

# HauntMaven.com - Wolfstone's Haunted Halloween Site



[http://wolfstone.halloweenhost.com/Lighting/bltgen\\_BlackLightGeneration.html](http://wolfstone.halloweenhost.com/Lighting/bltgen_BlackLightGeneration.html)

## Generating and Projecting Black Light

You wouldn't think that there is so much to say about [black light](#) lamps. But we decided that the subject deserves a page of its own.



## So, where can I get cheap black lights?

When the psychedelic era sputtered and died out, it took Lava Lamps and fuzzy black light posters with it. There is enough of a retro movement that these things can still be found - retro lives at [Spencer Gifts](#). Better still, many stores offer black lights when Halloween rolls around.

The best black light for all-around haunt use is a fluorescent black light. These resemble the regular white fluorescent lights, found in offices and stores, except that they use a special lamp that emits black light. The lamps used for black light effects have several modifications from the standard white fluorescent lamps:

- there is usually more mercury, for enhanced UV generation
- the phosphors are designed to convert short wave UV into long wave UV
- the glass envelope is made from a purple filter glass, which prevents the emission of visible light

Such fluorescent black light fixtures, complete with lamp, ready to turn on, are available at [Spencer Gifts](#) and other stores. These small fluorescent units are intended to light up posters and other decorations. They work fine on spooky stuff, too.

You can make your own black light setup with a shop-light fluorescent fixture and pair of 4-foot black light lamps from [Home Depot](#) - total cost around \$30, and it puts out much more light than units intended for posters. I have four such units. Two of them have been repainted with silver paint inside the reflector and black elsewhere. They work fine even if you leave them white. See [So, where can I get cheap fluorescent black light tubes?](#)

## **I have light fixtures. Can I turn them into black lights?**

You probably can, but you might not like the results. It depends on what you are starting with. There are two kinds of light fixtures common around the home...

Incandescent fixtures tend to have pear-shaped bulbs that screw into sockets. You can get replacement incandescent black light lamps, but they don't perform all that well. For details, check out [Are those inexpensive incandescent black lights any good?](#)

Fluorescent fixtures tend to have long, tubular lamps. These fixtures are easily converted to black lights by simply replacing the white lamp with one built for black light. The black light lamp must be the same physical length, and similar in electrical characteristics - don't put a 50W black light lamp in a fixture made for a 20W lamp, even if it happens to fit.

You can also use existing light fixtures if you filter them to remove the visible light. Check out [Black light filters](#). Note that this approach is seldom cost-effective because such filters are expensive, and most ordinary lamps don't emit much black light to begin with.

## **So, where can I get cheap fluorescent black light tubes?**

Fluorescent black light lamps are handy for converting existing lighting fixtures, building new black light fixtures, and replacing lamps that have burned out.

When buying fluorescent black light lamps, check the part number stamped on the glass near the end. The part number should end in a "BLB" suffix. The glass should be a dark purple.

Lamp manufacturers all use different systems to come up with their part numbers, and I won't attempt to list them. In addition to the manufacturer's part numbers, most lamps also have a semi-standard number on them. The semi-standard number should look like "FwTd-BLB", "FwBLB-Td", or "Fw-BLB", where:

|       |  |
|-------|--|
| "F"   | means "fluorescent" (avoid anything starting with "G")                       |
| "w"   | is some number, indicating the wattage                                       |
| "T"   | indicates a tubular shaped envelope  |
| "d"   | is a number giving the diameter of the glass tube in increments of 1/8-inch. |
| "BLB" | indicates that this is a black light, with a blue glass tube (avoid "BL")    |

Here are some markings I have seen:

| brand   | number     | watts   | length  | tube diameter | expected lifetime |
|---------|------------|---------|---------|---------------|-------------------|
|         | F15T8-BLB  | 15-watt | 18-inch | 1-inch        |                   |
| G.E.    | F40BLB     | 40-watt | 48-inch |               |                   |
|         | F40T12-BLB | 40-watt | 48-inch | 1.25-inch     |                   |
| Philips | F40T12BLB  | 40-watt | 48-inch | 1.25-inch     |                   |
| Philips | F20T12/BLB | 20-watt | 24-inch | 1.25-inch     | 9000 hours        |
| Philips | TLD15W/08  | 15-watt | 18-inch |               | 7500 hours        |

[Home Depot](#) carries fluorescent black light tubes throughout the year. They offer numerous sizes, and their prices are pretty good. Any store that carries black light fixtures should have lamps for use as replacements. I have seen them at [Spencer Gifts](#), though the price was unimpressive.

Some of the smaller lamps sometimes show up on the surplus electronics market and through other mail and web stores:

- [All Electronics](#) #BLB-5 - \$3  
F4T5-BLB
- [Electronic Goldmine](#) #G9598 - \$5.95  
MOOLIM F4T5 BLB
- [Marlin P Jones](#) #12123-LA - \$2.49  
5-inch replacement lamp for Avon skin lamp. **Warning: UV-B**
- <http://www.starmgc.com> "6 inch black light bulb" - \$14.95  
[Noted in a posting by DolphinWay@aol.com]

## Are those inexpensive incandescent black lights any good?



The short answer is "no, incandescent black lights stink". Details follow....

You can get small incandescent black light lamps. Essentially, they are ordinary incandescent lamps with a coat of purple paint inside.

These bulbs are inexpensive and easy to find at party stores and home stores.



Some incandescent black light bulbs are sold as "flood" lights, and look the part.

They do emit *some* black light, but usually also put out quite a bit of visible purple light. Some people don't like the purple light these things put out, saying that it detracts from the glow of the fluorescent object they are trying to illuminate. Others like the purple, saying that it lends a somber and spooky look.

Be aware that these incandescent black lights *put out a lot of heat*. That's because they are visible-light bulbs, with the internal coating trapping most of the visible light. The energy has to go somewhere, and winds up as heat. [Wolfstone reader Ken Brown says that the trapped heat causes incandescent black light bulbs to burn out rapidly.]

Avoid these unless you need just a touch of black light, and some visible purple light, in a place that you can't fit a fluorescent. Don't put them in or near things that might catch fire from the heat.

Summary:

- low black light output
- runs dangerously hot
- short lifetime

Such a deal!

## Black Light Projectors

Just think what you could do with a black light spotlight or projector! Just be aware that really good ones are expensive.

[This list is quite old, perhaps from 2000. I am sure that pricing and availability has changed a lot. I am keeping this information, just as an example of the types of products that you can find if you look around.]

- [Altman](#) UV-702  
250-Watt, integral ballast. Effective distance 10-20 ft. tilt adjustment, no focus control.
- [Altman](#) UV-703  
400-Watt, 10" UV-A filter fresnel lens, external ballast. Adjustable from narrow spot (150 feet) to wide flood. Head 26 lbs, Ballast 21 lbs. No fan; quiet. Compact, high output.
- [Altman](#) UV-704  
400-Watt, weatherproof, integral ballast and igniter, 8" UV-A filter lens. Replaceable lens for narrow beam or wash. No fan, quiet.
- [Altman](#) UV-705  
400-Watt, 110-Volt. Integral ballast and igniter, UV-A filter lens. Focus mechanism for narrow beam or wash. No fan, quiet.
- [American DJ](#) BL-125D - \$358, list (seen for \$200)  
125-W black light lamp and fixture: discharge lamp, reflector, mounting bracket.
- [Theatre Effects](#) BL90 - \$500  
250-Watt, 110-Volt, lamp, fixture, ballast.
- [Theatre Effects](#) BL91 - \$500  
400-Watt, 220-Volt, lamp, fixture, ballast.
- <http://www.acclaim-music.com> Apollo Blacknight UV Black Light Cannon - Canadian \$699 US  
Price: \$454.35  
400-Watt, 110-Volt. "Replace up to twenty normal four foot UV flourescents." Five minute warm up time. Weight 17kg.
- [Wildfire](#) - WF-250(F)(WS)(S) Long-Throw  
250-Watt, 100/120/240-Volt. UV-A filter. Integral ballast. Flood: 60' throw, 90° field; Wide Spot: 80' throw, 50° field; Spot: 150' throw, 20° field. Metal-halide lamp rated 1000 hours.
- [Wildfire](#) - WF-400E Long-Throw  
400-Watt, 100/120/240-Volt. UV-A filter. External ballast. Throws of up to 50' at beam spreads of 20° to 40°. Has slot for gobos. Metal-halide lamp rated 1000 hours.

- [Wildfire](#) - WF-400S/F Long-Throw  
400-Watt, 100/120/240-Volt. UV-A filter. External ballast. Throws of up to 60' at beam spreads of 8° spot to 59° flood. Metal-halide lamp rated 1000 hours.
- [Wildfire](#) - WF-401F Long-Throw  
400-Watt, 100/120/240-Volt. UV-A filter. Throws of up to 100' at beam spread 115°. Metal-halide lamp rated 1000 hours.
- [Wildfire](#) - WF-600S/F Long-Throw  
600-Watt, 100/260-Volt. UV-A filter. External ballast. Throws of up to 200' at beam spreads of 20° to 40°. Metal-halide lamp rated 1000 hours.
- <http://www.magicstor.com/files/blklite.htm> #BL90 - \$500  
250W, 120V mercury vapour blacklight. Comes complete with fixture, ballast, mercury vapor lamp with UV filter. Take about 5 minutes to come up to full intensity, and must cool down after dowsing before it can be relit. Replacement lamp #BL90L - \$100.
- <http://www.magicstor.com/files/blklite.htm> #BL91 - \$500  
400W, 220V mercury vapour blacklight. Comes complete with fixture, ballast, mercury vapor lamp with UV filter. Take about 5 minutes to come up to full intensity, and must cool down after dowsing before it can be relit. Replacement lamp #BL91L - \$240.
- <http://www.nightmarefactory.com/effects.html> #IA132 - \$619  
250 watt professional blacklight projects a beam 10 -20 feet. It will light an entire room in a haunted house as it has a 100 degree spread. Can be hung or will sit on the floor. Lamp is rated at 2400 hours. Replacement lamp #IA134 - \$35.
- <http://www.nightmarefactory.com/effects.html> #IA150 - \$3,375  
400 WATT, 10" fresnel spot / flood blacklight. High intensity illumination of fluorescent materials at distances of up to 150 feet. Quiet - no fan. Rugged TV/Studio quality die-cast and extruded aluminum housing. Fresnel lens with special filter glass transmits UV-A light and filters out UV-B and UV-C for safety. Simple operation - one on/off switch located on ballast. Barn Door Rollers for easy rotation. Replacement lamp #IA151 - \$99.

Compact fluorescent black lights

The fluorescent lamp is the only source of black light that is both inexpensive and effective. There are now "compact fluorescent" black light lamps that screw into an ordinary fixture.

We created a whole page, just for [compact fluorescent black lights](#).

You can also find circular fluorescent black lights.

## Black light LEDs

The first visible Light Emitting Diodes (LEDs) were red. Yellow and green came soon. Many years later the blue LED was invented. There are now LEDs that emit black light.

We created a whole page, just for [black light LEDs](#).

# Black Light Filters

Black light filters can, *in theory*, transform an ordinary spotlight into a black light spotlight.

Beware: A "black light filter" filters out the visible light and only allows black light to pass through. That's what you want in this application. An "ultraviolet filter" filters out UV light, allowing only visible light to pass through. That's exactly the opposite of what you want.

Warning: Using a filter to make a black spotlight only works well if the existing light source already has a lot of black light in it. Normal incandescent lamps have very little black light in them. An ordinary incandescent has, compared to visible output, about 1% UVA and about 0.04% UVB. These numbers would be higher for halogen lamps, due to higher operating temperature, and better UV transmittance by the quartz envelope. But still not that great. Using a black light filter on an ordinary incandescent lamp produces a poor spotlight (think math: white minus white equals nothing). It also generates a lot of heat, since all of that filtered out visible light has to go somewhere! Ideally, these filters would be used with UV-rich mercury vapor lamps.

Dichroic filters are better. Since they do not absorb the non-UV light, they heat up less.

- [Theatre Effects](#) BL95GF glass UV filter in metal frame. 7.5" square.
- [Rosco](#) Permacolor #3650 glass dichroic filter described as "UV ?Woods Glass?" on their web site. If it really is woods glass, it is suitable.
- <http://www.magicstor.com/files/blklite.htm>  
Described as follows:
  - Glass UV Filter in Frame - This 7.5" square filter/frame combination fits the gel holder on most
  - theatrical stage lights. It prevents all light except for UV from passing through it, but since most
  - tungsten-halogen lamps don't make much UV light in the first place, it is not a very efficient source of
  - blacklight. A 750W minimum stage light is required; incandescent lamps make more UV than quartz
  - lamps.
  - #BL95GF - \$37.50

In the absence of true black lights and real black light fixtures, you might try using a very bright light and a "Congo Blue" filter (Roscolux #382; GAM #930; Lee #181). This topic occasionally comes up in "rec.arts.theatre.stagecraft", and in February 2001, caused something of a flame war between a gent with a background in optics who claimed it could not possible work, and those who had tried it with success. My take on the subject is that (a) a tiny amount of genuine UV is getting through the blue filter (b) significantly more *near-UV* light is getting through. And the near-UV is enough to get some fluorescence going. Nobody claims that this is a good way to generate black light. But it does seem to have some effect.

## Black Light Strobes

There are now available numerous black light strobes, combining two interesting lighting effects into one very unique one.

We devote an entire page to [black light strobes](#).

## Battery-Powered Black Lights

Here is a list of small (some battery-powered) black lights. Some may be out of stock or discontinued. If nothing else, it shows that this kind of equipment isn't too hard to find.

- [Herbach & Rademan](#) #TM91UVL1699 - \$19.95  
4" 110 VAC powered black light fixture
- [Electronic Goldmine](#) #C6471 - \$23.95  
8" 6Vdc powered black light KIT
- [www.alltronics.com](#) #95L007 - \$7.95  
Pocket (pager) sized 3Vdc black light.
- [Marin P. Jones](#) #7231-MI - \$3.95  
Pocket sized black light, 2 "AA" battery powered
- [Marin P. Jones](#) #11999-MI - \$3.95  
Pocket sized black light, 2 "AA" battery powered, with white flashlight.
- <http://www.magicstor.com/files/blklite.htm> #BL12 - \$25.00  
12" Blacklight runs on 8 AA batteries; comes w/ cigarette lighter plug.

## Tiny Cold-Cathode Black Lights

Special lighting for those special haunt applications... cold-cathode fluorescent lamps from [JKL Components Corporation](#).

Sometimes you need just a tiny bit of light. Perhaps you need a small source of UV to fit inside your FCG marionette. [JKL Components Corporation](#) offers affordable tiny fluorescent lamps.

Their Micro-Lume fluorescent lamps are available in numerous visible colors.

They also have a line of UV lamps ranging in length from 25mm to 240mm and in diameter from 3mm to 9mm. These are described as "narrow-band", and are available in several different wavelengths. Go for something 345 to 400 nM.



All of these lamps require special power supplies. JKL carries inverters that run on 5V, 14V, and 24V.

Straight from JKL, the visible lamps cost about \$10 apiece. Power inverters go for \$15. I have also seen JKL fluorescent lamps and inverters at [Fry's Electronics](#) and [All Electronics](#).

As of 5/2000, All Electronics offers the following UV lamps:

| diameter | length | cat#    | price   |
|----------|--------|---------|---------|
| 3mm      | 25mm   | UV-325  | \$8.25  |
| 3mm      | 50mm   | UV-350  | \$8.50  |
| 3mm      | 100mm  | UV-3100 | \$10.75 |

Tiny, inexpensive, long life, cool-running, easy to use. Could you ask for more? It's scary! I'll bet that there are hundreds of haunt applications for a black light the size of a pencil.

## What about those cheap UV lights with the timer?

Several surplus outlets are selling UV lamps intended for skin examinations. They were originally manufactured for Avon and entitled Derma Spec. These units turn off after 1 minute.

They have been sighted at:

- [All Electronics](#) #UVL-1 - \$10
- [Electronic Goldmine](#) #G9589 - \$6.95, on sale for \$4.95 [July 2006]
- [Hosfelt Electronics](#) #10-113 - \$4.95
- [Marlin P Jones](#) #1138-MI - \$5.95

The units look attractive for haunt applications, because you get the lamp, fixture, and case for cheap. It runs on 12 volts from a wall transformer. With a little work, you could run it off batteries.

There are some problems with this unit:

- It contains a built-in timer that shuts the light off after 1 minute.
- The power supply that converts 12 volts to power for the lamp runs hot. Bypassing the timer could cause it to melt down.
- The Marlin P. Jones catalog entry for this unit said it was UV-B, which you wouldn't want to use in a haunt anyway - it might sunburn your eyes and those of your patrons!

Don Klipstein has a simple fix to disable the timer. His original posting is located at <http://www.misty.com/~don/dermhack.html>. The essentials are reposted here, copyright Don Klipstein.

1/20/99, updated 3/23/2000.

This requires some electronic repair skill. Do this at your own risk. Also, this unit is not of really good quality anyway - at least the price is right if you get it from Hosfelt Electronics or Electronic Goldmine or All Electronics.

Now for the hack: There are two steps: 1. Locate C1 which is a 47 microfarad electrolytic capacitor near R3 which is a 1.2 meg 1/4 watt resistor. Short this capacitor. You would want to solder a small piece of wire or add a large blob of solder across this capacitor's terminals. This step alone will defeat the automatic shutoff, but now a transistor in the circuit can overheat.

2. To avoid overheating a transistor in the circuit, find the heatsink with that transistor in one corner of the board. You need to add some sort of extension to this heatsink.

I soldered two 6-inch lengths of 10-gauge stranded wire to the heatsink. It is tricky soldering to aluminum - use fine sandpaper to scrub off the oxide layer and immediately tin the scrubbed area. Do this only towards the ends of the heat sink fins to avoid cooking the transistor during soldering. Do the tinning as quickly as possible with a high wattage (~40 watts or more) iron. You may need to push around a blob of solder on the freshly scrubbed aluminum, lightly scrubbing it again with the soldering iron tip in the process.

After solder is solidly stuck on at least two points of the heatsink, allow the whole heatsink to cool and then solder on the two pieces of 10-gauge wire. You probably want this wire to be insulated. After the wire is soldered in place, you probably want to add some epoxy somewhere on the board to keep the wires from breaking off from the heatsink.

**CAUTION** - Hack this unit only at your own risk.

**CAUTION** if you operate this unit while it is open - high voltage is present. I also recommend operating it only with a 4 watt fluorescent tube in place. Operating the unit unloaded may result in excessive voltage spikes in some of the circuitry.