

Fig 1: Ring shaped spot after Diffractive Axicon (at focus)

## Diffractive Axicon

Diffractive Axicons convert an input beam into a Bessel beam that can be focused to a ring and has an extended depth of focus.

They are wavelength dependent and defined by divergence angle.

Diffractive axicons are a compact solution of exceptionally precise shape and angle. They allow very small angles and can accept small incident beams, completely aberration free, and can be of positive and negative configurations (convex / concave).

### FEATURES

- Ring shaped spot
- Elongated focus
- High efficiency
- Low back-reflection
- High-power threshold
- Wavelengths from UV to IR
- Optional AR/AR coating

### APPLICATIONS

- Material Processing applications:**
- Laser Glass Cutting
  - Laser Drilling
  - Laser Welding
  - Disc Cutting

Our Diffractive Axicon DOE have no apex "dead zone" and have absolute angular accuracy (no tolerances in production), enabling consistent performance of the system even when cone angles are very small, making them especially suitable for high power laser applications such as material processing where tight focus is used.

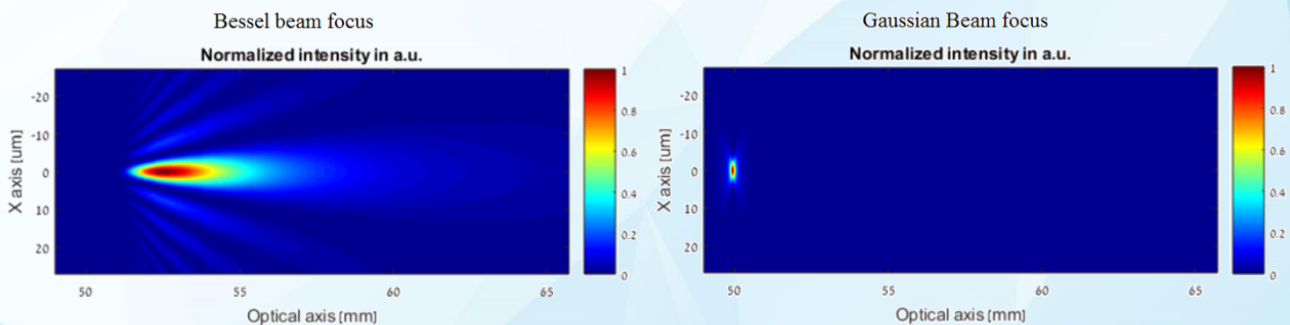


Fig 2: Using a Diffractive Axicon to generate a Bessel beam gives extended depth of Focus compared to just focusing a gaussian beam

Main differences between Diffractive and Refractive axicons include:

- No apex "dead" area vs. a "dead" area in the center
- Accurately defined angle with no variation vs. Angle changes with production tolerances
- Compact vs. "bulky" solution

## SPECIFICATION RANGE

|                               |                              |
|-------------------------------|------------------------------|
| <b>Materials</b>              | Fused Silica, ZnSe, Plastics |
| <b>Wavelength range</b>       | 193nm to 10.6um              |
| <b>DOE design</b>             | Binary, 8-level, 16-level    |
| <b>Element size</b>           | 5mm to 150mm                 |
| <b>Diffraction efficiency</b> | 75%-98%                      |
| <b>Coating (optional)</b>     | AR/AR                        |

