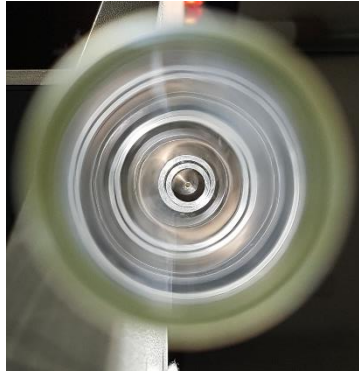
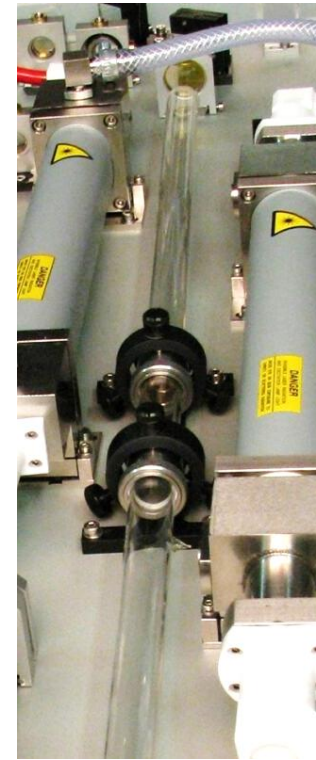


Vacuum Cell & Vacuum Spatial Filter for Pulsed Lasers



Vacuum Spatial Filter (VSF), is a vacuumized borosilicate glass cell at which center lays titanium pinhole. Spatial filter, a usual technique used to improve laser beam quality by removing noise from laser beams and resulting a smooth intensity profile. Since pulsed lasers have much higher pike power, vacuum cell is the only alternative, therefore a microscope objective (used to use for CW lasers) cannot be used to focus pulsed laser beams in to a pinhole because of COD .



Vacuum cells (VC), vacuumized borosilicate glass cell with vacuum of up to 10^{-5} mbar level. Pulsed laser manufacturers or laser photonics folks using Relay imaging systems to control diffraction and preserving the spatial structure of laser beam. The focal plane of Kepler telescope is weakest part of such systems frequently leading to air-breakdown. The best solution is a focal plane being situated in the glass Vacuum Cell (VC).

Geola Digital designs and manufactures Vacuum Cells, which are intended for pulsed laser application. The cells can be manufactured with pinhole at the center (**VSF**) or without pinhole inside the cell (**VC**).

Typical VSF & VC Specifications*

Specification	Value
Cell Material	Borosilicate or Molybdenum Glass
Pinhole Material	Titan or Stainless steel
Cell Diameter	Ø5 mm, Ø6 mm, Ø8 mm, Ø9 mm, Ø10 mm, Ø14 mm, Ø16 mm, Ø19 mm, Ø20 mm, Ø38 mm
Cell Length	from 100 mm to 1000 mm
Vacuum	up to 10^{-5} mbar
Pike power up to	≥ 0.2 GW/cm ²
Windows Material	BK7 or UVFS
Windows Coatings ¹	AR/AR @ 1064nm, AOI = 0°
Windows Thickness ²	from 5 mm to 8 mm
Cell Windows Geometry	or / \ or \\
Mechanical Adjustment	X&Y / X / Y
Windows Surface Quality	20-10 Scratch-Dig
Window Flatness	$\geq \lambda/4$
Default Beam Center Height ³	25mm, 50mm

* Specifications marked 'typical' are indications of typical performance and will vary with each unit we manufacture

¹ Other coating available on request

² Build in lenses instead of windows are also available

³ Customized beam heights are also available on request

Vacuum Cell & Spatial Filter

The DATASHEET, November 2022

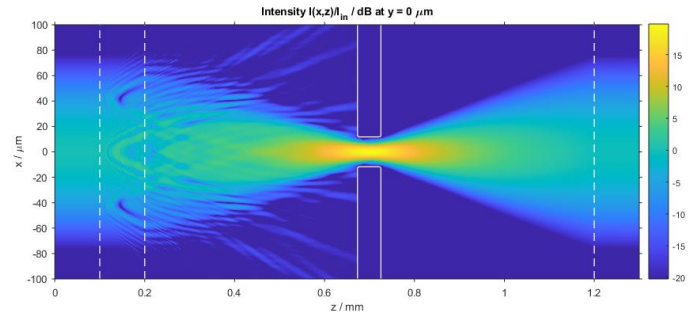


Features

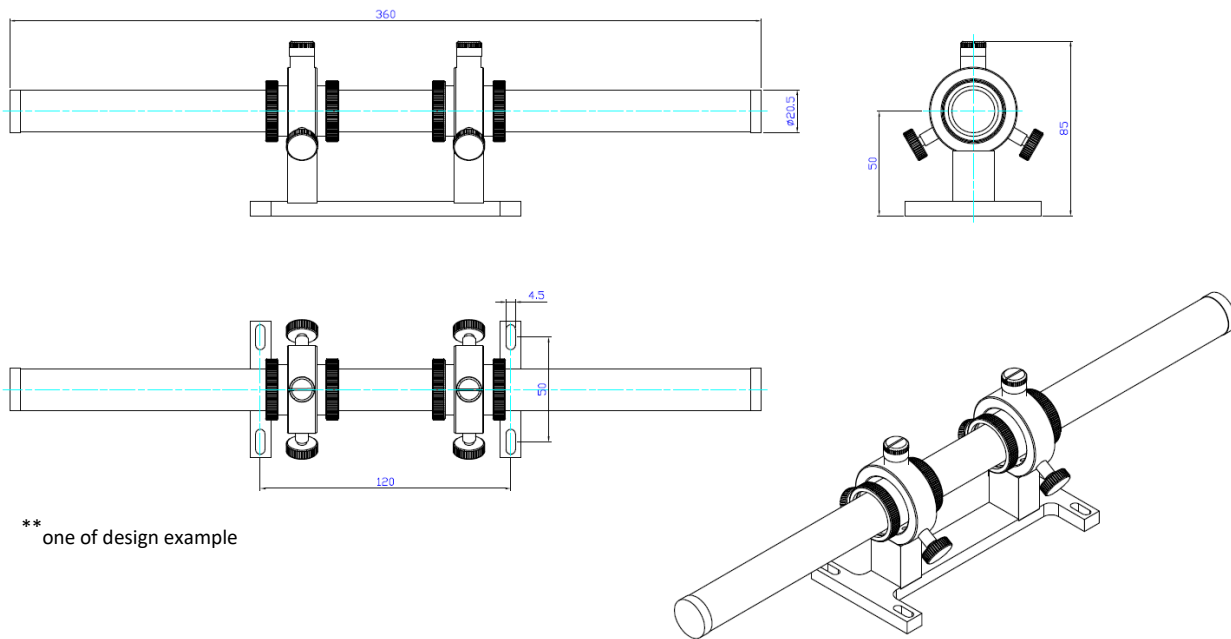
- Long lasting vacuum levels
- Variety of available cell diameters and lengths
- Different window geometries
- Tunable adjustment mounts
- Custom made designs are welcome

Application

- Vacuum Spatial Filtering
- Pulsed laser beam Cleaning
- Relay Imaging with Vacuum cell
- Diffraction suppression via Relay imaging
- Air-breakdown elimination

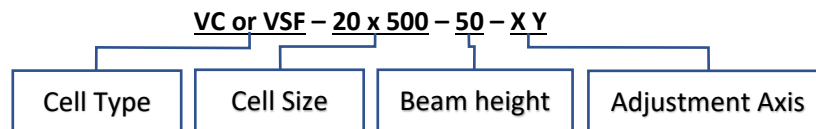


Dimensions **



** one of design example

Ordering information



VC – Vacuum Cell

VSF – Vacuum Spatial Filter (Vacuum cell with pinhole inside)

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