





VLSC is a family of compact positioners especially designed for XY alignment or scanning in vacuum. The stainless steel body, ball bearings with metal cages, vented holes, vacuum cleaning and handling make it suitable for the use in HV or UHV.

A variety of actuators, with the standard 9.5 mm shank, provide travel ranges of 12.5 mm (S size) and 25 mm (M size), with repeatability down to 0,2 μ m and resolution down to 0,03 μ m. High load capability up to 20 kg in a very compact shape make them useful as an alignment base for big and heavy components e.g. 8" Gimbal Mounts in laser optical alignments:

Available in motorised or manual version, mixed configurations upon request.

- Stiff stainless steel body
- Interchangeable spring loaded actuators
- Pre-aligned XY configuration
- High load capacity in small footprint

VLSC typical Specifications*					
Actuator	Stepper	Piezo Open-Loop	Piezo Closed-Loop	Manual drive 0,25 mm pitch screw	
Resolution	2,5 µm full step	-	0,03 μm per count	-	
Minimum incremental motion	0,1 µm	0,03 µm	0,05µm	0,5 µm	
Repeatability	<1 µm	-	+/- 0,2 µm	-	
Travel range	12,5 mm (S size) - 25 mm (M size)				
Max speed	2 mm/s recommended:				
Axial force	20 N				
Bearings load capacity	100 N (S size) - 200 N (M size)				
Moment	Please contact us for a proper calculation				
*Note	100% of the stages are singularly tested and measured with the interferometer and documented with actual data.				

VLSC



Ordering Information Vacuum Linear Stage Compact



e.g. VLSC-S-PZ-UHVG-1000 = XY, 12,5mm travel range, piezo open-loop actuators, prepared for vacuum 10^{-8} mbar, 1m vacuum cable

- Stepper and piezo motorised actuators have 1m vacuum cable unless you require a different length.
- Stepper actuators (SM) are provided with a Sub-D9 test connector (not for vacuum, only for testing purposes) unless you require a vacuum connector.
- Piezo actuators (PZ / PZC) are provided with vacuum compatible Lemo connectors as standard.
 - We can supply a complete set-up if you choose; if you need accessories such as vacuum connectors, vacuum feed-throughs, air wiring length, controller, software...
 - or more please fill in the form, downloadable at this link: www.nano-stage.com
 - or follow the QR code on the right.



VLSB

Vacuum Linear Stage Basic

- Simple and cost effective design
- Low profile
- Optional position feed-back with resolver
- FV and HV environment

VI SB typical Specifications*

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stage for vacuum, suitable for many simple positioning tasks where the highest accuracy

comes even on a budget. In spite of its minimalist design it still delivers an excellent compromise of load capacity, stroke and positioning resolution. The low profile of the stainless steel mono-rail with recirculating ball bearings makes VLSB stages the ideal choice as base positioners; thanks to the high stiffness you can pile-up over the carrier with no problem. These HV stages are actuated by a precision preloaded lead screw and a Phytron VSS motor with optional resolver.

- Homing is possible on one micro-switch in PEEK integrated in the motor flange.
 - It is also possible to stack these stages in multi-axes set-ups. VLSB stages are suitable down to HV 10^-7 mbar.

veob typical opecifications					
Motor	VSS43.200.1,2 200 step / revolution	+ resolver option with 1024 point / revolution			
Lead/ screw pitch	0,5	0,5 mm			
Resolution	2,5 µm full step	0,5 μm per count			
Minimum incremental motion	0,25 μm (micros	0,25 µm (microstep / open-loop)			
Epeatability	<1 µm	<1 µm			
Travel range	50 - 25	50 - 250 mm			
Max speed	3mm/s recommended: limit	ted by duty cycle in vacuum			
Axial force	100 N				
Load capacity	150 N with single carrier				
Moment	Please contact us for a proper calculation				
*Note	100% of the stages are sing with the interferometer and c	gularly tested and measured documented with actual data.			

VLSB

Vacuum Linear Stage Basic



Ordering Information Vacuum Linear Stage Basic

Part Number	Travel range	Vacuum preparation	Temperature sensors	Measurement system	Cable lenght
VLSB	50	FV (fine vacuum)	K type	RS (resolver)	1000
	100	HV (high vacuum)	PT100		custom
	150				
	200				
	250				

e.g. VLSB-200-HV-PT100--RS = 200mm travel range, HV 10^-7 mbar, Motor with integrated PT100 and resolver, 500mm vacuum leads

• Select travel range, vacuum environment and the optional sensor in the table above to define the code number.

• Be aware of the duty cycle limitations of motors in vacuum especially with dry lubrication, please check this data-sheet:

• For multi-axe assembly, overall system specifications, duty-cycle analysis or any special requirements please fill in the form at this link:

or at the QR code on the right and contact us.

• We can deliver a turn-key solution from the vacuum stage through the electrical connection in vacuum and air to the control electronics, let us know your requirements.



VLSP

Vacuum Linear Stage Plus

- High precision / high load
- Incremental or absolute linear scale
- Resolver
- Optional dry lubrication

VLSP typical Specifications*						
Motor	VSS43.200.1,2 200 step / revolution + resolver option with 1024 point per revolution		+ direct incremental or absolute linear scale			
Lead/ screw pitch		0,5 mm				
Resolution	2,5 µm full step	2,5 μm 0,5 μm full step per count				
Minimum incremental motion	0,25 µm (micro	0,05 μm (microstep/C-Loop)				
Repeatability	<1 µm	<1 µm <1 µm				
Travel range	50 - 25	50 mm (-100 with 2nd	carrier)			
Max speed	3 mm/s recomm	nended: limited by duty	cycle in vacuum			
Axial force		100 N				
Load capacity	150 N with single carrier - 300 N with double carrier					
Moment	Please co	Please contact us for a proper calculation				
*Note	100% of the sta with the interfero	ges are singularly teste meter and documented	ed and measured with actual data.			

VLSP is the hi-end micro positioning stage thought to deliver the highest performances in a compact

shape. A solid body, machined by a block of aluminium alloy, integrates high precision stainless steel recirculating ball bearings. A stainless steel lead-screw with preloaded PEEK nut is driven by a VSS Phytron motor, PEEK micro-switches are integrated in the mechanics for end of run and homing function. The optional second carrier is offered to increase load capacity and pitch/yaw/ roll stiffness as well as moment capacity of the stage: this is very helpful for multi-axes assembly in XY or YZ configurations. For no-compromise in accuracy, VLSP stages can be accessorised with a direct measurement system either incremental or absolute. The VSS motor can be also integrated with a resolver as well as temperature sensors. This mechanics can be lubricated with UHV grease or dry lubrication for more demanding applications. UHV and UHVG versions can also be operated in a Hard Rad environment.

VLSP

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Vacuum Linear Stage Plus



RS

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Ordering Information

Part Number	Travel range	Carriers	Mirco SW	Vacuum preparation	Temperature sensors	Measurement system	Cable lenght
VLSP	50	1	1	FV (fine vacuum)	K type	ILS (incremental linear scale)	1000
	100	2	2	HV (high vacuum)	PT100	ALS (absolute linear scale)	custom
	150			UHV (ultra high vacuum dry)		RS (resolver)	
	200			UHVG (ultra high vacuum grease)			
	250						

VLSP-150-2-2-UHV-RS-1500-K = 50 mm travel range, UHV environment with dry lubrication, resolver integrated in the motor, K type thermocouple integrated in the motor winding, 1500 mm vacuum leads

• Select travel range, vacuum environment and the optional sensor in the table above to define the code number.

• For multi-axe assembly, overall system specifications, duty-cycle analysis or any special requirements please fill in the form at this link:

or at the QR code on the right and contact us.

- Be aware of the duty cycle limitations of motors in vacuum especially with dry lubrication, please check this data-sheet:
 - We can deliver a turn-key solution from the vacuum stage through the electrical connection in vacuum and air to the control electronics, let us know your requirements.





VRSP is the hi-end rotation stage, thought to deliver the highest performance in a compact shape. A solid body machined by a block of aluminium alloy integrates an accurate pre-loaded crossed roller bearing made of stainless steel. A stainless steel/PEEK worm/wheel gear is actuated by a VSS Phytron motor, PEEK microswitches are integrated in the mechanics for end of run and freely settable pins allow an easy limitation of the travel range in working conditions. An absolute RESA encoder ring can be integrated in the stage for the highest accuracy and position repeatability. The VSS motor can be also integrated with a resolver as well as temperature sensors. These mechanics can be lubricated with UHV grease or dry lubrication for more demanding applications. UHV and UHVG can also be operated in a Hard Rad environment.

Vacuum Rotation Stage Plus

- High precision / high load
- Absolute direct encoder ring
- Adjustable end of run
- Optional dry lubrication

VRSP typical Specifications*							
Motor	VSS43.200.1,2 200 step / revolution	+ resolver option with 1024 point per revolution	+ direct absolute encoder ring				
Worm/ wheel gear		95:1					
Resolution	0,019° full step	0,019° 0,0037° full step per count					
Minimum incremental motion	0,002° (microstep/open loop)	0,002° (microstep/open loop)	0,0001° (microstep/C-Loop)				
Repeatability	+/- 0	+/- 0,002° +/- 0,0001°					
Travel range	+/- 360° can be fi	reely limited by adjusta	ble micro switches				
Max speed	20°/s recomme	20°/s recommended: limited by duty cycle in vacuum					
Axial load capacity	150 N						
Moment	Please contact us for a proper calculation						
*Note	100% of the sta with the interfero	ges are singularly teste meter and documented	d and measured with actual data.				

Vacuum Rotation Stage Plus



Ordering Information Vacuum Rotation Stage Plus

Part Number	Vacuum preparation	Temperature sensors	Microswitch	Measurement system	Cable lenght
VRSP	FV (fine vacuum)	K type	1	ARS (absolute ring scale)	1000
	HV (high vacuum)	PT100	2	RS (resolver)	custom
	UHV (ultra high vacuum)				

VRSP-HV-2-ARS-PT100 = rotation stage for HV environment, 2 micro switches, RESA encoder ring (26 bit read-head), PT100 temperature sensor integrated in the motor windings, 500 mm vacuum leads

• For multi-axe assembly, overall system specifications, duty-cycle analysis or any special requirements please fill in the form at this link:

or at the QR code on the right and contact us.

- Be aware of the duty cycle limitations of motors in vacuum especially with dry lubrication, please check this data-sheet:
 - We can deliver a turn-key solution from the vacuum stage through the electrical connection in vacuum and air to the control electronics, let us know your requirements.





All of our vacuum stages are designed with special care for the use in HV or UHV : the mechanical design, the material choice and the mounting procedures guarantee minimum outgassing and long durability. Optionally we can provide an RGA chart. After an accurate washing and drying process of all components, stages are mounted in a clean environment. A three axes Fabry-Perot interferometer is used to optimize the precision mounting as well as doing a calibration and measurement of the mechanics. All stages have to pass a stress test before the measurement and are finally delivered with an ID including s/n, calibration parameters, and main measured specifications. Optionally we can perform multi-axe systems measurements in requested conditions such as load, moment... Optionally we can also do measurements in vacuum by using a fiber optic feed-through. Special packaging saves the vacuum preparation for the final installation in the vacuum chamber.

Quality and Precision

- 100% measured
- 100% stress tested
- Clean UHV handling
- Product ID

