

FILM-TECH

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MODIFYING ELMO 1200 SERIES PROJECTORS TO ARC LAMPS

Projectionists for film groups who feel competent to do simple electrical wiring can modify any Elmo ST-1200, ST-1200HD or regular GS-1200 projector to the super-bright Gemini EZG short-arc lamp for relatively little money and time. The EZG lamp has a very full color spectrum (meaning all colors in a film come through bright), a mean color temperature of 6000° Kelvin (like daylight) and burns for 75 hours at a cost of a little over \$1. per hour. Unlike Xenon, there is no explosion hazard, and it is considerably brighter than Xenon-equipped Super 8 projectors. The drawbacks are that it takes two minutes to reach full brightness after striking; it should not be used for periods of less than ten minutes; and it requires several minutes cooling down time after extinguishing before it can be restarted. We have lived with these factors for over fifteen years and found them easy enough to work around.

Before getting into a modification, know that arc-converted Elmo projectors must have the improved Elmo projection lenses. If you buy one or other of these brighter, sharper lenses you may not need to make the arc conversion. The lenses are the f/1.0 12.5-30mm lens and the f/1.2 25-50mm lens. Buy the lens that allows you to use it most of the time at a higher focal length in its zoom range. This will enable concave or convex films to remain in focus because longer focal lengths provide a greater depth of back focus, thus minimizing the need to re-focus during shows.

Now, on to the arc conversion. Besides an appropriate Elmo projector, you'll need the correct power supply. Any MARC 300 or GEMINI Power Supply that is in good working order will do. There are lots lying around in a-v storage rooms and on the used market (see shutterbug magazine). Ours was made by Sylvania for an Eiki 16mm projector in 1968. New ones can be found through General Electric, Power Supply Operation, P.O. Box 1701, Fort Wayne, Indiana 46801, telephone (219) 428-2552. ~~\$400~~ ~~\$500~~ ~~so~~

First, a word of caution about dealing with these power supplies: Even when disconnected, the capacitors in them are capable of delivering a several thousand volt jolt to an unsuspecting tinkerer. BE CAREFULL. Our power supply has only the basic three wires: positive, negative and ground. Should you locate a power supply, such as a Kodak or Bell & Howell one, with a multi-pin connector, note that pin #1 (red wire) attaches to the positive lamp lead, pin #2 (blue wire) goes to the negative lamp lead and pin #6 (green wire) is the ground. The ground from projector to power supply is absolutely necessary.

Placing the power supply close to the projector induces hum into the sound system. The power supply must be wired to the projector so that they can be separated by at least three feet. We use a 6' connecting cable so the power supply rests on the floor below the projector stand. The wire must be heavy: at least #14 rubber covered 300 volt cable. Connections must be

made straight and smooth with solder and covered with heavy shrinkwrap. This is to enable the 9000 volt starting current to travel unimpeded. Again, be careful: there's a lethal jolt of current in the power supply that can be let loose whether or not it is connected or turned on.

If you happen upon a simple three-wire power supply, order the following parts for your conversion from EIKI International, Inc. 27882 Camino Capistrano, Laguna Niguel, CA 92677, telephone (714) 831-2511:

Two #5750 Internal Cables- SYL (for an Ekik ST-3H Marc 300 projector),

One #5726 Output Cables- SYL.

From Elmo Service Center, 1500 Plaza Ave., New Hyde Park, NY 11040, telephone (516) 775-3200 order the following:

One #4P48688 Lamp Fixing Plate (for the original ST-1200 projector. It's the only one that will hold the Gemini lamp),

One #4P48381 Lamp Holder 2 Assembly.

These parts used to cost less than \$50. The Gemini EZG lamp costs over \$100 but can usually be bought at discount.

To fit the lamp holder correctly into an ST-1200HD or GS-1200 projector you will need to drill some new positioning holes in the holder. To fit the lamp into the holder you will need to bend flat the bulb-holding flange on the lamp holder. Both of these operations can be accomplished with a household electric drill and a strong pair of pliers. Be careful not to drop the lamp holder screws down into the projector blower; use a magnetic screw driver. Align the center of the lamp tube by shining a light on the lamp while peering through the lens past the gate and open shutter. Adjustments can be made later if you miss proper alignment on the first try. Remember: adjust the lamp in the opposite direction from the shadow.

No additional cooling or ventilation is needed. To allow clear passage of the lamp wires, we've sawn out several air vanes on the lamp cover and projector door. We preferred not to make a permanent modification of our projectors so that a regular quartz projection bulb could be re-installed at any time, making the projector useful for sound recording. (The arc lamp precludes the stop/start procedures necessary for sound recording set-up).

The intensity of the Gemini lamp will blister film almost instantly if paused in the gate. Don't use the pause mechanism of the GS-1200 without making sure the shutter stops in a closed position. Even then we don't allow the film to sit in one place in the gate with the lamp on for more than a few seconds. If we have to pause while a filmmaker talks on one film in a series of films in a screening, we continually rock and roll at pause speed (6 fps) until it's o.k. to proceed. We tape a gray cardboard to the front of the projector stand and flip it up in front of the lens while the talk goes on.

On modifications of the ST-1200 and ST-1200HD projectors we made a lightweight aluminum disc with fold-over ears from a bit of roof flashing to cover the safety shutter and prevent blistering.

Most of the power supplies have a current sensitive relay to prevent operation unless the projector, plugged into the power supply is running and ready to cool the lamp when it is struck. Elmo projectors don't draw enough current to close the current relay, so we help them along by attaching a 3' industrial extension cord with triple outlet to the power supply projector outlet. Then we plug in a (green) reflector flood, the kind used under palm trees. This closes the relay for sure, even with the projector off, so again, be careful to turn on the projector blower before striking the lamp. To avoid filling the auditorium green light, we point the floodlight into one of our travel cases or under a table in a booth and, voila! we have a dim, if eerie, threading lamp.

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