



## GENERAL GUIDANCE ON STAGE LIGHTING SAFETY

**S**afety is of paramount importance in the theatre. The standard of equipment and the use to which it's put must be closely controlled.

Many small theatres are equipped with old luminaires and electrical installations which are no longer considered safe, and expert advice should be sought before old electrical equipment is used.

You must also remember that you are dealing with electricity and heat, and that you are frequently working in poor lighting levels where simple untidiness can be a hazard. These notes are not intended as a comprehensive guide to safety - there are many publications and regulations on the subject - but simply a few notes to make you aware of the potential dangers of using professional lighting equipment.

[New guidelines have been issued by the Health and Safety Executive and extracts from their free pamphlet called Electrical Safety for Entertainers are quoted here. We recommend that you have a copy of this pamphlet: details are given at the end of this paper.]

### Plug Wiring

Regularly check the wiring of all plugs. The cable clamps should hold the cable outer sheath firmly; the colour code should be correct, and to the latest standard: brown (live); blue (neutral); green & yellow (earth). The wires should be fully inserted, and the terminals must be tight.

### Always Unplug

Never open a luminaire whilst it is plugged in to a power socket. Even if you switched the circuit off before you climbed the ladder, someone else could have switched it back on in ignorance of what you were doing.

### Using Plugs

Never remove a plug with your fingers near the pins - hold the body of the plug only. If you ever

touch a plug that is hot, isolate the circuit immediately, and call an electrician. If you see a plug where the outer sleeve of the cable is not secured by the cable clamp, report it immediately to someone qualified to make a repair. Never use multiple adaptors in a single socket as this can overload the circuit.

### Using Extension Cables

Never work on an extension lead until you are satisfied that it is isolated from the mains. Never use an extension cable that has a damaged outer sleeve. Support the weight of a hanging extension lead so that there is no strain on the cable clamp.

### Lighting Bars

Check that the lighting bars have at least 3 fixing points, so that the bar can remain in position if one fixing fails.

### Safety Chains

Always fit a safety chain directly between the luminaire and the bar or suspension point. Never rely on just a hook clamp or bolt. Also ensure that accessories such as barndoors, colour frames and colour changers are secure and cannot fall out of the guides.

### Fuses

When a theatre lamp reaches the end of its life, the filament frequently collapses on itself, causing a short circuit which blows the fuse. This is quite normal, but when a fuse fails, never replace it with a larger one: correct the fault and replace the same size fuse. A general rule is that a fuse fails because there is a problem with the circuit and replacing the fuse before the problem is discovered and corrected could cause a fire.

### Lamps

Always wait a few minutes before removing a lamp or gobo holder from a working spotlight. They will be extremely hot for several minutes

after the light has been switched off. Also, there is a small, but real risk of a tungsten halogen lamp exploding when it is very hot. Dispose of old lamps with care. Don't vibrate lamps that are on; the filament sections can touch together and burn out. Never use a higher wattage lamp than is specified for the spotlight.

## **Discharge Lamps**

You may experience discharge lamps in follow-spots. Remember: Discharge lamps produce UV radiation which is contained inside the spotlight by glass lenses and light baffles. Never look directly at a discharge lamp when it is switched on unless you have protective goggles. Always treat discharge lamps with extreme care.

## **Trailing Cables**

Always ensure that extension cables are tidy, and are not left trailing across an entrance on stage. It is particularly easy to trip over a trailing cable in the darkness, and if that cable is connected to a spotlight on a tripod stand, it could cause injury.

## **Dark Exits**

Always remember that it is as important to illuminate backstage as well as on-stage. Actors may have been blinded by the lighting on stage, only to face pitch darkness off stage. It will take time for their eyes to adjust, so if there is a dark exit, illuminate it with a small spotlight, or floodlight, fitted with a blue filter so it won't distract the audience, but will give the actor a safe route off-stage.

## **Rigging**

As tempting as it might seem, never show off how easily you can climb a ladder with a spotlight in one hand, and a colour filter in your mouth! If possible, use a tower which can be locked firmly in place. If you have to rig a spotlight from a ladder, ensure the ladder is secure, and have a friend stand at the foot of it to prevent it slipping. If you inadvertently drop anything whilst rigging shout "HEADS!", as this is a universally understood warning.

## **Fire Precautions**

Never enclose a spotlight in scenery, and always ensure that the spotlight is at least 0.5m from the nearest flammable object. Always locate the position and type of fire extinguisher when working on stage, and find out how to use it in an emergency. Never leave any lighting equipment or cables obstructing a fire exit.

## **Focusing**

When focusing, try to keep the temperature of the luminaire as low as possible. Only switch on the lights you have to focus, as and when you reach them. Set them to a dimmed level which gives enough light to see, but is not so bright that it makes the spotlight impossible to touch. Remember that shutter blades get hot. When fitting a colour frame, barndoors or gobo, take care not to drop it. Somebody may be walking below.

## **Using Stands**

Ensure that stands cannot tip over by checking that they are stable and locked firmly in position, and that the cables are tucked neatly out of the way. If possible, attach a safety chain from the top of the stand to an immovable fixing point.

## **Maintenance**

It is now law in the UK that all electrical equipment is maintained safely. This means that all electrical equipment in use shall receive a regular safety check, and repaired by a qualified person. When you are checking your stage luminaires for electrical safety, take a little time to clean the lenses, and make sure that the shutters operate smoothly. Don't forget that cables, sockets and dimmers must also be regularly checked.

Typical routine checks are:

- Adequate electrical insulation of all live parts.
- Proper earthing of exposed metalwork.
- Adequate fastening of wires.
- Protection of shock during use & re-lamping.
- Adequate endurance with the intended lamp in operation.
- No risk of fire to objects near by.
- Safe operating temperatures for handles.
- Adequate retention of electrical components.
- Safe mechanical structure for all components.
- Safety shields to protect against the risk of broken glass.
- Suspension system to have an adequate factor of safety.
- Markings to show rating and any other safety information.

For your free copy of *Electrical Safety for Entertainers*, contact the Health and Safety Executive at:  
Broad Lane, Sheffield S3 7HQ  
(tel: 0742 752539)  
or: Baynards House, 1 Chepstow Place,  
Westbourne Grove, London W2 4TF

(tel: 0171-221 0870)

This information is an extract from the Strand Lighting "*Step into the Limelight*" Education Resource Pack. Available from Strand Lighting or from dealers.