



# Power Tips:

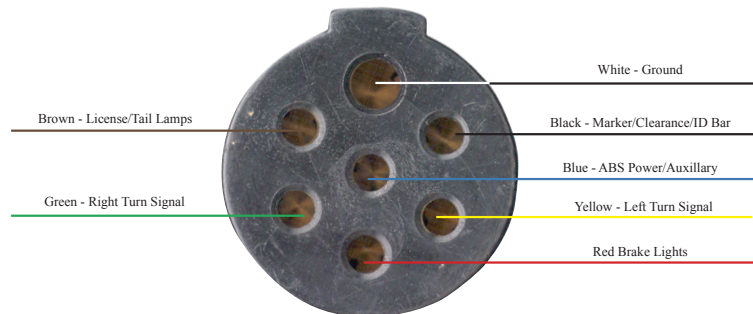
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## Trailer Lighting Troubleshooting

When diagnosing lighting problems on trucks and trailers it is extremely important to remember to look for the simplest problems first and then move progressively from there. This is especially important if you are working on a customer's unit, where time is money, and you want them to come back! There are several causes for lighting failures ranging from vibration damage to corrosion from prior poor electrical repair. Doing a little diagnostics when repairing the lighting can assure a lasting repair.

The most prevalent lighting problems occur on the trailer, so knowing how the trailer is supposed to be wired will help diagnose a problem. The color code for wiring in the trailer from the tractor through the electric cord into the trailer is as follows:

- ▶ **Red:** brake lights
- ▶ **Green:** right turn signal
- ▶ **Yellow:** left turn signal
- ▶ **Black:** marker/clearance/ID lamps
- ▶ **Blue:** ABS/Auxiliary power
- ▶ **White:** ground



### Be sure to remember the following tips anytime you are servicing the electrical system:

- ▶ Always use dielectric grease in electrical connections to prevent corrosion
- ▶ Always use either heat shrink butt connectors or heat shrink when making connections
- ▶ Always use the appropriate gauge wire and terminals.
- ▶ Replace light bulbs with the direct replacement. Changing to a different bulb can either be too dim or too hot or melt the lens.
- ▶ When replacing fixtures always make sure they are grounded well.
- ▶ Never pierce wires with a test light probe, this can accelerate corrosion
- ▶ Never bypass fuses or circuit breakers in the system

Today most trailer manufacturers use harness systems to make the manufacture of the trailer easier. These modular systems also make it easier to diagnose lighting problems because they isolate the different circuits. These harness systems also reduce the incidence of damage due to corrosion. Therefore it is also very important not to use a 'spike' type of electrical tester to pierce the insulation on wiring. Due to the modular nature of the systems it is very easy to 'open' the system at major junctions to check voltage.

### Diagnosis and Repair of Single Lamp Failure

1. Identify which lamps or lamp is out
2. Pull the lamp out of the grommet and unplug the pigtail to check for voltage going to the lamp
  - 2a. If it is a bulb-replaceable light, check the bulb and if the bulb is good  
Very carefully insert the probe of the test light into the socket to test for voltage.



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3. If you determine the lamp is burned out replace the lamp or new bulb and you're done.
4. If you determine there is no voltage coming to the lamp then it is necessary to follow the wires to the junction and determine the cause of the failure.
5. If it is a recent failure with no corrosion you may be able to simply reconnect the wire.
6. In the case of a long-term failure it will probably be necessary to splice the wire.
  - a) Check to see that you have enough slack wire to cut out the corrosion.
  - b) Cut out the corroded part and trim back the remaining leads to ¼" of exposed wire (being careful not to short out the bare wire)
  - c) Either slip a piece of shrink tubing down the wire, or use heat shrink butt connectors and then dip the exposed wire into dielectric compound.
  - d) Crimp the connections and then using a heat gun shrink the tubing to seal the connection.
7. Test the lamp to make sure that it's working and then reassemble the fixture

### Diagnosis and Repair of Lamp System Failure

1. Visually determine which system isn't working. (Refer to the wiring diagram to determine which system could have failed)
2. The easiest place to look first is the connection between the tractor and trailer so disconnect the pigtail from the trailer and turn all the lights on from the tractor.
3. Using your test light check each circuit for power and if all of the positions on the pigtail have power it's time to move to the trailer.
4. Plug the pigtail back into the nose socket.
5. Open the socket on the nose of the trailer and check the connections for the circuit that has failed. If the connections are corroded and there is a poor connection trim the wire back ¼" dip it into the dielectric compound and reinsert into the socket connector.
6. Test to see if that resolved the problem and reassemble if complete.
7. If that didn't resolve the problem trace the wire back to the first junction and check for power to that circuit.
8. In the event there is no power coming from the nose of the trailer the wire has failed and it will be necessary to replace.
  - a) Using the same procedure as shown above splice the wire to restore power to the circuit.
  - b) In the event the wire is in a harness or inaccessible due to the bolster plate either replace the entire harness or run a jumper wire until such time as the harness can be replaced. Use great care in the routing of the jumper wire so as to not cause a short due to interference from the fifth wheel or other accessories.
9. If there is power at the first junction continue the procedure at the remaining junctions all the way to the rear sill.
10. Test the system and if all is functioning reassemble open junctions and tie up loose wires.

Depending on the manufacturer harnesses can usually be replaced easily, however due to the variations in equipment they may need to be ordered in custom lengths.