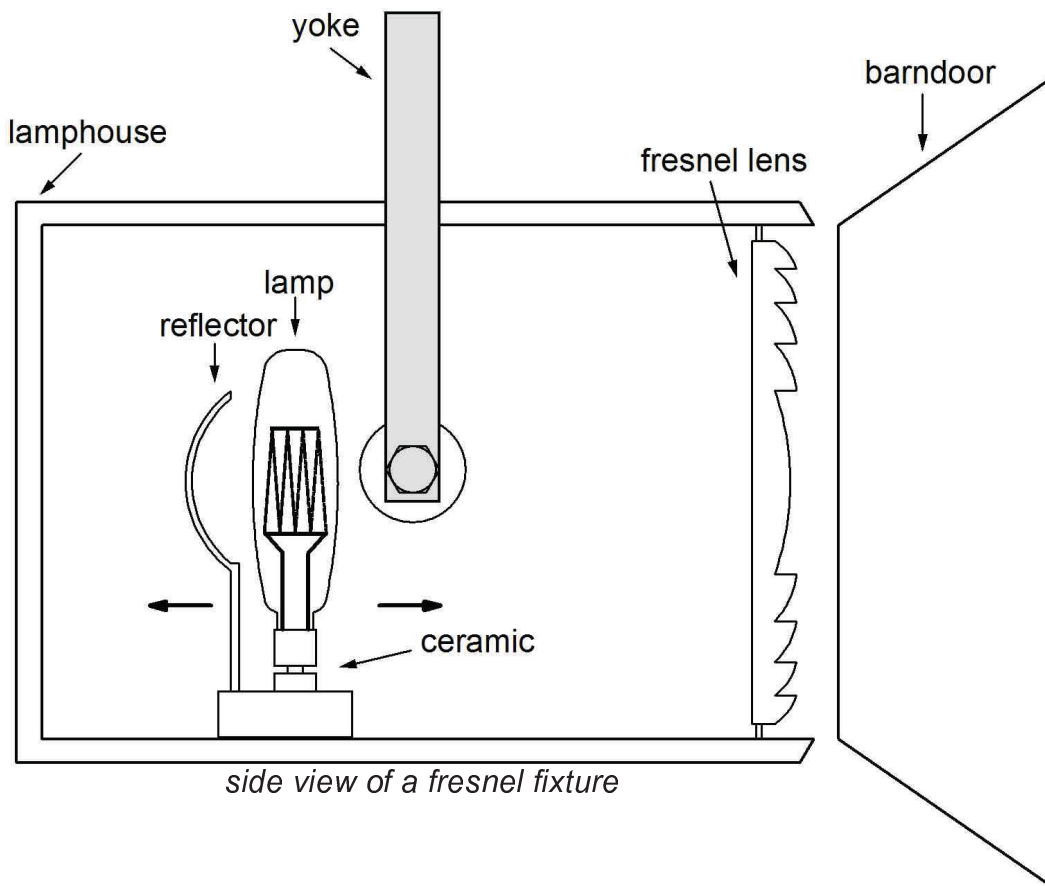


front view of a fresnel lens

A fresnel is a single lens fixture that produces a soft edged beam. They are identified by the rows of concentric rings on the front of the lens. They are typically used for producing seamless colour washes.

**Origins** The term fresnel refers to the 'fresnel lens' these fixtures are equipped with. They are named after their inventor Augustin-Jean Fresnel. He originally created them for lighthouses where they were far more lightweight and efficient than traditional lenses. They have since been adapted for the entertainment industry and are the work-horse of theatre lighting rigs.

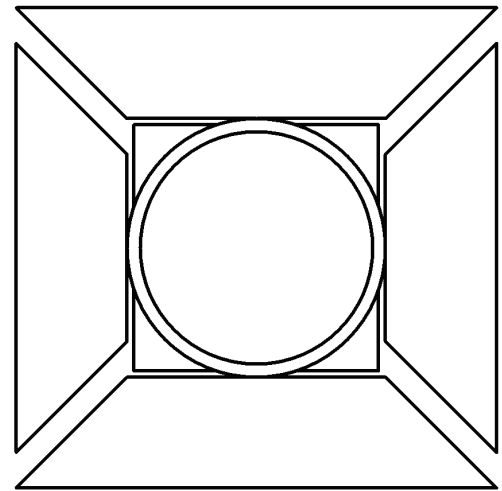


side view of a fresnel fixture

**Use** The beam angle (zoom) of a Fresnel is controlled by moving the lamp and reflector in relation to the lens. As the lamp/reflector assembly moves closer to the lens the beam floods - becomes larger. As the lamp/reflector assembly moves away the lens the beam spots - becomes smaller. Technicians focusing a fresnel (or any other single lens fixture) should be very gentle as rough movements of the lamp/reflector assembly can cause a hot filament to shatter. Compared to a profile most fresnels have a relatively large zoom range, usually in the realm of  $10^{\circ}$  -  $50^{\circ}$ .

**Accessories** The most common accessory for fresnels is a set of barndoors - four hinged metal flaps that can be used to give a circular beam selected straight edges, as well as control stray light (spill). These straight edges will retain the same soft edge quality as the original circular beam. Barndoors are usually fitted by simply sliding into a set of runners on the front of the fixture.

Like most conventional fixtures fresnels can be fitted with a standard colour frame or alternatively a colour changing device such as a scroller.



front view of barndoors



normal fresnel beam



fresnel beam with lower barndoor in

**Application** Fresnels are most commonly used for toplight and backlight. They are ideally suited for seamless colour washes as their softness allow each beam to blend into the next. However the fresnel optics cause some small amount of light to scatter away from the lens for nearly 180 degrees around the fixture. For this reason they are rarely used for front-of-house duties as stray light will tend to illuminate the proscenium arch and audience. Over shorter distances this may not be an issue. As always experiment for best results. Fresnels are also valued in TV and Film as their diffuse beams produce soft shadows. In terms of brightness a 1000w fresnel has less punch than a 1000w Par 64, however the added control of a circular beam, variable zoom and barndoors makes them the preferred choice for theatre work. Where spill is an issue use a PC instead.



Strand Electric patt. 123 Fresnel. These 500w fixtures were originally manufactured in 1957 and can still occasionally be found in use in fringe venues. More recent small fresnels are fitted with 650w lamps and are used in a wide range of roles in small venues.  
*Image courtesy of Strand.*



Selecon Rama 150 Fresnel. This fixture can be fitted with either a 1000w or 1200w lamp. Units of this size are often used for overhead colour wash in medium and large venues. They can also be found lighting sets, their broad zoom range meaning they can efficiently light both small and large areas.  
*Image courtesy of Selecon.*



Robert Juliat 329 Fresnel. 2000w fixtures like this one are often used for backlight in larger venues where their higher power helps them perform over the long distances involved. They are also useful for projecting heavily saturated colours with enough brightness to compete against other lamps.  
*Image courtesy of Robert Juliat.*

**Reference** McGrath, Ian. 1991. *An approach to stage lighting*. Corrimal East, N.S.W. : I. McGrath.