

Basic Troubleshooting Guidelines

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The following are the basic guidelines to perform troubleshooting for an unlighted or partially unlighted string set. Covered are (4) typical product designs that apply to Lighting and Pre-Lit Trees.

- (1) Miniature Incandescent ConstantON Strings
- (2) Miniature Incandescent Regular (Non-ConstantON) Strings
- (3) StayBright (SB) LED with C7 or C9 Reflector Caps
- (4) Energy Smart (ES) LED

Important to Note: In the first 3 cases, the product is series-connected. All it takes is for one of the two bulb (Miniature Incandescent or LED) lead wires not to touch (make electrical contact) one of the two metal terminals inside the lampholder (socket) for an entire circuit not to light. This is a standard construction design throughout the industry. Energy Smart LED has a slightly different construction as stated below though basically is series-connected.

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<http://www.youtube.com/watch?v=CBFvse4MH8#t=8>

For Videos on replacing Fuse Bulbs:

<http://www.youtube.com/watch?v=tepRbR7Par0#t=4>

1) Troubleshooting Steps for Miniature ConstantON String Sets

Step 1 – Blown/Open Plug Fuse

If the entire set does not light, first confirm that the fuse(s) in the plug are OK and have not blown. If so, then replace with the proper amperage fuse that was provided with your product. See Fig. 1a.

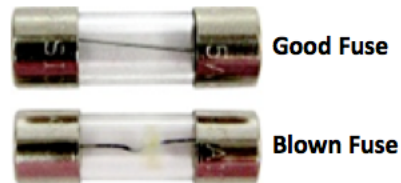


Fig. 1a

Note: CSA plug has no fuse.

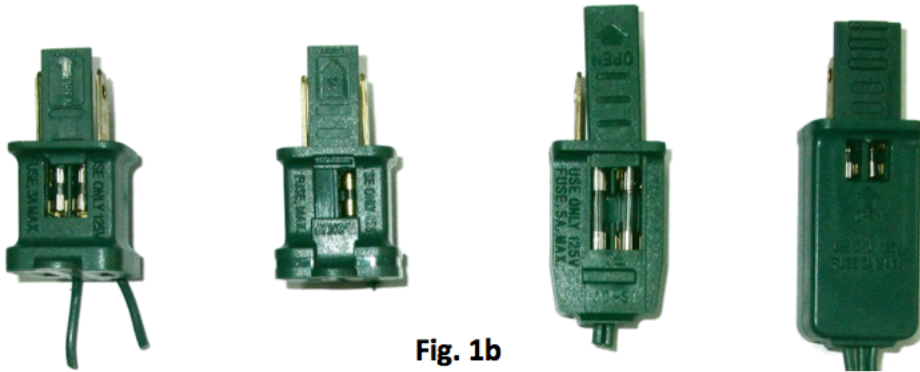


Fig. 1b

Step 2 – Burned Out Bulb

Visually examine the string for obvious missing, broken, blackened or burned out bulbs with open filament changing them first. See Fig. 2.

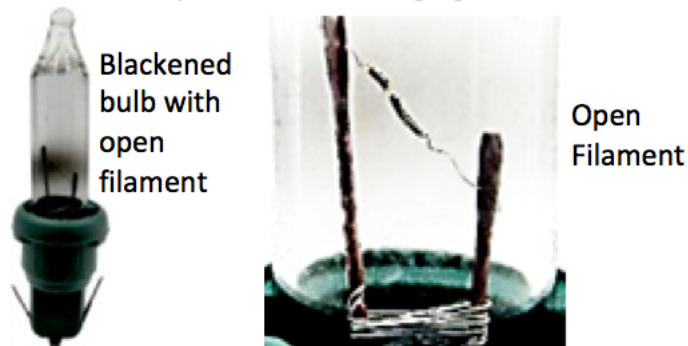
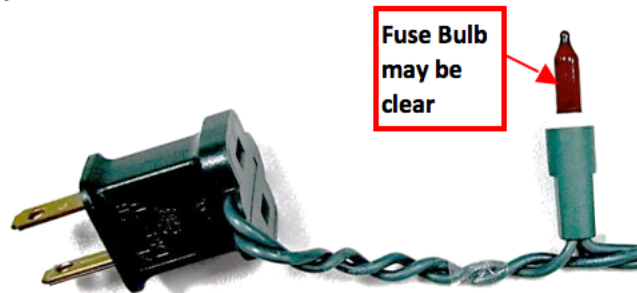


Fig. 2

Step 3 – Bad/Open Fuse Bulb

Look for the fuse bulbs having a different color base (white if set has green wire or green if white wire). It may have an open or broken filament. If so, please replace with a spare based fuse bulb that came with your product. Go to **Step 6** to check if set lights otherwise proceed to **Step 4**.



Notes:

1. There is 1 fuse bulb for every 50 bulbs in a circuit.
2. The first bulb next to a plug is an example of what a fuse bulb looks like.
3. Where a circuit is not lighting there would be one of these fuse bulbs.

Step 4 – Loose Bulbs

Starting at one end of an unlighted circuit, check that each bulb is fully inserted into the lampholder (socket). In other words it is not loose. See **Fig. 4a**. **Fig. 4b** is the basic nomenclature used in lighting strings.



Fig. 4a

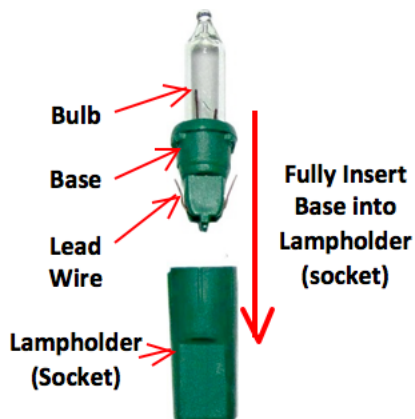


Fig. 4b

Step 5 – Missing or Misaligned Lead Wires

Remove the first non-fuse based-bulb. Check that both lead wires are not missing (**Fig. 5**) and aligned in the center of the base (**Fig. 6**.) You may inspect or test the bulb with a commercial device to assure that the bulb lights. If all is OK replace the based bulb and go to the next bulb repeating the process. Replace any bad bulb with a spare bulb provided with product.



Fig. 5

Fig. 6

(2) Miniature Incandescent Regular (Non-ConstantON) String Sets

Perform all the above steps except **Step 3**.

(3) StayBright (SB) LED with C7 or C9 Reflector Caps

For these products remove the reflector cap first. Then perform all steps except **Steps 2** and **3**. Replace the bad LEDs. Replace the cap.

Note: With other SB products the reflector cap is fitted onto the base when removing from socket.

(4) Energy Smart (ES) LED

The troubleshooting procedure follows that of Stay Bright above. Do all steps except **Steps 2** and **3**. Replace the bad LEDs.

Note: This design has multiple parallel groups of 2 LEDs in series meaning that the first 2 LEDs from the plug (and each two thereafter) are in parallel. Remove 1 of the 2 LED and the string remains lighted. However, if both LEDs in any one-group fail, then the entire circuit is unlit, as each group of two are series-connected. You may temporarily replace 1 of the paired LEDs with a spare LED to check that each pair is not open.