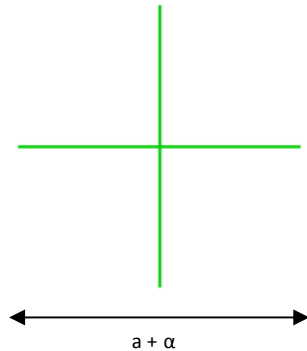


# DE-R 289 Diffractive Optical Element



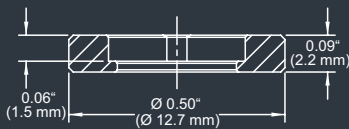
- **Element Number:** DE-R 289
- **Current Product Revision:** A
- **Description:** Cross – 15 @520
- **Number of Spots on Line:** 605
- **Substrate Material:** Polycarbonate (PC)
- **Size (Ø x Thickness):** 8 x 1.2 mm
- **Design Wavelengths:** 520 nm
- **Recommended Wavelength Range:** 480 - 550 nm
- **Minimum Recommended Beam Diameter:** 2-3 mm

Within the recommended wavelength range, the zeroth order is not brighter than the rest of the cross. Pattern size and pattern angles and the intensity in the undiffracted central spot ('zero order intensity', see reverse page) will vary most with the wavelength.

Diffraction efficiencies given on this datasheet have been measured using elements of product revision A.

## MOUNTED VERSION

For testing or setups under laboratory conditions we offer a version mounted in 12.7 mm stainless steel frame for use with standard laboratory holders.



Thorlabs 8 mm steel lens adapter

## COLLIMATED / CONVERGING LASER

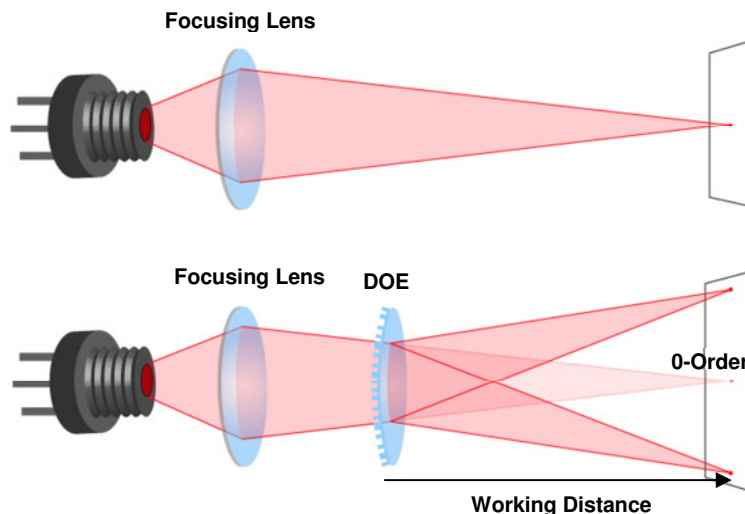
The laser can be collimated for long range use or converging for a fixed working distance.

Please note that the size/thickness of each spot or line depends on the focusing of the laser.

## Pattern Geometry and Diffraction Angles

Wavelength	Pattern Size @ 100 mm Distance	Pattern Angle
	<b>a</b>	<b>α</b>
405 nm	21 mm	11.7°
450 nm	23 mm	13.0°
515 nm	26 mm	14.9°
532 nm	27 mm	15.4°
594 nm	30 mm	17.2°
635 nm	32 mm	18.4°
650 nm	33 mm	18.8°
730 nm	37 mm	21°

## Setup



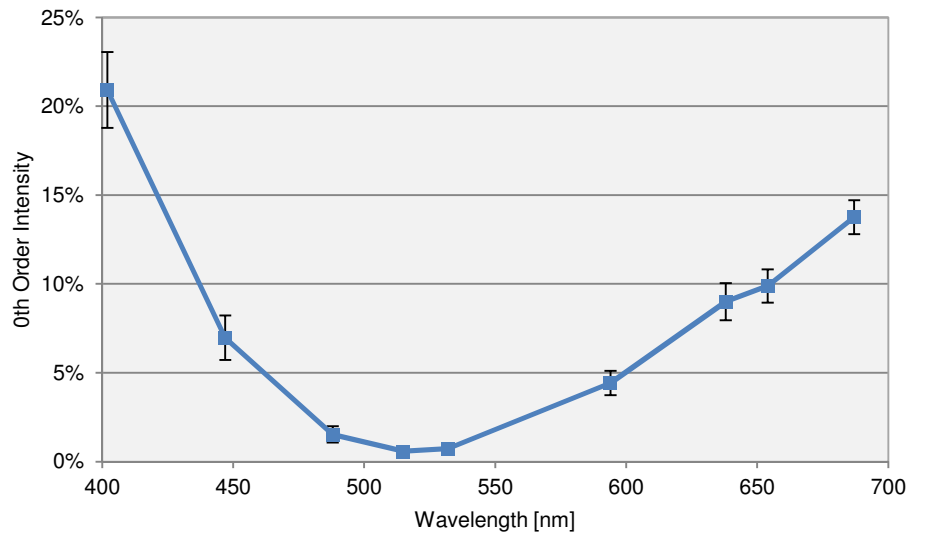
Laser diodes are the most common light source to be used with diffractive optical elements, but other laser light sources may also be used.

The DOEs are best used with collimated or convergent laser sources. The microstructure surface should be oriented towards the laser.

The 0-order spot is equivalent in size and shape to the original beam, but its power is attenuated.

## Diffraction Zero Order Intensity:

Wavelength	0-Order Intensity
447	7.0%
488	1.5%
520	0.6%
532	0.7%
594	4.4%
638	9.0%
654	9.9%
687	14%



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