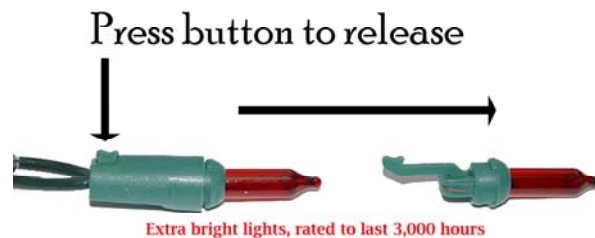


How to help your lights last longer

It is important to understand that light sets do not simply “go bad” unless damaged. Rather, it is only light bulbs “go bad” over time. Also, it is very rare that you will ever have to change the fuses in a light set! Listed below are the ways to easily maintain your lights and enjoy your tree for many years to come!

- As soon as you notice that a light bulb has burned out, replace it. Doing this properly maintains the voltage among all of the lights in the set. Your light sets are designed to stay lit even if a bulb naturally burns out. However, once one light burns out the remaining lights in the set begin to work harder by taking up the extra energy of the burned out bulb. Consequently, running a set that contains a burned out bulb (or bulbs) will cause the overall life span of the set to diminish and eventually fail. Please note: A light set will not function if any bulbs are missing, broken, or improperly inserted.

Pictured below is an illustration on how to properly remove a light bulb from a Brilliant Light Set.



- Always inspect your tree for burned out bulbs at the beginning and end of each season of use. These are the most convenient times to do so, and will insure that your lights work properly form season to season!
- Do not put your tree away hot! Allow the lights to settle and cool for 30 minutes before taking down your tree for storage. This will protect the light filaments and prevent breakage.
- Protect your lights from power surges! We always recommend using a high quality surge protector for your tree. A power surge will cause damage to your light sets and is not covered under warranty.

HELPFUL HINTS!

- If you notice that some of your lights are beginning to burn brighter than usual, this is a sign that there are burned out bulbs that need to be replaced!
- Please note that many spare lights have been included with your tree. They may be found in small plastic bags attached to each light set where it plugs into the extension cord at the trunk. We recommend leaving them attached so that they will not get lost and remain easily available for replacement.
- Finally, do yourself a favor! We highly recommend the purchase of a **Light Keeper Pro** light tester to help maintain the lights on your tree! This amazing light tester will troubleshoot any light set issue in minutes. To find out information, as well as, where to purchase the LightKeeper please visit their web site at www.lightkeeperpro.com

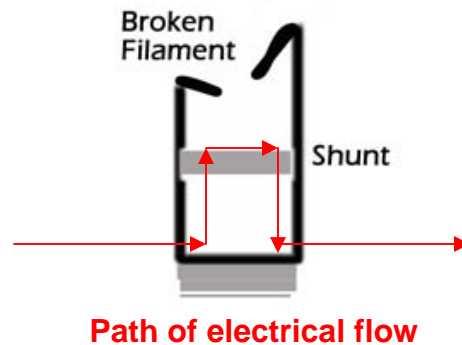
An Easy Way to Troubleshoot Lights

What Causes a Light Set to Fail?

A light set can fail for any of these reasons:

- Internal bulb failure
- Loose, broken, or missing bulb
- Bad connection between the bulb and bulb socket
- Blown fuse (**very rare**)
- Broken wire or plug
- Poor connection at the power source

But the most common cause by far is internal bulb failure. Modern light sets are designed to work even if one or more individual lights fail.



In this drawing, the filament in the bulb has burned out, interrupting the flow of electricity required for the light bulb to operate.

Miniature light sets are designed with a feature that allows current to bypass the burnt out filament. It's called a shunt – an aluminum wire wrapped around the two metal posts supporting the filament. If the filament is burned out, current will normally burn through an oxide coating, completing the circuit and illuminating the rest of the light set.

If the oxide fails to burn off, the shunt fails, the circuit cannot be completed, and the remaining lights go out. Just as a water pipe needs a clear path to have water flow it; a light set also requires a clear path to have electricity flow it. The shunt acts as a back up system to keep a light set's electrical circuit completed.

The first thing you should do when lights are out is to inspect the light set to see if all the bulbs are present, are unbroken, are in tight, and plugged into an outlet that's working.

If this doesn't solve the problem, it may be due to a loose contact between one of the light bulbs and its husk (the plastic receptacle into which the light bulb fits). Next, you will need to check you light set for a loose bulb contact.

The quickest way to check for a loose contact is to:

1. Run your hand over the needles of the section where the lights are out.
2. Start at the base of the branch near the tree trunk, and brush your hand out toward the tip. By doing this you will be gently jostling the bulbs, and usually the bulb with a loose contact will cause the lights to flicker on.
3. If this is the case, locate the bulb that's creating the flicker and replace it with one of the spares provided. (You can find these in a clear plastic package attached to the base cords of each light set.)
4. Start with one branch, and go from branch to branch (left to right) using this method. Proceeding left to right is a good way to keep track of what you have checked, so you don't become frustrated looking randomly for bulbs.

If this technique of brushing and replacing doesn't solve the problem, it's probably due to one or more failed shunts. Resolving this problem can best be accomplished either by obtaining a **Light Keeper Pro** or by contacting NeumanTree for help.

A **Light Keeper Pro** is an inexpensive but very effective device that makes it easy to locate problems so you can get your lights to go back on. You can check out the Light Keeper Pro and find a retailer near you at: www.lightkeeperpro.com

