

Long Travel Linear Shift Mechanism

HLSML Series

The HLSML provides strokes of up to 1000mm (39”) with high precision motion maintained throughout the stroke. The HLSML is also chosen for shorter strokes where ultimate stability is required.

HLSML KEY ADVANTAGES

- » Up to 1m stroke
- » Smooth kinematic motion
- » Reliable and rigid construction
- » ‘Plug and play’ production solutions
- » True UHV performance
- » Bakeable to 250°C
- » Demountable bellows

Linear Shift Mechanisms (LSMs) provide linear motion along the port axis (Z). Typical applications include the positioning of beamline filters, adjustment of sputter sources and deposition stages through to production style applications.

UHV Design has the largest range of LSMs in the world, ranging from CF35 to CF150 flanges, up to 1m stroke, tilt & X alignment versions with manual, pneumatic and motorisation options, all available with a range of position encoders. Bakeable to 250°C, the range is supplied on CF flanges and provides true UHV performance.

The HLSML series of long travel Linear Shift Mechanisms, incorporates an upgraded structure with rear spine and large bore shafts and supports. The rigid structure maintains precise motion and unrivalled stability with strokes up to 1m.

High duty cycle production HLSMLs are available providing reliable, smooth and rigid motion with long operational life. Production ready HLSMLs can be supplied with pre-wired switches and connectors for ‘plug & play’ operation.

Actuation methods

The series can be actuated via a manual handwheel, DC motor or stepper motor.

Motorised HLSMLs are fitted with bakeable limit and home switches, pre-wired to a single, bakeable connector mounted on the frame. HLSMLs are compatible with UHV Design’s SADC and Stepper motor controller range.

Each HLSML can be supplied with a digital linear scale, offering visual position indication with 10 micron resolution.



HLSML38 Technical Data

SPECIFICATION	VALUE
Travelling flange size	FC38 (2-3/4") metric tapped straddled
Fixed flange size	FC38 (2-3/4") clear holes straddled
Stroke range	200 to 800 mm
Clear bore	38 mm
Leadscrew pitch	2.54mm (0.1")
Max axial load on travelling flange	150N
Maximum cantilevered moment	10 Nm
Flange alignment under vacuum	2 mrad (eg 2mm at 1m from travelling flange)
Linear scale option - resolution	1mm engraved scale or 0.01mm DLA option
Bakeout temperature	250 °C with motor/DLA/ linear potentiometer removed
Linear encoder option - standard resolution	Renishaw LM10 with 10 micron resolution
Linear encoder option - upgraded resolution	Upgrade to 1 micron resolution
Linear encoder option - encoder repeatability	Better than unit of resolution in same direction
Stepper motor option	23 frame 8 wires 3A / phase
Standard stepper option - motor wiring	UTO motor 23HT18C230
stepper motor option - switches	bakeable limit and home switches with lemo socket wired to diagram WD-002
Stepper motor maximum linear speed	5.08 mm/second
Linear resolution per 1/2 step	0.000508 mm
DC motor option	24V dc brushed motor
DC motor option - motor wiring	2 pin generic plug to diagram WD-010
DC motor switches	bakeable limit switches only not wired
Upgrade DC motor option - switches	bakeable limit switches with lemo socket wired to diagram 11-6-03
DC motor maximum linear speed	4 mm/second
Motor gearbox type and ratio stepper option	spur and 25:2
Motor gearbox type and ratio dc option	spur and 25:1
Motor gearbox backlash	1 degree
Motorised Linear backlash under vacuum	0.0071mm

HLSML64 Technical Data

SPECIFICATION	VALUE
Travelling flange size	FC64 (4 1/2") metric tapped straddled
Fixed flange size	FC64 (4 1/2") clear holes straddled
Stroke range	300 to 1000 mm
Clear bore	65 mm
Leadscrew pitch	2.54mm (0.1")
Max axial load on travelling flange	245N
Maximum cantilevered moment	10 Nm
Flange alignment under vacuum	2 mrad (eg 2mm at 1m from travelling flange)
Linear scale option - resolution	1mm engraved scale or 0.01mm DLA option
Bakeout temperature	250 °C with motor/DLA/ linear potentiometer removed
Linear encoder option - standard resolution	Renishaw LM10 with 10 micron resolution
Linear encoder option - upgraded resolution	Upgrade to 1 micron resolution
Linear encoder option - encoder repeatability	Better than unit of resolution in same direction
Stepper motor option	23 frame 8 wires 3A / phase
Standard stepper option - motor wiring	UTO motor 23HT18C230
stepper motor option - switches	bakeable limit and home switches with lemo socket wired to diagram WD-002
Stepper motor maximum linear speed	6.35 mm/second
Linear resolution per 1/2 step	0.000635 mm
DC motor option	24V dc brushed motor
DC motor option - motor wiring	2 pin generic plug to diagram WD-010
DC motor switches	bakeable limit switches only not wired
Upgrade DC motor option - switches	bakeable limit switches with lemo socket wired to diagram 11-6-03
DC motor maximum linear speed	3.7 mm/second
Motor gearbox type and ratio stepper option	planetary and 10:1
Motor gearbox type and ratio dc option	spur and 25:1
Motor gearbox backlash	1 degree
Motorised Linear backlash under vacuum	0.0071mm

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