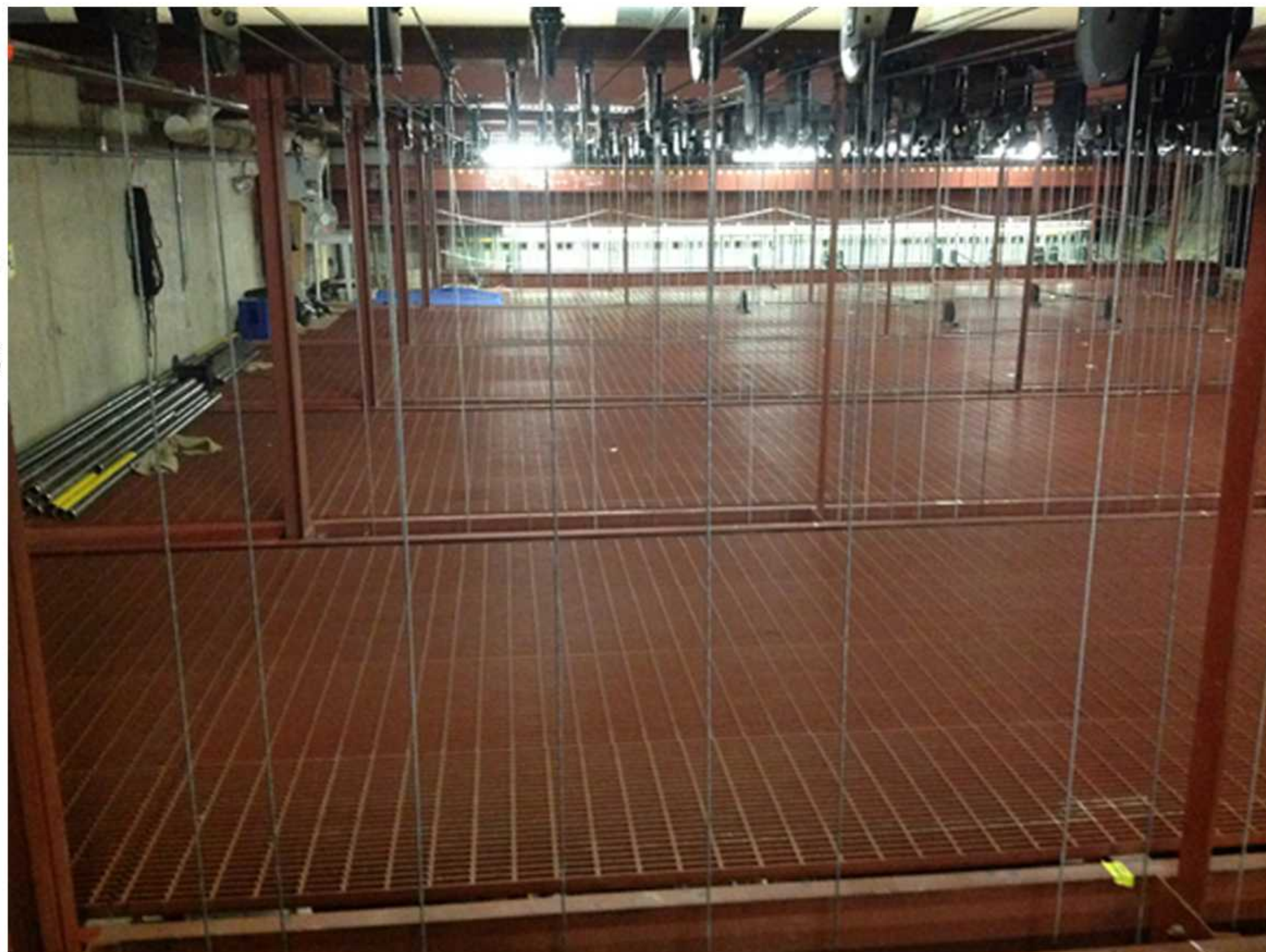




# **Contents**

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<b>The Rail</b>	<b>Pg 3</b>
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<b>Electrics-Power</b>	<b>Pg 10</b>
<b>Electrics-Circuits</b>	<b>Pg 11</b>
<b>Rigging</b>	<b>Pgs 12-14</b>

The rail is a counter weight system with 76 possible line sets, of these 5 are non-working for the symphony shells, unless the shells are removed. The 5 electrics can be used as working line sets if the cable picks are adjusted. With the electrics there are 51 working line sets, 6" apart except where line sets are missing. Those spots have 12" between.



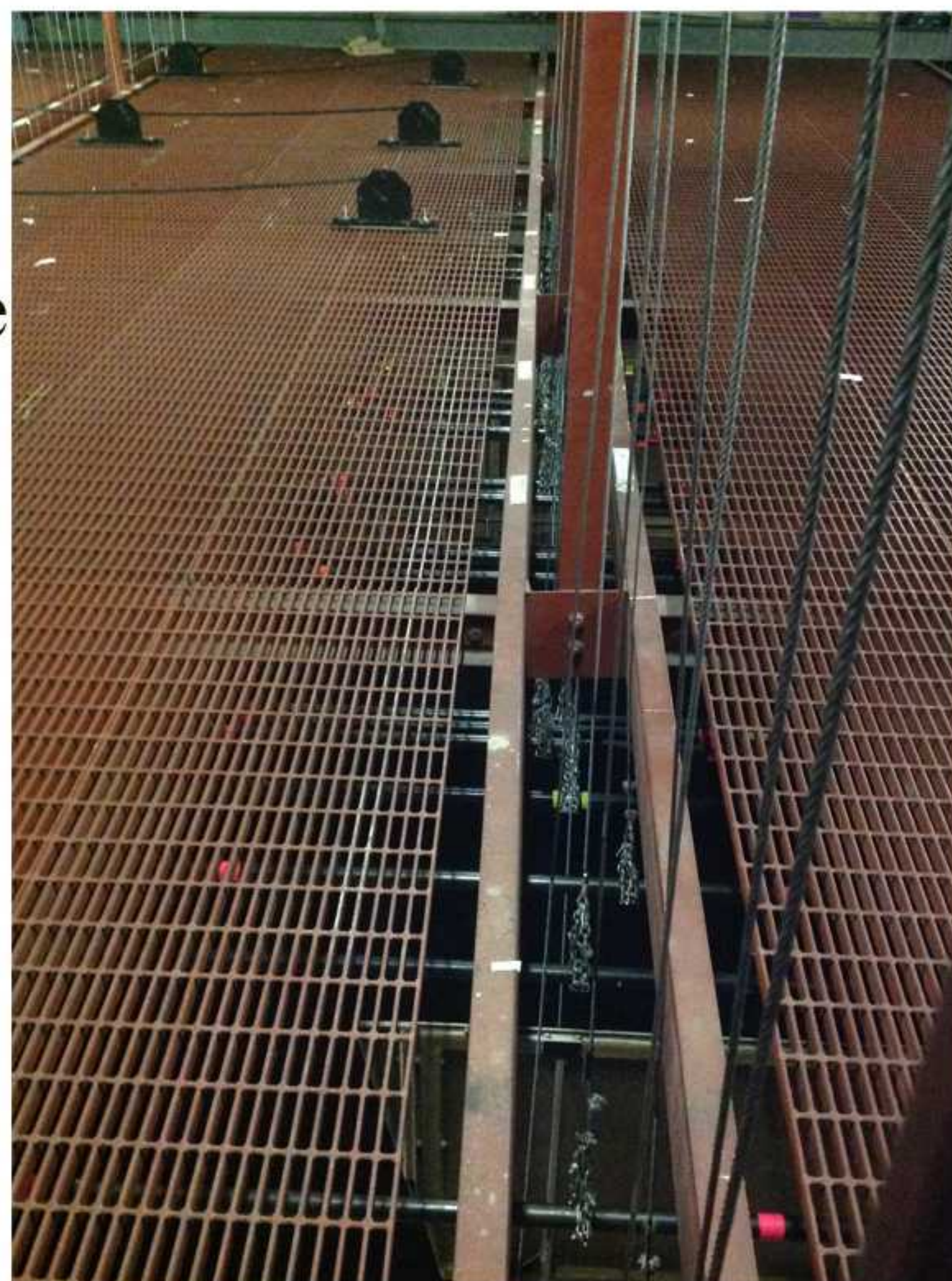
The grid is 65' from the deck, 106' S.L. to S.R., 47' upstage to downstage. It has 6 wells for line sets 10'2" apart and 10" wide. The floor of the grid is subway grate. There are wells S.L. and S.R. for cable picks, the S.R. well has cables for the 5 house electrics run through it. A 4'x 4' trap door is located upstage right.



Far S.L. on the grid are the head blocks for the fly rail. The line sets run from the top of the arbor through the head blocks across the ceiling through the loft blocks and down the wells to the batons which hang below the grid.



The head blocks sit above the arbors. Each arbor has 6 lines of the line set attached to the top. Coming through the head block also has the rope that ties to the top of the arbor running through the center of the block down through the rail locks, idler block and back up to the bottom of the arbor.



The wells run up and down stage. They're 10" wide and 10'2" apart. There are 6 wells that line sets run through with loft blocks directly above each. These are aligned for each line set. **(never kick the blocks)**

The loft blocks run stage left to right starting with all 6 lines. As each line goes through a well at each of the loft blocks, the number of rollers reduce by one from 6 S.L. to 1 S.R. across the grid.



Shivs for cable pics

These pics can be moved up or down stage to align with batons. (except house electric pics)

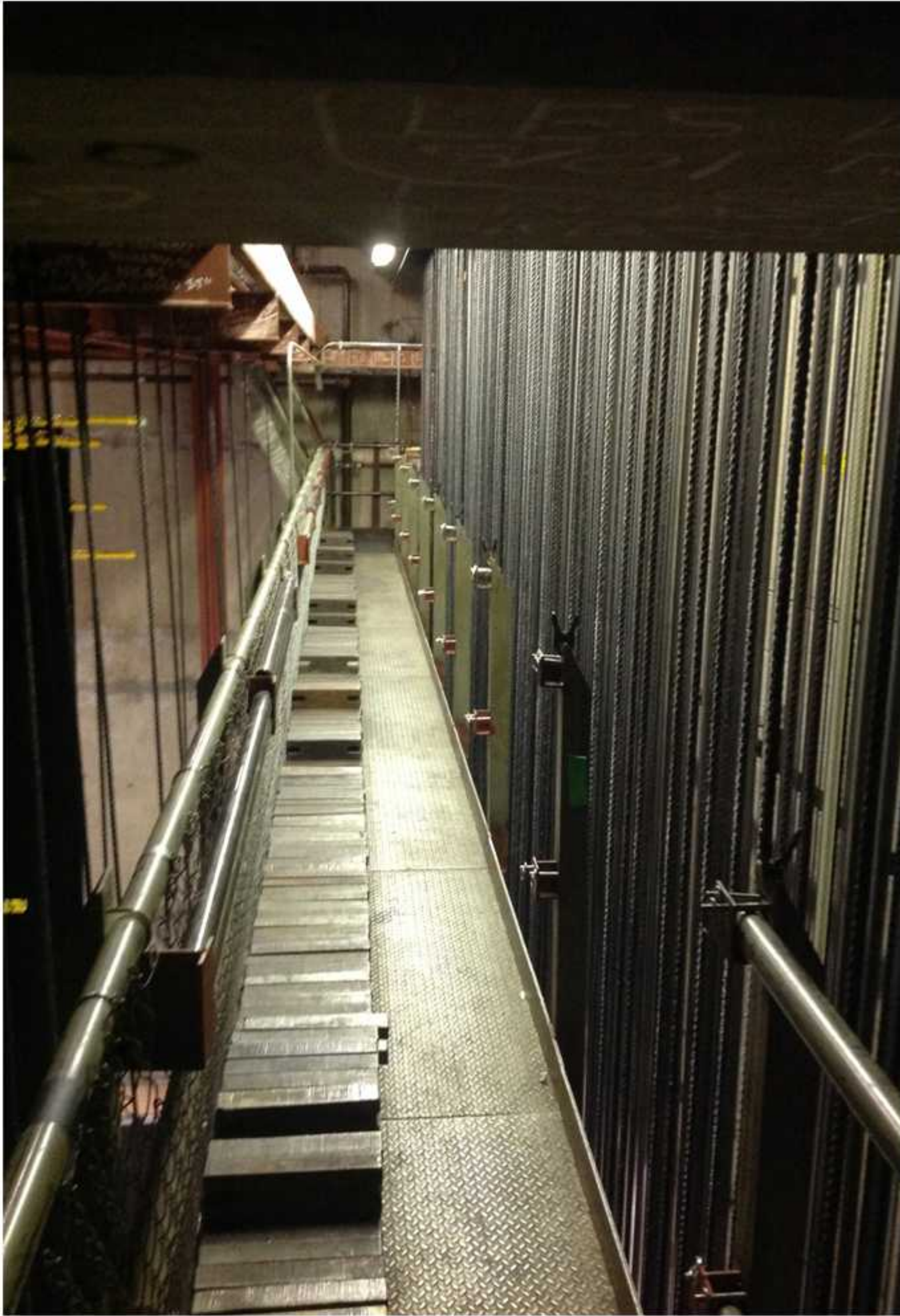
When rigging you can basket the well or rig from high steel. Rigging through subway grate always go well to well with the pipe.



Depending on the shows needs, line sets can be diverted. The diverters can face either up or down stage, and attach to grate with J-bolts. **(remember we never kick blocks, we always use diverters)**



## The weight floor

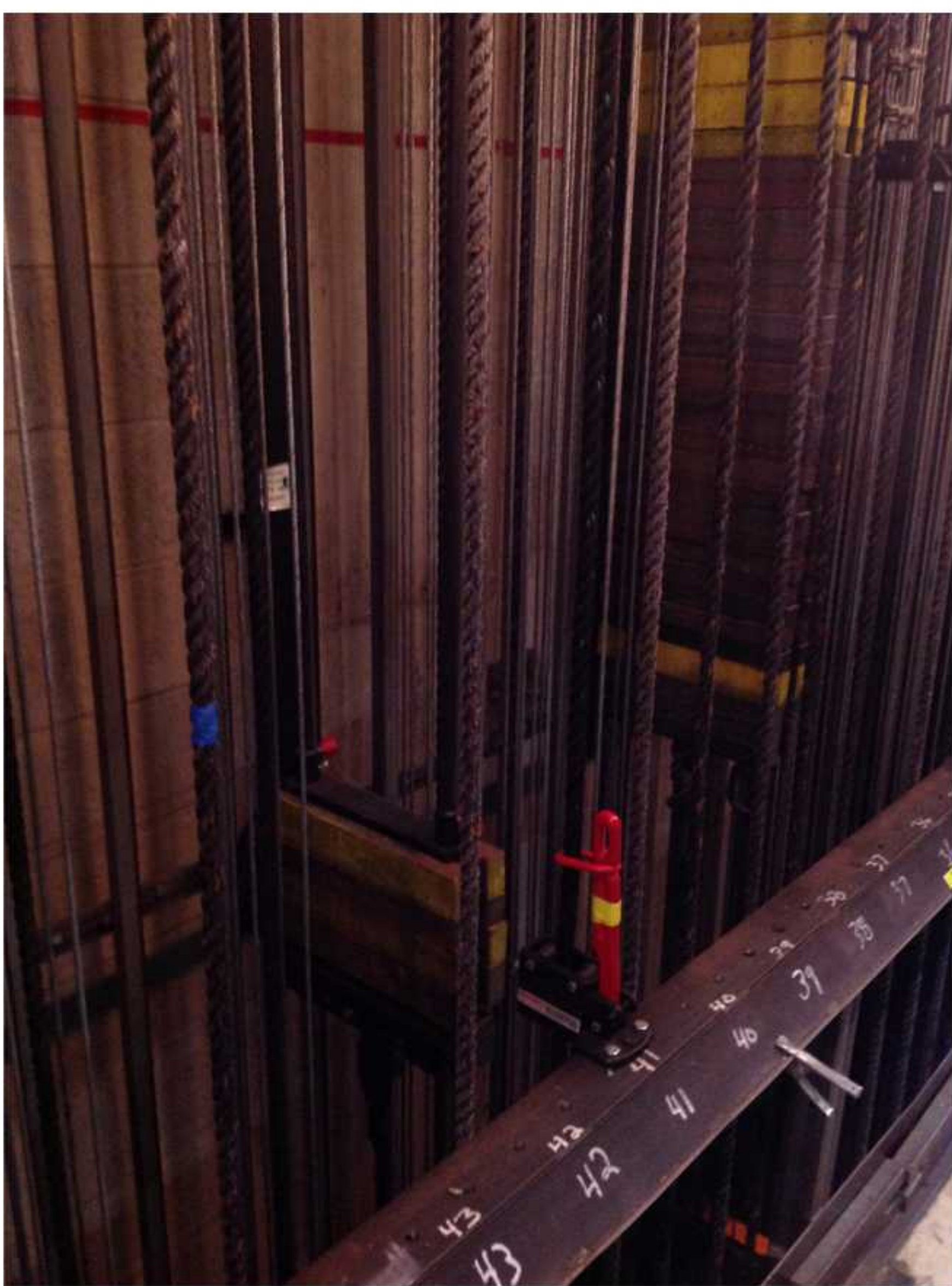


The weight floor has 30 and 15 lb. bricks with a total of ( 13,000 + ). arbor is loaded by either sitting with your legs in the well, or you can climb into the well and stand on T track on the back wall, which ever is more comfortable for you. You should load arbor with 30 lb bricks until close adding a 15 lb brick when needed to get within 5 or 10 lbs.



These are gridded pipes. Notice orchestra ceiling pieces and pick lines coming through the grid.

## An arbor



The arbors have a weight capacity of 1200 lbs. a few are larger about 1500 lbs. Use spreader plates every 300 lbs. with a lock plate on top. If more weight is needed than the arbor can hold, you can marry 2 arbors together with a marrying plate or by chaining 2 batons together.

## The pin rail



The pin rail Has pick lines and 32 circuits. It is also used to add weight to arbors if necessary. When needed the locks can be moved to the pin rail, and the fly rail can be run from there.

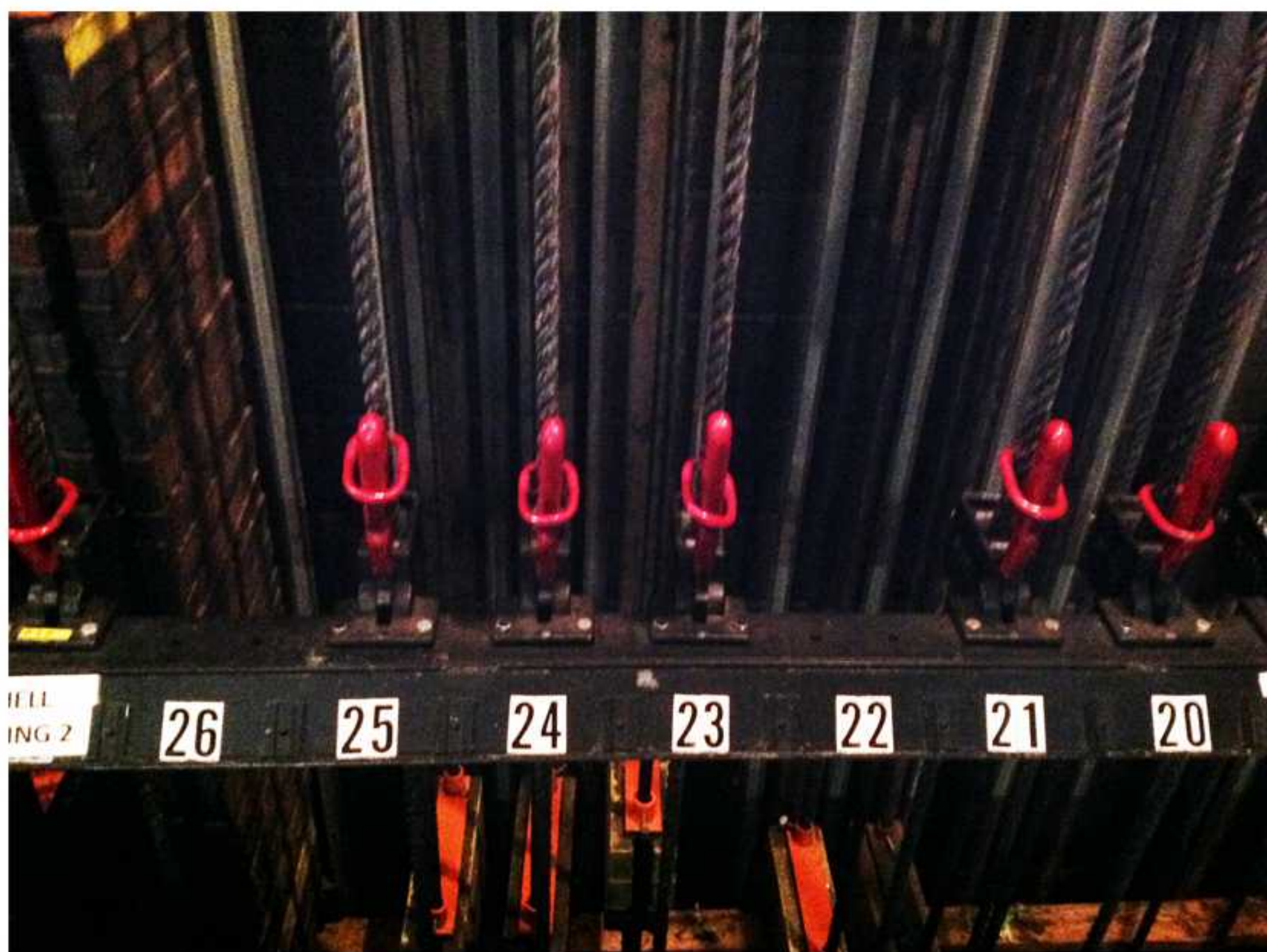
**Important: When running the fly rail from the pin rail, never use the buddy lock from there, always have someone use buddy lock on the deck. That way the arbor will not interfere with the control of the buddy.**

A properly tied off cable pick



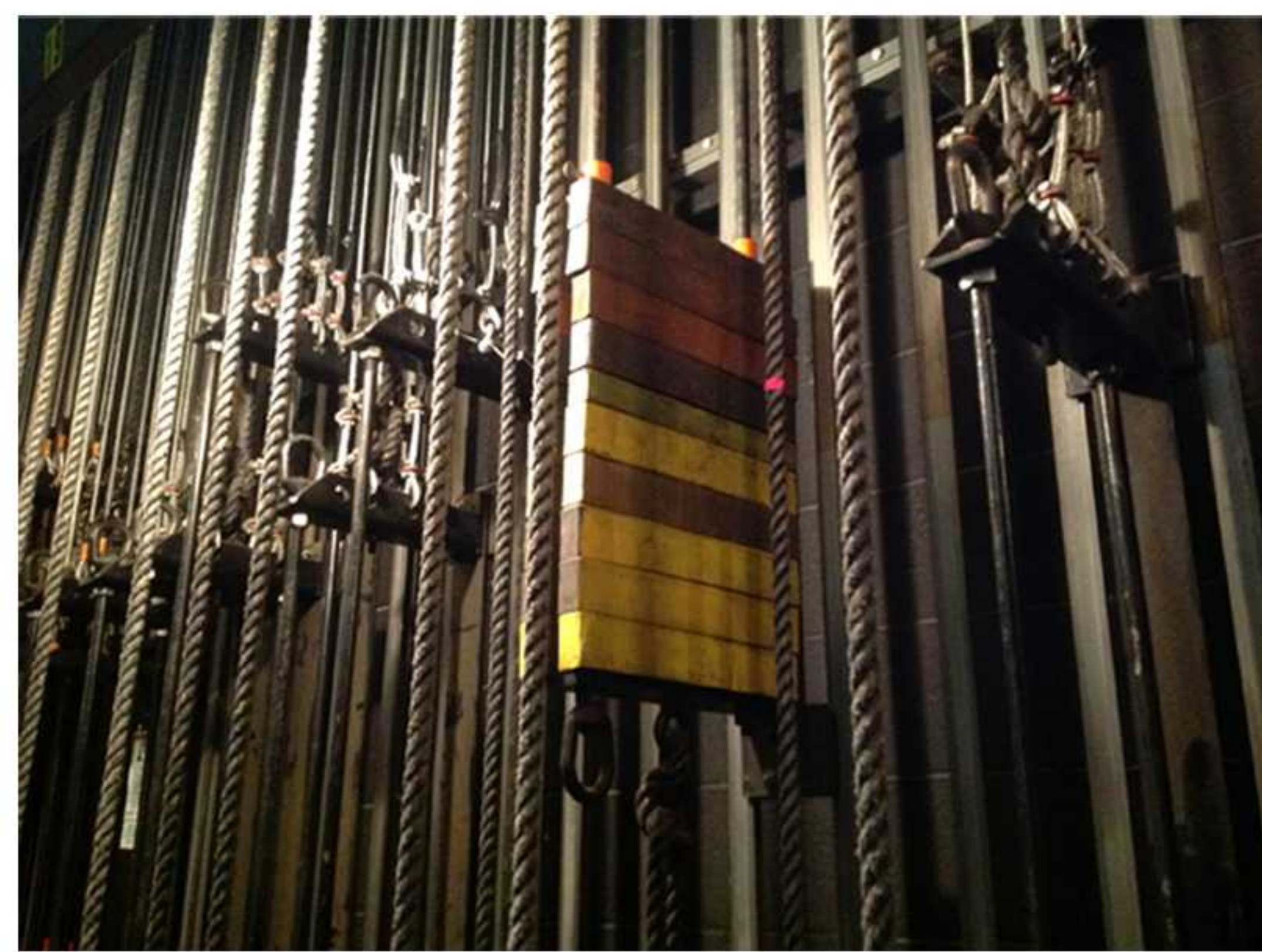
House circuits on pin rail  
4 boxes on each side S.L. & S.R.  
8 circuits per box





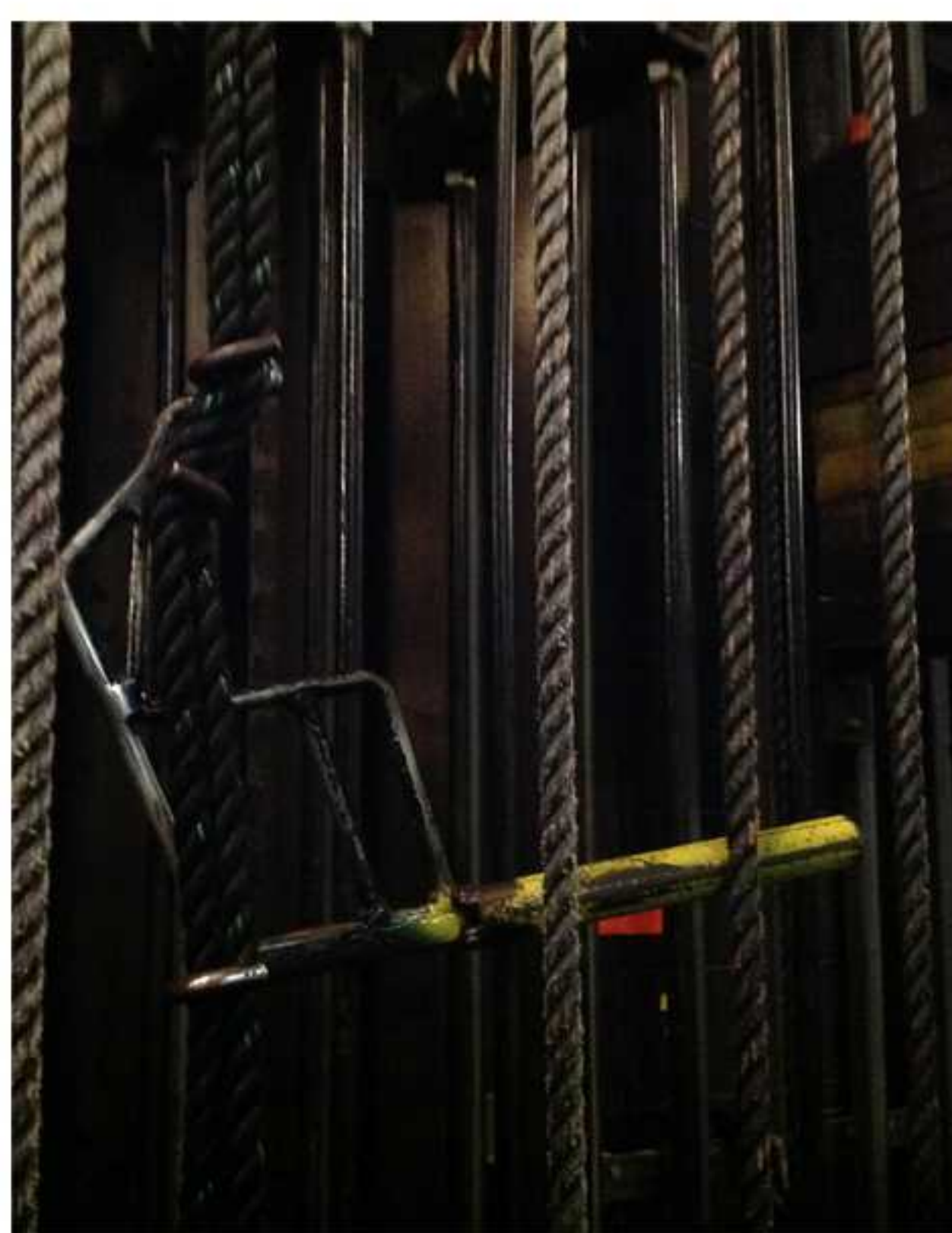
Rail locks

These are the locks for the fly system. They hold the arbor and pipe in place once it (the arbor) has been loaded. When loading use a buddy lock for any weight over 200 lbs. The fly rail is a counter weight system, that means,



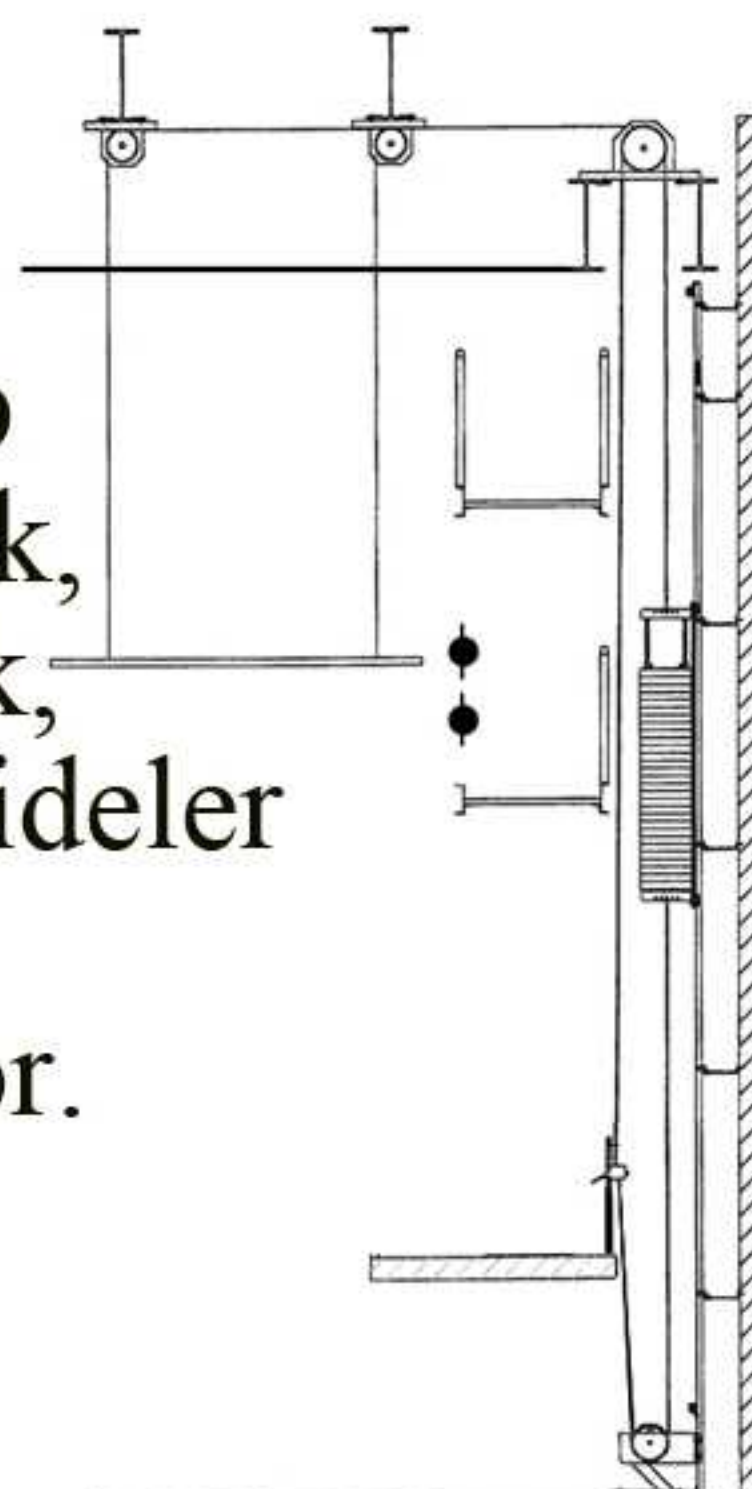
Arbor

whatever the piece being hung on the pipe weighs, that weight needs to be added to the arbor. Use the buddy lock till the piece is in the air and balanced with the arbor.



Buddy Lock

Below (in the well) are the idler blocks. Each rope runs from the top of the arbor up through the head block, down through the lock, down and around the idler block, and back up to the bottom of the arbor.



Idler blocks

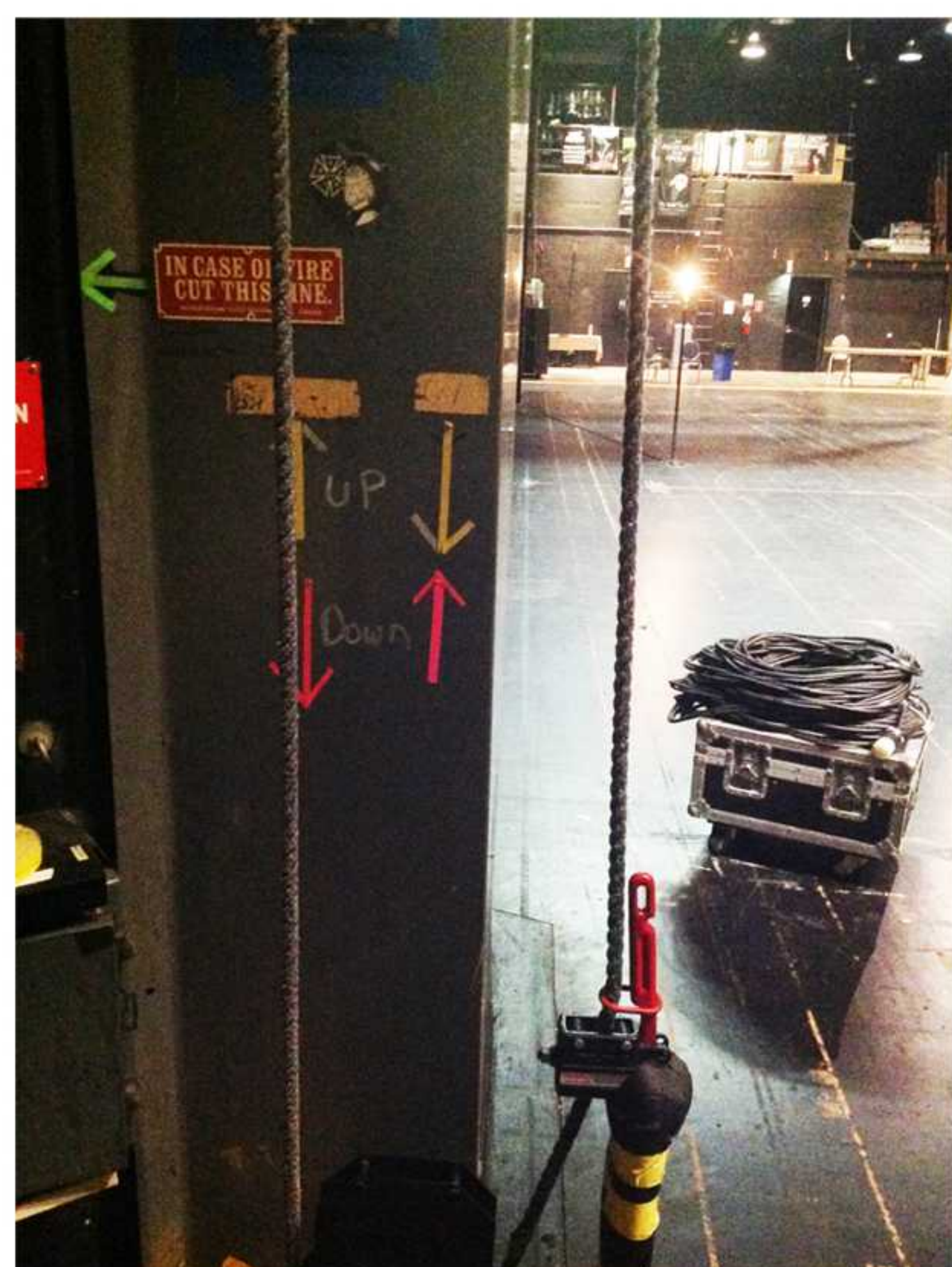


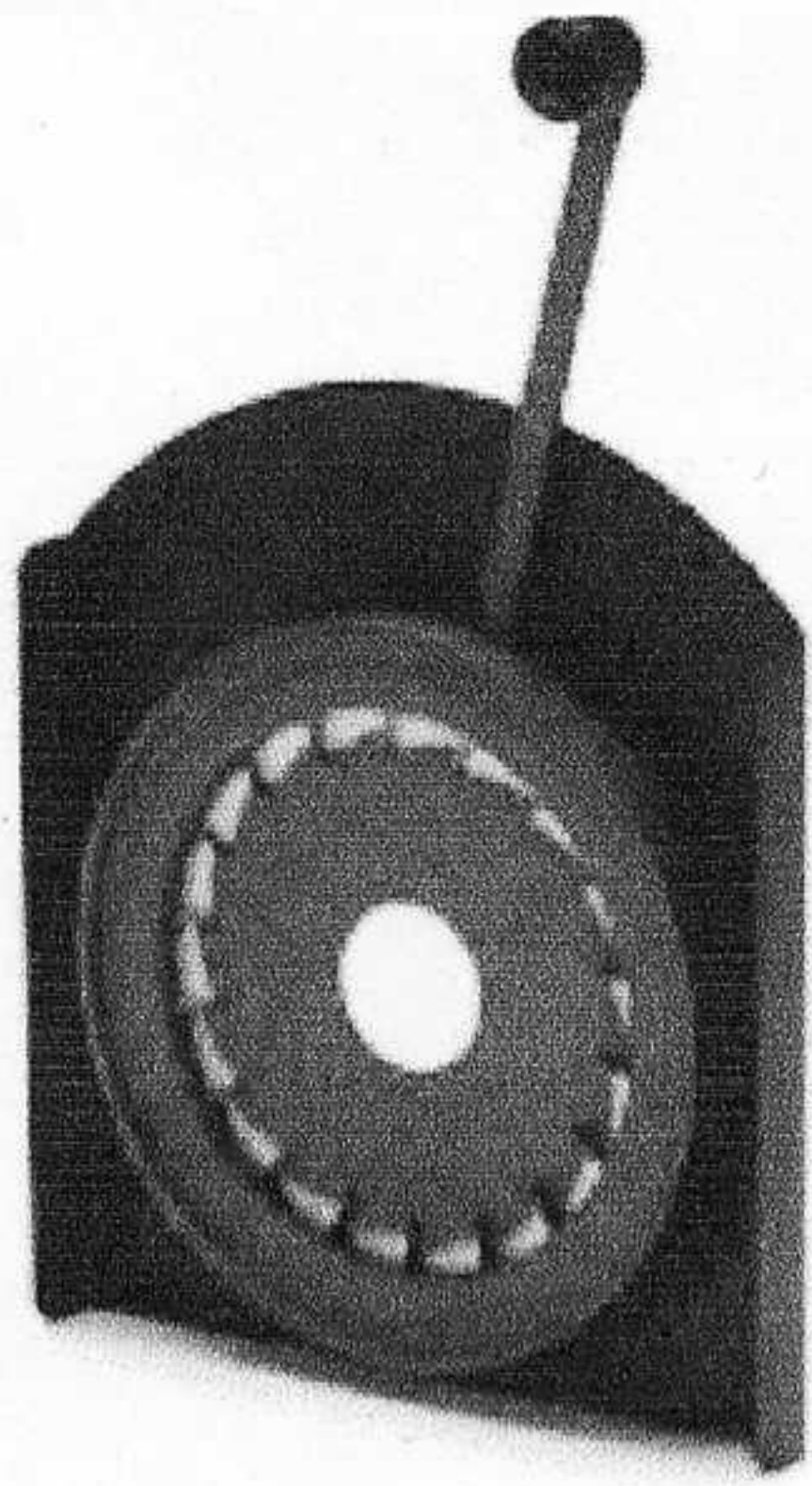
The 1st electric is the only motorized line set



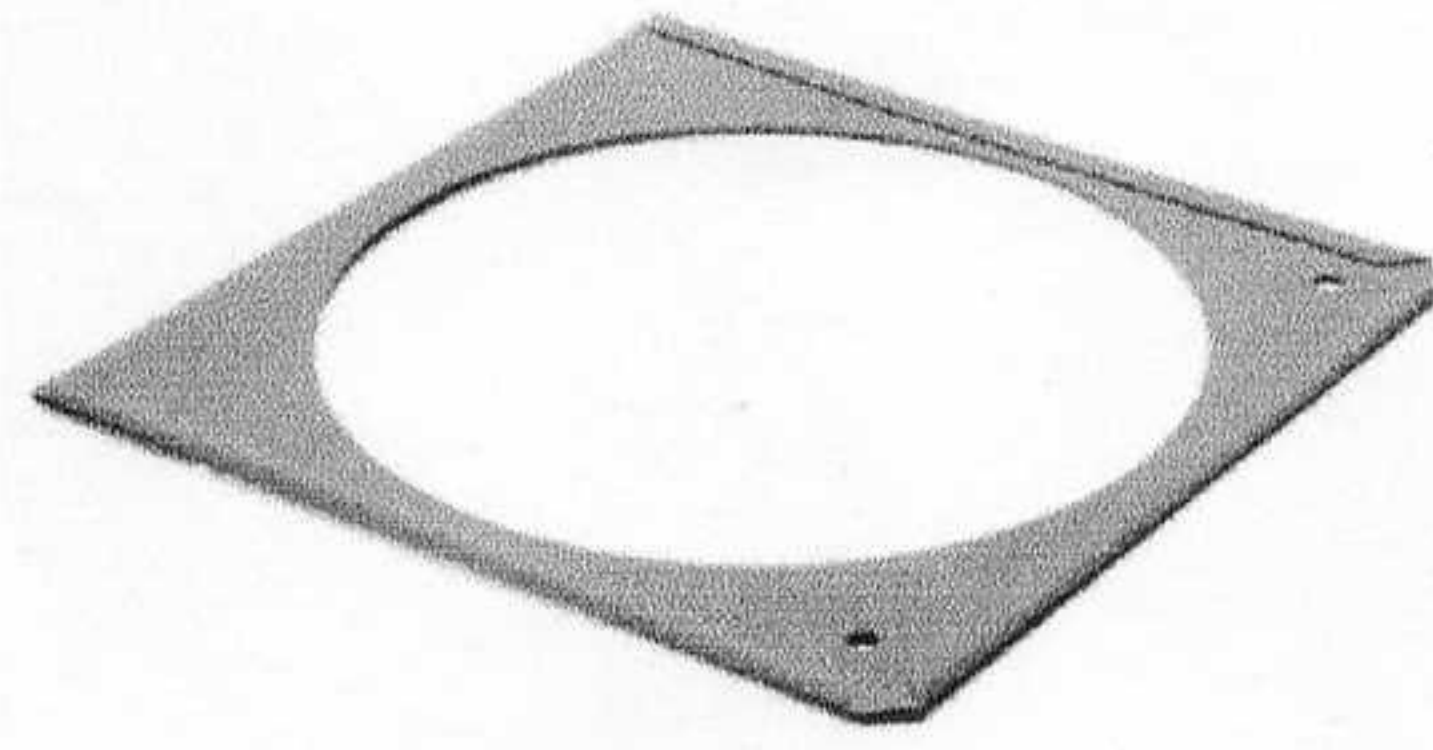
The main curtain or main rag is, like all other line sets (or batons), in that they all are guillotine type curtains (fly in or out). The main curtain requires 2 men to operate. One man on the front line and one man on the back line.

The important thing to remember when on the rail is never lose control of the piece, fly it in and out as fast as you can safely. If you feel the piece getting away slow down and get control. All shows will sacrifice speed for safety, every time.



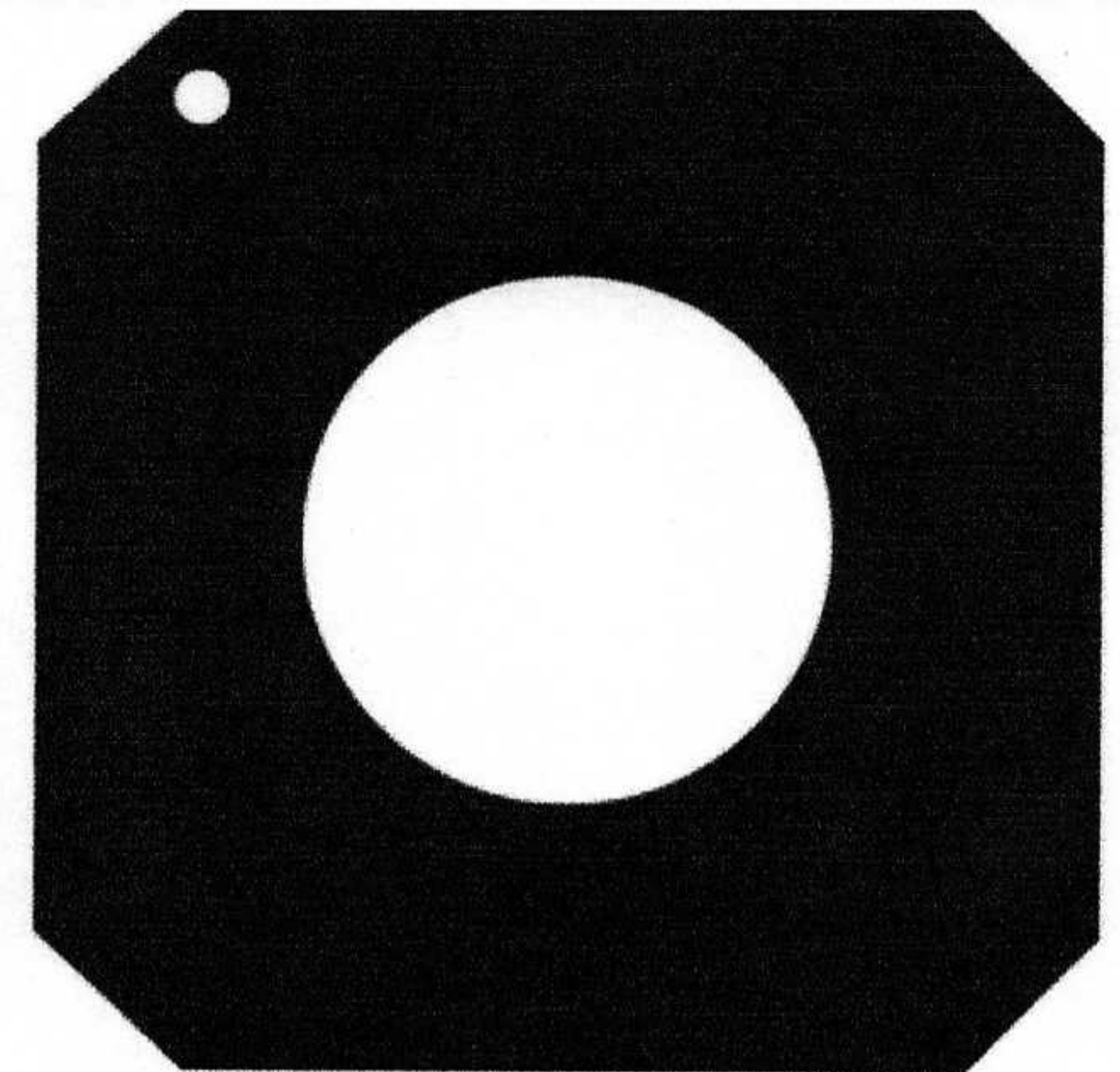


Iris

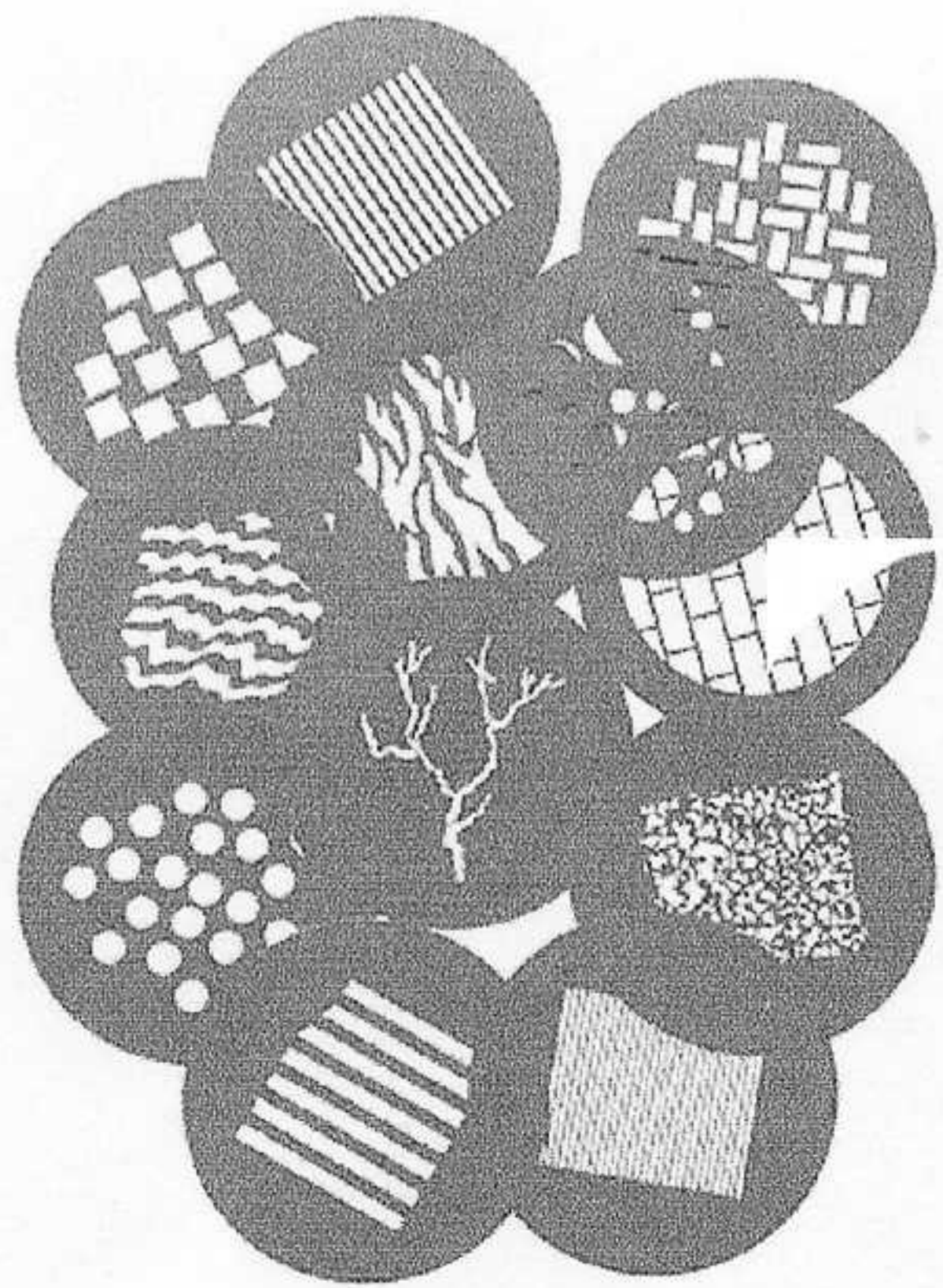


gel frame

An iris can be inserted into the body of the source four to control the diameter of the beam.



A doughnut, or donut, is a thin metal or cardboard panel, similar in shape and appearance to a color frame, but with a small diameter hole intended to reduce off-axis rays of light being projected from a fixture.<sup>[2]</sup> This increases sharpness of the light by reducing the effect of imperfect lenses. Doughnuts are designed to fit into the color frame holder directly outside the fixture, immediately in front of lens assembly. Because they are typically thin, doughnuts can often be placed in the same slot as a gel frame. Doughnuts are typically used in fixtures in order to sharpen the beam when a template is in place.



gobos



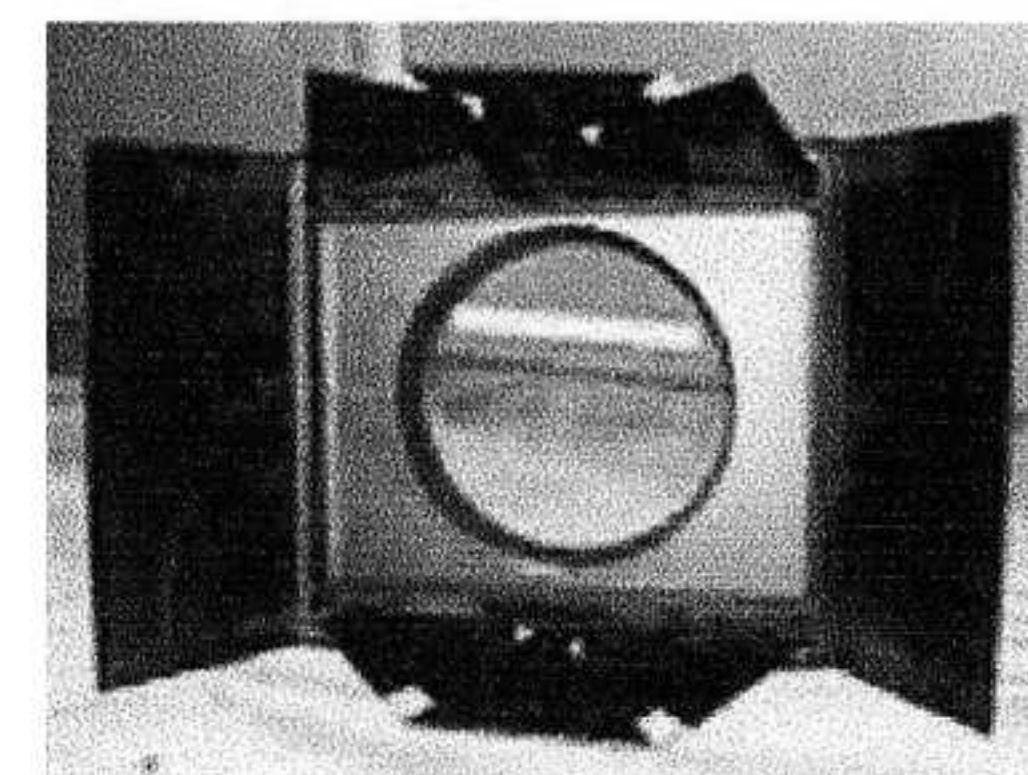
gobo holder

Gobos (GOes Before Optics) should be inserted upside down and backwards into the holder.



Top hat

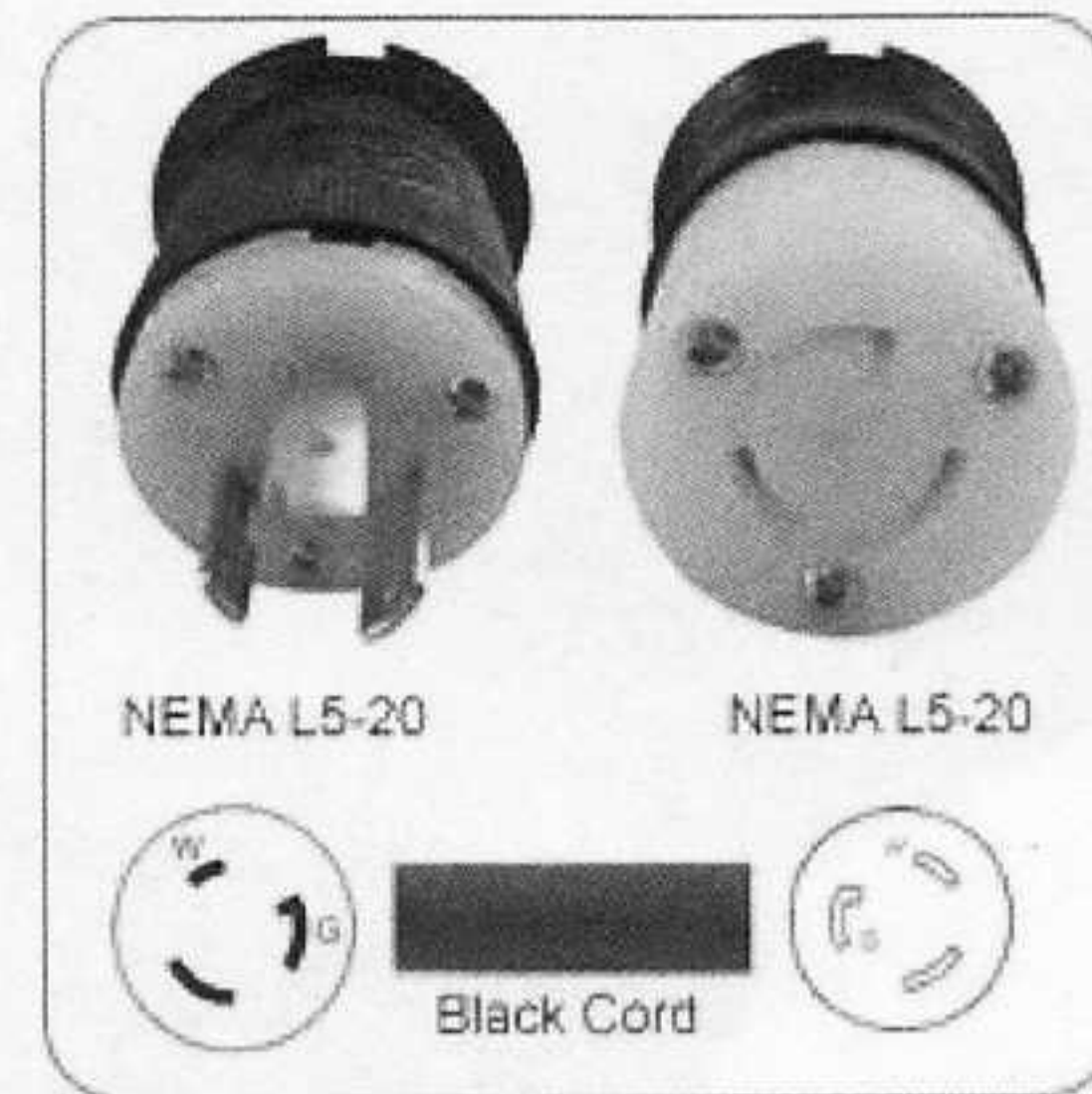
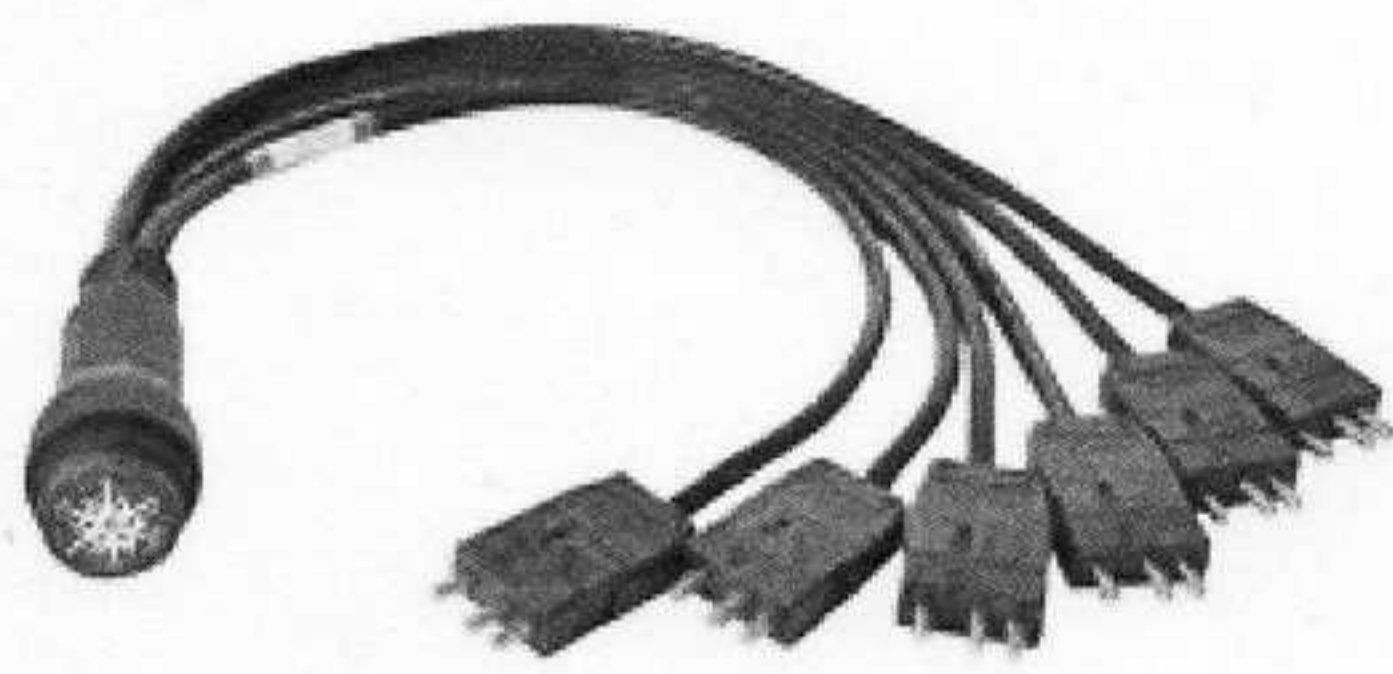
Keeps ambient light off scenery that is close.



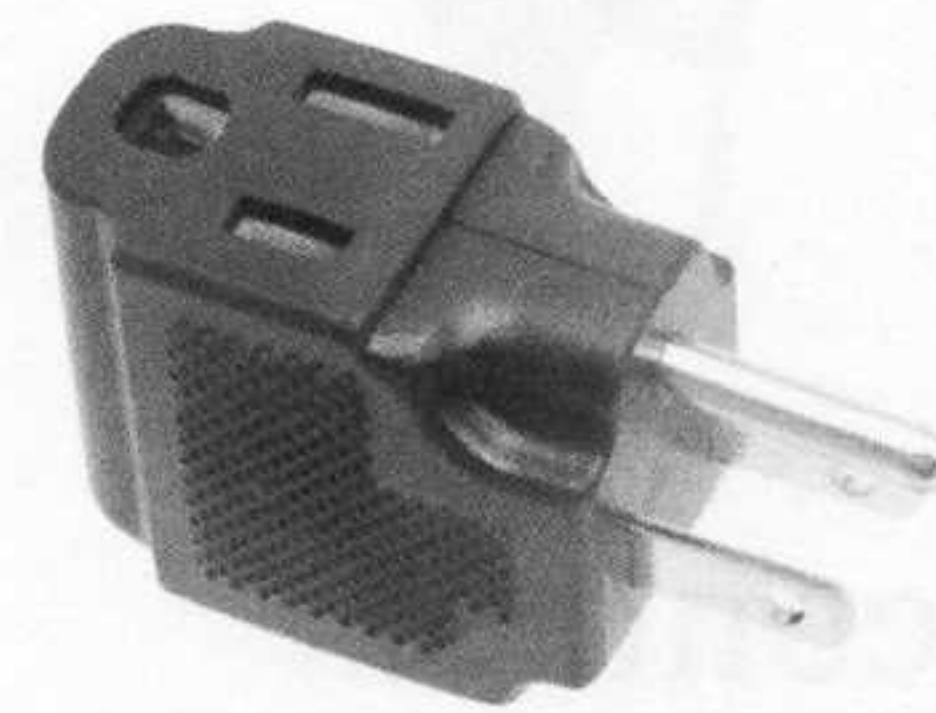
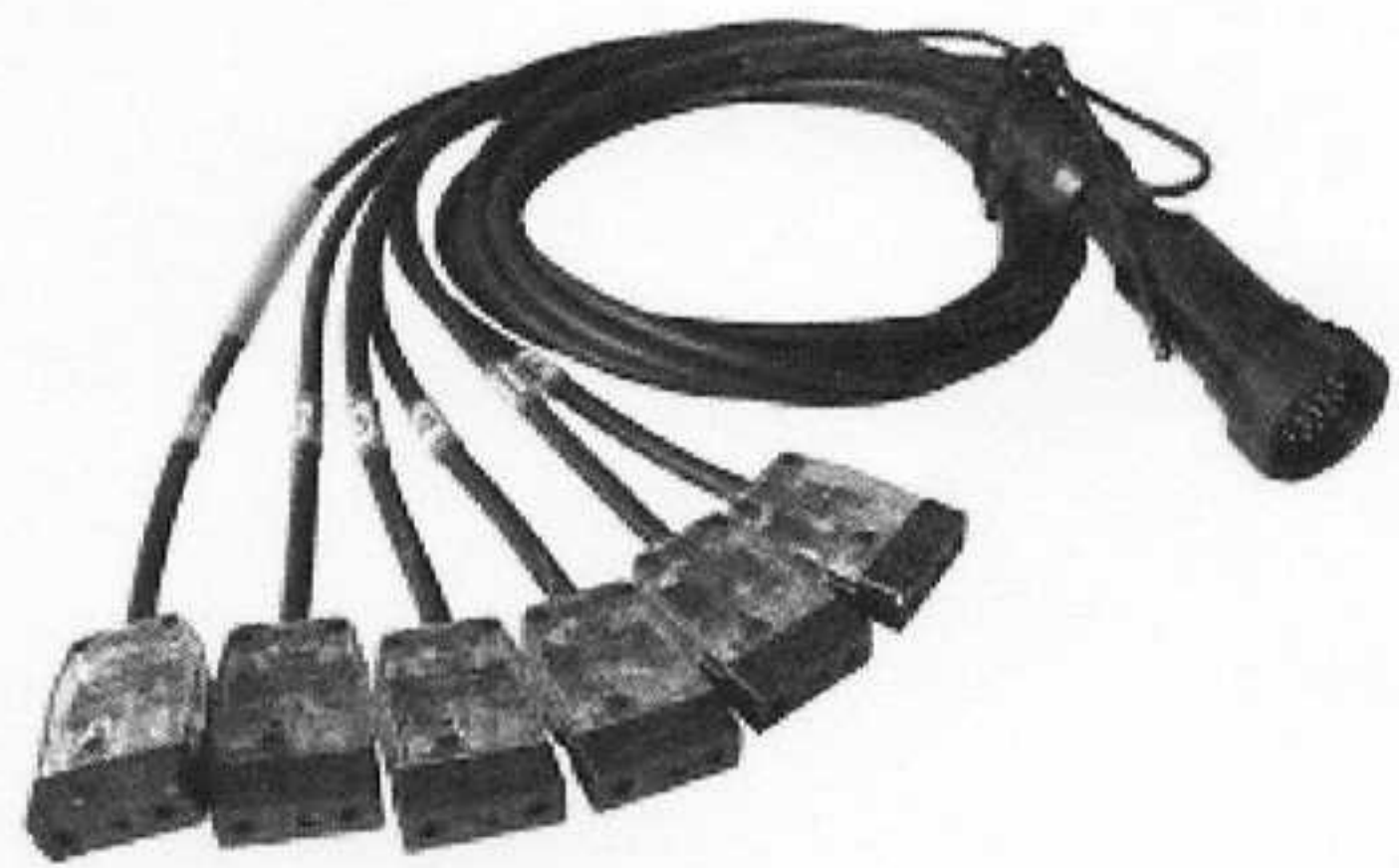
Barn door

Can be used with both fresnels and pars to shutter

Twist lock



Break in



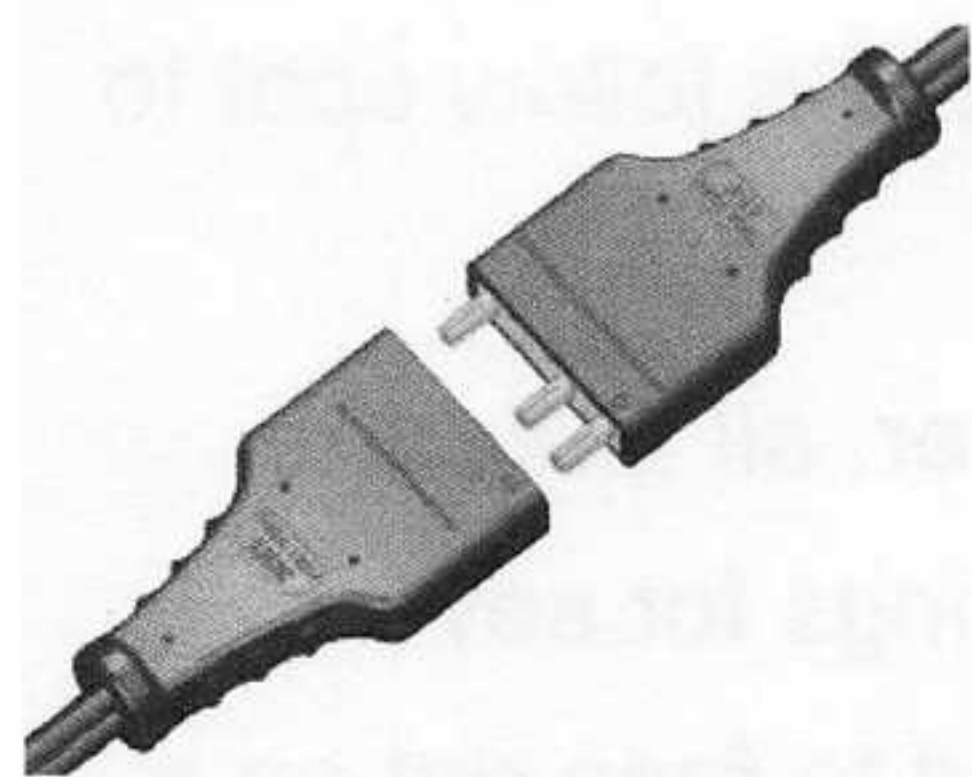
Edison

Break out

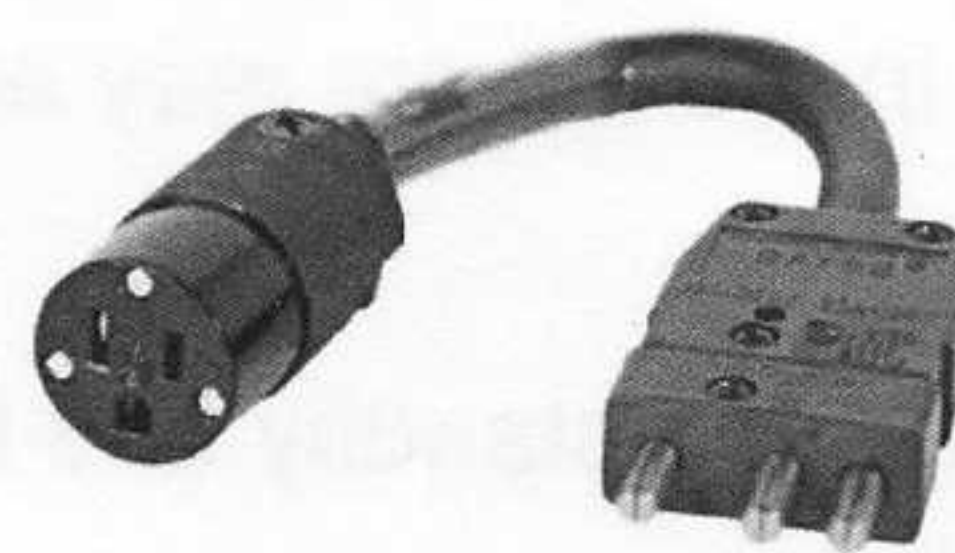


socapex

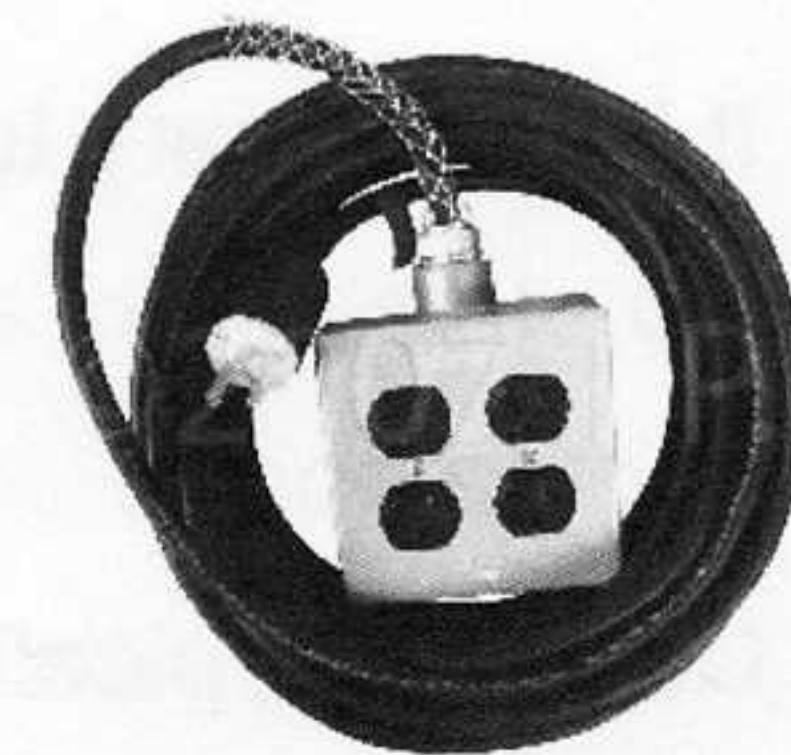
Two-fer



Stage pin

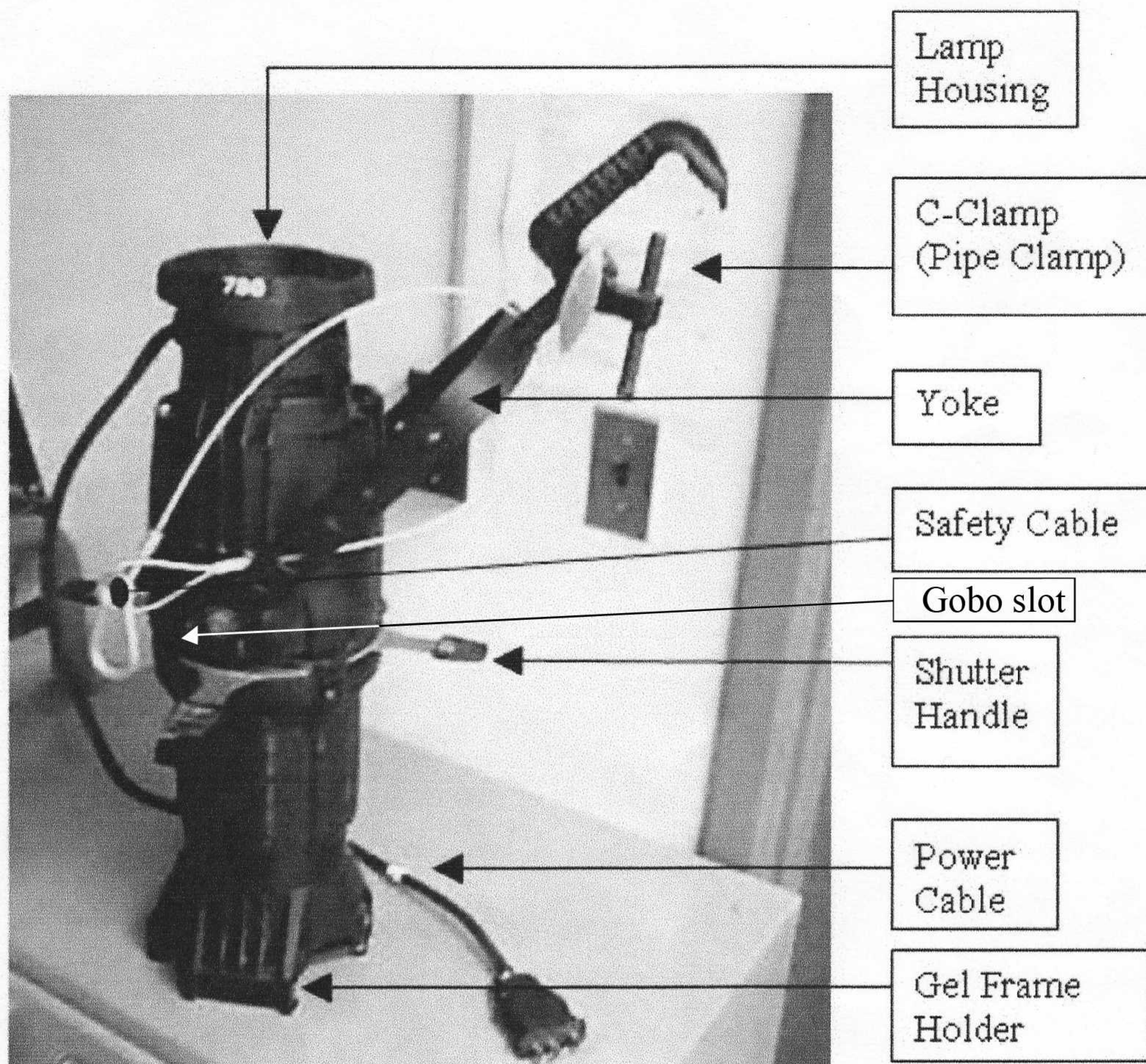


adapter



quad box

## Ellipsoidals (ellipsoidal reflector spotlights) Lekos Source Fours



The major components of an ERS light are the casing in which the internal parts are mounted, an ellipsoidal reflector located in the back of the casing, a lamp mounted to position the filament at the rear focal point of the ellipsoid, a dual plano-convex lens (two plano-convex lenses facing each other in the barrel), and at the front, a gel frame to hold the color gel. The light from the lamp is efficiently gathered by the ellipsoidal reflector and sent forward through the gate, shutters and lens system.

“Source Four” is the ETC brand name.

“Leko” is the Strand Lighting brand name.

Source Fours are 750 watts.

The 5, 10, and 19 degree barrels at the PCC are not painted.

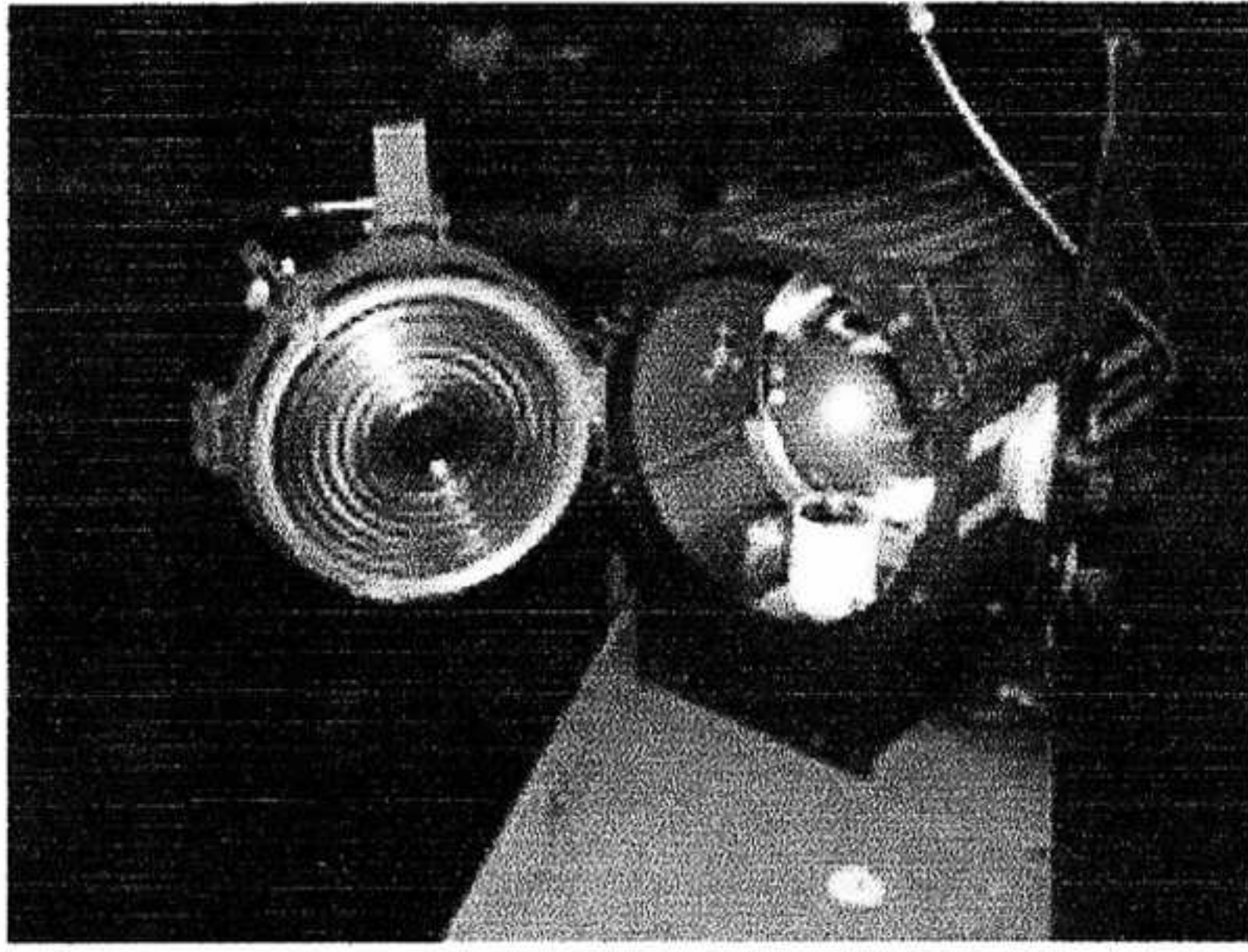
The 26 degree barrels have a white stripe painted on the barrel.

The 36 degree barrels have a red strip painted on the barrel.

As the degree of throw becomes smaller, the instrument can either be used further from the stage to create a similarly-sized beam as a closer, larger instrument, or it can be used from the same distance to create a smaller beam.

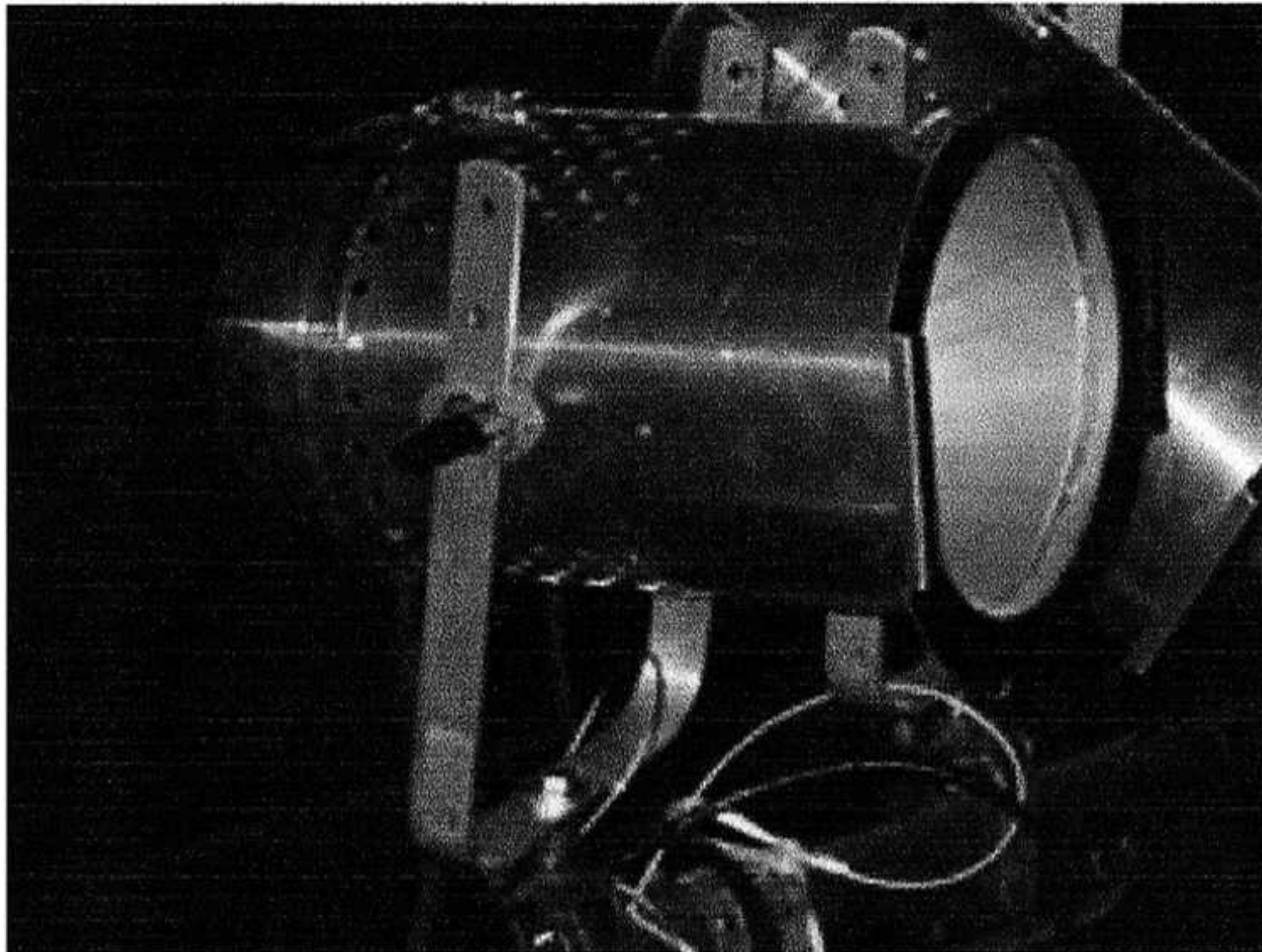


## Fresnel



A **Fresnel** employs a Fresnel lens to wash light over an area of the stage. The distinctive lens has a 'stepped' appearance instead of the 'full' or 'smooth' appearance. The lamp and reflector remain a fixed unit inside the housing, and are moved forward and back to focus the light.

## Par Cans



**Parabolic Aluminized Reflector lights, or PAR lights, or PAR cans,** are used when a substantial amount of flat lighting is required. A PAR can is a sealed beam PAR lamp housed in a simple can like unit. Like an old-fashioned automotive headlight, the reflector is integral to the lamp and the beam spread of the unit is not adjustable except by changing the lamp. Par lamps come in "wide", "medium", "narrow", and "very narrow".



wide



medium

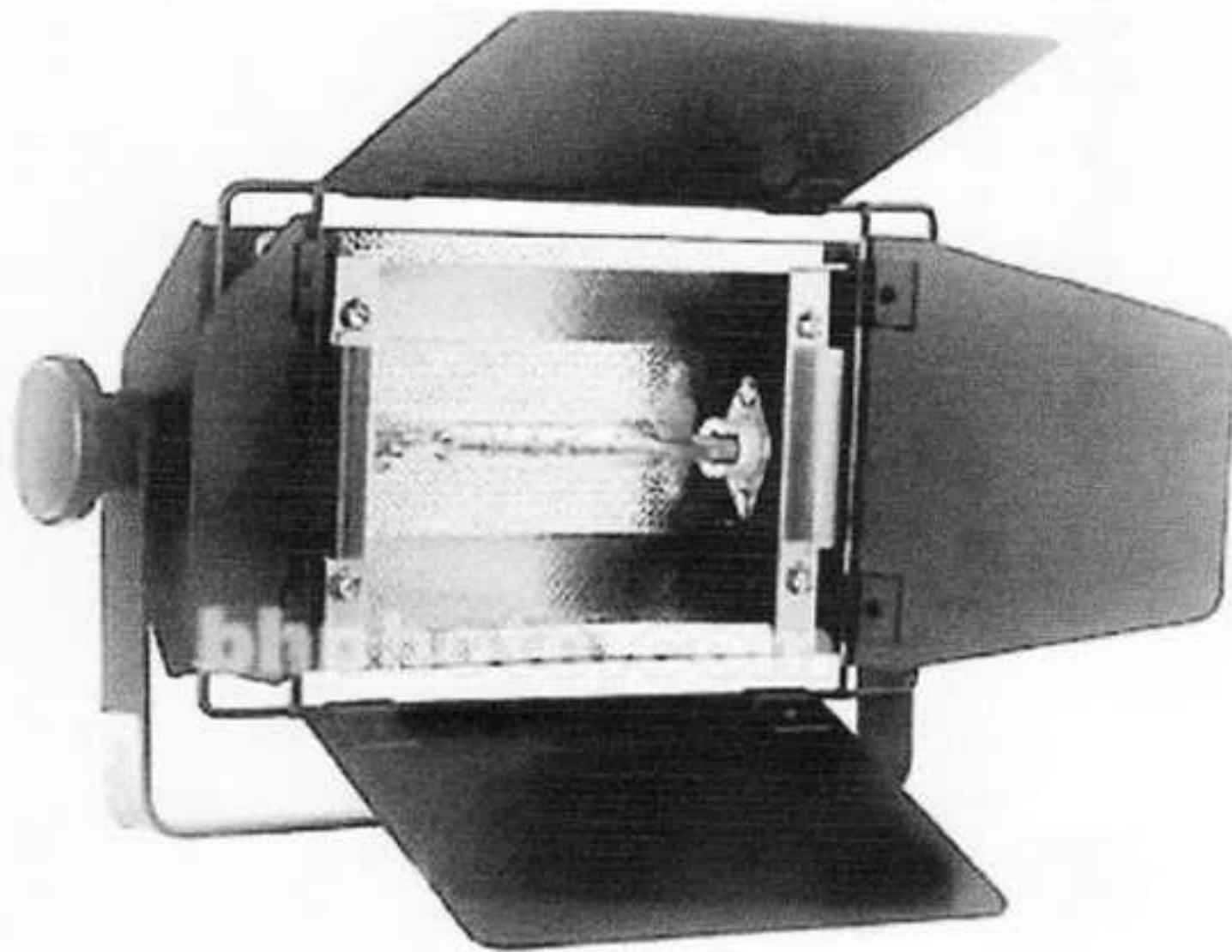


narrow



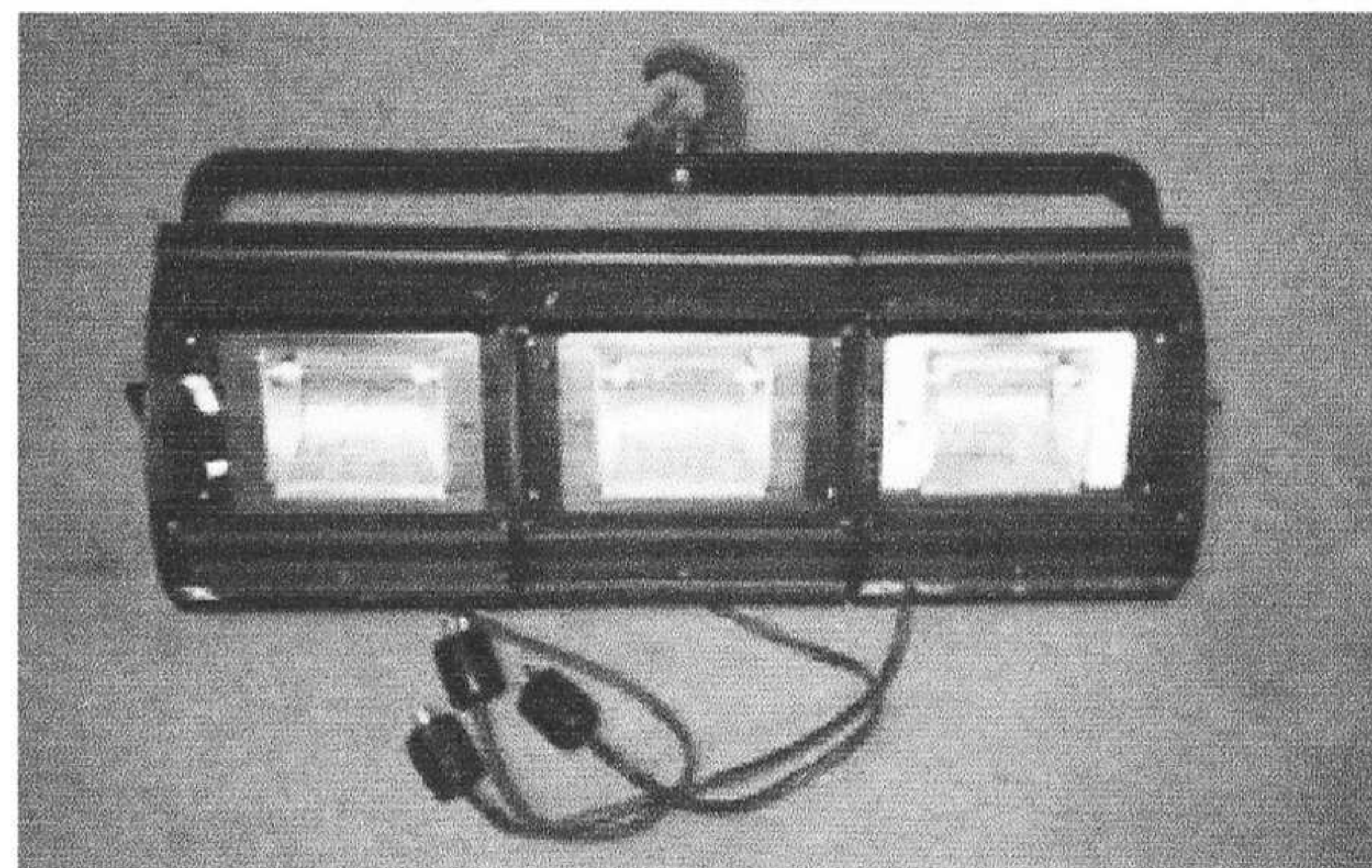
very narrow

The ceramic base on the par lamp can be adjusted either vertically (for a longer throw) or horizontally (for a wider throw).



## Mini Tins (Altman Q-Lites, Flood lights)

Used primarily for PSO. These get VERY HOT, so wear gloves if touching them when they are on or have been on recently. Mini tins are 1000 watts. Use gloves or towel to change lamps, hand oil will destroy a lamp.



## Cyc Lights

**Strip lights, also known as cyclorama or cyc lights** (thus named because they are effective for lighting the cyclorama, a curtain at the back of the stage), are long housings typically containing multiple lamps arranged along the length of the instrument and emitting light perpendicular to its length. Lamps are often covered with gels of multiple colors (often red, green, and blue, which, in theory, allow almost any color to be mixed) with each color controlled by a separate electrical dimmer circuit.

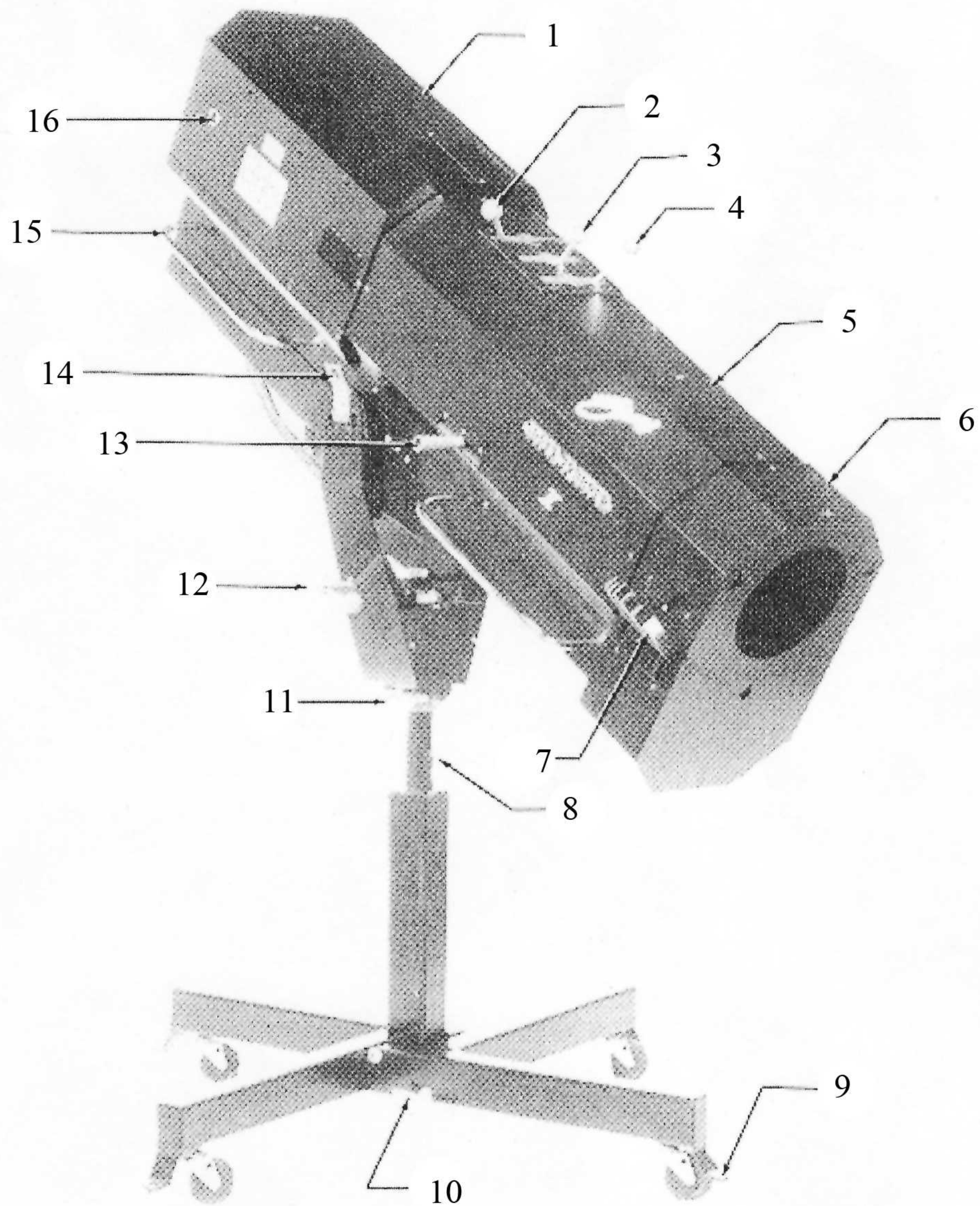
The PCC owns both Colortran and Altman cyc lights. Their gel holders vary slightly in size, so it is best to use the correct holder with each instrument.



## Followspot controls

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- **Chopper** – Cuts or shutters the top and bottom part of the beam.
- **Douser** – Controls intensity.
- **Iris** – Controls beam size.
- **Trombone** – Controls focal length.
- **Color Frames** – Changes the color of the light. Also known as a **boomerang** and/or a color magazine. Color magazines contain the color gels, which are counted from the rear of the follow spot forward
- Operators should keep chatter to a minimum on headset.
- It is customary to be in position at least 15 minutes prior to show start and to be waiting on the headset.
- It is customary to have a spotting scope or **Tel-rad** to help with low light level and rapid, tight pick up. In place of a scope, operators in the theatre may align light leaks from the follow spot to marks on a board.
- Cues are typically given with a warning, a standby and then a GO. However, all three are not always used. In a series of rapid cues, follow spot operators may get warnings for several actions and then GOs with no additional warning. Spot operators may be called to fade out on a cue or on a visual like an exit. There may be multiple spots with different pick up positions, fade times and color frame assignments



1. Cover, Lamphouse Compartment
2. Fade-Out Control Lever
3. Masking Blade Control Lever
4. Iris Control Lever
5. Cover Optical System
6. Disc Housing, Color Boomerang
7. Color Selector Lever, Boomerang
8. Height Adjusting Pin

9. Mounting Bracket, Leveling Foot
10. "T" Bolt, Folding Leg
11. Horizontal Swing Friction Adjust
12. Vertical Tilt Friction Adjust
13. Spot Size Control (Trombone) Handle
14. Lifting Strap
15. Hand Rail
16. Arc Viewing Port

400 amp power distros S.R. just outside stage door  
 an additional 400 amp box located behind piano room



These boxes are used to tie in power for touring shows they have access panels below the 2 gray boxes and also next to S.R. door.



neutral colored white

blue red and black all hot

ground colored green located bottom of the box also on bottom is access for tails

100 amp box S.L. by main rag mainly used for audio tie in

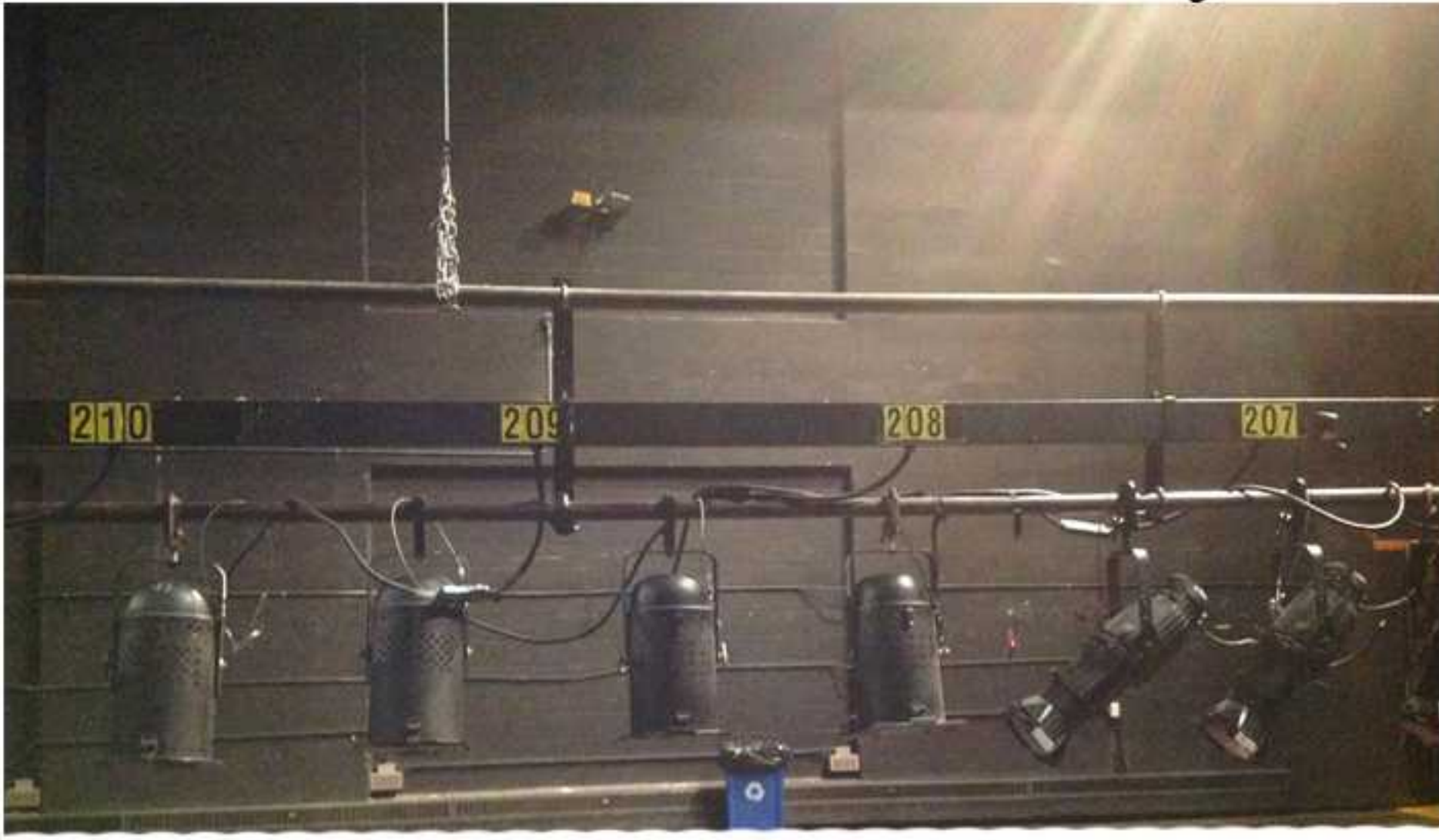


Dimmers are located in basement 1st door just off the elevator, they are set up to be patched 1 to 1 with the circuits, which means each circuit can be patched to it's own dimmer

**(Only the head electrician will ever need access to dimmers or power distros)**



House electrics or raceways



1st electric circuits 145-174  
 2nd electric circuits 175-204  
 3rd electric circuits 205-224  
 4th electric circuits 225-264  
 5th electric circuits 265-284

pin rail circuit box



S.R. pin rail  
 1st box 327-334  
 2nd box 335-342  
 3rd box 343-351  
 4th box 352-358

S.L. pin rail  
 1st box 295-302  
 2nd box 303-310  
 3rd box 311-318  
 4th box 319-326



balcony rail circuits are located in the 1st balcony box seating area S.L. and S.R. 89-94 and 103-108 we use multi-cable to run power to instruments



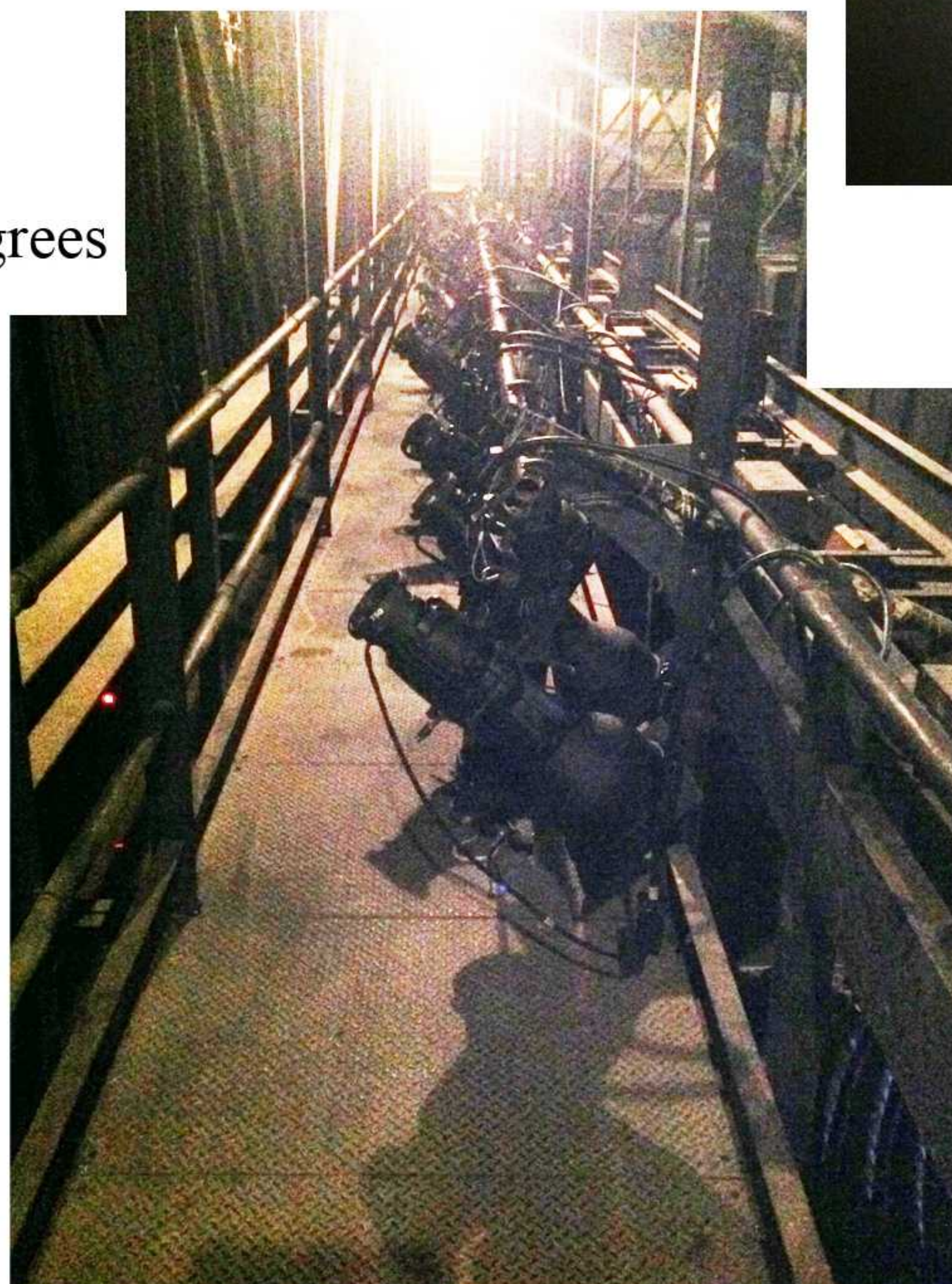
Box boom instruments 10 degrees circuits S.R. are 73-84 S.L. are 61-72



instrument in beam position are 10 degrees



Spot rail instruments are 5 degrees S.L. of spot booth are 1-11 S.R. of booth are 16-26



F.O.H. beam circuits from S.L. to S.R. are 27-56



deck chain



5' Steel red



10' steel white



20' steel blue



30' steel green

shackles



fall arrest

spansets



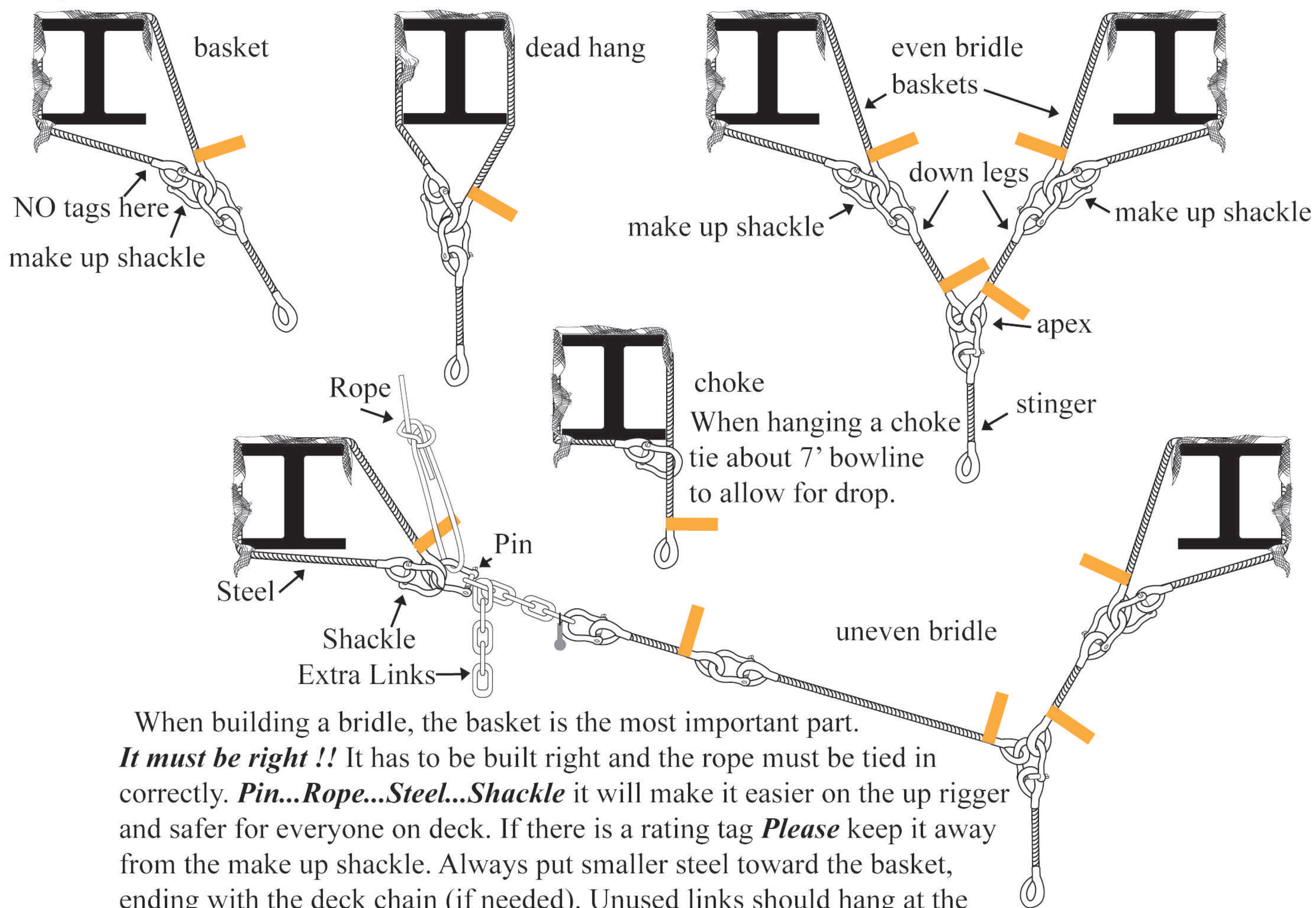
carabiner



shiv

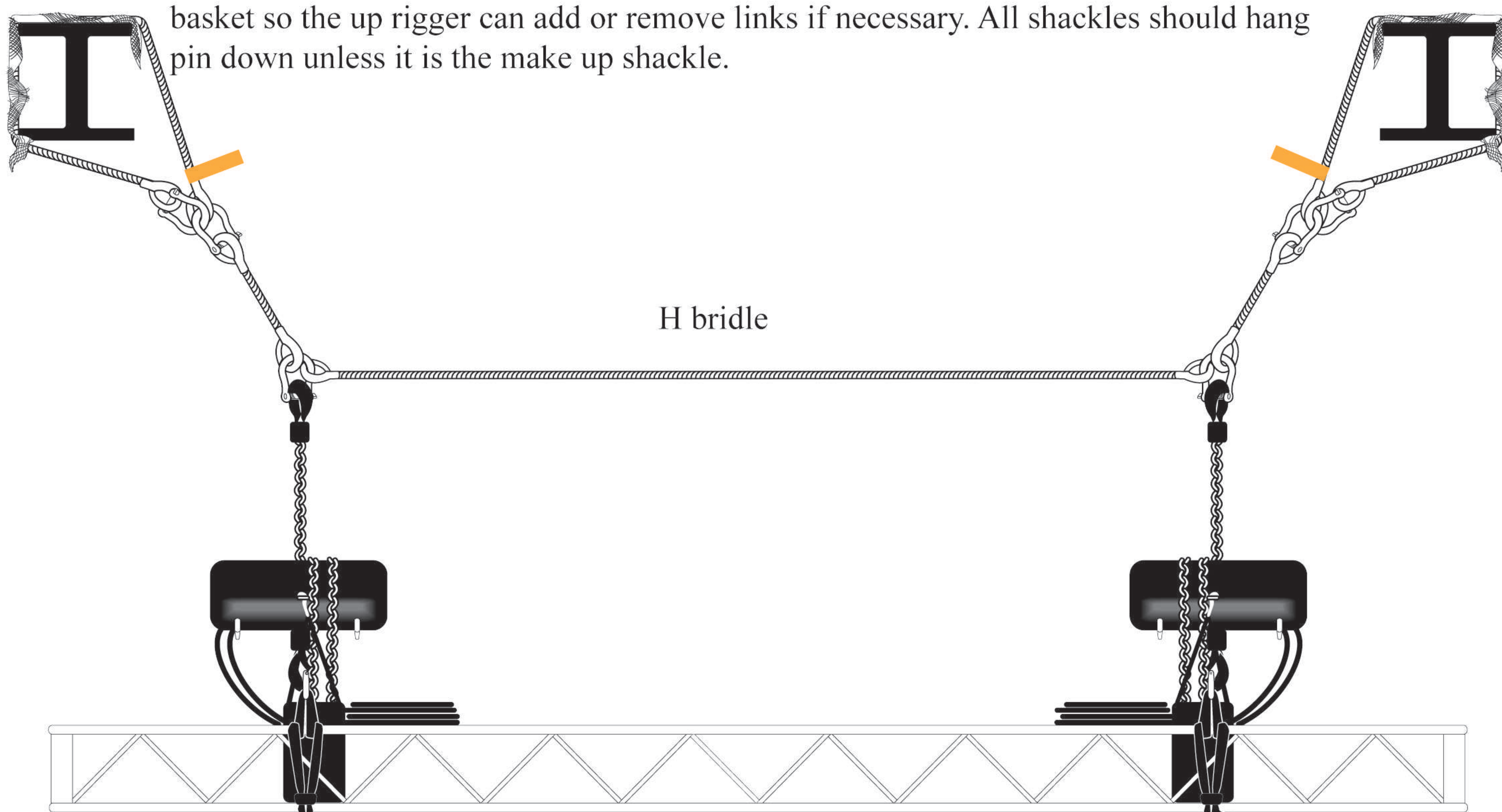


The Basket, is the steel that wraps the beam. In the arena a 5' basket is used for the spreaders (which run up and down stage and a 10' basket for the mains (which run S.L. to S.R.) except by the score board where some spreaders run S.L. to S.R.

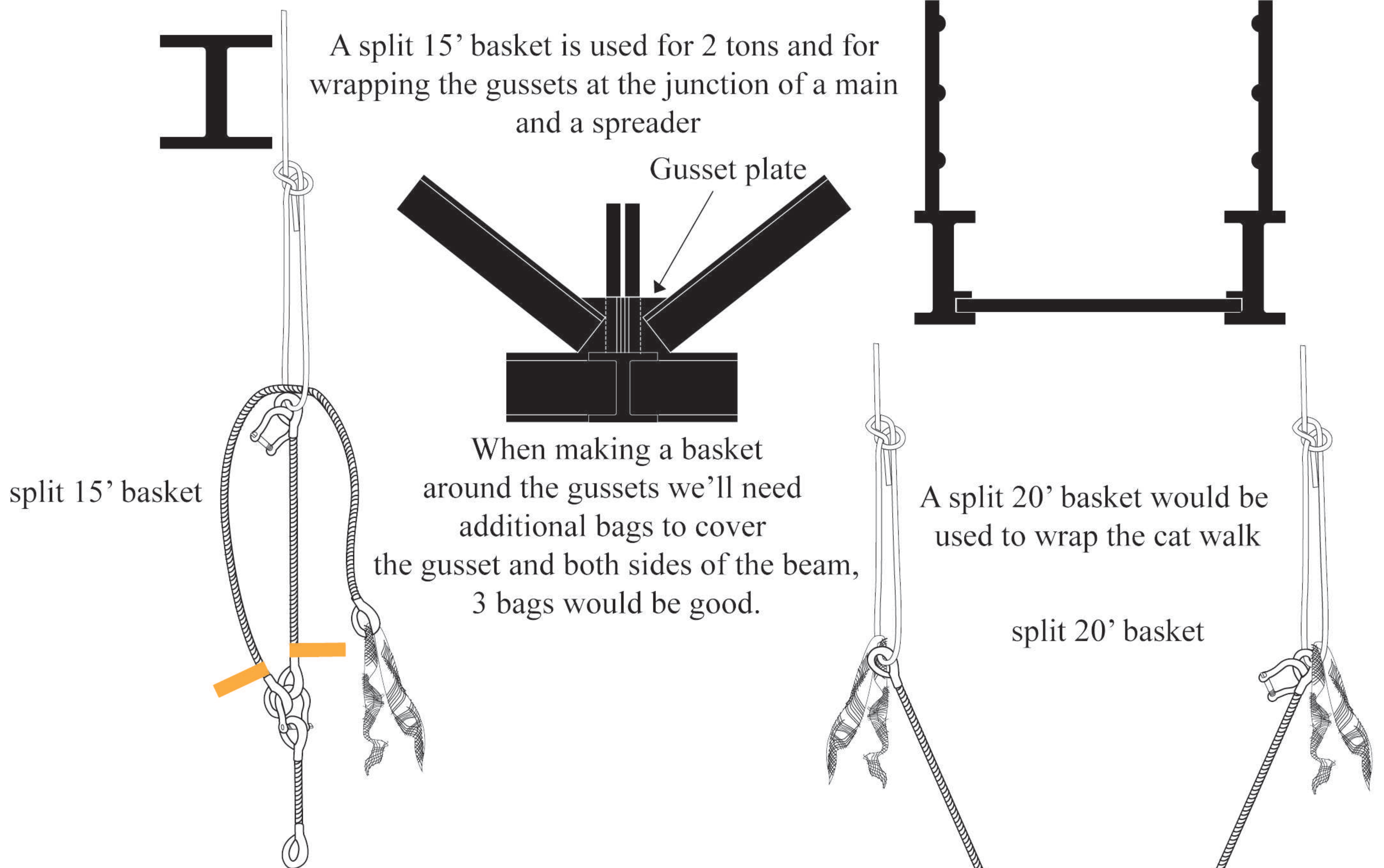


When building a bridle, the basket is the most important part. ***It must be right !!*** It has to be built right and the rope must be tied in correctly. ***Pin...Rope...Steel...Shackle*** it will make it easier on the up rigger and safer for everyone on deck. If there is a rating tag ***Please*** keep it away from the make up shackle. Always put smaller steel toward the basket, ending with the deck chain (if needed). Unused links should hang at the

basket so the up rigger can add or remove links if necessary. All shackles should hang pin down unless it is the make up shackle.



## Split baskets

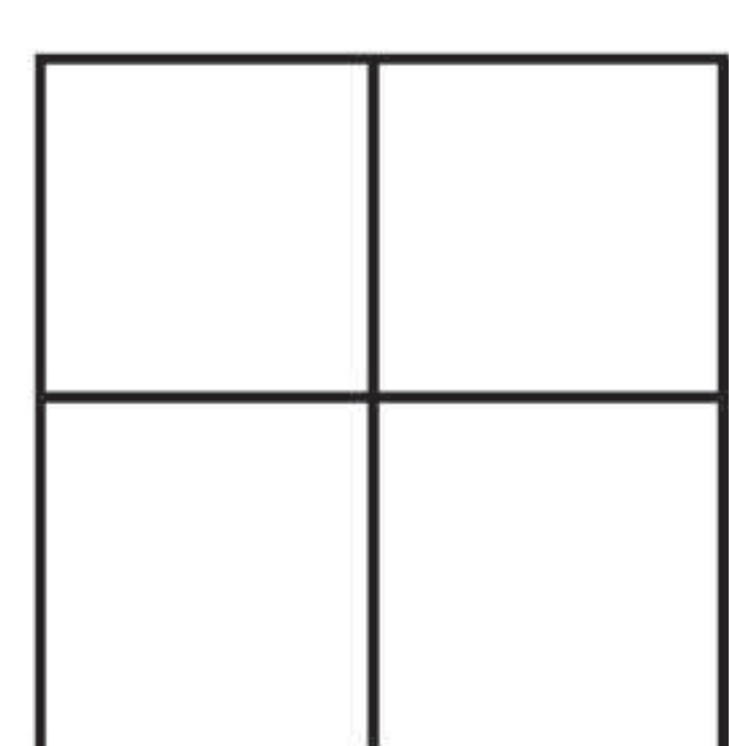


A riggers main responsibility is safety and the down rigger is responsible himself and also for all those around him, so when asked to move by an up rigger asks you to move, see to it that those around you also clear the area below working steel.

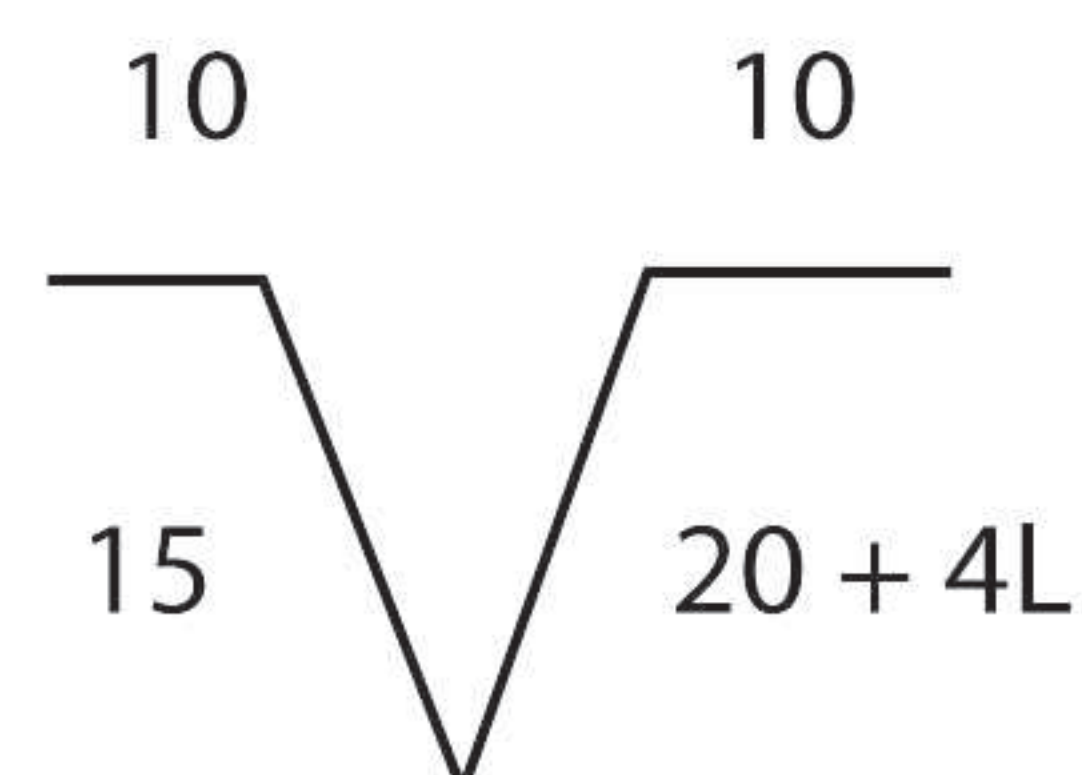
## NOTHING FALLS UP

When hanging 2 bridles next to each other, make sure the hooks face away from each other. That way neither can get caught on the other when raised or lowered.

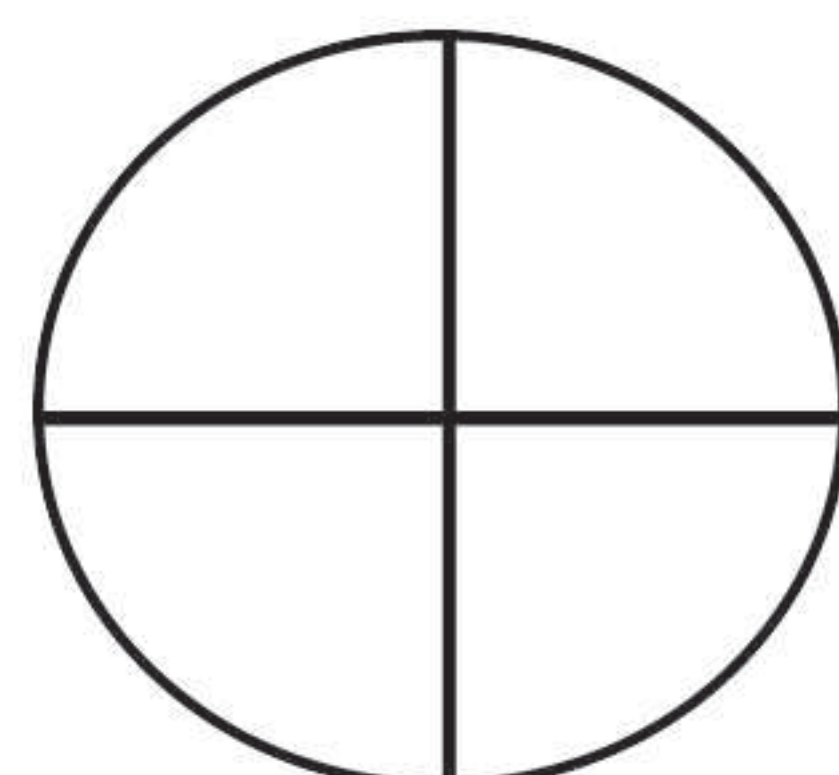
When points especially bridles are going out make sure that all steel, shackles, and hooks are hanging correctly, because the up rigger can only reach the steel closest to the basket.



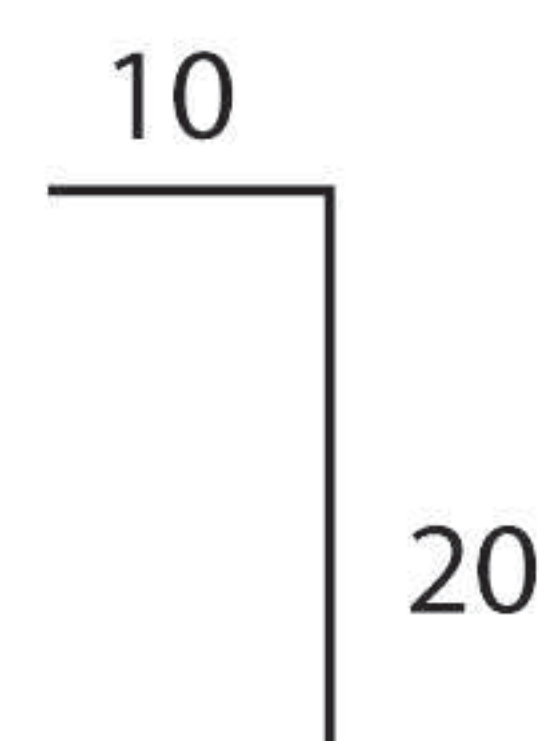
Audio Point



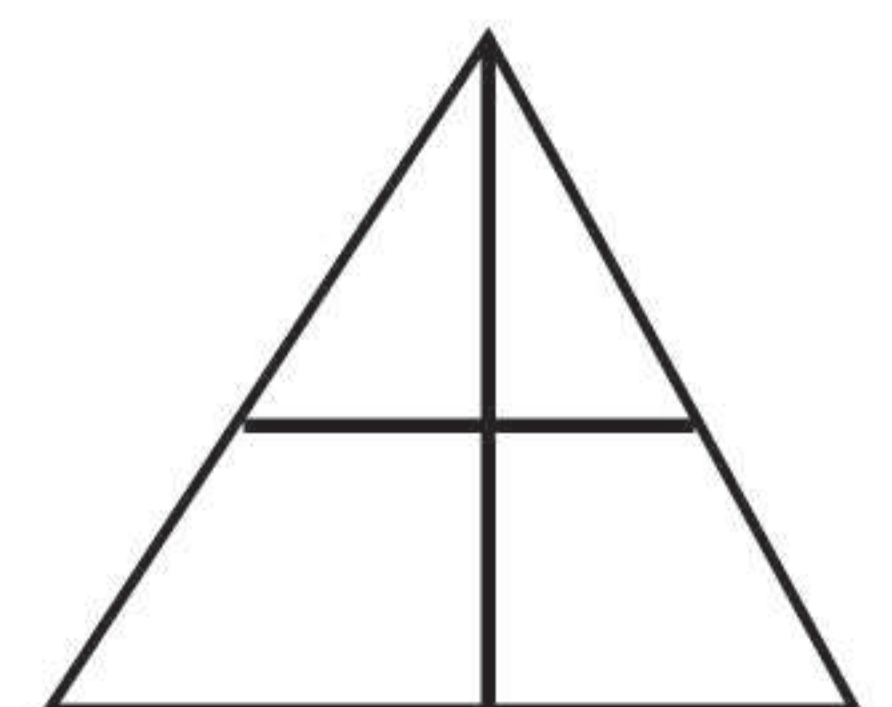
a bridle on the mains with a 15' down leg and a 20' down leg and 4 working links



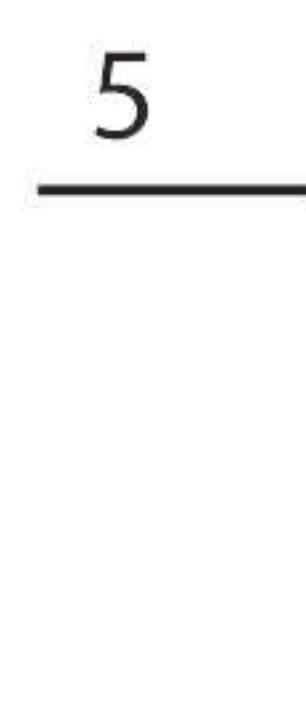
Lighting Point



a dead hang on a main with a 20' stinger



Video Point



a dead hang on a spreader with a 10' stinger