

# Linear Shift Mechanism With Tilt

## LSMT Series



Smooth kinematic linear motion along the port axis (Z) with the additional facility to tilt the travelling flange so it serves as an integrated port aligner. This makes the LSMT ideal for applications where precise alignment with a fixed point is essential.

### LSMT KEY ADVANTAGES

- » Up to 150mm stroke
- » +/- 2° tilt for final alignment
- » Adjustment via 4 threaded support shafts
- » Smooth kinematic motion
- » Bakeable to 250°C
- » Demountable bellows assembly

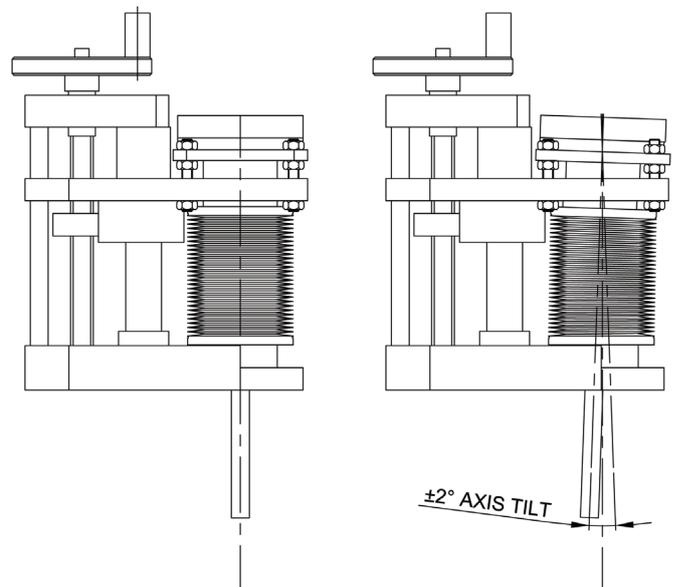
Linear Shift Mechanisms (LSMs) provide linear motion along the port axis (Z). Typical applications include the positioning of beamline filters, adjustment of sputter sources and deposition stages through to production style applications.

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 LSMT is based on the standard LSM series with the additional facility to tilt the moving flange by +/- 2° for final alignment, acting as an integrated port aligner. Typically used on beamlines to align diagnostics or for ion/sputter source alignment. Adjustment is actuated via four threaded support shafts. All flanges in the series are supplied with tapped bolt holes on the base flange as standard.

### Actuation methods

The series can be actuated with a manual handwheel, pneumatic cylinder, DC motor or stepper motor.



## LSMT38 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                                     |
| Stroke range                            | 25 to 150 mm  |
| Clear bore                              | 38 mm   |
| Leadscrew pitch                         | 2.54mm (0.1")   |
| Tilt angle of Travelling flange         | +/-2 degrees  |
| 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 removed                         |
| 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 - Z axis only      | 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 - Z axis only           | 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  |

## LSMT64 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                                     |
| Stroke range                            | 25 to 150 mm  |
| Clear bore                              | 65 mm   |
| Leadscrew pitch                         | 2.54mm (0.1")   |
| Tilt angle of Travelling flange         | +/-2 degrees  |
| 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 removed                         |
| 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 - Z axis only      | 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 - Z axis only           | 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  |

### For more information:

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