

VSM17-Z Translation Stage

Ultra High Vacuum Modular Translation Stages

AML ultra high vacuum compatible vertical linear translation stages for z-axis translation of loads up to 30 kg.

They can be used standalone or as part of a complex motion system, as they are compatible with the range of VSM17 modular stages. Specifically designed for Z-axis translation, the sample table is always above the mechanism across the stage's full range of travel.

They are manufactured with UHV compatible material and construction methods and utilise AML UHV stepper motors.



FEATURES

- Standard travels from 50 to 70 mm
- 1 μm resolution
- 0.26 μm repeatability
- Maximum speed of 5 mm/sec
- Suitable for use to 1×10^{-10} mBar
- Bakeable to 200 °C
- 30 kg centred load capacity
- Features AML D35.1 stepper motor
- Can optionally be fitted with limit switches or an optical encoder
- Radiation resistant and dry lubricated versions available
- Designed for Z-axis translation
- Compatible with all VSM17 modular stages
- May be customised for specific requirements

SPECIFICATIONS

| Specification | VSM17-Z-050 | VSM17-Z-070 |
|--------------------------------|---|---------------------------|
| Travel | 50 | 70 |
| Resolution | 1 μm | |
| Maximum Speed | 5 mm/s | |
| Repeatability | 0.26 μm | |
| Centred Load Capacity | 30 kg | |
| Maximum Load Moment | 80 Nm | 42 Nm |
| Roll, Pitch and Yaw (Unloaded) | $\pm 78 \mu\text{rad}$ | $\pm 67 \mu\text{rad}$ |
| Roll, Pitch and Yaw Compliance | $\pm 54 \mu\text{rad/Nm}$ | $\pm 66 \mu\text{rad/Nm}$ |
| Straightness of Travel | 3 $\mu\text{m}/100 \text{ mm}$ | |
| Stepper Motor | AML D35.1 | |
| Vacuum Environment | $< 1 \times 10^{-10} \text{ mBar}$ | |
| Maximum Temperature | 200 °C (reduces to 120 °C when an optional encoder is fitted) | |
| Mass Including Motor | 2.1 kg | 2.6 kg |

NOTES

BACKLASH: Backlash in the gearbox of the VSM17-Z is controlled by special gearing and is negligible. Backlash between the nut and leadscrew is controlled by gravity.

LUBRICATION: Running surfaces are dissimilar materials or dry lubricated with molybdenum disulfide. Leadscrews are lubricated with Nyetorr® 6300 UHV grease. Dry lubrication can be specified.

VERNIER STOP: These stages may be driven to the vernier stops at the limits of their travel and stalled without damage.

STACKED MECHANISMS: For 3-axis motion mount the stage moving the load vertically on top of the others to avoid adding their weight to its load.

OPTIONS

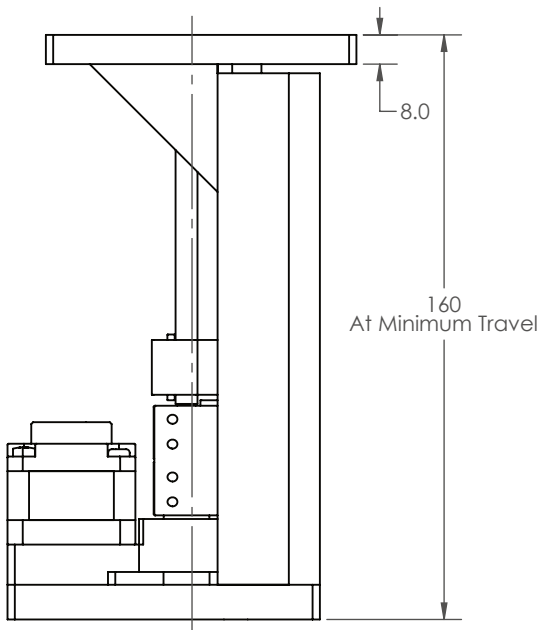
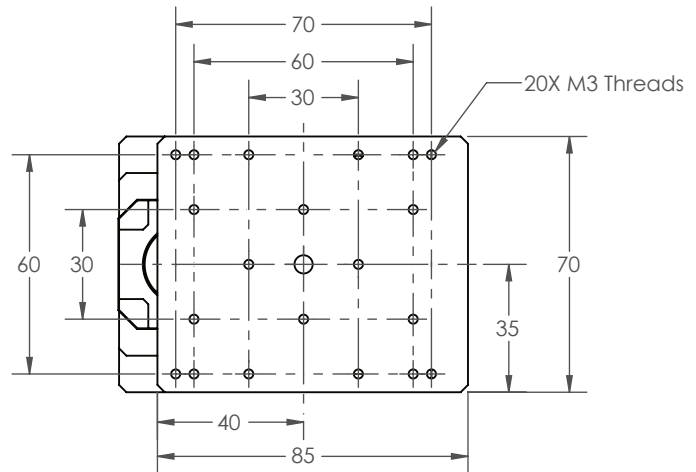
LS Adds 2x limit switches to the stage.

ER Adds a Renishaw TONiC™ UHV incremental encoder on the stage.
Renishaw readhead part number: T1630-15M.

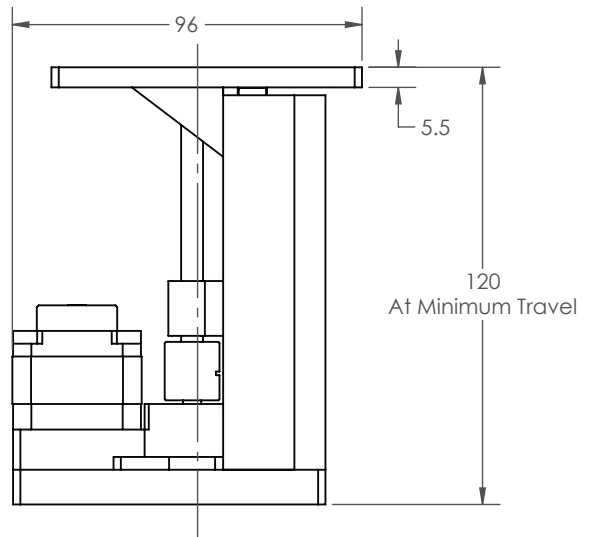
EA Adds a Renishaw RESOLUTE™ UHV absolute encoder.
Renishaw readhead part number: RL26BVE050D15V.

R Adapts the stage so that it is radiation hardened, making it compatible with a total dose of 1E6 Gy of gamma radiation.

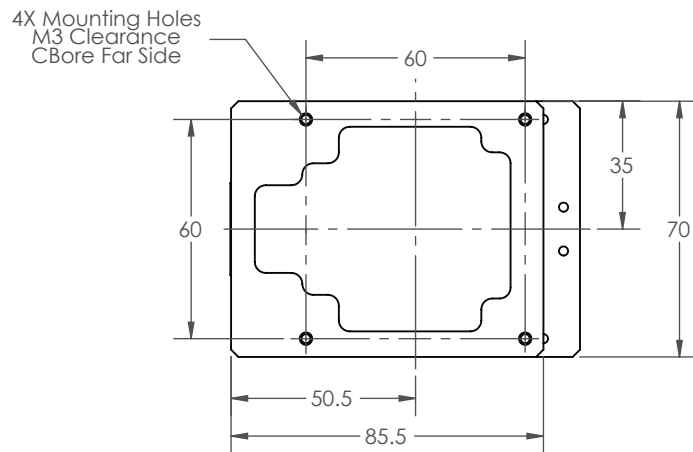
DIMENSIONS



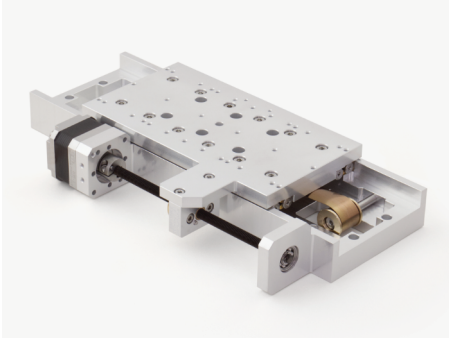
VSM17-Z-070



VSM17-Z-050



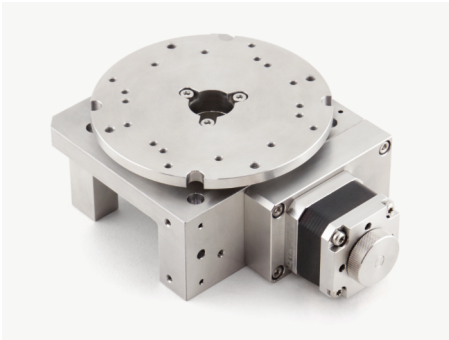
RELATED PRODUCTS



VSM17-X

High Performance, Modular UHV Compatible Stage.

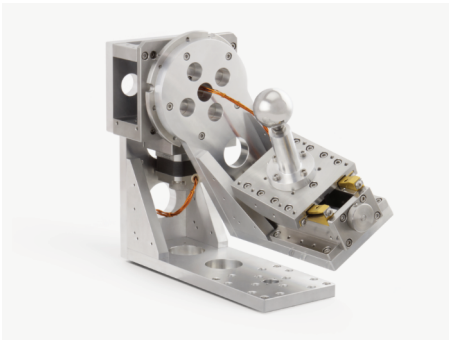
Linear translation stage suitable for use in UHV. Can support loads of up to several kilograms and travel from 50 to 200 mm. 5 μm resolution allows for precise in-vacuum motion.



VSM17-R

High Performance, Modular UHV Rotation Stage.

Rotation stage suitable for use in UHV. Can support loads of up to 100 kilograms. Resolutions from 0.1° to 0.005° with 360° of continuous rotation.



VSM17-G

High Performance, Modular UHV Goniometer Stage.

Goniometer stage suitable for use in UHV. It is possible to build a Euler goniometer with a common centre of rotation.

ORDERING INFORMATION

| Order Code | |
|----------------|---|
| VSM17-Z-xxx | 1 μm resolution (xxx=travel in mm) |
| VSM17-Z-xxx-LS | 1 μm resolution with 2 x limit switches |
| VSM17-Z-xxx-EA | 1 μm resolution with encoder (absolute) |
| VSM17-Z-xxx-ER | 1 μm resolution with encoder (incremental) |
| VSM17-Z-xxx-R | 1 μm resolution, radiation resistant |



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AML pursues a policy of continuous improvement and reserves the right to make detail changes to specifications without consultation. E and OE.