

EFFECTS

Any Spotlight can be used as a Projector. Its efficiency, however, is dependent upon three things: 1, the lens and lens system; 2, the reflector system and 3, the type of lamp and wattage. Other factors are also taken into consideration in manufacture but can be neglected here.

There are two types of projectors which fall under the general heading (A), those whose image is projected by use of a condenser lens system and (B) those whose image is produced with the help of a reflector system, through a gate.

System A

The condenser system produces an exact reproduction of the slide in the same way as a normal film projector but employs special slides or discs and requires an optical lens system fitted to the front of the effect, which has to be precision made.

Condenser System Source Requirements

First Lens: Must be of the plano convex type for height definition work but for simple projections a fresnel lens can be used.

Reflector: A large well balanced correctly aligned reflector is required.

Lamp: The best type of lamps for this work are ones of the Class T range or A1 range with a flat filament, the wattage being dependent upon the amount of illumination required.

Adjustment of housing: Depending upon the size of the first and condenser lens, the nearer the lamp is to the first lens the better the light output. Adjustment of the lamp is necessary to prevent an image of the filament being projected.

Heat Filter: This is not necessary if the slides to be projected are made of heat resistant glass.

SLIDES

The standard size slide for most projectors is $6\frac{1}{2}'' \times 8'' \times \frac{1}{4}''$ thick heat resistant glass. Ordinary glass is apt to shatter due to the heat at the focal point (over 300 degrees for a 1 kw unit).

Image size should not exceed 3" and is usually smaller for most applications, dependent upon the size of picture required and the lens employed. The correct size can be calculated using the following formula:—

$$\frac{p}{P} = \frac{q}{Q} \qquad \frac{1}{p} \times \frac{1}{P} = \frac{1}{f}$$

p = Multiplication factor
 P = Size of image on slide
 q = Distance from wall

Q = Size of picture
 f = Focal length of lens.

Image should be mounted upside down as it is reversed when projected. Outlining can best be obtained by using matt model paint and colouring by using glass stain, both are easily removed with a razor blade. Before application of the paint, the glass should be cleaned with methylated spirits to remove any grease. All marking should be kept to one side only, as due to the thickness of the glass, any image on the other side will be out of focus. Cathedral or rolled glasses of the type used for bathroom windows can be used for producing patterned backgrounds particularly useful in revues etc., but a heat filter must also be used.

MOVING EFFECTS

These are supplied in the form of a heat resistant glass disc in a sheet metal housing and are driven by a variable speed motor. Effects such as clouds, rain, snow, fish, ships etc., can be supplied in this form available for either hire or sale.

LENSES (OPTICAL)

Three standard lenses are available, $2\frac{1}{2}''$, $3''$ and $4''$ focal length, for use with either slides or moving effects. For determining the type of lens required, the previous mentioned Formula should be used.

System B

This consists of a spotlight with a specially manufactured plate or 'GOBO', in place of the usual masking plate, to project a silhouette. Simple effects such as prison bars, crosses etc. can thus be produced. The main advantage of this system is that it requires no extra equipment, the unit also being used for ordinary spotlighting work. The image produced is also brighter compared with the condenser lens type as little light is absorbed by the lens. The main drawback being in that only silhouettes can be produced.

ULTRA VIOLET LIGHT

This light is near the end of the visible spectrum and as such is actually invisible to the human eye. It can only be seen when reflected from surfaces treated with a special fluorescent base, which changes it to visible light. The main use of this type of lighting is for such things as pantomime or revue work, where the set, costumes etc. are painted or made of treated material, so that they fluoresce. Special paints have also been developed that will be seen under ultra violet light but be invisible under ordinary light as opposed to ordinary materials which on the other hand will remain dark.

There are a wide range of paints and materials available. Shade cards can be supplied on request.

The light source used for these effects is normally in the form of