

## CO<sub>2</sub> Beam Expanders

### Description

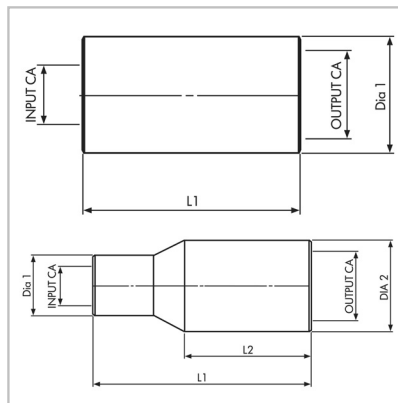
We offer a range of different beam expanders. The different versions will be introduced below.



### Features / Characteristics

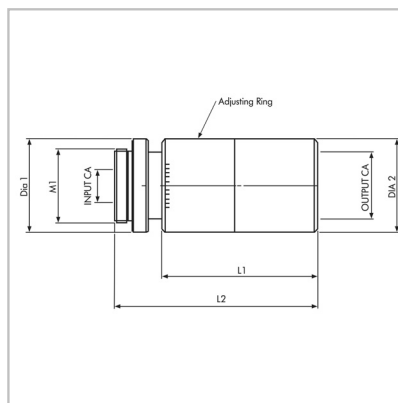
#### Fixed Expanders

Fixed expanders are inexpensive systems in which the focussing range cannot be readjusted. Compensating for the divergence/convergence of the incident beam is not possible.



#### Variable Expanders

With variable expanders, the spacing between the lenses can be modified to compensate for the divergence of the incident beam. The total length can vary by  $\pm 3$  mm.



## Zoom Expanders

In zoom expanders an infinitely variable magnification level can be set ranging from 2 to 8 times the original size. Due to the high variability, these expanders are quite common in the laboratory.

The expanders are variable. That is to say, compensating for divergence/convergence is possible.



## Applications

Beam expanders have two main purposes in the laser industry.

- **Increased power density in the focal point**  
In order to obtain an increased power density in the focal point, the incident beam is expanded to its maximum. Here the physical property of the achievable focus diameter being inversely proportional to the beam diameter before the focussing lens is utilized.
- **Beam guidance over long distances**  
The product of beam radius and divergence is the same at every point along the beam path. The divergence of a laser beam is reduced by beam expansion. Therefore, the beam does not expand as widely across long paths. This is advantageous for later focussing of the beam.

## Specifications

Datasheets/drawings with information on size and further specs are available on request.

## Good to know

When used in reverse, beam expanders can reduce the beam diameter.

Beam expanders consist of two lenses that are built according to the Galileo telescope and therefore do not generate an intermediate focus. These systems are suited for typical medium power levels of up to 100 W. There are fixed, variable and zoom expanders.

#### For inquiries, we need to know:

- Type (fixed, variable, zoom)
- Wavelength (e.g. 10.6 μm)
- Magnification
- Input beam diameter/ output beam diameter
- Average laser power

Customer designs are available upon request.

#### Handling

Safety data sheet and handling inspections are available upon request (in German only).

#### Product Code



For example:

BEX-10.6-2A 2xbeam expander fixed, CO<sub>2</sub> input Ø15 mm, output Ø17 mm



For example:

BXZ-10.6-2-8x, 2-8x Zoom Beam Expander, input 10 mm, output 38 mm