

*Commonly Used Lighting Instruments*

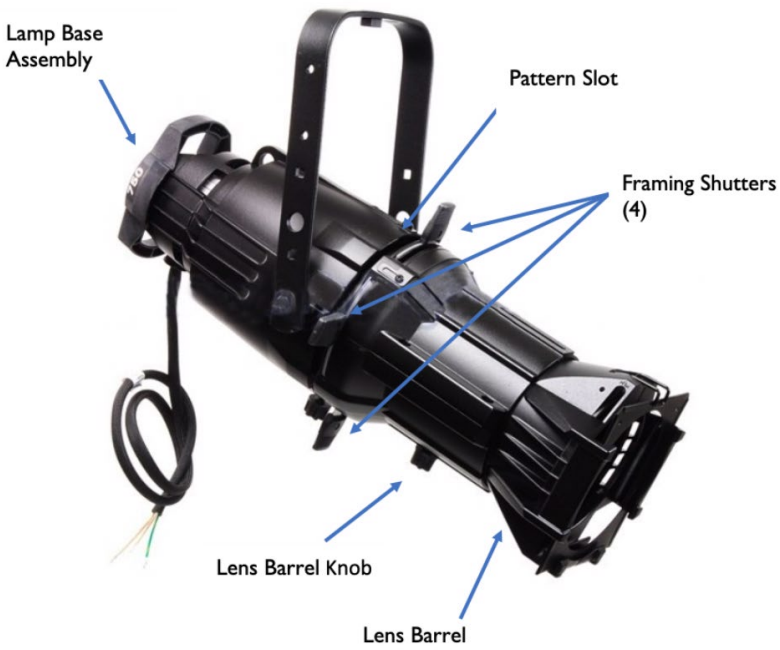


# Introduction

The primary function of stage lighting is to illuminate the space so that the audience can see the actors and the scenery. However, stage lighting is also used to provide mood and atmosphere, establish a sense of place or focus audience attention. With the addition of gobos, lights may even be used to create objects such as a window, or to suggest environments, such as a leafy glade. This article discusses the most common lighting instruments used to accomplish these tasks.

## Ellipsoidal Reflector Spotlight

Also known as an ERS. Commonly used in the front of house position. An ERS produces a well-defined, hard-edged light beam and is described by its **Focal Length** (6x9, 6x12, 6x16) or by the **Degree** (width of the light beam) coming out of the light. (19°, 26°, 30°, 36°). Is focused by **Running the Barrel**. An ERS can also be used on stage as a **Special**, as **High Side Light** or with **Gobo's** to create texture or other visual/image effects.

Ellipsoidal Reflector Spotlight	
<p><b>Necessary Materials/Tools List</b> Ellipsoidal Reflector Spotlight Phillips/Flat Head Screwdriver (as needed)</p>	 <p>The diagram shows a black Ellipsoidal Reflector Spotlight (ERS) with various components labeled. A blue arrow points to the 'Lamp Base Assembly' at the rear. Another points to the 'Pattern Slot' on the side. Four arrows point to the 'Framing Shutters (4)' which are the adjustable vanes at the front. Two arrows point to the 'Lens Barrel Knob' and the 'Lens Barrel' at the very front.</p>
<ul style="list-style-type: none"><li>● Framing Shutters</li><li>● Lens Barrel</li><li>● Pattern Slot*</li><li>● Lamp Base Assembly**</li><li>● Lens Barrel Knob</li><li>● Reflector</li></ul> <p>*also known as a Gobo slot.</p> <p>**the assembly also contains adjustable screws or knobs allowing Bench Focusing.</p>	

# Fresnel

The Fresnel lens produces a very even light that is soft at the edges and tends to project a soft shadow. Because the edge of the light is soft, it is not absolutely precise and will blend easily with the edges of other fresnels to give smooth stage coverage.

## Fresnel

- They are called a 'Fresnel' because they use a 'Fresnel' lens, recognized by the characteristic 'stepped' molding on one face and the texturing on the other, named after its designer, Augustin Fresnel.
- Focusing a fresnel is done by using the focus knob to move the lamp and reflector forward or backward inside the light. Forward is nearer the lens and will create a larger but dimmer pool of light. Moving backward will create a smaller but brighter light beam.



Focus Knob

## PARnel

“PAR” is short for parabolic aluminized reflector; it is a medium to short throw fixture. They produce a somewhat harsh, diffused light, commonly used for back, down and sidelight. The light beam is oval in shape. Lamps come in different wattages and beam styles (VNS- Very Narrow Spot, MFL - Medium Flood, WFL- Wide Flood). They gained popularity in the early rock and roll community because they are inexpensive and durable.

### PAR

- They are called a “par” because their lamps are a parabolic aluminized reflector.
- To focus a PAR lamp, “spin the bottle” by grasping the porcelain lamp base and turning the can as desired. By spinning in this way you can change the beam pattern.

***SAFETY NOTE:*** It is ***IMPORTANT*** to know what type of PAR you are working with. You ***CAN NOT*** spin an ACL lamp since ACL's have screw terminals and you will suffer an electrical shock.



“PARnel” is the model name of a lighting instrument manufactured by Electronic Theatre Controls. They are a medium to short throw fixture, producing somewhat harsh, diffused light typically used for general illumination, down, and backlight.

### PARnel

- Called a PARnel because they are a hybrid of two common fixtures, a PAR and a Fresnel.
- Focused by turning a focus knob.



## Striplight

Striplights consist of a row of lamps. Incandescent versions with red, blue and green color media are commonly seen in school auditoriums and provide a wash of color on the stage. Color is produced either with gels or with glass roundels. Occasionally striplights are used to light scenic drops or cycloramas. These instruments are sometimes referenced as “x-rays” in technical notes from plays written in the 1930’s and 1940’s.

### Striplight

- Called a striplight because of their construction, which is a row, or “strip” of lamps packaged together. A single striplight is usually wired internally into either 3 or 4 circuits with each circuit consisting of several lamps evenly spaced within the unit.
- Strip lights may be purchased in incandescent or LED versions. LED versions work much the same way as incandescent, however offer greater color choice and control.



# Instrumentation Lists by Type of Light

## Conventional Fixtures

“Conventional” refers to lighting instruments which utilize a quartz or tungsten halogen lamp, and which will work with a standard theatrical dimming system. Types of conventional fixtures include:

- Ellipsoidal
- Fresnel
- Source Four Par/Star Par
- PAR Can
- Scoops
- Strip lights
- Cyc lights

For details on these lights and their uses, contact a theatrical lighting vendor.

## LED Family

“LED Family” refers to lighting instruments which utilize light emitting diodes (LEDs) for their light sources. These consume substantially less power than conventional fixtures and many come with an option for changing colors, making them extremely versatile. LED lighting instruments do not require traditional stage dimmers. Types of LED fixtures include:

- Ellipsoidal
- Fresnel
- “PAR”
- Strip lights
- Cyc lights
- Retrofits
- LED Lamps

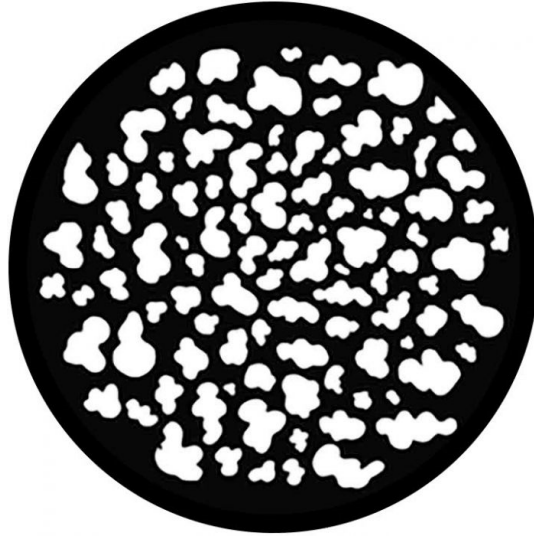
## Movers

“Movers” refers to lights which can be programmed to move and change positions. Types of Movers include:

- Profile
- Spot
- Performance
- Beam
- Hybrid
- Wash

## Common accessories

1. Plug Adapter (2P&G to Edison, etc.)
2. Barn Door
3. Top Hat/Snoot
4. Pattern/Gobo
5. Pattern Holder
6. Iris
7. 2-fer



Rosco Gobo #77811 Soft Breakup  
(used with permission)

## Common useful tools

1. C-Wrench
2. Heat resistant gloves
3. Tie Line
4. pin-splitter/cleaner
5. Continuity Tester  
Multimeter

## Relevant Industry Codes

ANSI E1.15 - 2006(R2011): Recommended Practices and Guidelines for the Assembly and Use of Theatrical Boom & Base Assemblies

ANSI E1.32 - 2012: Guide for the Inspection of Entertainment Incandescent Lamp Luminaries

ANSI E1.36 - 2007(R2012): Model Procedure for Permitting the Use of Tungsten-Halogen Incandescent Lamps and Stage and Studio Luminaires in Vendor Exhibit Booths in Convention and Trade Show Exhibition Halls

OSHA Standard Number 1926 Subpart K "Electrical"

## Links and Resources

<https://www.etconnect.com/Support/Training-Events/Educational-Resources.aspx>

All ANSI documents are available for free download at [www.esta.org](http://www.esta.org) (Technical Standards Program)

## Image Credits

Altman Lighting Company <https://www.altmanlighting.com/>

ETC Lighting <https://www.etcconnect.com/>

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