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## The Care and Feeding of Moving Lights



*By Greg Persinger*

There is nothing worse than getting a call on Saturday night from a church saying that five out of its 12 moving lights have quit working. Of course this is generally followed with the caller asking if you can drop everything and come right now and fix them as they absolutely have to have them for Sunday morning and they need to program tonight.

Upon arriving I start by asking all of the appropriate troubleshooting questions:

“How old are the lights?” I ask.

“A little over a year old,” is the reply. “They are no longer under warranty. It figures they would start acting up after the warranty expires.”

This begins to make me suspicious.

“Have you had any problems with them in the past?” I ask.

“Sure,” they say, “but they always came back and continued to work so we didn’t worry about it very much.”

“So you have had problems but you didn’t bother to figure out what was causing the problems and continued to use the lights, correct?” I ask.

“That’s right,” they answer.

This is bad, I think as I ride the lift 40 feet into the air to look at the first dead light.

As I get to the light I noticed that the cooling fans on the unit are caked full of dust and general gunk, and one of the fans had quit working. I bet this unit has baked itself to death, I tell myself. Sure enough, as I get the cover off I noticed the melted plastic and burnt wiring from where the unit had overheated.

"Hey, when is the last time you cleaned these lights?" I yell to the floor.

"Never," comes the response.

Down I go to break the bad news and try to convince them not to use any of the lights until they can pull them all down and clean them so as not to inflict any more damage.

Contrary to popular belief, moving lights break. That's right, they need maintenance and repair just like every other type of electromechanical equipment in the world.

### **Basic Mechanics**

If you think about what makes up a typical moving light it makes a lot of sense. Generally there are electronics that are used to control the functions of the light, there are mechanics that physically operate the functions of the light, and there is the light source that creates the light the unit is putting out.

By themselves all of these components are relatively stable and long-lasting, but when you put them all together in the smallest enclosure you can fit them into, you are just asking for trouble.

The primary problem is that the light source creates as much heat as a small heater while it is creating all of that light, and all of this created heat is the enemy of the mechanics and the electronics. The engineers add various cooling mechanisms, generally fans, to dissipate the heat and cool the lighting fixture, but if the lights get full of dust and the fans aren't cooling effectively or quit working altogether, the components in the fixture begin to overheat and this can cause all sorts of failures.

Common failures are melted fans, burnt wiring, shattered lenses, warped or broken patterns, broken colors, shattered lamps, warped reflectors, failed electronics, and jammed motors.

While these common failures generally can be fixed, they typically are not replacements that can be performed by the end user. Instead, someone specifically trained to do repairs on your make and model of moving light will probably have to make the repairs.

Repairs run anywhere from \$35 to \$75 an hour for the technician doing the work plus parts, which can run from a few dollars for a broken wire to several thousand dollars for a dead electronic PC board. Knowing this, preventative maintenance is the key to keeping the high-dollar repairs to a minimum on your moving lights.

### **Cleaning is Key**

Cleaning the average moving light is a fairly easy task that will take about an hour or so. The first place to start with any moving light is to bring the light to the floor.

Yes, you can work on your lights in the air but anything you do on the floor will be done to a much higher degree of quality as well as be much safer than working in the air.

One of the best ways to get your lights to the floor is with a rope and pulley. Be sure you are using good knots and have plenty of people on the other end of the rope to help raise and lower the lights as a typical moving light weighs in around 100 pounds. Also, because of the weight of most moving lights, be careful not to overload your man lift if this is your means of raising and lowering your moving lights.

Safety has to be your highest priority and if you have any doubts or are unsure of what you are doing, get some training from a professional company or just let a lighting company do the work.

Generally the manual will give you the in and outs as well as any special instructions on cleaning and caring for the light. Once you have read the manual it is time to get started. Start by making sure the fixture is cool and unplugged then take the covers off of the light. Once you have the light open, use a vacuum cleaner to vacuum out the dust and gunk from the light. Be sure to vacuum the fans out but try not to let the fan blades spin. A good way to prevent the fans from spinning is to stick a small screwdriver in the fan to block the blades from turning. The reasoning behind this is on some fixtures the fans generate electricity when they spin which could damage the electronics.

After a good vacuuming, use denatured alcohol, a denatured alcohol and distilled water mixture, or other manufacturer specified cleaning agent to clean all of the optical components in the fixture. The optical components include lenses, mirrors, colors, patterns, etc. Do not use any glass cleaner with ammonia unless specified by the manufacturer, as this tends to degrade the special coatings on the optical components.

Once everything is clean, replace the covers being careful to get everything back on tightly and in the proper place.

This is a good time to replace the lamp if the fixture is due to have the lamp replaced.

**Lamp Replacement** Most moving lights use arc lamps and arc lamps have a specified number of running hours before they require replacement.

Most of the time an arc lamp will continue to run beyond its specified number of running hours, but every hour past its specified lamp life could bring it closer to an explosive end. If the lamp would happen to explode it could damage a lot of parts in the fixture requiring repairs beyond a new lamp.

When you replace the lamp be sure to wear clean gloves as well as eye protection and make sure the lamp is at room temperature before you attempt to change it. The gloves will protect your hands if the lamp should happen to break as well as protect the lamp from the oils on your hand. The safety glasses will protect your eyes from broken glass if the lamp decides to shatter while you are handling it. Be sure to wipe down the lamp with alcohol to make sure it is clean once you get it in the lamp socket.

The owner's manual will have detailed information on replacing the lamp as well as optimizing the lamp output. This is necessary to make sure that the light is as bright as possible. Ideally you would test the fixture for proper operation before you hang the fixture back up. If everything works, put the fixture back up and move to the next fixture.

These are just the preventative maintenance basics to keep your lights running long and have healthy lives. For a more in-depth study on moving light maintenance, I highly recommend you make arrangements to attend a training course for your make and model of moving light. All of the major moving light manufacturers provide these courses for a fee, but the money you spend now will become a huge savings in the future as you maintain and repair the issues that arrive with your moving lights.

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