

# Keystone Calculation for Custom Gobos

## DATA REQUIRED

1. The fixture (make and model)
2. The lens to be used
3. The lens focal length
4. The required image size
5. The perpendicular throw
6. The position of the lantern relative to the center point of the image

## The Fixture (Make and Model)

This is the starting point for all calculation, not only impacting upon the optical calculation but also dictating the amount of gobo real estate available for the projection.

## The Lens

Many fixtures are compatible with a variety of lens options. It is important to decide which lens will be used with the gobo.

## The Lens Focal Length

Ideally the metrics of the lens should be expressed as its focal length (in millimeters) rather than beam angle – i.e. 45mm, 63mm, 85mm, 150mm and so on. It should be noted that the shorter the focal length, the wider the beam angle.

## The Required Image Size

Simply the actual size of the desired projection expressed in height x width or diameter, whichever is most appropriate to the image.

## The Perpendicular Throw

Sometimes referred to as the “Z” offset: the distance between the fixture and the projection surface. This is measured at a right angle from the screen - hence “perpendicular”. (See Figure 1)

More specifically: the distance between the plane of the projection screen and the parallel plane of the projector, measured at right angles to both.

## Fixture Position Relative to the Image - X:Y Offsets

To better understand these measurements, picture standing behind the projector looking directly towards the projection screen. (See Figure 2)

The “X” offset is the distance across (horizontal) between the center of the image and the fixture. This is negative if the projector is to the left of the image, positive if to the right.

The “Y” offset is the distance up or down (vertical) between the centre of the image and the fixture. This is negative if the fixture is below the image center, positive if above.

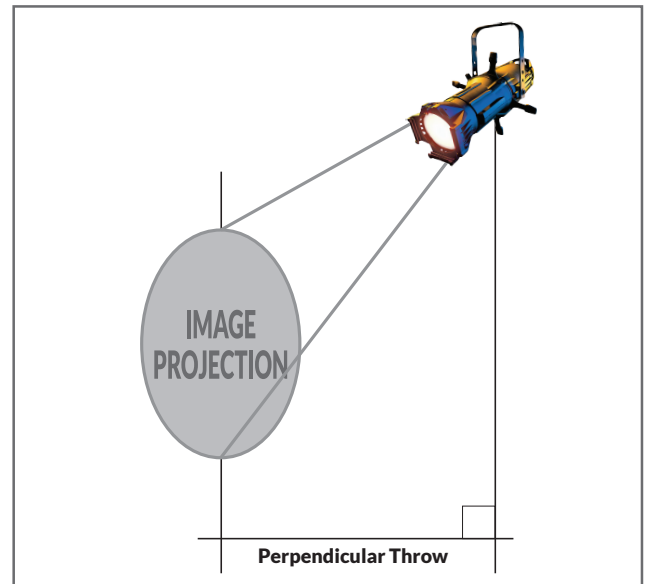


Figure 1

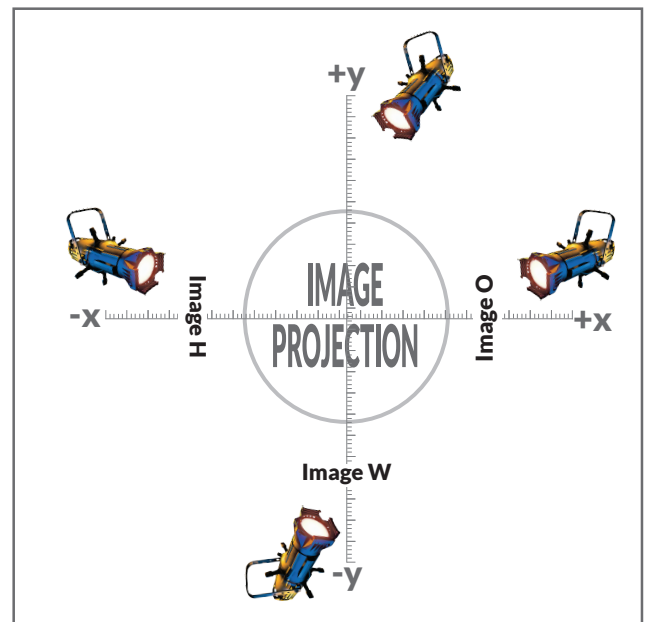
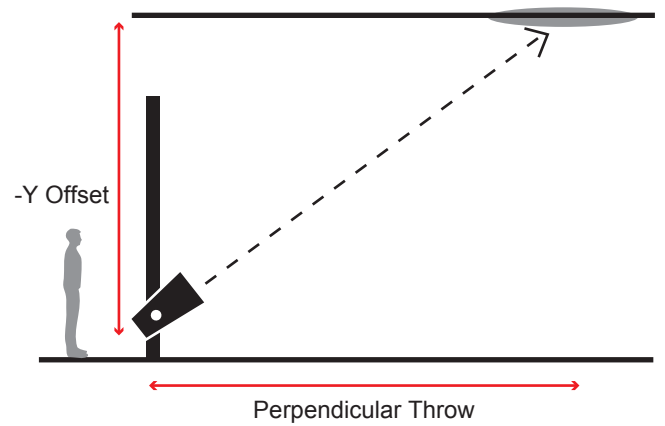
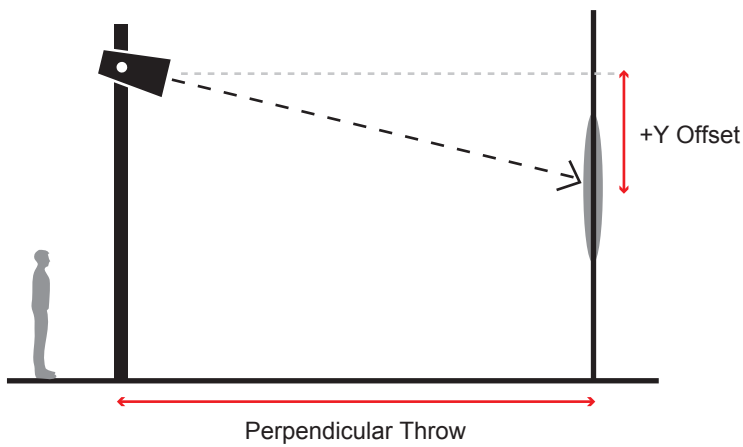
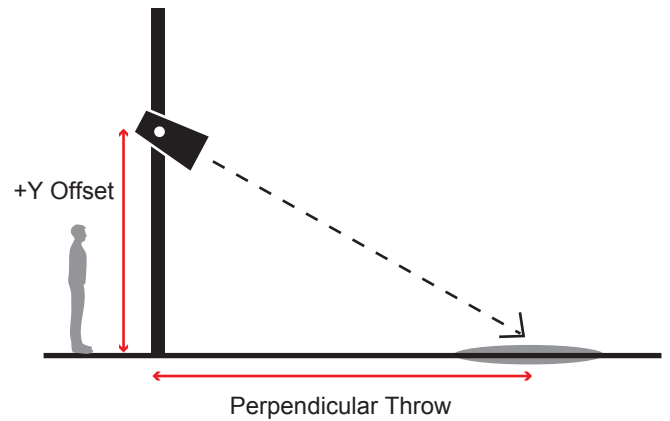
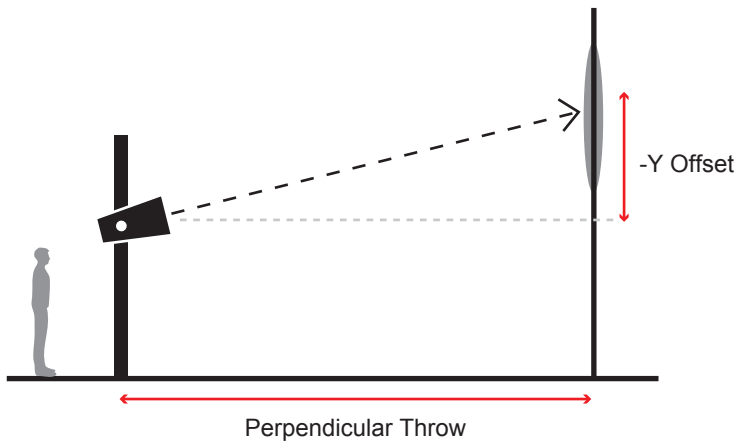


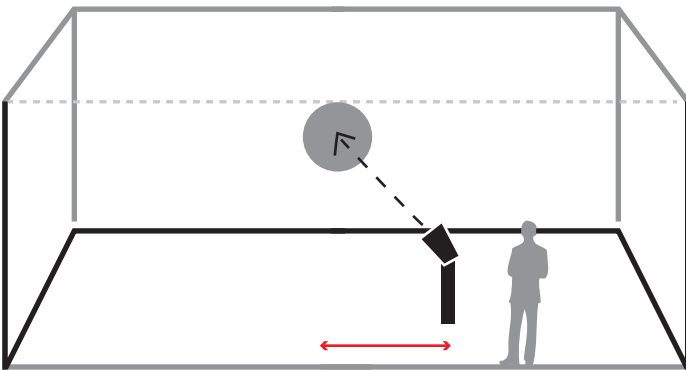
Figure 2

# Gobo Keystoning Illustrations

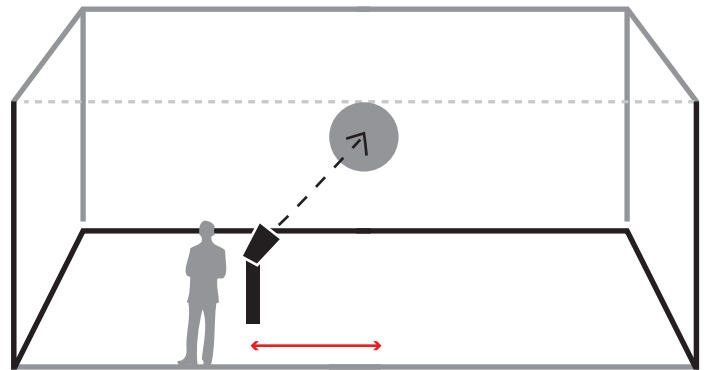
## SIDE ELEVATIONS (Not to Scale)



## REAR ELEVATIONS (Not to Scale)



+X Offset



-X Offset

## PLAN VIEWS (Not to Scale)

