



Application Notes

Using C-Mount Wedge Type Beam Splitters with the LBS-300 P/N SPZ17015 and SP90273

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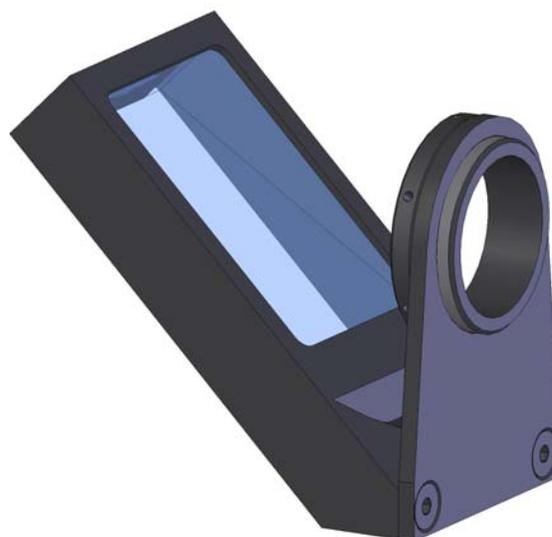
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C-mount Wedge Beam Splitters P/N SPZ17015



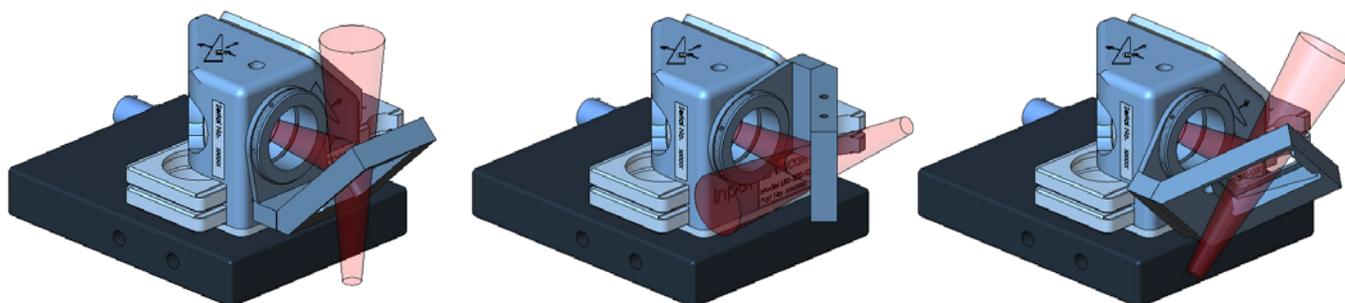
SPZ17015



SP90273

The SPZ17015 and SP90273 C-mount wedge Beam splitter attachments are attached directly to a c-mount input port of various cameras and optical devices allowing an attenuated sample of a beam to be directed into the device.

- uncoated UVFS beam splitters provide about 4% reflection (96% attenuation).
- Samplers can be rotated through 360° which may ease setups.

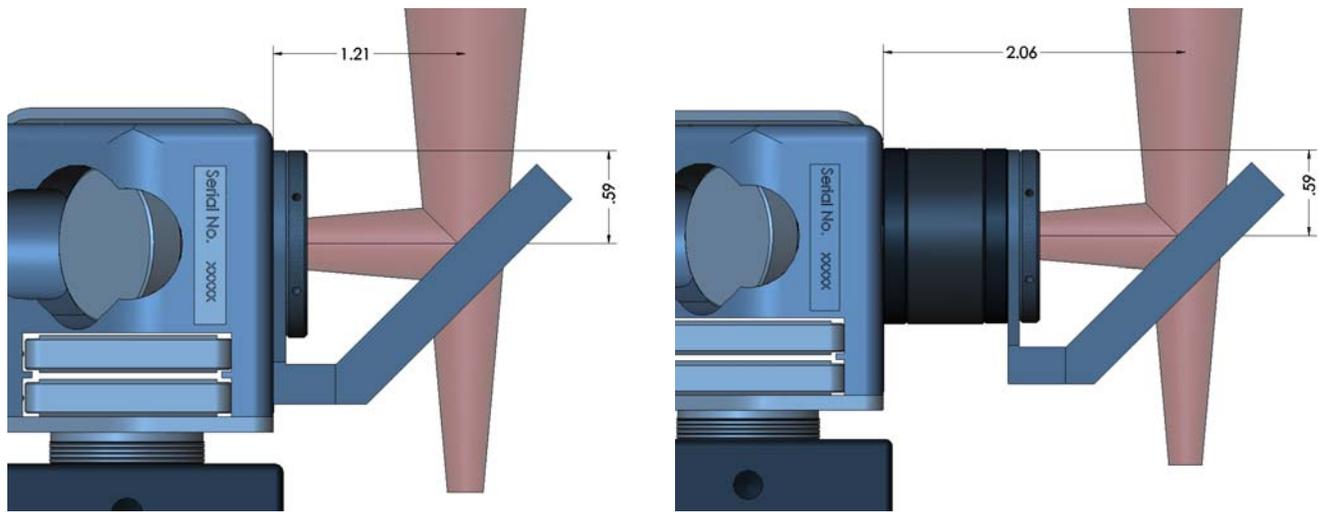


Cautions:

- No matching orthogonal sampler means that the sampled beam will not contain equal proportions of different polarization components.
- The majority of the beam will be passed thru the sampler and will need to be handled safely.
- The transmitted beam is deflected by 6-7° away from the LBS-300.
- The secondary sampled beam will pass through the LBS at 90° to the original beam and will also need to be contained in a safe manner.
- Insure that transmitted beam will clear the camera!
- The clear aperture of the sampling wedge is only 15mm limiting the max size of the sampled beam to about 8mm

LBS-300 + SPZ17015 Focused Spot Analyzer

The SPZ17015 Beam Sampler may be added to an LBS-300 Focused Spot Analyzer setup to provide additional attenuation. This setup may only be effective for relatively long focus length lasers, due to the additional path length.



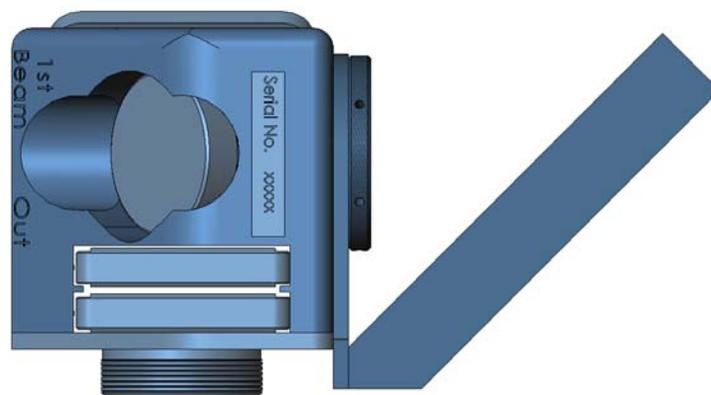
Sampler adds 1.8” to path length

Adding negative lens adds 2.65” to path length

Due to the requirement for c-mount threads, it is necessary to change the FSA lens holder from a .3” tube to a .5” tube and add a c-mount adapter. This adds .36” to the path length.

The FSA worksheet will give the approximate power levels and beam sizes for the new setup giving information on which lens and filter combination will be most useful.

A new large sampling wedge assembly can be used that will increase the size of the clear aperture to 30mm, however the path length is also increased. The larger sampler may not be useful in any orientation, as it may interfere with the camera.



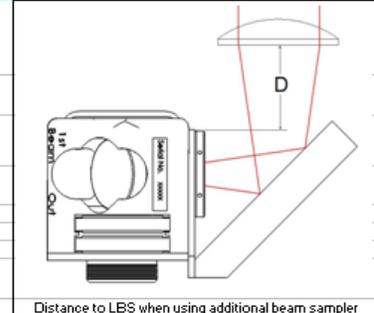
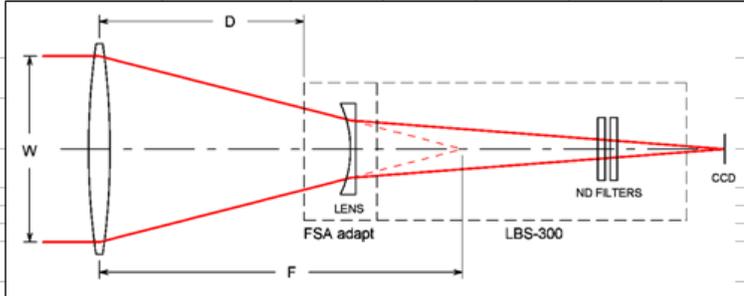
SPZ90273

Calculator for YAG Focal Spot Analyzer

All results are approximate

1. In the blue boxes below, Enter the beam parameters and the camera model.
2. The predicted results will appear in the yellow area. The required separation of the LBS-300 from the reference point for the various lenses will appear in top row of yellow squares.

Do not enter anything into any squares except the blue ones



Distance to LBS when using additional beam sampler

LBS Model	LBS-300-NIR	Number of c-mount attenuators	0
Average Input Power	1000 Watts	Additional Wedge Beam Sampler	SPZ17015
Beam Width (W)	20 mm		
Distance to Focus (F)	150 mm		
Beam M ²	1		
Camera Model	SP620U	For CW lasers, only SP620U, GRAS 20 or SCDR 20 cameras are recommended	

Additional Wedge Sampler
Select the model of additional wedge sampler from the list

	Negative lens Focal Length						mm
	-50	-100	-125	-150	-200	No Lens	
Distance to LBS-300 (D)	54.8	40.4	35.8	32.2	26.8	26.3	mm
Beam width at FSA*	10.7	12.6	13.2	13.7	14.4	12.4	mm
Beam width at filter	0.9	1.4	1.5	1.6	1.8	2.5	mm
Energy Density at filter	1.137	0.535	0.442	0.384	0.318	0.157	W/cm ²
Magnification	2.69	1.84	1.67	1.56	1.42	1.00	
Spot size at detector	27.3	18.7	17.0	15.9	14.4	10.2	µm
Filter Attenuation required	8.8	9.1	9.2	9.3	9.3	9.6	ND

Beam may be clipped by input aperture

Predicted spot size for M² = 1

Additional ND filters may be required

FSA tube clear aperture		
Total path length through LBS-300 to CCD	78.0 mm	Including C-Mount attenuators
Total path length from FSA to CCD	95.7 mm	Including C-Mount attenuators

For Pulsed lasers, the ND values required may be less than indicated above. See data sheet for ND filter damage limits.

For stable results, cameras should be externally triggered when used with pulsed lasers

* If additional wedge beam sampler is installed, beam width is measured at wedge.