

PTH602 - March 9, 2017

Item # PTH602 was discontinued on March 9, 2017. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

PASSIVE ISOLATION SYSTEMS

- ▶ Closed Pneumatic Isolation System
- ▶ Standard and Heavy Duty Models
- ▶ Inflate via a Simple Foot Pump
- ▶ Height: 23.6" and 27.5" (600 mm and 700 mm)



PTP602
(600 mm Tall)



PTP603
(700 mm Tall)



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OVERVIEW

Features

- Passive Vertical Vibration Isolating Supports
- Oil-Free Design
- High-Load Capacity with Excellent Stability
- Compatible with All Thorlabs' Nexus™ Optical Tables
- Closed Pneumatic Isolation System
- 600 mm and 700 mm (23.6" and 27.5") Heights for 210 mm and 310 mm (8.3" and 12.2") Thick Optical Tables



Thorlabs' passive vibration isolation optical table supports can be used with all of our optical tables, and are ideal for general imaging and micropositioning-based experiments. They have a closed pneumatic isolation system that effectively isolates the optical table from floor vibrations throughout the 10 to 50 Hz frequency range. Most sources of vibrations in a lab are within this frequency range, thus these supports are suitable for use in many labs (see the *Vibrations* tab of the Optical Tables Tutorial).

These isolators provide simple and effective passive vibration isolation with excellent vertical and horizontal stability. The closed pneumatic isolation system can be inflated with a foot pump or some other source of compressed air and does not require a constant source of compressed air to maintain isolation. If the pneumatic isolation system is depressurized the optical table will remain securely supported on the frame of the optical table supports. Alternatively, if the air chamber is overinflated, vertical stops will prevent the optical table from rising above the maximum designed range. If the table is at either end of the range of motion, the optical table supports will no longer isolate the optical table from floor vibrations. More information about the function and construction of the optical table supports can be found under the *Design* tab on this page or in the *Isolation Systems* tab of the Optical Tables Tutorial.

Tabletop Height

To accompany our two optical table thicknesses, 210 mm and 310 mm (8.3" and 12.2"), our isolation systems are available at heights of both 600 mm and 700 mm (23.6" and 27.5") to produce a working height of 35.8" (910 mm). For each height, Thorlabs also offers two versions of passive isolator: Heavy Duty, with a maximum load of 4850 lb (2200 kg) for a set of four, and Standard with a maximum load of 2425 lbs (1100 kg) per set. Full installation instructions are included. For higher loads, longer tables, or custom-designed joined systems, more than four isolators may be needed. Please contact Tech Support to discuss your specific requirements.

Passive Upgrade Kit for Rigid Non-Isolating Supports

As applications develop and grow, vibration isolation requirements may change. The PWA076 upgrade kit allows users to upgrade non-isolating supports so that they provide passive isolation.

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S P E C S

Specification Data

	Standard Passive Vibration Isolators	Heavy Duty Passive Vibration Isolators
Vertical Resonant Frequency	4.5 Hz*	4.5 Hz*
Vertical Transmissibility at Resonance	22 dB*	22 dB*
Isolation Efficiency at 10 Hz	-11.5 dB (74%)*	-11.5 dB (74%)*
Load Capacity (Set of Four)	600 - 2425 lbs (275 - 1100 kg)	1200 - 4850 lbs (550 - 2200 kg)
Height	23.6" or 27.5" (600 mm or 700 mm)	23.6" or 27.5" (600 mm or 700 mm)
Air Pressure (Recommended)	65 to 75 psi (448 to 517 kPa)	65 to 75 psi (448 to 517 kPa)
Air Pressure (Maximum)	80 psi (550 kPa)	80 psi (550 kPa)
Finish	Black Paint	Black Paint

*Specifications measured at 55% of max rated load. At higher loads the resonant frequency will decrease and isolation efficiency at 10 Hz will increase.

Transmissibility

An optical table system is subjected to continuous vibrational impulses from the laboratory floor. These vibrations may be caused by large machinery within the building or even by wind or traffic-excited building resonances (swaying). Transmissibility is a measure of the isolators efficiency at damping out these vibrations and is defined as the ratio of the amplitude of the transmitted vibration to that of the forcing vibration.

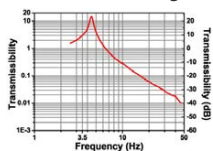
Other common ways to represent this ratio are:

Percent of isolation = (1 - transmissibility ratio) x 100 or

Isolation in dB = 20 x log(transmissibility ratio)

At resonance, the system amplifies the input vibration so that the transmissibility ratio is greater than one. The transmissibility ratio is dependent on several factors; for instance the ratio will be dependent on the load placed on the isolators. Remember that the isolators only damp vibrations transmitted through the legs of the frame from the floor; air handling systems are often a significant source of vibration that is transmitted to the work surface through the air. As a result, in applications particularly sensitive to vibrations a comprehensive evaluation of the environment is recommended before choosing a vibration isolation platform. For more information on this topic please see our Vibration Isolation Tutorial.

Transmissibility Plot



Common Vibration Sources

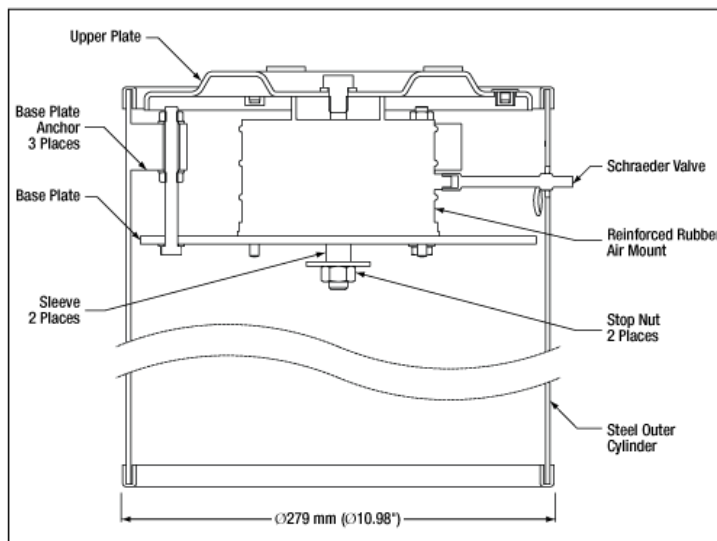
Types	Frequency (Hz)	Amplitude (inches)
Air Compressors	4 – 20	10 ⁻²
Handling Equipment	5 – 40	10 ⁻³
Pumps	5 – 25	10 ⁻³
Building Services	7 – 40	10 ⁻⁴
Foot Traffic	0.5 – 6	10 ⁻⁵
Elevators	Up to 40	10 ⁻³ to 10 ⁻⁵

Building Motion	46/Height in meters	10 ⁻¹
Building Pressure Waves	1 – 5	10 ⁻⁵
Railroad*	5 - 20	+/-0.15g
Highway Traffic*	5 - 100	+/-0.001g

*Amplitude is reported in dB using the acceleration due to gravity as the reference acceleration.

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DESIGN



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Feature	Design
Vibration Isolation	Damped Pneumatic Spring: Damping of vibrations is achieved by the use of a reinforced rubber air chamber. The air chamber is connected by tubing to a Schraeder valve so that once the air chamber is inflated the source of compressed air or the pump used to pressurize the chamber can be removed. The table is supported by the air pressure in the chamber, which can be adjusted to compensate for a change in the load placed on the optical table. The volume and stiffness of the reinforced rubber air chamber has been optimized to minimize the resonant frequency of the optical table supports while maximizing the damping performance for our complete range of tabletops.
Stable Support	Large-Diameter Cylindrical Design: The large-diameter, free-standing optical table supports provide maximum stability and safety, without the need for cumbersome tie bars that add additional resonances to the support system.
Height	Cylindrical Steel Supports: To accompany our two tabletop thicknesses, 8.3” and 12.2” (210 and 310 mm), our isolation systems are available at heights of both 23.6” and 27.5” (600 and 700 mm) to produce a working height of 35.8” (910 mm).

When passive vibration isolation optical table supports are used in a lab where the load placed on the optical table is frequently changing it is sometimes advantageous to use a pressure regulator in conjunction with a constant source of compressed air. This allows the user to quickly level the optical table by adjusting the pressure in the air chamber of each optical table support.

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SELECTION GUIDE

Optical Table Supports Comparison Table

	Active Vibration Isolation Supports	Standard Passive Vibration Isolation Supports	Heavy Duty Passive Vibration Isolation Supports	Rigid, Non-Isolating Supports
Vertical Resonant Frequency ^a	1.25 Hz	4.5 Hz	4.5 Hz	N/A
Vertical Transmissibility at Resonance ^a	10 dB	22 dB	22 dB	N/A

Isolation Efficiency at 10 Hz ^a	97.5%	74%	74%	N/A
Isolation Type	Active	Passive	Passive	None ^b
Load Capacity (Set of 4)	5500 lbs (2500 kg)	600 - 2425 lbs (275 - 1100 kg)	1200 - 4850 lbs (550 - 2200 kg)	5500 lbs (2500 kg)

- Specifications measured at 55% of max rated load. At higher loads the resonant frequency will decrease and isolation efficiency at 10 Hz will increase
- Upgradeable to passive isolation using upgrade kit PWA076

[Hide Part Numbers](#)

Part Number	Description	Price	Availability
PTP602	Set of Four Standard Duty Passive Legs - 600 mm High	\$1,902.00	Today
PTP603	Set of Four Standard Duty Passive Legs - 700 mm High	\$1,902.00	Lead Time
PTH602	Set of Four Heavy Duty Passive Legs - 600 mm High	\$2,240.00	Today
PTH603	Set of Four Heavy Duty Passive Legs - 700 mm High	\$2,240.00	Lead Time