

MVS005 - June 7, 2021

Item # MVS005 was discontinued on June 7, 2021 For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

1/2" (13 MM) TRAVEL VERTICAL TRANSLATION STAGE

- ▶ 1/2" Travel Vertical Stage
- ▶ Precise Micrometer Positioning with 10 µm Repeatability
- ▶ Interchangeable Top Platform with 8-32 and 1/4"-20 Taps



MVS005
 1/2" (13 mm) Travel
 Vertical Stage



Application Idea
 MVS005 with MMP1
 Grooved Top Plate

OVERVIEW

Features

- 1/2" (13 mm) of Vertical Travel
- Micrometer Adjuster for Fine Positioning
- Array of 1/4"-20 and 8-32 Mounting Holes
- Grooved and Extended Top Plates for Our Flexure Stage Accessories are Available
- Black Anodized Aluminum Construction

The MVS005 Vertical-Axis Positioning Stage has been developed to meet the stringent requirements associated with aligning optical components. It allows 0.5" of height adjustment and provides a working height range of 2.48" to 2.98". The stage is constructed from black anodized aluminum and includes crossed roller bearings for uniform performance over the entire range of motion.

Vertical Manual Stages Selection Guide	
	1/2" (13 mm) Travel
	1" (25 mm) Travel
	4" (101.6 mm) or 10" (254 mm) Travel

Item #	MVS005
Travel Range	0.50"
Working Height Range	2.48" to 2.98"
Adjustment Per Micrometer Revolution	0.025"
Load Capacity (Within Plate Area)	2 kg (4.4 lbs)
Load Capacity when Stage is Inverted (Within Plate Area)	0.75 kg (1.65 lbs)
Backlash	<1 µm
Repeatability	10 µm
Linearity^a	99.9%
Straightness	±10 µm
Parallelism of Top and Bottom Plates	140 µm Over Area of Plates
Spring Preload at 0 mm Travel	30 N
Spring Preload at 13 mm Travel	45 N
Weight	0.41 kg (0.9 lbs)
Construction	Solid Aluminum
Finish	Black Anodized



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Combine a MVS005
with a PT1(/M) for a
2-axis stage.

The top mounting plate has a generous array of thirteen 1/4"-20 and twelve 8-32 tapped holes. If required, the user can replace the top plate with our MMP1(/M) grooved top plate, allowing

- 99.9% linearity indicates that the top platform will move by 99.9% of the distance that the micrometer is adjusted at any point within the travel range.

the stage to be used with our range of flexure stage accessories. Three extended top platforms are also available for use in applications that require extra reach beyond the edge of the vertical stage. The stage is shipped complete with a 148-811ST (148-801ST) fine-adjustment micrometer drive with a 0.001" (10 µm) graduated scale. It delivers 0.025" (500 µm) of height adjustment per revolution, making the stage ideal for aligning a wide range of optical components. For motorized vertical translation, the included micrometer can be replaced with one of our 1/2" (12 mm or 13 mm) ZST, ZFS, or Z8 actuators.

MANUAL LINEAR STAGES

Manual Linear Translation Stages

Thorlabs' manual translation stages are offered in a range of maximum travel distances, from less than 1/4" (6 mm) to 2" (50 mm) and longer for our long travel, large area platforms. Many of these stages can be ordered in multi-axis configurations, providing XY or XYZ translation. For fiber coupling applications, please see our Multi-Axis Stages, which offer finer adjustment than our standard manual translation stages. In addition to linear translation stages, we offer rotation stages, pitch and yaw platforms, and goniometers. We also offer motorized translation stages that are powered by DC Servo motors, stepper motors, or direct drive technology.

Crossed-Roller Bearing Stages



These linear translation stages feature crossed roller bearings travel mechanisms for precision motion, high load capacity, and low angular deviation. The LNR Series stages feature all-steel body construction, while the LX, XRN, and XR Series stage bodies are constructed of aluminum.

Crossed-Roller Bearing Stages						
Product Family	LNR Series 25 mm Stages	LX Series 25 mm Stages	XRN Series 25 mm Stages	XR Series 25 mm Stages	XR Series 50 mm Stages	LNR Series 50 mm Stages
Click Photo to Enlarge						
Travel	25 mm (0.98")	25 mm (0.98")	25 mm (0.98")	25 mm (0.98")	50 mm (1.97")	50 mm (1.97")
Drive Type	Multiple	Micrometer	Micrometer	Micrometer	Micrometer	Multiple
Platform Size	2.34" x 2.36" (59.4 mm x 60.0 mm)	2.56" x 2.56" (65.0 mm x 65.0 mm)	2.00" x 3.35" (50.7 mm x 85.0 mm)	2.98" x 4.33" (75.7 mm x 110.0 mm)	2.98" x 5.51" (75.7 mm x 140.0 mm)	3.94" x 3.94" (100.0 mm x 100.0 mm)
Possible Axis Configurations	X, XZ, XY, XYZ	X, XY, XZ, YZ, XYZ	X, XY, XYZ	X, XY, XYZ	X, XY, XYZ	X, XY, XYZ
Additional Details						

Ball Bearing Stages



These translation stages feature hardened steel linear bearings for precise motion and long life. They are available with a variety of actuators and in single-axis or preassembled multi-axis configurations.

Ball Bearing Stages					
Product Family	MS Series 1/4" Stages	T12 Series 1/2" Stages	MT Series 1/2" Stages	PT Series 1" Stages	LT Series 2" Stages

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Travel	1/4" (6.4 mm)	1/2" (12.7 mm)	1/2" (12.7 mm)	1" (25.4 mm)	2" (50 mm)
Drive Type	Multiple	Thumbscrew	Multiple	Multiple	Differential Micrometer
Platform Size	1.17" x 1.17" (29.7 mm x 29.7 mm)	0.76" x 0.81" (19.3 mm x 20.6 mm)	2.40" x 2.41" (61.0 mm x 61.2 mm)	3.00" x 4.00" (76.2 mm x 101.6 mm)	3.75" x 3.75" (95.3 mm x 95.3 mm)
Possible Axis Configurations	X, XY, XYZ	X, XY, XYZ	X, XY, XYZ	X, XY, XYZ	X, XY, XYZ
Additional Details					





Dovetail Stages

These compact stages incorporate dovetails and a leadscrew for the translation mechanism. They are suitable in general purpose motion control applications.

Dovetail Stages			
Product Family	DT Series 1/2" Stages	DTS Series 1" Stage	DTS Series 2" Stage
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Travel	1/2" (12.7 mm)	1" (25 mm)	2" (50 mm)
Drive Type	Thumbscrew	Thumbscrew	Thumbscrew
Platform Size	1.00" x 1.00" (25.4 mm x 25.4 mm)	2.68" x 2.95" (68.0 mm x 75.0 mm)	2.68" x 3.74" (68.0 mm x 95.0 mm)
Possible Axis Configurations	X, XY, XYZ	X, XY, XYZ	X, XY, XYZ
Additional Details			





Flexure Stages

Thorlabs' Nanoflex™ translation stages feature frictionless flexure mechanisms for improved positioning and resolution when compared to similar stages made using bearings. The translation of the stage is accomplished by the elastic deformation (flexing) of a linkage attached to the mounting platform. Most models also include piezo actuators for small position adjustments.

Flexure Stages				
Product Family	Nanoflex™ 1.5 mm Stage	Nanoflex™ 5 mm Stages		
Click Photo to Enlarge				
Travel	1.5 mm (0.06") + 25 µm Piezo	5 mm (0.20")	5 mm (0.20") + 20 µm Piezo	
Drive Type	Thumbscrew and Piezo Actuator	Differential Micrometer	Differential Micrometer and Open-Loop Piezo Actuator	Differential Micrometer and Closed-Loop Piezo Actuator
Platform Size	1.18" x 1.18" (30.0 mm x 30.0 mm)	2.95" x 2.95" (75.0 mm x 75.0 mm)		
Possible Axis Configurations	X, XY, XYZ	X, XY, XYZ	X, XY, XYZ	X, XY, XYZ
Additional Details				

Vertical Stages

We offer vertical translation stages with crossed roller bearings for precise motion as well as long travel vertical stages for heavy-duty applications.


Vertical Stages				
Product Family	MVS Series 1/2" Vertical Stage	MVS Series 1" Vertical Stage	VAP Series 4" and 10" Vertical Stages	
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Travel	1/2" (13.0 mm)	1" (25.0 mm)	4" (101.6 mm)	10" (254 mm)
Drive Type	Micrometer		Adjuster Knob and Coarse Manual Positioning	
Platform Size	2.36" x 2.36" (60.0 mm x 60.0 mm)		3.00" x 6.00" (76.2 mm x 152.4 mm)	
Additional Details				

1/2" (13 mm) Travel Vertical Translation Stage

Part Number	Description	Price	Availability
MVS005	1/2" Travel Vertical Translation Stage, 8-32 and 1/4"-20 Taps	\$690.39	Lead Time

Vertical Translation Stage Accessories: 1/4"-20 (M6) and 8-32 (M4) Tapped Top Plate

- ▶ Array of 1/4"-20 (M6) and 8-32 (M4) Tapped Mounting Holes
- ▶ Replacement Top Plate for the MVS005 Vertical Stage
- ▶ Allows One to Switch Between an Imperial and Metric Mounting Surface on Our Stages



Item #	RB13P1	RB13P1/M
Click for Mechanical Drawing		

The RB13P1(M) Mounting Plate is the same as the top plate that is included with the MVS005(M) vertical stage. It has a generous array of thirteen 1/4"-20 (M6) and twelve 8-32 (M4) tapped holes. For more details, please see the mechanical drawings of the imperial and metric top plates included in the table above and to the right.

Part Number	Description	Price	Availability
RB13P1/M	Adapter Plate with M6 and M4 Taps	\$55.19	Today
RB13P1	Adapter Plate with 1/4"-20 and 8-32 Taps	\$55.19	Today

Vertical Translation Stage Accessories: Grooved Top Plate

The MMP1(M) replacement grooved top plate allows MVS005 stages to be used with our range of flexure stage accessories (such as the HCS030 Optic Mount shown to the right). The top plate is easily changed by removing four attachment screws with a 2 mm hex key or balldriver.

Item #	MMP1	MMP1/M
Click for Mechanical Drawing		

Our range of flexure stage accessories includes mounts to hold and manipulate optical fibers, laser diodes, gradient-index lenses, spherical lenses, and other commonly used optical components. Accessories are mounted to the top



platform using a tongue-in-groove system and are retained with cleats and cap screws. The plate includes sixteen 6-32 (M3) tapped holes for cleats and other hardware, as well as four 4-40 (M2) taps and nine 8-32 (M4) taps. For more details, please see the mechanical drawings of the imperial and metric top plates included in the table above.

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An HCS030 Optic Mount Secured on an MMP1 Top Plate with AMA010 Mounting Cleats

Part Number	Description	Price	Availability
MMP1/M	Replacement Mounting Plate for Flexure Stages with M4, M3, and M2 Taps	\$63.65	Today
MMP1	Replacement Mounting Plate for Flexure Stages with 8-32, 6-32, and 4-40 Taps	\$63.65	Today

Vertical Translation Stage Accessories: Extended Top Platforms

- ▶ Extend the Mounting Surface of the MVS005 Stage
- ▶ Array of 8-32 (M4), 6-32 (M3), and 4-40 (M2) Tapped Holes
- ▶ Three Mounting Surface Length Options:
 - ▶ 88 mm (3.46")
 - ▶ 95 mm (3.74")
 - ▶ 105 mm (4.13")
- ▶ Groove for Flexure Stage Accessories



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AMA003 Extended Top Plate Fitted to an MBT616D MicroBlock Flexure Stage

These extended platforms are designed to be replacements for the top plate of the MVS005 vertical stage. The extended mounting surface contains an array of 8-32 (M4), 6-32 (M3), and 4-40 (M2) tapped holes, which are convenient for attaching components or accessories that need to reach into smaller spaces. Three sizes are available, offering platform lengths of 88.0 mm (3.46"), 95.0 mm (3.74"), or 105 mm (4.13"). Two AMA010 (AMA010/M) accessory mounting cleats are also included with the purchase of each platform. These platforms can also be used with our Multi-Axis Flexure Stages.

Part Number	Description	Price	Availability
AMA001/M	Extended Top Platform, 88 mm, Metric	\$98.47	Today
AMA003/M	Extended Top Platform, 95 mm, Metric	\$98.47	Today
AMA005/M	Extended Top Platform, 105 mm, Metric	\$98.47	Today
AMA001	Extended Top Platform, 88 mm	\$98.47	Today
AMA003	Extended Top Platform, 95 mm	\$98.47	Today
AMA005	Extended Top Platform, 105 mm	\$98.47	Today

