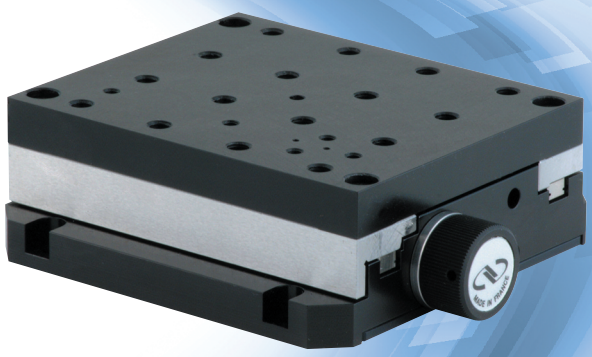
Precision Compact Motorized Linear Stages

VP-25X



Featuring an aluminium body in a compact package, the VP-25X series has 25 mm travel with exceptional MIM and position stability. Similar to other families of linear stages, the VP-25X also features recirculating ball bearings, a backlash-free ball screw, and a linear steel scale. Applications include: fiber alignment, bio-medical, semiconductor and high precision test and measurement.

Backlash-free Ballscrew

The VP includes a preloaded, backlash-free ball screw, which provides smooth motion and outstanding bi-directional repeatability.

XYZ Configuration

The VP stages can be easily stacked into XY configurations or XYZ configurations using the VP-BK bracket. The VP stages conveniently come with either Metric or Standard hole patterns.

Micro-positioning

The VP-25XL series features a linear steel scale encoder ensuring positioning with accuracy of ±1 µm is possible when commanded by the XPS advanced motion control system.

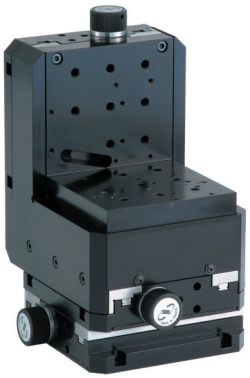
End-of-Run Limit Switches

The stage contains end-of-run limit switches on both ends to prevent damage to the stage from over-travel.

Manual Adjustment Knob

The VP-25X is equipped with a manual adjustment knob adding to its utility.

- Easy XY and XYZ configuration
- Highly sensitive 10 nm Minimum Incremental Motion
- Low-profile, compact, and lightweight
- Convenient manual adjustment knob
- Built-in linear encoder for highly repeatable and precise motion
- Plug and Play - ESP compatible



VP-25X stages can easily be assembled into an XYZ configuration with optional VP-BK bracket. Shown here is a left-handed stack, VP-25X-XYZL.

DESIGN DETAILS

Base Material	Aluminum
Bearings	Recirculating ball bearings
Drive Mechanism	Backlash-free ball screw
Drive Screw Pitch	1 mm
Feedback	Linear steel scale, 20 mm signal period. VP-25XA: RS422 output VP-25XL: 1 V_{PP} analog sine-cos output
Limit Switches	Optical
Origin	Optical, at center of travel, including mechanical zero signal
Motor	DC-Servo
Cable Length	VP-25XA: 1.5 m (included) VP-25XL: 3 m (included)

Newport®

Metrology Report Included at No Additional Cost

Newport guarantees specification values which are measured and recorded following ASME B5.57 and ISO 230-2 standards. The typical performance values are two times better than the guaranteed specifications.

Need Accuracy to 1 µm?

For critical positioning applications, Newport offers micropositioning calibration services. We will create, implement and verify an electronic compensation process to improve the absolute position accuracy of your Newport VP-25XL Series stages when commanded by our XPS advanced motion control system. Compensation is performed at 20.0 °C, ±0.2 °C, for linear and non-linear errors, ensuring accuracy of up to 1 µm/100 mm over center 80% of travel. A certificate of calibration per Newport Metrology Procedure A167 and measured error maps are provided.

SPECIFICATIONS

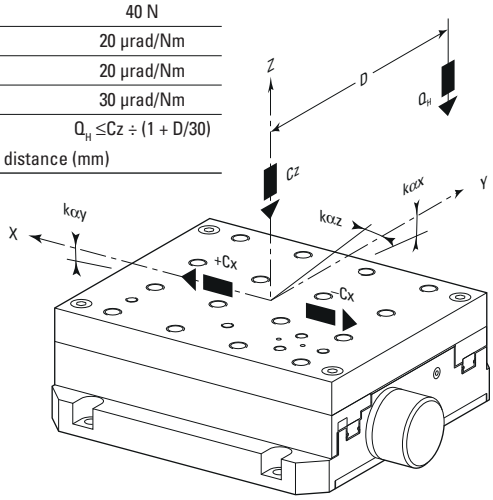
	VP-25XA	VP-25XL
Travel Range (mm)	25	
Minimum Incremental Motion (µm)	0.1	0.01
Bi-directional Repeatability, Typical (Guaranteed)[1] (µm)	±0.06 (±0.10)	±0.05 (±0.07)
Accuracy, Typical (Guaranteed)[1] (µm)	±0.4 (±1.0)	±0.5 (±1.0)
Maximum Speed (mm/s)	25	
Pitch, Typical (Guaranteed)[1][2] (µrad)	±22 (±50)	±20 (±50)
Yaw, Typical (Guaranteed)[1][2] (µrad)	±17 (±50)	±20 (±50)
MTBF (h)	20,000	
Weight [lb. (kg)]	3.3 (1.5)	

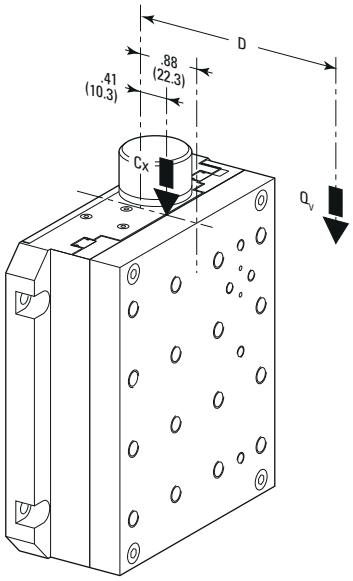
[1] For the definition of Typical and Guaranteed specifications see "Motion Basics Terminology & Standards" Tutorial at www.newport.com

[2] To obtain arcsec units, divide µrad value by 4.8.

LOAD CHARACTERISTICS AND STIFFNESS

Cz,	Normal centered load capacity	60 N
-Cx, +Cx,	Axial load capacity	40 N
Kαx,	Compliance in roll	20 µrad/Nm
Kαy,	Compliance in pitch	20 µrad/Nm
Kαz,	Compliance in yaw	30 µrad/Nm
Q_H,	Off-center load (N)	$Q_H \leq Cz \div (1 + D/30)$
	Where D = Cantilever distance (mm)	

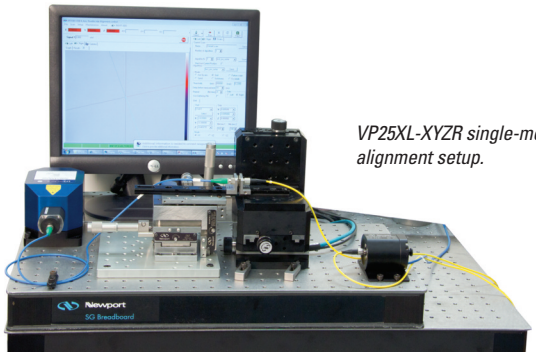




Cx,	Axial load capacity	40 N
Q_V,	Off-center load (N)	$Q_V \leq Cz \div (1 + D/30)$
	Where D = Cantilever distance in mm between the center of mass of the load and the bearings center (mm)	
Distance between top surface and the bearings center		22.3 mm
Distance between under the top plate and the bearings center		10.3 mm

RECOMMENDED CONTROLLERS/DRIVERS

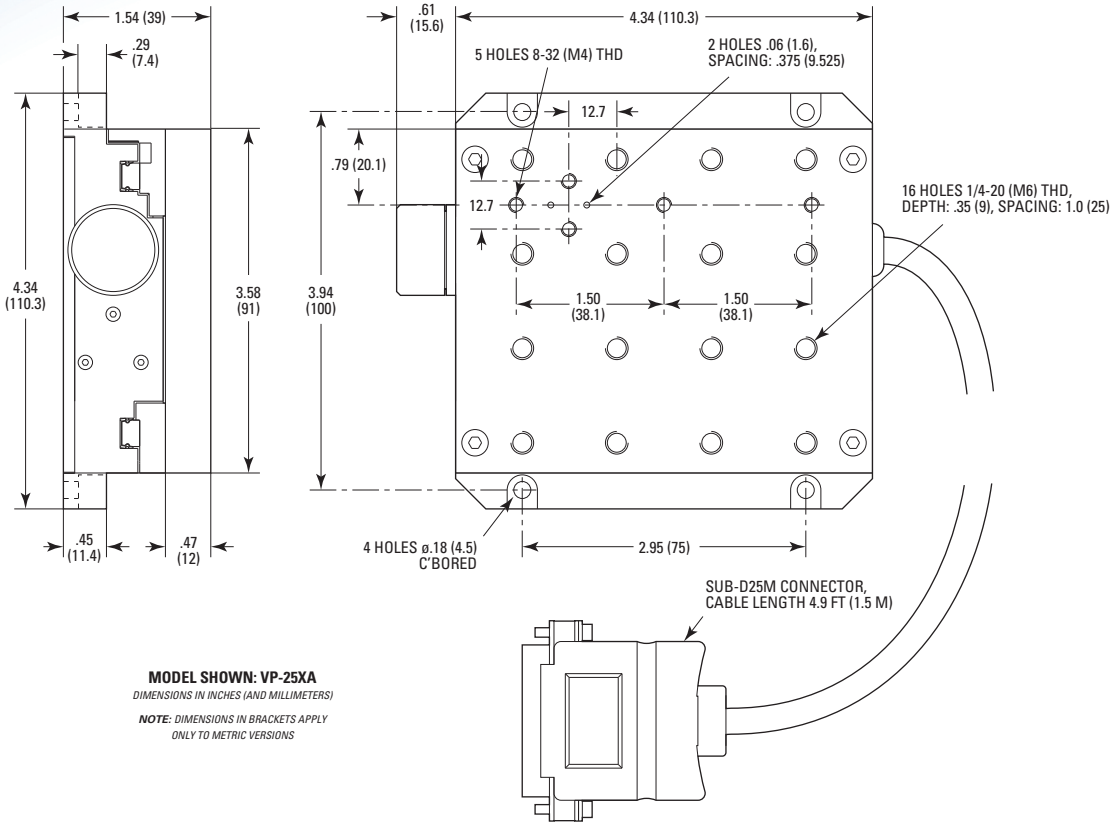
Model	Description
XPS-D	1- to 8-axis universal high-performance motion controller/driver
XPS-DRV11	Universal digital driver card for stepper, DC and direct motors
XPS-RL	1- to 4-axis universal high-performance motion controller/driver
XPS-DRV01	PWM drive module for DC brush and stepper motors, 3 A/43 V max.
XPS-DRV03	High performance PWM drive module for DC motors, 5 A/43 V max.
ESP301	1- to 3-axis motion controller/driver
SMC100CC	Single-axis DC motor controller/driver



VP25XL-XYZR single-mode fiber alignment setup.

DIMENSIONS

VP-25XA Stage



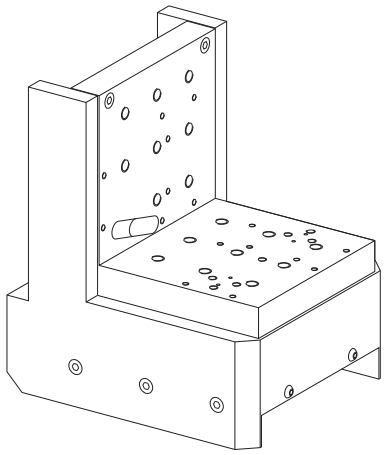
MODEL SHOWN: VP-25XA

DIMENSIONS IN INCHES (AND MILLIMETERS)

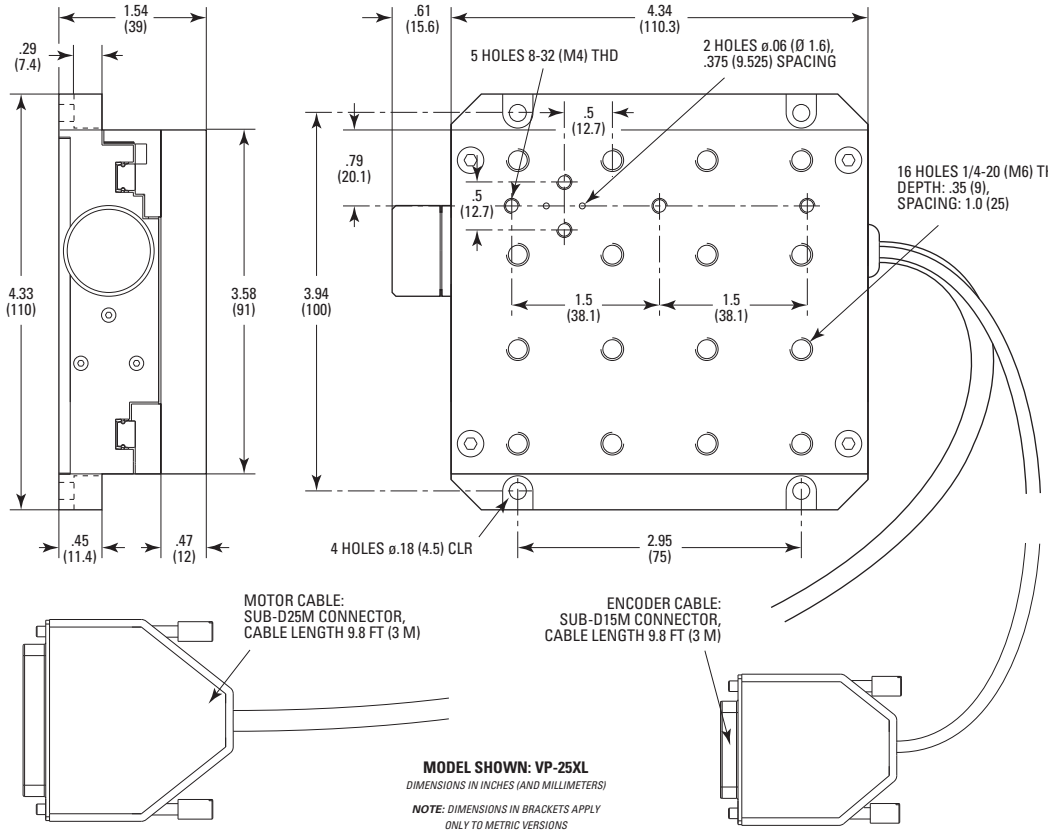
NOTE: *DIMENSIONS IN BRACKETS APPLY ONLY TO METRIC VERSIONS*

VP-BK Bracket

(see dimenions on next page)



VP-25XLA Stage

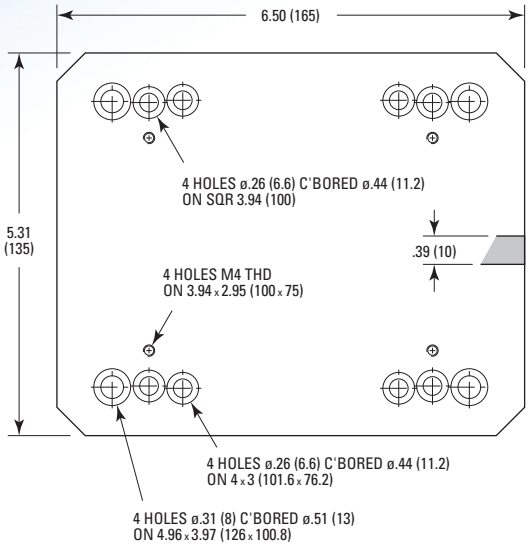


MODEL SHOWN: VP-25XL

DIMENSIONS IN INCHES (AND MILLIMETERS)

NOTE: *DIMENSIONS IN BRACKETS APPLY ONLY TO METRIC VERSIONS*

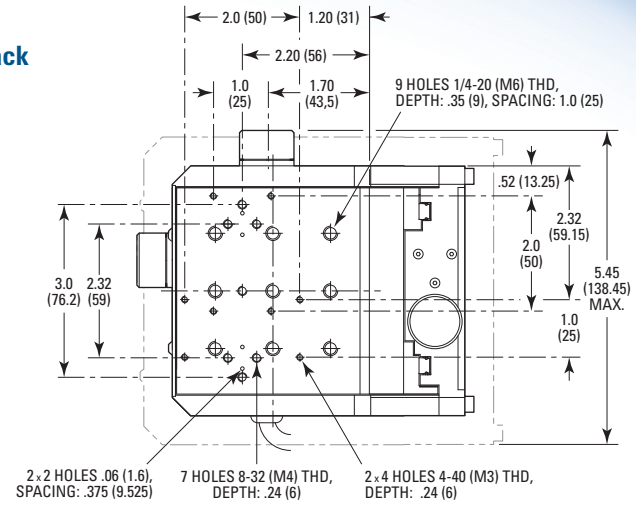
VP-BP Base Plate

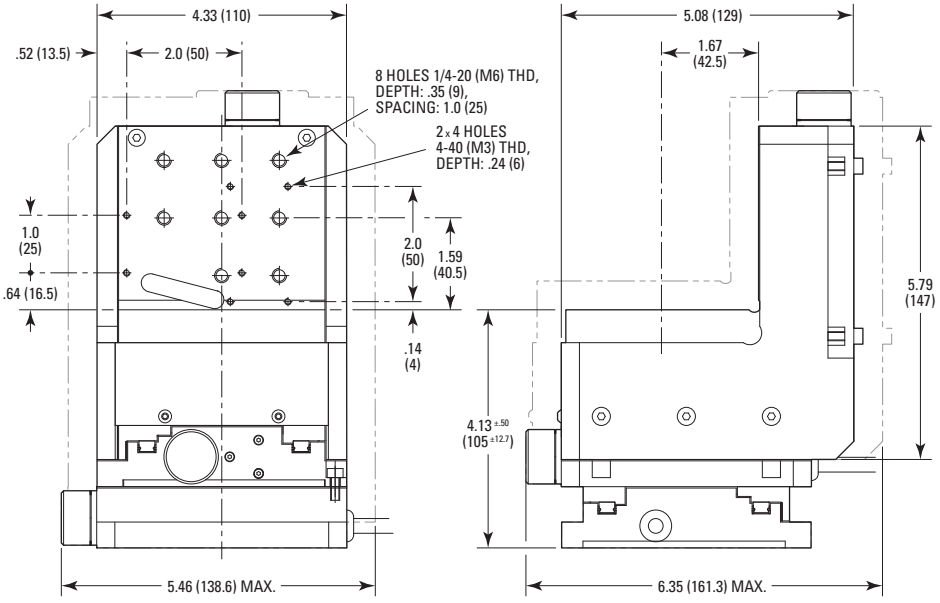


XYZ Stage Stack

MODEL SHOWN: (M-)VP-25XA-XYZL
DIMENSIONS IN INCHES (AND MILLIMETERS)

NOTE: *DIMENSIONS IN BRACKETS APPLY ONLY TO METRIC VERSIONS*





ORDERING INFORMATION

Model (Metric)	Description
VP-25XA (M-VP-25XA)	Precision Compact Linear Stage, 25 mm, 0.1 mm, DC servo motor with Tachometer
VP-25XL (M-VP-25XL)	Precision Compact Linear Stage, 25 mm, 0.005 mm, DC servo motor with Tachometer
VP-25XA-XYZL (M-VP-25XA-XYZL)	Compact XYZ Stage Stack, Left-handed, (M-)VP-25XA Stages with (M-)VP-BK Bracket
VP-25XA-XYZR (M-VP-25XA-XYZR)	Compact XYZ Stage Stack, Right-handed, (M-)VP-25XA Stages with (M-)VP-BK Bracket
VP-25XL-XYZL (M-VP-25XL-XYZL)	Compact XYZ Stage Stack, Left-handed, (M-)VP-25XL Stages with (M-)VP-BK Bracket
VP-25XL-XYZR (M-VP-25XL-XYZR)	Compact XYZ Stage Stack, Right-handed, (M-)VP-25XL Stages with (M-)VP-BK Bracket

ACCESSORIES

Model	Description
562-RAIL-3.7	562 Dovetail Rail, 562F-TILT Stages
561-RAIL-1	Dovetail Rail, ULTRAlign Positioning System, 25.4 mm Length
VP-BC	Base Clamp Set, VP Series Stages, Set of Four
VP-BP	Universal Base Plate, VP Series Stages

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