type: none"> ○ 53 (10A) (manual transmission) ○ 40 (10A) (automatic transmission) • Bulb(s) • Circuitry

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, connect the diagnostic tool to the data link connector (DLC) and select the vehicle to be tested from the diagnostic tool menu. If the diagnostic tool does not communicate with the vehicle:
 - Check that the program card is correctly installed.
 - Check the connections to the vehicle.
 - Check the ignition switch position.
5. If the diagnostic tool still does not communicate with the vehicle, refer to the diagnostic tool operating manual.
6. Carry out the diagnostic tool data link test. If the diagnostic tool responds with:
 - CAN circuit fault; all electronic units no communication/not equipped, refer to **MODULE COMMUNICATIONS NETWORK** .
 - No response/not equipped for the GEM, refer to **MULTIFUNCTION ELECTRONIC MODULES** .
 - System passed, retrieve and record the continuous DTCs, erase the continuous DTCs and carry out self-test diagnostics for the GEM.
7. If the DTCs retrieved are related to the concern, go to the **GENERIC ELECTRONIC MODULE (GEM) DIAGNOSTIC TROUBLE CODE (DTC) INDEX**.
8. If no DTCs related to the concern are retrieved, GO to **SYMPTOM CHART** to continue diagnostics.

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Generic Electronic Module (GEM) Diagnostic Trouble Code (DTC) Index

GENERIC ELECTRONIC MODULE DIAGNOSTIC TROUBLE CODE INDEX

DTC	Description	Source	Action
B1810	Lamp Back Up Switch Input Circuit Failure	GEM	For inoperative condition, GO to <u>PINPOINT TEST R</u> . For continuous on condition, GO to <u>PINPOINT TEST S</u> .

Symptom Chart

SYMPTOM CHART

Condition	Possible Sources	Action
<ul style="list-style-type: none">The reversing lamps are inoperative	<ul style="list-style-type: none">CircuitryReversing lamp switch (manual transmission)Digital transmission range (TR) sensor (automatic transmission)Central junction box (CJB)	<ul style="list-style-type: none">GO to <u>PINPOINT TEST R</u>.
<ul style="list-style-type: none">The individual reversing lamp is inoperative	<ul style="list-style-type: none">Circuitry	<ul style="list-style-type: none">MEASURE the resistance between the LH reversing lamp C451, circuit 31-LG9 (BK), harness side and ground; or between the RH reversing lamp C461, circuit 31-LG16 (BK), harness side and ground.<ul style="list-style-type: none">If the resistance is less than 5 ohms, REPAIR circuit 15S-LG9A (GN/BK) (LH reversing lamp) or

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2005 ACCESSORIES & BODY, CAB Exterior Lighting - Focus

		<p>circuit 15S-LG16 (GN/OG) (RH reversing lamp). TEST the system for normal operation.</p> <ul style="list-style-type: none">○ If the resistance is not less than 5 ohms, REPAIR the reversing lamp ground circuit. TEST the system for normal operation.
<ul style="list-style-type: none">• The reversing lamps are on continuously	<ul style="list-style-type: none">• Circuitry• Reversing lamp switch (manual transmission)• Digital TR sensor (automatic transmission)• CJB• Powertrain control module (PCM)	<ul style="list-style-type: none">• GO to <u>PINPOINT TEST S.</u>

Pinpoint Tests

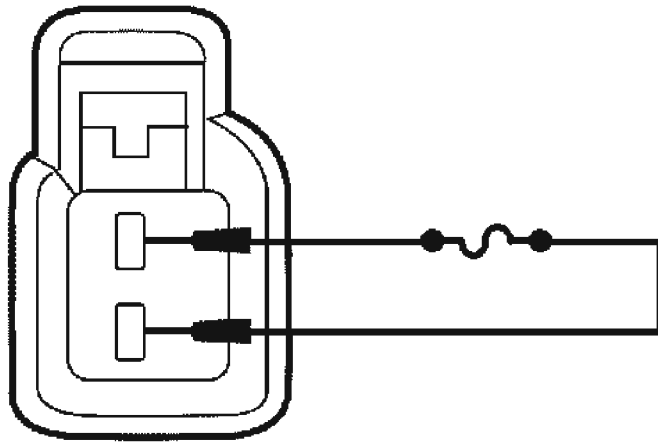
PINPOINT TEST R: THE REVERSING LAMPS ARE INOPERATIVE

R1 DETERMINE THE TRANSMISSION TYPE

- Check the vehicle and determine the type of transmission.
- **Is the vehicle equipped with a manual transmission?**
 - Yes : GO to R2.
 - No : GO to R7.

R2 BY-PASS THE REVERSING LAMP SWITCH

- Key in OFF position.
- Connect a fused (10A) jumper wire between the reversing lamp switch C1407-2, circuit 15-LG28 (GN/WH), harness side and the reversing lamp switch C1407-1, circuit 15S-LG3 (GN/YE), harness side.



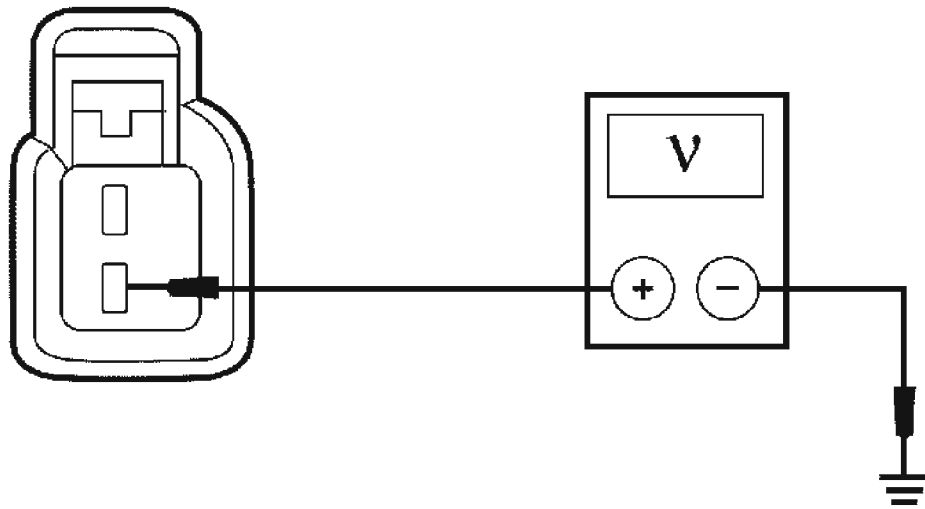
A0092710

Fig. 51: By-Passing Reversing Lamp Switch
Courtesy of FORD MOTOR CO.

- Key in ON position.
- **Do the reversing lamps illuminate?**
Yes : INSTALL a new reversing lamp switch. REFER to **REVERSING LAMP SWITCH**. TEST the system for normal operation.
No : REMOVE the jumper wire. GO to R3.

R3 CHECK THE VOLTAGE TO THE REVERSING LAMP SWITCH

- Measure the voltage between the reversing lamp switch C1407, pin 2, circuit 15-LG28 (GN/WH), harness side and ground.



A0092642

Fig. 52: Measuring Voltage Between Reversing Lamp Switch C1407, Pin 2, Circuit 15-LG28 (GN/WH), Harness Side And Ground
 Courtesy of FORD MOTOR CO.

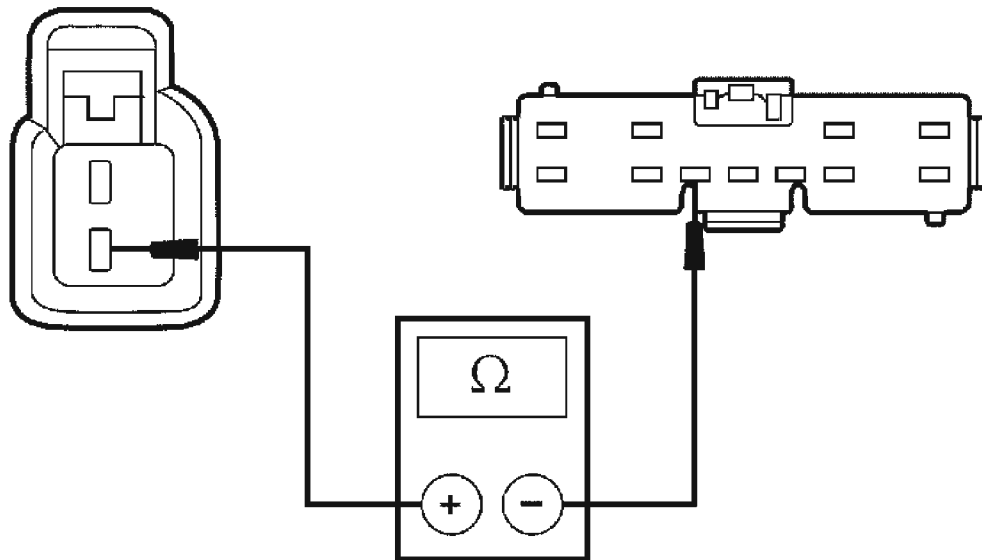
- Is the voltage greater than 10 volts?

Yes : GO to R5.

No : GO to R4.

R4 CHECK CIRCUIT 15-LG28 (GN/WH) FOR AN OPEN

- Key in OFF position.
- Disconnect: CJB C270f.
- Measure the resistance between the reversing lamp switch C1407-2, circuit 15-LG28 (GN/WH), harness side and the CJB C270f-9, circuit 15-LG28 (GN/WH), harness side.



A0093504

Fig. 53: Checking Circuit 15-LG28 (GN/WH) For An Open
Courtesy of FORD MOTOR CO.

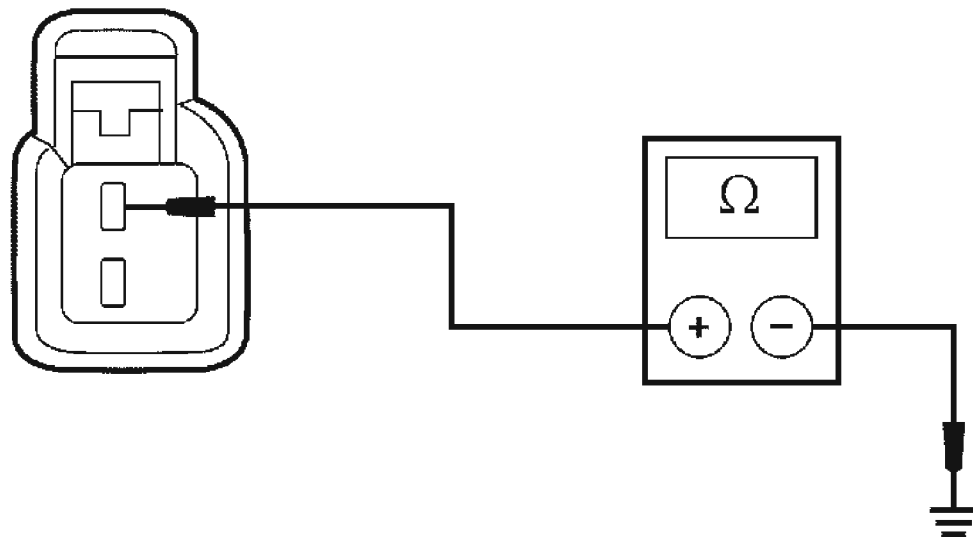
- **Is the resistance less than 5 ohms?**

Yes : REPAIR OR INSTALL a new CJB. TEST the system for normal operation.

No : REPAIR the circuit. TEST the system for normal operation.

R5 CHECK THE REVERSING LAMP POWER SUPPLY CIRCUIT FOR AN OPEN

- Key in OFF position.
- Measure the resistance between the reversing lamp switch C1407-1, circuit 15-LG3 (GN/YE), harness side and ground.



A0093541

Fig. 54: Measuring Resistance Between Reversing Lamp Switch C1407-1, Circuit 15-LG3 (GN/YE), Harness Side And Ground
Courtesy of FORD MOTOR CO.

- **Is the resistance less than 5 ohms?**

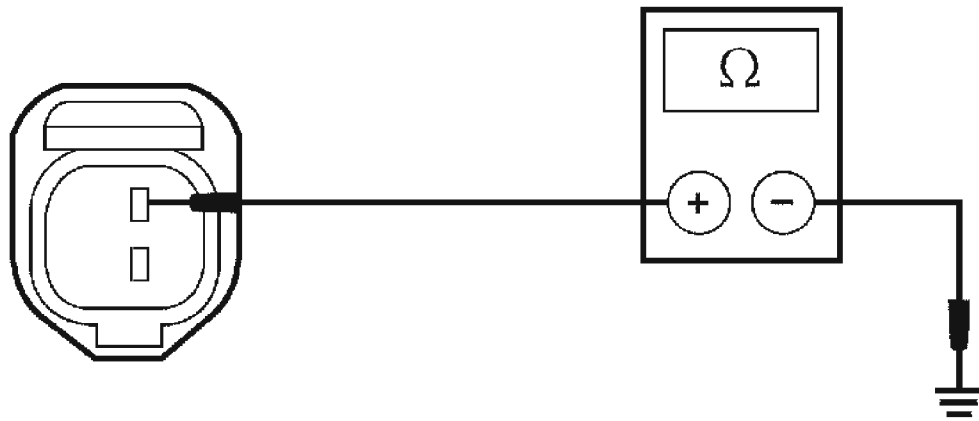
Yes : REPAIR or INSTALL a new CJB. TEST the system for normal operation.

No : For a 3-door or 5-door vehicle, GO to R6.

For a 4-door or wagon vehicle, REPAIR the reversing lamp power supply circuit.
TEST the system for normal operation.

R6 CHECK THE REVERSING LAMP GROUND CIRCUIT FOR AN OPEN (MANUAL)

- Disconnect: Reversing Lamp.
- Measure the resistance between the LH reversing lamp C451-1, circuit 31-LG9 (BK), harness side and ground; or between the LH reversing lamp C461-1, circuit 31-LG16 (BK), harness side and ground.



A0093544

Fig. 55: Checking Reversing Lamp Ground Circuit For An Open (Manual)
Courtesy of FORD MOTOR CO.

- **Is the resistance less than 5 ohms?**

Yes : REPAIR the reversing lamp power supply circuit. TEST the system for normal operation.

No : REPAIR the reversing lamp ground circuit. TEST the system for normal operation.

R7 CHECK THE PCM TRANSMISSION PIDs

- Key in ON position.
- Connect the diagnostic tool.
- Enter the following diagnostic mode on the diagnostic tool: PCM PID.
- Monitor the PCM transmission range PID while moving the transmission shift lever through all the transmission ranges.

- **Do the transmission ranges agree with the PIDs?**

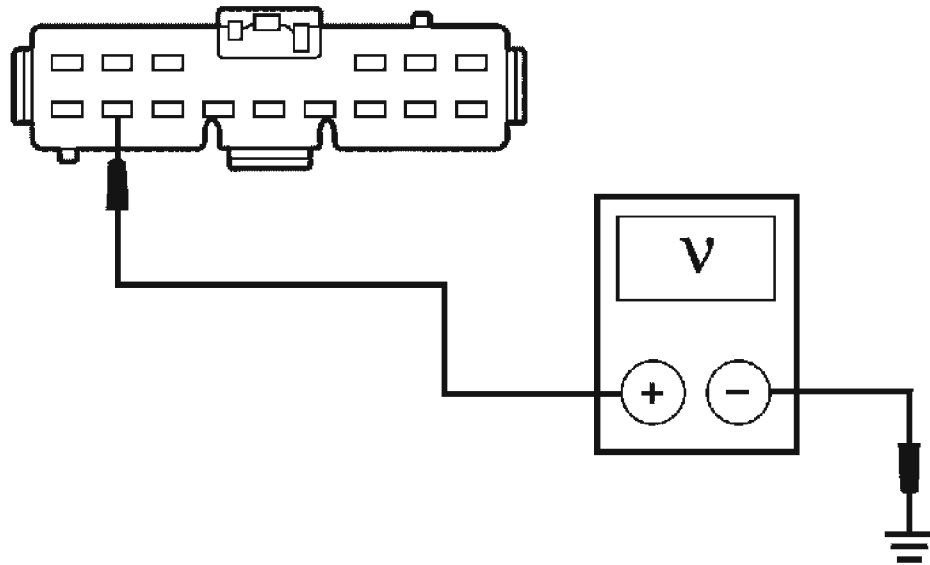
Yes : GO to R8.

No : REFER to AUTOMATIC TRANSAXLE/TRANSMISSION to continue diagnosis of the transmission.

R8 CHECK CIRCUIT 15S-TA38B (GN/BU) FOR AN OPEN

- Key in OFF position.
- Disconnect: CJB 270d.
- Apply the parking brake.
- Key in ON position.

- Place the transmission in REVERSE.
- Measure the voltage between the CJB C270d-14, circuit 15S-TA38B (GN/BU), harness side and ground.



A0094058

Fig. 56: Measuring Voltage Between CJB C270d-14, Circuit 15S-TA38B (GN/BU), Harness Side And Ground
Courtesy of FORD MOTOR CO.

- **Is the voltage greater than 10 volts?**
Yes : PLACE the transmission in PARK. GO to R9.
No : REPAIR the circuit. TEST the system for normal operation.

R9 CHECK CIRCUIT 15S-LG9 (GN/BK) FOR AN OPEN

- Key in OFF position.
- Measure the resistance between the CJB C270d-15, circuit 15S-LG9 (GN/BK), harness side and ground.

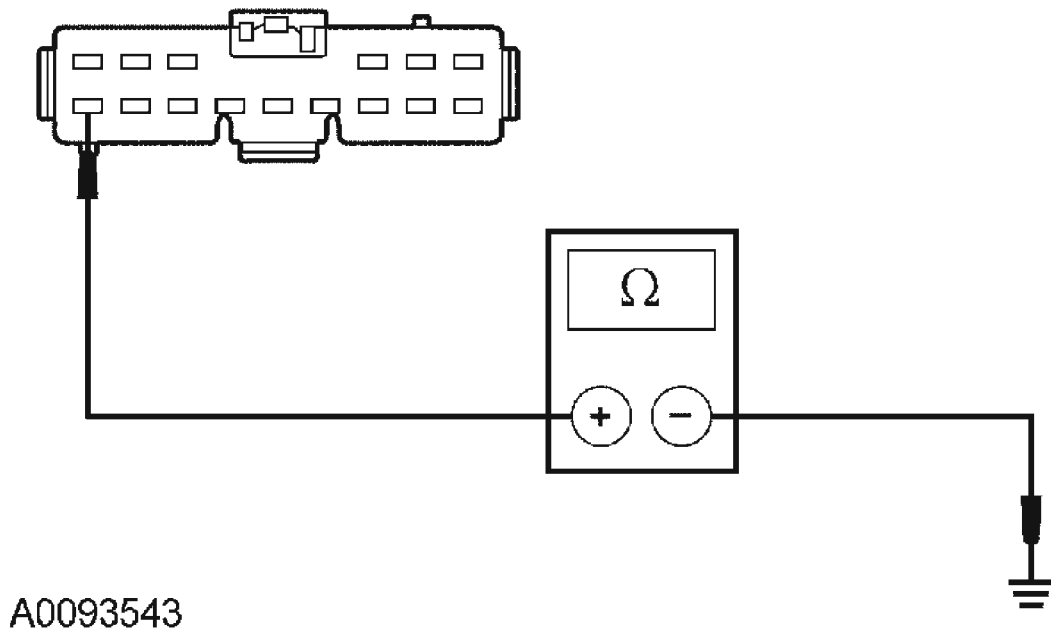


Fig. 57: Measuring Resistance Between CJB C270d-15, Circuit 15S-LG9 (GN/BK), Harness Side And Ground
Courtesy of FORD MOTOR CO.

- **Is the resistance less than 5 ohms?**

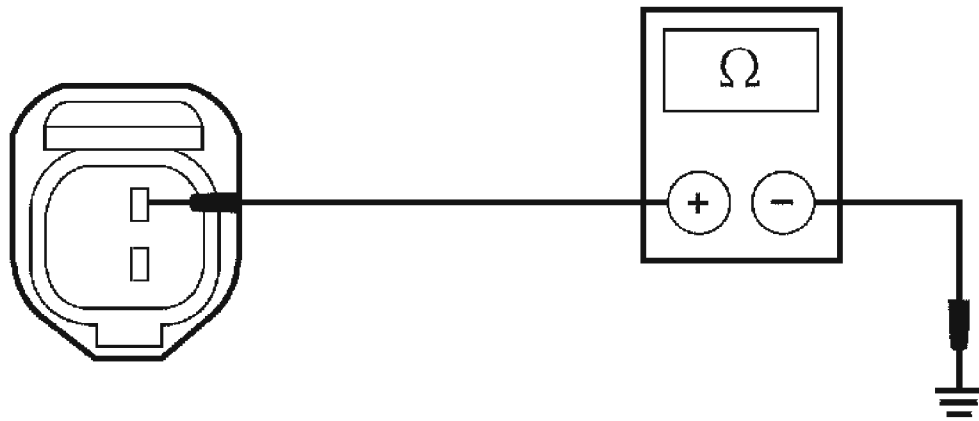
Yes : REPAIR or INSTALL a new CJB. TEST the system for normal operation.

No : For a 3-door or 5-door vehicle, GO to R10.

For a 5-door or wagon, REPAIR the circuit. TEST the system for normal operation.

R10 CHECK THE REVERSING LAMP GROUND CIRCUIT FOR AN OPEN (AUTOMATIC)

- Disconnect: Reversing Lamp.
- Measure the resistance between the LH reversing lamp C451-1, circuit 31-LG9 (BK), harness side and ground; or between the LH reversing lamp C461-1, circuit 31-LG16 (BK), harness side and ground.



A0093544

Fig. 58: Checking Reversing Lamp Ground Circuit For An Open (Automatic)

Courtesy of FORD MOTOR CO.

- **Is the resistance less than 5 ohms?**

Yes : REPAIR the reversing lamp power supply circuit. TEST the system for normal operation.

No : REPAIR the reversing lamp ground circuit. TEST the system for normal operation.

PINPOINT TEST S: THE REVERSING LAMPS ARE ON CONTINUOUSLY

S1 DETERMINE THE TRANSMISSION TYPE

- Check the vehicle and determine the type of transmission.
- **Is the vehicle equipped with a manual transmission?**

Yes : GO to S2.

No : GO to S3.

S2 CHECK THE REVERSING LAMP SWITCH

- Key in OFF position.
- Disconnect: Reversing Lamp Switch C1407.
- Key in ON position.
- **Do the reversing lamps continue to illuminate?**

Yes : REPAIR circuit 15S-LG3 (GN/YE). TEST the system for normal operation.

No : INSTALL a new reversing lamp switch. REFER to **REVERSING LAMP**

SWITCH. TEST the system for normal operation.

S3 CHECK CIRCUIT 15S-LG9 (GN/BK) FOR A SHORT TO POWER

- Key in OFF position.
- Disconnect: CJB C270d.
- Key in ON position.
- **Do the reversing lamps continue to illuminate?**
Yes : REPAIR the circuit. TEST system for normal operation.
No : GO to S4.

S4 CHECK THE PCM TRANSMISSION PIDS

- Connect the diagnostic tool.
- Enter the following diagnostic mode on the diagnostic tool: PCM PID.
- Monitor the PCM transmission range PID while moving the transmission shift lever through all the transmission ranges.
- **Do the transmission ranges agree with the PIDs?**
Yes : REPAIR or INSTALL a new CJB. TEST the system for normal operation.
No : REFER to **AUTOMATIC TRANSAXLE/TRANSMISSION** to continue diagnosis of the transmission.

GENERAL PROCEDURES

HEADLAMP ADJUSTMENT

Headlamp Aiming

1. The headlamp aiming procedure depends on what type of beam pattern the headlamp is equipped with. Vehicles may come equipped with visual optical left (VOL), visual optical right (VOR) or SAE only (includes sealed beam type) headlamps. To identify the headlamp beam pattern, look on the headlamp lens. Molded in small letters on the headlamp lens is 1 of the following:
 - SAE
 - VOL and SAE
 - VOR and SAE
2. Once the headlamp beam pattern is identified, aim the headlamps using 1 of the following methods as applicable.
 - Photometric aimers can aim VOL-, VOR-and SAE-type headlamps only. This is the preferred method of headlamp aiming.
 - Visual or screen method aiming can be used to aim VOL-, VOR- and SAE-type headlamps only.
 - Mechanical aimers cannot be used with VOR- or VOL-type headlamps.

Aerodynamic lamps that can be aimed mechanically have 3 nibs molded into the lens of the lamp.

Photometric Aiming

1. For the photometric aiming procedure, refer to the appropriate photometric headlamp aimer instruction manual.

Screen Method Aiming

NOTE: Horizontal aim is not necessary for VOL or VOR headlamps.

NOTE: Consult your state vehicle inspection manual for recommended tolerance ranges for visual aiming.

NOTE: The sight shield may need to be positioned or removed for access to the adjusters.

All headlamp types

1. Before starting headlamp adjustment:
 - Check the tire inflation.
 - Check that no other load is in the vehicle other than a half tank of fuel.
 - Check that the headlamps are clean.
 - Check for correct headlamp operation.
 - Check that the vehicle is on level ground.
 - If the vehicle is equipped with air suspension, make sure that the switch is on.

NOTE: The vertical wall or screen must be a minimum of 2.4-m (8-ft) wide.

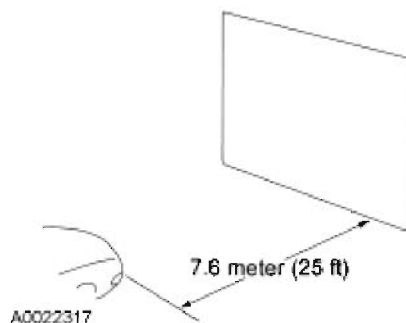


Fig. 59: Identifying Distance Between Vehicle And Vertical Wall Or Screen
Courtesy of FORD MOTOR CO.

2. Park the vehicle on a level surface approximately 7.6-m (25-ft) from the vertical wall or screen directly in front of it.

NOTE: The center of the lamp is marked either on the lens (circle, crosshair or other mark) or on the bulb shield internal to the lamp (crosshair or other mark).

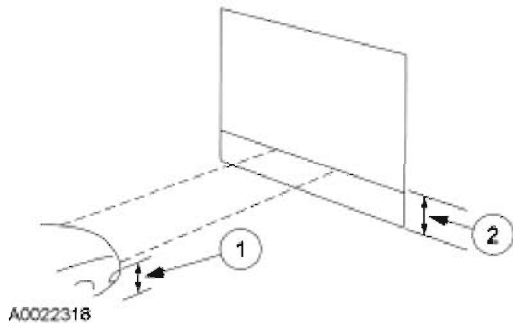


Fig. 60: Aiming Headlights
Courtesy of FORD MOTOR CO.

3. Mark a horizontal reference line on the vertical wall or screen.
 1. Measure the center of the headlamp height to ground and record the measurement.
 2. Make a 2.4-meter (8-ft) horizontal mark (using masking tape) on the vertical wall or screen at the same distance from the ground as previously recorded.

NOTE: This procedure should be done in a dark environment to effectively see the headlamp beam pattern.

4. Turn on the low beam headlamps to illuminate the wall or screen and open the hood.

NOTE: For SAE-type headlamps, the appearance of the beam pattern may vary between vehicles.

5. On the wall or screen, locate the high intensity area of the beam pattern. Place the top edge of the high intensity zone even with the horizontal reference line.

SAE-type headlamps

6. In addition to the horizontal line marked in Step 3, a pair of vertical lines must be marked at the center line of the headlamps on the wall or screen.
 1. Mark the center line of the vehicle on the wall or screen.
 2. Measure from the center of the headlamp to the center line of the vehicle.
 3. Make two 1.5-meter (5-ft) vertical marks (using masking tape) on the wall or screen at the same distance from the vehicle center line as previously recorded.

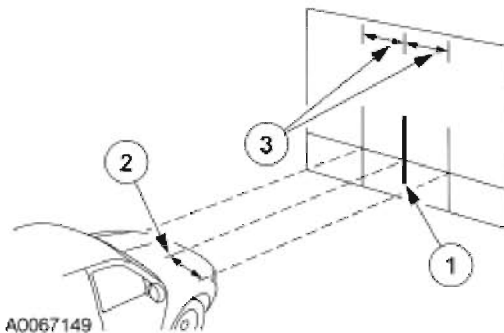
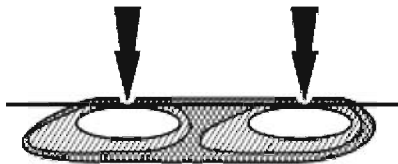


Fig. 61: Marking Vertical Lines At Center Line Of Headlights On Wall Or Screen
 Courtesy of FORD MOTOR CO.

7. On the wall or screen, locate the high intensity area of the beam pattern. Place the left edge of the high intensity zone even with the vertical line corresponding to the headlamp being adjusted.

VOR-type headlamps

NOTE: The appearance of the VOR beam pattern may vary between vehicles.



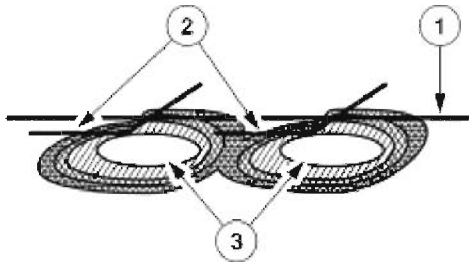
A0042248

Fig. 62: Identifying High Intensity Area (VOR Type Headlamps)
 Courtesy of FORD MOTOR CO.

8. Identify at the top edge of this high intensity area a distinct horizontal cutoff in the beam pattern. If the top edge of this cutoff is not even with the horizontal reference line, the headlamp beam needs to be adjusted.

VOL-type headlamps

9. For VOL-type headlamps, there is a distinct cutoff in the left portion of the beam pattern. The edge of this cutoff should be positioned 50.2 mm (2 in) below the horizontal reference line.
 1. Horizontal reference line.
 2. Top edge of the beam pattern.
 3. High intensity zone.



A0042249

Fig. 63: Identifying VOL-Type Headlamps Beam Pattern
Courtesy of FORD MOTOR CO.

Mechanical Aiming

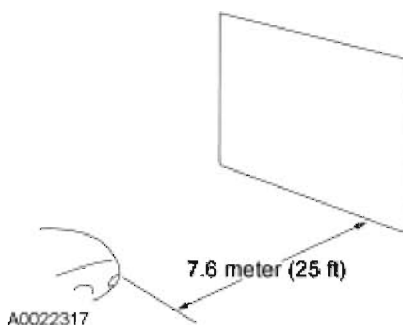
1. For the mechanical aiming procedure, refer to the appropriate mechanical headlamp aimer instruction manual.

FRONT FOG LAMP ADJUSTMENT

NOTE: Horizontal aim is not required for this vehicle and is not adjustable. Consult your state vehicle inspection center for recommended tolerance ranges for visual aiming.

1. Before starting the fog lamp assembly adjustment:
 - Check the tire inflation.
 - Make sure there are no other loads in the vehicle other than a half tank of fuel.
 - Make sure the vehicle is on level ground.
 - Make sure the fog lamps and headlamps are clean.
 - Make sure the headlamps are operating and are correctly aimed.

NOTE: The vertical wall screen must be a minimum of 2.4-m (8-ft) wide.



A0022317

Fig. 64: Identifying Distance Between Vehicle And Vertical Wall Or Screen
Courtesy of FORD MOTOR CO.

2. Park the vehicle on a level surface approximately 7.6 m (25 ft) from the vertical wall or screen directly in front of it.
3. The correct visual aim for the fog lamps is with the top edge of the high-intensity zone 10 cm (4 in) below the horizontal center of the fog lamps.

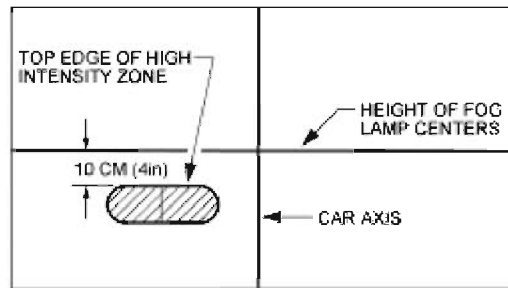


Fig. 65: Identifying Correct Visual Aim For Fog Lamps
Courtesy of FORD MOTOR CO.

REMOVAL AND INSTALLATION

HEADLAMP BULB

Removal and Installation

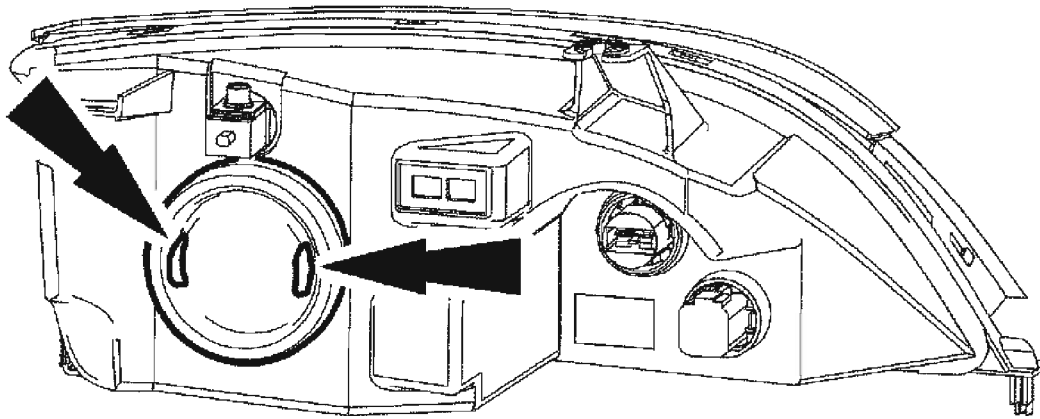
WARNING: The headlamp bulb contains gas under pressure. The bulb may shatter if the glass envelope is scratched or if the bulb is dropped. Handle the bulb carefully. Grasp the bulb only by its base. Avoid touching the glass envelope. Failure to follow these instructions may result in personal injury.

CAUTION: The headlamp bulb should not be removed from the headlamp until just before a new bulb is installed. Removing the bulb for an extended period of time may affect headlamp bulb performance. Contaminants may enter the headlamp where they can settle on the lens and reflector. Never turn on the headlamps with the bulb removed.

NOTE: Make sure the headlamp switch and the ignition switch are in the OFF position.

NOTE: The headlamp assembly is shown removed for clarity.

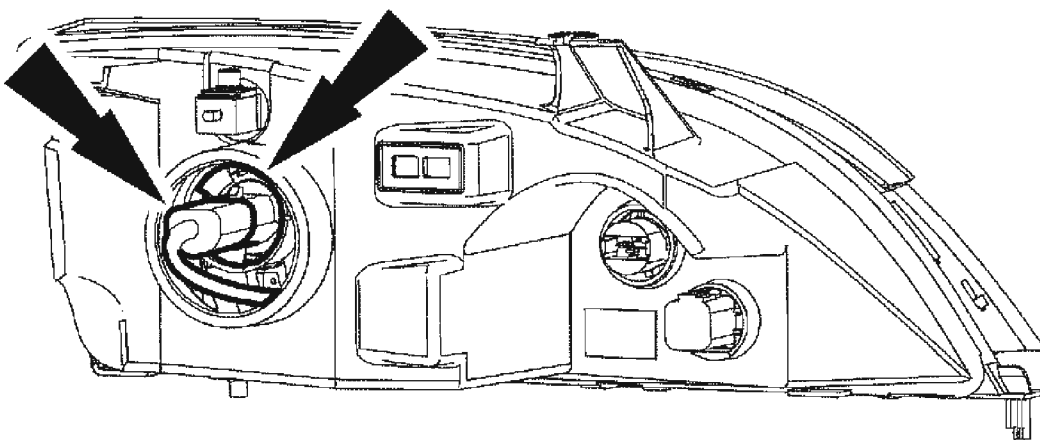
1. Squeeze the tabs and remove the headlamp cover.



A0093531

Fig. 66: Squeezing Tabs And Removing Headlamp Cover
Courtesy of FORD MOTOR CO.

2. Disconnect the headlamp connector and remove the headlamp bulb.



A0093532

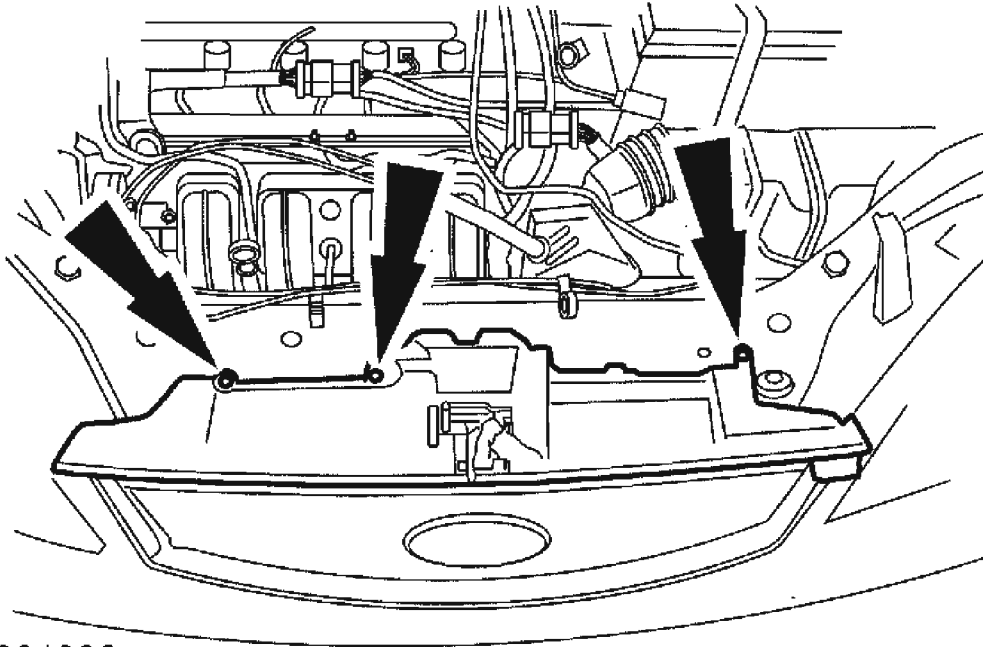
Fig. 67: Disconnecting Headlamp Connector And Removing Headlamp Bulb
Courtesy of FORD MOTOR CO.

3. To install, reverse the removal procedure.

HEADLAMP ASSEMBLY

Removal and Installation

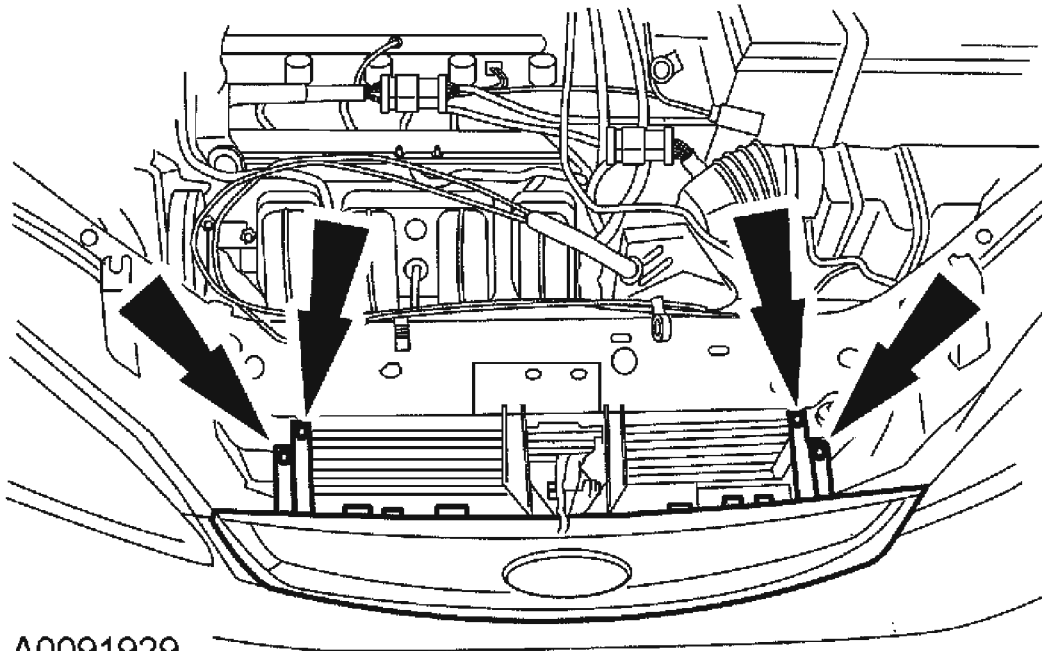
1. Remove the pin-type retainers and the upper radiator air deflector.



A0091928

Fig. 68: Removing Pin-Type Retainers And Upper Radiator Air Deflector
Courtesy of FORD MOTOR CO.

2. Remove the screws and the radiator grille.

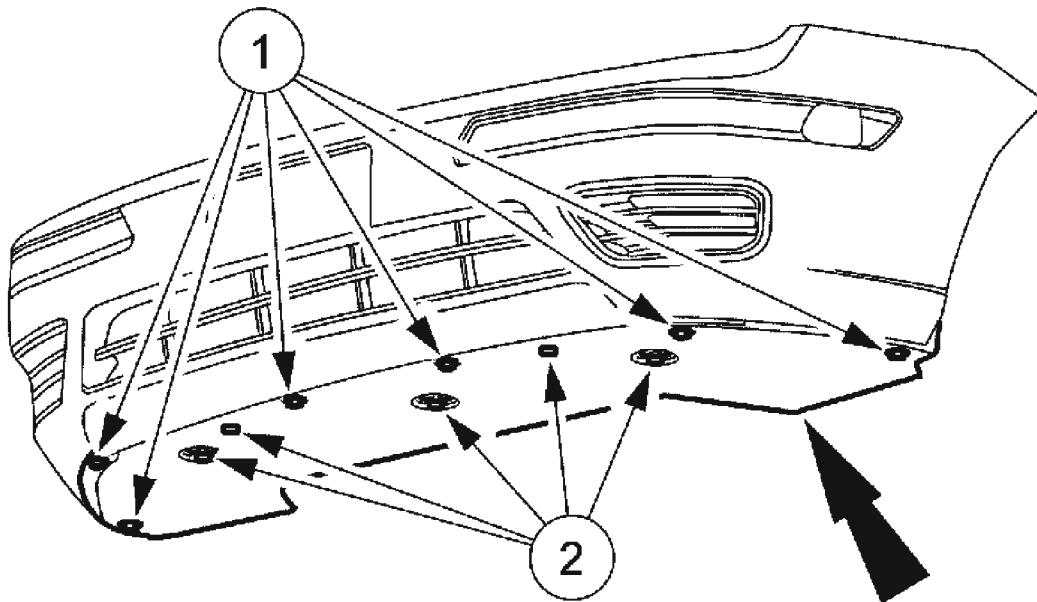


A0091929

Fig. 69: Removing Screws And Radiator Grille
Courtesy of FORD MOTOR CO.

3. Raise and support the vehicle. For additional information, refer to **IDENTIFICATION CODES**.

NOTE: Two bolts are located in the wheel well opening and not shown in the graphic.



A0093880

Fig. 70: Removing Bolts And Pin-Type Retainers
Courtesy of FORD MOTOR CO.

4. Remove radiator lower air deflector.
 1. Remove the 8 bolts.
 2. Remove the pin-type retainers.

NOTE: If LH headlamp, remove the air cleaner assembly. For additional information, refer to INTAKE AIR DISTRIBUTION AND FILTERING .

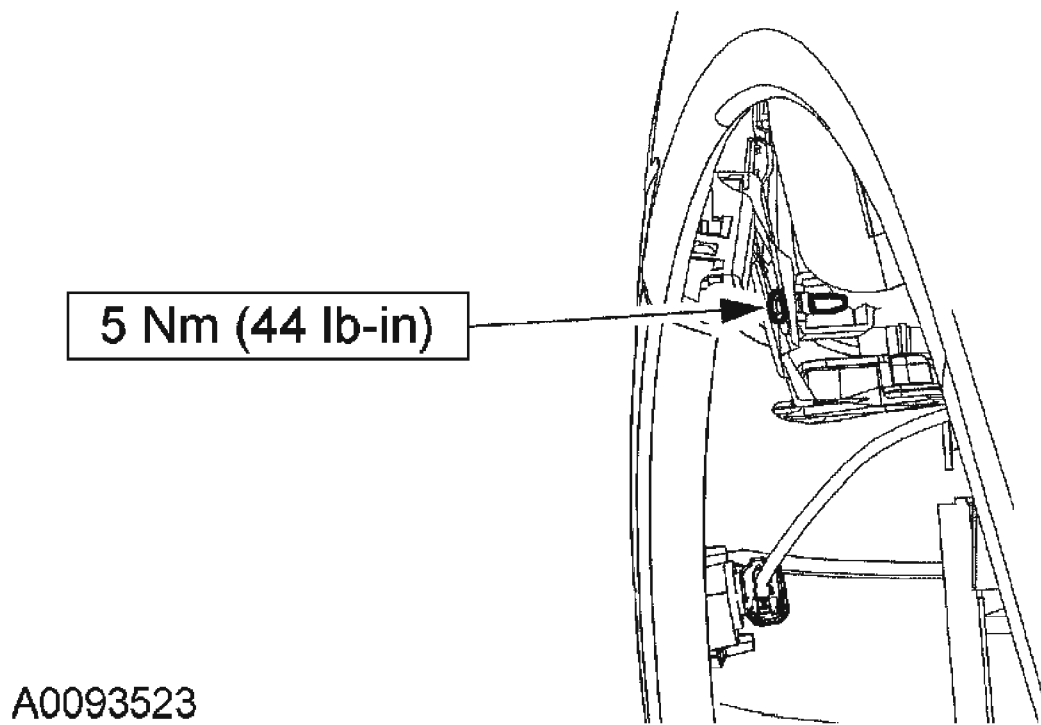


Fig. 71: Removing Lower Headlamp Assembly Bolt
Courtesy of FORD MOTOR CO.

5. Remove the lower headlamp assembly bolt.
6. Lower the vehicle.
7. Remove the headlamp assembly.
 - Disconnect the electrical connector.

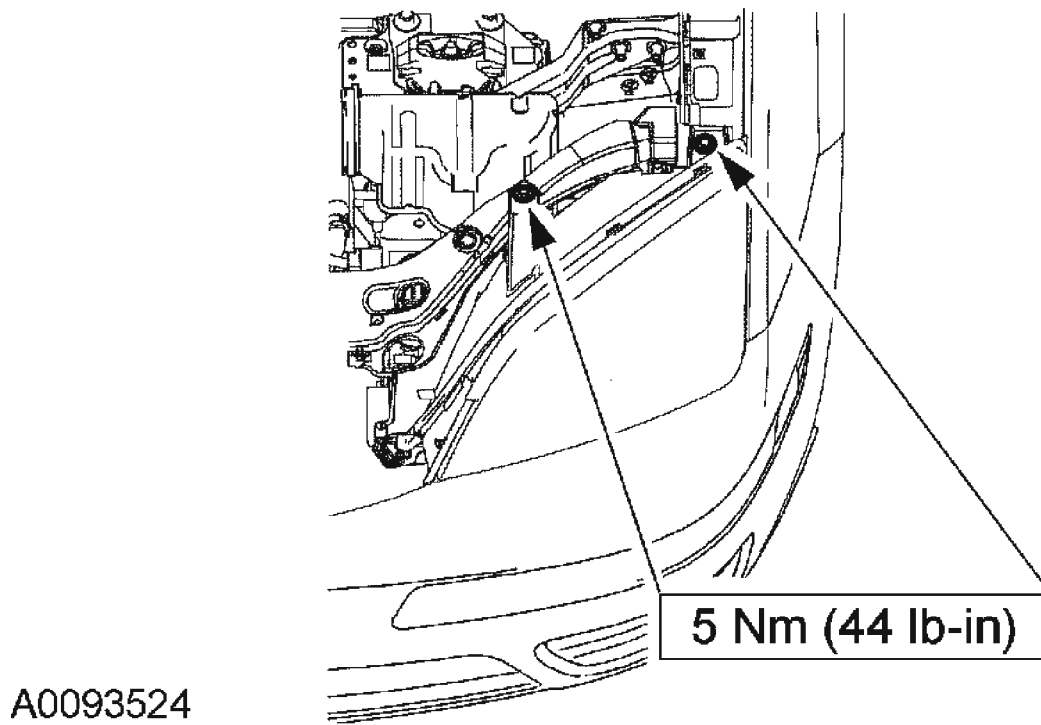


Fig. 72: Removing Headlamp Assembly
Courtesy of FORD MOTOR CO.

8. To install, reverse the removal procedure.
- If necessary, adjust the headlamps. For additional information, refer to **HEADLAMP ADJUSTMENT**.

HEADLAMP SWITCH

Removal and Installation

1. Disconnect the battery ground cable. For additional information, refer to **BATTERY, MOUNTING AND CABLES**.
2. Remove the bolts and the instrument panel lower panel.

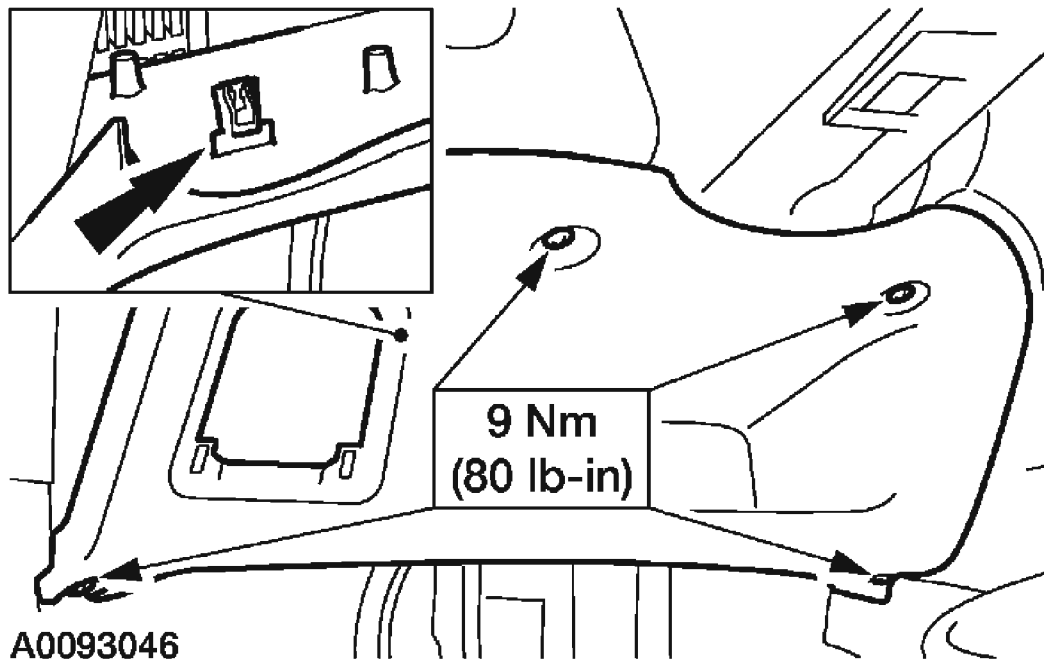


Fig. 73: Removing Bolts And Instrument Panel Lower Panel
Courtesy of FORD MOTOR CO.

3. Remove the screw and detach the headlamp switch bezel.

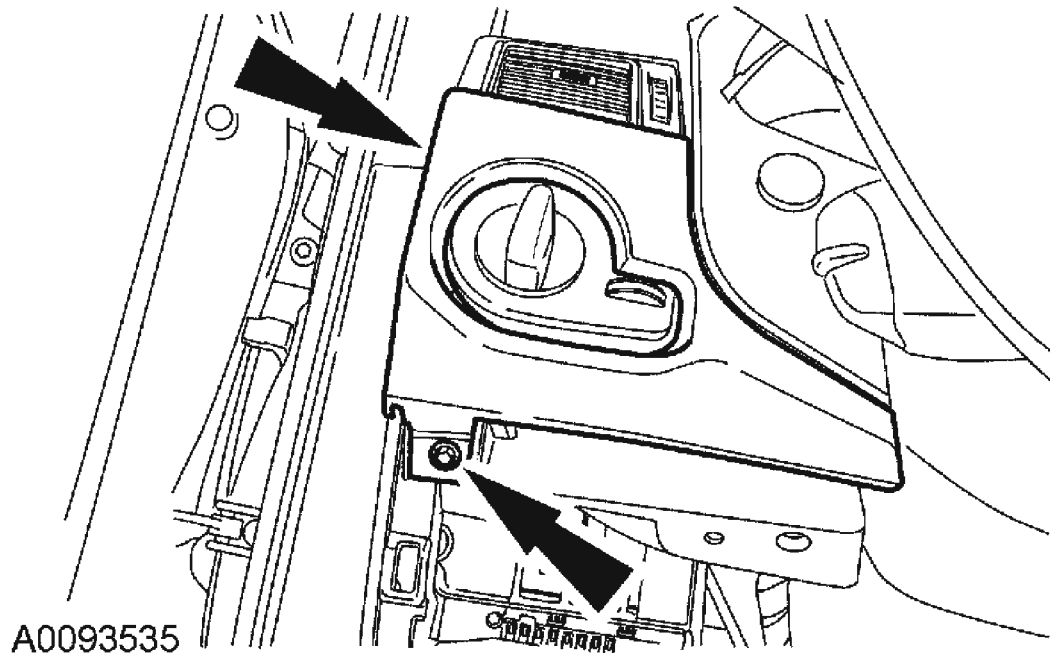


Fig. 74: Removing Screw And Detaching Headlamp Switch Bezel
Courtesy of FORD MOTOR CO.

4. Remove the screws and the headlamp switch.
 - Disconnect the electrical connectors.

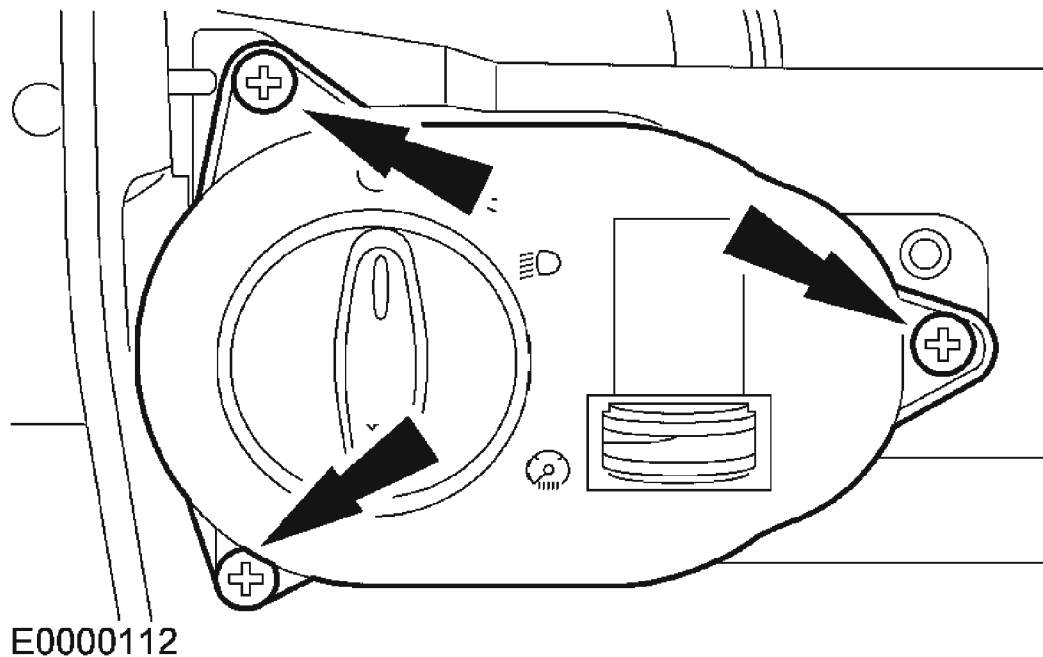


Fig. 75: Removing Screws And Headlamp Switch
Courtesy of FORD MOTOR CO.

5. To install, reverse the removal procedure.

STOPLAMP SWITCH

Removal

1. Remove the stoplamp switch.
1. Disconnect the electrical connector.
2. Rotate the stoplamp switch counterclockwise to remove.

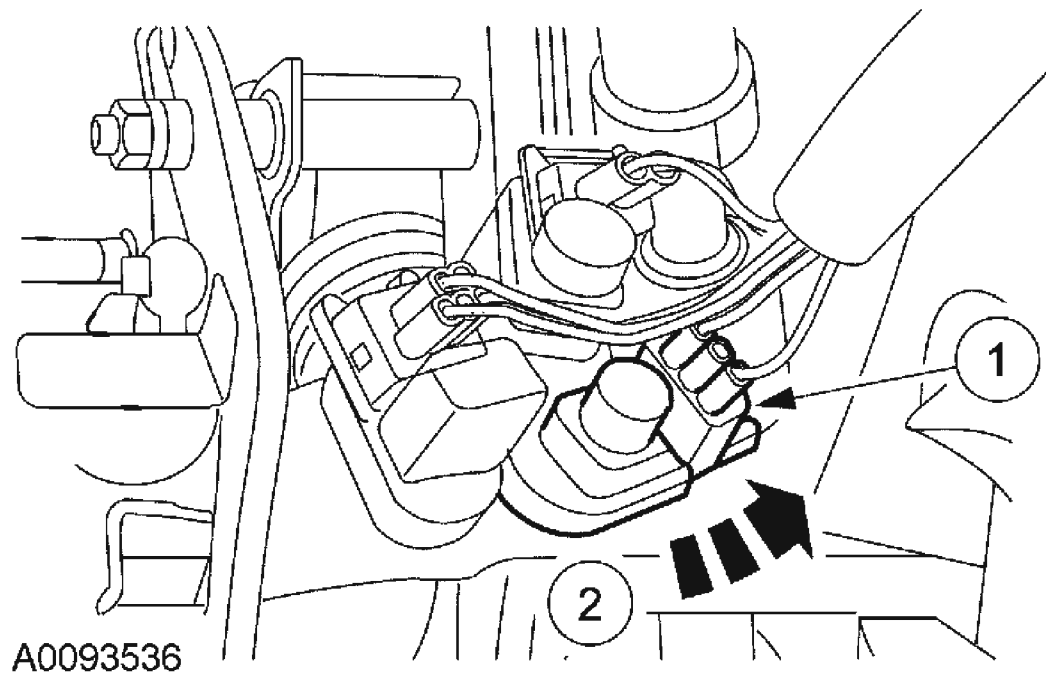
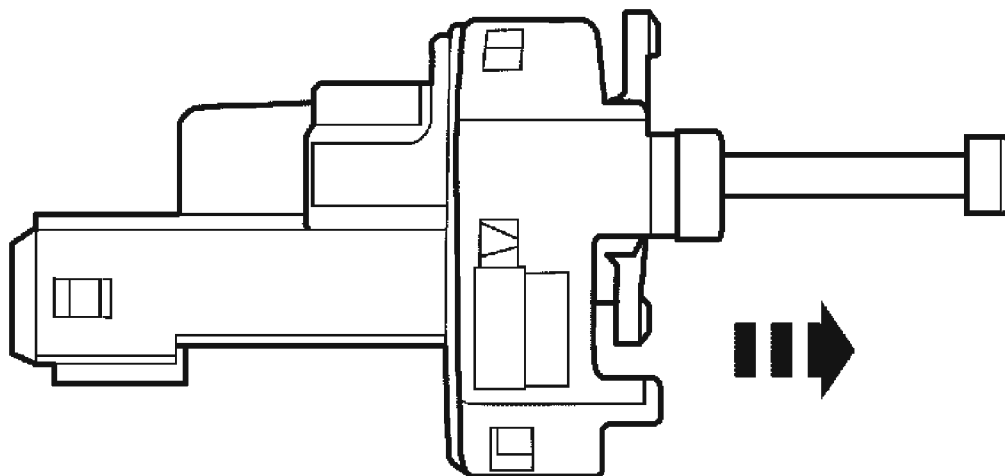


Fig. 76: Removing Stoplamp Switch
Courtesy of FORD MOTOR CO.

Installation

1. Pull the stoplamp switch plunger out to its full extent.



A0093537

Fig. 77: Pulling Stoplamp Switch Plunger Out To Its Full Extent
Courtesy of FORD MOTOR CO.

NOTE: The brake must be applied while installing the stoplamp switch.

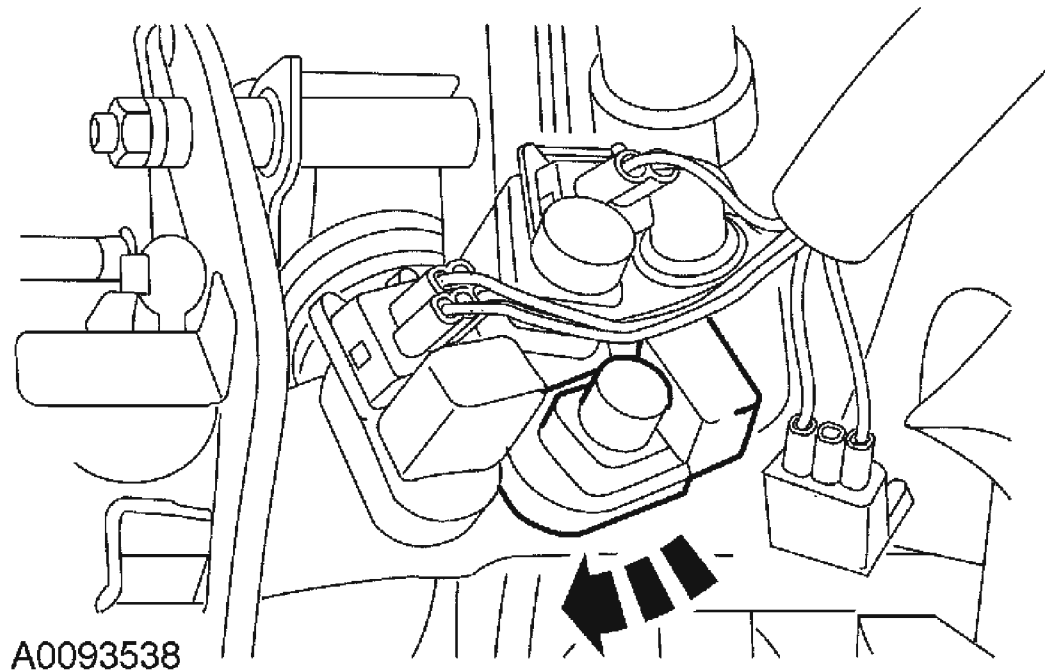


Fig. 78: Installing Stoplamp Switch
Courtesy of FORD MOTOR CO.

2. Install the stoplamp switch.
 - Rotate the stoplamp switch clockwise to install.
3. Slowly release the brake pedal.
4. Connect the electrical connector.

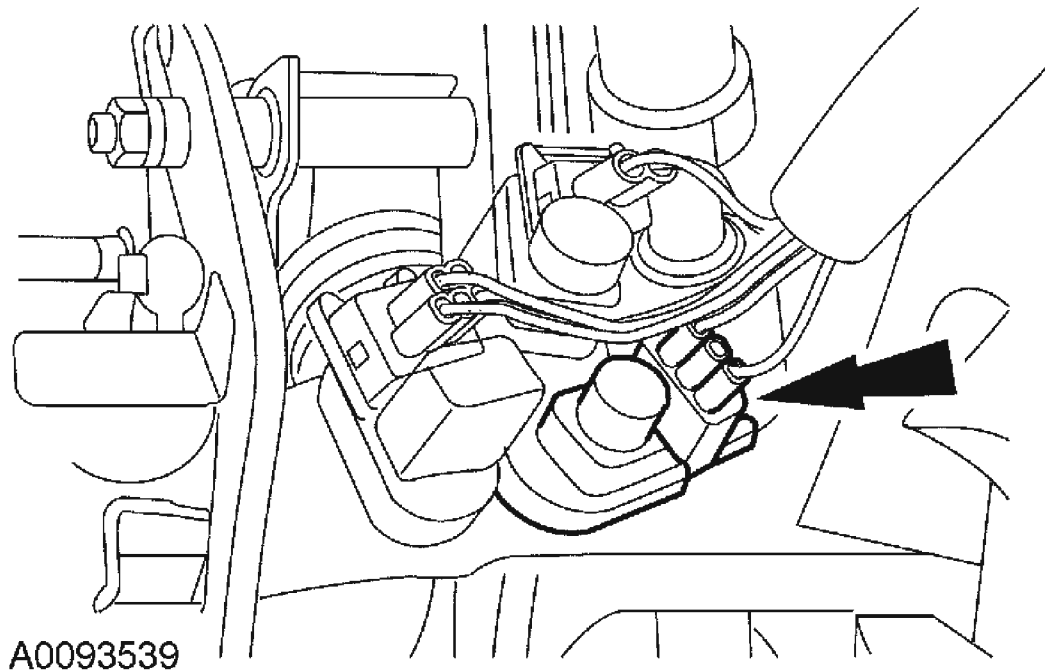


Fig. 79: Connecting Electrical Connector
Courtesy of FORD MOTOR CO.

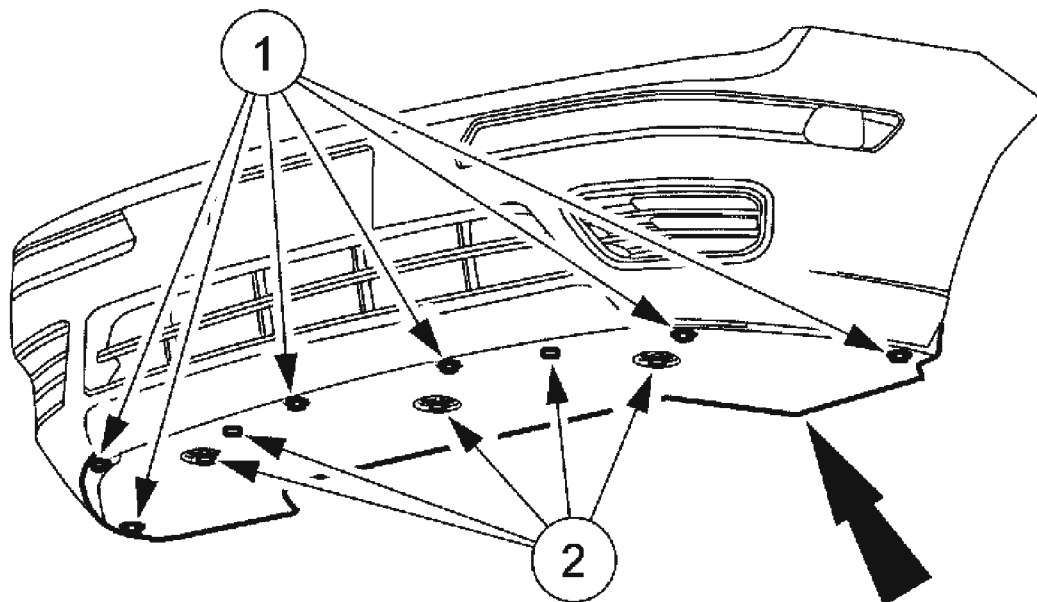
FOG LAMP

Removal and Installation

NOTE: Make sure the headlamp switch and the ignition switch are in the OFF position.

1. Raise and support the vehicle. For additional information, refer to **IDENTIFICATION CODES**.

NOTE: Two bolts are located in the wheel well opening and not shown in the graphic.



A0093880

Fig. 80: Removing Lower Radiator Air Deflector Bolts And Pin-Type Retainers
Courtesy of FORD MOTOR CO.

2. Remove the lower radiator air deflector.
 1. Remove the 8 lower radiator air deflector bolts.
 2. Remove the pin-type retainers.
3. Remove the front fog lamp assembly.
 1. Disconnect the electrical connector.
 2. Remove the front fog lamp bolts.

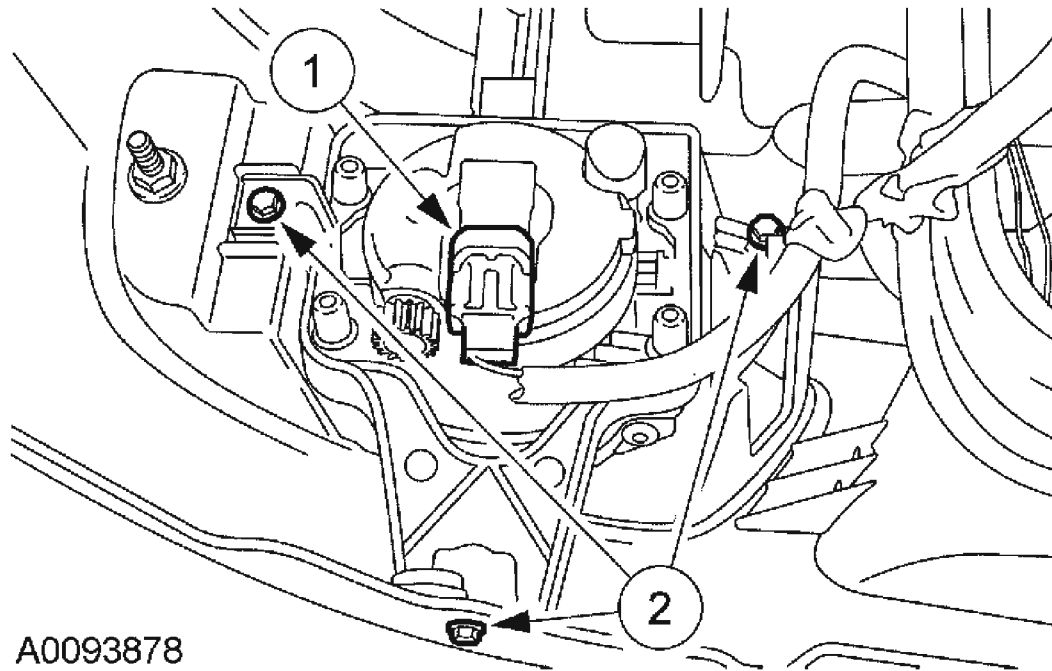


Fig. 81: Removing Front Fog Lamp Assembly
Courtesy of FORD MOTOR CO.

4. To install, reverse the removal procedure.
- If necessary, adjust the fog lamps. For additional information, refer to **FRONT FOG LAMP ADJUSTMENT**.

FOG LAMP BULB

Removal and Installation

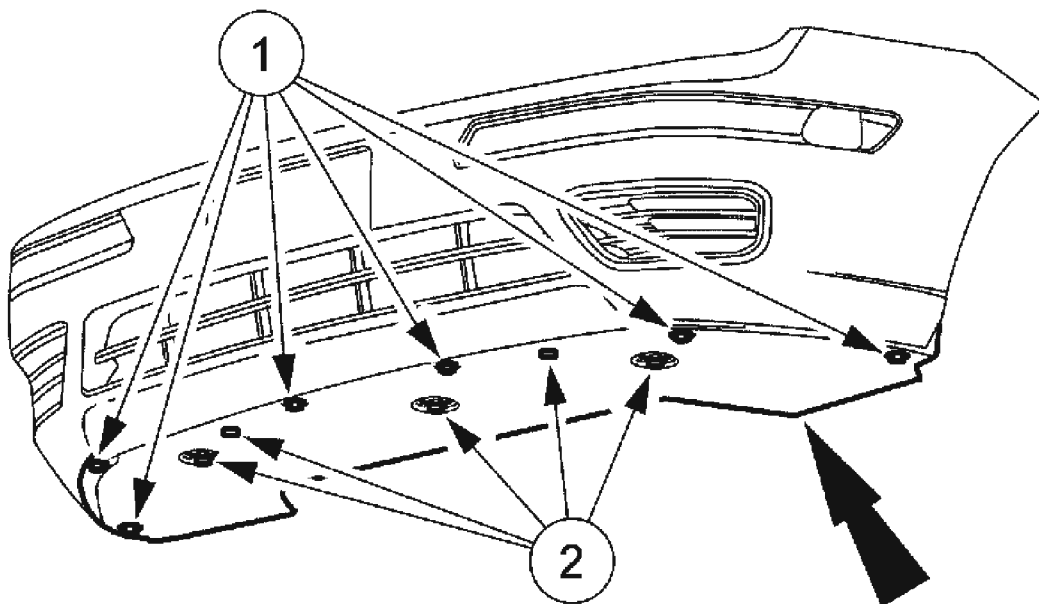
WARNING: The fog lamp bulb contains gas under pressure. The bulb may shatter if the glass envelope is scratched or if the bulb is dropped. Handle the bulb carefully. Grasp the bulb only by its base. Avoid touching the glass envelope. Failure to follow these instructions may result in personal injury.

CAUTION: The fog lamp bulb should not be removed from the fog lamp until just before a new bulb is installed. Removing the bulb for an extended period of time may affect fog lamp bulb performance. Contaminants may enter the fog lamp where they can settle on the lens and reflector. Never turn on the fog lamps with the bulb removed.

NOTE: Make sure that the headlamp switch and the ignition switch are in the OFF position.

1. Raise and support the vehicle. For additional information, refer to **JACKING AND LIFTING**.

NOTE: Two bolts are located in the wheel well opening and not shown in the graphic.



A0093880

Fig. 82: Removing Lower Radiator Air Deflector
Courtesy of FORD MOTOR CO.

2. Remove lower radiator air deflector.
 1. Remove the 8 lower radiator air deflector bolts.
 2. Remove the pin-type retainers.
3. Remove the front fog lamp bulb.
 - Disconnect the electrical connector.

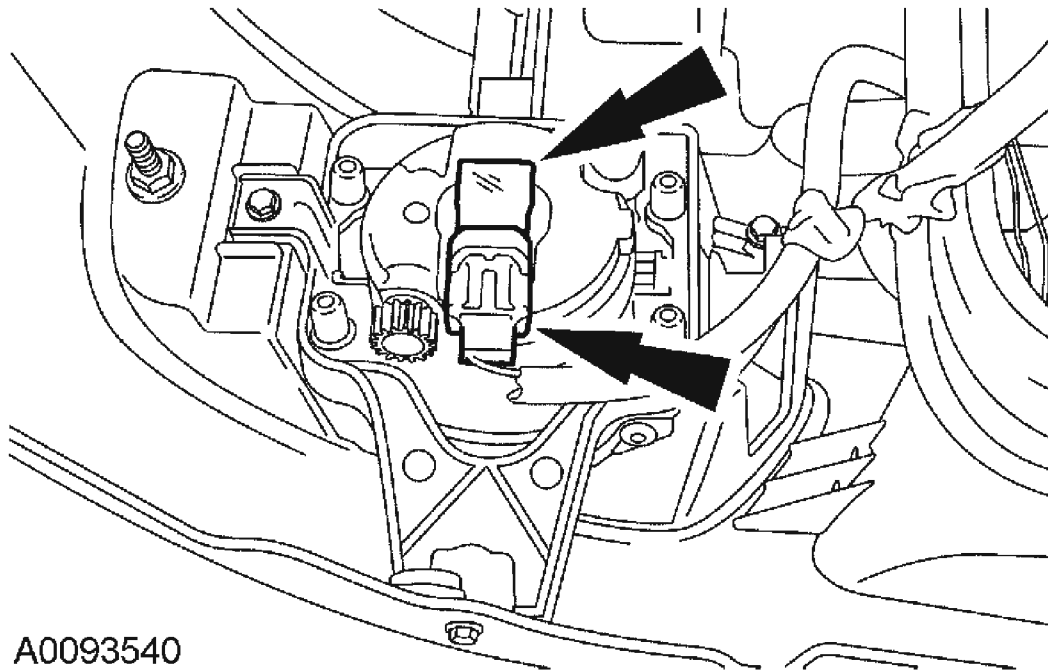


Fig. 83: Removing Front Fog Lamp Bulb
Courtesy of FORD MOTOR CO.

4. To install, reverse the removal procedure.

REAR LAMP ASSEMBLY

Removal and Installation

Sedan

1. Remove the 3 rear lamp retaining nuts.

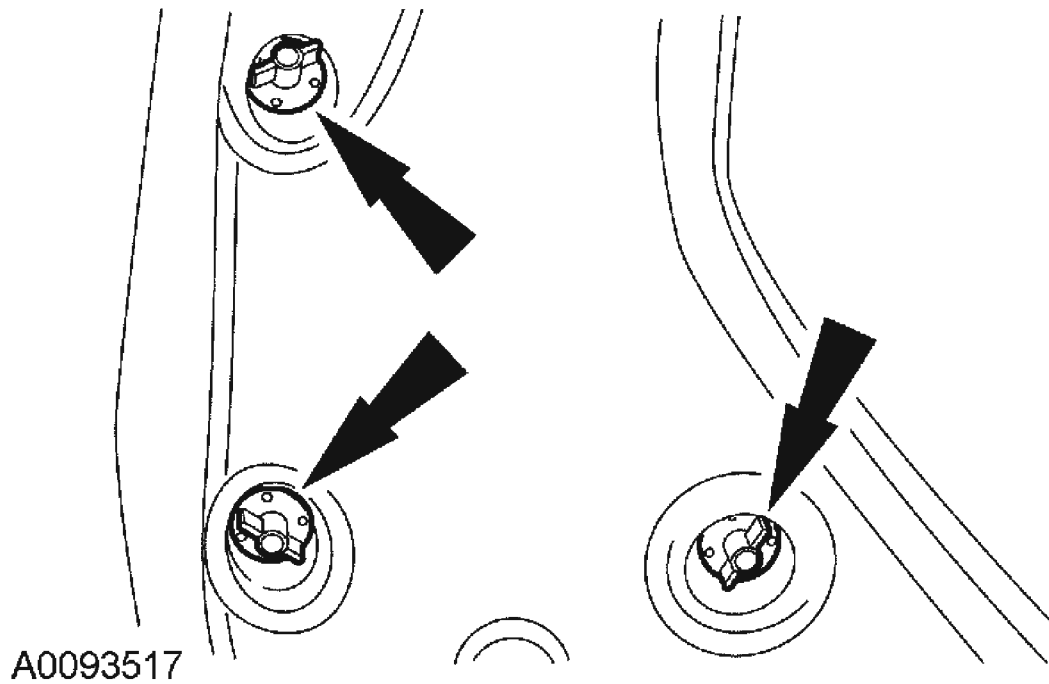


Fig. 84: Removing Rear Lamp Retaining Nuts (Sedan)
Courtesy of FORD MOTOR CO.

2. Remove the rear lamp assembly.
 - Disconnect the electrical connectors.

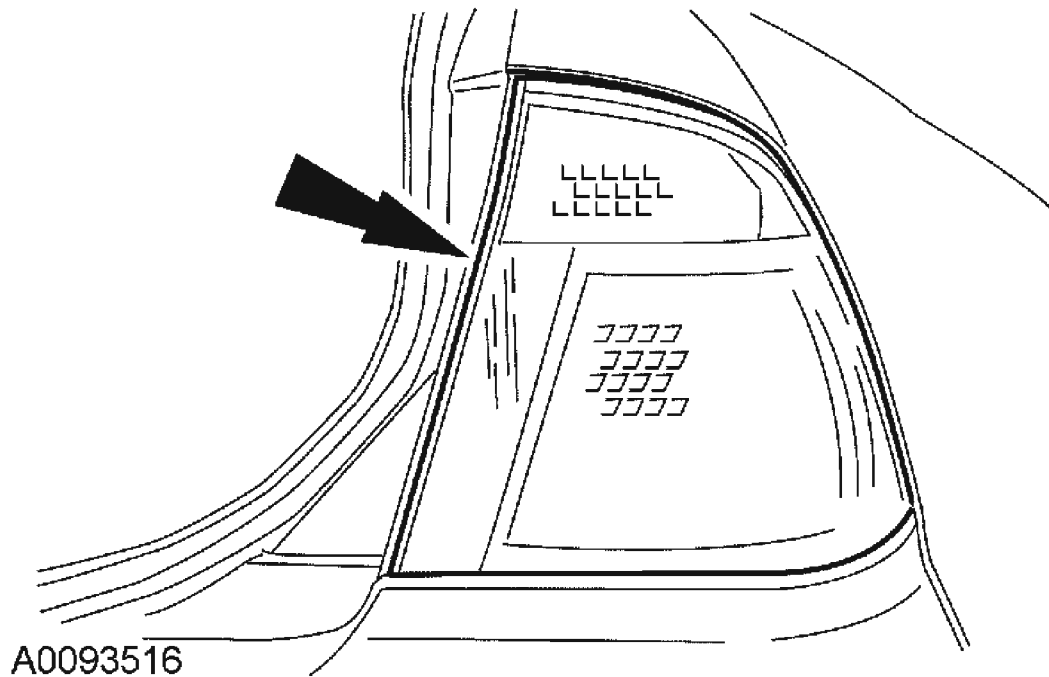


Fig. 85: Removing Rear Lamp Assembly
Courtesy of FORD MOTOR CO.

3-door/5-door/wagon

3. Remove the rear lamp retaining nut.

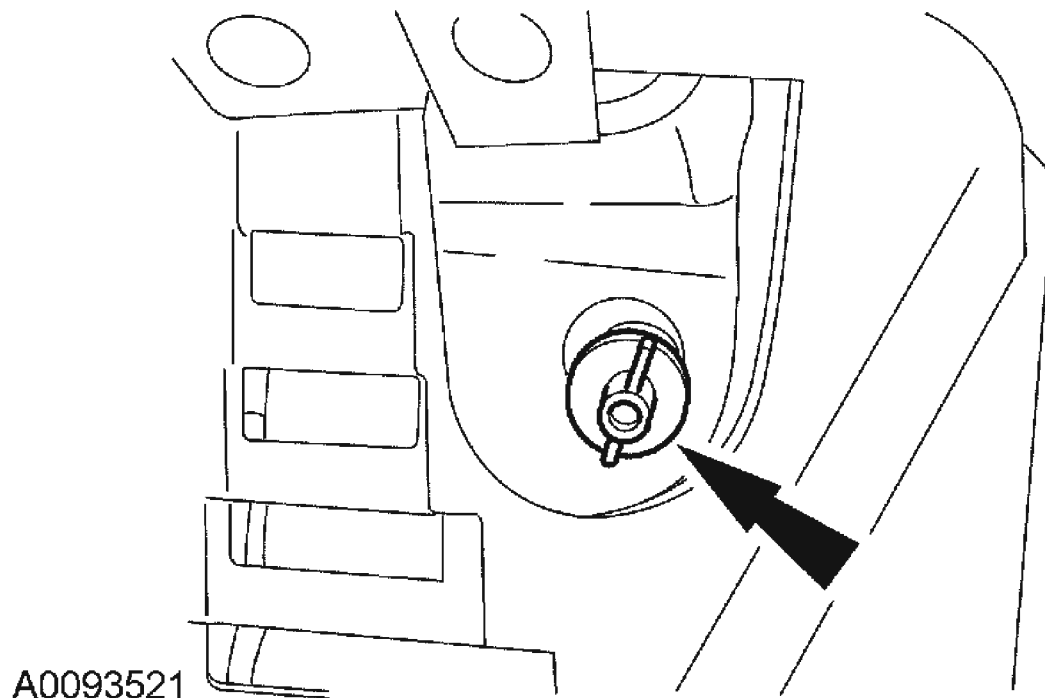


Fig. 86: Removing Rear Lamp Retaining Nut (3-Door/5-Door/Wagon)
Courtesy of FORD MOTOR CO.

4. Remove the rear lamp retaining screw.

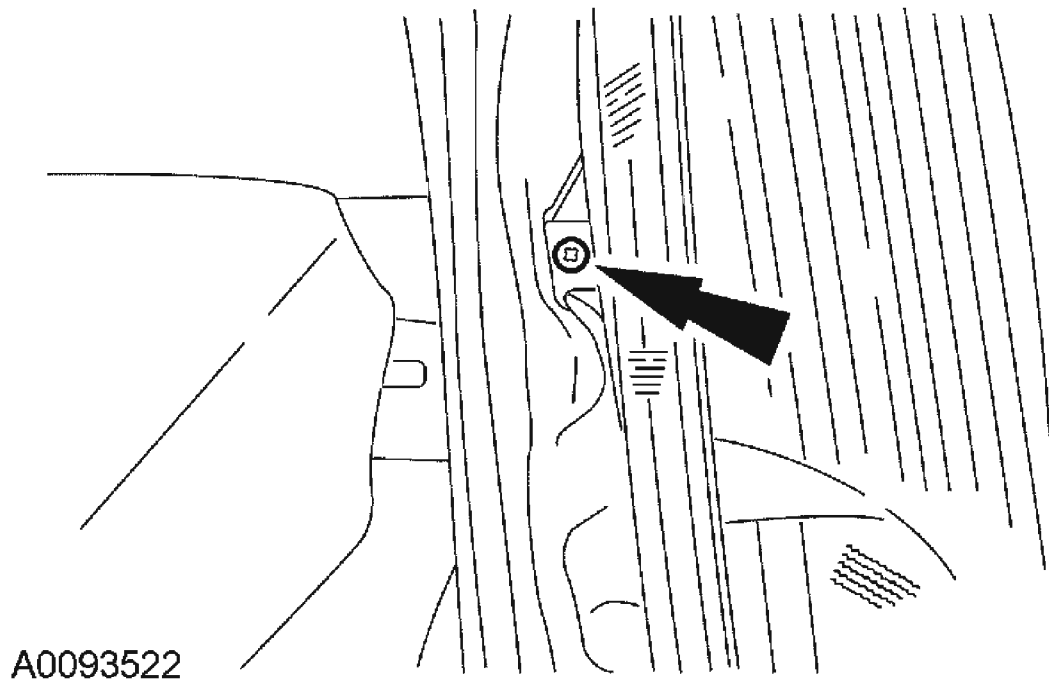


Fig. 87: Removing Rear Lamp Retaining Screw
Courtesy of FORD MOTOR CO.

CAUTION: When removing the rear lamp, pull the rear lamp assembly straight rearward. Damage to the lamp or window may result if the lamp is twisted or pulled only from the bottom.

5. Remove the rear lamp assembly.
 - Disconnect the electrical connectors.

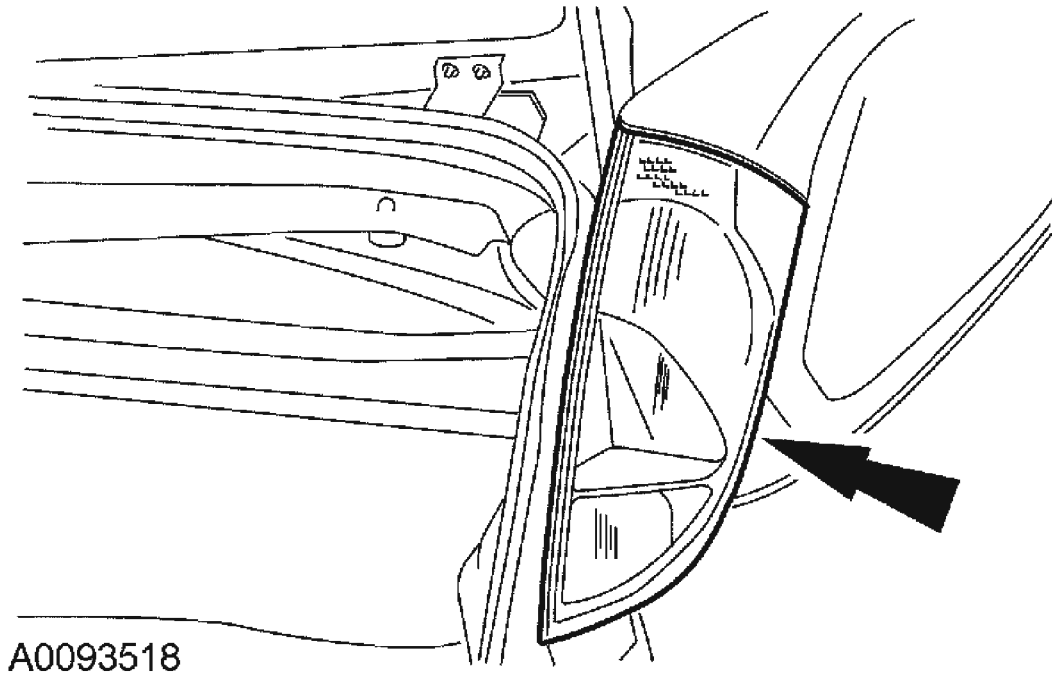


Fig. 88: Removing Rear Lamp Assembly
Courtesy of FORD MOTOR CO.

All vehicles

6. To install, reverse the removal procedure.

REVERSING LAMP SWITCH

Removal and Installation

1. Remove the battery tray. For additional information, refer to **BATTERY, MOUNTING AND CABLES**.
2. Disconnect the electrical connector and remove the reversing lamp switch.

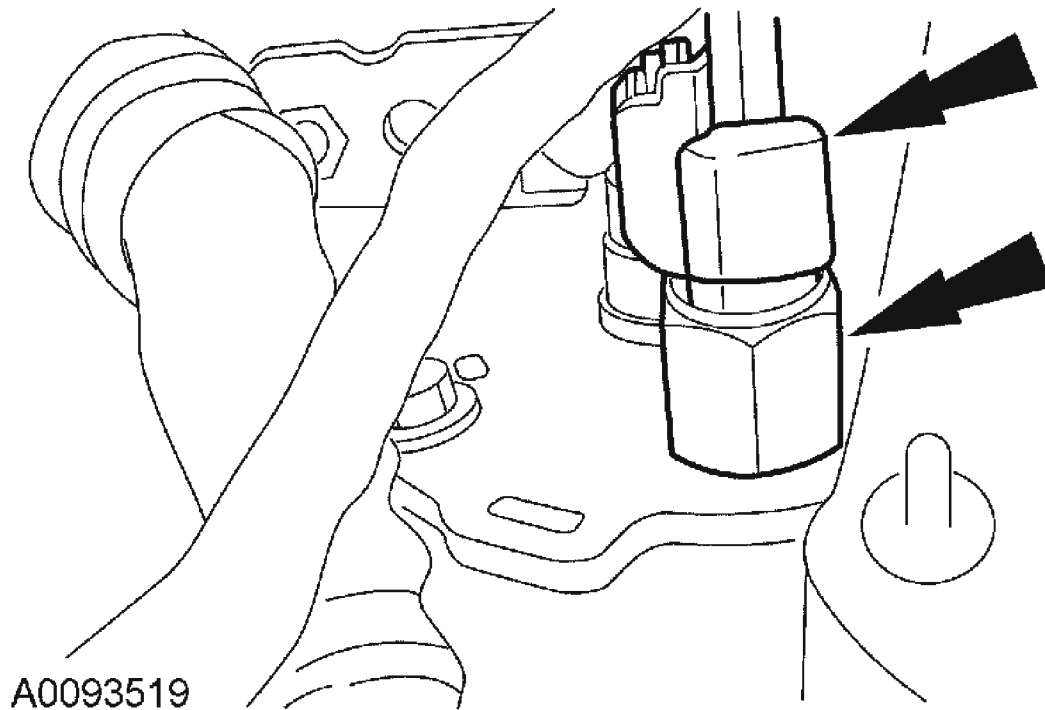


Fig. 89: Disconnecting Electrical Connector And Removing Reversing Lamp Switch

Courtesy of FORD MOTOR CO.

3. To install, reverse the removal procedure.

HIGH MOUNTED STOPLAMP

Removal and Installation

Sedan

1. Remove the pin-type retainers and the decklid trim panel.
2. Remove the pin-type retainers and the high mounted stop lamp.
 - Disconnect the electrical connector.

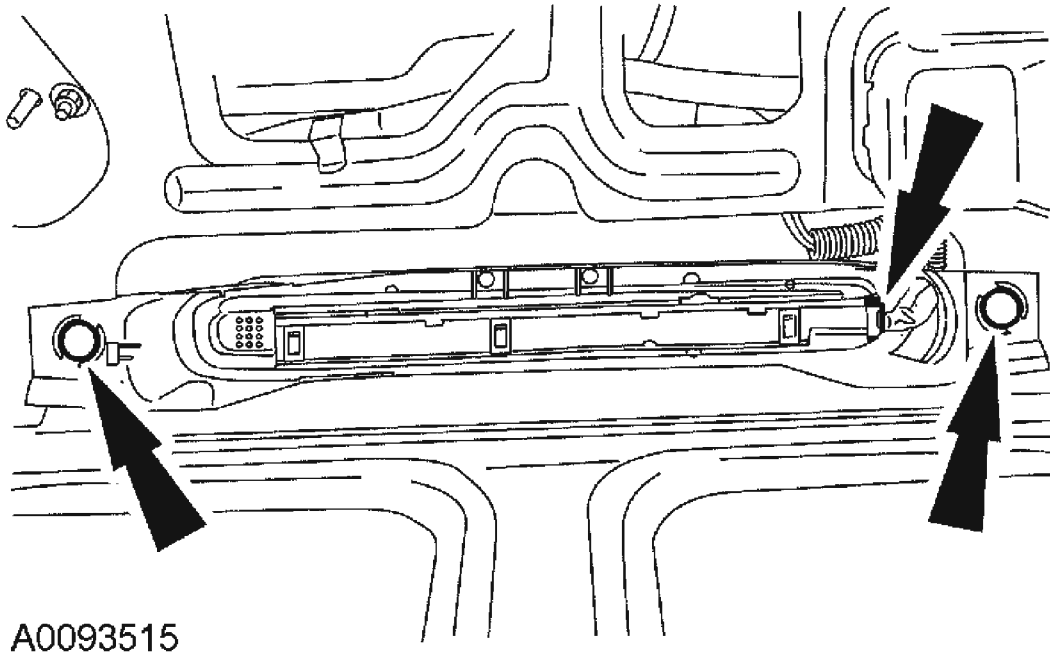
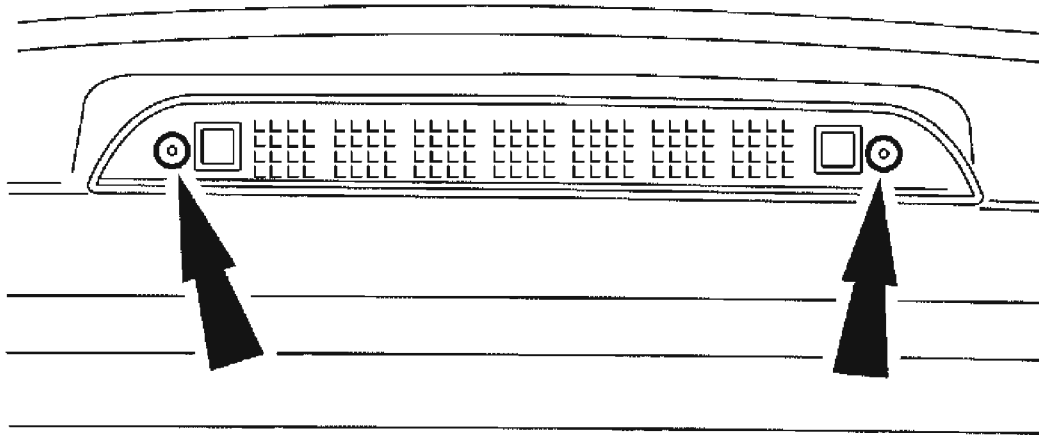


Fig. 90: Removing Pin-Type Retainers And High Mounted Stop Lamp (Sedan)

Courtesy of FORD MOTOR CO.

3-door/5-door/wagon

3. Remove the screws and the high mounted stop lamp.
 - Disconnect the electrical connector.



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Fig. 91: Removing High Mounted Stop Lamp (3-Door/5-Door/Wagon)
Courtesy of FORD MOTOR CO.

All vehicles

4. To install, reverse the removal procedure.