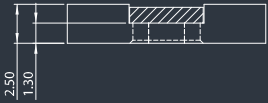
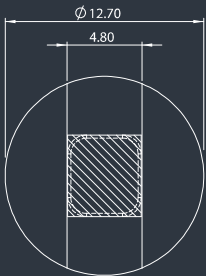


DE-R 440 Diffractive Optical Element

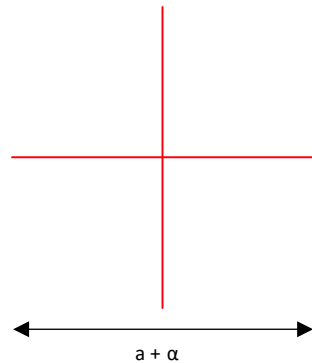
MOUNTED VERSION

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.



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.



- **Element Number: DE-R 440**
- **Current Product Revision: A**
- Description: Cross – 38 @ 635
- Number of Spots on Line: 1191
- Substrate Material: Acrylate on soda lime glass with AR coating for 635nm on rear side of the substrate
- Substrate Size: 5.2 mm x 4.7 mm
- Thickness: 1.0 mm
- Design Wavelength: 635 nm
- Recommended Wavelength Range: 560-670 nm
- Minimum Recommended Beam Diameter: 1.5 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.

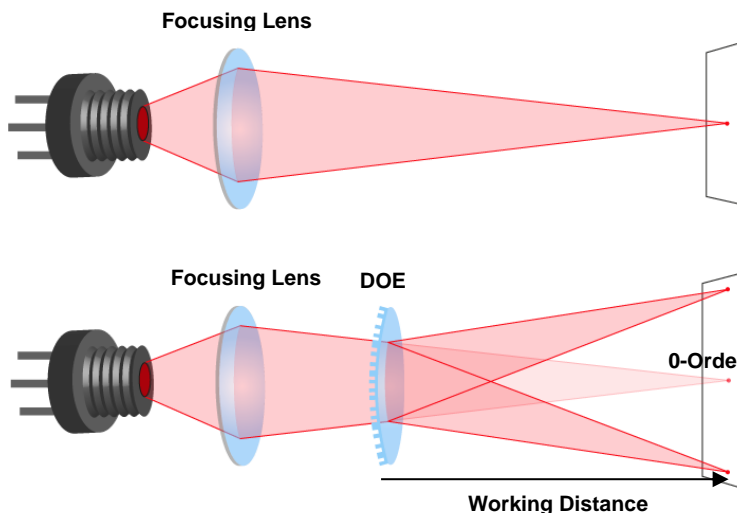
Diffraction efficiencies given on this datasheet have been measured using elements of product revision A.

Pattern Geometry and Diffraction Angles

Wavelength	Pattern Size @ 100 mm Distance	Pattern Angles
λ [nm]	a [mm]	α [°]
450	47.9	26.9
515	55.3	30.9
532	57.3	32.0
594	64.6	35.8
635	69.6	38.4
650	71.4	39.3
660	72.7	39.9
684	75.7	41.5
750	84.2	45.7

Table 1: Pattern size and pattern angle depending on the wavelength

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	Min 0-Order Intensity	Typ. 0-Order Intensity	Max 0-Order Intensity
532	3.3%	6.0%	8.7%
638	0.2%	0.9%	1.5%
684	1.3%	3.2%	4.8%
751	5.5%	8.7%	13.0%

Table 2: Due to the symmetry of the pattern there is no preferred direction for polarization, OA – wanted Off-Axis orders

