Rod Systems

Key Features (VPB Adjustable Base)

- *Locks down rods anywhere on Newport tables and breadboards*
- *Rigid support for rods and components*
- *Easily adjustable with component in place*

VPB (M-VPB)

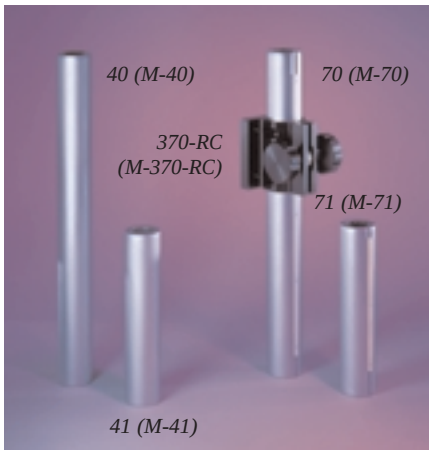
Newport rod systems continue to set the standard of excellence for component mounting stability in critical optical research applications. Four series of 1.5 in. (38 mm) diameter component mounting rods are offered for use with a broad line of compatible components. Their patented design has been refined over the years to reflect advancements in structural dynamics technology. All Newport rods feature centerless ground, tubular steel construction with an attractive, low-reflectance hard-chromed satin finish.

Exceptional Stability

All Newport rods are made entirely of steel. Steel provides much greater dynamic rigidity than aluminum due to its almost order-of-magnitude greater material loss factor. This means even our undamped rods have the high resonant frequency and correspondingly low vibration amplitude required for optical laboratory use. Also, with their inherently greater stiffness and strength, steel rods support larger loads with greater stability.

Steel construction has other advantages; steel has half the thermal expansion coefficient of aluminum and a higher heat capacity so thermal stability is enhanced.

Standard Rods



Models 40 and 70 rods have the sturdiness suitable for the majority of general laboratory applications. Both models are 14 in. (356 mm) tall. Model 70 has a nylon gear rack set into the rod for rack-and-pinion control over component elevation.

Models 41 and 71 short rods are 7 in. (178 mm) tall and have a smaller resonant vibration amplitude than the longer rods. Their low profile makes them ideal for compact experimental setups.

Precision, Heavy-Duty Construction

The rods are made round to 0.0005 in. (12 µm) to mate repeatedly with the bore of every Newport rod-mounted component. A chromed finish is applied for a low-reflectivity surface that, unlike aluminum, is resistant to gouging, scratching and corrosion allowing for many years of service.

Convenient to use

All rods attach easily to tables either with an integral tie-down bolt or a steel ring base. We offer a wide selection of precision components including clamps, platforms and optics holders that mount interchangeably on the rods for complete component mounting flexibility.

Related Products

340-RC (M-340-RC) *370-RC (M-370-RC)*

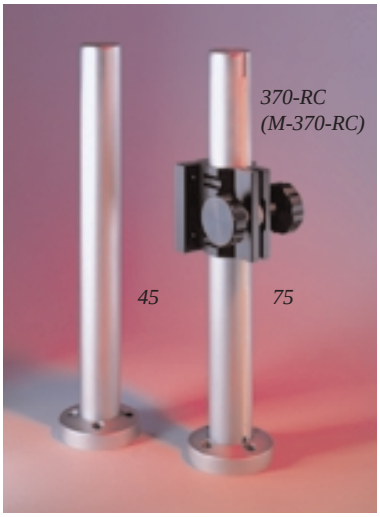
34 (M-34) *300-P (M-300-P)*

A custom Newport rod wrench is provided with each standard rod for easy attachment.

Model VPB Adjustable Base is a stiff, low-profile adjustable platform designed for stable mounting of Newport rods and components anywhere on our tables and breadboards.

Model VPB has XY sliding adjustments for complete positioning freedom on any mounting surface with a standard pattern of 1/4-20 (or M6) mounting holes on 1 in. (25 mm) centers.

Damped Rods



Model 45 (left) and Model 75 shown with 370-RC Clamp (right)

Models 45 and 75 Damped Rods are the most sophisticated rods available for critical applications where acoustical and vibrational forces are a concern. These rods incorporate cylindrical masses constrained by damping layers, concentrated in the upper portion of the rod where they are most effective in dissipating vibrational energy. This construction is the result of extensive computer modeling, dynamic testing and structural analysis.

Newport's patented internal damping system provides unmatched vibrational immunity. Compared to the best alternative designs, Newport damped rods exhibit 60% higher resonant frequency, 100% faster vibration decay and 160% better peak compliance.

These 14 in. (356 mm) long rods mount to tables and breadboards with four bolts through a special ring base.

Model 75 has a nylon gear rack for rack-and-pinion control over component elevation.

Damped Rod Performance

The time-domain responses shown in Figures 1 and 2 dramatically illustrate the difference between the Newport approach and alternative damping implementations when the rod is supporting a load.

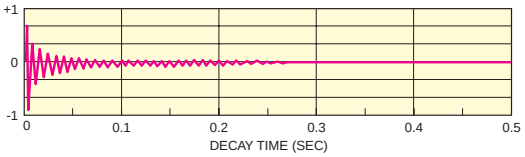


Fig. 1: Time response of a Newport Model 45 Damped Rod supporting a 2.5 lb (1.1 kg) load.

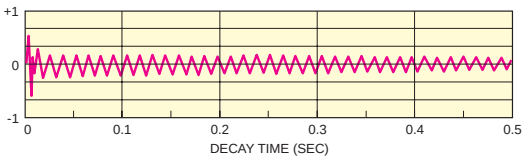


Fig. 2: Time response of an alternative, lead-shot damped rod with the same 2.5 lb (1.1 kg) load as Fig. 1.

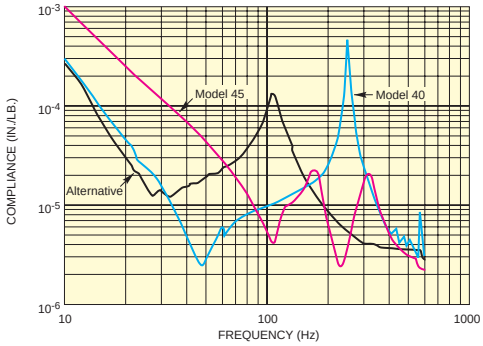


Fig. 3: Compliance comparison of an alternative damped rod with Newport's Model 40 & Model 45 Rods.

Newport's Model 40 undamped steel rod has a single resonance peak at 240 Hz corresponding to the first bending mode of a cantilevered beam.

The **alternative**, lead-shot damped rod has a single resonance peak roughly 1/4 the amplitude of the undamped rod. This peak is lower in frequency (~105 Hz) because of the lower stiffness-to-mass ratio of this construction, which makes it more likely to couple to vibrations from nearby mechanical and electrical components.

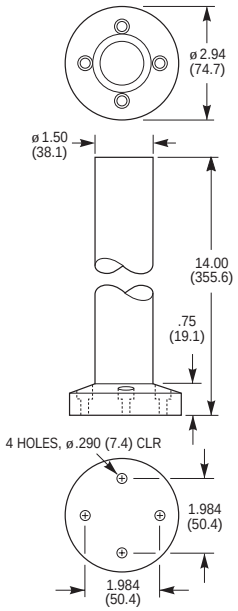
Newport's Model 45 damped rod is so highly damped that the 240 Hz resonance is split into subpeaks at 170 and 210 Hz whose amplitudes are 40 times less than the undamped response peak and 5 times less than the alternative rod.

Ordering Information

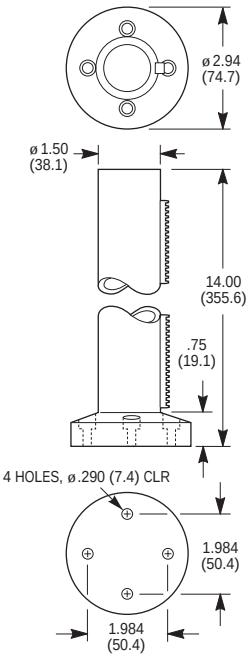
Model (Metric)	Description	Length [in. (mm)]
45	Damped Rod	14.0 (355.6)
75	Damped Rod with Rack	14.0 (355.6)
40 (M-40)	Standard Rod	14.0 (355.6)
70 (M-70)	Standard Rod with Rack	14.0 (355.6)
41 (M-41)	Short Rod	7.0 (177.8)
71 (M-71)	Short Rod with Rack	7.0 (177.8)
14828-01 (16636-01)	Rod Wrench	
VPB (M-VPB)	XY Adjustable Base	

U.S. Patent 4,050,665

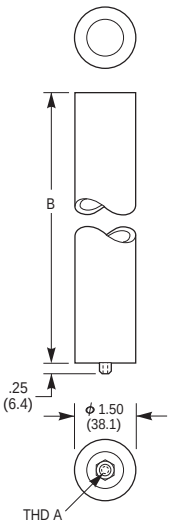
Model 45



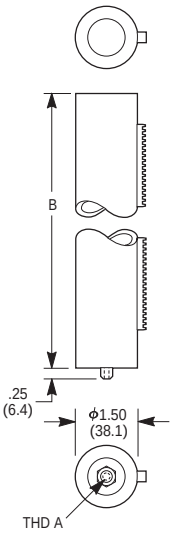
Model 75



Model 40, 41

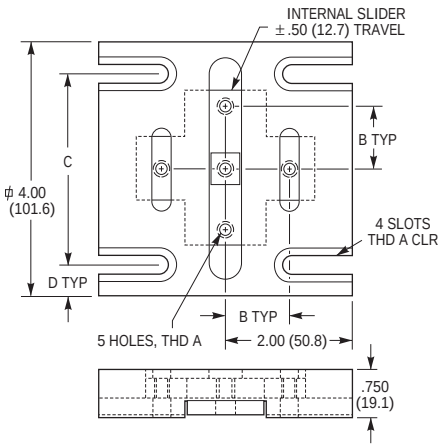


Model 70, 71



	Thread	Dimension [in. (mm)]
Model (Metric)	A	B
40 (M-40)	1/4-20 (M6)	14.00 (355.6)
41 (M-41)	1/4-20 (M6)	7.00 (177.8)
70 (M-70)	1/4-20 (M6)	14.00 (355.6)
71 (M-71)	1/4-20 (M6)	7.00 (177.8)

Model VPB



	Thread	Dimension [in. (mm)]		
Model (Metric)	A	B	C	D
VPB (M-VPB)	1/4-20 (M6)	1.000 (25.0)	3.000 (75.0)	0.50 (13.3)

CAD *See our website for CAD files*