

Vibration Isolation Concepts

Source of Vibration

There are three primary sources of vibration which can disturb a payload, such as ground vibrations, acoustic noises, and direct force disturbances.

At one extreme, the ground vibration environment may consist of low level seismic disturbances present everywhere on earth and the disturbances, imperceptible under ordinary circumstances, present operating problems for highly sensitive equipment. When cultural vibration effects are added, even wider range of sensitive equipment is affected.

For example, even low-amplitude vibration can affect the performance and yield of lithography equipment such as stepper, the resolution of electron microscopes, the accuracy of measuring machines, and the performance of many types of precision equipments and instruments for electro-optical research. The cultural disturbances affecting the sensitive equipments are man-made and caused by phenomena such as vehicle and foot traffic, human activity, air handling systems, elevators, machinery and numerous other sources.

3 Factors In Dynamic System

In discussing vibration isolation, it is useful to identify three elements of a dynamic system.

1. The equipment need to be isolated.
2. The support structure (floor).
3. The isolation system between the equipment and the support structure.

Vibration Isolation

In a passive isolation system, two factors affecting isolation efficiency are the natural frequency and damping of the isolator. The natural frequency is the rate of free oscillation per unit time and damping is the characteristic which dissipates energy in a dynamic system.

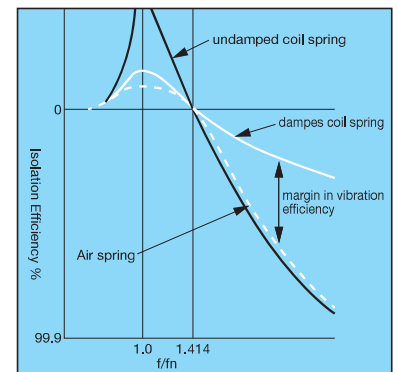
The ratio of forcing frequency (the disturbing frequency) to natural frequency (f/f_n) is used to determine the isolation efficiency of any isolation systems.

$$\text{Transmissibility } Tr = |1 - (f/f_n)^2| \times 100\%$$

where

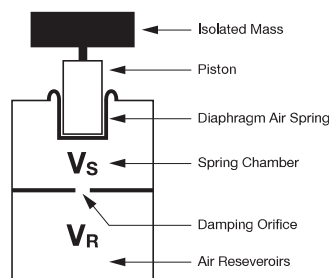
f/f_n = the ratio of forcing frequency to natural frequency

Graph shows typical plots of isolation efficiency. Notice that when f/f_n is less than $f_2=1.414$, the curves show that the vibration is magnified, when the forcing frequency is equal to the natural frequency ($f/f_n=1$), maximum magnification occurs. At ratios above 1.414, the curves are in the isolation range. Typically isolators which exhibit the greatest magnification at resonance have the best isolation efficiency (undamped coil spring).



Generally speaking, low amplification at resonance as shown for the plot of a damped coil spring is desirable; however, notice that this is accomplished at the expense of isolation efficiency. Pneumatic isolators with an air spring and damping chamber on the other hand, combines the desirable characteristics of low magnification at resonance and high isolation efficiency as shown the graph.

The equation for determining the natural frequency of a pneumatic isolators is



$$f_n = \frac{1}{2\pi} \sqrt{\frac{YAG}{V}}$$

Where

Y = Ratio of specific heat, 1/4 for air

A = Effective area of air piston, cm^2

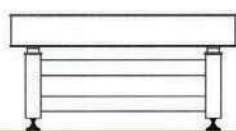
G = Gravity acceleration

V = Volume of air chamber, cm^3

As seen from equation, the natural frequency of the pneumatic isolator depends on the ratio of the piston area to the volume of the air isolator

Types of Vibration Isolation Systems

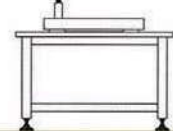
Optical Tables
OSDVID Series



Lab Desk Isolators
OSDVID Series



Desk Top Isolators
OSDVIT Series



Structure of Flat Benches

- Optical Tops consist of ferro-magnetic stainless steel (SUS430) top skin plates, carbon steel bottom skin plates (SPHC), plated steel honeycomb (0.25mm foil, 3.2cm² cell size) sandwiched between two plates and side steel panels, all bonded with high strength adhesive.
- High-damping optical tops apply Broadband Damping technologies and have excellent dynamic stiffness.
- Honeycomb cores (cell size 3.2cm²) made of 0.25mm thick plated steels give maximized stiffness, extensive contact surface with two plates for high rigidity.
- Top skins are precisely grinded to minimize surface curves, pressure bonded to achieve excellent top flatness, lightly sanded with a circular pattern to remove burrs and non-reflecting & non-glare finished.
- Since all mounting holes on top plates are lead-screw tapped instead of using inserts, deformation or looseness of holes does not occur. The M6(1/4-20) tapped holes are for mounting optical components, arranged in a regular interval 25mm (1").
- Honeycomb cores, top/bottom plates and side walls are rigidly bonded with specially formulated high strength adhesive which allows no elastic bending and hysteresis. Since all parts are made of structural steels having the same coefficient of expansion, deformation such as overall distortion does not occur even in the repeatable temperature changes.
- Cylindrical cups are attached on the bottom of top skins for sealing tapped holes to prevent the inflow of any chemical substances into inside honeycomb cores.
- Upon customers' requests, special mounting holes and various configurations of optical tops are available.

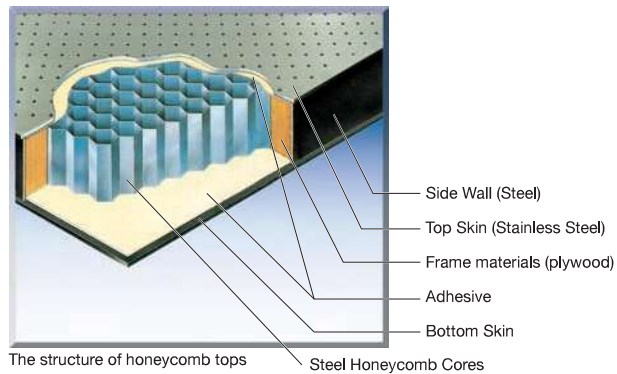
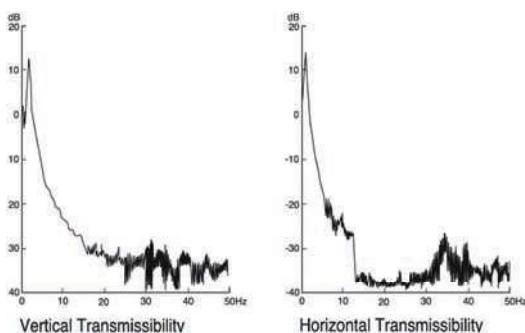
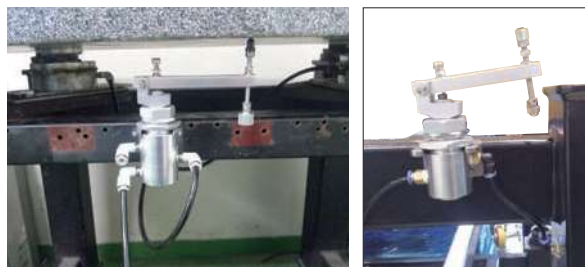


Table Frame



- **Pneumatic Vibration Isolator**
Pneumatic vibration isolation supports provide an effective vibration isolation performance both in vertical and horizontal direction in regular laboratories of 10Hz – 60Hz. Compressed air supply systems are required.
- **Damping**
Pneumatic vibration isolation supports have damping orifices quickly decreasing and settling the movement of optical tops affected by external force or weight transfer.
- **Auto Leveling System**
Pneumatic vibration isolation supports are equipped with three auto leveling valves adjusting the inside pressure of the air spring chambers automatically. This is to maintain the height and level of table tops even under eccentric load.
- Pneumatic vibration isolation supports come with casters and levelers for easy movement and installation.
- Pneumatic vibration isolation supports consisting of 4 isolators can support from 500kg to 2,000kg load. For higher load, long optical tops or joined tables, quantity of isolators can be increased.



Delivery Cost

Because the vibration isolator and laboratory bench are heavy, extra shipping costs are required in addition to the price of those products. Also, to carry in those products, transport, personnel and equipment appropriate to the delivery site are required. At the time of a quotation, please provide our International Sales Division with the Carry-In Route and Installation Environment Question Sheet on [Reference](#) D016.

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The OSDVIA-T series is a high-performance active vibration isolation system. Its auto leveling/locking systems and LCD display make it very user friendly.

When used in conjunction with the Acoustic Enclosure, the OSDVIA-T series reduces environmental noise and vibration for highly sensitive experiments.



OSDVIA-T45



OSDVIA-T56

Features

- Easy to Installation & Operation :
 - ▷ Auto Locking & Leveling Systems
 - ▷ LCD Display
- Robust Control by High-Performance Digital Controller
- Excellent Isolation Performance for the Micro-Vibration in the range of low-frequency
- No compressed air supply required
- Option : Acoustic Enclosures

Applications

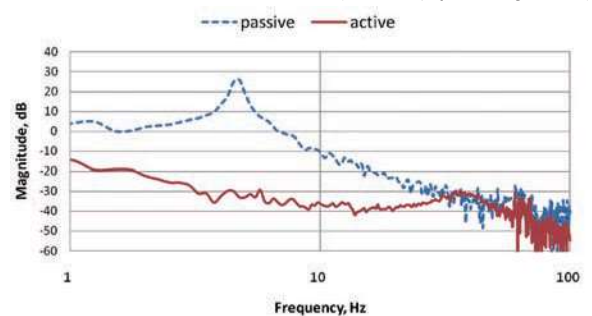
- Atomic Force Microscopes
- Scanning Probe Microscopes
- Interferometers
- Other Ultra-Precision Measurement Systems

Specifications

Part Number	OSDVIA-T45	OSDVIA-T56	OSDVIA-T67
Dimensions [mm]	(W)420 × (D)500 × (H)93	(W)500 × (D)600 × (H)93	(W)600 × (D)700 × (H)93
Max. Load Capacity [kg]	10 – 100	10 – 100	10 – 100
Weight [kg]	25	32	40
Actuator	Using Electro-Magnetic Force		
Controlled degrees of Freedom	6		
Isolation Performance	-35dB – -40dB/10Hz		
Settling Time	<0.5sec		
Control Force	Vertical >7N, Horizontal >3N		
Input Voltage [V]	AC85 – 264 / 50 – 60Hz		
Power Consumption [W]	< 36		
Temperature [°C]	5 – 50		
Humidity [%]	20 – 90		
Top plate	Solid Aluminum / M6 mounting holes		
System Configuration	Controller and vibration isolator unit integrated type		
Active Control Range	about 0.5Hz – 100Hz		
Initial Horizontal Adjustment	Automatic adjustment		
Lock when moving	Automatic locking mechanism		
Confirmation of Vibration Isolation Status	Displayed on the front monitor		

Transmissibility Curves

(under the payload 50kg, vertical)



Our highest performance vibration isolation system utilizes independent isolation mechanisms for the horizontal and vertical axes.

This system achieves the highest performance and efficiency for the most demanding applications.

- This vibration isolator rapidly attenuates vibrations transmitted to mounted equipment and instruments, and is essential for equipment and instruments that are affected by vibration.
- The bench is lightweight and has excellent stiffness due to the steel honeycomb core.
- The top surface of the bench is made from a magnetic stainless steel with tapped holes (M6 25×25mm matrix).
- The manual leveling system does not require a continuous air supply. The isolators can be pressurized with just a hand air pump.

Exterior			
		OSDVIO	
Natural Frequency	Vertical Direction	about 1,2 – 1,5Hz	
	Horizontal Direction	about 1,5 – 1,7Hz	
Vibration Isolation		Air Spring Isolations	
Damping		Air Damping by Orifice	
Honeycomb Material inside Bench		Plated steel honeycomb (0,25m foil, 3,2cm2 cell size)	
Bench Material	Upper Plate	4.0mm thickness 430 series ferro magnetic stainless steel plate, smooth sanded finish	
	Lateral Side	2.0mm thickness carbon steel plate with damped wood composite, vinyl convert finish	
	Lower Plate	4.0mm thickness carbon steel plate epoxy painted finish	
Bench Top Surface		M6 tapped holes on 25×25mm matrix over the entire surface (leaving 37,5mm around the edges)	
Bench Top Surface Finish		Unpainted (smooth sanded finish)	
Surface Flatness		±0.1mm over 600mm square	
Hole/Core Sealing		Easy clean cylindrical cup (25mm deep)	

Guide

- We can produce sizes not listed in the catalog. Contact our Sales Division for more information.
- When installed in locations with no air source, use the silent air compressor (OSDAC-30) which can be used indoors.

Reference D014

Attention

- The vibration isolator will perform the best when the load on the table is evenly distributed.
- Freight is calculated separately. Use the carry-in route and installation environment question sheet.

Reference D016 Catalog Code W6001

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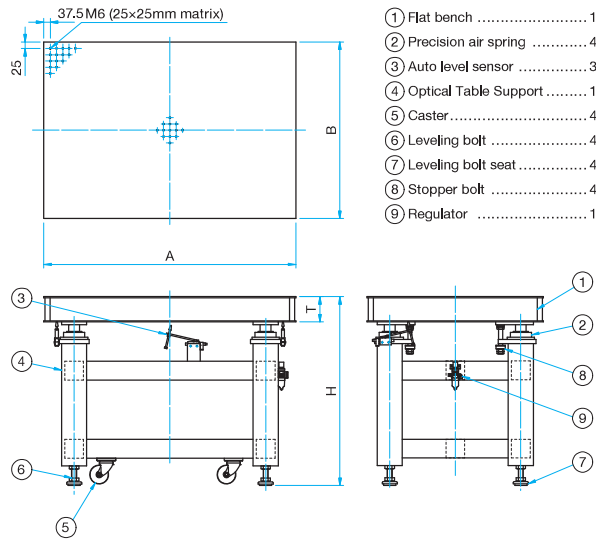
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Outline Drawing

OSDVIO series



Specifications

Part Number	A × B [mm]	H [mm]	T [mm]	Load capacity [kg]	Weight [kg]
OSDVIO-I-0909M-100t(800H)	900× 900	800	100	300	154
OSDVIO-I-1007M-100t(800H)	1,000× 700	800	100	310	140
OSDVIO-I-1206M-100t(800H)	1,200× 600	800	100	310	141
OSDVIO-I-1207M-100t(800H)	1,200× 700	800	100	290	159
OSDVIO-I-1209M-100t(800H)	1,200× 900	800	100	260	190
OSDVIO-I-1506M-100t(800H)	1,500× 600	800	100	390	187
OSDVIO-I-1507M-100t(800H)	1,500× 700	800	100	370	207
OSDVIO-I-1509M-200t(800H)	1,500× 900	800	200	310	269
OSDVIO-I-1510M-200t(800H)	1,500×1,000	800	200	290	284
OSDVIO-I-1512M-200t(800H)	1,500×1,200	800	200	240	329
OSDVIO-I-1515M-200t(800H)	1,500×1,500	800	200	180	396
OSDVIO-I-1806M-200t(800H)	1,800× 600	800	200	340	234
OSDVIO-I-1807M-200t(800H)	1,800× 700	800	200	320	254
OSDVIO-I-1809M-200t(800H)	1,800× 900	800	200	270	306
OSDVIO-I-1812M-200t(800H)	1,800×1,200	800	200	190	387
OSDVIO-I-1815M-200t(800H)	1,800×1,500	800	200	420	468
OSDVIO-I-2010M-200t(800H)	2,000×1,000	800	200	520	362
OSDVIO-I-2012M-200t(800H)	2,000×1,200	800	200	460	421
OSDVIO-I-2015M-200t(800H)	2,000×1,500	800	200	380	510
OSDVIO-I-2409M-300t(800H)	2,400× 900	800	300	440	453
OSDVIO-I-2412M-300t(800H)	2,400×1,200	800	300	320	578
OSDVIO-I-2415M-300t(800H)	2,400×1,500	800	300	200	701
OSDVIO-I-3009M-300t(800H)	3,000× 900	800	300	350	585
OSDVIO-I-3010M-300t(800H)	3,000×1,000	800	300	300	634
OSDVIO-I-3012M-300t(800H)	3,000×1,200	800	300	200	739
OSDVIO-I-3015M-300t(800H)	3,000×1,500	800	300	450	896
OSDVIO-I-3612M-300t(800H)	3,600×1,200	800	300	480	864
OSDVIO-I-3615M-300t(800H)	3,600×1,500	800	300	309	1051

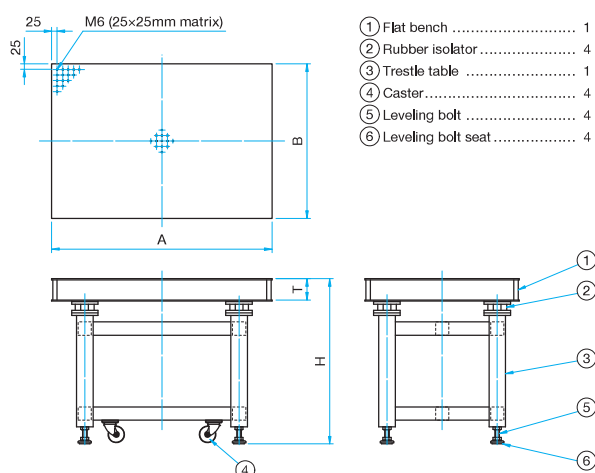
Entry level optical bench provides a basic level of vibration isolation for non critical experiments.



- The internal aluminum honeycomb structure provides a lightweight and stiff structure.
- The vibration isolating legs have high stiffness and stability.
- The top surface of the bench is magnetic stainless steel plate, with tapped holes (M6 25×25mm matrix) over the entire surface.

Outline Drawing

OSDVIO-R series



* For products with bench thickness (T) 150mm or less, placement of the pipes connecting the table legs is different.

Attention

- Freight is calculated separately.
Use the carry-in route and installation environment question sheet.
Reference ► D016 Catalog Code W6001

Common Specifications

Vibration Isolation Method	Rigid supports with elastomer mounts
Honeycomb Material inside Bench	Steel
Bench Material	Upper plate: 4.0mm thickness 430 series ferro magnetic stainless steel plate, smooth sanded finish Lateral surface: 2.0mm thickness carbon steel plate with damped wood composite, vinyl convert finish Lower plate: 4.0mm thickness carbon steel plate epoxy painted finish
Bench Top Surface	M6 tapped holes on 25×25mm matrix over the entire surface (Leaving 37.5mm around the edges)
Bench Top Surface Finish	Unpainted (smooth sanded finish)
Surface Flatness	±0.1mm over 600mm square
Hole/Core Sealing	Easy clean cylindrical cup (25mm deep)

Specifications

Part Number	A × B [mm]	H [mm]	T [mm]	Load capacity [kg]	Weight [kg]
OSDVIO-R-0909M-100t(800H)	900× 900	800	100	300	149
OSDVIO-R-1007M-100t(800H)	1,000× 700	800	100	310	135
OSDVIO-R-1206M-100t(800H)	1,200× 600	800	100	310	136
OSDVIO-R-1207M-100t(800H)	1,200× 700	800	100	290	154
OSDVIO-R-1209M-100t(800H)	1,200× 900	800	100	260	185
OSDVIO-R-1506M-100t(800H)	1,500× 600	800	100	390	182
OSDVIO-R-1507M-100t(800H)	1,500× 700	800	100	370	202
OSDVIO-R-1509M-200t(800H)	1,500× 900	800	200	310	264
OSDVIO-R-1510M-200t(800H)	1,500×1,000	800	200	290	279
OSDVIO-R-1512M-200t(800H)	1,500×1,200	800	200	240	324
OSDVIO-R-1515M-200t(800H)	1,500×1,500	800	200	180	391
OSDVIO-R-1806M-200t(800H)	1,800× 600	800	200	340	229
OSDVIO-R-1807M-200t(800H)	1,800× 700	800	200	320	249
OSDVIO-R-1809M-200t(800H)	1,800× 900	800	200	270	301
OSDVIO-R-1812M-200t(800H)	1,800×1,200	800	200	190	382
OSDVIO-R-1815M-200t(800H)	1,800×1,500	800	200	420	463
OSDVIO-R-2010M-200t(800H)	2,000×1,000	800	200	520	357
OSDVIO-R-2012M-200t(800H)	2,000×1,200	800	200	460	416
OSDVIO-R-2015M-200t(800H)	2,000×1,500	800	200	380	505
OSDVIO-R-2409M-300t(800H)	2,400× 900	800	300	440	448
OSDVIO-R-2412M-300t(800H)	2,400×1,200	800	300	320	573
OSDVIO-R-2415M-300t(800H)	2,400×1,500	800	300	200	696
OSDVIO-R-3009M-300t(800H)	3,000× 900	800	300	350	580
OSDVIO-R-3010M-300t(800H)	3,000×1,000	800	300	300	629
OSDVIO-R-3012M-300t(800H)	3,000×1,200	800	300	200	734
OSDVIO-R-3015M-300t(800H)	3,000×1,500	800	300	450	891
OSDVIO-R-3612M-300t(800H)	3,600×1,200	800	300	480	859
OSDVIO-R-3615M-300t(800H)	3,600×1,500	800	300	309	1046

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OSDVID series are available in two versions: C type for cleans rooms and L type for laboratory settings.

OSDVID-C series



- Highly damped stainless steel laminate top.
- Suitable for a class one cleanrooms cleanroom.
- Designed to be easily cleaned with no dust collecting grooves or ledges.
- No outgassing components. All air to support the table is properly vented.
- Perforated top cover to reduce air turbulence in clean rooms.

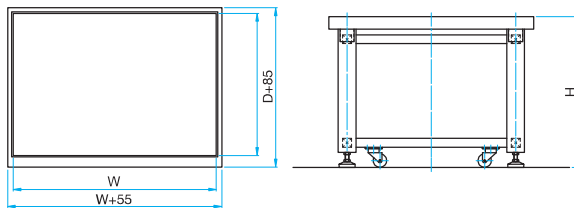
OSDVID-L series



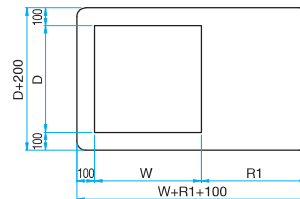
- The top cover is made of a melamine resin.
- The swivel casters allow for easy movement. Optional drawers, and monitor stands are available.

Outline Drawing

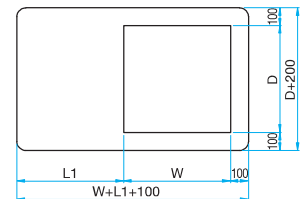
OSDVID



C series



L series



General Specification

Natural Frequency	1.2Hz – 2.0Hz
Isolation Efficiency	at 10Hz: 75% – 95% at 20Hz: 85% – 98%
Levelling Repeatability	±1.0mm / ±0.05mm
Net Load Capacity	500kg
Shipping Weight	150 – 250kg
Material	Frame & Top: All Stainless Steel ("C" Type) Steel tube, Powder Painted ("L" Type) Top Cover: Stainless Steel ("C" Type) Melamine H.P.Boards ("L" Type)
Operation	3 – 5kg/cm ² Compressed Air or Bottled Nitrogen

Specifications

Part Number	W x D [mm]	H [mm]	Load capacity [kg]	Weight [kg]
OSDVID-C-45-L-600	400x500	800	500	103
OSDVID-C-56-L-600	500x600	800	500	126
OSDVID-C-77-L-600	700x700	800	500	183
OSDVID-C-86-L-600	800x600	800	500	178
OSDVID-C-88-L-600	800x800	800	500	203
OSDVID-C-96-L-600	900x600	800	500	192
OSDVID-C-97-L-600	900x700	800	500	207
OSDVID-C-99-L-600	900x900	800	500	235
OSDVID-C-107-L-600	1,000x700	800	500	219
OSDVID-C-127-L-600	1,200x700	800	500	245
OSDVID-C-128-L-600	1,200x800	800	500	266
OSDVID-C-158-L-600	1,500x800	800	500	313
OSDVID-L-45-L-600	400x500	800	500	103
OSDVID-L-56-L-600	500x600	800	500	126
OSDVID-L-77-L-600	700x700	800	500	183
OSDVID-L-86-L-600	800x600	800	500	178
OSDVID-L-88-L-600	800x800	800	500	203
OSDVID-L-96-L-600	900x600	800	500	192
OSDVID-L-97-L-600	900x700	800	500	207
OSDVID-L-99-L-600	900x900	800	500	235
OSDVID-L-107-L-600	1,000x700	800	500	219
OSDVID-L-127-L-600	1,200x700	800	500	245
OSDVID-L-128-L-600	1,200x800	800	500	266
OSDVID-L-158-L-600	1,500x800	800	500	313

These desktop vibration isolation units are ideal for small optical systems and microscopes



Applications

- Optical Microscopy
- Surface Profilometry
- Hardness and roundness Tester
- Hardness and roundness testing

● Compact Design(portable)

Affordable and practical model, light weight structure and enhanced convenience in use and installation.

● Special material(high-damping top)

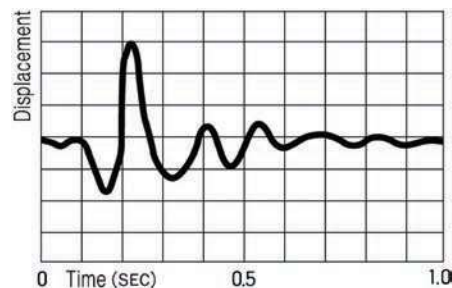
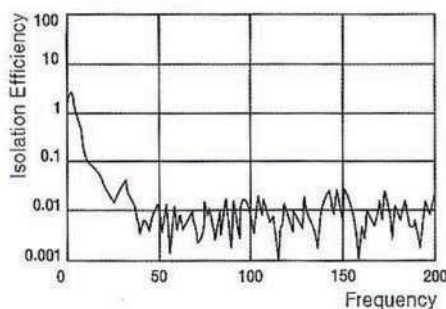
Laminated with a special material to ensure an excellent damping performance. [optional] Honeycomb top plate-increasing height, but any customized mounting holes available.

● Auto leveling system(Tri-pole leveling)

Ensuring to help pinpoint experiments used of three polar leveling valves.

Attention

- ▶ To achieve ideal vibration isolation performance, always use a strong table frame to mount the table top type vibration isolator system.
- ▶ The vibration isolator may not perform normally if used under an extremely offset load or with instruments or equipment with a high center of gravity.



Common Specifications

Part Number		OSDVIT-45A(25H)	OSDVIT-56A(25H)	OSDVIT-86A(25H)
Natural Frequency		2.5Hz ~ 0.3Hz		
Vibration Isolation		Special diaphragm air springs		
Damping		Air damping by orifices		
Leveling		Auto leveling by 3 height control valves		
Material of Top Plate		Stainless steel laminated top / Honeycomb 25t		
Load Capacity		150 kg	150 kg	150 kg
Weight		50 kg	65 kg	80 kg
Overall Dimension [mm]	Steel top	(W)432 × (D)532 × (H)84	(W)532 × (D)632 × (H)84	(W)832 × (D)632 × (H)84
	Honeycomb 25t	(W)430 × (D)530 × (H)110	(W)530 × (D)630 × (H)110	(W)830 × (D)630 × (H)110
Required air supply		4kg/cm ²		
Standard Accessories		Air regulator & Filter 4φ Nylon tube 6mm, Tube coupling (R 1/4" 4φ)		
Option		Exclusive air compressor		

* Besides the above standard sizes, custom dimensions are available upon requests.

Part Number	W × D [mm]	H [mm]	Load capacity [kg]	Weight [kg]
OSDVIT-45A(25H)	432×532	86	150	50
OSDVIT-56A(25H)	532×632	86	150	65
OSDVIT-86A(25H)	832×632	86	150	80

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Tabletop Optical Breadbord

OSDVIO-B

RoHS

Catalog Code

W6505

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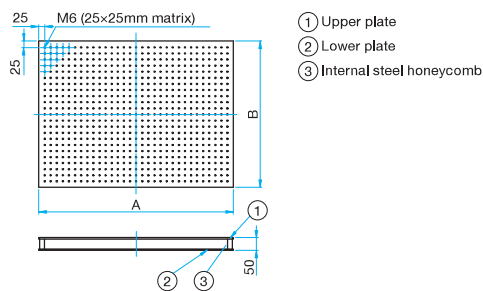
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- Top plates are made of stainless steel (SUS430), bottom plates are made of hot rolled steel (SPHC). The core of the boards is comprised of plated steel honeycomb cores bonded with high strength adhesive.
- Honeycomb cores (size 3.2cm²) are made of 0.25mm thick plated steels giving maximized stiffness and extensive contact surface with two plates for high rigidity.
- Top plates are precisely grinded to minimize surface curves and pressure bonded to achieve excellent flatness.
- The M6 (1/4"-20) tapped holes are on a 25 mm matrix.
- Cylindrical cups are attached to the bottom of top skins for sealing tapped holes. This prevents the flow of any chemical substances into the honeycomb cores.



Outline Drawing



Attention

- ▶ To ensure optimal performance, rubber feet isolators should be used on the four corners, and used on a strong table frame to mount breadboard.
- ▶ Freight cost will be quoted separately. Use the carry-in route and installation environment question sheet.

Reference D016 Catalog Code W6001

Common Specifications

Honeycomb Material inside Bench	Plated steel honeycomb (0.25mm foil, 3.2cm ² cell size)
Bench Material	Upper plate: 4.0mm thickness 430 series ferro magnetic stainless steel plate, smooth sanded finish Lateral surface: 2.0mm thickness carbon steel plate with damped wood composite, vinyl convert finish Lower plate: 4.0mm thickness carbon steel plate epoxy painted finish
Bench Top Surface	M6 tapped holes on 25x25mm matrix over the entire surface (Leaving 37.5mm around the edges)
Bench Top Surface Finish	Unpainted (smooth sanded finish)
Surface Flatness	±0.1mm over 600mm square
Hole/Core Sealing	Easy clean cylindrical cup (25mm deep)

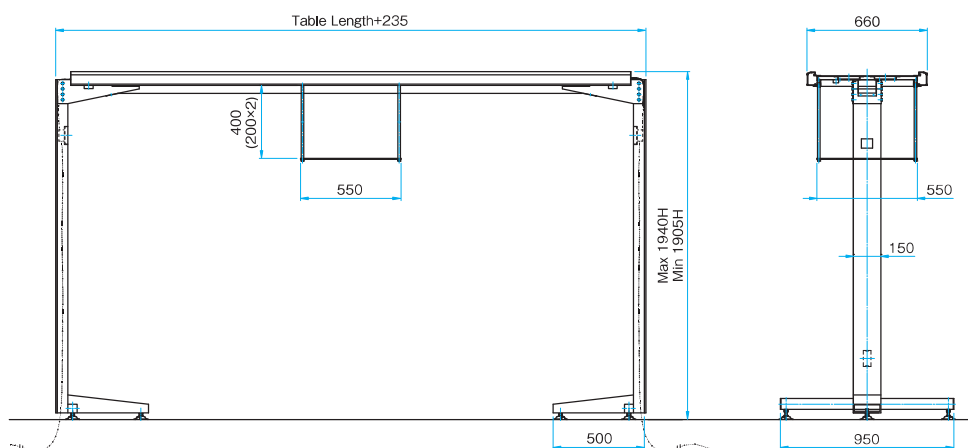
Part Number	A × B [mm]	T [mm]	Weight [kg]
OSDVIO-B-0504M-50t	500× 400	50	17
OSDVIO-B-0605M-50t	600× 500	50	26
OSDVIO-B-0606M-50t	600× 600	50	31
OSDVIO-B-0707M-50t	750× 750	50	49
OSDVIO-B-0806M-50t	800× 600	50	42
OSDVIO-B-0906M-50t	900× 600	50	47
OSDVIO-B-0907M-50t	900× 750	50	59
OSDVIO-B-0909M-50t	900× 900	50	70
OSDVIO-B-1006M-50t	1,000× 600	50	52
OSDVIO-B-1007M-50t	1,000× 750	50	65
OSDVIO-B-1009M-50t	1,000× 900	50	78
OSDVIO-B-1010M-50t	1,000×1,000	50	87
OSDVIO-B-1206M-50t	1,200× 600	50	63
OSDVIO-B-1207M-50t	1,200× 750	50	78
OSDVIO-B-1209M-50t	1,200× 900	50	94
OSDVIO-B-1210M-50t	1,200×1,000	50	104
OSDVIO-B-1212M-50t	1,200×1,200	50	125
OSDVIO-B-1506M-50t	1,500× 600	50	78
OSDVIO-B-1507M-50t	1,500× 750	50	98
OSDVIO-B-1509M-50t	1,500× 900	50	117
OSDVIO-B-1510M-50t	1,500×1,000	50	131
OSDVIO-B-1512M-50t	1,500×1,200	50	157
OSDVIO-B-1806M-50t	1,800× 600	50	94
OSDVIO-B-1807M-50t	1,800× 750	50	117
OSDVIO-B-1809M-50t	1,800× 900	50	141
OSDVIO-B-1812M-50t	1,800×1,200	50	188
OSDVIO-B-2010M-50t	2,000×1,000	50	174
OSDVIO-B-2012M-50t	2,000×1,200	50	209

The OSDOTS series (Overhead Table Systems) is used for mounting vibration producing equipment above the laboratory bench. The height of shelf can be easily adjusted. Shelves can be positioned at any position along the rail.



- Convenient location of instruments.
- Increased table space.
- Mechanical isolation of equipments with fans.
- Overhead shelf adjusted in height, free standing.
- Leveling feet for uneven floors.
- Formed steel welded design, black power coat finished.
- Additional shelving units are available.(Optional).
- Grounded-electrical outlets (110V / 220V / 60Hz) on each side of the shelf.
- N.F.B (30A) for preventing instruments from overload currency.

Outline Drawing



Specifications

Part Number	Weight [kg]
OSDOTS-4	106
OSDOTS-5	128
OSDOTS-6	135
OSDOTS-7	157
OSDOTS-8	164
OSDOTS-10	193
OSDOTS-12	249

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Air Compressor | OSDAC-30

RoHS

Catalog
Code

W6507

Portable air compressors designed to be compact and quiet.



Specifications

Part Number	OSDAC-30
Operating Pressure	40-80psi
Pressure Control	Preset Minimum Pressure by Automatic Switch
Air Delivery	30ℓ/min, @80psi
Tank Capacity	20 liters
	Electrical Power: 220VAC 200W
Size (WxDxH)	510 × 290 × 500mm
	Net Weight: 23kg
Noise Level	40dB
Air Discharge outlet diameter	φ6 with one-touch fitting
Body color	Light Gray
Pressure Indicator	1 ea
Drain Valve	1 ea
Pressure Valve	1

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Faraday Cages



Clear Acrylic Enclosures



Shield Box



Dark Box

Guide on Special Orders for Vibration Isolators

Catalog Code **W6004**

We can provide a wide variety of sizes, shapes or precision not listed in the catalog or for additional processing of products listed in the catalog.

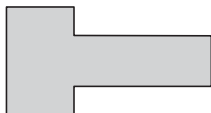
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► Use the Question Sheet for Special Orders, and contact our Sales Division for more information.

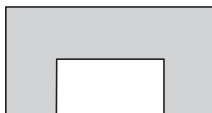
► [WEB Reference](#) [Catalog Code](#) W6004

Examples of custom benches

● T-shaped flat bench



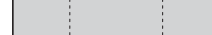
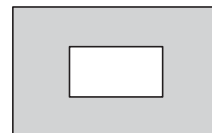
● Notch shape Flat bench



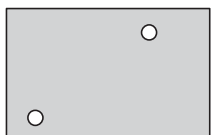
● L-shaped flat bench



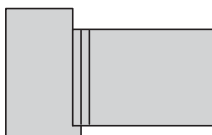
● Outline shaped flat bench



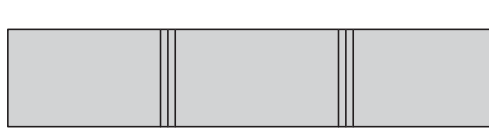
● Flat bench with through holes



● T-joint type flat bench



● Slot-joint type flat bench



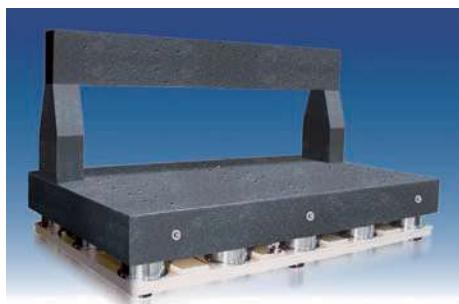
Custom products



A.F.M



LCD Inspection Equipment



PDP Equipment



Laser
Welding Workstations



S.T.M



Optics



Microscope In Semi, Fab



Thin film
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Question Sheet

Catalog Code W6001

Carry-In Route and Installation Environment Question Sheet ☐ Quotation ☐ Order

Date

☐ To: SIGMAKOKI Co., Ltd. **FAX +81-3-5638-6550**

Customer Information	Affiliation (Organization Name)				
	Department		Name	Mr(s)	
	Address * Fill in Bldg, Subdivision, Room.	Zip Code	Prefecture	City/Ward/District	Town Village
	TEL	ex.	FAX	E-mail	
If the installation site is different from the above, fill it in below.					
Installation Site	Address * Fill in Bldg, Subdivision, Room.	Prefecture	City/Ward/District	Town Village	
			Service Counter	Mr(s)	
	TEL	ex.	FAX		

Model Number Examined	Desired Delivery Date
------------------------------	------------------------------

Check Column	Items included in Estimate
	(1) Reinforced cardboard packaging, consolidated shipment, handover on the track (does not include carry-in)
	(2) Simple packaging, zone charter flight, handover after unloading (not including carry-in work)
	(3) Simple packaging, zone charter flight, handover after unloading and carry-in (not including installation and adjustments)
	(4) Simple packaging, zone charter flights, and handover after unloading, carry-in, installation and adjustment (some personal assistance is possible)
	(5) Simple packaging, zone charter flights, and handover after unloading, carry-in, installation and adjustment (without personal assistance)

* Place checks in the column on the left considering specifications of the model you examined, and difficulty of the carry-in route, because costs will vary according to the carry-in conditions and the specified estimate range.

* Depending on the size, your machine cannot be delivered on the carry-in route in one piece, and sometimes disassembly/assembly are required.

* Sometimes adjustments are required depending on the model.

* The rates of shipping/carry-in fees will vary according to the details specified on the day of delivery.

Check Column	Specific Instructions on Carry-in Date (Note 1): Important
	(a) Consolidated shipment, without carry-in since it falls in (Items Included in Estimate... (1))
	(b) If a weekday nothing special to specify
	(c) Specify carry-in date and time on weekdays
	(d) Specify Sat., Sun., Holidays

Carry-in Environment (Customers specifying (3), (4) or (5) in Items included in Estimate, please fill in.)				
Installation Floor	Floor number of the installation site?		Above ground	basement
	How wide is the service entrance?		Width	mm×Height mm
Above Ground Service Entrance	Sometimes there are differences in grade to the service entrance, how great is the difference in grade?		Width	mm
	How big is the parking space at the service entrance?		Width	mm×Width mm
Carry-in Route	What are the minimum width and height of the carry-in passage?		Width	mm×Minimum height mm
	Sometimes there are differences in grade of the carry-in passage, how great is the difference in grade?		Width	mm
Entrance to Installation Room	How big is the entrance of the installation room?		Width	mm×Height mm
	Sometimes there are differences in grade to the entrance, how great is the difference in grade?		Width	mm
	How wide is the passage in front of the installation room?		Width	mm
Other	What is the type of installation room?		Normal / Clean room	
	In case of a clean room, is special curing required?		Required / Not required	
Carry in to Basement or Above 2nd Floor				
Has Elevator	How big is the elevator door?		Width	mm×Height mm
	How much space inside the elevator?		Width	mm×Depth mm×Height mm
	What is max payload of the elevator?		Width	kg
No Elevator	Dedicated Service Entrance Exists	How big is the special service entrance?	Width	mm×Depth mm×Height mm
		Sometimes there are differences in grade to the entrance, how great is the difference in grade?	Difference in grade mm	
		Is there a hoist?	Yes / No	
Regardless of measures, will not go on the elevator	Dedicated Service Entrance Does Not Exist (Stairs, window in installation room, window on passage)	Please draw a simple sketch of the carry-in route and attach on a separate sheet of paper. We will contact you separately.		

(Note 1) After the delivery date is decided based on the designated day, we will contact you separately. When the designated delivery date is changed after contacting you, we may charge a cancellation fee. Please contact our Sales Division at least 1 week in advance to change the designated day.

(Note 2) When you have chosen an air spring vibration isolator, fill in the Air Spring Vibration Isolator Model Selection Check Sheet [▶ Web Return](#) Catalog Code W6002.

Rubber tile vibration isolators are designed to be placed at the four corners of an optical laboratory bench or other equipment to reduce vibrations.



Attention

► Recommended maximum load is 4.9N/cm² (about 5kgf/cm²)

Specifications				
Part Number	External Dimensions [mm]	Thickness [mm]	Weight per Sheet [kg]	Quantity [Pieces]
PR-1010	100×100	10	0.12	4
PR-1515	150×150	10	0.27	4
PR-3030	300×300	10	1.1	1

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Darkroom Kits



Clean Darkroom Kits

DRU
DRUC

Catalog Code W6016

Theres darkrooms are composed of a steel fram and block out curtains.

- All five sides of the room are covered with a black-out curtain.
- White LED penlights are available form OptoSigma to check work while in the darkroom.
- Please consider size of your equipment/table when selecting a darkroom size.

Type	Darkroom Kits DRU	Clean Darkroom Kits DRUC
Exterior		
Features	<ul style="list-style-type: none"> ● Allows easy installation of a darkroom space indispensable for image measurements, exposure testing, and optical measurements. ● Easy to dismantle, making it convenient for transportation and storage. 	<ul style="list-style-type: none"> ● Allows easy installation of a clean darkroom space indispensable for highly accurate and reliable optical measurements, testing, and other tasks. ● HEPA filters provide Class 100 dust collection efficiency in terms of cleanliness at the air outlet, with wind speed of approximately 0.5m/s. Although it varies according to the darkroom size, the cleanliness inside the darkroom is roughly Class 7 (Class 10,000) within 5 minutes after power-up. ● Fitted with an exhaust type compact ventilation fan.
Black-out Curtain	Material	Obverse side: Polyester, Reverse side: Neoprene rubber
	Light Blocking Effect	Class 1 shading ability (99.99~100%)
	Fire Retardancy	Fire retardant

Guide

- ▶ This product comes as a kit including a black-out curtain, pipes and a plastic hammer.
- ▶ Estimated time required for assembly: (e.g.) DRU-1816 will take about 30 minutes (with two people).
- ▶ To ensure optimal cleanliness, wear clean room garments while working in a darkroom. Clean room garments are available for purchase.

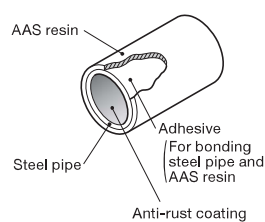
Attention

- ▶ The blackout curtains have a flap-type entrance where the blackout curtain overlaps in the center entrance way. Curtain-rail-type blackout curtains are also available, but reduce the light blocking. Contact our Sales Division for more information.
- ▶ Darkroom kits include curtain tie clips.
- ▶ Custom sizes or shapes not listed in the catalog are available. Contact our Sales Division for more information.

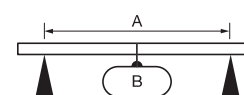
Frame Pipes

The pipes used for the skeleton framework of the darkroom kits and clean darkroom kits are $\phi 28\text{mm}$ steel frames. The structure and strength are as shown in the following figure. These pipes can be readily connected and assembled with T- and L-shaped joint pipes using a plastic hammer.

Structure



Strength



A [Dimensions]	B [Max. Strength]
450mm	about 1,666N (170kgf)
900mm	about 784N (80kgf)
1,800mm	about 392N (40kgf)

Specifications

Darkroom Kits Part Number	Clean Darkroom Kits Part Number	Frontage [mm]	Depth [mm]	Height [mm]
DRU-1212	DRUC-1212	1,200	1,200	2,000
DRU-1515	DRUC-1515	1,500	1,500	2,000
DRU-1816	DRUC-1816	1,800	1,600	2,000
DRU-2017	DRUC-2017	2,000	1,700	2,000
DRU-2219	DRUC-2219	2,200	1,900	2,000
DRU-2819	DRUC-2819	2,800	1,900	2,000
DRU-3020	DRUC-3020	3,000	2,000	2,000