

# Standard Linear Shift Mechanism

## LSM Series



Production-proven linear motion along the port axis (Z) for sample positioning and production applications.

Comprehensive series offering true UHV performance with a vast range of flange sizes, strokes, actuation and encoder options.

### LSM KEY ADVANTAGES

- » 2x flange parallelism compared with conventional designs
- » 2x load-carrying capability compared with conventional units
- » Smooth kinematic motion
- » 10,000 cycle lifetime guarantee
- » Demountable bellows assembly
- » Bakeable to 250°C

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 LSM is the most comprehensive series in the range, offering the largest number of flange, stroke and actuation options. All flanges within the series are supplied with tapped bolt holes as standard. Special variants with clear holes on the mounting flange can be provided for most sizes, these are labelled HLISM in the partcodes and specification tables.

### Actuation methods

The series can be actuated via a manual handwheel, pneumatic cylinder, DC motor or stepper motor. Each LSM can also be fitted with a digital linear scale, offering visual position indication with 10 micron resolution.

Motorised LSMs are fitted with bakeable limit and home switches, pre-wired to a single bakeable connector mounted on the frame ('UP' option must be selected). LSMs are compatible with UHV Design's SADC and Stepper motor controller range, details of which can be found in our catalogue.

**LSM38 Technical Data**

SPECIFICATION	VALUE
Travelling flange size	FC38 (2-3/4") metric tapped straddled
Standard fixed flange size	FC38 (2-3/4") metric tapped straddled
Optional fixed flange size	FC38 (2-3/4") clear holes straddled
Stroke range	25 to 300 mm
Clear bore	38 mm
Leadscrew pitch	2.54mm (0.1")
Max axial load on travelling flange	150N and 50N Pneumatic option
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/pneumatic cylinder /DLA/ linear potentiometer removed
Linear encoder option - type	Renishaw LM10
Linear encoder option - resolution	1 micron
Linear encoder option - encoder repeatability	Better than unit of resolution in same direction
Pneumatic option - cylinder bore	32 mm
Pneumatic option - cylinder fitting	6mm tube push fit
Pneumatic option - cylinder switch	5-24V 2 wire reed switch
Pneumatic option - max linear speed	25mm / second
Stepper motor option	23 frame 8 wires 3A / phase
Standard stepper option - motor wiring	Flying leads
Standard stepper motor - switches	bakeable limit switches only not wired
Upgrade stepper motor - motor wiring	lemo socket to diagram 11-1-25
Upgrade stepper motor option - switches	bakeable limit and home switches with lemo socket wired to diagram WD-002
Stepper motor maximum linear speed	2.54 mm/second
Linear resolution per 1/2 step	0.000254 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	spur and 25:1
Motor gearbox backlash	1 degree
Motorised Linear backlash under vacuum	0.0071mm

## LSM64 Technical Data

SPECIFICATION	VALUE
Travelling flange size	FC64 (4 1/2") metric tapped straddled
Standard fixed flange size	FC64 (4 1/2") metric tapped straddled
Optional fixed flange size	FC64 (4 1/2") clear holes straddled
Stroke range	25 to 300 mm
Clear bore	65 mm
Leadscrew pitch	2.54mm (0.1")
Max axial load on travelling flange	245N and 200N Pneumatic option
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/pneumatic cylinder /DLA/ linear potentiometer removed
Linear encoder option - type	Renishaw LM10
Linear encoder option - resolution	1 micron
Linear encoder option - encoder repeatability	Better than unit of resolution in same direction
Pneumatic option - cylinder bore	63 mm
Pneumatic option - cylinder fitting	6mm tube push fit
Pneumatic option - cylinder switch	5-24V 2 wire reed switch
Pneumatic option - max linear speed	25mm / second
Stepper motor option	23 frame 8 wires 3.9A / phase
Standard stepper option - motor wiring	Flying leads
Standard stepper motor - switches	bakeable limit switches only not wired
Upgrade stepper motor - motor wiring	Built in UTO motor 23HT18C230 (3A / Phase)
Upgrade stepper motor option - switches	bakeable limit and home switches with lemo socket wired to diagram WD-002
Stepper motor maximum linear speed	1.27 mm/second
Linear resolution per 1/2 step	0.000127 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	1.95 mm/second
Motor gearbox type and ratio	spur and 50:1
Motor gearbox backlash	1 degree
Motorised Linear backlash under vacuum	0.0071mm

## LSM100 Technical Data

SPECIFICATION	VALUE
Travelling flange size	FC100 (6") metric tapped straddled
Standard fixed flange size	FC100 (6") metric tapped straddled
Optional fixed flange size	FC100 (6") clear holes straddled
Stroke range	25 to 300 mm
Clear bore	102 mm
Leadscrew pitch	2mm
Internal gearbox - manual option only	5:1
Max axial load on travelling flange	200N and 150N Pneumatic option
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/pneumatic cylinder /DLA/ linear potentiometer removed
Linear encoder option - type	Renishaw LM10
Linear encoder option - resolution	1 micron
Linear encoder option - encoder repeatability	Better than unit of resolution in same direction
Pneumatic option - cylinder bore	80 mm
Pneumatic option - cylinder fitting	8mm tube push fit
Pneumatic option - cylinder switch	5-24V 2 wire reed switch
Pneumatic option - max linear speed	25mm / second
Stepper motor option	23 frame 8 wires 3A / phase
Standard stepper option - motor wiring	Buit in UTO motor 23HT18C230
Standard stepper motor - switches	bakeable limit switches only not wired
Upgrade stepper motor option - switches	bakeable limit and home switches with lemo socket wired to diagram WD-002
Stepper motor maximum linear speed	1.27 mm/second
Linear resolution per 1/2 step	0.000127 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	1.86 mm/second
Motor gearbox type and ratio	Planetary and 50:1
Motor gearbox backlash	1 degree
Motorised Linear backlash under vacuum	0.0071mm

## LSM150 Technical Data

SPECIFICATION	VALUE
Travelling flange size	FC150 (8") metric tapped straddled
Standard fixed flange size	FC150 (8") metric tapped straddled
Optional fixed flange size	FC150 (8") clear holes straddled
Stroke range	25 to 300 mm
Clear bore	150 mm
Leadscrew pitch	2mm
Internal gearbox - manual option only	5:1
Max axial load on travelling flange	200N and 100N Pneumatic option
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/pneumatic cylinder /DLA/ linear potentiometer removed
Linear encoder option - type	Renishaw LM10
Linear encoder option - resolution	1 micron
Linear encoder option - encoder repeatability	Better than unit of resolution in same direction
Pneumatic option - cylinder bore	100 mm
Pneumatic option - cylinder fitting	10mm tube push fit
Pneumatic option - cylinder switch	5-24V 2 wire reed switch
Pneumatic option - max linear speed	25mm / second
Stepper motor option	23 frame 8 wires 3A / phase
Standard stepper option - motor wiring	Built in UTO motor 23HT18C230
Standard stepper motor - switches	bakeable limit switches only not wired
Upgrade stepper motor option - switches	bakeable limit and home switches with lemo socket wired to diagram WD-002
Stepper motor maximum linear speed	1.27 mm/second
Linear resolution per 1/2 step	0.000127 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	1.86 mm/second
Motor gearbox type and ratio	Planetary and 50:1
Motor gearbox backlash	1 degree
Motorised Linear backlash under vacuum	0.0071mm

### For more information:

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