Basic Spotlight Operation



Spotlight Operation

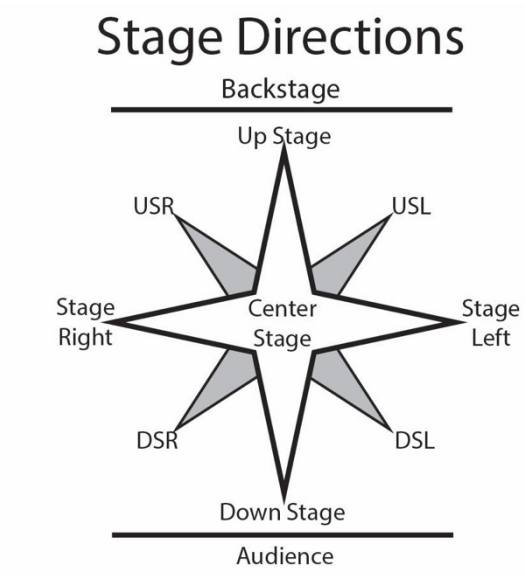
Table of Contents

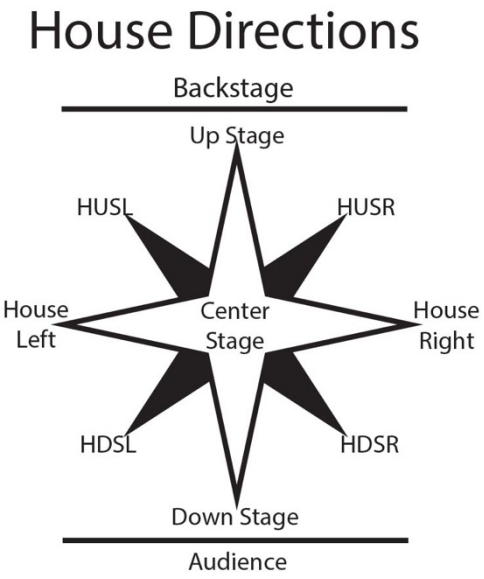
1. Expectations and Warnings _____ Pg 3
2. Types of Spotlights _____ Pg 4
3. Controls and Parts _____ Pg 5
4. Normal operation for Gladiator III _____ Pg 8
5. Handling the Spotlight _____ Pg 8
6. Tools _____ Pg 10
7. Terminology and Commands _____ Pg 11
8. Com Usage and Etiquette _____ Pg 12
9. Pre-Show _____ Pg 13
10. Post Show _____ Pg 14

1. Expectations and Warnings

A. All spotlight operators are expected to be able to:

i. Quickly comprehend stage directions





ii. Know your stage directions, Up and Down stage will always be the same, but LD may call Right & Left from stage position or house position

iii. Remain focused and attentive for the length of a performance

iv. Be able to stay standing for the length of a performance

v. Have full use of both arms

vi. Be able to see the performance area well enough to find their target

vii. All issues with the spot light should be reported to the House Electrician

B. All spotlight operators should know the warning signs:

i. Tags saying unit needs repair or is out of service

ii. Frayed cables

iii. Faulty cable connections

iv. Sound of broken glass or parts moving inside unit

v. A lack of output from the lamp or fan

vi. Never use oil on a lantern of this kind.

If the lamp burns out do not open up the housing body to investigate or attempt to replace yourself. The bulb is under pressure and potentially could explode. It should only be examined by a qualified person wearing a face shield

2. Types of Spotlights

A. Lime

i. As mentioned earlier, the first followspots used limelight - this is produced by a burning jet of oxygen and hydrogen impinging on a rotatable cylinder of lime, which produces an intense light.

B. Carbon Arc

i. The first Super Trouper followspots, introduced in 1956, used this light source. Many movie projectors of that period, and high power film lighting also used carbon arcs (known as Arc Lights). The intense light is produced from an electrical discharge between two carbon rods in free air. The carbon rods are moved close together to start ('strike') the flow of electrical current between them. As the rods are moved apart slightly a bright light is produced. As the carbon rods are used up by this process, they must be regularly adjusted to maintain the arc. This light source has now been replaced by the alternatives below.

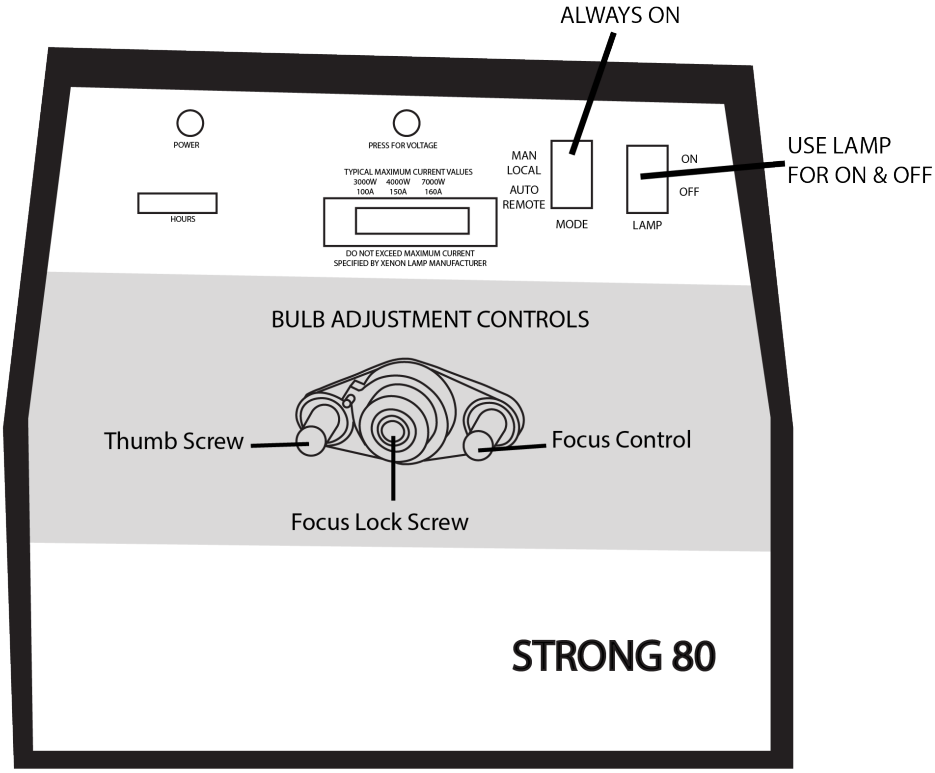
C. Xenon

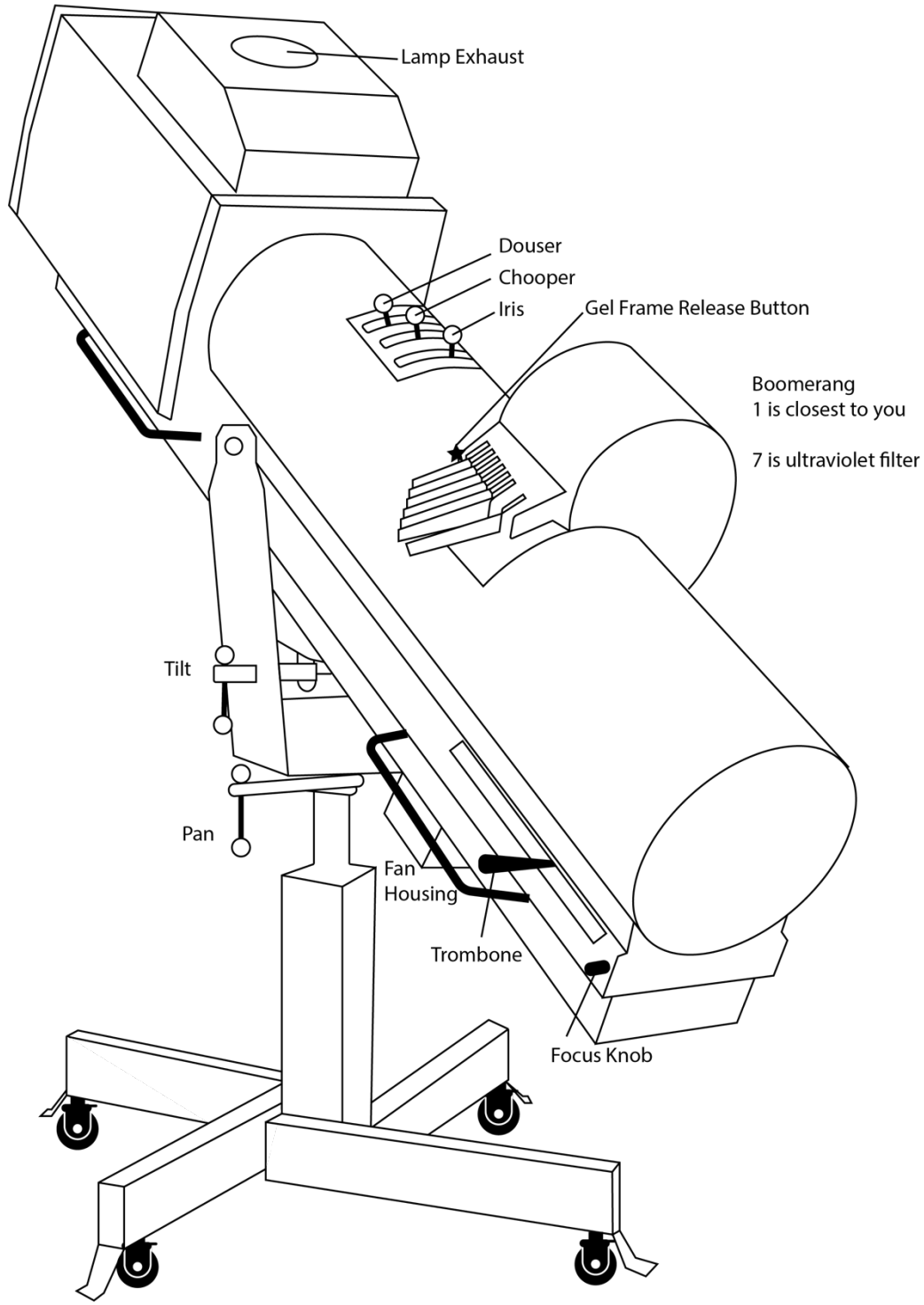
i. Two electrodes in a glass bubble filled with xenon gas.

D. CSI

E. HMI

3. Controls and Parts





Created by Ben Knudstrup and Jessica Westra

A. **Power switch** – provides power to the light, located on Ballast which is the power supply

B. **Lamp ON/OFF switch** – fires or strikes the light

C. **Manual / Auto switch** (Operator's generally don't need to worry about this switch) - In manual mode the operator must turn the Lamp switch to ON in order for light to fire, In Auto mode the light will automatically come on when the light is powered up

D. **Douser / Dowser** – controls the intensity

E. **Iris** – adjusts the diameter

F. **Trombone** – further adjusts the light beam diameter, typically used sparingly for large group shots or lighting the flag

G. **Chopper** – shutters the top and bottom of the light beam, may also be used as a douser

H. **Focus knob** – adjusts focus, hard/soft edge of the light beam

I. **Boomerang** – Gel Frame holder

    i. Frames are numbered #1-6, Typically #1 is located closer to the back of the spotlight with #6 located closer to the front

    ii. Each frame holder has a corresponding lever which can be raised up to lock the frame in place

    iii. There is a release button which when pushed will release any and all of the frames that are currently in use – WATCH YOUR FINGERS

J. **Pan and Tilt Knobs** – adjusts the swivel action of the light, Up to Down & Side to Side, try to find a happy medium – not too loose or too tight

4. **Normal operation for Gladiator III** (type of spotlight at Van Andel Arena)

   A. Normal operation when the switch in the main AC supply line to the xenon power supply is in the ON position, and the 30 A. circuit breaker on the switching power supply is ON, the POWER lights on the xenon power supply and the lamphouse instrument panel will glow. The lamphouse blowers will start. The blowers in the power supply will operate.

   B. Operation of the lamphouse blowers will close the (2) air flow interlock switches, and if the lamphouse door is closed and correctly secured, the control circuit to the LAMP switch will be completed.

   C. The mode switch, located on the lamphouse instrument panel, should be in the "MAN." (Manual) position.

   D. When the lamp switch is placed in the ON position, the AC control circuit (5 & 6) in the lamphouse will energize the power supply circuitry providing DC current to the igniter and bulb.

   E. There will be a distinctly audible high voltage arc ping at the igniter arc gap and across the bulb electrodes. The bulb should ignite immediately after one or two of these high voltage pulses, and the lamp current will adjust to the output setting of the xenon power supply. Multiple ignition pulses prior to bulb ignition normally indicate a low DC output setting. See xenon power supply manual. A "warm" or aged xenon bulb might also require multiple strikes.

   F. If the Xenon Bulb will not ignite contact the Head Electrician.

5. **Handling the Spotlight**

   A. Generally, the best position for the operator to stand is near the center of the spotlight on the right side. The angle of tilt, the size of the porthole, and the layout of the spotlight position may dictate another location.

   B. Each operator will, after a few minutes of operation, generally develop his own system and position for most convenient operation.

   C. The horizontal swing and vertical tilt are individually adjustable to give the desired degree of friction to suit the operator. The locking clamps are located on the right side of the yoke assembly.

   D. The ease with which the spot size control handle ("trombone") can be operated may be adjusted by means of the nylon friction brake screw in the outrigger of the large lens carriage casting. To access this adjustment, open the color boomerang and remove the gel frames. Slide the large lens carriage to the extreme rear position. Reach through the boomerang housing and loosen the nylon friction screw locknut. Turn the nylon friction screw clockwise to increase drag, or counterclockwise to relieve. Tighten the locknut after the desired adjustment is reached.

E. The iris control is the front lever which projects through the top of the optical system housing. When this lever is to the right (as viewed from the rear of the unit), the largest aperture is provided. Smaller apertures are obtained as the lever is moved to the left.

F. The spot size control handle is located on the right hand side of the optical system just above the base rail. A variation of spot sizes from full flood to small spot can be obtained by moving the spot size control handle from one extreme to the other. Beam intensity is increased by this optical system when reducing from flood to spot, and maximum intensity is reached when the spot size control handle is in the extreme forward position.

G. The maximum flood spot is obtained with the iris control lever to the right (toward the operating side) for the largest aperture and with the spot size control handle moved as far to the rear as possible.

H. Smaller sized spots are projected as the spot size control handle is moved forward. Most of the spot sizes needed will be produced with the iris in its maximum open position.

I. For a "Head Spot," or any spot smaller than can be obtained with the spot size control handle in its extreme forward position, shift the iris control lever to the right (toward operating side) for a smaller aperture. The iris control lever should always be returned to its extreme left position before the spot size control handle is again moved to obtain larger spots.

J. Masking shutter (chopper) lever is the middle lever projecting through the top of the optical system housing. The masking shutter blades are operated by this lever to shape the projected spot to a rectangle, strip spot, or dousing.

K. The disengaged position of the masking shutter lever is to the extreme left (away operating side) and varying degrees of masking to complete cutoff are obtained by moving the lever to the right (toward the operating side).

L. The angle of the masking shutter blades can be adjusted to compensate for the horizontal projection angle. Remove the color boomerang and optical system housing, and loosen the screws holding each of the masking shutter blades enough to allow adjustments. Ignite the bulb and adjust the angle of the bottom blade by tapping with a screwdriver so its projected edge lies parallel to the footlights. Tighten the screw. Operate the masking shutter lever to close the blades. Adjust the upper blade to close in line with the bottom blade and tighten the screw.

M. Fadeout mechanism and douser control is the rear lever projecting through the top of the optical system cover. This lever controls the intensity of light from complete fadeout when the lever is to the left, to full intensity when the lever is to the right.

N. The spot focusing control knob is located on the operating side of the optical system at the forward end above the base rail. This control is used to adjust the optical system for the length of throw. When making an adjustment, rotate the spot focusing control knob until the sharpest edge is obtained on the projected spot.

O. The color boomerang is equipped with six color holders and an ultraviolet filter. Additional filter holders can be supplied by an authorized Strong International Dealer.

i. To operate individual color filters, lower the desired filter selector lever. A rocker catch located in the color disc housing holds the filter in position.

ii. To release color, push the filter release button or engage another color, thus releasing the previous color automatically.

iii. To replace a filter holder, open the hinged top of the color disc housing and lift out the desired filter holder.

iv. High Temperature Filters (RoscoLux® or equivalent) cut to nine inch diameter are required, and are secured in the filter holders with paper fasteners.

v. Note: When Placing Color Filters in the boomerang, the less dense colors (pink, amber) should be placed in the holders toward the rear of the boomerang (toward arc), and those of greater density (red, green) should be placed in the holders toward the front of the boomerang (away from the arc).

vi. Color Temperature Reduction Filters, required for use with television and videotape, are available from theatrical supply dealers.

6. Tools

A. Plot sheet should include the following:

i. **Lighting Cue** [the cue that the followspot should come on / turn off with]
ii. **Cue Description** [e.g. ‘Song Starts’ or ‘As the dance ends’]
iii. **Color Number** [the color frames are numbered for ease of use]
iv. **Size** [see 5. K]
v. **Level** [the brightness / intensity of the dimmer]
vi. **Pickup** [name of character]
vii. **Notes** [reminder e.g. ‘As she runs onstage’ or ‘As he turns downstage on final beat of song’]

B. Telrad, Spot Dot or other sight aide – used to accurately line up the light for pickups and tracking
   i. If needed have a means to attach the sight to the light such as a strap

C. Gloves, Long sleeves or towel – help protect from the heat, lights can get very hot

D. Hanging Weights – used to adjust the balance of the light, be aware of the noise factor - might not be advisable on a Broadway

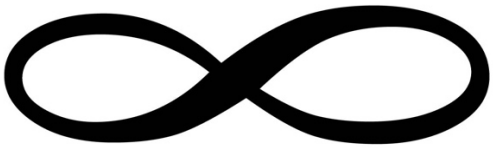
E. Water & Snacks – you may be operating the light for 3 hours or more without a break

7. Terminology and Commands
Commands will be whatever the Lighting Director (LD) prefers but in general:

A. ALWAYS wait for the GO – Do not perform cues until LD says GO

   i. LDs will usually give a standby cue and then repeat the same cue followed by a "GO"
   ii. Example: "Spot #1 standby to pickup the lead singer at center stage on a 3 second fade." "Spot #1 on the singer, GO"

B. Ballyhoo – make a large figure 8 on its side with the light, be careful not to light up the control booth or any other areas that shouldn't be lit



C. Black Out / Bump Out – Decrease the intensity to 0% as fast as possible

D. Bump On/Up – Increase intensity to desired percentage as fast as possible

E. Fade – Gradually increase or decrease the intensity at a steady rate, length and percentage will depend on the cue

F. Ghosting – bringing douser up just enough so that operator can see the light beam, used so operator can see where their light will land without drawing too much attention, might not be appropriate – check with the LD before using

G. Home position – The stage location where you will spend a majority of your time aiming the light
   i. When working a Griffins game know area locations: North / South tunnel, Home / Away benches, Seating section numbers, Hunting Horn etc.

H. Maintain Try to keep track of your person even when your spot is not being used, the LD may get sidetracked or make a mistake and have to call you in on a second's notice

I. Mistakes Happen. If you make a mistake and pickup the wrong person or area of the stage, it is usually best to fade out and then fade back in on the correct location as opposed to quickly swinging the light over

J. Open up – Increase iris size

K. Size Shots:

i. **Head** – Top of head to top of shoulders

ii. **Half Body** – Head to waist

iii. **Three Quarter** – Head to knees

iv. **Full Body** – Head to toe

v. **Group** – multiple people, Full Body

L. Switch / Swap – Trade focal point with another spotlight

i. Example: You (Spot #1) are lighting the guitar player and Spot #2 is lighting the bass player. LD gives the cue to switch – you now light the bass player and Spot #2 lights the guitar player

M. Tighten up – Decrease iris size

8. Com Usage and Etiquette

A. Familiarize yourself with the com controls, do a com check and adjust volume prior to the start of the performance

B. Give warning before removing or connecting any com cables to protect the ears of other com users – not really necessary at the end of a performance when packing up com

C. Be respectful of others and the performance - resolve personal issues after the performance or keep it to yourself,

D. Keep it short. Try not to talk over (step on) someone else who is talking.

E. Casual conversation is ok but be mindful of the time and place – be able to "read the room" and don't get in the way of cue calling

F. If you have to use the restroom or get off com for a period of time make sure to notify the LD and get permission, when you return let the LD know that you are back

9. Pre-Show

A. Check in with the Head Electrician and/or LD to receive instructions

B. Use the restroom if needed, you may not have another chance for several hours
- i. Along those same lines, don't drink a lot of fluids before the performance

C. Leave yourself enough time to get set up at the spotlight –
- i. set your sight
- ii. familiarize yourself with the controls – they will be in different locations depending on the make and model you are using,
- iii. make adjustments
- iv. check boomerang
- v. check com
- vi. get something to sit on etc.

D. Alert the Head Electrician if:
- i. There are issues with the spot
- ii. Lens needs cleaning
- iii. Fans are not running
- iv. Lamp is burned out

If the lamp burns out do not open up the housing body to investigate or attempt to replace yourself. The bulb is under pressure and potentially could explode. It should only be examined by a qualified person wearing a face shield

Post Show

A. 10 Minute Cool down

i. Once you are sure that your spot is no longer needed turn off the lamp but keep the power on so that the fan can run and cool down the light, after 10 minutes turn of the power

B. The LD will usually give instructions on what to do with gels and com and where to return them if they are being struck

C. Pull Gel – RELEASE ALL OF THE GEL FRAMES and then remove them from the Boomerang

D. Take care of the Com

i. If Com is staying at the light, then hang it conveniently on the light

ii. If it needs to be packed up make sure to include headset, com pack and all corresponding cables neatly coiled up

E. Clean up after yourself – make sure to pack up everything, throw away trash, return any stools or chairs you may have moved

F. If you discovered any issues with the spot light be sure to let the House Electrician know so that they can address them

Historical Trivia:

In the USA a followspot is known simply as a spotlight, operated by a spotlight operator. A more historic term for followspots is 'limes', operated by a 'lime operator'. The first followpots used limelight as the light source. The phrase 'being in the limelight' refers to being in a followspot beam.