Laboratory Tables & TableTop™ Platforms

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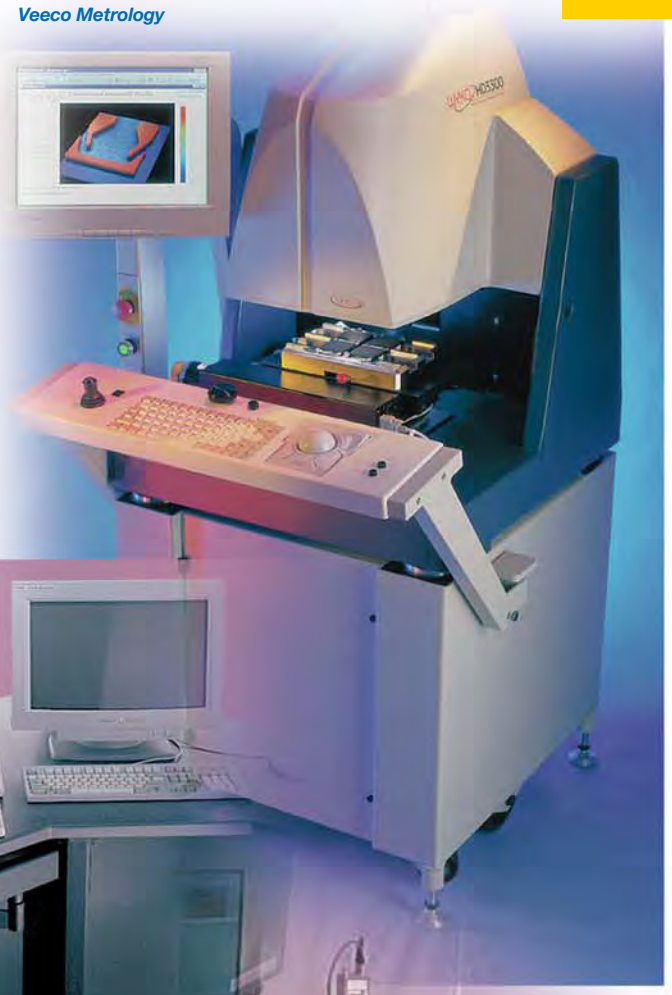
Marine Biological Lab at Woods Hole



Veeco Metrology

Applied Precision

Probing Solutions

www.gmp.ch

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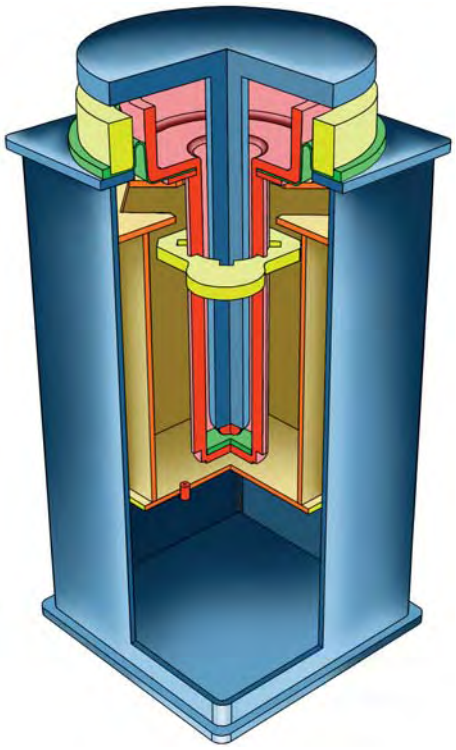
Gimbal Piston™ Isolators



The key element in all TMC vibration isolation tables is our Gimbal Piston™ Air Isolator. These assemblies have repeatedly proven, in independent tests, to provide outstanding isolation in all directions for even the lowest input levels.

The Gimbal Piston utilizes proprietary pneumatic damping techniques, which include air flow restrictors and a unique geometry. It is lightly damped and highly responsive to typical, low-amplitude ambient floor vibrations, yet achieves very high damping for gross transient disturbances, such as sudden load changes or bumping the top plate. The result is that Gimbal Piston Isolators provide superior isolation yet will virtually eliminate any gross disturbance within a few seconds.

The Gimbal Piston can also stabilize isolated systems with relatively high centers of gravity without compromising isolation.

Low-Amplitude Input Response

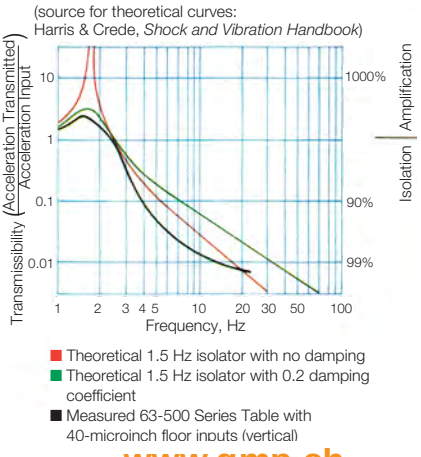
The greatest challenge in designing an effective isolator is to maintain good performance at the low vibration amplitude inputs typical of ambient building floor vibration. Isolator specifications are often based on measurements done with the isolator placed on a "shaker table" with very high amplitude input levels. Such testing, with input amplitudes on the order of millimeters, yields unrealistic performance expectations and is misleading as results will not reflect the actual performance in use.

The Gimbal Piston Isolator design is unique in its ability to maintain its stated resonant frequency and high level of attenuation in even the most quiet, real, floor environments. The performance is linear to such low amplitudes because the design is virtually free of friction and therefore able to avoid rolling friction to static friction transitions.

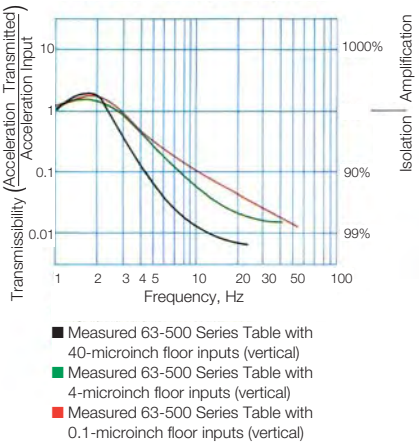
Every other system that we have tested at levels typical for floor vibration exhibits either a higher resonant frequency than claimed or a substantial increase in transmission through the isolator mount.

We stress the importance of performance specifications at low levels because we have repeatedly observed, in our own testing and in many as-used installations, that better performance is much easier to achieve at greater amplitudes and higher frequencies.

Vibration Isolation vs. Pneumatic Damping



Low-Amplitude Input Response



Horizontal vs. Vertical Inputs

Our innovative Isolator allows a thin-wall, rolling diaphragm seal to accommodate horizontal displacement by acting as a gimbal. Instead of using a cable-type pendulum suspension, the Gimbal Piston Isolator carries the load on a separate top plate that has a rigid rod extending down into a well in the main piston. The bottom of the rod has a ball-end that bears on a hard, flat seat.

The result is an inherently flexible coupling which allows horizontal flexure in the isolator as the ball simply rocks (without sliding or rolling) very slightly on the seat.

The approach works extremely well, even with sub-microinch levels of input displacement, because the static friction is virtually the same as the rolling friction. Horizontal motion is simply converted to the usual vertical diaphragm flexure but out of phase: one side of the piston up, the other down, in a gimbal-like motion.

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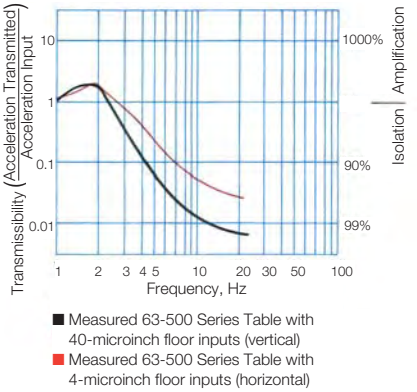
Horizontal vs. Vertical Isolation



Limitations of Other Types of Isolators

Thick-Wall Rubber Diaphragms. Most commercial isolators employ an inexpensive, thick-walled rubber diaphragm in the piston to achieve vertical isolation. Because of the relative inflexibility of these elements, low amplitude vibration isolation performance is compromised. Though such a system feels "soft" to gross hand pressure, typical low-level floor vibration causes the rubber to act more like a rigid coupling than a flexible isolator.

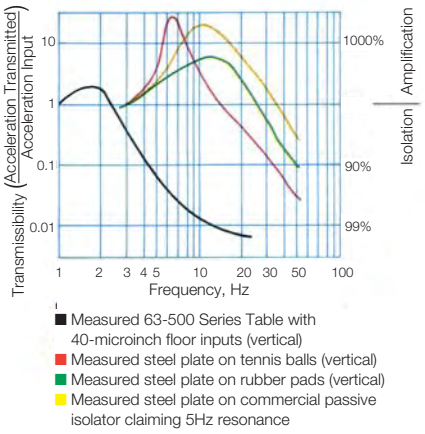
Sealed Pneumatic Isolators (Passive). Sealed air isolators do not automatically adjust to load changes. The primary limitation of such systems is that they must be made too stiff to be effective isolators. For example, a passive isolator with a true 1.5 Hz resonant frequency would drift several inches vertically in response to small changes in load, temperature, or pressure and require constant manual adjustment. Thus, no practical sealed isolators are designed with such low resonant frequencies.

Bearing Slip Plates. In theory, bearing slip plates should allow horizontal isolation by their decoupling effect. In practice, for such a design to work at low amplitudes, it would require precision ground, hardened bearings with impossibly small tolerances. The commercially available versions cannot overcome the static frictional forces at low amplitudes to get the bearings rolling at all. In addition, all such systems are difficult to align initially and easily drift out of calibration.

Homemade Assemblies. Homemade isolation systems - often a steel or granite slab placed on rubber pads, tennis balls, or air bladders - will work only if the disturbing vibrations are high frequency and minimal isolation is required. While all isolators use the principle of placing a mass on a damped spring, their performance is differentiated primarily by spring stiffness: the stiffer the spring, the higher the resonant frequency. Thus, homemade solutions are limited by their high resonant frequency.

A Gimbal Piston™ Isolator with a 1.5 Hz vertical resonant frequency begins to isolate at 2 Hz and can reduce vibration by over 95% at 10 Hz. A tennis ball under a steel plate with a 7 Hz resonant frequency begins to isolate above 10 Hz and reduces vibrations by 90% at 30 Hz. But most building floors exhibit their highest vibrational displacements between 5 and 30 Hz, so that a tennis ball or rubber pad actually makes the problem worse by amplifying ambient frequencies between 5 and 10 Hz.

Comparative Performance Curves



Gimbal Piston™ Isolators are routinely used for the most demanding electron microscope installations.

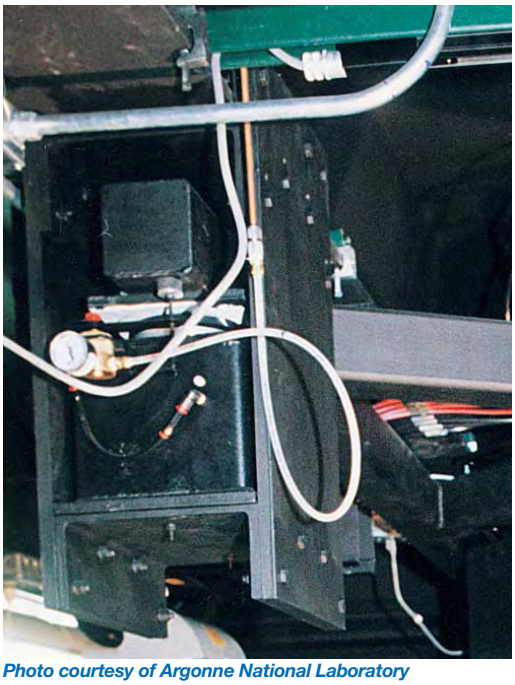


Photo courtesy of Argonne National Laboratory

Top Plate Design Alternatives

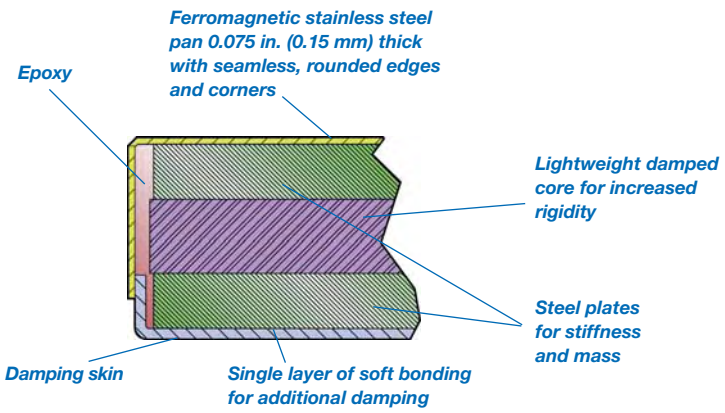
Small Lab Tables & TableTop™ Isolators

TMC Steel Honeycomb CleanTop® II

An effective table top design must incorporate three critical factors: mass, stiffness, and damping. Mass ensures that forces applied to the table top will cause minimal displacements. Stiffness raises the table top's lowest resonance out of the working range and provides a more stable work surface. Damping decays the higher frequency vibration that reaches the top.

TMC provides three basic versions of table tops: stainless steel laminate, CleanTop® II steel honeycomb, and granite.

Stainless Steel Laminate. The standard TMC top plate is a 2 to 4 in. thick, highly damped, high stiffness lamination of steel plates sandwiched around a lightweight damped core, rigid epoxy-bonded into a seamless stainless steel pan with rounded edges and corners. With their combinations of structural epoxies and visco-elastic adhesives, these tops will not delaminate due to heat, humidity, or aging. TMC laminated tops are recommended for most applications not requiring mounting holes.



Laminated tops are standard on 64 Series TableTop™ Platforms, 65 Series Floor Platforms, and 63-500 and 68-500 Series Lab Tables, 63-600 ClassOne™ Workstations, and Quiet Island® Sub-Floor Platforms. They can also be supplied with a plastic top skin laminated onto the stainless steel to make an even more easily cleanable surface. Plastic skins do, however, detract from the ferromagnetic properties of the top and are unsatisfactory for magnetic hold-downs.

Steel Honeycomb CleanTop® II. Increasingly, researchers are using honeycomb construction tops with their lab tables to facilitate bolt-down mounting of their equipment to a flat and stable work surface. TMC's spill-proof CleanTop II is uniquely suited to such applications.

For a complete discussion of CleanTop II Optical Tops, see Section 2.

Granite Tops. Granite surfaces are standard with 64 Series TableTop Platforms. They are available on special order with other isolation systems. The advantages of a granite top are its relatively high mass and stiffness and the potential for being lapped to a precise surface flatness. Granite's non-magnetic nature is useful in some applications.

For small tops, granite is an inexpensive, moderate performance material. In larger sizes, however, granite is more expensive than standard TMC top plates, sacrifices damping, and does not have other desirable features.

Performance Summary

Small Tops for Lab Tables

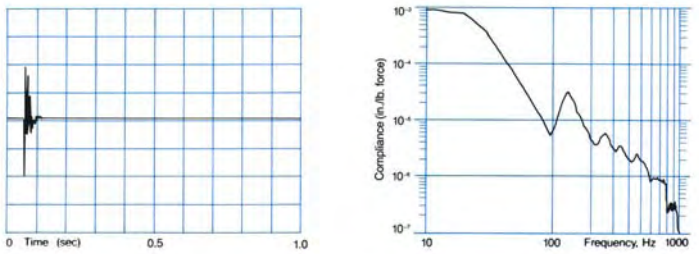
Damping

Structural damping determines how quickly an excited resonance in a table top decays. The simplest way to measure damping is to hit the table top with a hammer and measure the decay with an accelerometer and oscilloscope or spectrum analyzer. The height of a resonance peak in the "compliance curve" also measures damping.

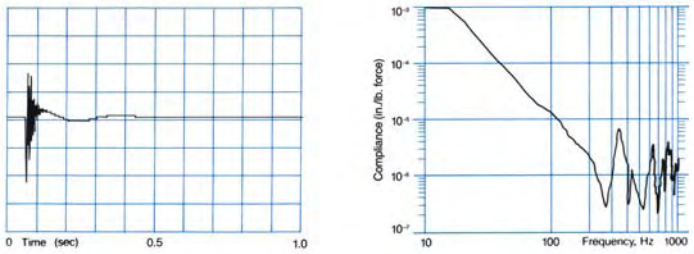
Compliance

Compliance is a reciprocal measurement of the dynamic stiffness of a table top. The data are obtained by inputting a measured force to the table top with a calibrated hammer and measuring the resultant acceleration (or displacement) with an accelerometer. Compliance is the ratio of displacement to force expressed as a function of frequency.

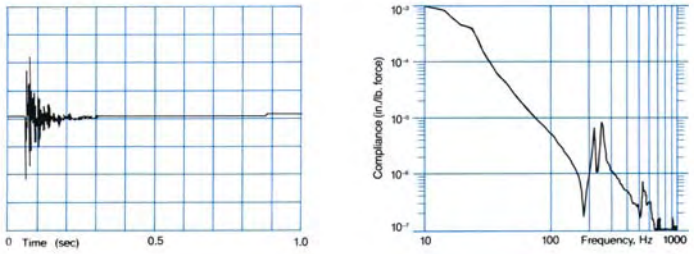
Damping | **Compliance**



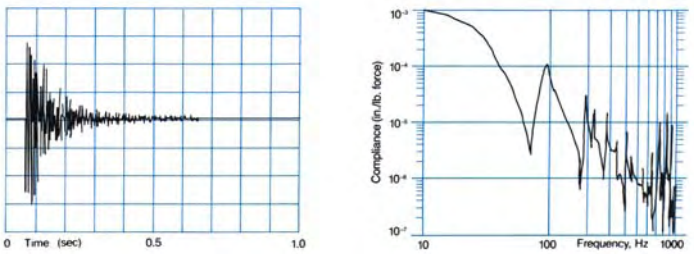
TMC Laminated Steel Top — 30 x 48 x 2 in. (750 x 1200 x 50 mm)



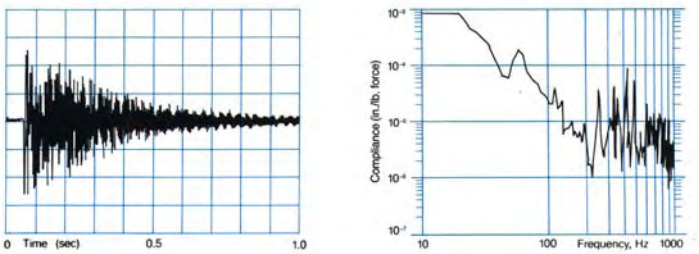
TMC CleanTop® II — 30 x 48 x 4 in. (750 x 1200 x 100 mm)



Granite Top — 30 x 48 x 4 in. (750 x 1200 x 100 mm)



Damped Steel Plate — 30 x 48 x 3/4 in. (750 x 1200 x 19 mm)



Undamped Steel Plate — 30 x 48 x 3/4 in. (750 x 1200 x 19 mm)

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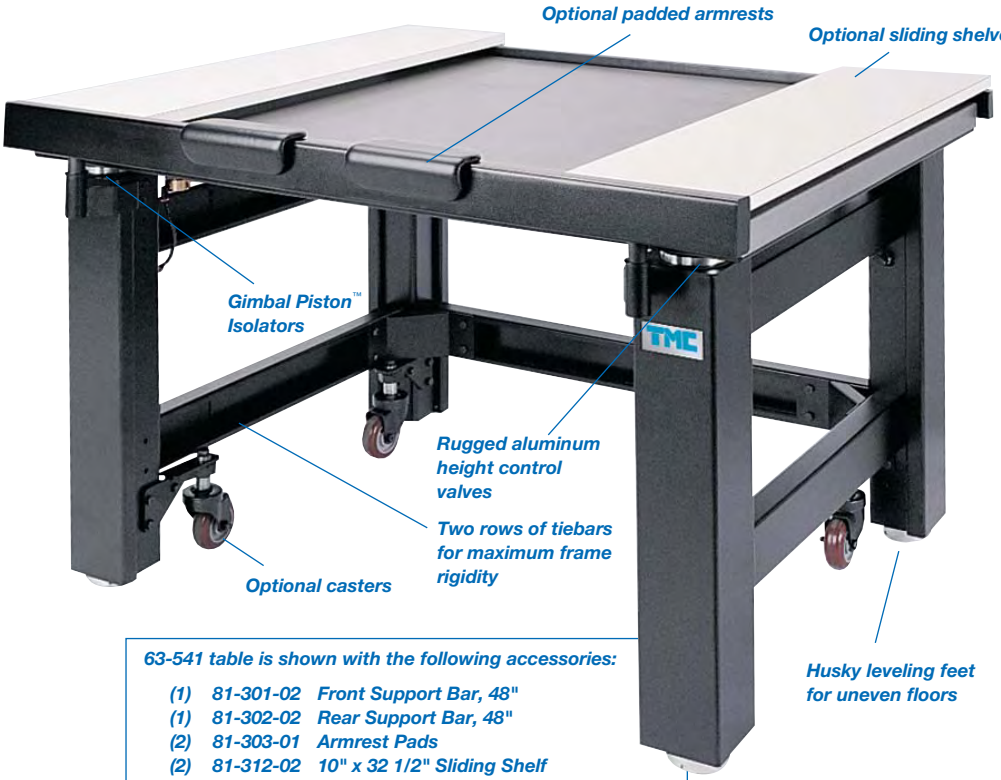
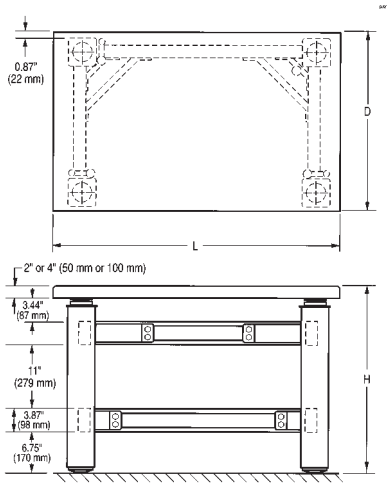
63-500 SERIES

High-Performance Lab Tables





63-541 table is shown with the following accessories:

(1)	81-301-02	Front Support Bar, 48"
(1)	81-302-02	Rear Support Bar, 48"
(2)	81-303-01	Armrest Pads
(2)	81-312-02	10" x 32 1/2" Sliding Shelf
(1)	83-014-01	Retractable Casters

Accessories for 63-500 Lab Tables are specified separately and listed in the Ordering Chart on Page 9.

TMC 63-500 Series High-Performance Lab Tables provide an excellent vibration-free working surface for loads up to 350 lb (160 kg). Now with modular construction, these tables are recommended for use in such diverse applications as electrophysiology, cell injection, ultramicrotomy, photomicroscopy, scanning tunnel microscopy, and confocal laser scanning microscopy.

GENERAL SPECIFICATIONS

Isolator natural frequency:
High Input
Vertical = 1.2 Hz
Horizontal = 1.0 Hz
Low Input
Vertical = 1.5 - 2.0 Hz
Horizontal = 1.2 - 1.7 Hz

Isolation efficiency @ 5 Hz:
Vertical = 70 - 85%
Horizontal = 75 - 90%

Isolation efficiency @ 10 Hz:
Vertical = 90 - 97%
Horizontal = 90 - 97%

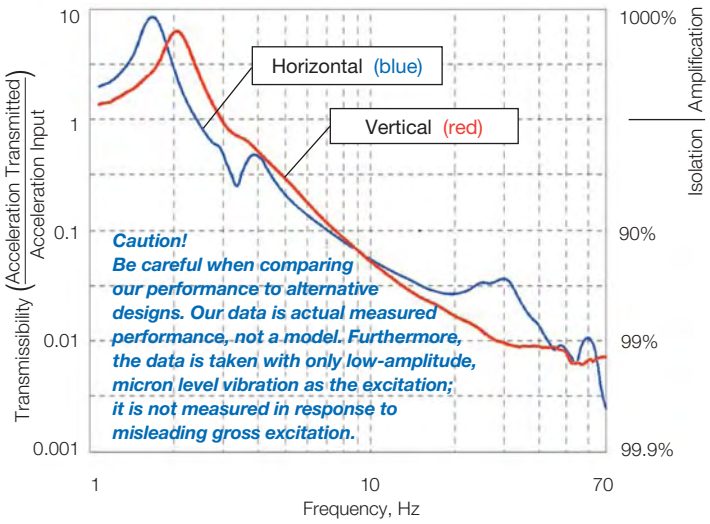
Gross load capacity:
1,400 lb (640 kg)

Net load capacity:
350 lb (160 kg)

Finish: Medium texture black powder coat frame, stainless steel top

Facilities required:
80 psi nitrogen or air

63-531 Vibration Isolation Performance (actual measured data)



Features

Gimbal Piston™ Isolators.

Our Gimbal Piston™ Isolator has been proven by independent tests to consistently outperform the competition. It achieves both horizontal and vertical isolation down to very low input levels.

Thin-Wall Rolling Diaphragms.

An integral part of the Gimbal Piston, the thin-wall, dacron-reinforced, rolling diaphragm air seals are only 0.020 in. (0.5 mm) thick and extremely flexible. They do not stiffen the spring as thicker rubber diaphragms do

Aluminum Height Control Valves.

All systems are equipped with rugged aluminum height control valves. Virtually unbreakable, they are finger adjustable with no need for tools. The standard model maintains height to ∓ 0.050 in. (∓ 1 mm); the precision model, to ∓ 0.005 in. (∓ 0.1 mm).

Internal Piston Travel Restraint.

Unique in the industry, TMC provides husky, tamper-proof, built-in piston travel restraints. The restraints are completely independent of the table valves and have been ram-tested at forces above those produced by the pistons operating at full pressure. They cannot be decoupled accidentally and do not interfere with setting up and using the table, but simply protect against overtravel without the use of external bars that create hazardous pinch points. Heavy loads, including the top plate, can be safely removed from a table in full operation.

Tiebar Gussets.

Exclusive TMC tiebar gussets increase table frame rigidity. They compensate for the elimination of the front tiebar in order to provide kneewell space.

Rugged Built-in Leveling Feet.

Table legs include built-in fine-thread 3 in. (75 mm) diameter screw jack levelers with 1/2 in. (13 mm) travel, provision for external adjustment, and a handy adjustment wrench. The base is a solid, slightly domed shape to assure solid, wobble-free contact with sloping or irregular floors.

Superior TableTops™.

Our standard laminated tops provide an attractive stainless steel ferromagnetic working surface with highly damped, high stiffness construction at low cost. For applications requiring the ultimate stiffness and damping or mounting holes, specify our patented CleanTop® II honeycomb top.

How to Order

See Ordering chart on Page 9.

Which Top Is Best for You?

Stainless Steel Laminate, our least expensive 63-500 top, is recommended for applications that require a strong magnetic attachment and will not involve repeated exposure of the top to corrosive liquids. However, stains from such liquids can be removed with an industrial strength stainless steel cleaner. This top does not have the precision flatness of our CleanTop II honeycomb top. Flatness is ∓ 0.030 in. (∓ 0.8 mm).

Plastic Laminate on Stainless Steel is an easy-to-clean alternative to stainless steel, without sacrificing structural performance. A plastic laminate is added to the top surface, which reduces ferromagnetic attachment strength.

CleanTop II features TMC's patented spill-proof, drilled and tapped mounting hole array. Tops are 4 in. (100 mm) thick and have 1/4–20 holes on 1 in. spacing or M6 holes on 25 mm spacing. The small cell-size steel honeycomb design provides even stiffer and better damping than our stainless steel laminate. Guaranteed flat to ∓0.005 in. (∓0.13 mm). For more information, see Section 2.

Scientifica Limited's unique SliceMaster enables one operator to take independent electrophysiological recordings from up to eight brain slices simultaneously, controlling all eight slice chambers from one workstation. The system minimizes repetitive tasks, improves statistical analysis, and reduces the use of animals. Each two-tier TMC table supports four stations with a temperature-controlled chamber and camera on the top tier and the stimulator and recording manipulators on the lower breadboard, freeing up valuable workspace in the laboratory. The whole rigid assembly is isolated on TMC's patented Gimbal Piston™ Air Isolators.

Accessories

Armrests and Sliding Shelves

Tables may be fitted with armrests and rigidly supported sliding side shelves just above the table top. The sliding shelves must be used in conjunction with a front support bar and a rear support bar that are fastened to the table legs. The bars can be retrofitted but cannot be used with the full perimeter enclosure or Faraday Cage.

Front Support Bar

This adjustable steel rail mounts on the table's front legs. It has a slot in which the shelves mount and is normally ordered with the armrest pads. The bar may be centered along the length of the table or cantilevered to suit your application.

Rear Support Bar

This adjustable rail mounts on the rear table legs and supports the rear end of the sliding shelves. It may also be cantilevered.

Armrest Pads

Adjustable leather forearm rests which fasten to the front support bar. A new armrest pad is now available which fastens to the perimeter enclosure.

Sliding Shelves

Shelves are made of wood with white plastic laminate covering all sides. A metal bracket on the front edge of the shelf fits into the slot in the front support bar. Shelves slide freely from side to side and are easily lifted off the support bars. Built-in stops prevent shelves from sliding out of slots. When ordering sliding shelves, you must order front and rear support bars.

Raised Rear Shelf

The 14 in. (350 mm) deep raised rear shelf mounts on the full perimeter enclosure and is the length of the corresponding table top. The shelf is solidly supported 18 in. (450 mm) above the isolated surface with no direct noise transmission to the table top. NOTE: This shelf cannot be used with the Faraday Cage.

Clear Acrylic Enclosures

The clear acrylic enclosure provides protection from drafts and dust. Custom configurations allow for acoustic and light protection. Features include: clear acrylic panels, solid top, and triple-track front section with a three-piece sliding front panel.

Casters

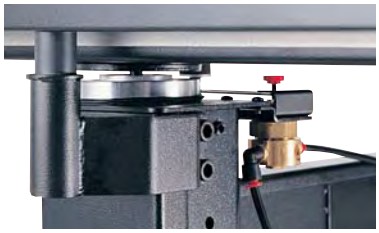
A set of four retractable casters with a total weight capacity of 1,000 lb (450 kg) can be mounted to the base of the table legs.

Fixed Full-Perimeter Enclosures

A fixed, welded-steel structure that completely surrounds the table top to provide non-isolated support for Faraday Cages, raised rear shelves, Plexiglas enclosures, and other special fixtures. It cannot be used with sliding shelves or support bars.

Precision Height Control Valves

To minimize bottled air supply usage, standard TMC height control valves have a small "dead band," resulting in a height return accuracy of ∓0.05 in. (∓1.3 mm). Precision valves control height to within ∓0.005 in. (0.13 mm) but have a slight,



constant leak. To specify precision height control valves with a table, add the letter "P" after the basic table model number. Precision valves may also be retrofitted to installed tables.

Articulated ArmRest

Our rugged, leather Articulated ArmRest adds stability and comfort when delicate manipulations must be made without disturbing the isolated surface. Mounts to front support bar or perimeter enclosure.

Articulated Armrests ease microscope use.

Subshelf

For additional storage space, a shelf mounted beneath the isolated table top is available and may be retrofitted at any time.

How to order

See Ordering Chart on page 9.
(See following example.)

Example: To order a 30 in. x 48 in. (750 mm x 1,200 mm) table with a 2 in. (50 mm) thick stainless steel laminate top, front and rear support bars, two 10 in. (250 mm) wide shelves, and armrest pads, the following numbers are specified:

1 each	63-541	table
1 each	81-301-02	front support bar
1 each	81-302-02	rear support bar
2 each	81-312-02	10 in. (250 mm) shelf
2 each	81-303-01	armrest pad
Note: You must specify quantity.		

NEW From TMC!

OnTrak™

An easy-to-use, roll-off option for 63-500 Tables that dramatically simplifies table rigging and installation.

Features & Benefits

- No heavy lifting required
- TableTop ships pre-installed on isolator frame
- Casters required
- Reduces set-up time
- Simply roll table off skid and into final destination

Optional Feature

How to Order

1. Simply specify the "OnTrak" part number from the chart at right.
2. Contact TMC for pricing.
3. Be sure your table configuration includes caster set No. 83-014-01.

OnTrak Ordering Chart

Order Number	Nominal Table Size	Price
90-510	25" x 36"	Contact TMC
90-530	30" x 36"	Contact TMC
90-540	30" x 48"	Contact TMC
90-560	36" x 48"	Contact TMC

Table and Accessory Ordering Chart

TABLE MODEL	25 in. x 36 in. 625 x 900 mm	30 in. x 30 in. 750 x 750 mm	30 in. x 36 in. 750 x 900 mm	30 in. x 48 in. 750 x 1200 mm	30 in. x 60 in. 750 x 1500 mm	36 in. x 48 in. 900 x 1200 mm	36 in. x 60 in. 900 x 1500 mm
Isolator frame only (no top)	63-510	63-520	63-530	63-540	63-540	63-560	63-560
Isolator with 2 in. stainless steel laminate	63-511	63-521	63-531	63-541	63-551	63-561	63-571
Isolator with 2 in. stainless steel and plastic laminate	63-512	63-522	63-532	63-542	63-552	63-562	63-572
Isolator with 4 in. CleanTop II, 1/4-20 on 1 in. spacing			63-533	63-543	63-553	63-563	63-573
Isolator with 100 mm CleanTop II, M6 on 25 mm			63-534	63-544	63-554	63-564	63-574
ACCESSORY MODEL							
Front support bar	81-301-01	81-301-00	81-301-01	81-301-02	81-301-03	81-301-02	81-301-03
Rear support bar	81-302-01	81-302-00	81-302-01	81-302-02	81-302-03	81-302-02	81-302-03
Armrest pads (front support bar)	81-303-01 for all tables (order 2)						
Armrest pads (perimeter enclosure and Faraday Cage)	81-303-02 for all tables (order 2)						
Articulated armrest	81-304-01 for all tables						
Articulated armrest adapter, front bar	81-305-01 for all tables						
Articulated armrest adapter, perimeter enclosure	81-306-01 for all tables						
Sliding shelf, 6 in.(150 mm) wide	81-311-01	81-311-02	81-311-02	81-311-02	81-311-02	81-311-03	81-311-03
Sliding shelf, 10 in. (250 mm) wide	81-312-01	81-312-02	81-312-02	81-312-02	81-312-02	81-312-03	81-312-03
Sliding shelf, 14 in. (350 mm) wide	81-313-01	81-313-02	81-313-02	81-313-02	81-313-02	81-313-03	81-313-03
Sliding shelf, 20 in. (500 mm) wide	81-314-01	81-314-02	81-314-02	81-314-02	81-314-02	81-314-03	81-314-03
Full perimeter enclosure, 2 in. (50 mm) tops	81-321-01	81-321-02	81-321-03	81-321-04		81-321-06	
Full perimeter enclosure, 4 in. (100 mm) tops			81-322-03	81-322-04		81-322-06	
Raised rear shelf	81-324-01	81-324-02	81-324-01	81-324-04		81-324-04	
Subshelf	81-325-01	81-325-02	81-325-03	81-325-04	81-325-04	81-325-04	81-325-04
Sliding shelf for perimeter enclosure	81-327-03	81-327-04	81-327-04	81-327-04		81-327-06	
Acrylic enclosure			81-328-03	81-328-04		81-328-06	
Casters, set of 4	83-014-01 for all tables						

NEW From TMC!

Faraday Cages
New Options and Features

Type II Faraday Cage

Optional "U"-shaped hanging shelf

New 2 in. diameter holes for cable passage

Optional non-isolated side shelf oriented front-to-rear

Full perimeter enclosure (required to mount cage)

Optional armrest pads are now available with Faraday Cages

Bench-mounted cage does not require vibration isolation table.

Same features as our table-mounted cages

Stainless-steel baseplate

BenchTop Faraday Cage

Type II Faraday Cage. The Type II Faraday Cage offers improved access and simplified assembly. The "window-shade" type retracting front panel is easier to operate than hinged doors and causes less disturbance when adjusted. This front panel may be positioned anywhere between fully opened and closed and stays in position without a fastener. The front door is shipped assembled and the entire unit may be assembled in a few minutes with a screwdriver (provided).

This cage incorporates the same stainless steel frame and copper-mesh material as previous versions. It mounts to (and requires) TMC's full-perimeter enclosures and mounts to our 63-500 Series tables.

Our 40 in. tall Type II Faraday Cages now include a convenient 2 in. diameter hole in the base of the side and rear panels. This feature eases cable interface to the interior of the cage. The hole is sleeved with a rounded rubber liner to shield sharp edges and assure long life. In addition, we now offer a new version of our armrest pads that is compatible with our cages. These armrest pads are virtually identical to our non-Faraday Cage pads but adhere with Velcro straps rather than clips or magnets.

BenchTop Faraday Cage. Until recently, our Faraday Cages have only been available as part of a complete TMC vibration isolation table system. The cages required our Perimeter Enclosure option and could not be assembled without a TMC 63-500 Series Vibration Isolation Table as its base.

We now offer the same line of 40 in. tall cages with a baseplate which allows the cage to be used on a bench-top without a corresponding TMC table. The base of the cage is a reinforced stainless steel plate which can support a compact vibration isolation system, microscope, or other instrument.

Type II Faraday Cage Ordering Chart

Type II Faraday Cage	Description	D		L	
		in.	mm	in.	mm
81-333-03	Type II Faraday Cage, 40 in.	30	750	36	900
81-333-04	Type II Faraday Cage, 40 in.	30	750	48	1,200
81-333-06	Type II Faraday Cage, 40 in.	36	900	48	1,200

BenchTop Faraday Cage Ordering Chart

BenchTop Faraday Cage	Description	D		L	
		in.	mm	in.	mm
81-334-03	BenchTop Faraday Cage	30	750	36	900
81-334-04	BenchTop Faraday Cage	30	750	48	1,200
81-334-06	BenchTop Faraday Cage	36	900	48	1,200

Accessory Ordering Chart

Description	30 in. x 36 in. 750 x 900 mm	30 in. x 48 in. 750 x 1200 mm	36 in. x 48 in. 900 x 1200 mm
Armrest pads (F.Cage)	81-303-02 (order 2)		
Full perimeter enclosure, 2 in. (50 mm) tops	81-321-03	81-321-04	81-321-06
Full perimeter enclosure, 4 in. (100 mm) tops	81-322-03	81-322-04	81-322-06
Hanging shelf, "U"-shaped	81-335-03	81-335-04	81-335-04
Sliding side shelf, 8 in. wide	81-332-04	81-332-04	81-332-06

SpaceSaver™

Overhead Rack System for Ergonomic Mounting of Shelving Accessories

SpaceSaver™ offers a range of accessories for our 63-500 Series High Performance Vibration Isolation Tables. It is a convenient way to mount computer monitors, keyboards, power strips, and miscellaneous items to an air-isolated table system.

The Basic System includes:

4 uprights
4 tiebars (front to rear)
2 tiebars (side to side)
1 frame mounting bracket kit
1 top shelf
1 hardware kit

SpaceSaver may be retrofit to most existing TMC tables. The modular design incorporates a "building-block" approach so components may be added at a later date. SpaceSaver is ideal for electrophysiology rigs, optical microscope-based measurement setups, and any other application for a vibration isolation table requiring interface with computers, power supplies, and other large devices.

SpaceSaver Ordering Chart

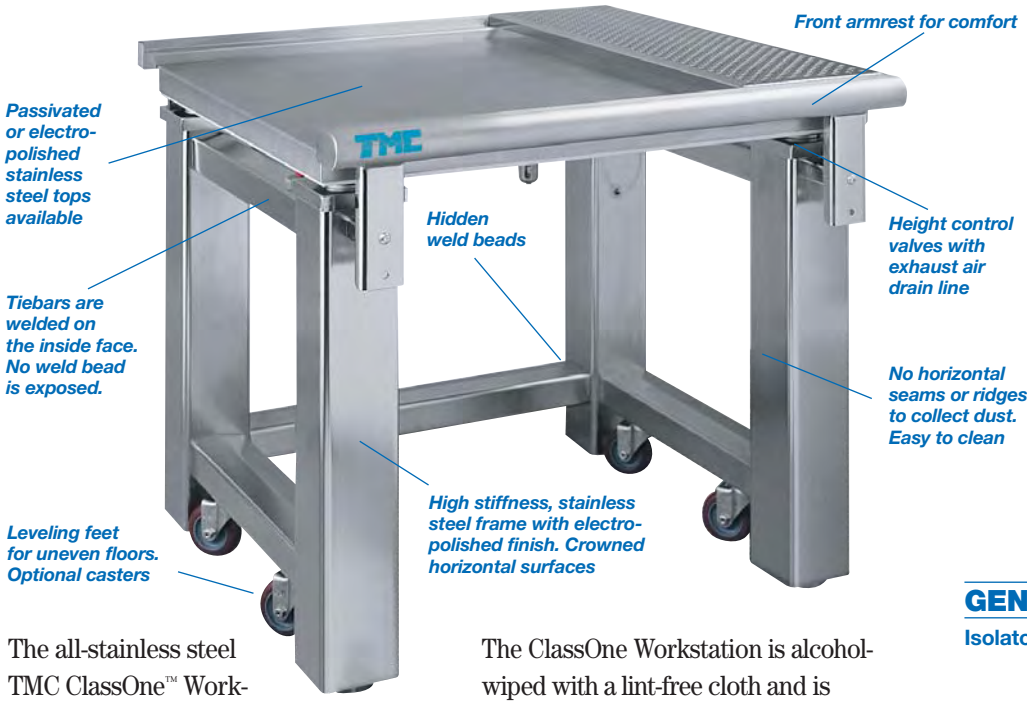
Description	30 in. x 36 in.	30 in. x 48 in.	36 in. x 48 in.
Basic System	81-340-03	81-340-04	81-340-06
Extra Top Shelf Kit**	81-341-03	81-341-04	81-341-06
Monitor Support Kit	81-342-01	81-342-01	81-342-01
Keyboard Tray Kit*	81-343-01	81-343-01	81-343-01
Power Strip Kit	81-344-01	81-344-01	81-344-01
Kit to mount perimeter enclosure option	81-345-01	81-345-02	81-345-02
Kit to mount front or rear support bar option	81-346-01	81-346-01	81-346-01
Front Support Bar	81-301-01	81-301-02	81-301-02
Padded Armrest for Front Support Bar	81-303-01	81-303-01	81-303-01
Rear Support Bar	81-302-01	81-302-02	81-302-02
Casters (set of 4)	83-014-01	83-014-01	83-014-01

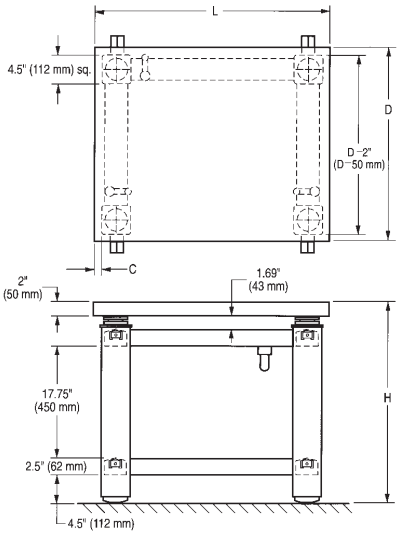
* Requires front support bar
** Precludes use of monitor support kit

GMP SA Siège principale: Avenue des Baumettes 17 CH-1020 Renens +41 21 633 21 21 Fax. +41 21 633 21 29 info@gmp.ch
GMP SA Büro Zürich: Dübendorfstrasse 11a CH-8117 Fällanden +41 44 825 34 00 Fax. +41 44 825 34 01 so@gmp.ch

63-600 SERIES

ClassOne™ Workstations





The all-stainless steel TMC ClassOne™ Workstation is a high-performance, pneumatic vibration isolation table designed from the floor up for maximum cleanroom compatibility. Isolation is provided by the same Gimbal Piston™ element that provides unsurpassed performance in isolating optical tables, electron microscopes, precision balances, and scanning-tunneling microscopes.

The ClassOne Workstation is alcohol-wiped with a lint-free cloth and is double-wrapped in plastic at the factory prior to shipping.

How to Order

The basic table includes a front support bar. Options include shelves, rear support bar (required to mount shelves), and casters. The shelves include a pattern of 0.4 in. (10 mm) holes on 1 in. centers. The accessories available for the 63-600 Series ClassOne Workstation are specified separately.

GENERAL SPECIFICATIONS

Isolator natural frequency:
High Input
Vertical = 1.2 Hz
Horizontal = 1.0 Hz
Low Input
Vertical = 1.5-2.0 Hz
Horizontal = 1.2-1.7 Hz

Isolation efficiency @ 5 Hz:
Vertical = 70 - 85%
Horizontal = 75 - 90%

Isolation efficiency @ 10 Hz:
Vertical = 90 - 97%
Horizontal = 90 - 97%

Gross load capacity:
1,400 lb (640 kg)

Net load capacity:
350 lb (160 kg)

Finish: Electopolished stainless steel frame, passivated or electropolished stainless steel top

Facilities required:
80 psi nitrogen or air

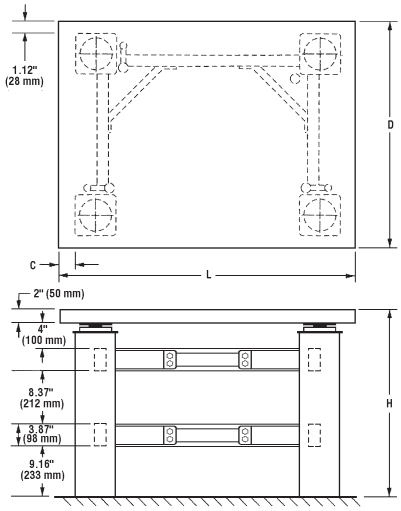
Table Ordering Chart

Table Model		L	D	H	C
Complete Table and Armrest with Passivated Stainless Steel Top	Complete Table and Armrest with Electropolished Stainless Steel Top				
63-631	63-635	35 in. (875 mm)	30 in. (750 mm)	30 in. (750 mm)	1/2 in. (13 mm)
63-641	63-645	47 in. (1,175 mm)	30 in. (750 mm)	30 in. (750 mm)	6 1/2 in. (163 mm)
63-661	63-665	47 in. (1,175 mm)	36 in. (900 mm)	30 in. (750 mm)	2 in. (50 mm)
63-671	63-675	60 in. (1,500 mm)	36 in. (900 mm)	30 in. (750 mm)	8 1/2 in. (213 mm)

Accessory Model	Description				
81-302-05	Rear support bar & mounting clamps	35 in. (875 mm)			
81-302-06	Rear support bar & mounting clamps	47 in. (1,175 mm)			
81-302-07	Rear support bar & mounting clamps	60 in. (1,500 mm)			
81-312-06	10 in. (25 mm) wide sliding shelf		30 in. (750 mm)		
81-312-07	10 in. (25 mm) wide sliding shelf		36 in. (900 mm)		
83-015-01	Casters, set of 4				

68-500 SERIES

High-Capacity Lab Tables



For table applications that require isolating over 350 lbs (160 kg) of net load, we recommend our 68-500 Series tables. They are similar in design to our 63-500 Series tables, with higher capacity isolators and a more massive stainless steel top plate.

In addition to high load applications, 68-500 Series tables are also recommended for payloads with unusually high centers of gravity and equipment with moving stages. These applications should benefit from the increased stability of the 68-500 design.

With a stiffer, more massive top plate, a lower natural frequency isolator, and stiffer, heavier leg frames, 68-500 Series tables provide performance that is markedly superior to any other passive table in the industry.

How to Order

See table ordering chart.

Optional Accessories

High-capacity casters that retract inside the leg frames are a convenient option with this table.

It is advisable to make this choice with the original order because retrofitting requires dismantling of the table.

A rigid front support bar, not in contact with the isolated surface, is useful as an armrest and can be easily retrofitted. This support bar is compatible with the armrest pads and articulated armrest described on page 8.

A rear support bar is required to allow mounting of sliding shelves when combined with front support bars. For sliding shelf ordering information, see page 8.

An equipment subshelf, mounted to the tiebars beneath the isolated surface, is made of wood covered with black plastic laminate and is easy to retrofit, see page 8.

Features

- Internal piston travel restraints
- Gimbal Piston™ Isolators with thin-wall rolling diaphragms
- All-aluminum height control valves

GENERAL SPECIFICATIONS

Isolator natural frequency:
High Input
Vertical = 1.0 Hz
Horizontal = 0.8 Hz
Low Input
Vertical = 1.2 - 1.7 Hz
Horizontal = 1.0 - 1.5 Hz

Isolation efficiency @ 5 Hz:
Vertical = 80 - 90%
Horizontal = 80 - 90%

Isolation efficiency @ 10 Hz:
Vertical = 90 - 99%
Horizontal = 90 - 99%

Gross load capacity:
4,000 lb (1,800 kg) @ 80 psi

Net load capacity:
1,200 lb (545 kg)

Finish: Medium texture black powder coat frame stainless steel top

Facilities required:
80 psi nitrogen or air

Table Ordering Chart

Table Model	Description	L	D	H	C
68-561	Complete Table, 3 ft x 4 ft	47 in. (1,200 mm)	35.75 in. (908 mm)	30 in. (760 mm)	2.2 in. (56 mm)
68-571	Complete Table, 3 ft x 5 ft	60 in. (1,500 mm)	35.75 in. (908 mm)	30 in. (760 mm)	9 in. (225 mm)
Accessory Model	**Description**	**L**			
81-401-01	Front support bar and mounting clamps	48 in. (1,200 mm)			
81-401-02	Front support bar and mounting clamps	60 in. (1,500 mm)			
81-402-01	Rear support bar and mounting clamps	48 in. (1,200 mm)			
81-402-02	Rear support bar and mounting clamps	60 in. (1,500 mm)			
81-421-01	Subshelf				
83-013-01	Set of 4 retractable casters				

U.S. Patent Nos. 5,832,806 and 5,779,010

20 SERIES

Active Vibration Isolation Tables

CE Marked

The affordable Active Vibration Isolation Table is available in a desk style configuration in the sizes shown in the ordering chart at right, although custom configurations are welcomed.

TMC's Active Vibration Isolation Table features state-of-the-art vibration isolation performance. By integrating our new CSP® (Compact Sub-Hertz Pendulum Isolation System) for horizontal vibration reduction with our new PEPS-VX® Inertial Damper for vertical vibration cancellation, we have produced a superior, ultra-quiet table in six degrees-of-freedom.

This advanced isolation technology may be combined with TMC optical tables and other TMC products, as well as designed into equipment for OEM applications.

Featuring 10 dB of isolation vertically and 20 dB of isolation horizontally at 2 Hz (a frequency at which other tables amplify vibration), the Active Vibration Isolation Table is ideal for the most demanding applications in unusually severe vibration environments.

Such applications include:

- Atomic force microscopes
- Scanning probe microscopes
- Commercial interferometers
- Electro-physiology recording
- Semiconductor inspection equipment

GENERAL SPECIFICATIONS

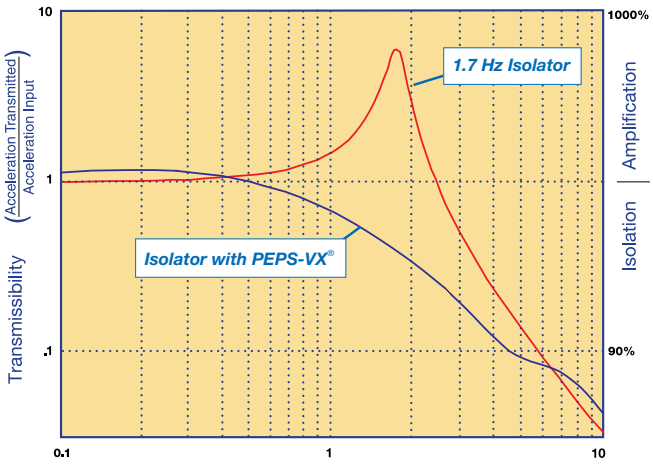
Isolator natural frequency (low input):
Vertical = 0.5 Hz (actively suppressed)
Horizontal = 0.5 Hz

Isolation efficiency @ 2 Hz:
Vertical = 10 dB
Horizontal = 20 dB

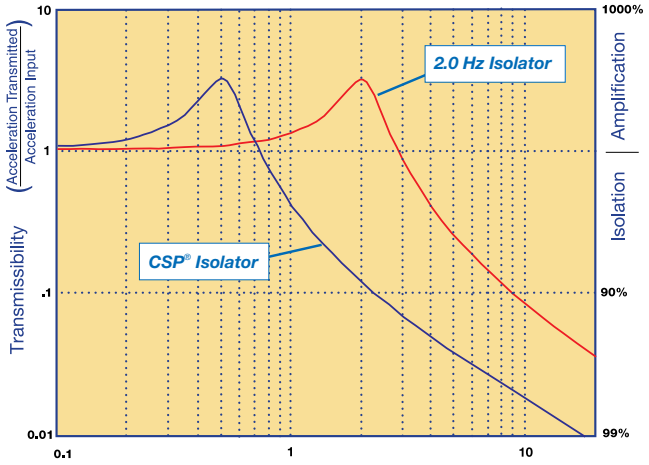
Net load capacity:
1,200 lb (545 kg)

Finish: Medium texture black powder frame, stainless steel top

Facilities required:
3 CFM @ 80 psi air filtered to 20 microns or less
120 VAC or ∓ 15 VDC, 7 w nom. 12 w max



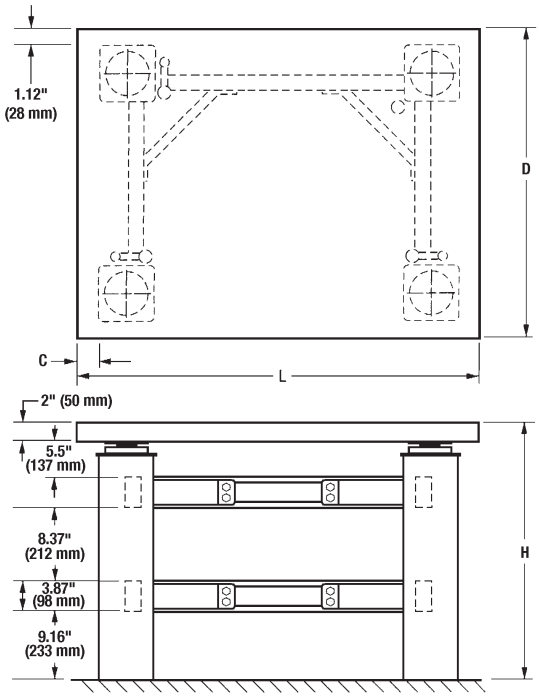
Frequency, Hz
Vibration Transfer Function: Vertical



Frequency, Hz
Vibration Transfer Function: Horizontal

Features

- CSP® Compact Sub-Hertz Pendulum air vibration isolation system for 0.5 Hz horizontal resonant frequency
- PEPS® Precision Electronic Positioning System for non-contacting height control of isolated surface to one micron
- PEPS-VX® Vibration Cancellation add-on to PEPS for low frequency vibration cancellation in the three vertical degrees-of-freedom
- Rigid steel frame construction in a desk-style configuration
- Highly damped, high-stiffness 2 in. thick, stainless steel laminate top



Ordering Chart

Table Model	Description	L	D	H	C
20-561	Active table, 3 ft x 4 ft	47 in. (1,194 mm)	35.75 in. (908 mm)	31 in. (787 mm)	2.2 in. (56 mm)
20-571	Active table, 3 ft x 5 ft	60 in. (1,524 mm)	35.75 in. (908 mm)	31 in. (787 mm)	8.7 in. (221 mm)

Accessory Model	Description	L	D
81-303-01	Armrest pads		
81-312-03	10 in. wide shelf	10 in. (254 mm)	38 1/2 in. (978 mm)
81-401-01	Front support bar and mounting clamps	48 in. (1,219 mm)	
81-401-02	Front support bar and mounting clamps	60 in. (1,524 mm)	
81-402-01	Rear support bar and mounting clamps	48 in. (1,219 mm)	
81-402-02	Rear support bar and mounting clamps	60 in. (1,524 mm)	
81-29822-01	Full perimeter enclosure	48 in. (1,219 mm)	37 in. (940 mm)

NEW From TMC!
Patent Pending

TableTop PZT™

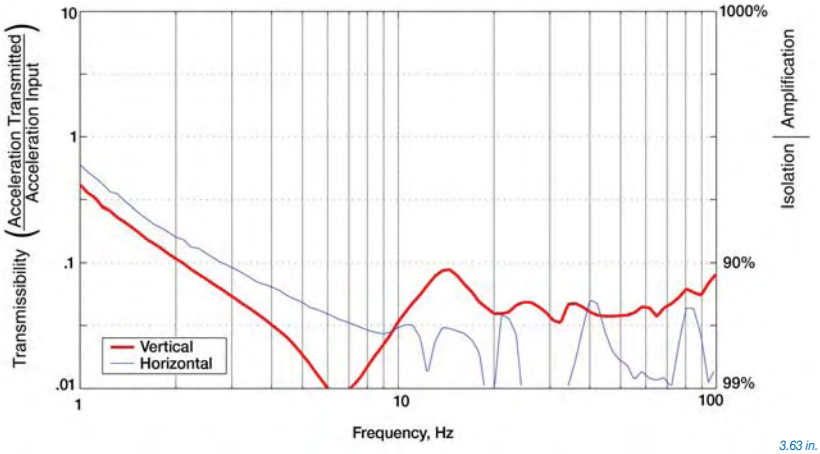
Compact Hard-Mount Vibration Cancellation System

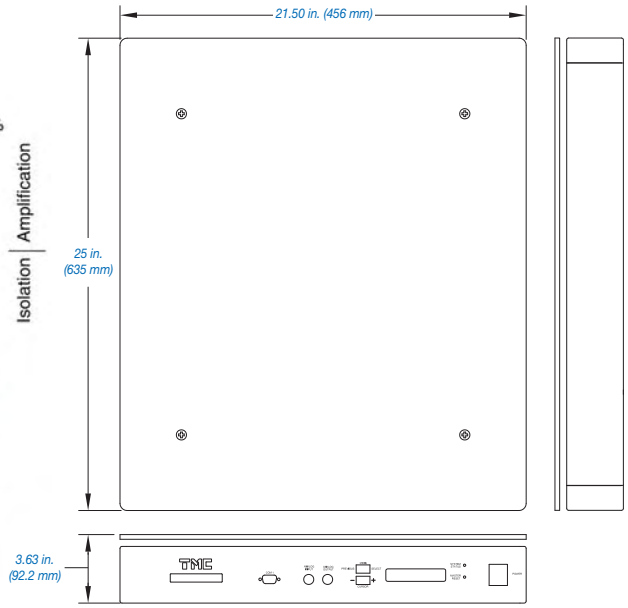
Sub-Hz compact active hard-mount vibration cancellation system for small precision instruments incorporates TMC's patented Stacis® technology

Benefits

- Active hard-mount, no soft air suspension
- Incorporates patented Stacis® technology
- Sub-Hz vibration cancellation, vertical and horizontal
- Lightweight, compact design
- Ideal for small precision instruments
- Extended stroke piezoelectric actuators, up to 60 µm
- Simple, robust, & cost-effective
- Payload capacity: up to 300 lb.

TableTop PZT™ Transmissibility





Ordering Chart

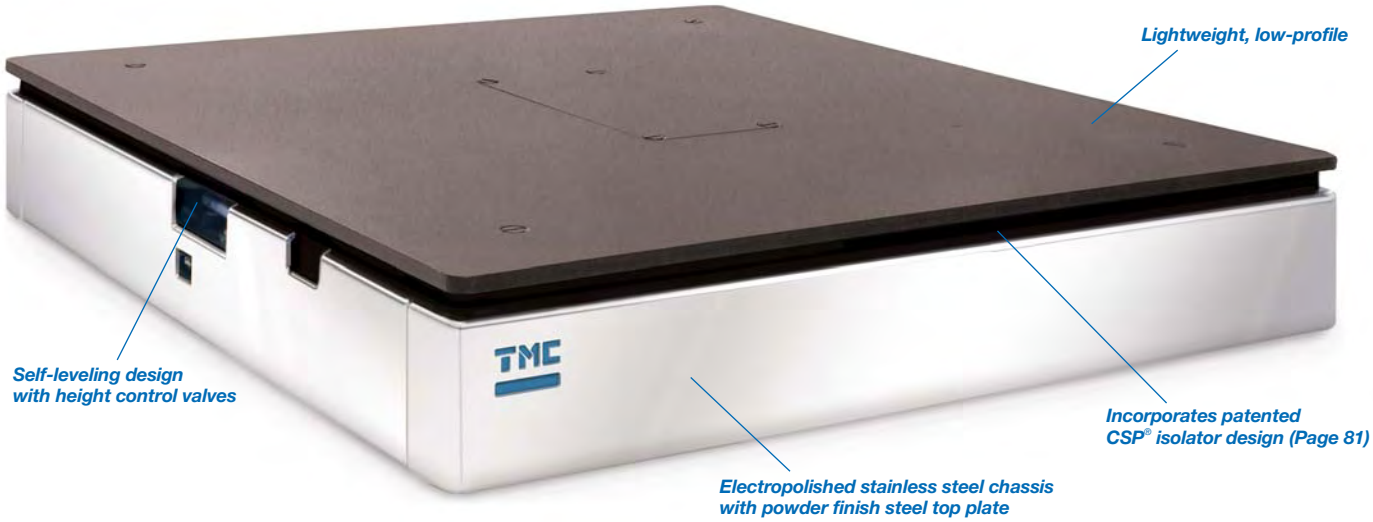
Catalog Number	Description	Pricing
25-406	TableTop PZT, 21.5 x 25.0 x 3.63 inches	Contact TMC

NEW From TMC!
U.S. Patent No. 5,779,010

66 SERIES

TableTop™ CSP®

High-Performance Vibration Isolation System with Compact Sub-Hertz Pendulum Technology



Low cost, lightweight system, ideal for microscopes

Nikon TE-2000 on TableTop™ CSP®. Photo courtesy of Micro Video Instruments

Benefits

- Exceptional passive vibration isolation, comparable to our full-size industry standard 63-500 Series tables
- Lightweight, compact design (less than 50 lb) is easily portable.

GENERAL SPECIFICATIONS

Net load capacity:
150 lb (67 kg)

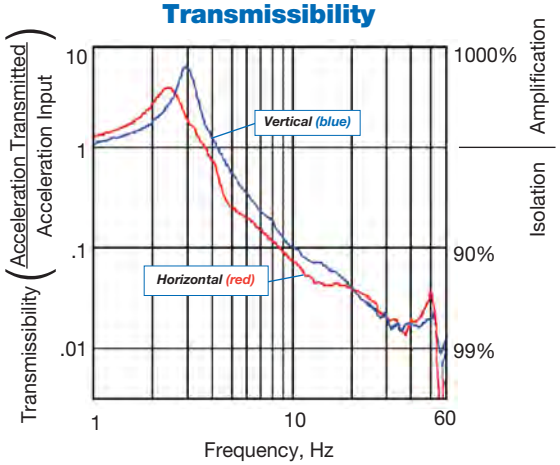
Facilities required:
80 psi air or nitrogen

Finish:
Electropolished stainless steel sides and base. Textured powder coat carbon steel top plate

Dimensions:
18 (w) x 20 (d) x 3 in. (h)
458 (w) x 508 (d) x 76 mm (h)

Weight:
50 lb (22 kg)

Transmissibility

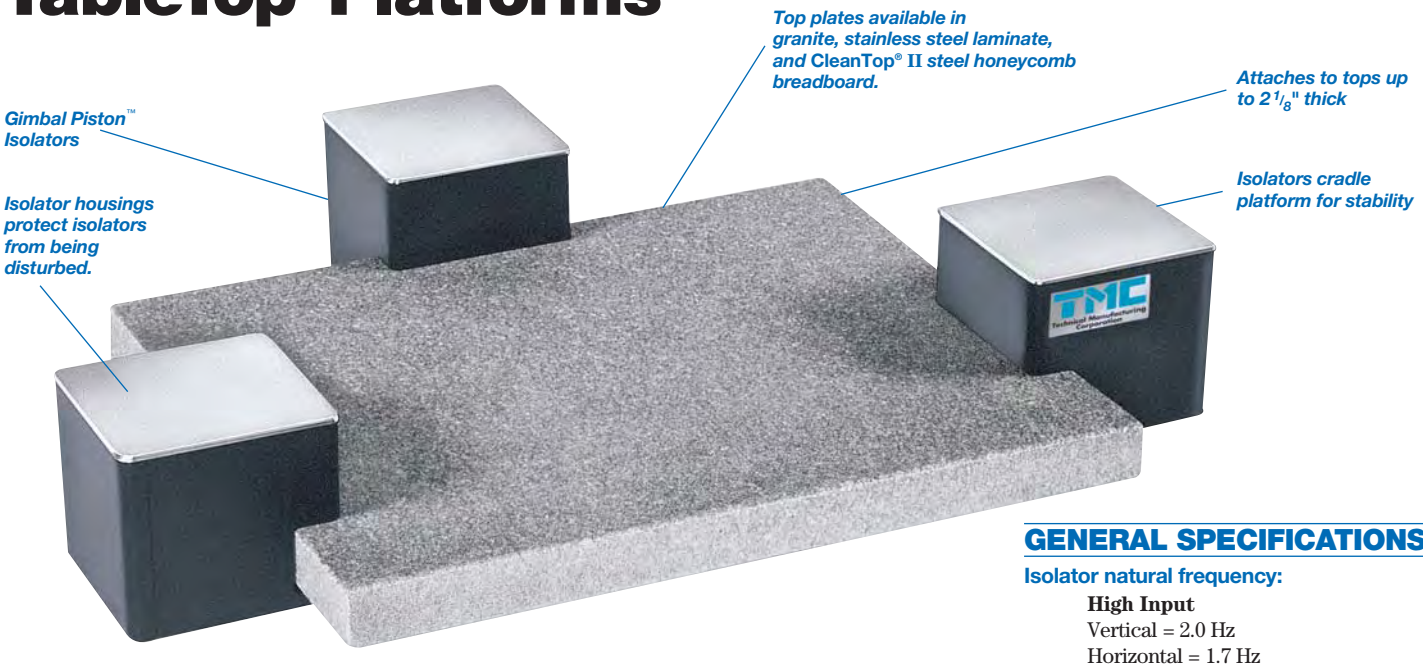


TableTop™ CSP® Ordering Chart

TMC Model	Description
66-501	TableTop™ CSP® Isolation System
81-334-03	BenchTop Faraday Cage, 30 x 36 in. (750 x 900 mm) *See page 10*
86-16888-00	Pressure Regulator with wall mounting bracket

64 SERIES

TableTop™ Platforms



Effectively isolates floor vibrations while allowing for multiple choices of working surface size and type

Benefits

- Modular design accommodates a wide range of applications.
- Lightweight for small instruments under 250 lbs. (115 kg)
- Choice of three or four isolators depending on desired configuration and load.

GENERAL SPECIFICATIONS

Isolator natural frequency:

High Input
Vertical = 2.0 Hz
Horizontal = 1.7 Hz

Low Input
Vertical = 2.0-2.9 Hz
Horizontal = 2.2-3.5 Hz

Isolation efficiency @ 5 Hz:
Vertical = 25-50%
Horizontal = 40-60%

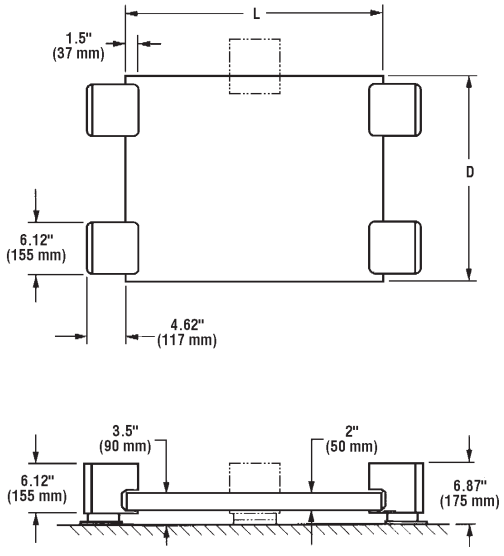
Isolation efficiency @ 10 Hz:
Vertical = 60-90%
Horizontal = 70-90%

Gross load capacity:
3 isolators = 1,000 lb (450 kg) @ 80 psi
4 isolators = 1,400 lb (640 kg) @ 80 psi

Net load capacity:
3 isolators = 250 lb (110 kg)
4 isolators = 350 lb (160 kg)

Finish: Medium texture powder coat frame, stainless steel or granite top

Facilities required:
80 psi nitrogen or air



TableTop™ Platform Ordering Chart

TableTop™ Platform Model	Description	L		D		TableTop™ Weight	
		in.	mm	in.	mm	lb	kg
64-301	3 isolators and housings (no top)						
64-314	Granite top with 3 isolators	24	600	24	600	105	48
64-315	Granite top with 3 isolators	30	750	24	600	135	60
64-401	4 isolators and housings (no top)						
64-414	Granite top with 4 isolators	24	600	24	600	105	48
64-415	Granite top with 4 isolators	30	750	24	600	135	60
64-426	Stainless steel top with 4 isolators	35	890	25	635	270	120
64-427	Stainless steel top with 4 isolators	30	750	30	750	270	120
64-428	Stainless steel top with 4 isolators	35	890	30	750	270	120
64-446	Imperial CleanTop II with 4 isolators	36		24		115	52
64-447	Imperial CleanTop II with 4 isolators	30		30		120	54
64-448	Imperial CleanTop II with 4 isolators	36		30		145	66
64-449	Imperial CleanTop II with 4 isolators	48		24		155	70
64-456	Metric CleanTop II with 4 isolators		900		600	115	52
64-457	Metric CleanTop II with 4 isolators		750		750	120	54
64-458	Metric CleanTop II with 4 isolators		900		750	145	66
64-459	Metric CleanTop II with 4 isolators		1200		600	155	70