

# ELECTRICAL CIRCUIT OPERATION AND DIAGNOSIS

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## Lights Circuit Operation

### Function:

Provides power to the headlights, tail lights, hazard lights, control panel lights, and rear work lights.

### Operating Conditions:

- Turn signal switch in OFF position.
- Light switch in HAZARD, ROAD, and FIELD positions.

### Theory of Operation:

The power circuit (fusible link, 002C and 002D Red wires, F3 fuse, 122A and 122C Red wires) provides unswitched voltage to S9 light switch terminal B and 122B Red wire provides voltage to S8 turn signal switch terminal 2.

#### Hazard Lights:

When S9 light switch is in the HAZARD position and the S8 turn signal switch is in the OFF position, the internal circuits of S8 turn signal switch provide pulsing current to front and rear turn lights, causing these lights to flash.

On models (S.N. -110606), current flows from 103 Org wire at S9 light switch, terminal 2, to S8 turn signal switch terminal 1.

On models (S.N. 110607- ), 103B Org from terminal 2 of S9 light switch supplies power to X59 beacon light connector. If no light is installed, power is carried through a jumper wire to 103A Org wire which is connected to terminal 1 of S8 turn signal switch. Ground for the beacon light connector is supplied through 010P Blk wire.

Right front and rear turn lights are controlled from S8 turn signal switch. Pulsing current flows from S8 turn signal switch, terminal 4, to the following:

- 115A and 115B Grn wires.
- H8 Right Turn Light.
- 115C Grn wire.
- Main Harness-to-Lights Harness X23 Connector, 115A Grn wire.
- 115B Grn wire.
- Right Rear Turn Light X43 Connector, terminal D.
- E1 Right Rear Turn Light.
- 115C Grn wire.
- Right Front Turn Light X45 Connector, terminal A.
- E7 Right Front Turn Light.

Left front and rear turn lights are controlled from turn S8 turn signal switch. Pulsing current flows from S8 turn signal switch, terminal 3, to the following:

- 125A and 125B Grn wires.

- H9 Left Turn Light.
- 125C Grn wire.
- Main Harness-to-Lights Harness X23 Connector, 125A Grn wire.
- 125C Grn wire.
- Left Rear Turn Light X44 Connector, terminal D.
- E4 Left Rear Turn Light.
- 125B Grn wire.
- Left Front Turn Light X46 Connector, terminal A.
- E8 Left Turn Light.

#### Headlights And Tail Light:

When S9 light switch is in the ROAD position, current flows from terminal 3 of S9 light switch to the headlight, tail light and panel light circuits. Current also flows from terminal 2 to terminal 1 of S8 turn signal switch, causing the hazard lights to flash.

To operate the headlights and instrument panel lights, current flows from S9 light switch, terminal 3, to the following:

- 138C and 138A Gry wires.
- F7 Headlights Fuse.
- 119A and 119B Wht wires.
- Instrument Panel X31 Connector, terminal B.
- E13 and E14 Instrument Panel Lights.
- 119C Wht wire.
- Main Harness-to-Lights Harness X24 Connector, terminal A.
- 119A and 119B Wht wires.
- Left Headlight X48 Connector, terminal A.
- E10 Left Headlight.
- 119C Wht wire.
- Right Headlight X47 Connector, terminal A.
- E9 Right Headlight.

To operate the tail lights, current flows from S9 light switch, terminal 3, to the following:

- 138C and 138B Gry wires.
- F8 Tail Lights Fuse.
- 118 Gry wire.
- Main Harness-to-Lights Harness X23 Connector, terminal 2.
- 118A and 118B Gry wires.
- Left Rear Light X44 Connector, terminal B.
- E5 Left Tail Light.