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460P Series

High-Performance Modular Ball Bearing Linear Stages

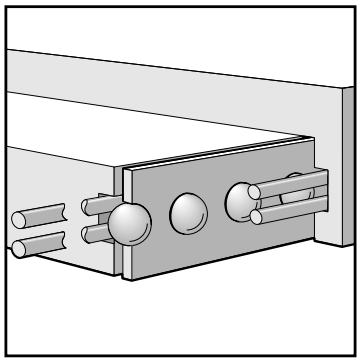


460P-XYZ
Order actuators and base plate separately.

- Precision ball bearing movements
- 0.5 and 1 in. (12.7 and 25.4 mm) travel
- Stackable for low profile, multi-axis positioning
- Patented peg joining system
- Angular deviation <150 µrad

460P Series High-Performance Modular Ball Bearing Linear Stages are constructed of aluminum and feature hardened ball bearings running between opposing pairs of hardened and polished stainless steel rods. This offers exceptional straightness of travel with lower load capacity than crossed-roller bearing stages. Actuators bear upon a hardened, polished carbide insert for smooth motion. Springs provide preload against the actuator tip to eliminate backlash. Stable, stainless steel actuator mounts allow your choice of Newport's manual or motorized actuators and can be reversed to accommodate vertical mounting.

Our patented peg joining system makes connecting these stages together very simple. Secure assembly is accomplished by screwing the pegs into threaded holes, placing a stage on the protruding pegs, and tightening two setscrews on the side of the stage. Stage stacks can easily be disassembled and reassembled into many configurations. The pegs can also be positioned at various locations on the stage for stable offset assemblies. Each stage has four counterbored through holes for additional mounting flexibility and is supplied with two peg screws and four low-profile screws. The 460P Series Stages are completely compatible with our 460PD Series Dovetail Stages. They are the same size, and can be joined together with the identical peg joining system.



Preloaded precision ball bearing movements provide reduced friction and capability to make small controlled movements. Bearings are captured in hardened steel rod guides.



Use these rotation adapters above or below a stage to manually rotate the stage around a peg and then lock the position.

Specifications

Maximum Stage Travel [in. (mm)]	1.0 (25.4)
Angular Deviation (µrad)	<150
Max Centered Load [lb (N)]	15 (67)
Load Capacity, Vertical [lb (N)]	5 (22)

Ordering Information

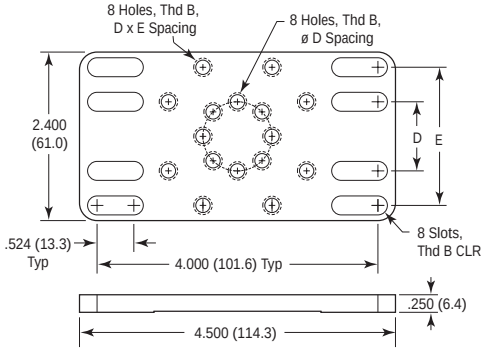
Model (Metric)	Description	Actuators Required
0.5 in. (12.7 mm) Travel*		
460P-X-05 (M-460P-X-05)	X Modular Linear Stage	1
460P-XY-05 (M-460P-XY-05)	XY Modular Linear Stage	2
460P-XYZ-05 (M-460P-XYZ-05)	XYZ Modular Linear Stage	3
1.0 in. (25.4 mm) Travel		
460P-X (M-460P-X)	X Modular Linear Stage	1
460P-XY (M-460P-XY)	XY Modular Linear Stage	2
460P-XYZ (M-460P-XYZ)	XYZ Modular Linear Stage	3
Accessories		
460P-90BK (M-460P-90BK)	90° Angle Bracket	
460P-BA (M-460P-BA)	Slotted Base Plate	
460P-RA1 (M-460P-RA1)	Rotation Adaptor, ø1.5 in. (31.8 mm)	
460P-RA2 (M-460P-RA2)	Rotation Adaptor, ø2.6 in. (64.8 mm)	
PEG-10 (M-PEG-10)	Pegs, pack of 10	
SCREW-10 (M-SCREW-10)	Extra Low-Profile Screws, quantity 10	

* 1.0 in. (25.4 mm) travel stage with actuator mount(s) for 0.5 in. (13 mm) actuators.
U.S. Patent 6,163,417

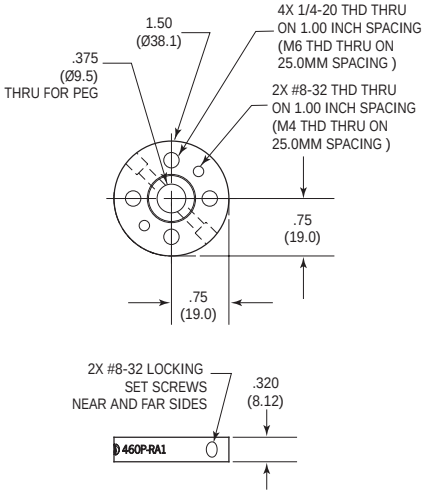
Recommended Actuators

Manual Drives	Description	460P-05	460P	Travel (mm)	Sensitivity (μm)
AJS Series (page 921)	Fine Adjustment Screw	•	•	13–25	0.6–0.6 - 0.75
SM-13 (page 923)	Micrometer	•		13	1
SM-25 (page 923)	Micrometer		•	25	1
HR-13 (page 925)	High-Resolution Micrometer	•		13	0.5
HR-1	Long Travel, High-Resolution Micrometer		•	25	0.25
DM-13 (page 928)	Differential Micrometer	•		13	0.1
DM-13L (page 926)	Differential Micrometer	•		13	0.1
DM-25L (page 926)	Differential Micrometer		•	25	0.1
Motorized Drives					
LTA-HS (page 836)	Motorized Actuator	•	•	50	0.1
CMA Series (page 839)	Motorized Actuator	•	•	12.5–25	0.2–0.5
PZA12 Actuator (page 834)	NanoPZ actuator, 12.5 mm travel	•	•	12.5	0.03

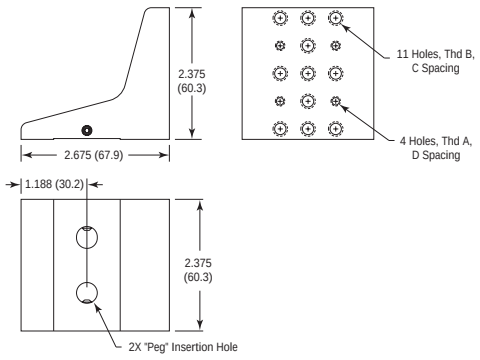
Model 460P-BA



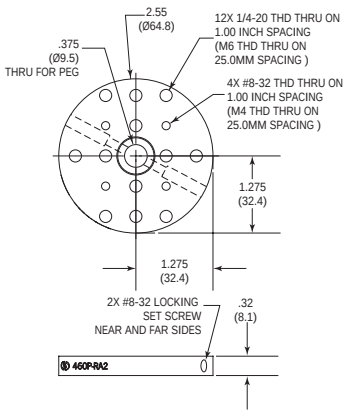
Model 460P-RA1



Model 460P-90BK



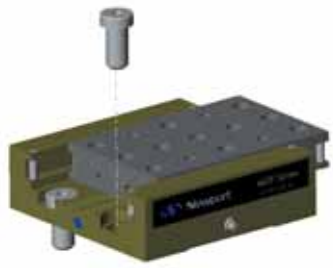
Model 460P-RA2



	Thread		Dimensions [in. (mm)]		
Model (Metric)	A	B	C	D	E
460P-BA (M-460P-BA)		1/4-20 (M6)		1.000 (25.0)	2.000 (50.0)
460P-90BK (M-460P-90BK)	8-32 (M4)	1/4-20 (M6)	0.500 (12.5)	1.000 (25.0)	



Pegs are used to securely attach the stages together, allowing quick assembly and great flexibility.



Four counterbored holes in the base can be used for bolting the stage down.

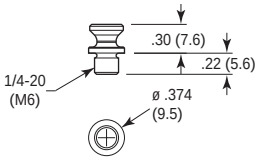


460P-XY (M-460P-XY)



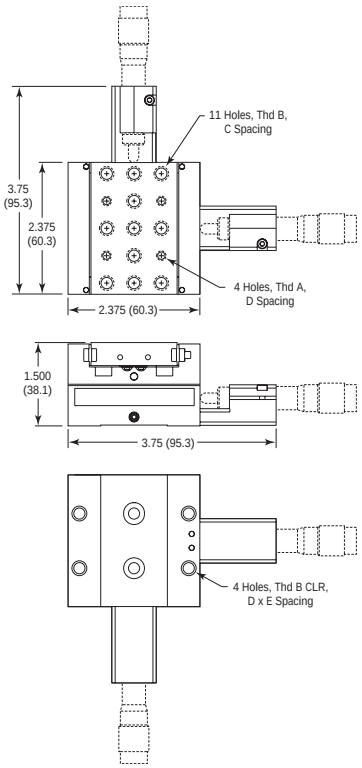
Pegs allow secure and rigid offset mounting.

Model PEG-10

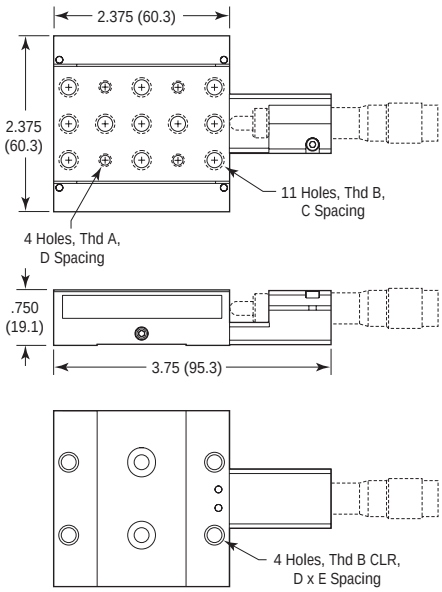


CAD *See our website for CAD files*

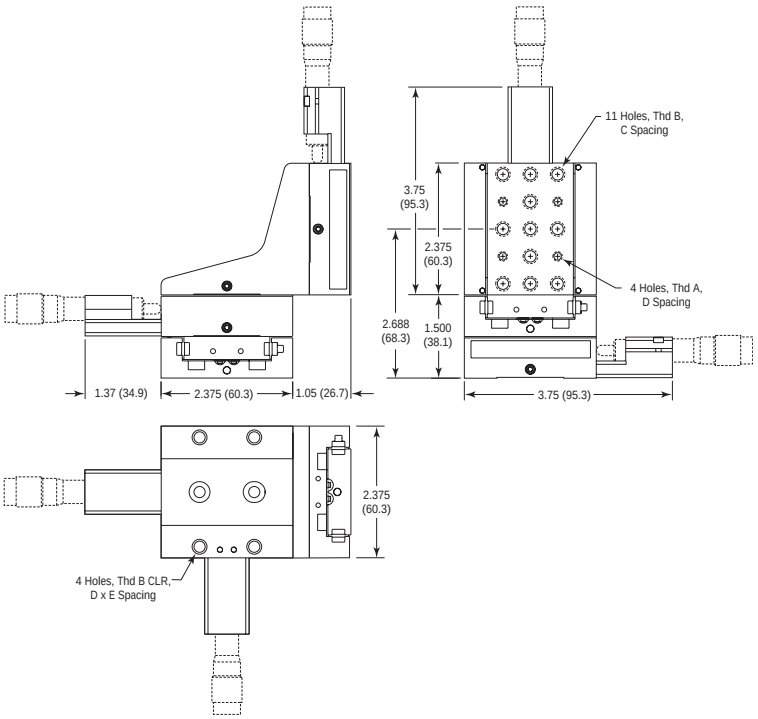
Model 460P-XY



Model 460P-X



Model 460P-XYZ



	Thread		Dimensions [in. (mm)]		
Model (Metric)	A	B	C	D	E
460P-X (M-460P-X)	8-32 (M4)	1/4-20 (M6)	0.500 (12.5)	1.000 (25.0)	2.000 (50.0)
460P-XY (M-460P-XY)	8-32 (M4)	1/4-20 (M6)	0.500 (12.5)	1.000 (25.0)	2.000 (50.0)
460P-XYZ (M-460P-XYZ)	8-32 (M4)	1/4-20 (M6)	0.500 (12.5)	1.000 (25.0)	2.000 (50.0)



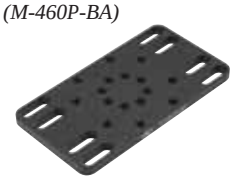
460P-90BK (M-460P-90BK)

The 90° angle bracket can be used for vertical mounting or as a horizontal mounting platform.



460P-X (M-460P-X)

460P-BA (M-460P-BA)



A slotted base plate allows positioning of a stage between the hole pattern on a breadboard or table.



PEG-10 (M-PEG-10)

Peg screws for flexible modularity.



SCREW-10 (M-SCREW-10)

Low-profile screws for conventional joining.



Bottom view showing the two center holes for pegs and four outer holes for screws.

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