System 3002.60M

Applications are for example grazing incidence diffraction experiments performed with samples of limited size, which can lead to the incident beam spilling over the surface of the sample under investigation. This condition is undesirable as it generally leads to an increase of background scattering.

Typical incident angles of < 0.3 deg and sample sizes in the order of 10mm x 10mm require that the vertical or horizontal extent of the beam is of the order of approximately 50µm to avoid beam overspill.

As the physical size of the spot is largely aberration limited, the only way of defining such an incident beam is by placing slits very close to the sample. Also by placing the slits at the exit beam very close to the sample, a well defined sample footprint is obtained plus a further reduction in background scatter.

General Information:

The system 3002.60M was developed for positioning a cross slit screen as close as possible to the sample. Thus it is possible to precisely define the beam entry to the sample and/or the beam exit to the detector. Attention was paid to achieving compact dimensions.

The interior is vacuum suitable. Thus, the system is ideal for low-energy beam applications.

Specifications:

Opening [mm]:	0-4
	asymmetrical
Weight [kg]:	4.5
Resolution [µm]:	1,524 / motor step (400 steps/rev)

Material:

Housing:	Aluminium*
Slit edges:	2mm Tungsten*
Vacuum duct:	Stainless steel

* other materials on request

Technical details:

The actuation mechanics are spatially separated from the sample position, with the four independent (tungsten) slit jaws positioned by a system of levers.

The actuation is achieved through use of four miniature linear vacuum feedthroughs which allow the motors to be mounted externally. The maximum overall opening aperture for the slit assembly is 4mm x 4mm and each jaw can be independently positioned with a resolution of microns.

The slit jaw motions have limit switches to avoid collision and mechanical damage. The front end of the tube slit has a Kapton window which easily can be exchanged and has a standard vacuum KF-flange for attachment of further optical elements.

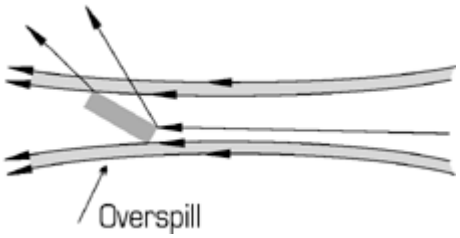
The slit screen is optionally mounted on a X95-Profile or a HUBER prism carriage. Thus it can be easily interchanged or mated with other beam line components.

Technical data motor:

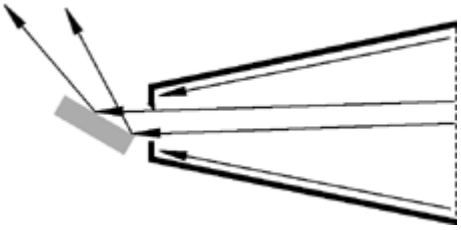
Number of phases:	2
Type of plug:	Sub D15
Number of steps/rev.:	200/400
Voltage [V]:	5
Current per phase [A]:	0.7

Graphic illustration of beam processing:

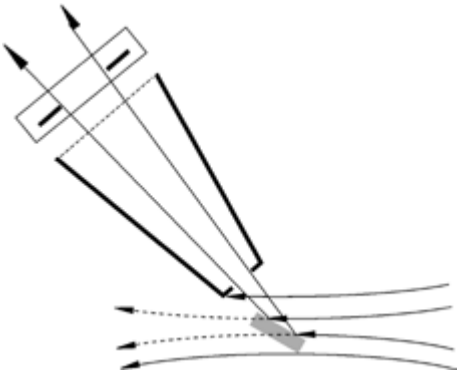
1. beam entry without tube slit screen



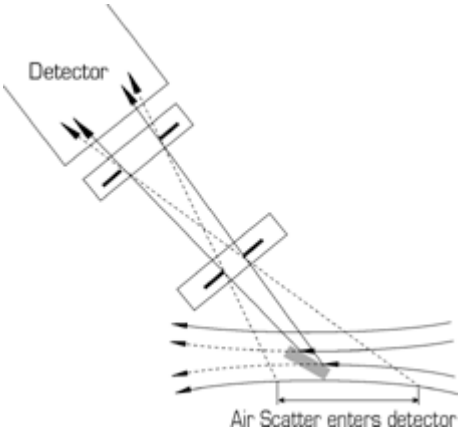
2. beam entry with tube slit screen

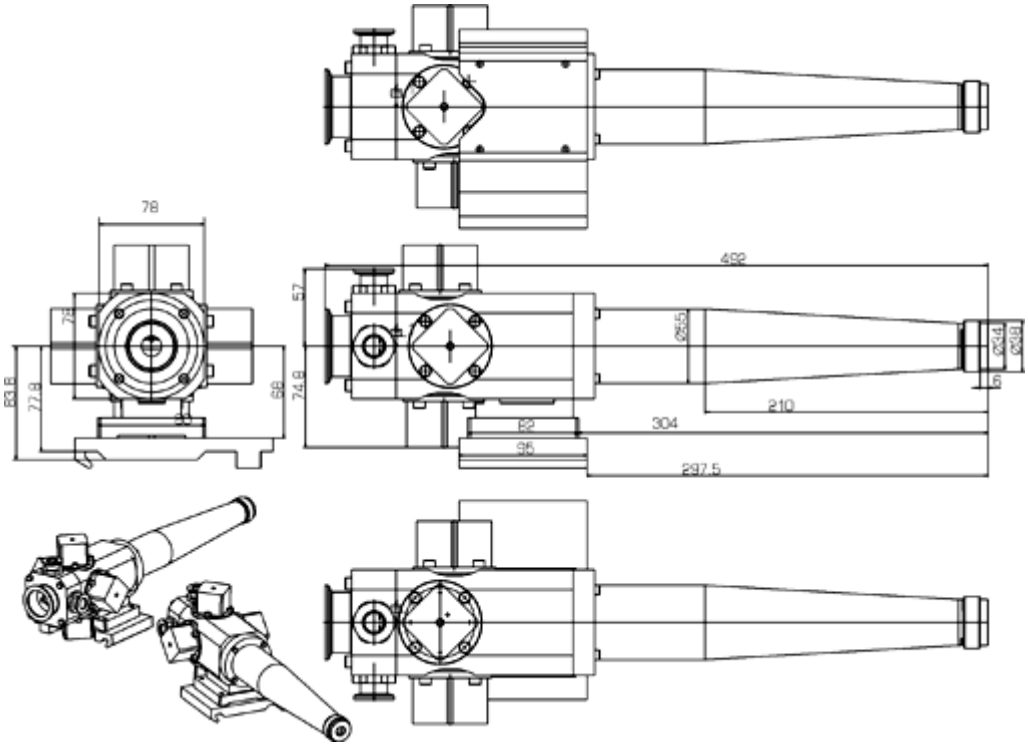


3. beam exit without tube slit screen



4. beam exit with tube slit screen

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74
83.6
77.8
66
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74.8
492
Ø55
Ø44
Ø40
5
210
304
82
96
297.5