

BragGrate™ - Spatial Filter (BSF)

Reflecting Volume Bragg Grating for spatial filtering

Product Description

Imperfections in laser optics and variations in laser gain medium cause side fringes and spatially varying intensity. Our spatial filters are designed to “clean up” laser beams from these deficiencies. BragGrate™ Spatial Filters (BSF) provide a simple, compact, and cost effective solution for laser beam spatial filtering. BSF is based on reflecting volume Bragg grating with a narrow acceptance angle that enables filtering of laser beams with a single element, thus replacing pinhole assemblies in case of narrow line laser sources. In addition to spatial filtering, BSF's provide ultra-narrow line spectral filtering and can be used for high-power/high-energy applications. BragGrate™ filters have superior environmental stability and can handle high power optical radiation and high operations temperatures.

Specifications

Diffraction Efficiency (DE): 90–95%

Spatial Noise Suppression: up to 30 dB

Center Wavelength Range: 400–2300 nm

Center Wavelength Tunability (angle tuning): up to 50 nm

Filter Thickness: 2–5 mm

Deflection Angles: 5–90 deg

Lateral Dimensions: up to 25×25 mm²

Standard Parameters

Center Wavelength: 405, 488, 514, 532, 633, 785, 1064 nm (custom wavelengths available)

Lateral Dimensions: 5×5 mm²

Thickness: ~3 mm

Angular Acceptance (FWHM): < 5 mrad

Deflection Angle: 20 deg

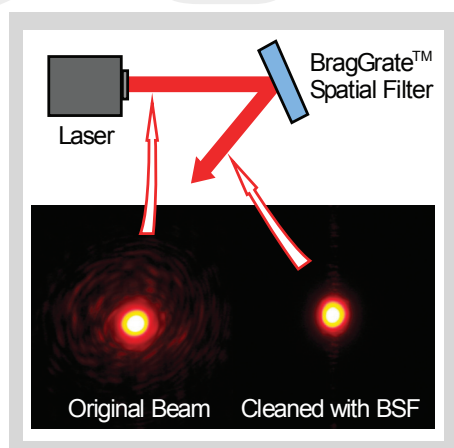
Aluminum Housing with 0.5" or 1" Outer Diameter

Advantages & Features

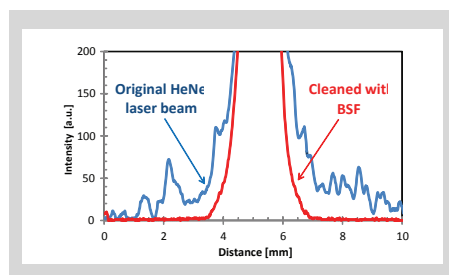
- Spatial filtering without refocusing and pinhole assembly
- Highly cost effective and small footprint
- Easy alignment by angle tuning in standard kinematic mount
- Compatible with high-power operations over 1 kW
- Compatible with high-energy operations up to 5 J/cm²
- Simultaneous spatial and spectral filtering (<5 cm⁻¹ to laser line)
- Supports operation at temperatures up to 400 C

Applications

- Filtering of spatial noise in laser beams
- Ultra-narrow linewidth spectral filtering of laser beams
- ASE filters for diode laser sources
- Wavelength-tunable spatial and spectral filters



Spatial filtering of 632.8 nm HeNe laser with BSF



632.8 nm HeNe laser beam profile before and after BSF cleaning