

PNEUMATICALLY ACTUATED LASER SHUTTERS



FEATURES

Pneumatically actuated	Simple, high reliability control with compressed air
In-air and UHV compatible options available	Adaptable design for demanding physics applications
Versions for large beam diameters [>20cm], high intensity [PW-class] and high average power [kW]	Suitable for integration into large laser systems
Rapid closing times even for large mirror masses	No need to rely on small shutters in the front-end – laser amplifiers can stay thermalized while waiting for user operations
Constructed mainly from off-the-shelf industrial, high-reliability components	Certain models designed to achieve Safety Integrity Level [SIL] 3 according to IEC-61508
Lifetime tested to >10000 cycles	Reliability and availability proven from daily use at ELI Beamlines
Numerous models developed for different applications	Adaptable to demanding end-user requirements
High reliability closing even in a horizontal orientation	No need for vertical gravity close in locations with space constraints

APPLICATIONS

- Industrial and scientific laser systems designed for high reliability and automation
- Facilities where lasers produce hazards such as ionizing radiation which require high integrity safety measures
- Industrial and assembly line applications of next-generation high energy, high rep-rate lasers

HOW DOES IT WORK?

These shutters are based on translating mirrors that direct the laser beam to a beam dump, preventing it from propagating and protecting down-beam components and personnel. A pneumatic actuator moves the mirror into or out of the beam. By storing energy as compressed air, reliable, fast and fail-safe closing is guaranteed, even when mounted horizontally.

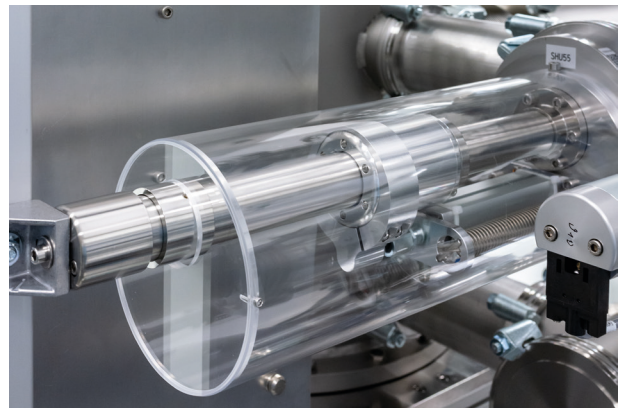
SPECIFICATION

Beam clear aperture	From 50 mm to 500 mm
Opening and closing times	From 50 ms to 5 seconds
Safety ratings	SIL2 (single shutter) and SIL3 (dual shutter)
Average laser power	Up to 1 kW (with integrated water cooled beam dump)

ABOUT US

ELI Beamlines is an international user facility that is involved in the development and operation of state-of-the-art laser systems, including some of the most powerful lasers in the world.

Our in-house development of high power lasers has led to many new and unique engineering solutions for highly demanding applications where commercial solutions satisfying our stringent requirements did not exist.



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