SECTION : 417-01 Exterior Lighting

VEHICLE APPLICATION : 2008.0 Falcon

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(Continued)

SPECIFICATIONS

BULB USAGE UNIT	TYPE
Park Lamp	5W wedge
High/Low Beam	60/55W H4
High Beam	55W H7
Fog Lamp (Ghia)	55W H11
Turn Signal	Amber 21W
Side Indicator	Amber 5W wedge
Stop/Tail Lamp	21/5W
High Mount Stop Lamp	21cp or 16 W wedge
High Mount Stop Lamp (XR, rear spoiler option)	Sealed LED
Licence Plate Lamp	5W wedge
Reverse Lamp	21W
Luggage Compartment	10W
Interior Dome Lamp	10W
Front Reading Lamps	5W
Front Footwell Lamp	3W
Rear Reading Lamps	5W
Rear Centre Console Lamp	3W
Glove Compartment	4W
Cigarette Lighter	2W
Door Mounted Interior Lamp	3W
Instrumentation / Display / Warning Lamps	Service by Technician
Automatic Transmission Control Indicator	Service by Technician

Torque Specifications

Description	Nm
Head lamp Bolts	3.2-4.5
Tail lamp Screws (Sedan)	2.5-2.9
Tail lamp screws (Style Side Box Ute)	4.5-6.3

DESCRIPTION AND OPERATION

Exterior Lighting

The exterior lighting consists of the following:

- Headlamps (includes functions: dipped beam, main beam, position, front turn signal)
- Side repeater lamps (front fender or door mirror mounted)
- Rear lamps (includes functions: stop, tail, rear turn signal, reverse, reflex reflector)
- High-mounted stop lamps
- Front fog lamps
- Licence plate lamps
- Fog lamp switch
- Multifunction switch
- Brake pedal position (BPP) switch

NOTE: The reflex reflector is mounted on the bumper on style side box ute vehicles.

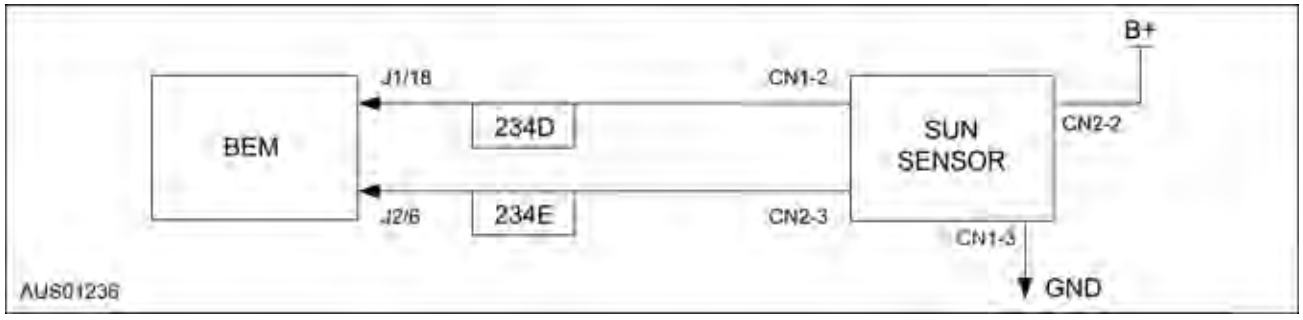
NOTE: The headlamp switch is integrated into the multifunction switch.

Twilight Sensor/Sun Load Sensor

The combined twilight and sun load sensor is contained in a compact package, which is installed on the instrument panel of a vehicle. It measures both the sunlight intensity and twilight.

The twilight sensor provides the information about low light conditions and is used to control automatic headlights (where fitted).

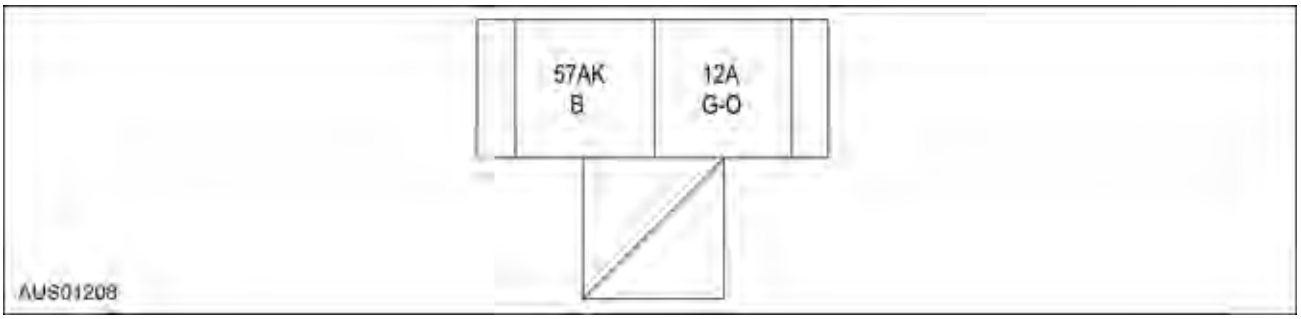
The Sun Load sensor is used by the automatic climate control system, to adjust the ACC settings for different sun intensity levels.



DIAGNOSIS AND TESTING

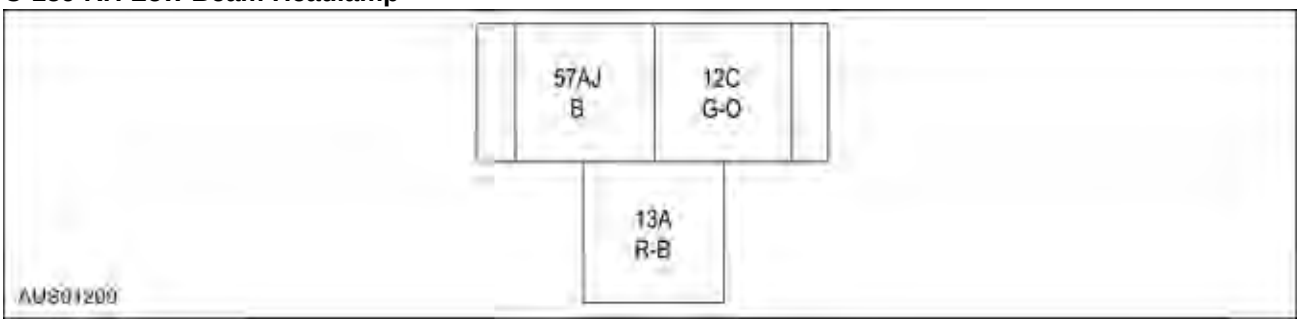
Headlamps

Connector Circuit Reference
C-159 RH High Beam Headlamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	12A (G-O) RH high beam headlamp power input	0 voltage, less than 5 ohms between RH high beam headlamp and high beam headlamp relay
2	Circuit 57AJ (B) RH high beam headlamp ground	0 voltage, less than 5 ohms between RH high beam headlamp and chassis ground

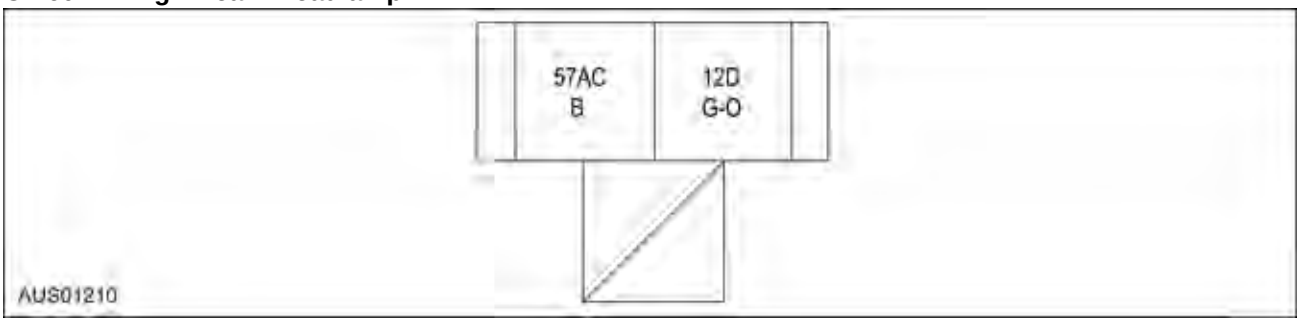
C-159 RH Low Beam Headlamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	12C (G-O) RH high beam headlamp power input	0 voltage, less than 5 ohms between RH low beam headlamp and high beam headlamp relay
2	13A (R-B) RH low beam headlamp power input	0 voltage, less than 5 ohms between RH low beam headlamp and low beam headlamp relay
3	Circuit 57AJ (B) RH low beam headlamp ground	0 voltage, less than 5 ohms between RH low beam headlamp and chassis ground

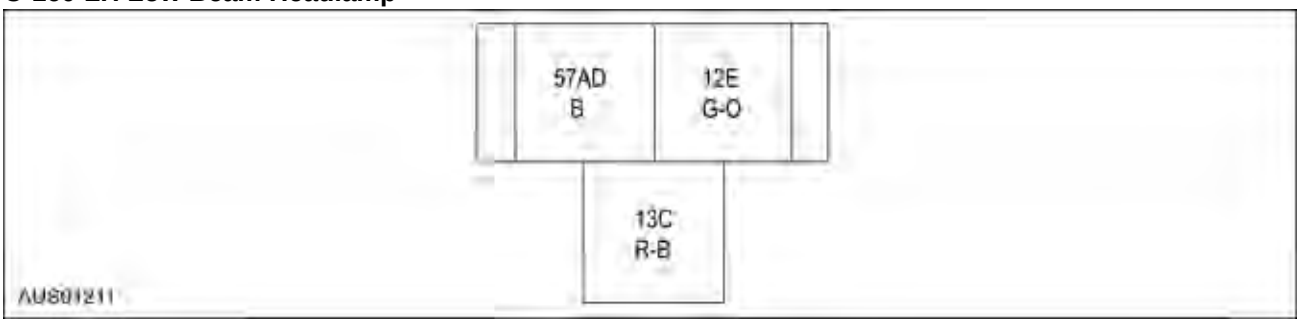
DIAGNOSIS AND TESTING (Continued)

C-160 LH High Beam Headlamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	12D (G-O) LH high beam headlamp power input	0 voltage, less than 5 ohms between LH high beam headlamp and high beam headlamp relay
2	Circuit 57AC (B) LH high beam headlamp ground	0 voltage, less than 5 ohms between LH high beam headlamp and chassis ground

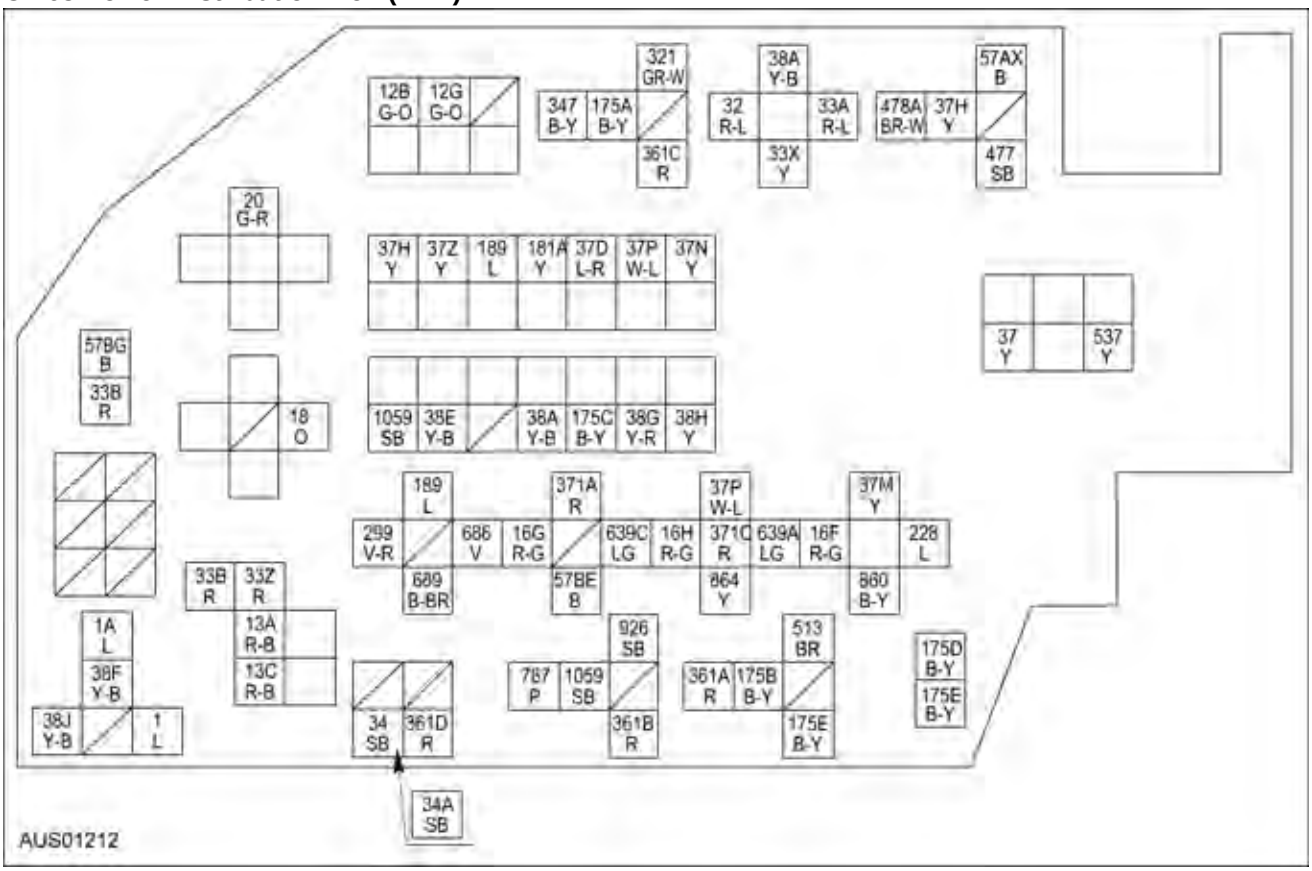
C-160 LH Low Beam Headlamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	12E (G-O) LH high beam headlamp power input	0 voltage, less than 5 ohms between LH low beam headlamp and high beam headlamp relay
2	13C (R-B) LH low beam headlamp power input	0 voltage, less than 5 ohms between LH low beam headlamp and low beam headlamp relay
3	Circuit 57AD (B) LH low beam headlamp ground	0 voltage, less than 5 ohms between LH low beam headlamp and chassis ground

DIAGNOSIS AND TESTING (Continued)

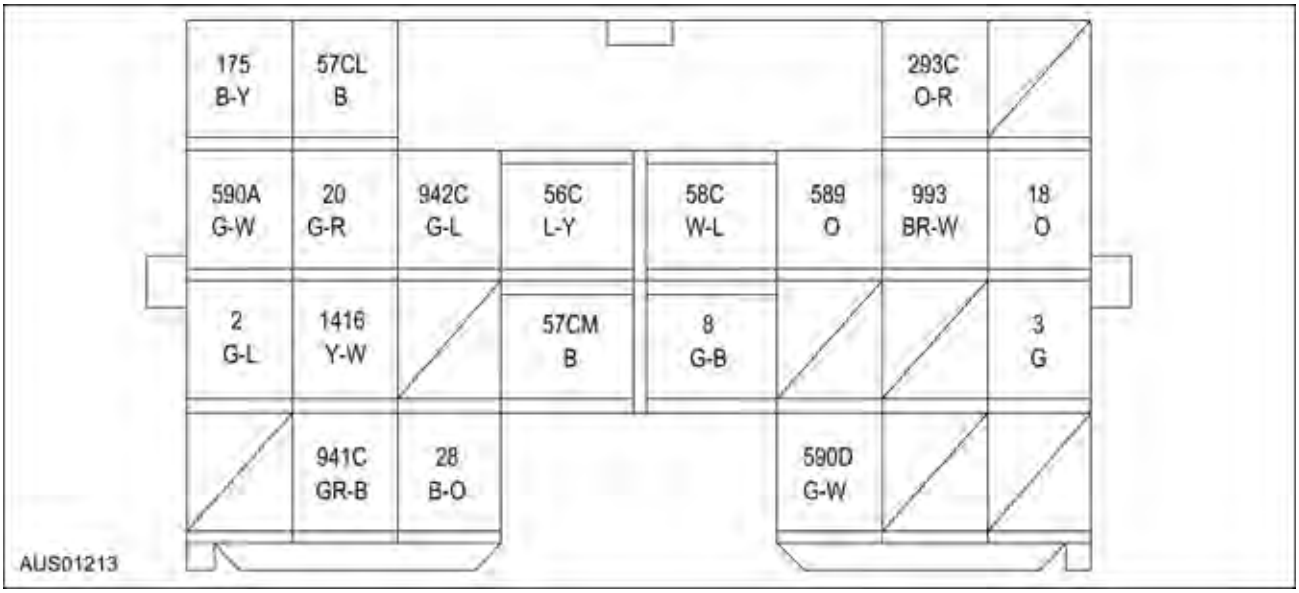
C-163 Power Distribution Box (PDB)



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 18 (O) Multifunction switch low beam headlamp input	0 voltage, less than 5 ohms between Multifunction switch and low beam headlamp relay
2	Circuit 20 (G-R) Multifunction switch high beam headlamp input	0 voltage, less than 5 ohms between Multifunction switch and high beam headlamp relay
3	12B (G-O) RH high beam headlamp power input	0 voltage, less than 5 ohms between RH high beam headlamp and high beam headlamp relay
4	Circuit 12G (G-O) LH High beam headlamp power input	0 voltage, less than 5 ohms between RH low beam headlamp and low beam headlamp relay
5	13A (RG-B) RH low beam headlamp power input	0 voltage, less than 5 ohms between LH high beam headlamp and high beam headlamp relay
6	13C (R-B) LH low beam headlamp power input	0 voltage, less than 5 ohms between LH low beam headlamp and low beam headlamp relay

DIAGNOSIS AND TESTING (Continued)

C-167 Multifunction Switch



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 18 (O) Multifunction switch low beam headlamp input	0 voltage, less than 5 ohms between Multifunction switch and low beam headlamp relay
2	Circuit 20 (G-R) Multifunction switch high beam headlamp input	0 voltage, less than 5 ohms between Multifunction switch and high beam headlamp relay
3	Circuit 57CL (B) Multifunction switch ground	0 voltage, less than 5 ohms between Multifunction switch and chassis ground

Inspection and Verification

Visual Inspection Chart

Mechanical	Electrical
. Multifunction switch	. Power Distribution Box (PDB): . fuse 15 (15A) . fuse 16 (15A) . fuse 24 (15A) . fuse 25 (15A) . relay 4 (40A) . relay 5 (40A) . Circuitry . Lamp bulbs

DIAGNOSIS AND TESTING (Continued)

Symptom Chart

Condition	Source	Action
. Both headlamps are inoperative	. Battery . Circuitry . Multifunction switch C-167	. Go to PinPoint Test A
. The low beams are inoperative	. PDB: . relay 5 . Circuitry . Multifunction switch C-167	. Go to PinPoint Test B
. The high beams are inoperative	. PDB: . relay 4 . Circuitry . Multifunction switch C-167	. Go to PinPoint Test C
. One low beam headlamp is inoperative	. PDB: . fuse 24 (15A) . fuse 25 (15A) . Circuitry . Headlamp bulb	. Go to PinPoint Test D
. One high beam headlamp is inoperative	. PDB: . fuse 15 (15A) . fuse 16 (15A) . Circuitry . Headlamp bulb	. Go to PinPoint Test E
. The headlamps are on continuously	. PDB: . relay 4 . relay 5 . Circuitry . Multifunction switch C-167	. Go to PinPoint Test F
. The flash-to-pass feature is inoperative	. Multifunction switch C-167	. Perform the Multifunction switch testing in Section 211-05. . Test the system for normal operation.

DIAGNOSIS AND TESTING (Continued)

Pinpoint Tests

Both headlamps are inoperative

Possible causes:

- Battery
- Multifunction Switch C-167
- Circuit 57CL (B) open

PINPOINT TEST A : BOTH HEADLAMPS ARE INOPERATIVE

Test Step		Result / Action to Take
A1	**CHECK THE MULTIFUNCTION SWITCH GROUND**	
	. Disconnect: Multifunction switch C-167. . Measure the resistance between Multifunction switch C-167, circuit 57CL (B), harness side and ground. . **Is the resistance less than 5 ohms?**	**Yes** Perform the Multifunction switch testing in Section 211-05. Test the system for normal operation. **No** Repair circuit 57CL (B). Test the system for normal operation.

The low beams are inoperative

Possible causes:

- Low beam headlamp relay
- Circuit 18 (O) open
- Multifunction Switch C-167
- Circuit 13 (R-B) open or short to ground

PINPOINT TEST B : THE LOW BEAMS ARE INOPERATIVE

Test Step		Result / Action to Take
B1	**CHECK CIRCUIT 13 (R-B) FOR A SHORT TO GROUND**	
	. Disconnect: RH low beam headlamp C-159 or LH low beam headlamp C-160. . Measure the resistance between RH low beam headlamp C-159, circuit 13A (R-B), harness side or LH low beam headlamp C-160, circuit 13C (R-B), harness side and ground. . **Is the resistance less than 5 ohms?**	**Yes** Repair circuit 13 (R-B). Test the system for normal operation. **No** Go to **B2**
B2	**CHECK CIRCUIT 13 (R-B) FOR AN OPEN**	
	. Disconnect: Low beam headlamp relay, PDB C-163 relay 5 (40A). . Measure the resistance between RH low beam headlamp C-159, circuit 13A (R-B), harness side or LH low beam headlamp C-160, circuit 13C (R-B), harness side and low beam headlamp relay, PDB C-163 relay 5 (40A), circuit 13 (R-B), harness side. . **Is the resistance less than 5 ohms?**	**Yes** Go to **B3** **No** Repair circuit 13 (R-B). Test the system for normal operation.
B3	**CHECK CIRCUIT 18 (O) FOR AN OPEN**	
	. Disconnect: Multifunction switch C-167. Measure the resistance between the low beam headlamp relay, PDB C-163 relay 5 (40A), circuit 18 (O), harness side and Multifunction switch C-167, circuit 18 (O), harness side. . **Is the resistance less than 5 ohms?**	**Yes** Go to **B4** **No** Repair circuit 18 (O). Test the system for normal operation.

DIAGNOSIS AND TESTING (Continued)

Test Step		Result / Action to Take
B4	**CHECK THE MULTIFUNCTION SWITCH**	
	. Perform the Multifunction switch testing in Section 211-05 . **Is the Multifunction switch operating correctly?**	**Yes** Replace the low beam headlamp relay Test the system for normal operation **No** See Multifunction switch in Section 211-05

The high beams are inoperative

Possible causes:

- Headlamp high beam relay
- Circuit 20 (G-R) open
- Multifunction Switch C-167
- Circuit 12 (G-O) open or short to ground

PINPOINT TEST C : THE HIGH BEAMS ARE INOPREATIVE

Test Step		Result / Action to Take
C1	**CHECK CIRCUIT 12 (G-O) FOR A SHORT TO GROUND**	
	. Disconnect: RH high beam headlamp C-159 or LH high beam headlamp C-160. . Measure the resistance between RH high beam headlamp C-159, circuit 12A (G-O), harness side or LH high beam headlamp C-160, circuit 12C (G-O), harness side and ground. . **Is the resistance less than 5 ohms?**	**Yes** Repair circuit 12 (G-O). Test the system for normal operation. **No** Go to **C2**
C2	**CHECK CIRCUIT 12 (G-O) FOR AN OPEN**	
	. Disconnect: Headlamp high beam relay, PDB C-163 relay 4 (40A). . Measure the resistance between RH high beam headlamp C-159, circuit 12A (G-O), harness side or LH high beam headlamp C-160, circuit 12C (G-O), harness side and headlamp high beam relay, PDB relay 4 (40A), circuit 12 (G-O), harness side. . **Is the resistance less than 5 ohms?**	**Yes** Go to **C3** **No** Repair circuit 12 (G-O). Test the system for normal operation.
C3	**CHECK CIRCUIT 20 (G-R) FOR AN OPEN**	
	. Disconnect: Multifunction Switch C-167. . Measure the resistance between the headlamp high beam relay, PDB C-163 relay 4 (40A), circuit 20 (G-R), harness side and Multifunction switch C-167, circuit 20 (G-R), harness side. . **Is the resistance less than 5 ohms?**	**Yes** Go to **C4** **No** Repair circuit 20 (G-R). Test the system for normal operation.
C4	**CHECK THE MULTIFUNCTION SWITCH**	
	. Perform the Multifunction switch testing in Section 211-05 . **Is the Multifunction switch operating correctly?**	**Yes** Replace the high beam headlamp relay. Test the system for normal operation. **No** See Multifunction switch in Section 211-05

One low beam headlamp is inoperative

Possible causes:

- Circuit 13 (R-B) short to ground
- Circuit 57 (B) open

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST D : ONE LOW BEAM HEADLAMP IS INOPERATIVE

Test Step		Result / Action to Take
D1	**CHECK THE HEADLAMP LOW BEAM VOLTAGE INPUT**	
	. Disconnect: Inoperative low beam headlamp. . Turn ON low beam headlamps. . Measure the voltage between RH low beam C-159, circuit 13A (R-B), harness side or LH low beam C-160, circuit 13C (R-B), harness side and ground. . **Is the voltage greater than 10 volts?**	**Yes** Repair circuit 57 (B). Test the system for normal operation. **No** Repair circuit 13 (R-B). Test the system for normal operation.

One high beam headlamp is inoperative

Possible causes

- Circuit 12 (G-O) short to ground
- Circuit 57 (B) open

PINPOINT TEST E : ONE HIGH BEAM HEADLAMP IS INOPERATIVE

Test Step		Result / Action to Take
E1	**CHECK THE HEADLAMP LOW BEAM VOLTAGE INPUT**	
	. Disconnect: Inoperative low beam headlamp. . Turn ON low beam headlamps. . Measure the voltage between RH high beam C-159, circuit 12A (G-O), harness side, RH low beam C-159, circuit 12C (G-O), harness side, LH low beam C-160, circuit 12E (G-O), harness side or LH high beam C-160, circuit 12D (G-O), harness side and ground. . **Is the voltage greater than 10 volts?**	**Yes** Repair circuit 57 (B). Test the system for normal operation. **No** Repair circuit 12 (G-O). Test the system for normal operation.

The headlamps are on continuously

Possible causes:

- Multifunction switch C-167
- Low beam headlamp relay
- Circuit 18 (O) short to ground
- Circuit 13 (R-B) short to power
- High beam headlamp relay
- Circuit 20 (G-R) short to ground
- Circuit 12 (G-O) short to power

PINPOINT TEST F : THE HEADLAMPS ARE ON CONTINUOUSLY

Test Step		Result / Action to Take
F1	**CHECK THE MULTIFUNCTION SWITCH**	
	. Disconnect: Multifunction switch C-167. . **Are the headlamps illuminated?**	**Yes** Go to **F2** **No** Perform the Multifunction switch testing in Section 211-05 Test the system for normal operation.

DIAGNOSIS AND TESTING (Continued)

Test Step		Result / Action to Take
F2	**CHECK CIRCUIT 18 (O) FOR A SHORT TO GROUND**	
	. Measure the resistance between Multifunction switch C-167, circuit 18 (O), harness side and ground. . **Is the resistance less than 5 ohms?**	**Yes** Repair circuit 18 (O). Test the system for normal operation. **No** Go to **F3**
F3	**CHECK CIRCUIT 20 (G-R) FOR A SHORT TO GROUND**	
	. Measure the resistance between Multifunction switch C-167, circuit 20 (G-R), harness side and ground. . **Is the resistance less than 5 ohms?**	**Yes** Repair circuit 20 (G-R). Test the system for normal operation. **No** Go to **F4**
F4	**CHECK HEADLAMP LOW BEAM RELAY**	
	. Disconnect: Low beam headlamp relay, PDB C-163 relay 5 (40A). . **Are the headlamps illuminated?**	**Yes** Go to **F5** **No** Install a new low beam headlamp relay. Test the system for normal operation.
F5	**CHECK CIRCUIT 13 (R-B) FOR A SHORT TO POWER**	
	. Measure the voltage between the low beam headlamp relay, PDB C-163 relay 5 (40A), circuit 13 (R-B) harness side and ground. . **Is the voltage greater than 10 volts?**	**Yes** Repair circuit 13 (R-B). Test the system for normal operation. **No** Go to **F6**
F6	**CHECK THE HEADLAMP HIGH BEAM RELAY**	
	. Disconnect: High beam headlamp relay, PDB C-163 relay 4 (40A). . **Are the headlamps illuminated?**	**Yes** Repair circuit 12 (G-O). Test the system for normal operation. **No** Install a new high beam headlamp relay. Test the system for normal operation.

PINPOINT TEST G : TWILIGHT SENSOR/SUN LOAD SENSOR NOT WORKING

NOTE: The sunload sensor must not be covered with a dash mat or other item, as this will prevent the optimum performance of the automatic climate control system and the automatic headlamp operation.

Test Step		Result / Action to Take
G1	**CHECK HEADLAMPS**	
	. Turn on the ignition. . Turn the headlamp switch to AUTO position. . Cover the Sun Load Sensor. . **Do the headlamps turn on after 2 Seconds?**	**Yes** Go to **G2** **No** Go to **G3**

DIAGNOSIS AND TESTING (Continued)

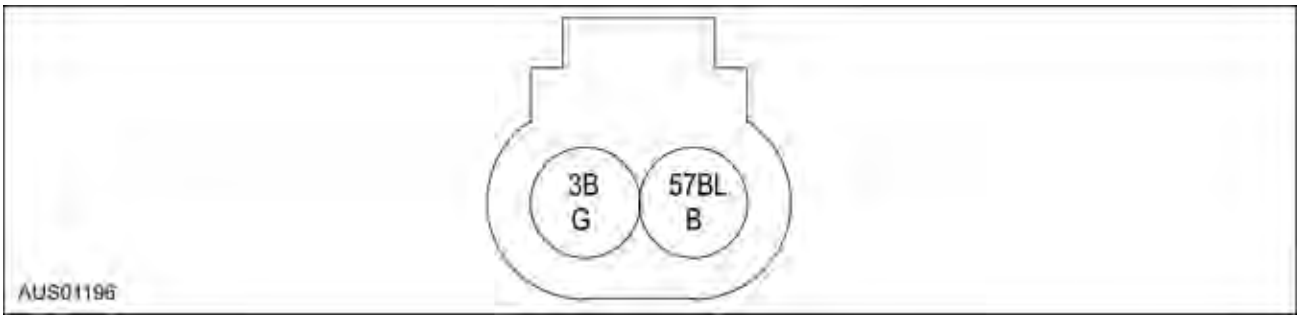
Test Step		Result / Action to Take
G2	**CHECK HEADLAMPS**	
	. With the ignition on and the headlamp switch in the AUTO position, uncover the Sun Load Sensor. . Shine a torch on the light sensor. . **Do the headlamps turn off after 15 Seconds?**	**Yes** System OK. **No** Go to **G3**
G3	**CHECK DTC LOG**	
	. Turn off the ignition. . Connect WDS. . Turn on the ignition. . **Is DTC $9790 or $9791 logged?**	**Yes** Go to **G4** **No** Refer to BEM Diagnostics.
G4	**CHECK PIN J 1/18 FREQUENCY**	
	. Disconnect J1 from BEM. . Turn Head lamp Switch to AUTO position. . Turn Ignition ON. . Using CRO on WDS back probe J 1/18. . **Are the following values as specified? Sensor Covered:J1= approx 400HzSensor uncovered and torch shining:J1 = approx 50Hz**	**Yes** Go to **G5** **No** Go to **G6**
G5	**CHECK IN J 2/6 VOLTAGE**	
	. Disconnect J2 from BEM. . Turn Head lamp Switch on AUTO. . Turn Ignition ON. . Using Voltmeter back probe J 2/6. . **Are the following values as specified? Sensor Covered:J2 = approx 0.7V Sensor uncovered and torch shining:J2 = approx 4.5V**	**Yes** Refer to BEM Diagnostics **No** Go to **G7**
G6	**CHECK CIRCUIT 234D CONTINUITY**	
	. Disconnect harness connector from Sun Load Sensor. . Check for short to B+, short to ground and continuity of circuit 234D. . **Is circuit 234D OK?**	**Yes** Go to **G7** **No** Check & Repair circuit 234D.
G7	**CHECK CIRCUIT 234E CONTINUITY**	
	. Disconnect harness connector from Sun Load Sensor. . Check for short to B+, short to ground and continuity of circuit 234E. . **Is circuit 234E OK?**	**Yes** Go to **G8** **No** Check & Repair circuit 234E.
G8	**CHECK CIRCUIT CN 1-3 RESISTANCE**	
	. Disconnect harness connector from Sun Load Sensor. . Back probe CN1 - 3 with an ohmmeter to ground. . **Is the following value as specified? Less than 1 ohm**	**Yes** Go to **G9** **No** Check & Repair ground circuit to Sun Load Sensor.

DIAGNOSIS AND TESTING (Continued)

Test Step		Result / Action to Take
G9	**CHECK CIRCUIT CN 2-2 RESISTANCE**	
. Disconnect harness connector from Sun Load Sensor. . Turn Ignition ON. . Back probe CN2 - 2 with an ohmmeter to ground. . **Is the following value as specified? Battery voltage to be 9-13 volts with ignition OFF.**		**Yes** Replace Sun Load Sensor. **No** Check & Repair Power Supply Circuit to Sun Load Sensor, (including Head Lamp Switch assembly).

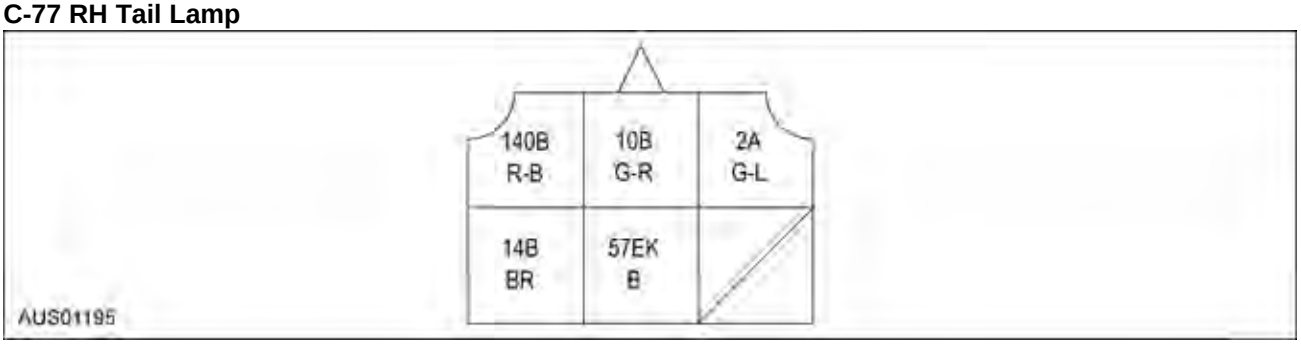
Turn Signal and Hazard Lamps

C-46 LH Side Marker



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 3B (G) LH side marker power input	0 voltage, less than 5 ohms between LH side marker and cluster
2	Circuit 57BL (B) LH side marker ground	0 voltage, less than 5 ohms between LH side marker and ground

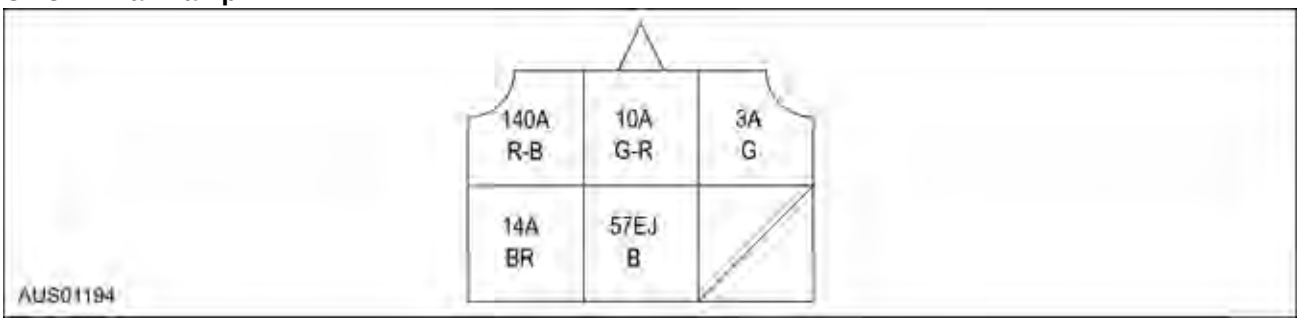
C-77 RH Tail Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 2A (G-L) RH turn signal power input	0 voltage, less than 5 ohms between RH turn signal and cluster
2	Circuit 57EK (B) RH tail lamp ground	0 voltage, less than 5 ohms between RH tail lamp and ground

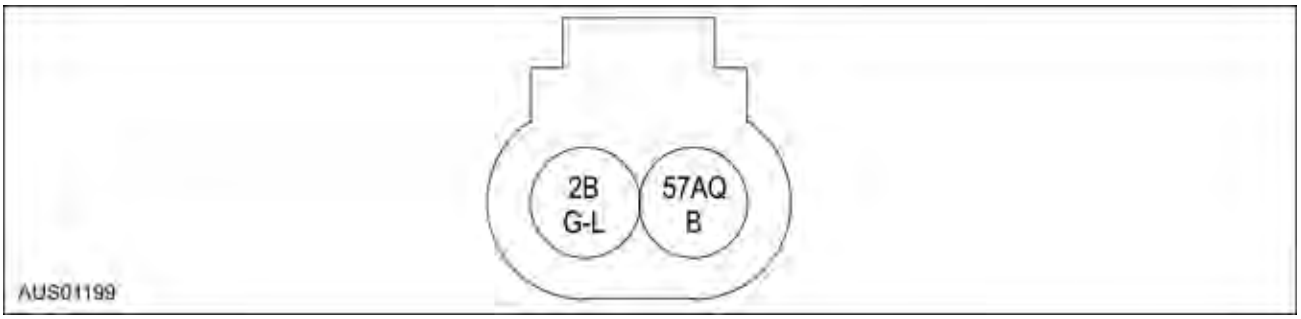
DIAGNOSIS AND TESTING (Continued)

C-78 LH Tail Lamp



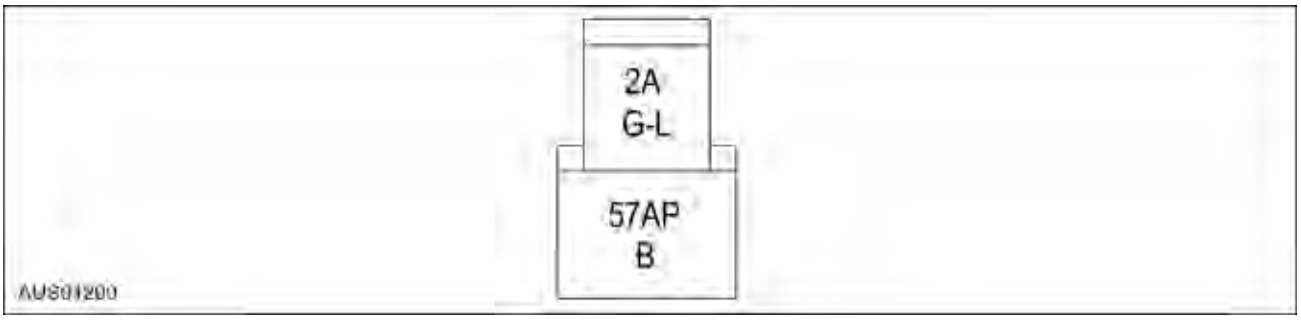
Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 3A (G) LH turn signal power input	0 voltage, less than 5 ohms between LH turn signal and cluster
2	Circuit 57EJ (B) LH tail lamp ground	0 voltage, less than 5 ohms between LH tail lamp and ground

C-154 RH Side Marker



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 2B (G-L) RH side marker power input	0 voltage, less than 5 ohms between RH side marker and cluster
2	Circuit 57AQ (B) RH side marker ground	0 voltage, less than 5 ohms between RH side marker and ground

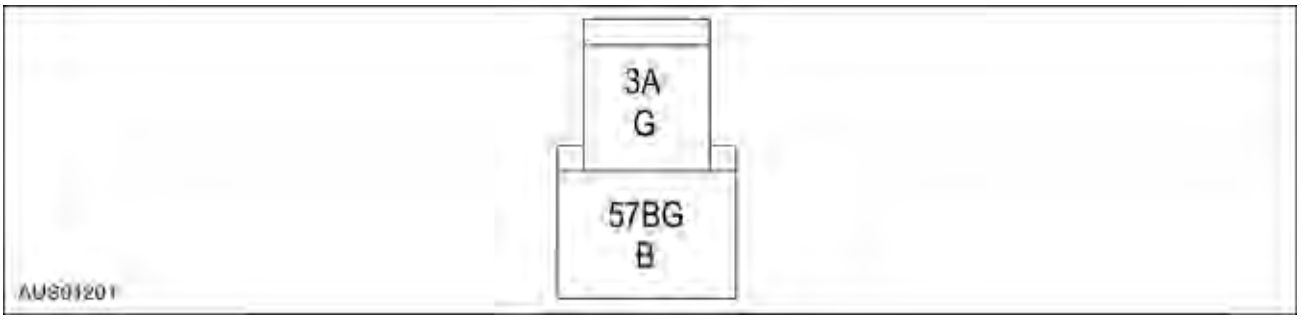
C-159 RH Turn Signal



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 2A (G-L) RH turn signal power input	0 voltage, less than 5 ohms between RH turn signal and cluster
2	Circuit 57AP (B) RH turn signal ground	0 voltage, less than 5 ohms between RH turn signal and ground

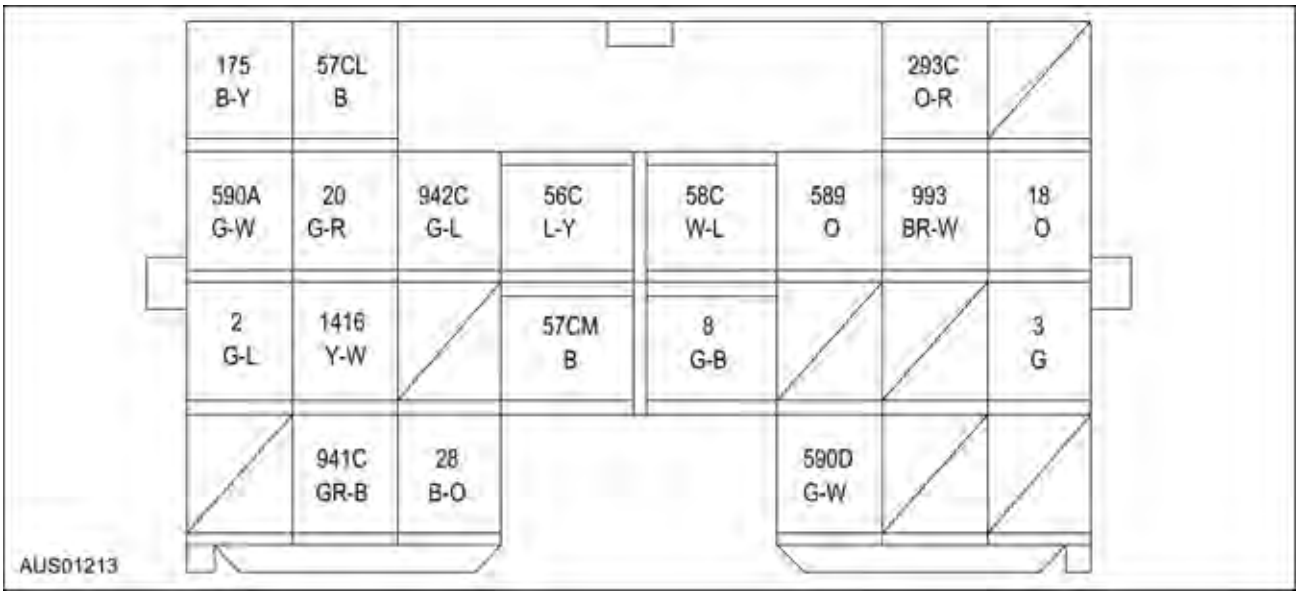
DIAGNOSIS AND TESTING (Continued)

C-160 LH Turn Signal



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 3A (G) LH turn signal power input	0 voltage, less than 5 ohms between LH turn signal and cluster
2	Circuit 57BG (B) LH turn signal ground	0 voltage, less than 5 ohms between LH turn signal and ground

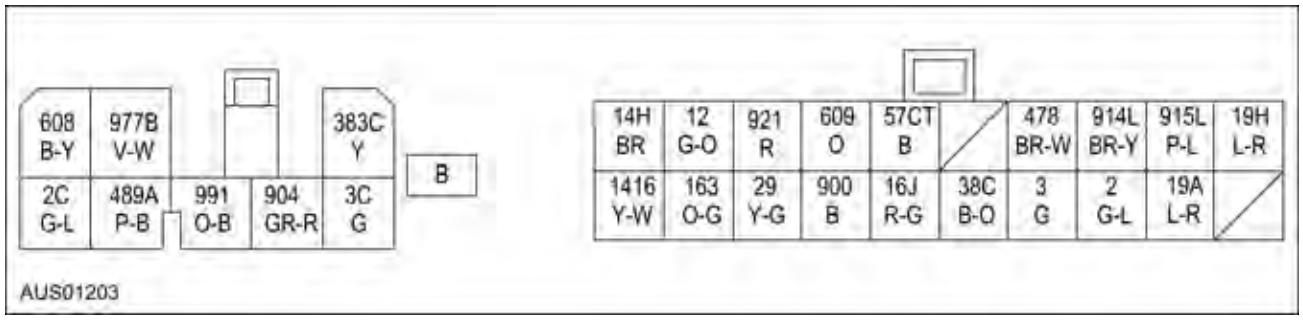
C-167 Multifunction Switch



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 2 (G-L) RH turn signal feed	0 voltage, less than 5 ohms between cluster and Multifunction switch
2	Circuit 3 (G) LH turn signal feed	0 voltage, less than 5 ohms between cluster and Multifunction switch
3	Circuit 8 (G-B) Turn signal flasher feed	0 voltage, less than 5 ohms between Multifunction switch and ignition relay

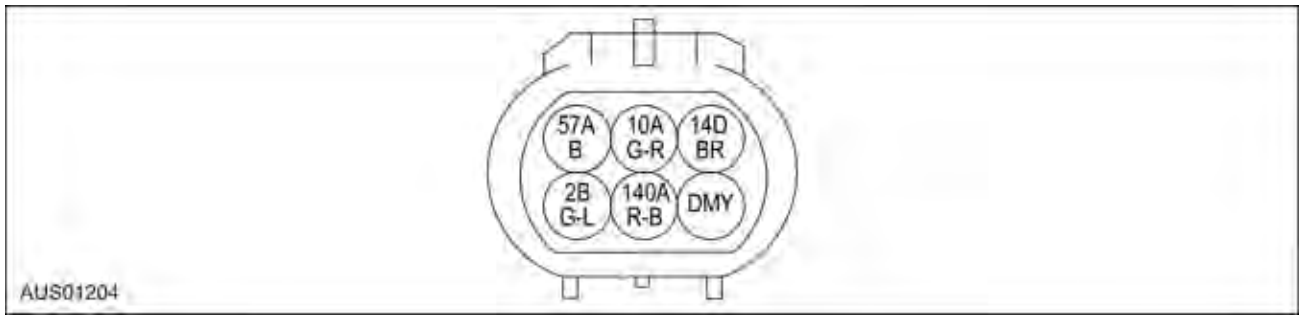
DIAGNOSIS AND TESTING (Continued)

C-171 Cluster



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 2 (G-L) RH turn signal feed	0 voltage, less than 5 ohms between cluster and Multifunction switch
2	Circuit 2C (G-L) RH turn signal lamp power input	0 voltage, less than 5 ohms between cluster and RH turn signal lamps
3	Circuit 3 (G) LH turn signal feed	0 voltage, less than 5 ohms between cluster and Multifunction switch
4	Circuit 3C (G) LH turn signal lamp power input	0 voltage, less than 5 ohms between cluster and LH turn signal lamps
5	Circuit 383C (Y) Hazard lights B+ input	Greater than 10 volts, 10,000 ohms between hazard lights input and chassis ground

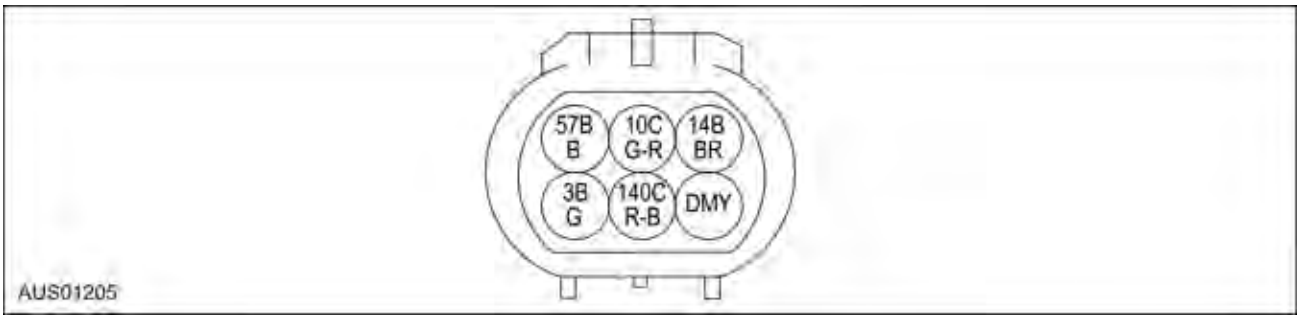
C-705 Ute Cab Chassis RH Tail Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 2B (G-L) RH turn signal power input	0 voltage, less than 5 ohms between RH tail lamp and cluster
2	Circuit 57A (B) RH tail lamp ground	0 voltage, less than 5 ohms between RH tail lamp and chassis ground

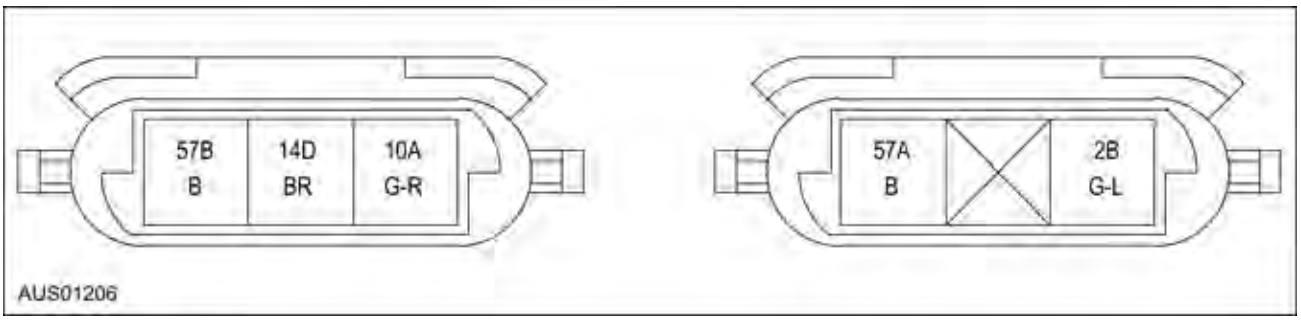
DIAGNOSIS AND TESTING (Continued)

C-707 Ute Cab Chassis LH Tail Lamp



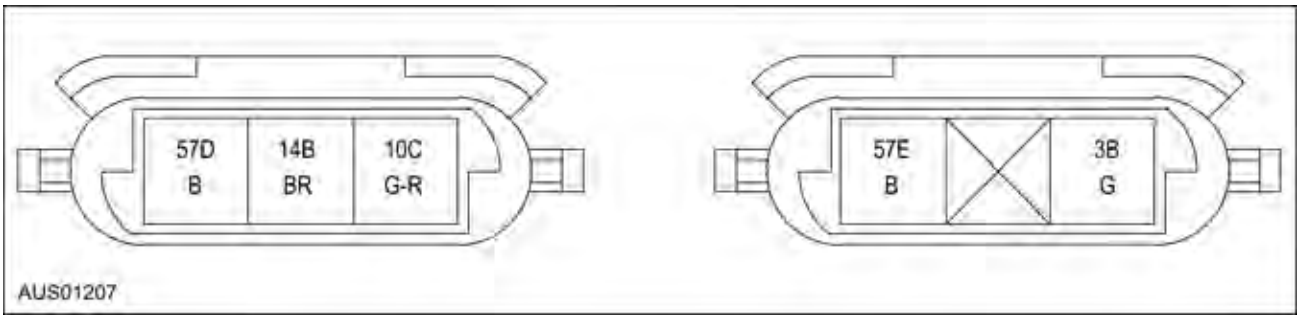
Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 3B (G) LH turn signal power input	0 voltage, less than 5 ohms between LH tail lamp and cluster
2	Circuit 57B (B) LH tail lamp ground	0 voltage, less than 5 ohms between LH tail lamp and chassis ground

C-706 Ute Style Side Box RH Tail Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 2B (G-L) RH turn signal power input	0 voltage, less than 5 ohms between RH tail lamp and cluster
2	Circuit 57A (B) RH tail lamp ground	0 voltage, less than 5 ohms between RH tail lamp and chassis ground

C-708 Ute Style Side Box LH Tail Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 3B (G) LH turn signal power input	0 voltage, less than 5 ohms between LH tail lamp and cluster
2	Circuit 57E (B) LH tail lamp ground	0 voltage, less than 5 ohms between LH tail lamp and chassis ground

DIAGNOSIS AND TESTING (Continued)

Inspection and Verification

Visual Inspection Chart

Mechanical	Electrical
. Multifunction switch	. Junction Box (JB): . . fuse 17 (15A) . Circuitry . Turn Signal and Hazard Lamp Bulbs . Multifunction switch . Cluster

Symptom Chart

Condition	Source	Action
. The turn signal lamps are inoperative	. Circuitry . Multifunction switch . Cluster	. Go to PinPoint Test A
. The turn signal lamps are always on	. Multifunction switch . Cluster	. Go to PinPoint Test B
. One turn signal/hazard lamp is inoperative	. Circuitry	. Go to PinPoint Test C
. The hazard lamps are inoperative	. Circuitry . Cluster	. Go to PinPoint Test D
. The hazard lamps are always on	. Cluster	. Perform the cluster testing in Section 413-01

DIAGNOSIS AND TESTING (Continued)

Pinpoint Tests

The turn signal lamps are inoperative

Possible causes:

- Circuit 8 (G-B) open or short to ground
- Multifunction switch C-167
- Circuit 2 (G-L) or 3 (G) open or short to ground
- Cluster C-171
- Circuit 2C (G-L) or 3C(G) open or short to ground

PINPOINT TEST H : THE TURN SIGNAL LAMPS ARE INOPERATIVE

Test Step		Result / Action to Take
H1	**CHECK MULTIFUNCTION SWITCH INPUT VOLTAGE**	
	. Disconnect: Multifunction switch C-167. . Turn ON ignition. . Measure the voltage between the Multifunction switch C-167, circuit 8 (G-B), harness side and ground. . **Is the voltage greater than 10 volts?**	**Yes** Go to **H2** **No** Repair circuit 8 (G-B). Test the system for normal operation.
H2	**CHECK THE MULTIFUNCTION SWITCH**	
	. Turn OFF ignition. . Perform the Multifunction switch testing in Section 211-05 . **Is the Multifunction switch functioning correctly?**	**Yes** Go to **H3** **No** Replace the Multifunction switch, see Section 211-05 Test the system for normal operation.
H3	**CHECK CLUSTER INDICATOR INPUT**	
	. Connect: Multifunction switch C-167. . Disconnect: Cluster C-171. . Turn ON ignition. . Turn ON inoperative indicator. . Measure the voltage between inoperative indicator harness side and ground . **Is the voltage greater than 10 volts?**	**Yes** Go to **H4** **No** Repair circuit. Test the system for normal operation.
H4	**CHECK INDICATOR LAMP POWER INPUT FOR A SHORT TO GROUND**	
	. Turn OFF ignition. . Disconnect: Inoperative lamp. . 3 Measure the resistance between the inoperative lamp, harness side and ground . **Is the resistance less than 5 ohms?**	**Yes** Repair circuit. Test the system for normal operation. **No** Go to **H5**

DIAGNOSIS AND TESTING (Continued)

Test Step		Result / Action to Take
H5	**CHECK INDICATOR LAMP POWER INPUT FOR AN OPEN**	
	. 1 Measure the resistance between the inoperative lamp, harness side and cluster C-171, harness side . **Is the resistance less than 5 ohms?**	**Yes** Perform the cluster testing in Section 413-01 Test the system for normal operation. **No** Repair circuit. Test the system for normal operation.

The turn signal lamps are always on

Possible causes:

- Multifunction switch C-167
- Circuit 2 (G-L) or 3 (G) short to power
- Cluster C-171
- Circuit 2C (G-L) or 3C (G) short to power

PINPOINT TEST I : THE TURN SIGNAL LAMPS ARE ALWAYS ON

Test Step		Result / Action to Take
I1	**CHECK THE MULTIFUNCTION SWITCH**	
	. Disconnect: Multifunction switch C-167. . **Are the turn signals always on?**	**Yes** Go to **I2** **No** Perform the Multifunction switch testing in Section 211-01. Test the system for normal operation.
I2	**CHECK CLUSTER**	
	. Disconnect: Cluster C-171. . **Are the turn signals always on?**	**Yes** Repair circuit 3C (G) if LH lights are illuminated or circuit 2C (G-L) if RH lamps are illuminated. Test the system for normal operation. **No** Go to **I3**
I3	**CHECK INDICATOR LAMP POWER INPUT FOR AN OPEN**	
	. Measure the voltage between malfunctioning indicator, harness side and ground . **Is the voltage greater than 10 volts?**	**Yes** Repair circuit. Test the system for normal operation. **No** Perform the cluster testing in Section 413-01. Test the system for normal operation.

One turn signal/hazard lamp is inoperative

Possible causes:

- Circuit 2 (G-L) or 3 (G) open
- Circuit 57 (B) open

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST J : ONE TURN SIGNAL HAZARD LAMP IS INOPERATIVE

Test Step		Result / Action to Take
J1	CHECK INOPERATIVE LAMP INPUT	
. Disconnect: Inoperative lamp. . Turn ON ignition. . Turn ON hazard lights. . Measure the voltage between the inoperative lamp, harness side and ground . **Is the voltage greater than 10 volts?**		**Yes** Repair circuit 57 (B). Test the system for normal operation. **No** Repair circuit 2 (G-L) or 3 (G). Test the system for normal operation.

The hazard lamps are inoperative

Possible causes:

- Circuit 383C (Y) open or short to ground
- Cluster C-171

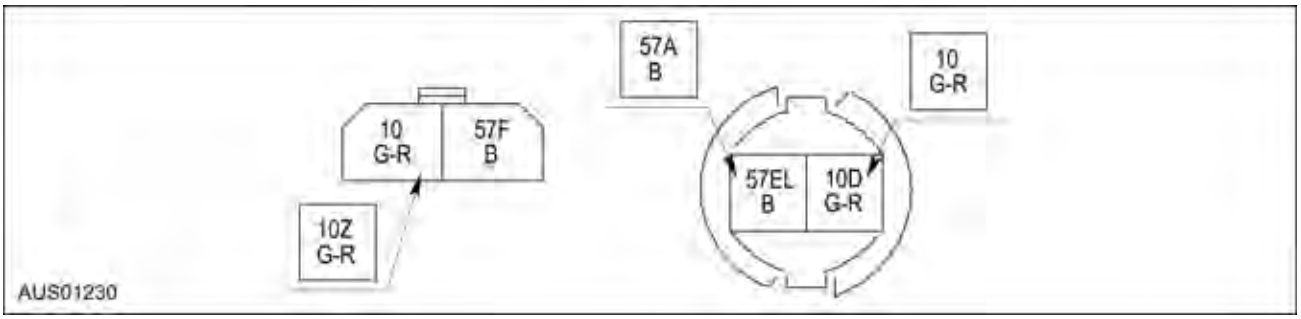
PINPOINT TEST K : THE HAZARD LAMPS ARE INOPERATIVE

Test Step		Result / Action to Take
K1	CHECK CIRCUIT 383C (Y) VOLTAGE	
. Disconnect: cluster. . Measure the voltage between cluster C-171, circuit 383C (Y), harness side and ground. . **Is the voltage greater than 10 volts?**		**Yes** Perform the cluster testing in Section 413-01 Test the system for normal operation. **No** Repair circuit 383C (Y). Test the system for normal operation.

Stop Lamps

Connector Circuit Reference

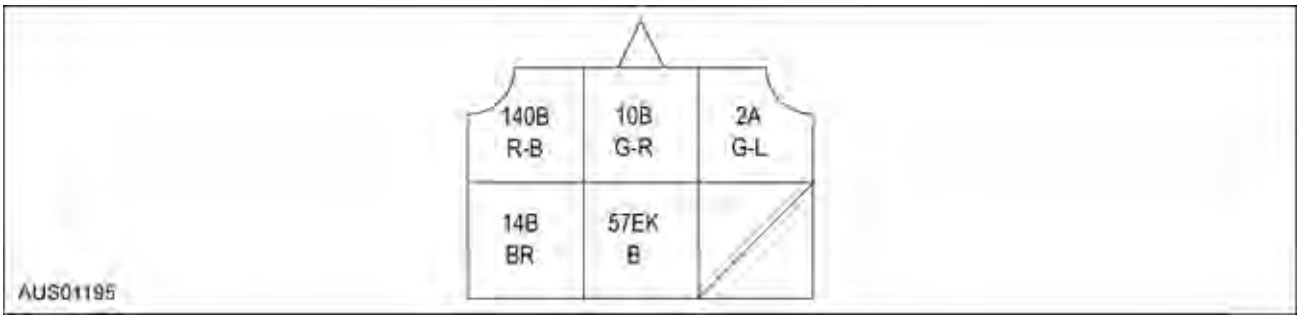
C-39 High Mount Stop Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 10D (G-R) Stop lamp power input	0 voltage, less than 5 ohms between stop lamp and brake switch
2	Circuit 57EL (B) Stop lamp ground	0 voltage, less than 5 ohms between stop lamp and chassis ground

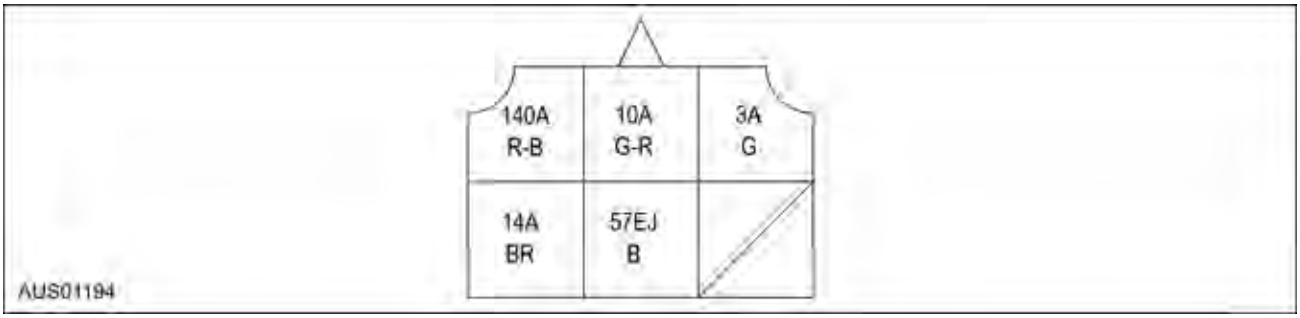
DIAGNOSIS AND TESTING (Continued)

C-77 Sedan Right Tail Lamp



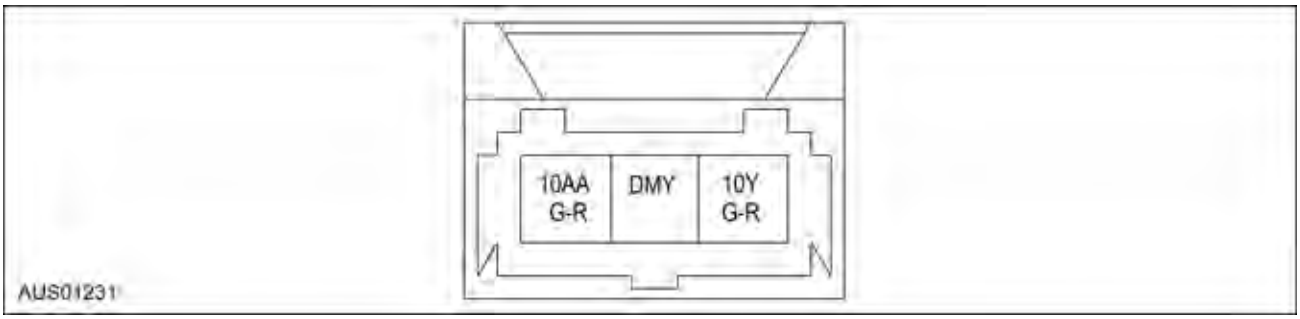
Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 10B (G-R) Stop lamp power input	0 voltage, less than 5 ohms between stop lamp and brake switch
2	Circuit 57EK (B) RH tail lamp ground	0 voltage, less than 5 ohms between RH tail lamp and chassis ground

C-78 Sedan Left Tail Lamp C-78



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 10A (G-R) Stop lamp power input	0 voltage, less than 5 ohms between stop lamp and brake switch
2	Circuit 57EJ (B) LH tail lamp ground	0 voltage, less than 5 ohms between LH tail lamp and chassis ground

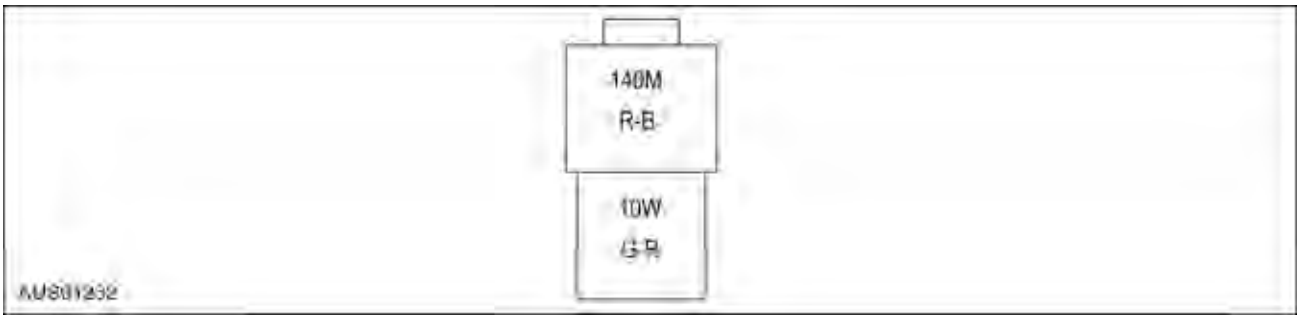
C-191 Brake Switch



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 10AA (G-R) Brake switch power input	0 voltage, less than 5 ohms between the brake switch and ignition relay
2	Circuit 10Y (G-R) Brake switch output to stop lamps	0 voltage, less than 5 ohms between the brake switch and stop lamps

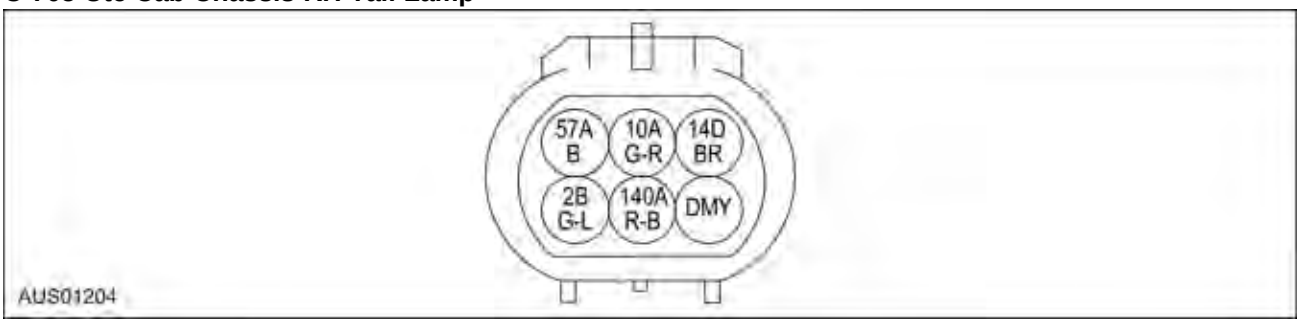
DIAGNOSIS AND TESTING (Continued)

C-710 Ute After Market High Mount Stop Lamp



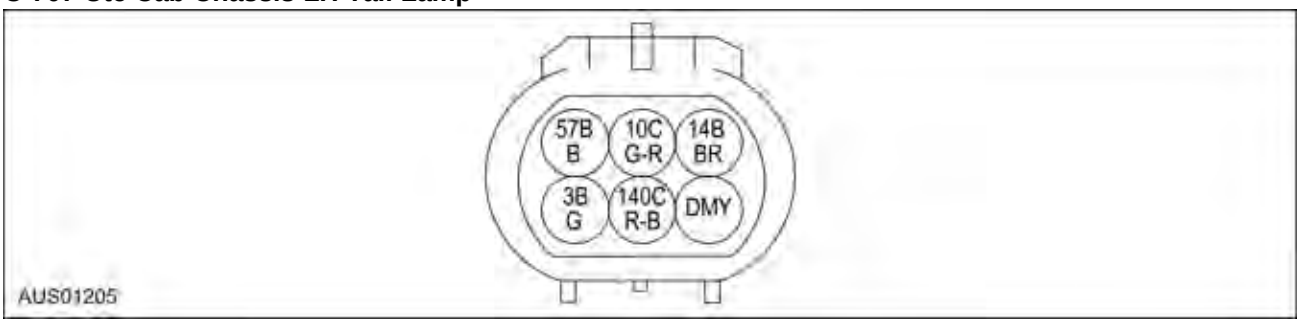
Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 10C (G-R) Stop lamp power input	0 voltage, less than 5 ohms between stop lamp and brake switch
2	Circuit 140M (R-B)	0 voltage, less than 5 ohms between stop lamp and reverse lamps

C-705 Ute Cab Chassis RH Tail Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 10A (G-R) Stop lamp power input	0 voltage, less than 5 ohms between stop lamp and brake switch
2	Circuit 57A (B) Stop lamp ground	0 voltage, less than 5 ohms between stop lamp and chassis ground

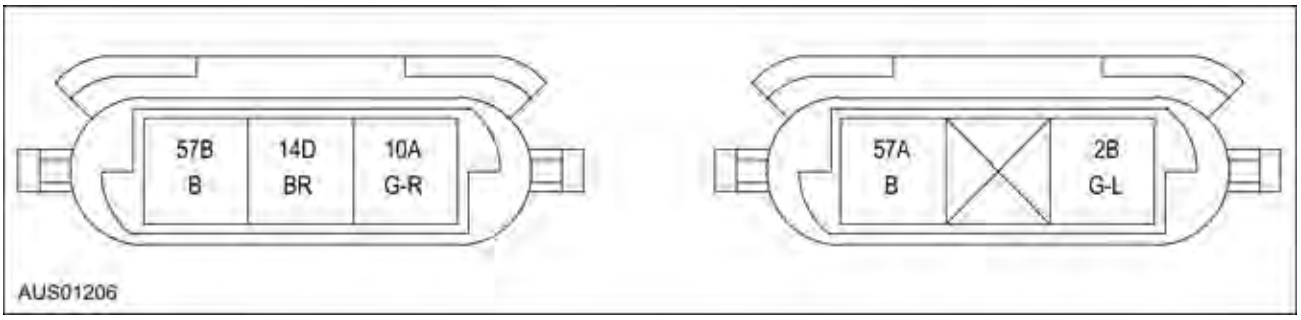
C-707 Ute Cab Chassis LH Tail Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 10C (G-R) Stop lamp power input	0 voltage, less than 5 ohms between stop lamp and brake switch
2	Circuit 57B (B) Stop lamp ground	0 voltage, less than 5 ohms between stop lamp and chassis ground

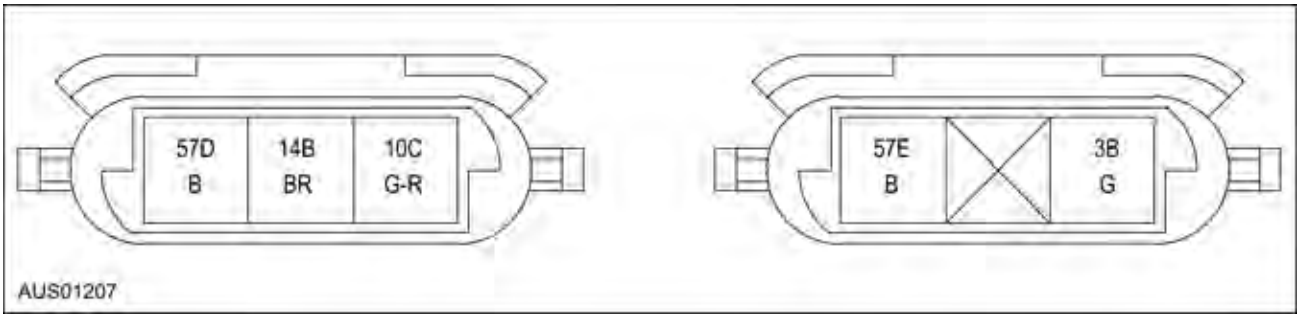
DIAGNOSIS AND TESTING (Continued)

C-706 Ute Style Side Box RH Tail Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 10A (G-R) Stop lamp power input	0 voltage, less than 5 ohms between stop lamp and brake switch
2	Circuit 57B (B) Stop lamp ground	0 voltage, less than 5 ohms between stop lamp and chassis ground

C-708 Ute Style Side Box LH Tail Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 10C (G-R) Stop lamp power input	0 voltage, less than 5 ohms between stop lamp and brake switch
2	Circuit 57D (B) Stop lamp ground	0 voltage, less than 5 ohms between stop lamp and chassis ground

DIAGNOSIS AND TESTING (Continued)

Inspection and Verification

Visual Inspection Chart

Mechanical	Electrical
. Brake switch	. Junction Box (JB): . fuse 7 (15A) . Circuitry . Stop Lamp bulbs

Symptom Chart

Condition	Source	Action
. Both stop lamps are inoperative	. Junction Box (JB): . fuse 7 (15A) . Circuitry . Brake switch	. Go to PinPoint Test A
. One or more stop lamps are inoperative	. Circuitry . Stop Lamp bulbs	. Go to PinPoint Test B
. The stop lamps are continuously on	. Circuitry . Brake switch	. Go to PinPoint Test C

DIAGNOSIS AND TESTING (Continued)

Pinpoint Tests

Both headlamps are inoperative

Possible causes:

- Circuit 10AA (G-R) open or short to ground.
- Brake switch C-191.
- Circuit 10Y (G-R) open or short to ground.

PINPOINT TEST L : THE STOP LAMPS ARE INOPERATIVE

Test Step		Result / Action to Take
L1	**CHECK THE BRAKE SWITCH INPUT VOLTAGE**	
	. Disconnect: brake switch C-191. . Turn ON ignition. . Measure the voltage between the brake switch C-191, circuit 10AA (G-R), harness side and ground. . **Is the voltage greater than 10 volts?**	**Yes** Go to **L2** **No** Repair circuit 10AA (G-R). Test the system for normal operation.
L2	**CHECK THE CIRCUIT 10Y (G-R) FOR A SHORT TO GROUND**	
	. Measure the resistance between the brake switch C191, circuit 10Y (G-R), harness side and ground. . **Is the resistance less than 5 ohms?**	**Yes** Repair circuit 10Y (G-R) Test the system for normal operation. **No** Go to **L3**
L3	**CHECK CIRCUIT 10 (G-R) FOR AN OPEN**	
	. Disconnect: Inoperative tail lamp. . Measure the resistance between the brake switch C191, circuit 10Y (G-R), harness side and inoperative tail lamp (one of the following): . **Is the resistance less than 5 ohms?**	**Yes** Perform the brake switch testing in Section 206-06 Test the system for normal operation. **No** Repair circuit 10 (G-R). Test the system for normal operation.

DIAGNOSIS AND TESTING (Continued)

One or more stop lamps are inoperative

Possible causes:

- Circuit 10 (G-R) open.
- Circuit 57 (B) open.

PINPOINT TEST M : ONE OR MORE STOP LAMPS ARE INOPERATIVE

Test Step		Result / Action to Take
M1	**CHECK CIRCUIT 10 (G-R) FOR AN OPEN**	
	. Disconnect: Inoperative stop lamp. . Turn ON ignition. . Measure the voltage between the brake switch C-191, circuit 10AA (G-R), harness side and inoperative tail lamp. . **Is the resistance less than 5 ohms?**	**Yes** Perform the brake switch testing in Section 206-06 Test the system for normal operation. **No** Repair circuit 10 (G-R). Test the system for normal operation.

The stop lamps are continuously on

Possible causes:

- Brake switch C-191
- Circuit 10 (G-R) short to power

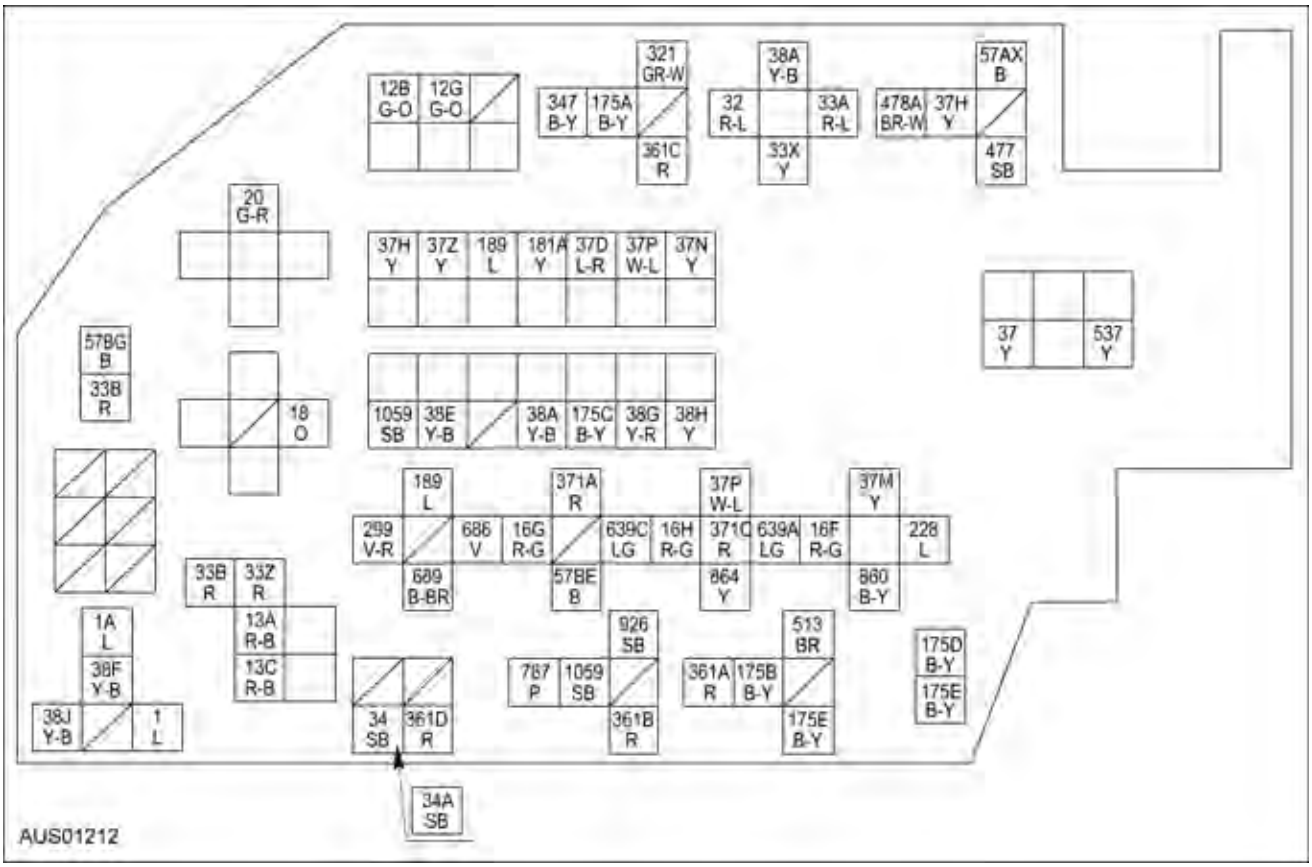
PINPOINT TEST N : THE STOP LAMPS ARE CONTINUOUSLY ON

Test Step		Result / Action to Take
N1	**CHECK THE CIRCUIT 10Y (G-R) FOR A SHORT TO POWER**	
	. Disconnect: brake switch C-191. . **Are the stop lamps illuminated?**	**Yes** Repair circuit 10 (G-R). Test the system for normal operation. **No** Perform the brake switch testing in Section 206-06 Test the system for normal operation.

DIAGNOSIS AND TESTING (Continued)

Fog Lamps

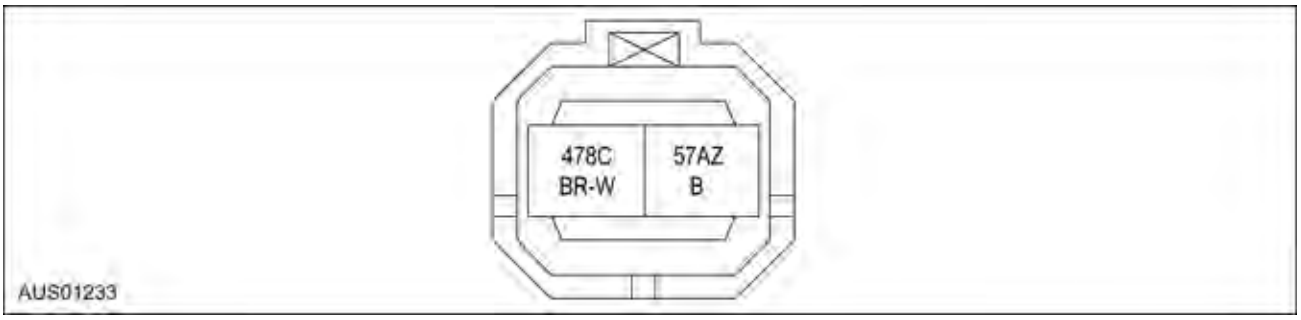
Connector Circuit Reference
C-163 Power Distribution Box (PDB)



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 37H (Y) Battery to fog lamp relay	Greater than 10 volts and 10,000 between fog lamp relay and ground
2	Circuit 57AX (B) Fog lamp relay ground	0 volts, less than 5 ohms between fog lamp relay and ground
3	477 (SB) Fog lamp switch to fog lamp relay	0 volts, less than 5 ohms between fog lamp switch and fog lamp relay
4	478A (BR-W) Fog lamp relay to fog lamps	0 volts, less than 5 ohms between fog lamp relay and fog lamps

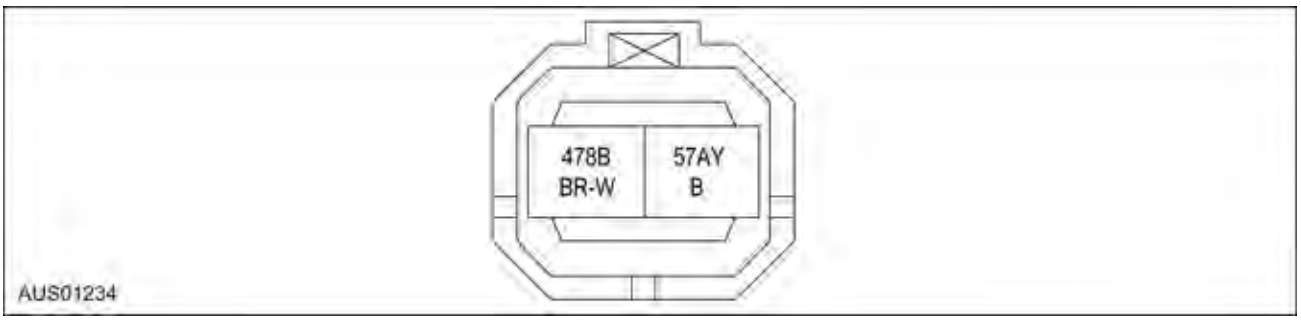
DIAGNOSIS AND TESTING (Continued)

C-360 LH Fog Lamp



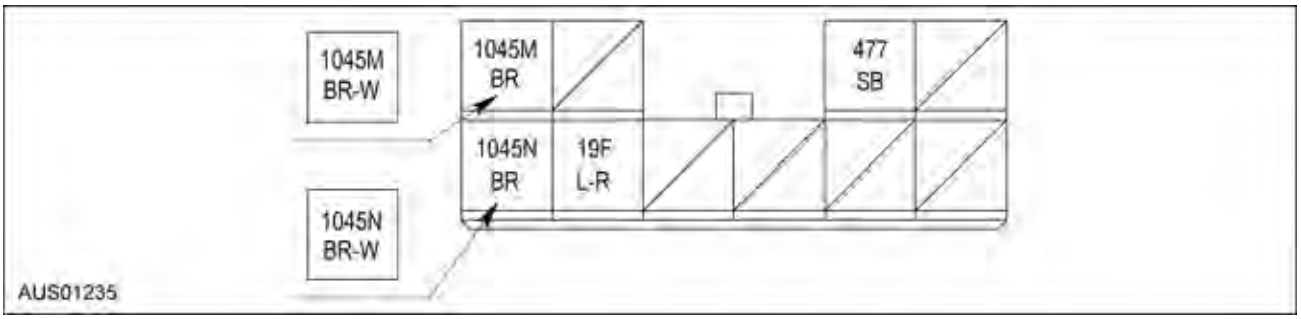
Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 57AZ (B) LH fog lamp ground	0 volts, less than 5 ohms between LH fog lamp and ground
2	Circuit 478C (BR-W) LH fog lamp power input	0 volts, less than 5 ohms between LH fog lamp and fog lamp relay

C-362 RH Fog Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 57AY (B) RH fog lamp ground	0 volts, less than 5 ohms between RH fog lamp and ground
2	Circuit 478B (BR-W) RH fog lamp power input	0 volts, less than 5 ohms between RH fog lamp and fog lamp relay

C-363 Fog Lamp Switch



DIAGNOSIS AND TESTING (Continued)

Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 1045M (BR) Fog lamp switch power input from tail lamp relay	0 volts, less than 5 ohms between fog lamp switch and tail lamp relay.
2	Circuit 477 (SB) Fog lamp switch to fog lamp relay	0 volts, less than 5 ohms between fog lamp switch and fog lamp relay

DIAGNOSIS AND TESTING (Continued)

Inspection and Verification

Visual Inspection Chart

Mechanical	Electrical
. Fog lamp switch.	. Power Distribution Box (PDB): . Fuse 18 (20A) . Relay 1 (20A) . Circuitry . Fog Lamp bulbs

Symptom Chart

Condition	Source	Action
. Both fog lamps are inoperative.	. Power Distribution Box (PDB): . Fuse 18 (20A) . Relay 1 (20A) . Circuitry . Fog lamp switch	. Go to PinPoint Test A
. One fog lamp is inoperative.	. Circuitry	. Go to PinPoint Test B
. Both fog lamps are on continuously.	. Power Distribution Box (PDB): . Relay 1 (20A) . Circuitry . Fog lamp switch	. Go to PinPoint Test C

Pinpoint Tests

Both headlamps are inoperative

Possible causes:

. Circuit 1045M (BR) open or short to ground
. Fog lamp switch C-363
. Circuit 477 (SB) open or short to ground
. Fog lamp relay
. Circuit 57AX (B) open
. Circuit 478 (BR-W) open or short to ground

PINPOINT TEST O : BOTH FOG LAMPS ARE INOPERATIVE

Test Step		Result / Action to Take
O1	**CHECK THE FOG LAMP SWITCH TO FOG LAMP RELAY VOLTAGE**	
	. Disconnect: Fog lamp relay, PDB C-163 relay 1 (20A). . Turn ON fog lamps. . Measure the voltage between fog lamp relay, PDB C-163 relay 1, circuit 477 (SB), harness side and ground. . **Is the voltage greater than 10 volts?**	**Yes** Go to **O5** **No** Go to **O2**
O2	**CHECK CIRCUIT 1045M (BR) VOLTAGE**	
	. Disconnect: Fog lamp switch C-363. . Measure the voltage between fog lamp switch C-363, circuit 1045M (BR), harness side and ground. . **Is the voltage greater than 10 volts?**	**Yes** Go to **O3** **No** Repair circuit 1045M (BR)

DIAGNOSIS AND TESTING (Continued)

Test Step		Result / Action to Take
O3	**CHECK CIRCUIT 477 (SB) FOR A SHORT TO GROUND**	
	. Measure the resistance between fog lamp relay, PDB C-163 relay 1, circuit 477 (SB), harness side and ground. . **Is the resistance less than 5 ohms?**	**Yes** Repair circuit 477 (SB). Test the system for normal operation. **No** Go to **O4**
O4	**CHECK CIRCUIT 477 (SB) FOR AN OPEN**	
	. Measure the resistance between the fog lamp relay, PDB C-163 relay 1, circuit 477 (SB), harness side and fog lamp switch C-363, circuit 477 (SB), harness side. . **Is the resistance less than 5 ohms?**	**Yes** Perform the fog lamp switch testing in this section. Test the system for normal operation. **No** Refer Circuit 477 (SB). Test the system for normal operation.
O5	**CHECK CIRCUIT 37H (SB) VOLTAGE**	
	. Measure the voltage between fog lamp relay, PDB C-163 relay 1, circuit 37H (SB), harness side and ground . **Is the voltage greater than 10 volts?**	**Yes** Go to **O6** **No** Repair circuit 37H (SB). Test the system for normal operation.
O6	**CHECK CIRCUIT 57AX (B) FOR AN OPEN**	
	. Measure the resistance between fog lamp relay, PDB C-363 relay 1, circuit 57AX (B), harness side and ground. . **Is the resistance less than 5 ohms?**	**Yes** Go to **O7** **No** Repair circuit 57AX (B). Test the system for normal operation.
O7	**: CHECK CIRCUIT 478 (BR-W) FOR A SHORT TO GROUND**	
	. Measure the resistance between fog lamp relay, PDB C-363 relay 1, circuit 478A (BR-W), harness side and ground. . **Is the resistance less than 5 ohms?**	**Yes** Repair circuit 478 (BR-W). Test the system for normal operation. **No** Go to **O8**
O8	**CHECK CIRCUIT 478 (BR-W) FOR AN OPEN**	
	. Disconnect: RH fog lamp C-362. . Measure the resistance between fog lamp relay, PDB C-363 relay 1, circuit 478A (BR-W), harness side and RH fog lamp C-362, circuit 478B, harness side. . **Is the resistance less than 5 ohms?**	**Yes** Replace fog lamp relay, PDB C-163 relay 1 (20A). Test the system for normal operation. **No** Repair circuit 478 (BR-W). Test the system for normal operation.

DIAGNOSIS AND TESTING (Continued)

One fog lamp is inoperative

Possible causes:

- Circuit 478 (BR-W) open
- Circuit 57 (B) open

PINPOINT TEST P : ONE FOG LAMP IS INOPERATIVE

Test Step		Result / Action to Take
P1	**CHECK THE VOLTAGE TO THE INOPERATIVE FOG LAMP**	
	. Disconnect: Inoperative fog lamp. . Turn On Fog Lamps. . Measure the voltage between RH fog lamp C-362, circuit 478B (BR-W), harness side or LH fog lamp C-360, circuit 478C (BR-W), harness side and ground. . **Is the voltage greater than 10 volts?**	**Yes** Repair circuit 57 (B). Test the system for normal operation. **No** Repair circuit 478 (BR). Test the system for normal operation.

Both fog lamps are on continuously

Possible causes:

- For lamp switch C-363
- Circuit 477 (SB) short to power
- Fog lamp relay
- Circuit 478 (BR-W) short to power

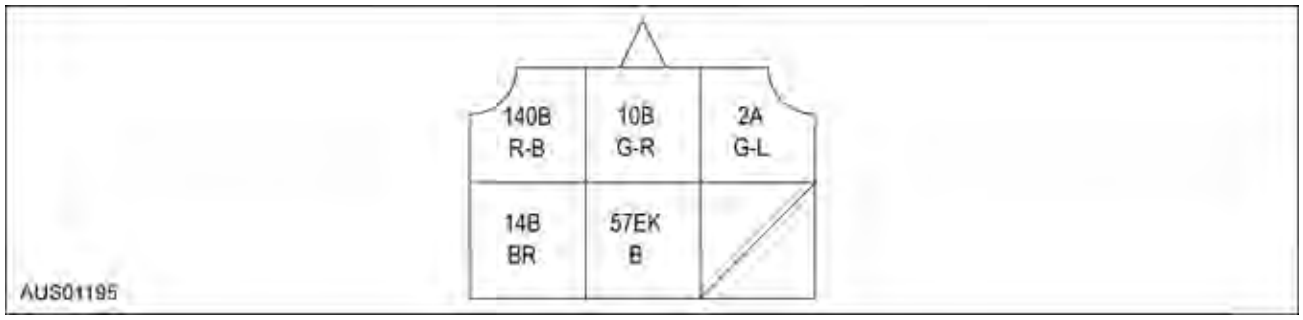
PINPOINT TEST Q : BOTH FOG LAMPS ARE ON CONTINUOUSLY

Test Step		Result / Action to Take
Q1	**CHECK FOG LAMP SWITCH**	
	. Disconnect: Fog lamp switch C-363. . **Are the fog lamps illuminated?**	**Yes** Go to **R2** **No** Perform the fog lamp switch testing in Section 000-00. Test the system for normal operation.
Q2	**CHECK CIRCUIT 478 A (BR=W) FOR A SHORT TO POWER**	
	. Disconnect: Fog lamp Relay, PDB C-163 Relay 1. . **Are the fog lamps illuminated?**	**Yes** Repair circuit 478 (BR-W). Test the system for normal operation. **No** Go to **Q3**
Q3	**CHECK CIRCUIT 477 A (SB) FOR A SHORT TO POWER**	
	. Measure the voltage between fog lamp relay, PDB C-163 relay 1, circuit 477 (SB), harness side and ground . **Is the voltage greater than 10 volts?**	**Yes** Repair circuit 477 (SB). Test the system for normal operation. **No** Replace fog lamp relay, PDB C-163 relay 1 (20A). Test the system for normal operation.

DIAGNOSIS AND TESTING (Continued)

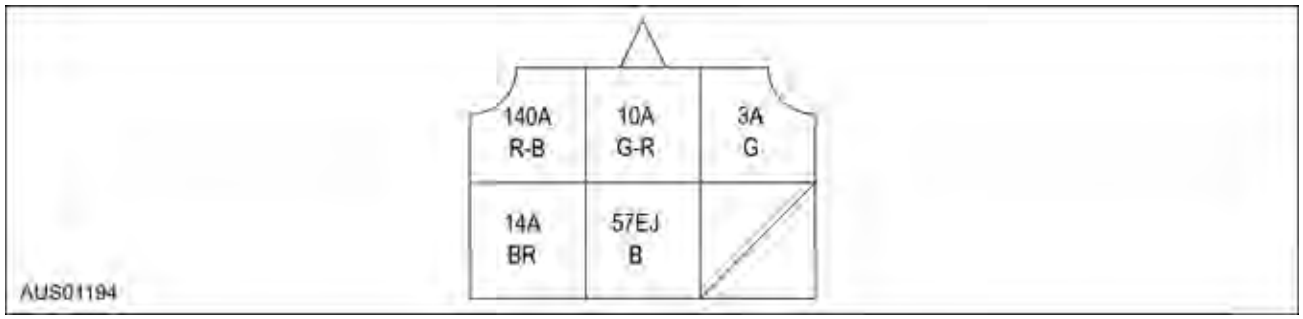
Parking, Rear and licence Lamps

C-77 Sedan RH Tail Lamp



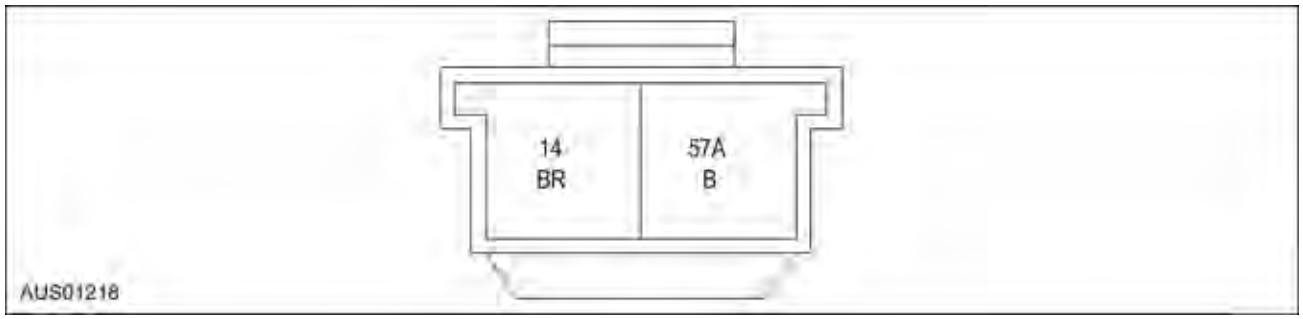
Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 14B (BR) RH rear lamp power input	0 voltage, less than 5 ohms between RH rear lamp and tail lamp relay
2	Circuit 57EK (B) RH tail lamp ground	0 voltage, less than 5 ohms between RH tail lamp and chassis ground

C-78 Sedan LH Tail Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 14A (BR) LH rear lamp power input	0 voltage, less than 5 ohms between LH rear lamp and tail lamp relay
2	Circuit 57EJ (B) LH tail lamp ground	0 voltage, less than 5 ohms between LH tail lamp and chassis ground

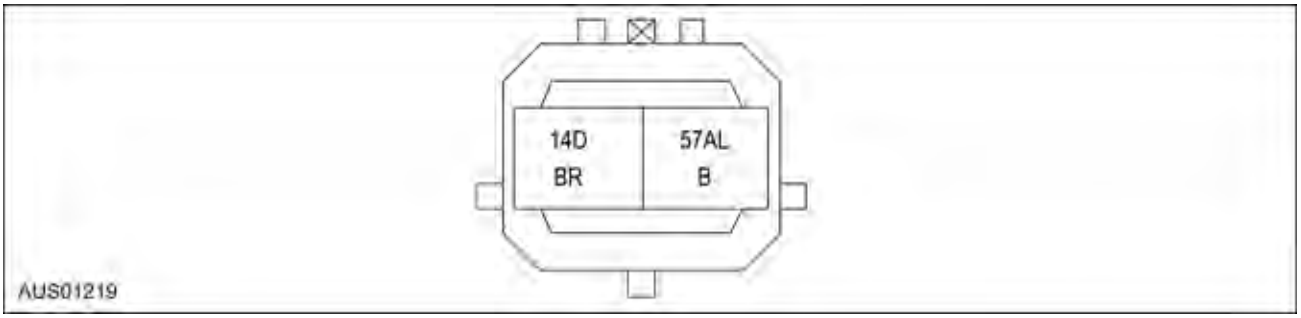
C-81 licence Lamp



DIAGNOSIS AND TESTING (Continued)

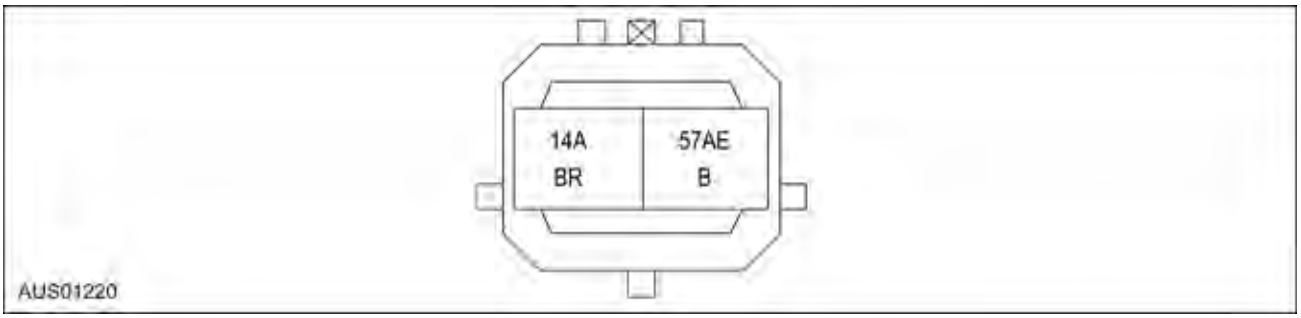
Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 14 (BR) licence lamp power input	0 voltage, less than 5 ohms between licence lamp and tail lamp relay
2	Circuit 57A (B) licence lamp ground	0 voltage, less than 5 ohms between licence lamp and chassis ground

C-159 RH Parking Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 14D (BR) RH parking lamp power input	0 voltage, less than 5 ohms between RH parking lamp and tail lamp relay
2	Circuit 57AL (B) RH parking lamp ground	0 voltage, less than 5 ohms between RH parking lamp and chassis ground

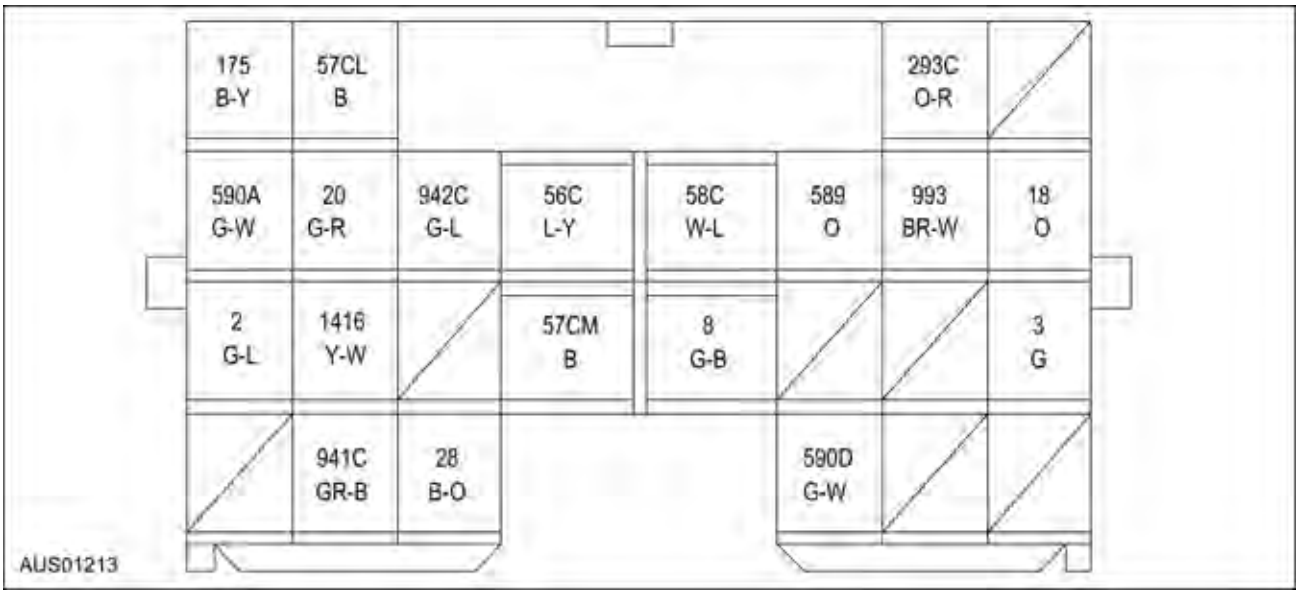
C-160 LH Parking Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 14A (BR) LH parking lamp power input	0 voltage, less than 5 ohms between LH parking lamp and tail lamp relay
2	Circuit 57AE (B) LH parking lamp ground	0 voltage, less than 5 ohms between LH Parking Lamp and chassis ground

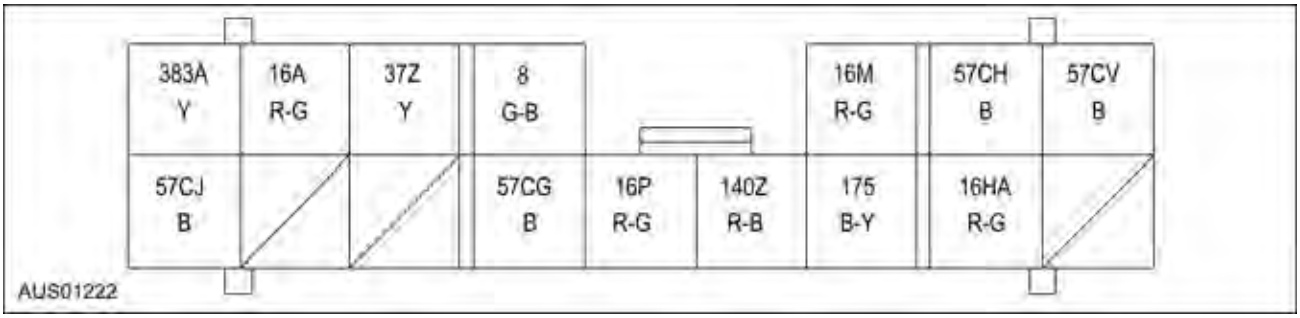
DIAGNOSIS AND TESTING (Continued)

C-167 Multifunction Switch



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 175 (B-Y) Multifunction switch parking lamps input from tail lamp relay	0 voltage, less than 5 ohms between Multifunction switch and tail lamp relay

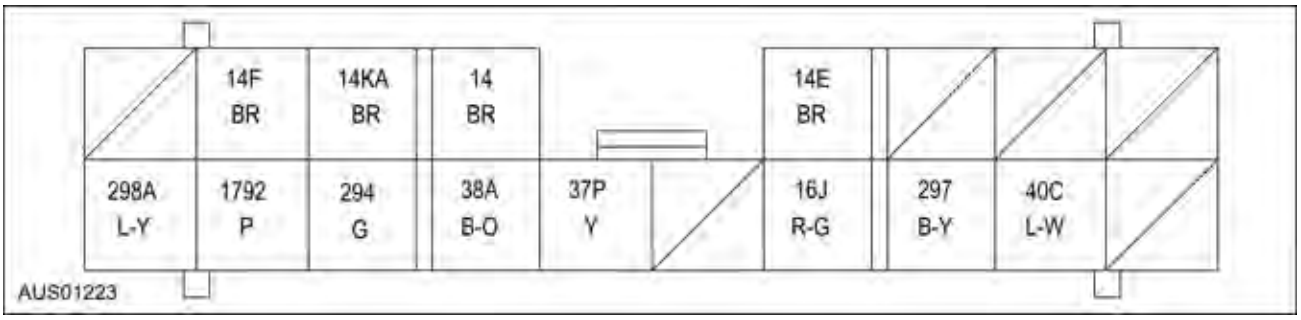
C-331 Junction Box (JB)



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 175 (B-Y) Multifunction switch parking lamps input from tail lamp relay	0 voltage, less than 5 ohms between tail lamp relay and Multifunction switch

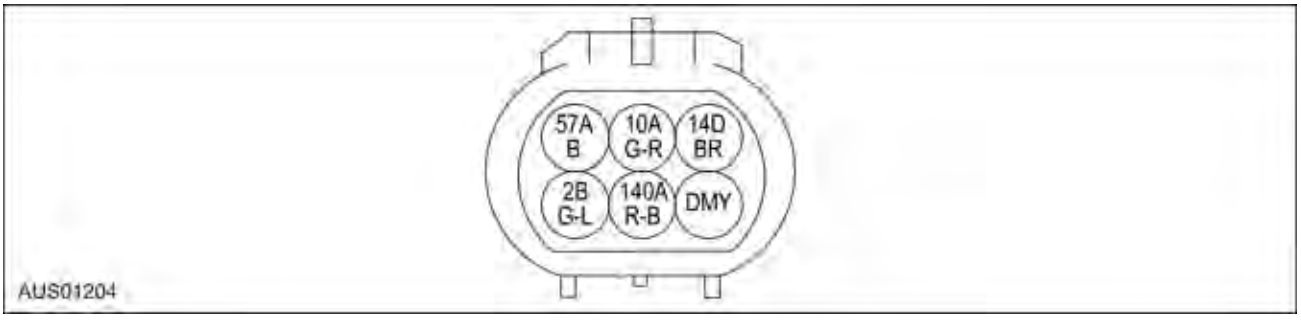
DIAGNOSIS AND TESTING (Continued)

C-334 Junction Box (JB)



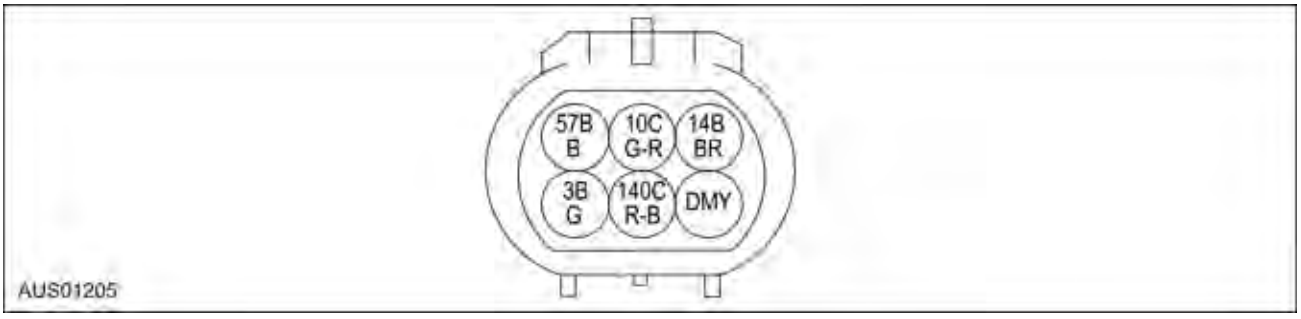
Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 14E (BR) Parking lamp power input	0 voltage, less than 5 ohms between tail lamp relay and parking, rear and licence lamps

C-705 Ute Cab Chassis RH Tail Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 14D (BR) RH rear lamp power input	0 voltage, less than 5 ohms between RH rear lamp and tail lamp relay
2	Circuit 57A (B) LH tail lamp ground	0 voltage, less than 5 ohms between LH tail lamp and chassis ground

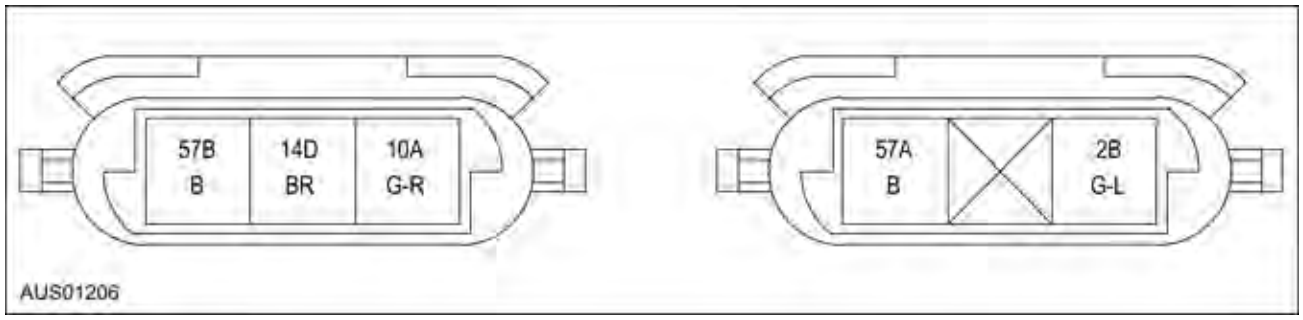
C-707 Ute Cab Chassis LH Tail Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 14B (BR) LH rear lamp power input	0 voltage, less than 5 ohms between LH rear lamp and tail lamp relay
2	Circuit 57B (B) LH tail lamp ground	0 voltage, less than 5 ohms between LH tail lamp and chassis ground

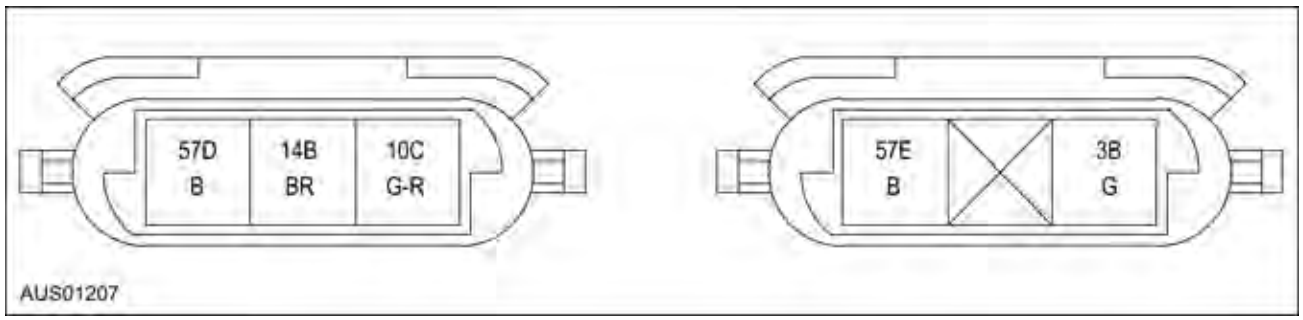
DIAGNOSIS AND TESTING (Continued)

C-706 Ute Style Side Box RH Tail Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 14D (BR) RH rear lamp power input	0 voltage, less than 5 ohms between RH rear lamp and tail lamp relay
2	Circuit 57B (B) RH tail lamp ground	0 voltage, less than 5 ohms between RH tail lamp and chassis ground

C-708 Ute Style Side Box LH Tail Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 14B (BR) LH rear lamp power input	0 voltage, less than 5 ohms between LH rear lamp and tail lamp relay
2	Circuit 57D (B) LH tail lamp ground	0 voltage, less than 5 ohms between LH tail lamp and chassis ground

DIAGNOSIS AND TESTING (Continued)

Inspection and Verification

Visual Inspection Chart

Mechanical	Electrical
. Multifunction switch	. Junction Box (JB): . fuse 23 (15A) . relay 4 (20 A) . Circuitry . Parking, rear and licence lamp bulbs . Multifunction switch

Symptom Chart

Condition	Source	Action
. The parking, rear and licence lamps are inoperative	. Junction Box (JB): . fuse 23 (15A) . relay 4 (20 A) . Circuitry . Multifunction switch C-167	. Go to PinPoint Test A
. One or more parking, rear or licence lamps are inoperative	. Circuitry	. Go to PinPoint Test B
. The parking, rear and licence lamps are on continuously	. Junction Box (JB): . relay 4 (20 A) . Circuitry . Multifunction switch C-167	. Go to PinPoint Test C

Pinpoint Tests

The parking, rear and licence lamps are inoperative

Possible causes:

- circuit 38G (Y-R) open or short to ground
- Tail lamp relay, JB relay 4 (20A)
- Circuit 175 (B-Y) open
- Multifunction switch C-167
- Circuit 57CL (B) open
- Circuit 14 (BR) open or short to ground

PINPOINT TEST R : THE PARKING, REAR AND LICENCE LAMPS ARE INOPERATIVE

Test Step		Result / Action to Take
R1	**CHECK TAIL LAMP RELAY INPUT VOLTAGE**	
	. Disconnect: Tail lamp relay, JB relay 4. . Measure the voltage between tail lamp relay, JB relay 4, circuit 38G (Y-R), harness side and ground. . **Is the voltage greater than 10 volts?**	**Yes** Go to **R2** **No** Repair circuit 38G (Y-R). Test the system for normal operation.

DIAGNOSIS AND TESTING (Continued)

Test Step		Result / Action to Take
R2	**CHECK CIRCUIT 14 (BR) FOR A SHORT TO GROUND**	
	. Measure the resistance between tail lamp relay, JB C-334 relay 4, circuit 14E (BR), harness side and ground . **Is the resistance less than 5 ohms?**	**Yes** Repair circuit 14 (BR) Test the system for normal operation. **No** Go to **R2**
R3	**CHECK CIRCUIT 14 (BR) FOR AN OPEN**	
	. Disconnect: RH Headlamp park lamp C-159. . Measure the resistance between tail lamp relay, JB C-334 relay 4, circuit 14E (BR), harness side RH headlamp park lamp C-159, circuit 14D (BR), harness side. . **Is the resistance less than 5 ohms?**	**Yes** Go to **R4** **No** Repair circuit 14 (BR). Test the system for normal operation.
R4	**CHECK CIRCUIT 175 (B-Y) FOR AN OPEN**	
	. Disconnect: Multifunction switch C-167. . Measure the resistance between tail lamp relay, JB C-331 relay 4, circuit 175 (B-Y), harness side and Multifunction switch C-167, circuit 175 (B-Y), harness side . **Is the resistance less than 5 ohms?**	**Yes** Go to **R5** **No** Repair circuit 175 (B-Y)) Test the system for normal operation.
R5	**CHECK MULTIFUNCTION SWITCH**	
	. Perform the Multifunction switch testing in Section 211-05 . **Is the Multifunction switch functioning correctly?**	**Yes** Replace the tail lamp relay. Test the system for normal operation. **No** Replace the Multifunction switch, see Section 211-05 Test the system for normal operation.

One or more parking, rear or licence lamps are inoperative

Possible causes:

- Circuit 14 (BR) open or short to ground
- Circuit 57 (B) open

PINPOINT TEST S : ONE OR MORE PARKING, REAR OR LICENCE LAMPS ARE INOPERATIVE

Test Step		Result / Action to Take
S1	**CHECK TAIL LAMP RELAY INPUT VOLTAGE**	
	. Disconnect: Inoperative parking, rear or licence lamp. . Turn ON the parking lights. . Measure the voltage between the inoperative lamp: . **Is the voltage greater than 10 volts?**	**Yes** Repair circuit 57 (B). Test the system for normal operation. **No** Repair circuit 14 (BR). Test the system for normal operation.

The parking, rear and licence lamps are on continuously

Possible causes:

- Tail lamp relay
- Circuit 175 (B-Y) short to ground
- Multifunction switch C-167
- Circuit 14 (BR) short to power

DIAGNOSIS AND TESTING (Continued)

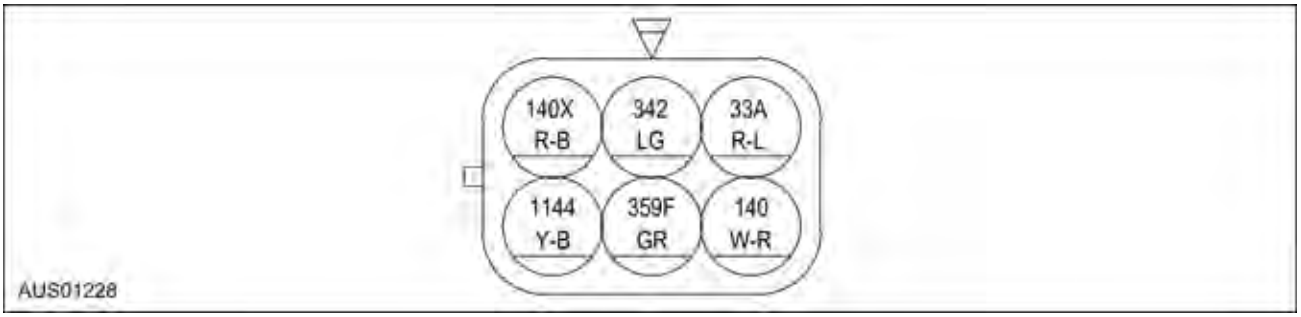
PINPOINT TEST T : THE PARKING, REAR AND LICENCE LAMPS ARE ON CONTINUOUSLY

Test Step		Result / Action to Take
T1	**CHECK MULTIFUNCTION SWITCH**	
	. Disconnect: Multifunction switch C-167. . **Are the parking, rear and licence lamps illuminated?**	**Yes** Go to **T2** **No** Perform the Multifunction switch testing in Section 211-05 Test the system for normal operation.
T2	**CHECK CIRCUIT 175 (B-Y) FOR A SHORT TO GROUND**	
	. Measure the resistance between Multifunction switch C-167, circuit 175 (B-Y), harness side and ground. . **Is the resistance less than 5 ohms?**	**Yes** Repair circuit 175 (B-Y). Test the system for normal operation. **No** Go to **T3**
T3	**CHECK TAIL LAMP RELAY**	
	. Disconnect: Tail lamp relay, JB C-334 relay 4. . **Are the parking, rear and licence lamps illuminated?**	**Yes** Repair circuit 14 (BR). Test the system for normal operation. **No** Replace the tail lamp relay. Test the system for normal operation.

Reverse Lamps

Connector Circuit Reference

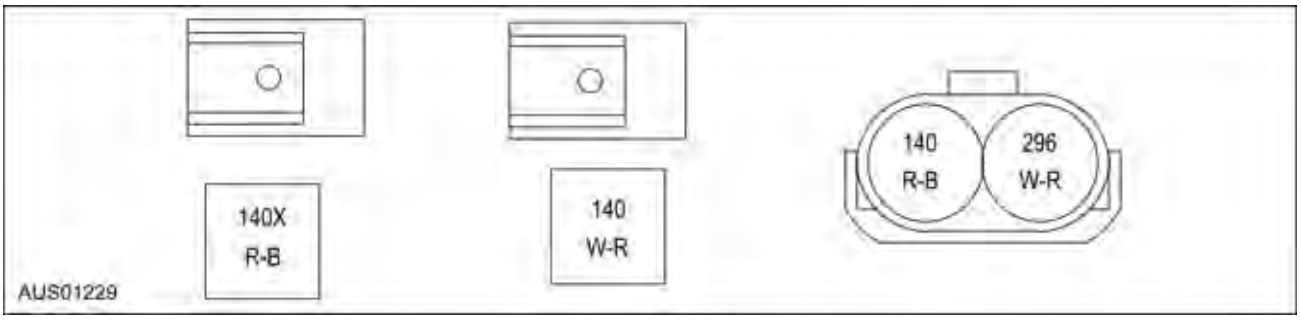
C-12 Inhibitor switch and PRNDL switch



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 140 (W-R)	0 voltage, less than 5 ohms between inhibitor switch and PRNDL switch and ignition relay
2	Circuit 140X (R-B)	0 voltage, less than 5 ohms between inhibitor switch and PRNDL switch, and reverse lamps

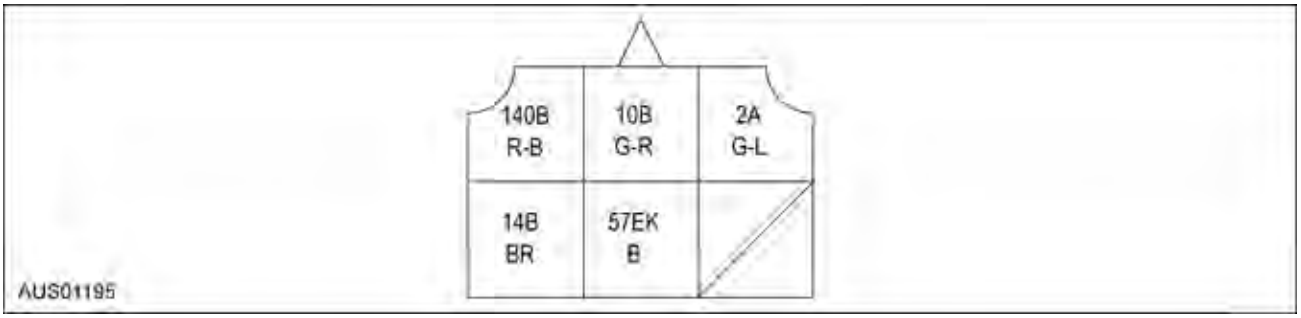
DIAGNOSIS AND TESTING (Continued)

C-26 Reverse Lamp Switch



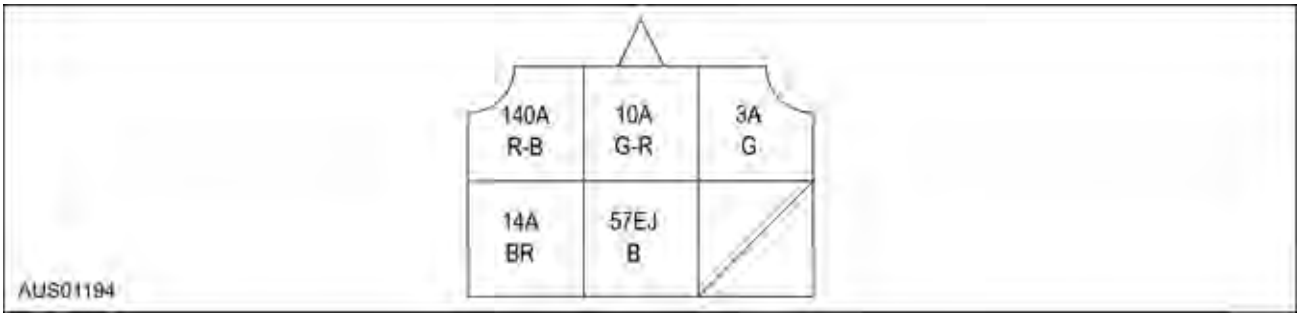
Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 140 (W-R)	0 voltage, less than 5 ohms between reverse lamp switch and ignition relay
2	Circuit 140X (R-B)	0 voltage, less than 5 ohms between reverse lamp switch and reverse lamps

C-77 Sedan RH Tail Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 140B (R-B) RH reverse lamp power input	0 voltage, less than 5 ohms between RH reverse lamp and either inhibitor switch and prndl switch or reverse lamp switch
2	Circuit 57EK (B) RH tail lamp ground	0 voltage, less than 5 ohms between RH tail lamp and chassis ground

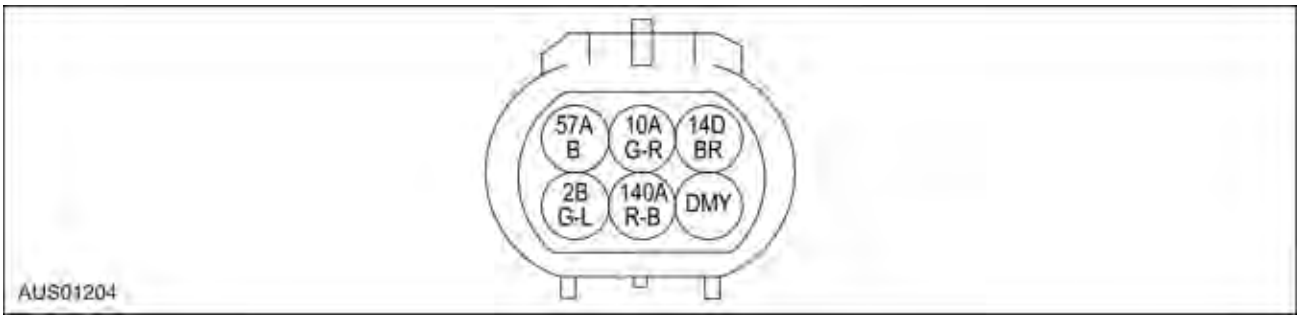
C-78 Sedan LH Tail Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 140A (R-B) LH reverse lamp power input	0 voltage, less than 5 ohms between LH reverse lamp and either inhibitor switch and prndl switch or reverse lamp switch
2	Circuit 57EJ (B) LH tail lamp ground	0 voltage, less than 5 ohms between LH tail lamp and chassis ground

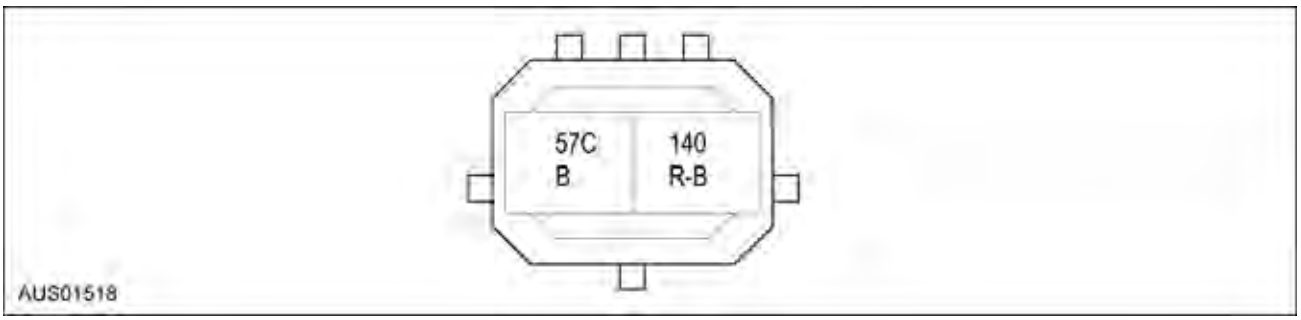
DIAGNOSIS AND TESTING (Continued)

C-705 Ute Cab Chassis RH Tail Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 140A (R-B) RH reverse lamp power input	0 voltage, less than 5 ohms between RH reverse lamp and either inhibitor switch and prndl switch or reverse lamp switch
2	Circuit 57A (B) RH tail lamp ground	0 voltage, less than 5 ohms between RH tail lamp and chassis ground

C-714 Ute Back Up Lamp



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	Circuit 140 (R-B) LH back up lamp power input	0 voltage, less than 5 ohms between back up lamp and either inhibitor switch and prndl switch or reverse lamp switch
2	Circuit 57C (B) LH back up lamp ground	0 voltage, less than 5 ohms between back up lamp and chassis ground

DIAGNOSIS AND TESTING (Continued)

Inspection and Verification

Visual Inspection Chart

Mechanical	Electrical
. Inhibitor switch and PRNDL switch . Reverse lamp switch	. Reverse lamp switch Junction Box (JB): . Fuse 15 (15A) . Circuitry . Reverse lamp bulbs

Symptom Chart

Condition	Source	Action
. The reversing lamps are inoperative	. Power Distribution Box (PDB): . Fuse 15 (20A) . relay 4 (20 A) . Circuitry . Inhibitor switch and PRNDL switch . Reverse lamp switch	. Go to PinPoint Test A
. The individual reversing lamp is inoperative	. Circuitry	. Go to PinPoint Test B
. The reversing lamps are on continuously	. Circuitry . Inhibitor switch and PRNDL switch . Reverse lamp switch	. Go to PinPoint Test C

Pinpoint Tests

The reversing lamps are inoperative

Possible causes:

- Circuit 140X (R-B) open or short to ground
- Inhibitor switch and PRNDL switch C-26
- Reverse lamp switch C-12
- Circuit 140 (W-R) open or short to ground
- Circuit 57 (B) open

PINPOINT TEST U : THE REVERSE LAMPS ARE INOPERATIVE

Test Step		Result / Action to Take
U1	**CHECK CIRCUIT 140X (R-B) VOLTAGE**	
	. Disconnect either: . Turn ON ignition. . Measure the voltage between (manual) Reverse Lamp Switch C-26, circuit 140X (R-B), harness side or (automatic) Inhibitor switch and PRNDL switch C-12, circuit 140X (R-B), harness side and ground. . **Is the voltage greater than 10 volts?**	**Yes** Go to **U2** **No** Repair circuit 140X (R-B). Test the system for normal operation.
U2	**CHECK CIRCUIT 140 (W-R) FOR A SHORT TO GROUND**	
	. Measure the resistance between (manual) Reverse Lamp Switch C-26, circuit 140 (W-R), harness side or (automatic) Inhibitor switch and PRNDL switch C-12, circuit 140 (W-R), harness side and ground. . **Is the resistance less than 5 ohms?**	**Yes** Repair circuit 140 (W-R). Test the system for normal operation. **No** Go to **U3**

DIAGNOSIS AND TESTING (Continued)

Test Step		Result / Action to Take
U3	**CHECK CIRCUIT 140 (W-R) FOR AN OPEN**	
	. Disconnect: Inoperative tail lamp. . Measure the resistance between (manual) Reverse Lamp Switch C-26, circuit 140 (W-R), harness side or (automatic) Inhibitor switch and PRNDL switch C-12, circuit 140 (W-R), harness side and inoperative tail lamp, circuit 140 (R-B), harness side. . **Is the resistance less than 5 ohms?**	**Yes** Go to **U4** **No** Repair circuit 140 (W-R). Test the system for normal operation.
U4	**CHECK CIRCUIT 57ER (B) FOR AN OPEN**	
	. Measure the resistance between inoperative tail lamp, circuit 57 (B), harness side and ground. . **Is the resistance less than 5 ohms?**	**Yes** Perform the inhibitor switch and PRNDL switch or reverse lamp switch testing in Section 307-01 Test the system for normal operation. **No** Repair circuit 57 (B). Test the system for normal operation.

The individual reversing lamp is inoperative

Possible causes:

- Circuit 140 (W-R)
- open
- Circuit 57 (B) open

PINPOINT TEST V : THE INDIVUDUAL REVERSING LAMP IS INOPREATIVE

Test Step		Result / Action to Take
V1	**CHECK THE VOLTAGE TO THE INOPERATIVE REVERSING LAMP**	
	. Set the parking brake. . Key in ON position. . Disconnect: inoperative reversing lamp. . Select REVERSE. . Measure the voltage between the: . Ute, non-SSB, right tail lamp C-705, circuit 140A (R-B) harness side. . Ute, non-SSB, left tail lamp C-707, circuit 140C (R-B) harness side. . Ute, SSB, back up lamp C-714, circuit 140 (R-B) harness side and ground. . **Is the voltage greater than 10 V?**	**Yes** Repair circuit 57(B). Test the system for normal operation. **No** Repair circuit 140(W-R). Test the system for normal operation.

DIAGNOSIS AND TESTING (Continued)

The reversing lamps are on continuously

Possible causes:

- Inhibitor switch and PRNDL switch C-26
- Reverse lamp switch C-12
- Circuit 140 (W-R) short to power

PINPOINT TEST W : THE REVERSING LAMPS ARE ON CONTINUOUSLY

Test Step		Result / Action to Take
W1	**CHECK CIRCUIT 140 (W-R) FOR A SHORT TO POWER**	
	. Disconnect either: . Measure the voltage between (manual) Reverse Lamp Switch C-26, circuit 140 (W-R), harness side or (automatic) Inhibitor switch and PRNDL switch C-12, circuit 140 (W-R), harness side and ground. . **Is the voltage greater than 10 volts?**	**Yes** Repair circuit 140 (W-R). Test the system for normal operation. **No** Perform the inhibitor switch and PRNDL switch or reverse lamp switch testing in Section 307-01 Test the system for normal operation.

GENERAL PROCEDURES

Headlamp Adjustment

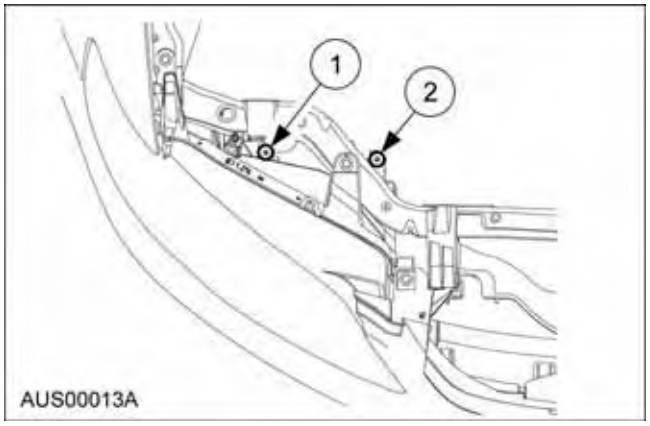
Low Beam

(Refer to diagram on following page.)

WARNING: Do not attempt to adjust headlamps in a car that has become very hot, as it may damage the adjustment pinions. In the situation of a hot engine bay open hood and allow to cool.

WARNING: Additional warning to customers to take care not to touch or lean against lamp while adjusting it according to following procedure.

1. To adjust the headlamp aim in accordance with this specification, a flat vertical test screen as shown is required. Alternatively an approved headlamp aim testing device may be used.
2. The vehicle must have the correct tyre pressure, must be unloaded, have a fully filled tank and the hand brake must be in the fully released position.
3. The vehicle must be placed on a flat horizontal surface and carefully positioned 10 metres from the test screen.
4. Gently rock vehicle to obtain correct horizontal vehicle attitude.
5. Measure H the height of the headlamp low beam bulb centre above ground. For different lamps and vehicles this height will vary due to vehicle production tolerance.
6. Set the horizontal breakline on the test screen to a height h = H-e where e is the aim setting dimension.
7. Measure A the distance between the low beam bulb centres. Using this dimension set up the low beam aim centre C and construct the 15 inclined breakline from this point on the test screen.
8. Switch on the low beam lights and cover all lamps except the one that is being aimed.
9. Using both the aim adjusting screws shift the light pattern of the headlamp on the test screen until the light/dark boundaries of the light pattern coincides with the breaklines on the test screen. Please note for vertical aim only both adjustment screws must be turned. The low beam pattern should now be centred on point C.

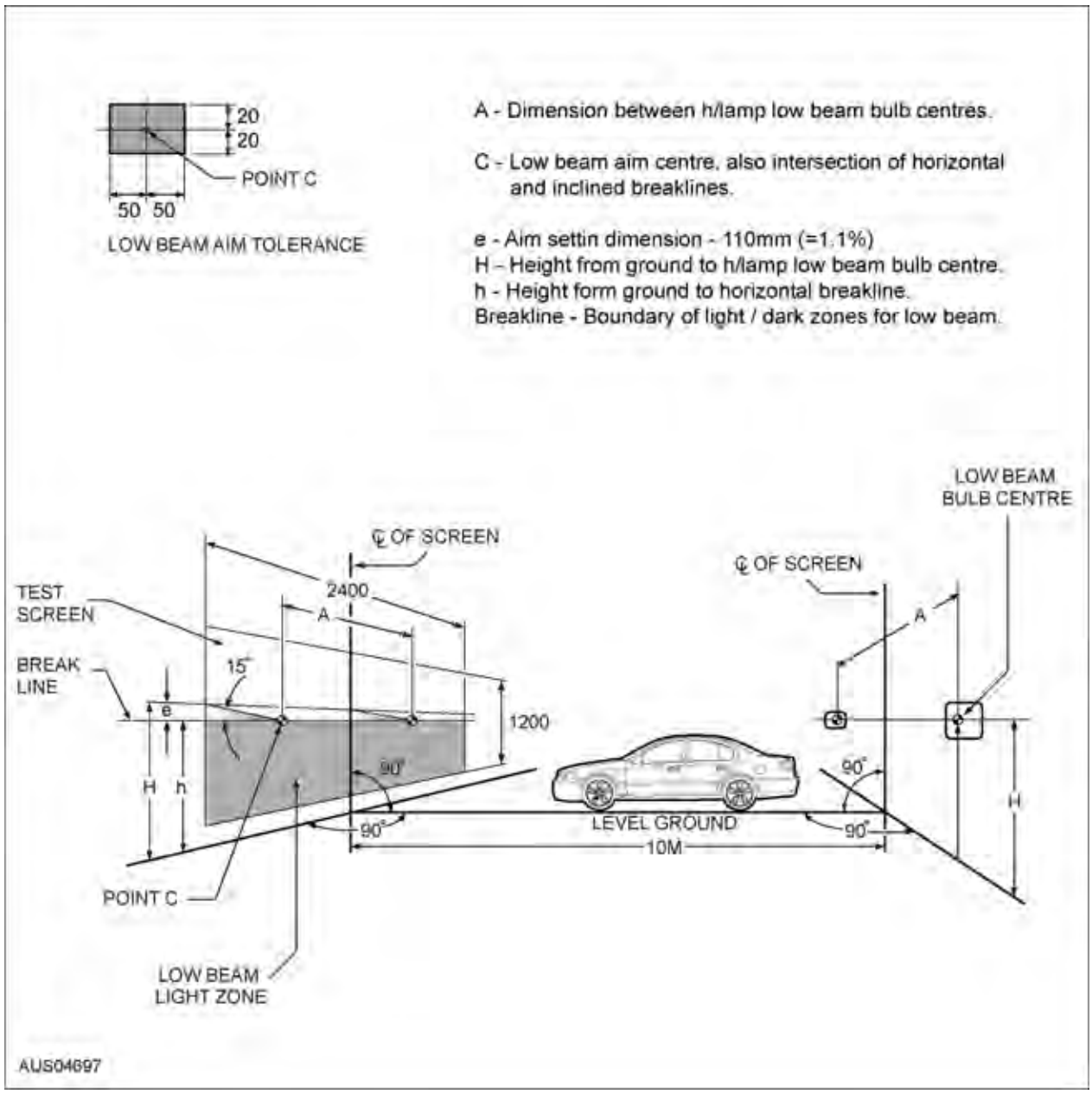


10. Repeat the above procedure to adjust the remaining headlamp.

High Beam/Driving Beam

1. The high beam aim is fixed internally within the headlamp relative to the low beam. Whenever the low beam aim is adjusted the high beam aim is also adjusted.

GENERAL PROCEDURES (Continued)



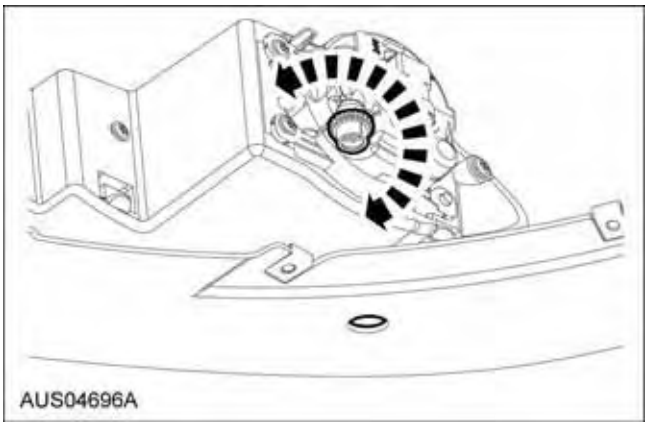
Fog Lamp Adjustment

(Refer to diagram on following page.)

1. To adjust the fog lamp aim in accordance with this specification, a flat vertical test screen as shown is required.
2. The vehicle must have the correct tyre pressure, must be unloaded, have a fully filled tank and the hand brake must be in the fully released position.
3. The vehicle must be placed on a flat horizontal surface and carefully positioned 5 metres from the test screen.
4. Gently rock vehicle to obtain correct horizontal vehicle attitude.
5. Measure H the height of the fog lamp bulb centre above ground. For different lamps and vehicles this height will vary due to vehicle production tolerance.
6. Set the horizontal line on the test screen to a height h = H-e where e is the aim setting dimension.
7. Switch on the fog lights and cover all lamps except the one that is being aimed.

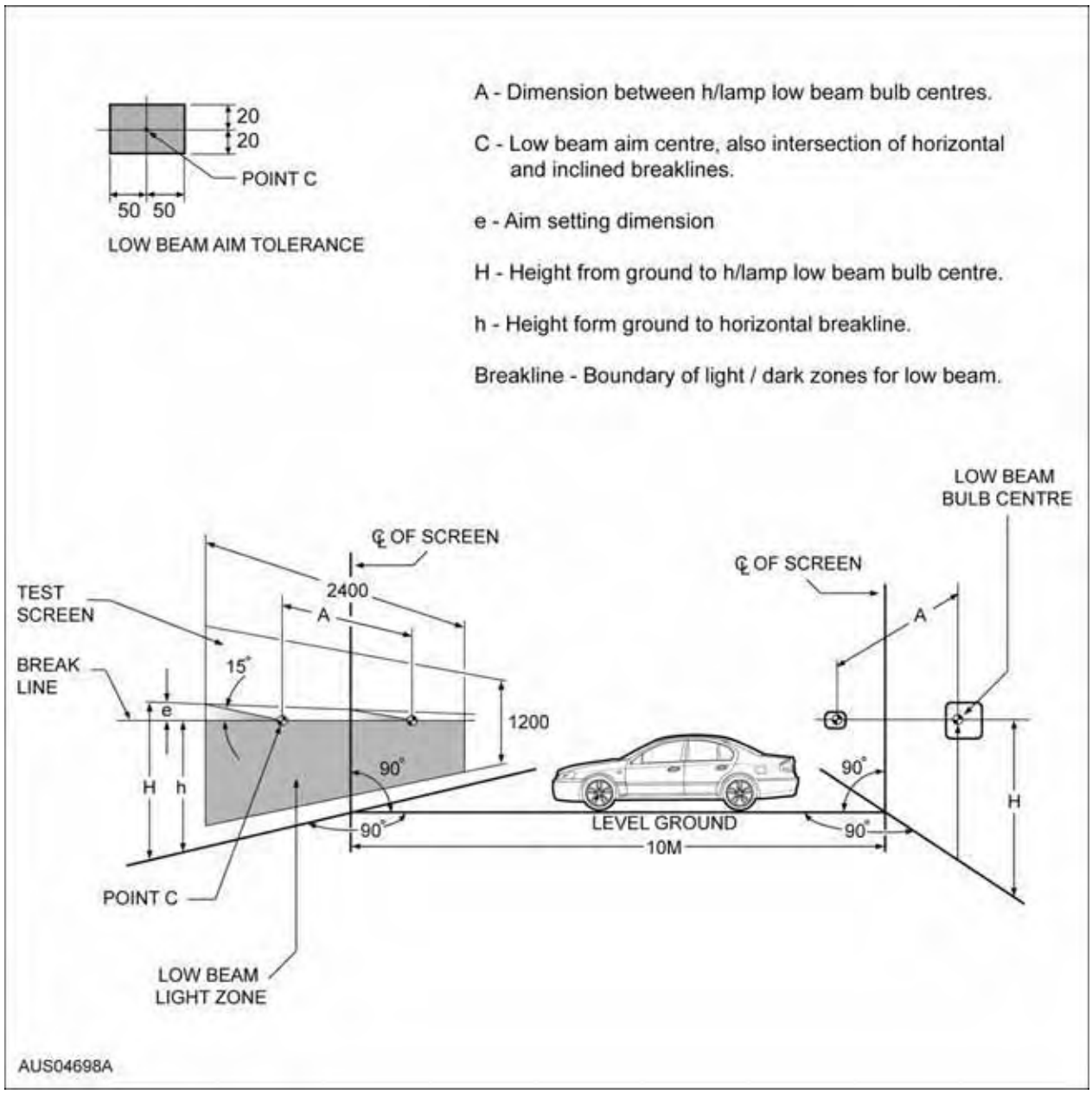
GENERAL PROCEDURES (Continued)

8. Using the vertical aim adjusting screw (accessible from under the bumper with an 6 mm Allen key or Phillips screw driver) shift the light pattern of the fog lamp on the test screen until the centre of the of the light pattern Point C coincides with the line at h on the test screen.



9. Repeat the above procedure to adjust the remaining fog lamp.

GENERAL PROCEDURES (Continued)



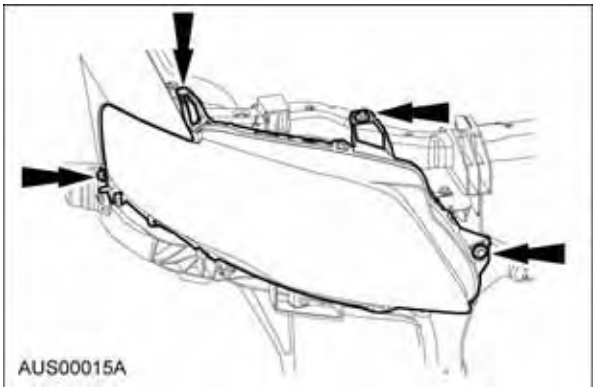
REMOVAL AND INSTALLATION

Headlamp Assembly

Removal

WARNING: Bulbs become hot to touch and can cause burns if not allowed to cool before handling.

1. Raise the hood.
2. Disconnect the 3 lamp wiring connectors.
3. Remove the front bumper & bumper absorber (Refer to section 501-19).
4. Disconnect Turn signal bulb connection, accessed from under the fender side .
5. Remove 3 bolts from the lamp.



6. Release fender "x" locator and pull lamp directly forwards.

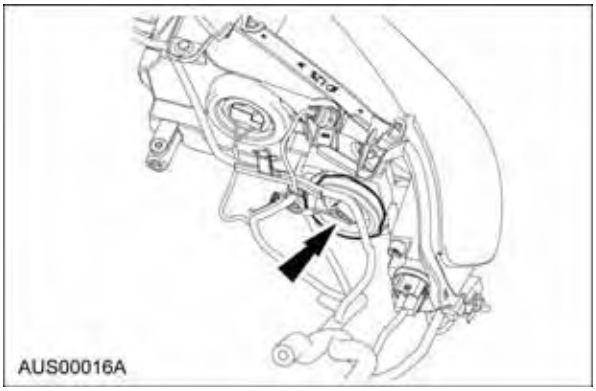
Installation

1. Connect lamp wiring harness.
2. Reverse removal procedure.
3. Check and adjust headlamp aim if necessary.

Headlamp Bulb — High Beam H7

Removal

1. Switch the headlamps off and allow sufficient time to cool.
2. Disconnect wiring from the bulb.
3. Remove the rubber boot from the lamp back face.



4. Release retaining spring clip and withdraw bulb.
5. Remove bulb from holder.

Installation

NOTE: Hold the replacement Quartz Halogen bulb with a clean cloth or tissue to prevent contact with glass. If the glass is touched, the skin's natural oils will contaminate the bulb. Wipe the bulb clean using methylated spirits before installing.

1. Push bulb into holder.
2. Install the bulb and retain it with the spring clip.
3. Install the rubber boot, installing the inner aperture to the bulb first, followed by the outer aperture to the lamp body. Ensure the rubber boot has sealed correctly and is not deformed.
4. Reconnect wiring to the bulb and test.

Headlamp Bulb — Low Beam H4

Removal

1. Switch the headlamps off and allow sufficient time to cool.
2. Disconnect wiring from bulb.
3. Remove the rubber boot from the lamp back face.
4. Release retaining spring clip and withdraw bulb.

Installation

NOTE: Hold the replacement Quartz Halogen bulb with a clean cloth or tissue to prevent contact with glass. If the glass is touched, the skin's natural oils will contaminate the bulb. Wipe the bulb clean using methylated spirits before installing.

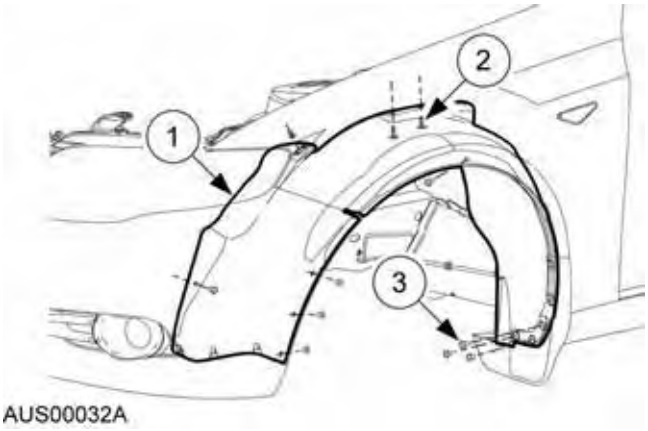
1. Install the bulb and retain it with the spring clip.
2. Install the rubber boot, installing the inner aperture to the bulb first, followed by the outer aperture to the lamp body. Ensure the rubber boot has sealed correctly and is not deformed.
3. Reconnect wiring to the bulb and test.

REMOVAL AND INSTALLATION (Continued)

Turn Signal Bulb

Removal

1. Turn the front wheel inward to allow access to the 3 lower front fender splash shield push pin rivets and screw. Carefully peel back the splash shield to expose the turn signal wiring connector.



Item	Description
1	Fender splash shield
2	Firtree Cip - 6.5x25mm (x2)
3	Scrivets - 6mm (x9)

2. Turn the bayonet-style connector anti-clockwise approximately 1/8 of a turn to free the bulb holder.

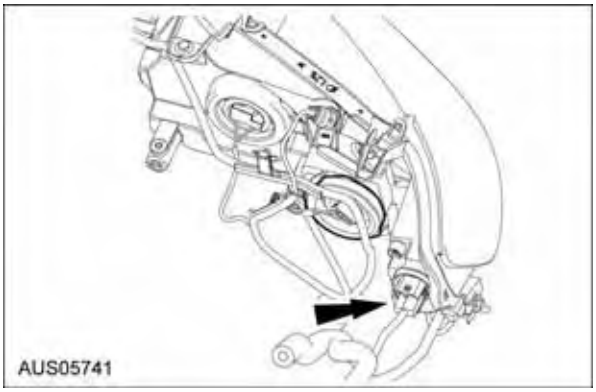
Installation

1. Reverse the removal procedure.

Parklamp Bulb

Removal

1. Switch the headlamps off and allow sufficient time to cool.
2. Gently rotate anticlockwise and pull bulb holder from the lamp.



3. Remove bulb from the holder by pulling outwards.

Fog Lamp

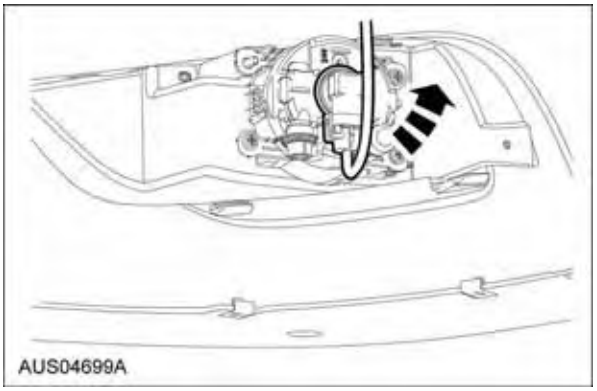
Removal

1. Switch the fog lamps off and allow sufficient time to cool.
2. Leave lamp in situ for bulb replacement.

Fog Lamp Bulb

Removal

1. Disconnect loom at connector.
2. Twist H11 bulb ¼ turn anticlockwise then pull, leaving lamp in situ.



3. Unclip retaining clip and remove bulb.

Installation

NOTE: Hold the replacement Quartz Halogen bulb with a clean cloth or tissue to prevent contact with glass. If the glass is touched, the skin's natural oils will contaminate the bulb. Wipe the bulb clean using methylated spirits before installing.

1. Install the bulb and retain it with the spring clip.
2. Test.
3. Clip lamp insert into the lamp assembly.

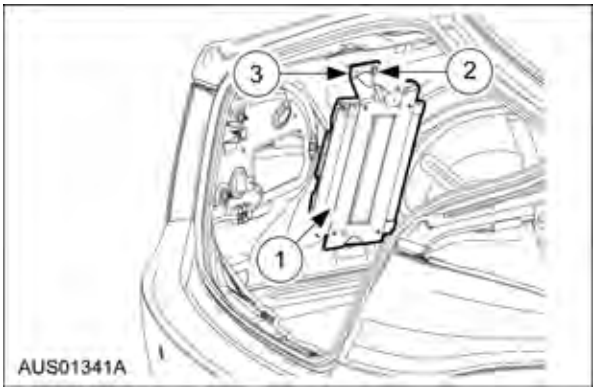
Tail Lamp Assembly — Sedan

Removal

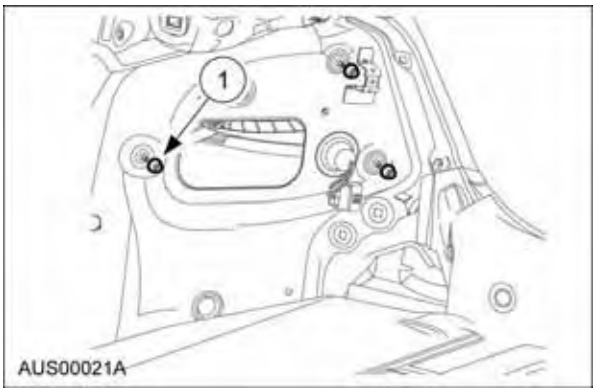
1. Open decklid.
2. Remove interior quarter trim.
3. Disconnect wiring connector to tail lamp and squeeze rubber grommet through hole.

REMOVAL AND INSTALLATION (Continued)

4. If an amplifier is fitted, remove two retaining screws on amplifier bracket and lower amplifier (passenger side only).



5. Remove three retaining nuts on the lamp from the inside of the vehicle.



6. Remove the lamp assembly, in the direction of the threaded mounting studs.

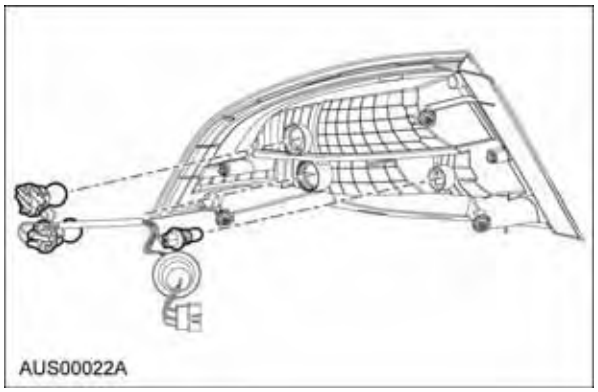
Installation

1. Pull the wiring assembly in and ensure the rubber grommet is correctly seated to body panel.
2. Install lamp into vehicle in the direction of the threaded mounting studs.
3. Install the three retaining nuts.
4. If an amplifier is fitted, raise amplifier and refit two retaining screws in bracket.
5. Connect the wiring connector and refit the rear quarter interior trim.
6. Close the decklid.

Tail Lamp, Reverse Lamp and Rear Indicator Bulb — Sedan

Removal

1. Follow steps 1, 2, 4, 5 and 6 of Tail Lamp Assembly Removal procedure, so that lamp assembly is free from vehicle. It is not necessary to disconnect the electrical wiring from vehicle.



2. Remove bulb holder from socket by rotating holder anti-clockwise approximately 1/8th turn until free from socket.
   - Stop and tail lamp - (clear twin filaments bulb)
   - Indicator lamp - (amber bulb)
   - Reverse lamp - (clear bulb)
3. Remove bulb from holder by rotating anti-clockwise approximately 1/8th turn.

Installation

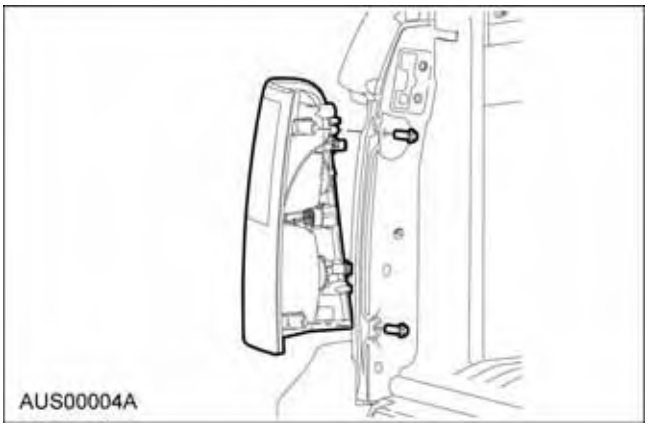
1. Install bulb in holder by gently pushing bulb into holder and rotating bulb clockwise.
2. Insert bulb and holder assembly into socket.
3. Follow the procedure given in this section for installation of the tail lamp assembly.

REMOVAL AND INSTALLATION (Continued)

Tail Lamp Assembly — Style Side Box

Removal

1. Open tailgate.
2. Remove two bolts on taillight edge.



3. Remove lamp, pulling away at 45 degrees.
4. Disconnect wiring.

Installation

1. Reverse removal procedure.

Rear Light Bulbs Replacement — Style Side Box

Removal

1. Remove tail lamp assembly (see procedure in this chapter).
2. Carefully pull out the bulb to be replaced.

Installation

1. Insert the new bulb and replace the wiring connector.
2. Carefully insert the tail lamp assembly.
3. Install the two bolts.

Tail Lamp Assembly — Tray

Removal

1. Remove M6 nuts from lamp mounting bracket.

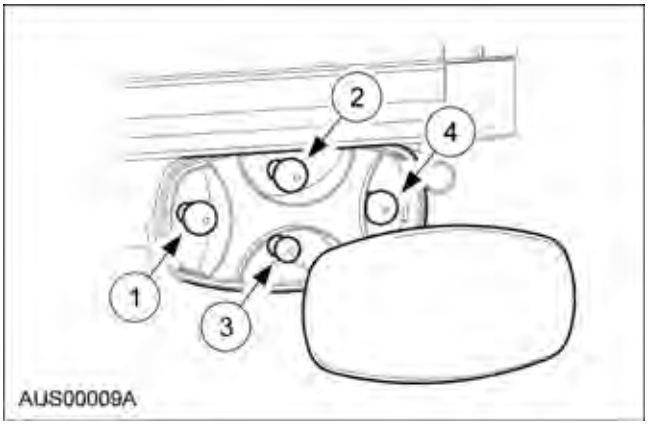
Installation

1. Reverse the removal procedure.

Rear Light Bulbs Replacement — Cable/Chassis and Tray

Removal

1. Release the retaining clip and swivel aside the plastic frame that secures the lens.



Item	Description
1	Reversing lamp (Inside bulb)
2	Indicator lamp
3	Tail lamp
4	Brake lamp (Outside bulb)

2. Remove the lens from the lamp assembly.
3. Remove the blown bulb by gently pressing the bulb down and turning it anti-clockwise.

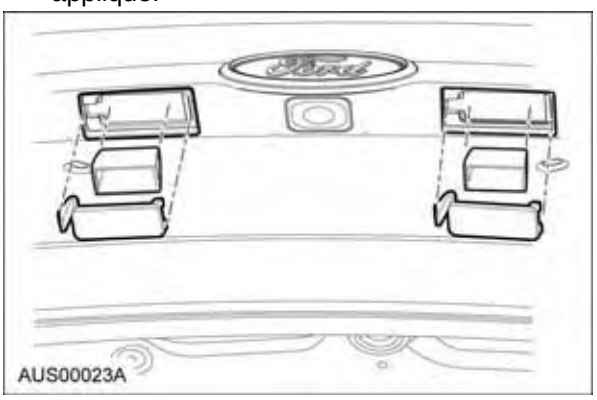
Installation

1. Insert a new bulb, replace the lens and close the plastic frame with the retaining clip.

Licence Plate Lamp Assembly

Removal

1. Gently insert a flat blade or similar object under one side of lamp assembly and gently press on the locking tab.
2. Lift the lamp assembly out of the bumper or applique.



3. Disconnect the wiring connector.

REMOVAL AND INSTALLATION (Continued)

Installation

1. Connect the wiring connector.
2. Position lamp assembly and push into bumper or applique until locking tabs engage.

Licence Plate Bulb

Removal

1. Remove lamp assembly as above leaving the wiring connected.
2. Turn bulb holder approximately 1/8th turn anti-clockwise until it is free.
3. Pull bulb out from socket.

Installation

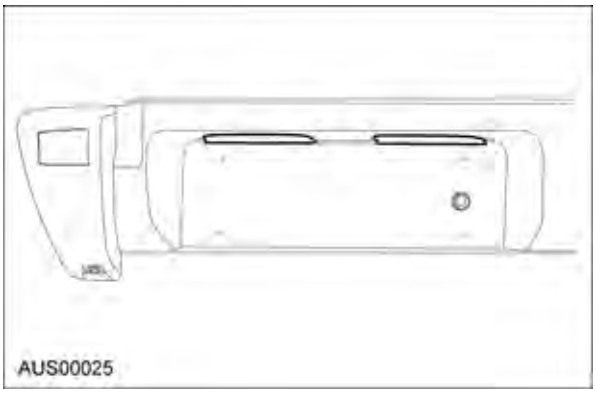
NOTE: Tabs prevent the bulb holder from being inserted into the lamp assembly at the incorrect orientation. Do not apply force.

1. Reverse the removal procedure.

Rear Licence Plate Lamp Replacement — Style Side Box

Removal and Installation

1. Carefully insert a flat blade under one side of the lamp assembly. Press gently on the locking tab.

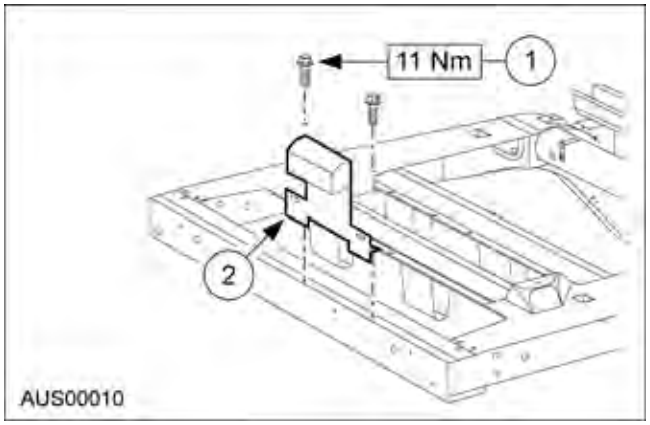


2. Lift the lamp assembly out of the bumper.
3. Disconnect the wiring connector.
4. Turn the bulb holder approximately 1/8th turn anti-clockwise until it is free. Pull the bulb from the socket.
5. Replace the bulb and bulb holder, connect the wiring connector and push the lamp assembly into the bumper until the locking tabs engage.

Rear Licence Plate Lamp Replacement — Chassis/Cab and Tray

Removal and Installation

1. Push off the rubber band and pull off the cap.



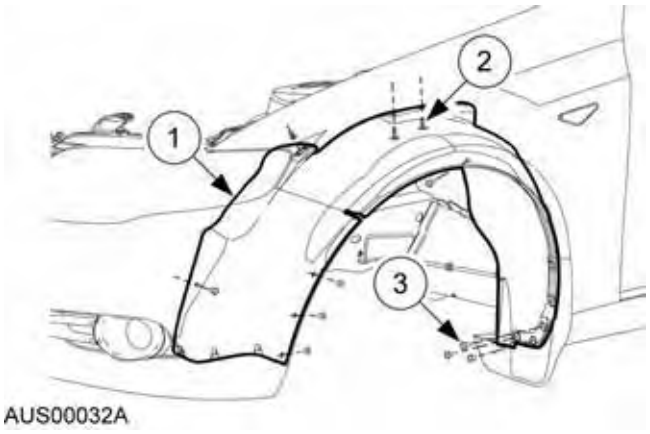
Item	Description
1	Retaining bolt
2	Licence plate housing

2. Remove the bulb by gently pressing it down and turning it anti-clockwise.
3. Insert a new bulb and replace the cap in the rubber band.

Side Indicator Lamps

Removal

1. Turn front wheel outward.
2. Remove front splash shield fixings behind wheel, and peel splash shield back.



Item	Description
1	Fender splash shield
2	Firtree Cip - 6.5x25mm (x2)
3	Scrivets - 6mm (x9)

3. Remove bulb holder by turning anti-clockwise about 90 degrees.

REMOVAL AND INSTALLATION (Continued)

4. Remove bulb from holder by pulling straight out.

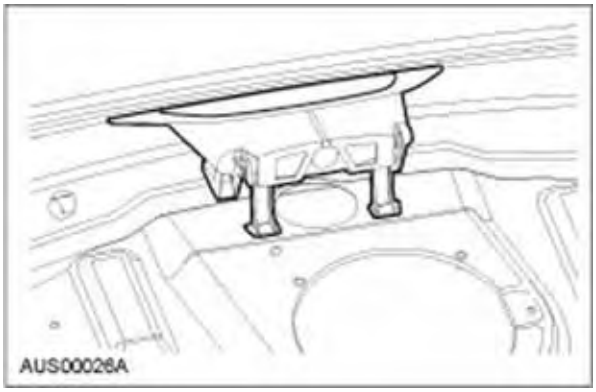
Installation

1. Reverse the removal procedure.

High Mount Stop Lamp — Sedan

Removal

1. From the inside of the luggage compartment, remove foam sealing plug from beneath the lamp.
2. From the inside of the luggage compartment, remove the bulb holder from the base of the lamp by turning 45 degrees anti-clockwise.
3. From inside the vehicle remove the parcel shelf trim.
4. Gently prise the lamp from the panel, dislodging the front legs first.



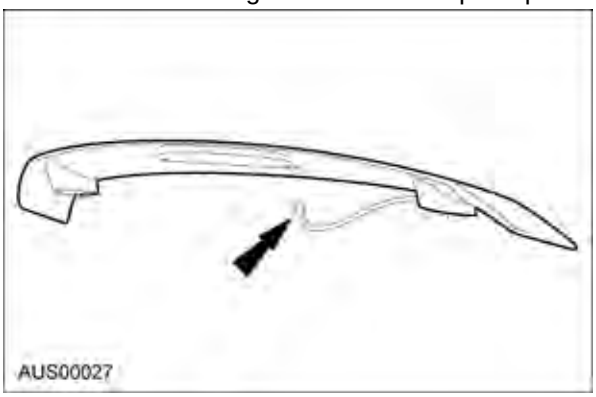
Installation

1. Locate rear pins into panel cross member first, then clip in front legs.
2. Replace the trim.
3. Install the bulb holder in the lamp.
4. Replace the foam sealing plug into the package tray.

High Mount Stop Lamp — XR Series Sedan

Removal

1. Unbolt rear spoiler and lift from bootlid.
2. Disconnect wiring connector to stop lamp.



3. Unscrew lamp assembly from spoiler.

Installation

NOTE: Lamp is a sealed unit and must be replaced as a complete assembly.

Twilight Sensor/Sun Load Sensor

For removal and installation of twilight sensor/sun load sensor, refer to section 412-04.