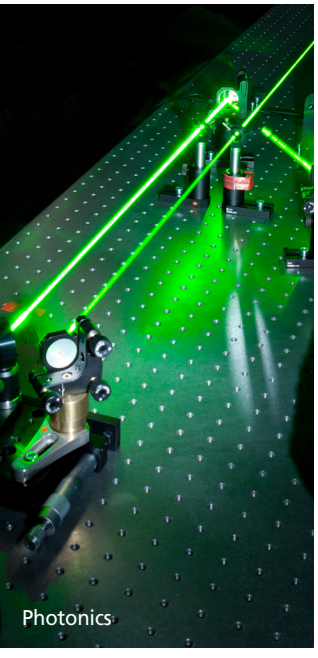
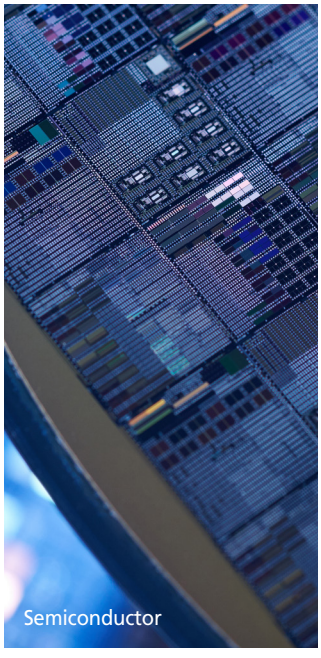
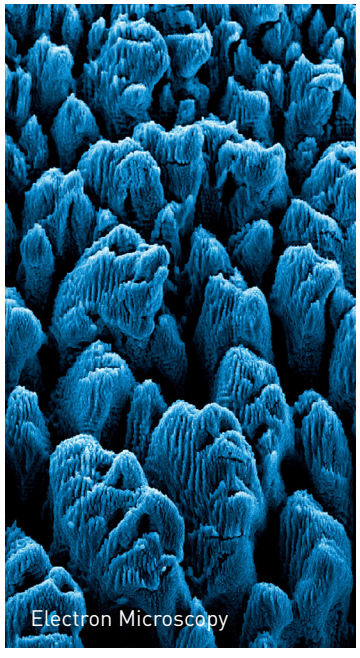
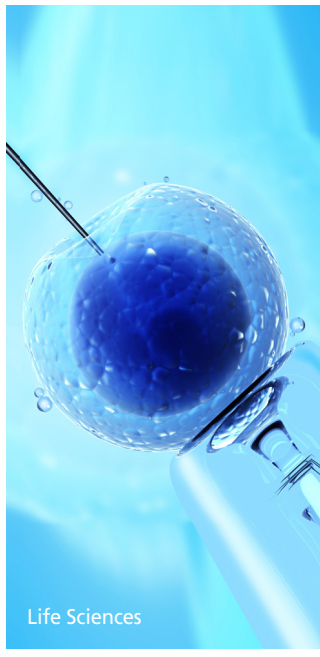
VIBRATION ISOLATION SYSTEMS









DAEIL SYSTEMS

Absolute Control of Vibration,
This Is Our Ultimate Mission.

DAEIL SYSTEMS was founded in 1984, as the first Korean company to introduce a vibration isolation system, with our passion for technological innovation, we've become the leader in vibration solutions for the new era of nanotechnology.

we've been supplying a wide range of vibration isolation systems including thousands of optical tables and from passive to active isolation systems, to industries, research institutes, and universities that are related with metrology, photonics, semiconductor, display and life sciences.

With more than 30 years of experiences in manufacturing and developing its own technology, we are committed to delivering innovative products. We will be relentless in pursuing our mission to provide the ultimate vibration solutions to explore the microscopic world more clearly.

CEO Kwangsan Kim

“A Global Leading Supplier of Vibration Isolation Systems”

We've established a global network in Asia, the Middle East, Oceania, and the Americas, supplying products that have been developed by our own technology.

Contents

Timeline

1984 Founded as DAEIL MACHINERY

1988 Changed the company name to DAEIL SYSTEMS

1989 Introduced the first vibration isolation table in Korea

1993 Introduced the first optical table in Korea

1996 Registered as a private limited company

1997 Obtained ISO 9001 Quality Management Certification

1999 Designated as New Technology Venture

2000 Built a new HQ and 1st factory in Yongin

2001 Established R&D center

2009 Founded Qingdao DAEIL SYSTEMS

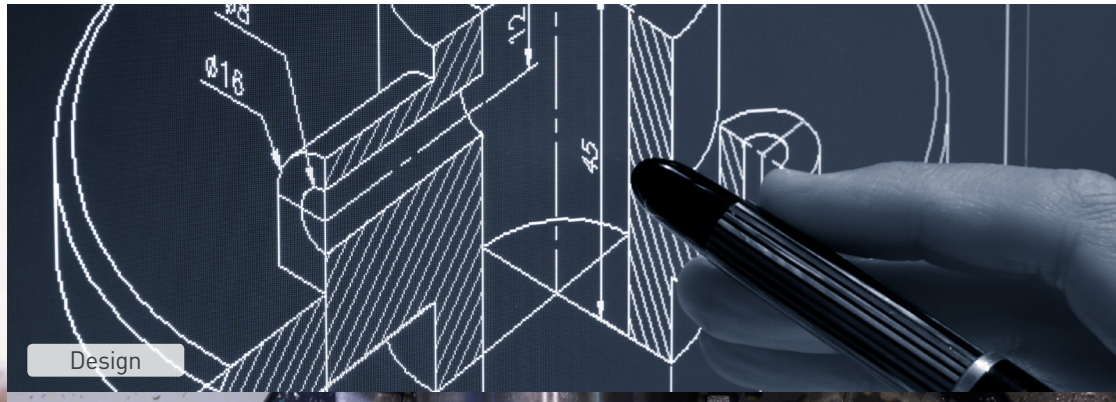
2009 Designated as an INNO-BIZ

2011 Designated as a promising SME Export

2012 Introduced an active isolation system

2016 Completed 2nd Factory Expansion


Receipt of Order



Design


Production

Order Fulfillment Process

1. Receipt of order

We choose suitable products to customers in accordance with equipment specifications. If required, we conduct a site survey to measure and analyze the installation site to determine whether the final site is suitable.

2. Design

We customize products based on the analysis of measured data and customer's equipment specifications.

3. Production

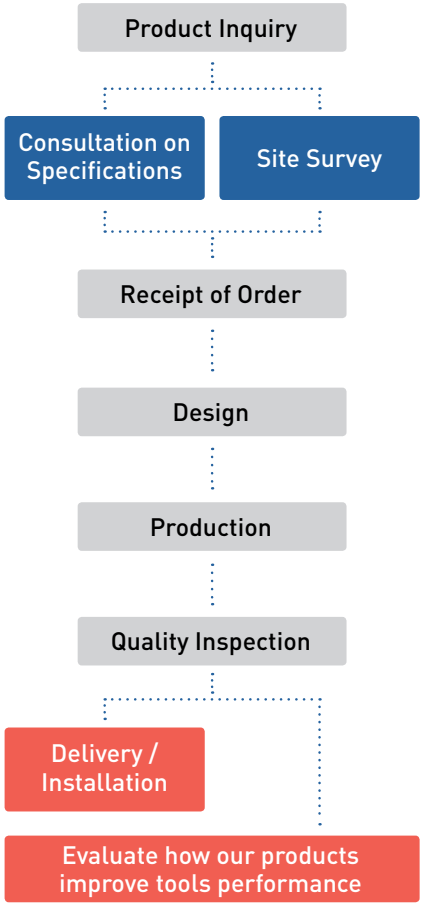
Our experienced and professional workers are committed to manufacture high-quality and flawless products at our cutting-edge manufacturing facilities.

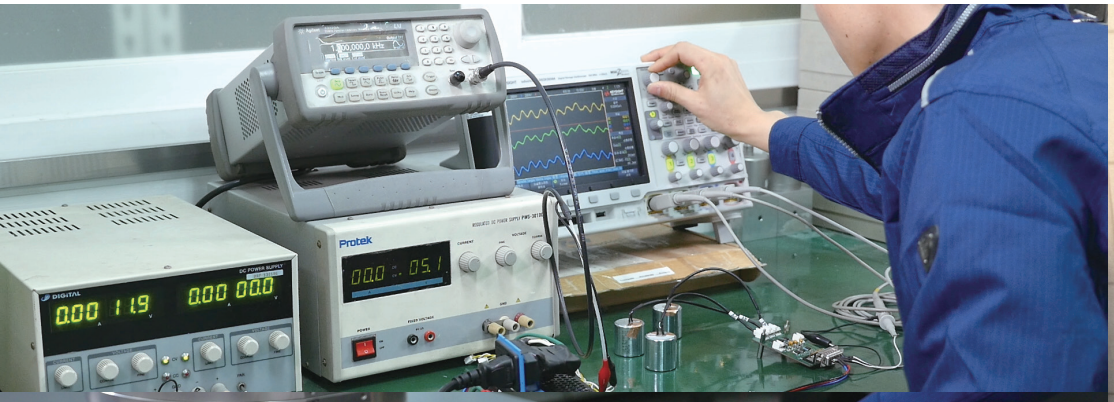
4.Quality Inspection

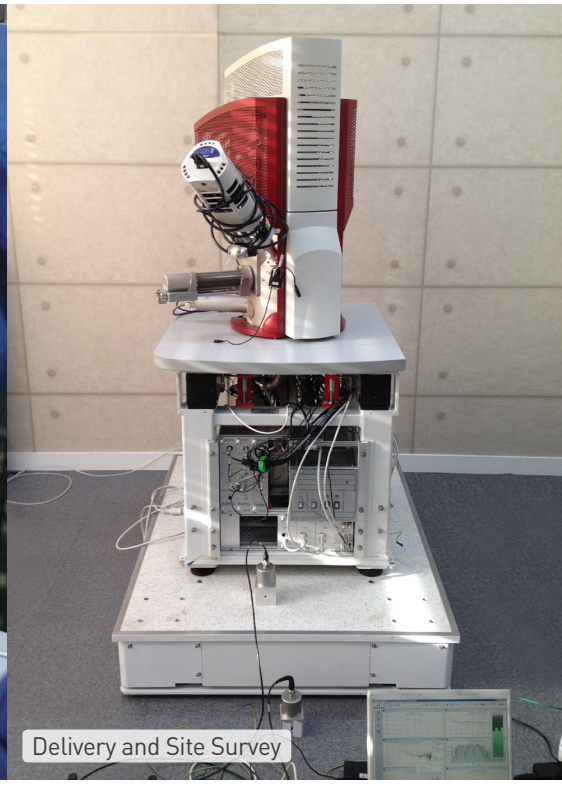
After production, we perform a quality inspection of the products prior to delivery, ascertaining their quality and quantity.

5. Delivery & Installation

Our engineers deliver and install products to customers according to the requested delivery date and location. After installation, the engineers provide a report of details showing how much our products improve the conditions of the environment.







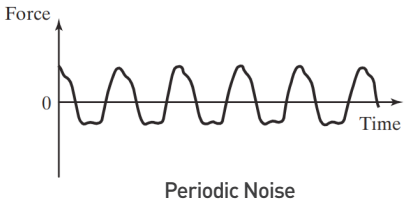
Basic Concepts of Vibration

Vibration

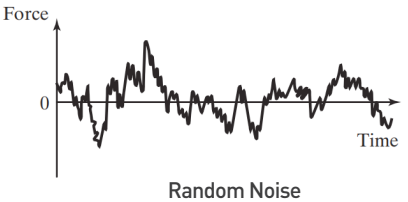
Vibration is a mechanical movement around an equilibrium point. In other words, it is a mechanical phenomenon where a dynamic external force is applied onto structures or floors, causing the oscillation motion that repeats itself after an interval of time. Among the sources of vibration, the low frequency vibration is not perceptible during daily activities, and adversely affect high–performance metrology tools in the fields of semiconductor, display, electron microscopy, photonics and life sciences.

Classification of Vibration

Periodic noise is defined as the known magnitude of the excitation acting on a vibratory system at any given time. It is generally caused by rotating machinery. Random noise is caused by unpredictable excitations such as wind velocity, road roughness, foot and vehicular traffic, and ground motion during various activities.



Periodic Noise



Random Noise

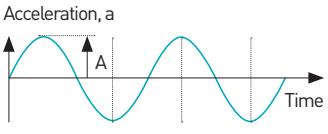
Measurement Unit of Vibration

Vibration can be measured in units of displacement, velocity and acceleration. The shape and frequency of the vibration are the same regardless of which of the three measurement units, used to express vibration, except for the difference in the phase.

Regarding sinusoidal signals, displacement, velocity and acceleration amplitude are related mathematically by a function of frequency and time. If the phase is not a factor to be considered, the velocity is obtained by dividing the acceleration signal by a factor proportional to frequency, and the displacement can be calculated by dividing the acceleration signal by a factor proportional to the square of frequency.

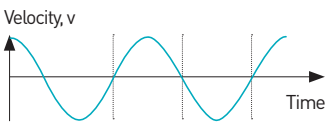
Measurement	Basic Unit	Common Unit	
Displacement	㎝	1 ㎛ = 10^{-3}㎜ = 10^{-4}㎝	1㎜ = 10^{-1}㎝ = 10^{-3}m
Velocity	㎝/sec	1 m/sec = 10^{2}cm/sec = 10^{3}㎜/sec	
Acceleration	㎝/s^2 (Gal)	1 g = 980 ㎝/sec^2	1 m/sec^2 = 10^{2}㎝/sec^2

Relationship between Displacement, Velocity and Acceleration



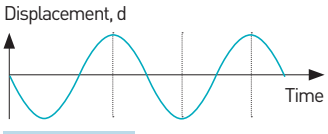
a = A

$a = A \sin \omega t$



$v = \frac{A}{\omega} = \frac{A}{2\pi f}$

$v = \int a\,dt = -\frac{A}{\omega}\cos \omega t$



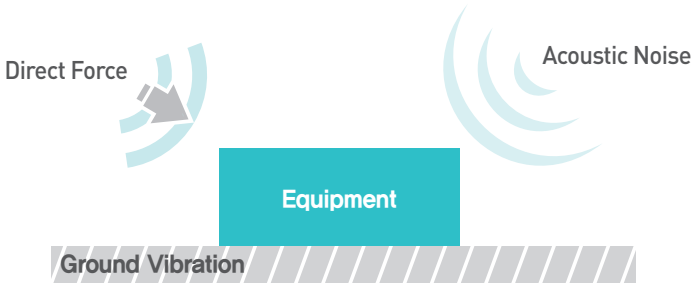
$d = \frac{A}{\omega^2} = \frac{A}{4\pi^2 f^2}$

$d = \int\int a\,dt\,dt = -\frac{A}{\omega^2}\sin \omega t$

Sources of Vibration

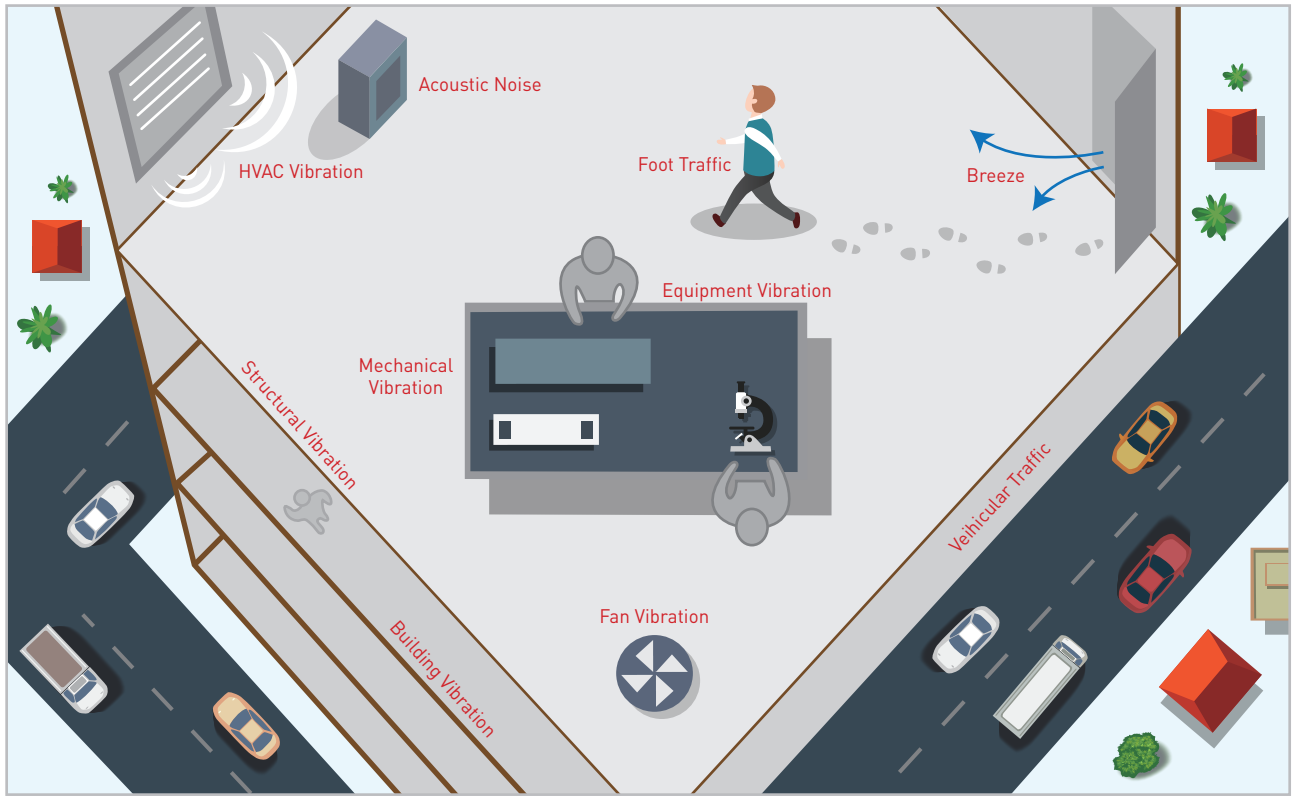
There are three main sources of vibration.

1) Ground vibration
2) Acoustic noise
3) Direct force applied to a payload on a isolation platform



〈Main Sources of Vibration〉

Sources of Vibration in a Lab

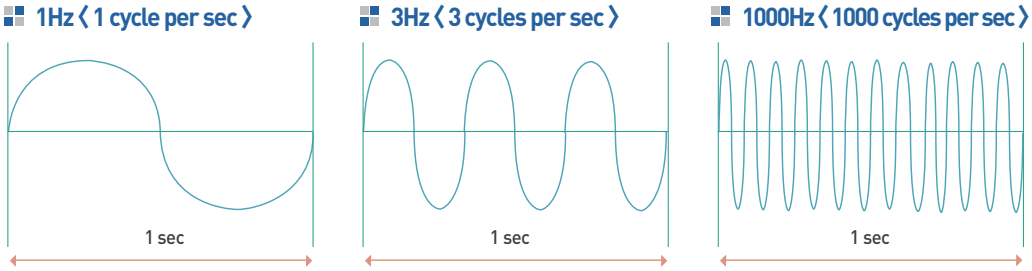


- Ground vibrations indicate all the factors that cause vibrations on a floor. The factors include foot and vehicular traffic, external noises, wind blowing a building and HVAC systems.
- Acoustic noises are the factors that directly apply a force to a payload, such as wind blwoing from fans.
- A direct force is a force that directly applied to a payload on a platform, including cables connecting all the equipment and motorized linear stages.

Vibration Terminology

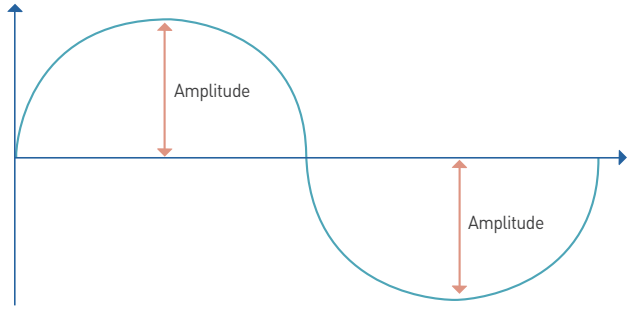
Frequency

Frequency is defined as the number of events of a repetitive motion cycle during the period of 1 second and measured in hertz (Hz).



Amplitude

The magnitude of displacement, velocity, or acceleration from its zero value (rest value) is known as amplitude. The amplitude of vibration can be expressed as peak–to–peak, peak, RMS [Unit : m, cm, mm].



Vibration Velocity

Changes in the amount of vibration in an interval of time is known as vibration velocity. [Unit : m/s, cm/s, mm/s]

Natural Frequency

The natural frequency is the frequency at which the system resonantes or oscillates when the system is not disturbed by an external force. A higher stiffness and a lower mass indicates the high natural frequency and a lower stifness and a higher mass indicates the low natural frequency.

Forced Frequency

If an object is subject to an external force, resulting vibrations and the frequency of that external force is known as forced frequency. When the forced frequency coincides with the natural frequency, the amplitude of vibration peaks which is known as resonance.

Vibration Acceleration Level

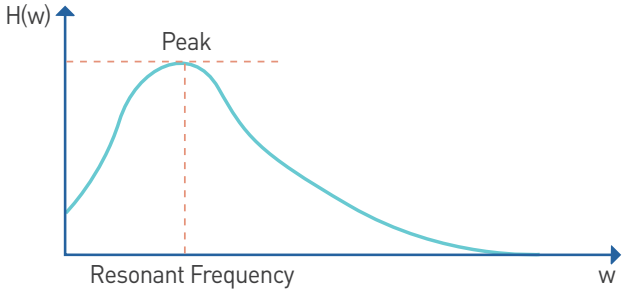
The magnitude of vibration acceleration level is expressed as decibels (dB).

$$VAL = 20\log \frac{a}{a_0} \ (dB)$$

a : Measured vibration acceleration level
a_0 : Reference vibration acceleration level

Resonance

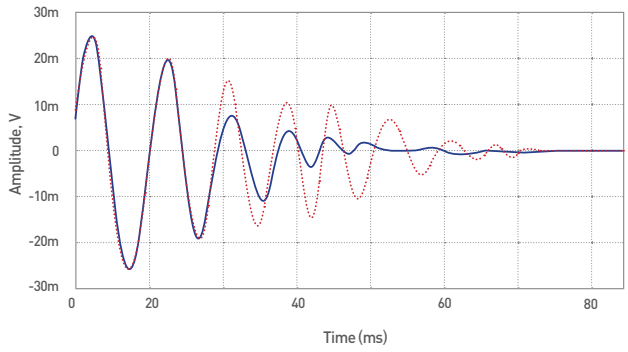
Resonance occurs if a forced frequency coincides with a natural frequency of the system, resulting large oscillations. Frequency at which the response amplitude is a relative maximum is known as resonant frequency.



Damping

Damping is the dissipation of oscillatory energy. Damping reduces the amplitude of vibrations occurring at the resonant frequency more quickly, achieving fast settling time improving stability of a system.

Settling time is the amount of time required for the output to reach and remain within + / – 10% of the steady–state value.



Measurement of Vibration Amplitude

PEAK

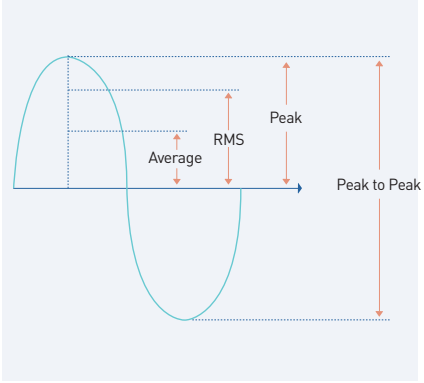
Peak indicates the maximum value of the vibration amplitude and is to measure shocks or waves which are rather stable. It indicates the magnitude of the vibration level, and a factor of time is not considered.

PEAK TO PEAK

Peak–to–Peak indicates the distance from a negative peak to a positive peak.

R.M.S (Root Mean Square)

Vibration is expressed in terms of its RMS velocity, which is the square root of the average of the squared values of amplitude. The RMS value both takes the time history of the wave into account and gives an amplitude value which is directly related to the energy content.
The RMS value of a sine wave is 0.707 times the peak amplitude and the RMS value is proportional to the area under the sine wave curve representing the vibration energy.
The RMS value is used for the vibration criterion (VC) curves, together with the international Standards Organization (ISO), which are now widely accepted throughout the world as a standard to determine whether the vibration level of the installation site is appropriate for equipment specifications.



AVERAGE

It indicates an average variation of vibration over time. However, the average value is considered of limited practical interest because it has no direct relationship with any useful physical quantity.

Vibration Isolation

Vibration isolation is defined as the process to isolate an object from sources of vibration. The theory of vibration isolation is to make the natural frequency of the system lower than the forced frequency and to suppress the resonance at the natural frequency of the system. As technology advances, the vibration isolation technique is essentially required to isolate vibrations from high–performance metrology tools.

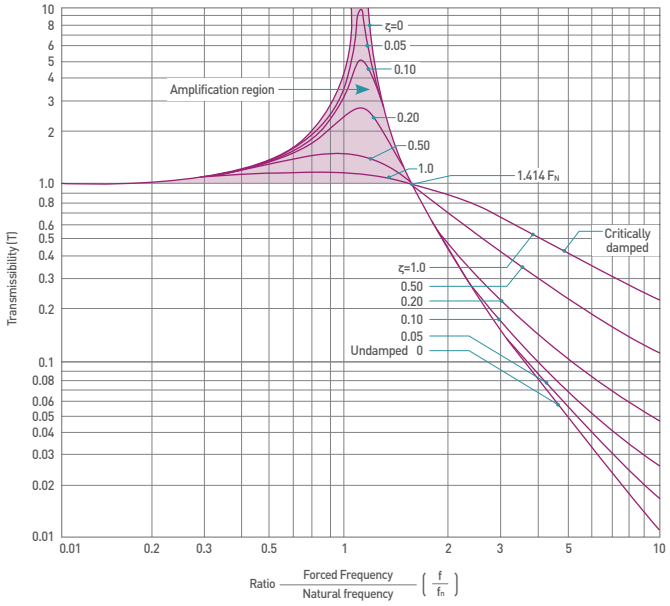
Transmissibility(T) indicates the ratio of the amplitude of the vibration transmitted to an isolated payload to that of the exciting vibration. The efficiency of the vibration isolation improves with the lower natural frequency, meaning the lower transmissibility is the better vibration isolation performance.

The frequency ratio is a function of the forced frequency and the natural frequency of the system and is used as an evaluation criterion to determine vibration isolation performance.

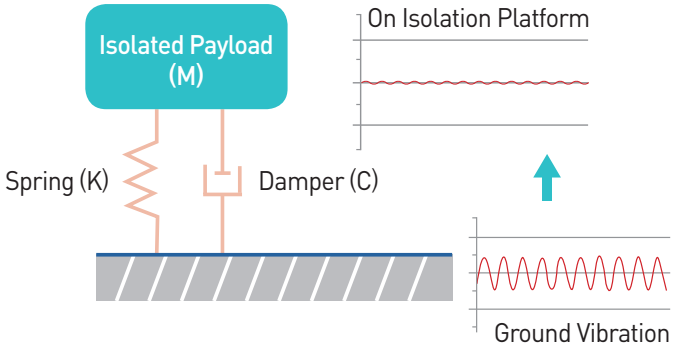
As the frequency ratio reaches 1.414FN and T becomes less than 1 for all values greater than this, the isolation effect taking place, on the other hand, when the transmissibility ratio is smaller than 1.414, then vibration is amplified. Therefore, the transmissibility frequency (1.414FN) is reasonable value to determine the limit frequency of each natural frequency because the transmissibility frequency (1.414FN) is unaffected by the damping value. If the frequency ratio is equal to 1, then vibration amplitude is maximized (i.e. resonance occurs when the forced frequency and the natural frequency coincides).

Damping is reduction or restraining of mechanical oscillations by dissipating the energy stored in an oscillatory system. The undamped spring lead the peaks of vibration amplitude at the resonant frequency. On the other hand, the damped spring decreases the vibration amplitude at resonance, however, there is a trade off between vibration isolation performance and damping that the vibration isolation performance degrades as damping increases.

Damping ratio is a system parameter, denoted by ζ (zeta), that can vary from undamped (ζ=0), under–damped



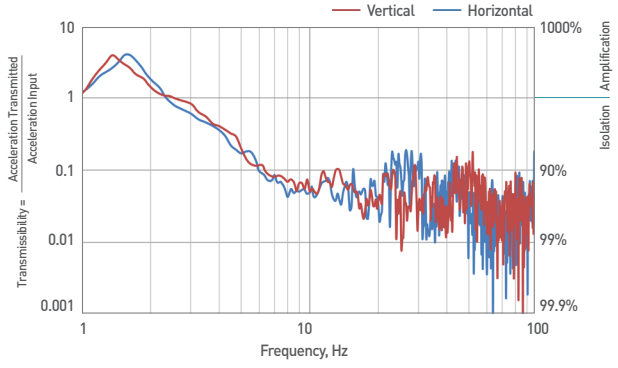
Vibration Isolation



Transmissibility = transmitted force / applied force

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

f/fn = Frequency Ratio fn = natural frequency f = forcing freqeuncy



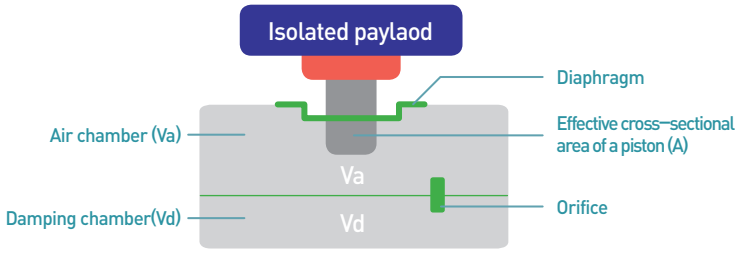
Transmissibility = Vibration Isolation Performance

Natural frequency

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

γ = air specific heat
A = effective cross–sectional area of a piston
G = acceleration of gravity
V = pressurized volume of chambers

Natural Frequency Formula



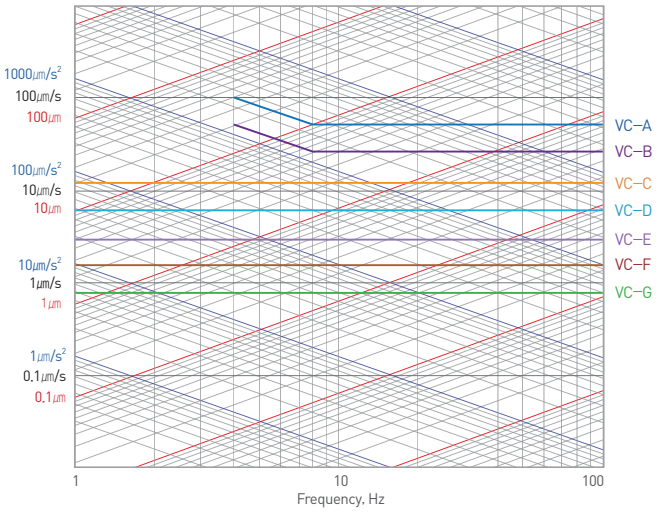
The natural frequency of the pneumatic isolator is defined by a function of the effective cross–sectional area of the piston and the pressurized volum of chambers.

Generic Vibration Criteria

The Vibration Criterion (VC) curves are widely used and accepted throughout the world as a basis for designing vibration–sensitive technical facilities and evaluating the performance of instruments and tools. Equipment operational problems that are caused by vibration, can be prevented if vibration conditions on the floor of the building comply with the VC curve appropriate to the vibration requirements. In other words, for an installation site to comply with vibration requirements, the measured one–third octave band velocity spectrum must lie below the appropriate VC curve.

Measured vibration levels in the RMS velocity unit, is to be processed in one–third octave bands of frequency, and a set of one–third octave band velocity spectra is employed to specify the VC curves that define guidelines for the tolerance of vibration levels.

Generic Vibration Criterion (VC) Curves

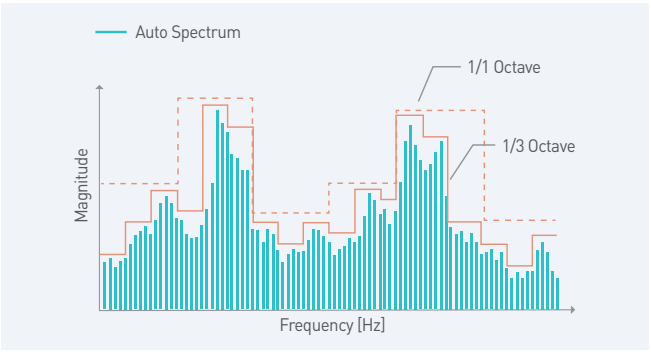


What are Octave Bands?

Octave Bands provide a method of splitting the vibration levels into smaller segments known as Octaves, identifying different vibration levels across individual frequencies.

One third Octave Bands are mainly used environmental and noise control applications. Each Octave Band is further split into three called one third Octave Band, providing a more detailed view of vibration levels. The entire frequency range is divided into sets of frequencies known as bands. Each band represents a specific range of frequencies. As the band increases, the upper band frequency is twice the lower band frequency.

Octave Bands



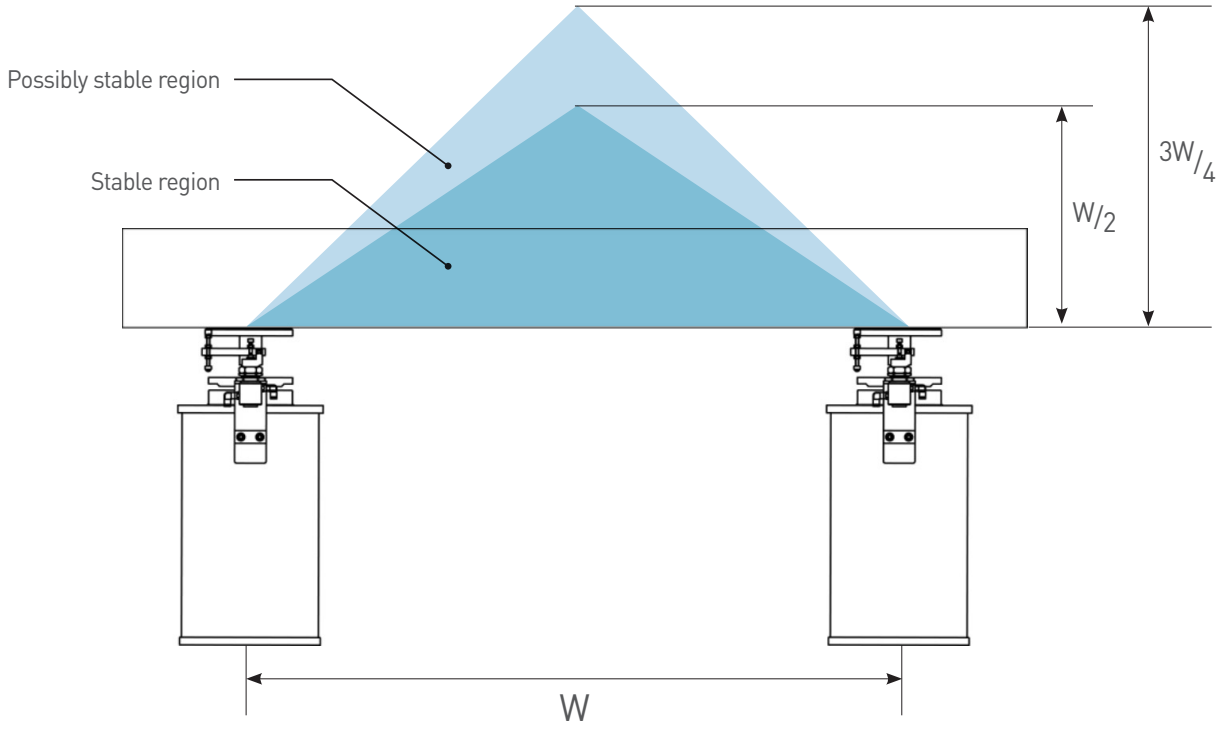
Generic Vibration Criteria

Criterion Curve	Description	Amplitude[1] μm/s (in/s)	Detail Size[2] μm
Workshop (ISO)	Distinctly perceptible vibration. Appropriate to workshops and non–sensitive areas.	800 (32,000)	N/A
Office (ISO)	Perceptible vibration. Appropriate to offices and non–sensitive areas.	400 (16,000)	N/A
Residential Area (ISO)	Barely perceptible vibration. Appropriate to sleep areas in most instances. Usually adequate for computer equipment, hospital recovery rooms, semiconductor probe test equipment, and microscopes less than 40x.	200 (8,000)	75
Operating Theatre (ISO)	Vibration not perceptible. Suitable in most instances for surgical suites, microscopes to 100x and for other equipment of low sensitivity.	100 (4,000)	25
VC–A	Adequate in most instances for optical microscopes to 400x, microbalances, optical balances, proximity and projection aligners, etc.	50 (2,000)	8
VC–B	Appropriate for inspection and lithography equipment (including steppers) to 3μm line widths.	25 (1,000)	3
VC–C	Appropriate standard for optical microscopes to 1000x, lithography and inspection equipment (including moderately sensitive electron microscopes) to 1μm detail size, TFT–LCD stepper/scanner processes.	12.5 (500)	1 – 3
VC–D	Suitable in most instances for demanding equipment, including many electron microscopes (SEMs and TEMs) and E–Beam systems.	6.25 (250)	0.1 – 0.3
VC–E	A challenging criterion to achieve. Assumed to be adequate for the most demanding of sensitive systems including long path, laser–based, small target systems, E–Beam lithography systems working at nanometer scales, and other systems requiring extraordinary dynamic stability.	3.12 (125)	<0.1
VC–F	Appropriate for extremely quite research spaces; generally difficult to achieve in most instances, especially cleanrooms. Not recommended for use as a design criterion, only for evaluation.	1.56 (62.5)	N/A
VC–G	Appropriate for extremely quite research spaces; generally difficult to achieve in most instances, especially cleanrooms. Not recommended for use as a design criterion, only for evaluation.	0.78 (31.3)	N/A

1. As measured in one–third octave bands of frequency over the frequency 8 to 80 Hz (VC–A and VC–B) or 1 to 80 Hz (VC–C through VC–G).
2. The detail size refers to line width in the case of microelectronics fabrication, the particle (cell) size in the case of medical and pharmaceutical research, etc. It is not relevant to imaging associated with probe technologies, AFMs, and nanotechnology.

The information given in this table is for guidance only. In most instances, it is recommended that the advice of someone knowledgeable about applications and vibration requirements of the equipment and processes be sought.

Stability of Vibration Isolation Platform



Vibration isolation platforms with pneumatic isolators encounters static instability problem, when a high CG payload placed on the platform with a narrow isolator spacing. The platform rocks in the middle of the narrowest spaced isolators at the height of the pneumatic isolator diaphragms. When the CG tilts from one side to the other, the payload placed on the isolation platform tilts, and the weight of the payload leads the payload to tilt even more, causing oscillation.

The stiffer isolators, the better stability of the isolation system, however, as the isolators become stiffer, the natural frequency becomes higher, which degrades vibration isolation performance. Therefore, it is essential to compromise a balance between stability and vibration isolation performance.

Solutions

Design a cradle vibration isolation platform

Add extra weights on top of the isolator

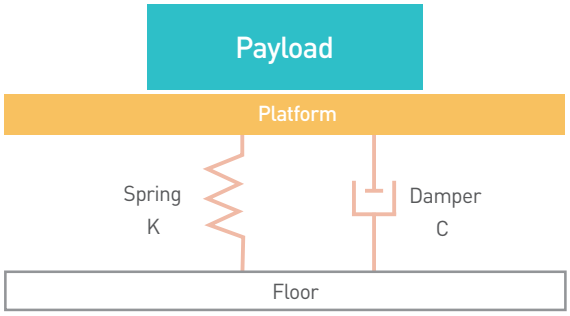
Increase the space between the isolators

DAEIL SYSTEMS provides customized solutions to ensure both the isolation system stability and the maximum vibration control performance.

Passive Vibration Isolation System

A passive vibration isolation system consists of three components: an isolated mass (payload), a spring (K) and a damper (C) and they work as a harmonic oscillator. The payload and spring stiffness define a natural frequency of the isolation system. While the spring (isolator) reduces floor vibrations from being transmitted to the isolated payload, the damper eliminates the oscillation that is amplified within the isolation system. In most cases, the passive isolation systems employ a pneumatic spring due to its low resonant frequency characteristic that provides outstanding vibration isolation and damping.

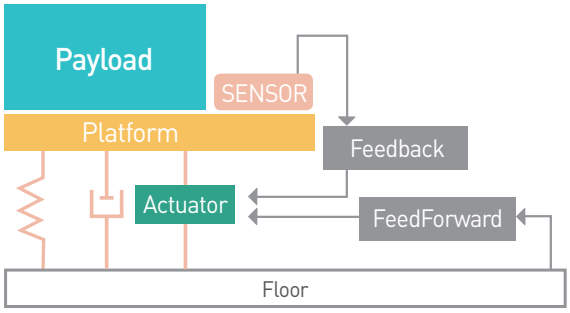
While the simple composition of isolation system can achieve the maximum vibration isolation efficiency, there are also limitations, such as a resonance phenomenon in the low frequency range, a longer settling time, and lack of controllability.



Passive Vibration Isolation System

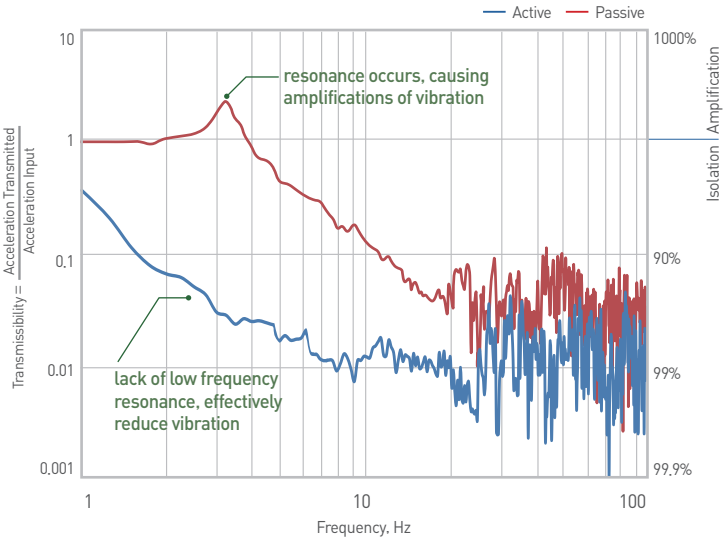
Active Vibration Isolation System

An active vibration isolation system is consisting of feedback and feedforward control systems with integrated sensors and actuators to isolate the most sensitive equipment from the extremely low frequency vibration which the passive isolation systems amplify vibrations at resonant frequencies. The extremely sensitive sensors detect incoming vibrations in all six degrees of freedom and a digital controller processes the measured vibration data received from the sensors into the digital signals. Then, the controller sends the signals to the actuators and the actuators cancel the vibrations by generating equal and opposite force.



Active Vibration Isolation System

Passive vs Active Isolation Systems



Passive vs Active Comparison

CATEGORIES	ACTIVE	PASSIVE
Natural frequency	0.5 Hz	1.5 – 10 Hz
Stiffness	Hard	Soft
Vibration Isolation Performance in 10 – 100 Hz	YES	YES
Vibration Isolation Performance in 1 – 10 Hz	No resonance, sub–hertz vibration isolation performance	Resonance occurs (amplifications of vibration)
Instantaneous Response	YES	NO
Controllability	Control the system precisely and delicately	Lack of controllability
Center of gravity	Stable	Unstable
Position accuracy	Around 1 μm	Around 0.05 mm–1mm
Degrees of freedom	6 DOF	3 DOF
Settling time	10 – 20 ms	2 – 10 ms

DVIA Series Acitve Vibration Isolation Systems

16 – 33

DVIA–T
Tabletop Active Vibration Isolation Platform

DVIA–M
Active Vibration Isolator

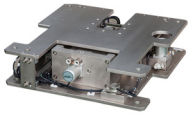
DVIA–MB
Base Active Vibration Isolation Platform

DVIA–MO
Hybrid Active Optical Table

DVIA–U
Modular Active Vibration Isolation Platform

DVIA–UD
Desk Active Vibration Isolation Platform

DVIA–UB
Base Active Vibration Isolation Platform



DVIA–P
Active Pneumatic Vibration Isolator

DVIO Series Optical Tables

34 – 37

Pneumatic Optical Table
Tie–Bar Type

Pneumatic Optical Table
Self–Standing Type

Non–Magnetic Optical Table

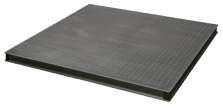
DVIO–B Series Optical Table Tops / Breadboards / Aluminum Plates

38 – 44

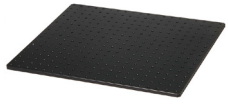
Research Grade
Optical Table Top

Scientific Grade
Optical Table Top

Non–Magnetic
Optical Table Top



Optical Breadboard



Optical Aluminum Plate

DVIO–S Series Optical Table Supports

45 – 49

Pneumatic Support
Tie–Bar Type

Pneumatic Support
Self–Standing Type

Rigid Support
Tie–Bar Type

Rigid Support
Self–Standing Type

DVIO Series Optical Table Accessories

50 – 53

Overhead Shelf

Joined Table System

Table Enclosure

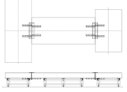


Table Yoke

Dark Booth

Clean Booth

Air Compressor

DVID Series Vibration Isolation Workstations 54 – 61

DVID–L
Lab Workstation

DVID–H
Optical Workstation

DVID–C
Cleanroom Workstation

DVID–T
Tabletop Workstation

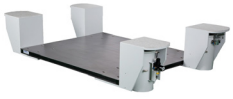
DVID Series Workstation Accessories 62 – 63

Faraday Cage

Table Enclosure

Options

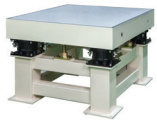
DVIP Series Low–Profile Vibration Isolation Platforms 64



DVIP–C
Cradle Vibration
Isolation Platform

DVIP–B
Base Vibration
Isolation Platform

DVIF Series Foundation Vibration Isolation Platform 65

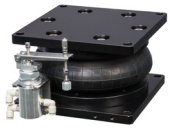


DVIF
Foundation Vibration
Isolation Platform

DVIM Series Pneumatic Vibration Isolators 66 – 75

DVIM–G
Advanced Pneumatic
Vibration Isolator

DVIM–M
Standard Pneumatic
Vibration Isolator



DVIM–F
Basic Pneumatic
Vibration Isolator

Air Spring

Acoustic Enclosure / SEM Enclosure / Site Survey 76 – 78

DAE
Acoustic Enclosure

DSE
SEM Enclosure

Site Survey

DVIA Series

Active Vibration Isolation Systems

The active vibration isolation system is the essential vibration control system for advanced ultra–precision industry that enables nanoscale measurements. The real–time feedback and feed forward control system effectively reduce the low frequency vibrations coming from both a payload and a floor. The active isolation system is widely used in the ultra–precision metrology such as advanced semiconductor fabrication plants, display, nanotechnology and nanofabrication research.

DVIA–T Series

Tabletop Platform

- Plug and Play system
- Automatic leveling & Weight distribution
- Compact design, Lightweight, Portability
- Air supply is not required
- Maximum payload capacity : 150 kg

DVIA–MB Series

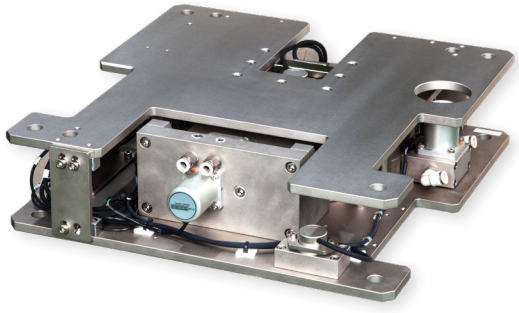
Base Platform

- Custom designed to fit all electron microscopes models
- Superior vibration isolation performance in 1 – 5 Hz
- Maximum payload capacity : 6000 kg

DVIA–U Series

Modular Platform

- Electromagnetic actuators
- Low–profile design
- Air supply is not required
- Maximum payload capacity : 700 kg



DVIA–P Series

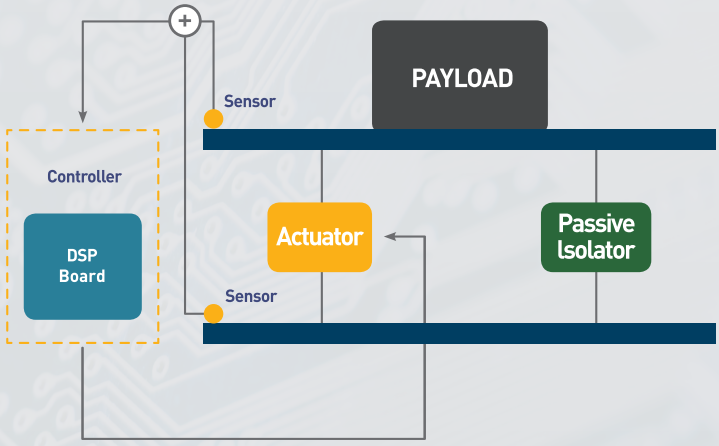
Mount Platform

- Pneumatic actuators
- Designed to support inspection tools for semiconductor and display
- Fastest settling time for tools with linear stages
- Outstanding vibration isolation performance in the low frequency range
- Maximum payload capacity : 50000 kg

What is an active vibration isolation sytem?

An active isolation system is used to effectively control the low frequency vibrations through feedback and feedforward control system employing sensors and actuators. The active vibration isolation system is designed to isolate nanoscale metrology and inspection tools that are extremely susceptible to the low frequency vibrations and the tools.

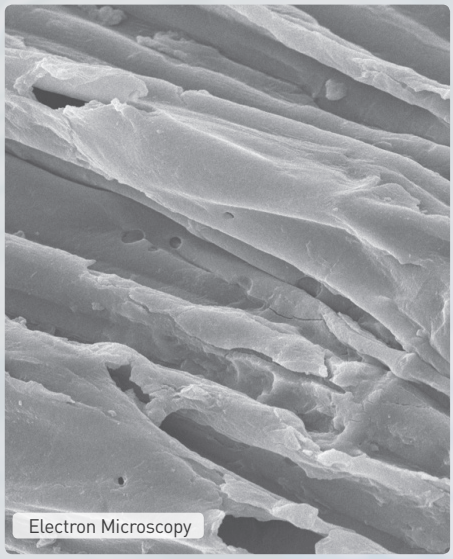
The integrated sensors constantly measure floor vibration and vibration originating from the tools, and send this data to the digital signal processor (DSP), then the DSP processes the data into digital signals to operate the actuators to generate equal and opposite force to the incoming vibrations. As the isolation system reduces vibrations in real–time, the effective isolation occurs in all frequency bands.

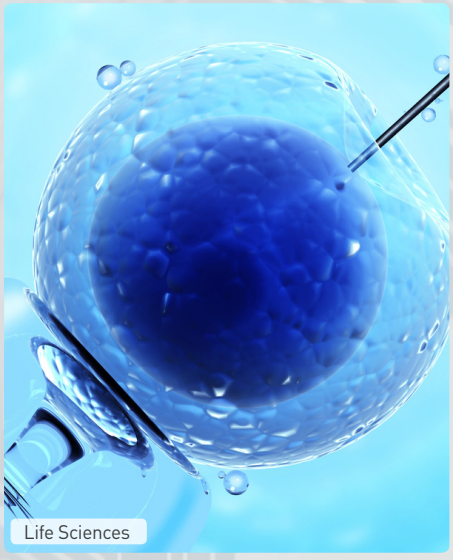


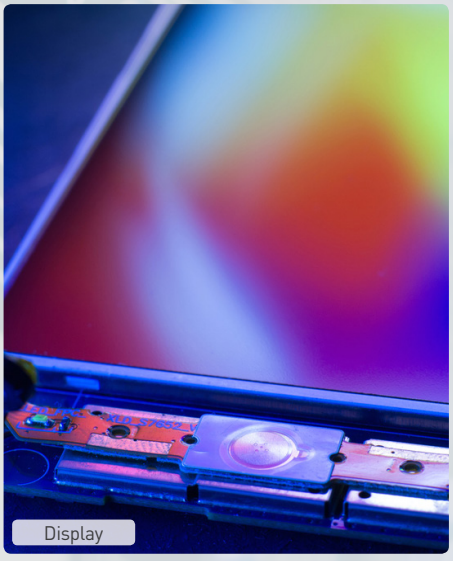
Applications

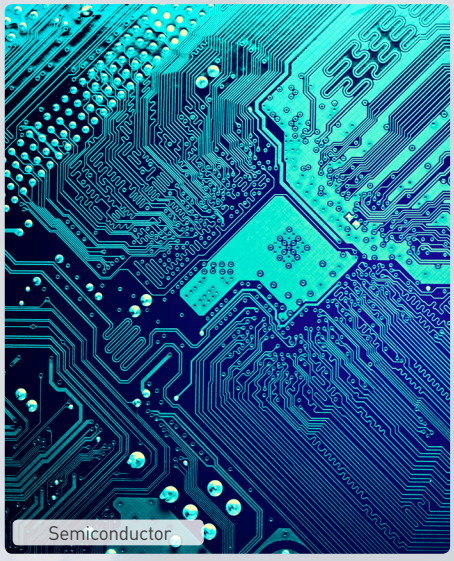

Microscopy


Metrology

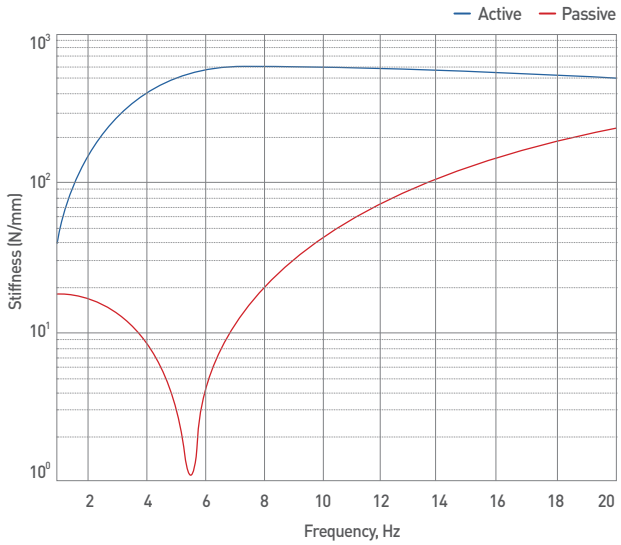

Electron Microscopy


Life Sciences

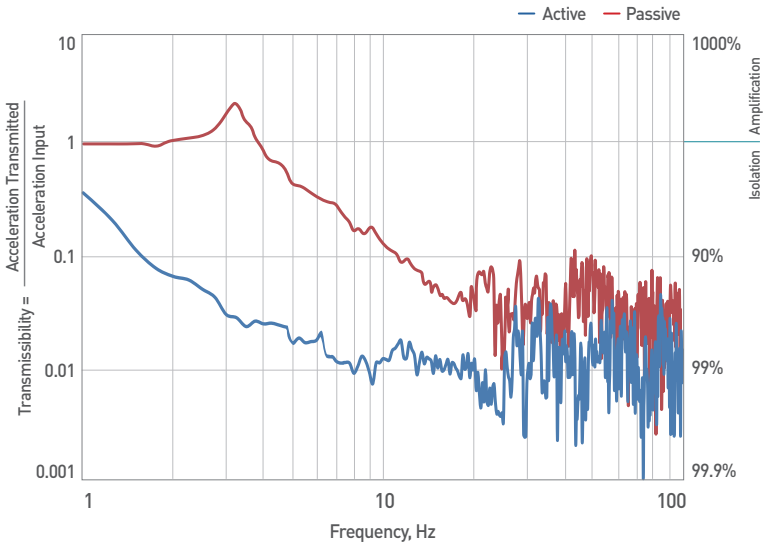

Display


Semiconductor

DVIA Series – Features & Benefits



Maximum Stiffness & Stability



Outstanding Vibration Isolation Performance

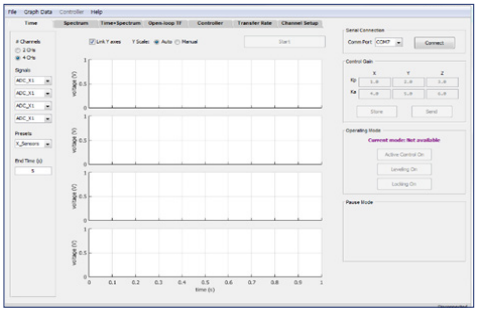
DVIA series does not suffer from the limitations of passive vibration isolation systems as the feedback control system employs actuators to generate an equal and opposite force to the external force continuously and instantly. The active isolation system sustains its the maximum stiffness and stability; therefore, the top plate of the active isolation system is resistant to vibrations, ensuring the maximum stiffness and stability of the system.

The passive isolation system normally has its natural frequency from 1.5 to 10 Hz, in which vibrations with the low forced frequency coincides with the natural frequency, amplifying incoming vibrations rather than reducing them.

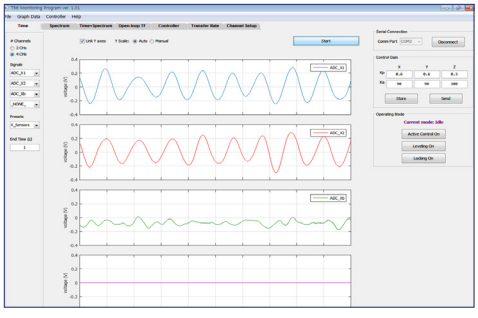
Our DVIA series overcomes this weakness by lowering the natural frequency of the system down to the sub–hertz, in other words, practically our DVIA series does not allow resonance in the low frequency. Therefore, DVIA series is incredibly effective in controlling 1 – 5 Hz where the vibration–sensitive tools tend to be unstable and disruptive that cannot yield its optimal results. DVIA series starts to reduce vibrations from 0.5 Hz, delivering 80 – 90% at 2 Hz.

User Interface Software

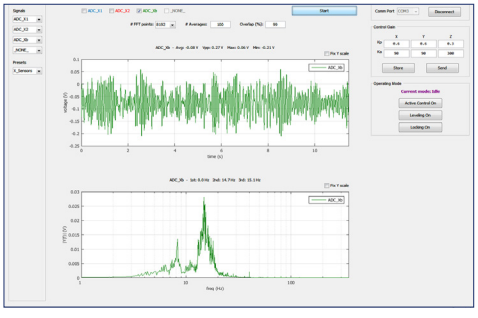
We use our own software with User Interface to employ the feedback and feedforward control systems for DVIA series and with the software, users can monitor the real time vibration isolation performance and the floor activities. In addition, the optimal vibration isolation performance can be only achieved through the on–site tuning by our professional engineers.



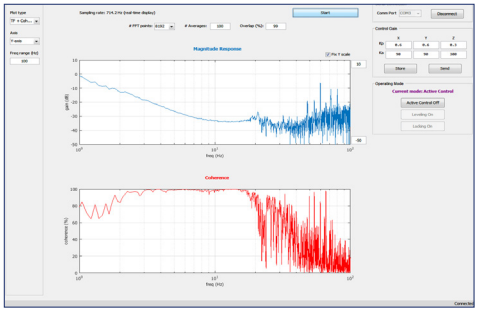
Initial screen



Sensor signal



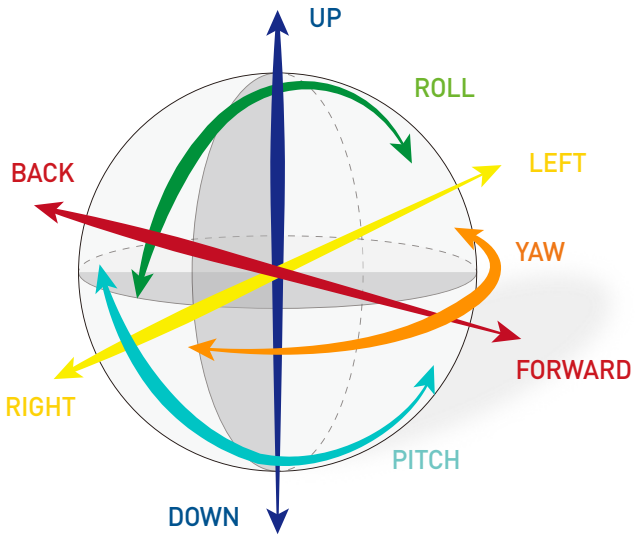
Autospectrum



Transmissibility

Six degrees of freedom

Sensors and actuators that are integrated in the active vibration isolators, controls vibrations in three translational degrees of motions (X, Y and Z), and three rotational degrees of motions (pitch, roll and yaw).

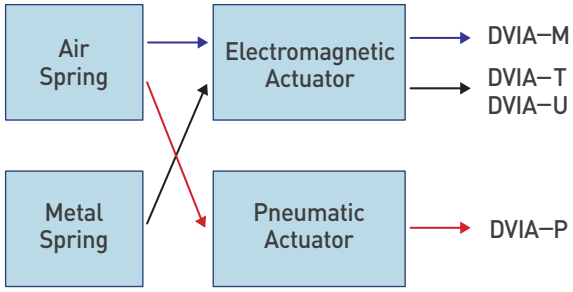


Configuration of Passive + Actuator

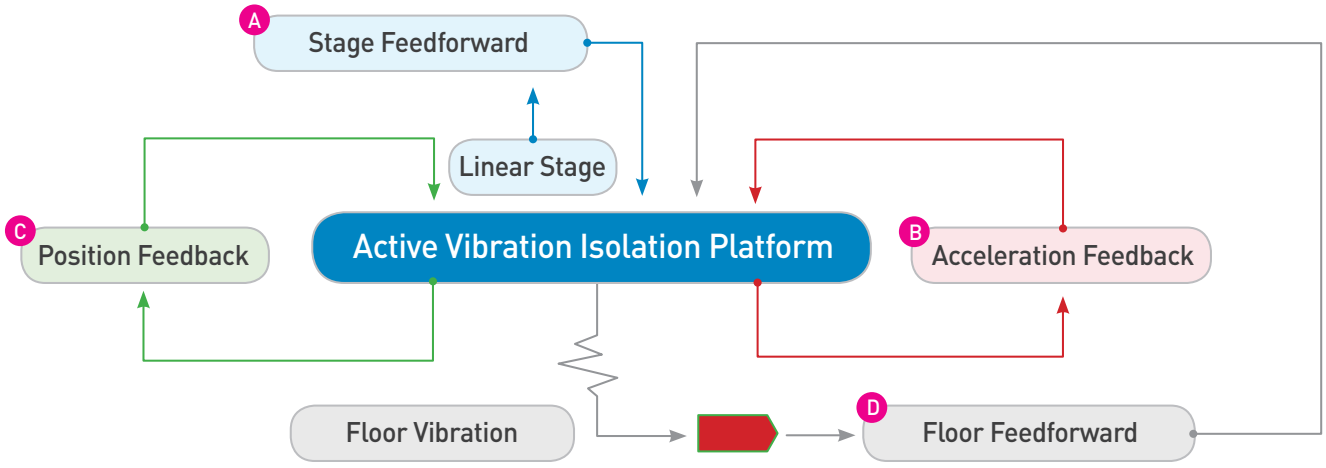
Air Spring + Electromagnetic Actuator → DVIA–M Series

Metal Spring + Electromagnetic Actuator → DVIA–T Series, DVIA–U Series

Air Spring + Pneumatic Actuator → DVIA–P Series



Feedback & Feed forward Control System



A Stage FeedForward

If the isolation system has information about motorized linear stages in advance, the system can produce the force that equal in size to the forces from dynamic linear stage motions in the opposite direction. As a result, the external force caused by the motorized linear stages is effectively minimized.

B Acceleration Feedback

The acceleration feedback control system employs sensors and actuators to continuously detect vibrations which disturb the isolated payload, then reacts to minimize vibrations. The acceleration feedback system not only reduces vibrations from the floor but also effectively minimizes vibrations from the motorized linear stages.

C Position Feedback

When the isolation platform is disturbed by vibrations, the position feedback measures displacement through position sensors, then transmit signals to a digital controller. After receiving the digital signals from the sensors, the digital controller drives actuators to return its original position.

D Floor FeedForward

The floor feedforward control system reduces floor vibration in a predefined way. If the system acquires information about the floor vibration data, the floor vibration can be significantly reduced by the feedfoward tuning.

DVIA-T Series

Tabletop Active Vibration Isolation Platform

Features

· Isolating Sub–Hertz Vibration

DVIA–T series provides excellent vibration isolation performance in1–10 Hz, where the low frequency vibration critically disturb nanoscale measuring tools. The vibration control range of DVIA–T series starts from 0.5 Hz, acheiving 90% vibration isolation at 2 Hz.

· Automatic Leveling to Payload Weight

If there are changes in an environment and location or placing other instruments, users can adjust a level of DVIA–T by simply pressing a button.

· Portable Design

The smallest model is 420 mm x 500 mm 93m which weighs only 25 kg, allowing user to hand carry and install on any place at all.

· Optimal Vibration Solution

Our own software provides the optimized vibration solution by employing the software to tune the feedback and feedforward control systems depending on users' instruments weight and environments, if required by users.

· It's Simple. Plug and Play!

DVIA–T incorporating a Plug & Play operation system, allowing users to use all functions by simply plugging a power cable in to AC power and pressing buttons.

· Real–Time Monitoring

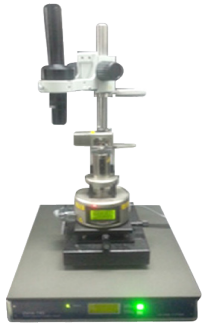
With the GUI software and integrated active sensors allow users to monitor real time vibration levels and isolation performance. Furthermore, an LCD display on the front side of DVIA–T, enables users to monitor the automatic leveling and real time vibration levels.

· No Air

Metal springs are integrated in DVIA–T series as to reduce high frequency vibrations and compressed air is not required.

Electron Microscopy

3D Optical Surface Metrology

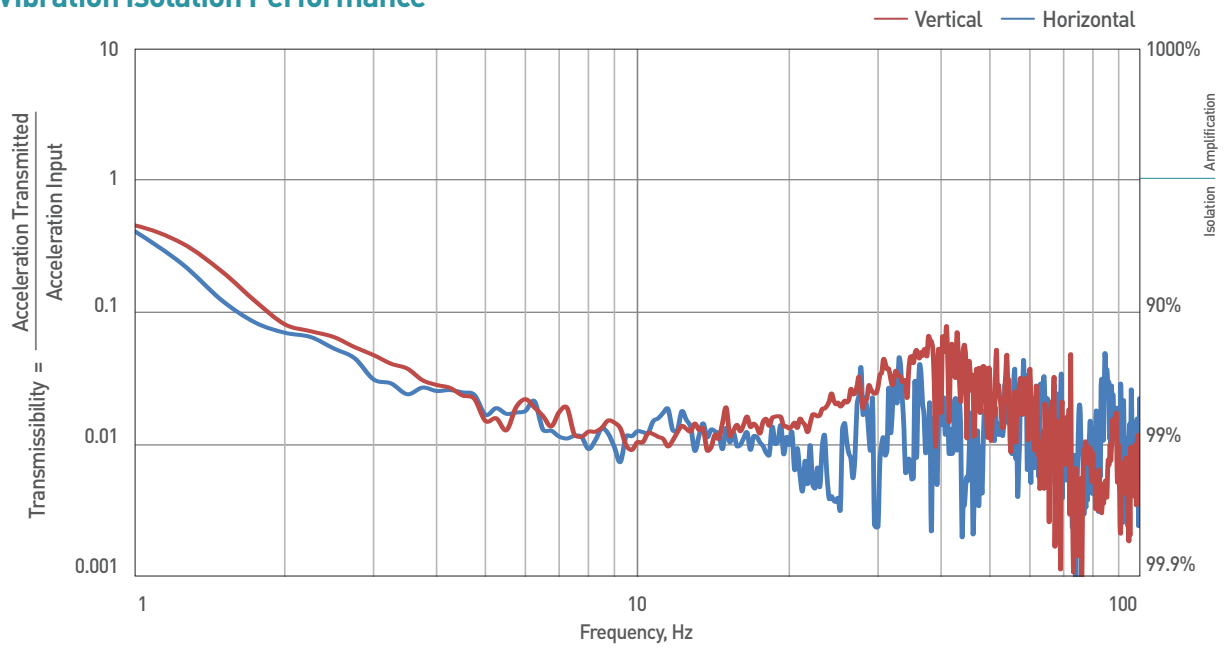


AFM

Application

- Tabletop SEM
- Atomic Force Microscopy
- Scanning Probe Microscopy
- Optical Microscopy
- Confocal Microscopy
- Interferometry
- Micromanipulation
- Nanoindentation
- Ultra–Precision Metrology Tools

Vibration Isolation Performance



Specifications

Model No.		DVIA–T45	DVIA–T56	DVIA–T67	DVIA–T78
Dimensions (W x D x H)		420 x 500 x 93 mm	500 x 600 x 93 mm	600 x 700 x 95 mm	700 x 800 x 95 mm
Maximum Load Capacity		90 kg / 150 kg	90 kg / 150 kg	90 kg / 150 kg	90 kg / 150 kg
Weight		25 kg	32 kg	47 kg	56 kg
Actuator		Electromagnetic Actuator			
Maximum Actuator Force		Vertical : 6 N, Horizontal : 3 N			
Active Isolation Range		0.5 – 100 Hz			
Degrees of Freedom		6 degrees			
Vibration Isolation Performance		40 – 80% at 1 Hz / ≥90% at ≥2Hz			
Settling Time		≤0.3 sec*			
Automatic Leveling / Load Adjustment		Yes			
Real–Time Monitoring		Active isolation status and automatic leveling on LCD display			
Top Plate		No Mounting Holes / M6 Mounting Holes / Custom			
Transportation		Internal Lock System			
Input Voltage (V)		AC 80 – 260 V / 50 – 60 Hz			
Power Consumption (W)		Less than 36 W			
Operating Range	Temperature (°C)	5 – 50 °C			
	Humidity (%)	20 – 90%			

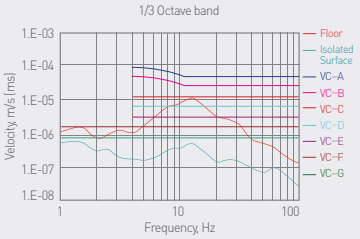
*0.3 sec settling time is measured after 90% reduction of input. (The settling time varies with several conditions, such as payload, force, natural frequency, etc.)

DVIA–T Case Studies

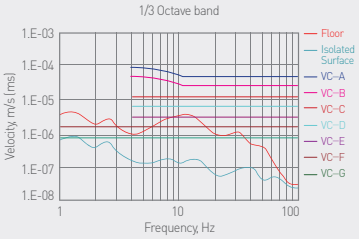
AFM Cantilever

The comparison of silicon substrate images measured on DVIA–T and a normal work table, clearly indicates that the DVIA–T remarkably reduces the vibration seen in the images.

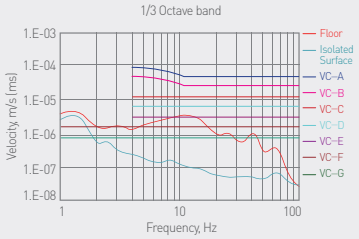
Z–axis



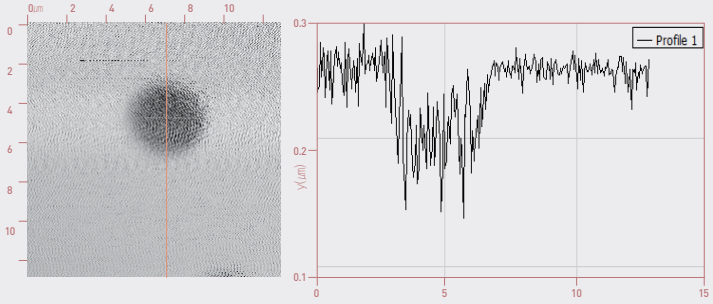
X–axis



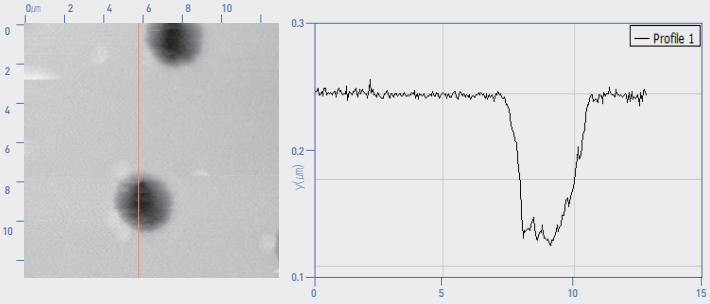
Y–axis

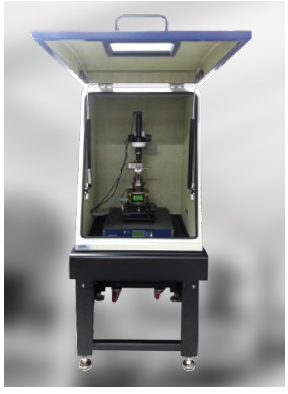


Silicon sbustrate images measured on the normal table (without vibration isolation)



Silicon substrate images measured on the DVIA–T (active vibration isolation)

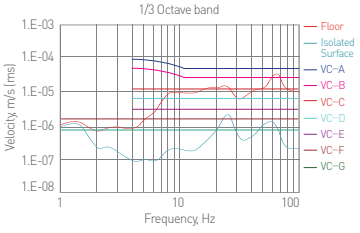




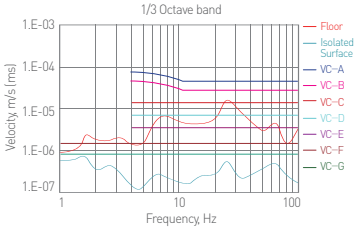
Bruker MULTIMODE8–U AFM

We compared line profile images that were measured on the DVIA–T placed inside the acoustic enclosure and on the pneumatic vibration isolation table.

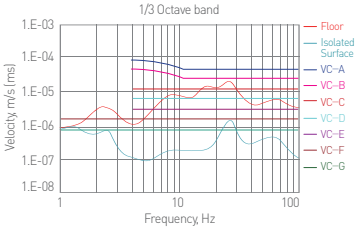
Z–axis



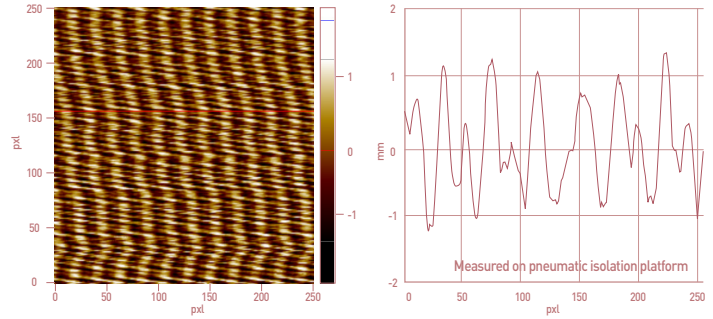
X–axis



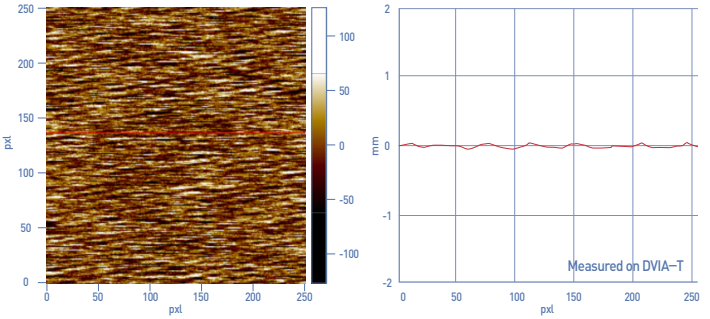
Y–axis



Pneumatic Vibration Isolation Platform



Set point of DVIA–T : 563.25 (nN)



The comparison of the line profile images demonstrated that the noise originating from the pneumatic vibration isolation table were 10 times bigger than the noise coming from the DVIA–T.

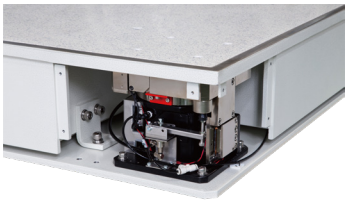
DVIA–MB Series

Base Active Vibration Isolation Platform

DVIA–MB Series

· Designed for Electron Microscopes

DVIA–MB is the ultimate base active vibration isolation platform for all commercial electron microscopes such as SEM and TEM. DVIA–MB provides the optimal environment, enabling electron microscopes to obtain high–resolution images of biological and non–biological specimens by reducing vibrations in the critical range of 1–5 Hz where the electron microscopes are extremely susceptible to the low frequency vibrations.



DVIA–M Isolator

· Superior Active Viration Isolators

DVIA–MB consists of four units of active vibration isolators in which the elements of air springs and active isolation technology are embedded. The integrated sensors and actuators effectively reduce the low frequency vibrations and starts to isolate vibrations from 0.5 Hz, achieving 90% vibration isolation at 2 Hz. The elements of air springs support payloads from 500 kg to 6000 kg and reduces high frequency vibrations.

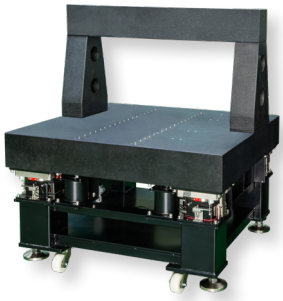
· Ultimate Hybrid Active Optical Table

The combination of optical table with honeycomb steel core structure and the DVIA–M active isolators offers superior vibration isolation performance and damping for the most challenging applications.

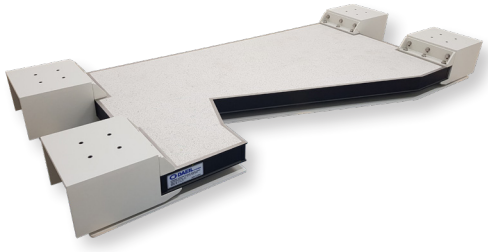
DVIA–M0 Series

· On–Site Tuning for Maximum Performance

Vibration levels vary with environment, location, vibration sources, etc. Therefore, we offer on–site tuning performed by our experienced engineers to guarantee the maximum performance level and customers' satisfaction. The engineer conduct a site survey to measure vibration data which is used to tune the feedback and feedfoward control systems, maximizing vibration isolation performance.



Custom Granite Table Platform

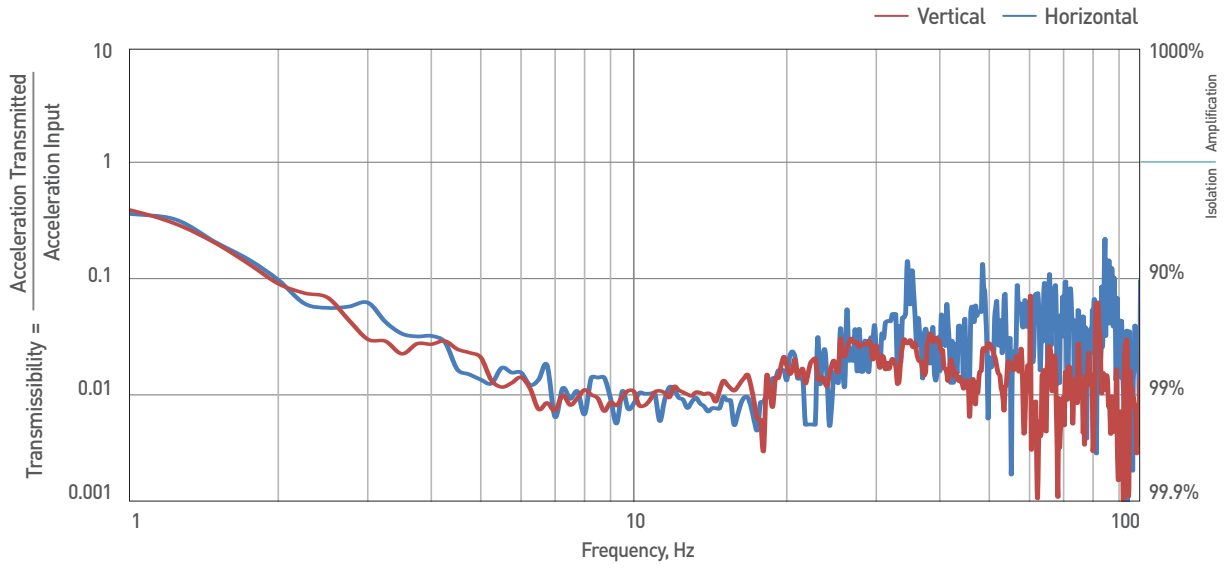


Custom Cradle Platform

· Custom Active Isolation Platforms

We customize platforms to fit all electron microscope models.

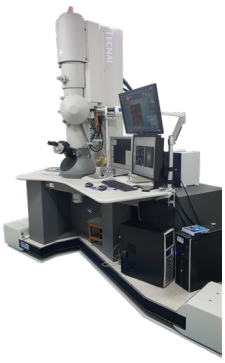
Vibration Isolation Performance



Specifications

Model No.		DVIA–MB1000	DVIA–MB3000	DVIA–MB6000
Dimensions (W x D x H)	Isolator Unit	190 x 190 x 180 mm	232 x 232 x 180 mm	308 x 308 x 180 mm
	Platform	Customize to Fit		
Maximum Load Capacity		500 – 1700 kg	1500 – 3500 kg	3000 – 6000 kg
Actuator		Electromagnetic Actuator		
Maximum Actuator Force		Vertical : 40 N, Horizontal : 20 N		Vertical : 80 N Horizontal : 40 N
Active Isolation Range		0.5 –100 Hz		
Degrees of Freedom		6 degrees		
Vibration Isolation Performance		50 – 80% at 1 Hz / ≥90% at ≥2 Hz		
Settling Time		≤0.3 sec*		
Input Voltage (V)		AC 80 – 260 V / 50 – 60 Hz		
Power Consumption (W)		Maximum 110 W , Below 50 W in normal operation		
Operating Range	Temperature (°C)	5 – 50 °C		
	Humidity (%)	20 – 90%		
Required Air Pressure		≥5 kg/cm^2		

*0.3 sec settling time is measured after 90% reduction of input. (The settling time varies with several conditions, such as payload, force, natural frequency, etc.)



FEI TEM

BRUKER NMR

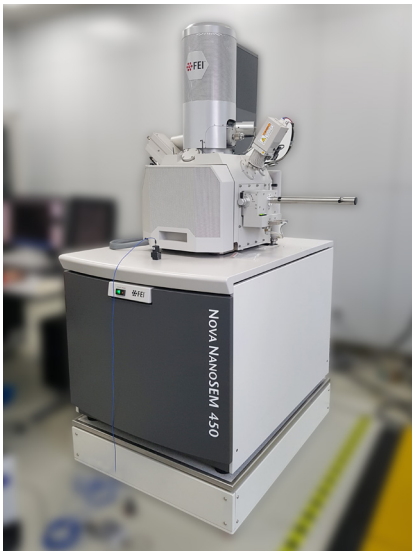
HITACHI SEM

ZEISS SEM

Applications

- Scanning Electron Microscopy (SEM)
- Transmission Electron Microscopy (TEM)
- Scanning Tunneling Microscopy (STM)
- Scanning Probe Microscopy (SPM)
- Nuclear Magnetic Resonance Spectroscopy (NMR)
- High–Performance MetrologyTools

DVIA–MB Case Study #1

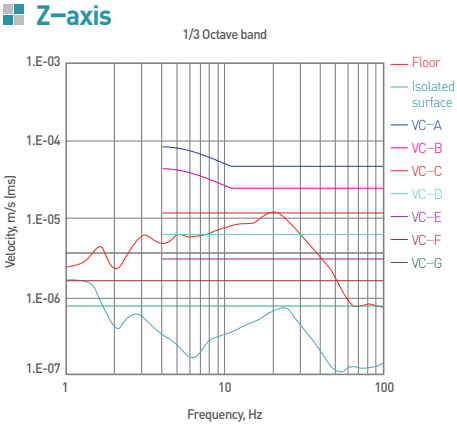


FEI Nova NanoSEM 450

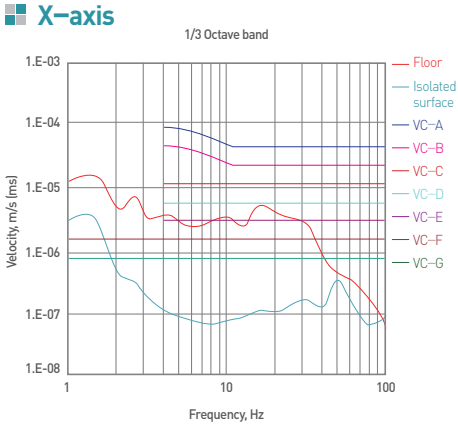
- The site survey indicated that the floor vibration was VC–C in z–axis , VC–D in x–axis and VC–C in y–axis.
- DVIA–MB series base active vibration isolation platform significantly reduced the floor vibration to VC–F in z–axis, VC–E in x–axis and VC–E in y–axis.

VC-Curves		
Test Direction	Floor	Isolated Surface
Z-axis	VC-C	VC-F
X-axis	VC-D	VC-E
Y-axis	VC-C	VC-E

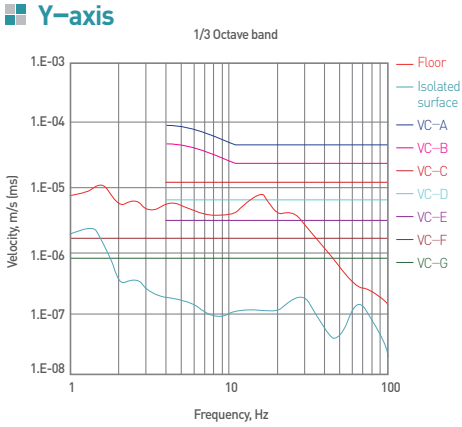
Z–axis



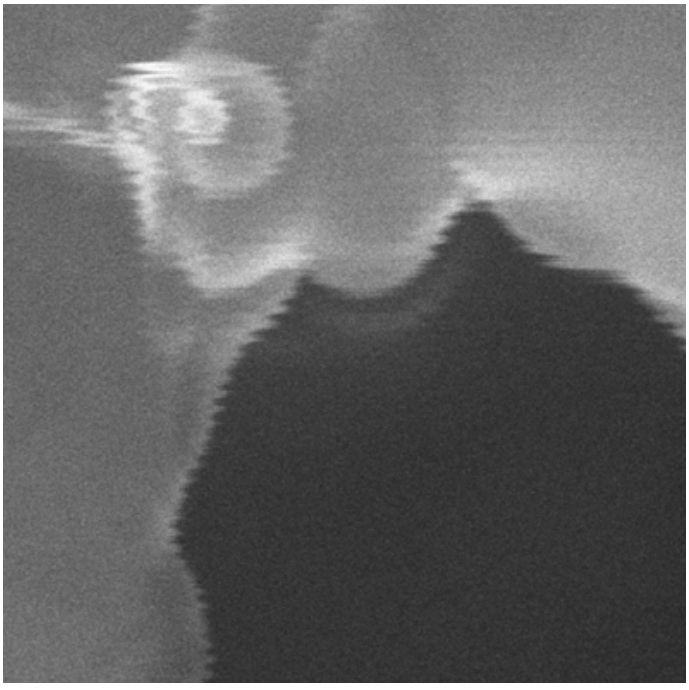
X–axis



Y–axis



Before



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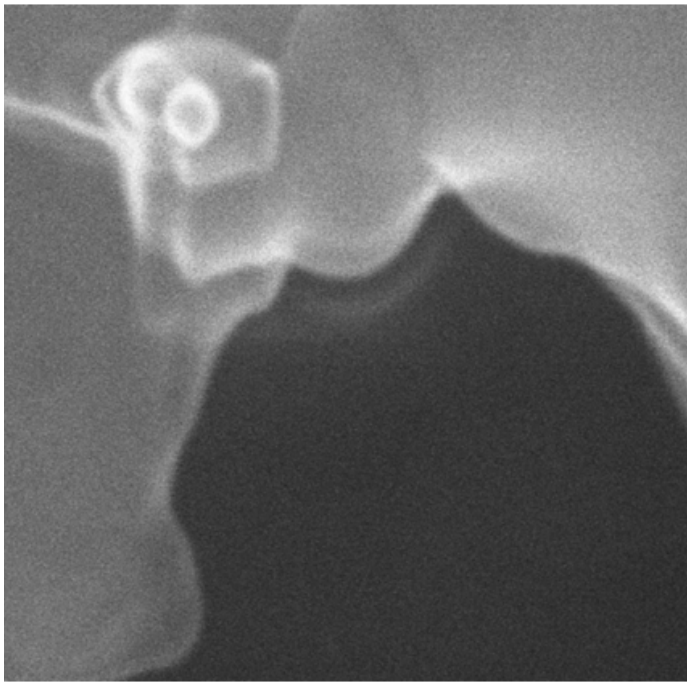
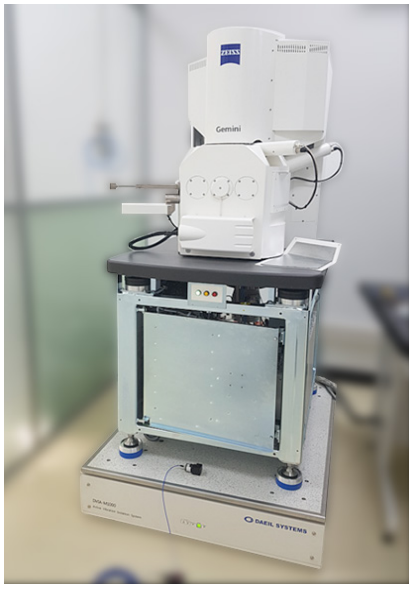


DVIA–MB Case Study #2

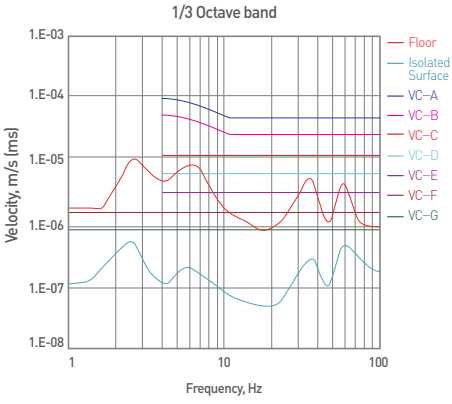


ZEISS Gemini SEM

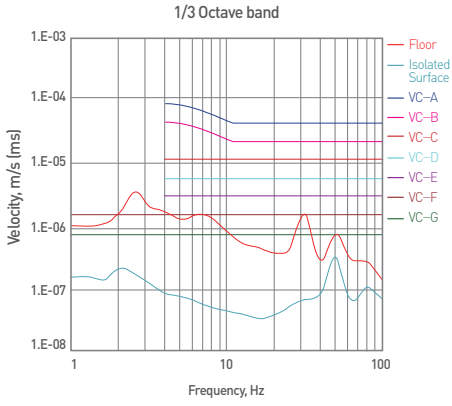
- The site survey indicated that the low frequency vibration was adversely affecting the SEM.
- The site survey indicated that the measured floor vibration was VC–D in z–axis, VC–E in x–axis and VC–E in y–axis.
- DVIA–MB remarkably reduced the floor vibration to VC–G in all axes.

VC-Curves		
Test Direction	Floor	Isolated Surface
Z-axis	VC-D	VC-G
X-axis	VC-E	VC-G
Y-axis	VC-E	VC-G

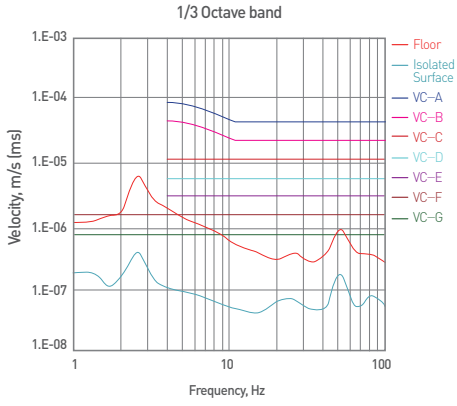
Z–axis



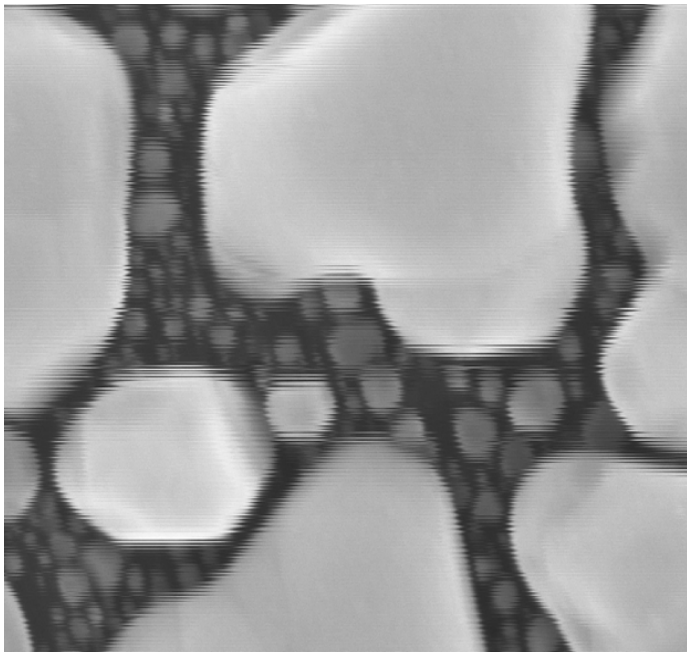
X–axis



Y–axis



Before



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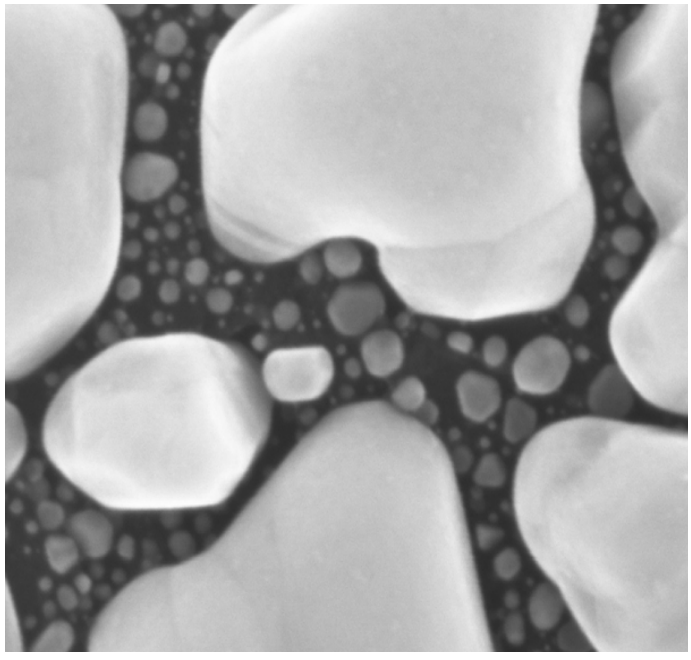


DVIA-U Series

Modular Active Vibration Isolation Platform

Features

· Active Isolation Technology

DVIA–U series incorporates sensors and actuators with the feedback and feedforward control systems excellently reduces vibrations in 1 – 10 Hz range and achieves the fast settling time.

· Modular Architecture Isolation Platform

DVIA–U series is a modular, low–profile platform that can be directly installed under measuring tools of various sizes and shapes. Furthermore, DVIA–U isolators can be integrated into either base or desk platforms.

· No Air

Integrated metel springs in DVIA–U series control high frequency vibrations and an air compressor is not required.

· On–Site Tuning for Maximum Performance

Vibration levels vary with environment, location, vibration sources, etc. Therefore, we offer on–site tuning by our experienced engineers to guarantee the maximum performance level and customers' satisfaction. The engineer conduct a site survey to measure vibration data which is used to tune the feedback and feedfoward control systems, maximizing vibration isolation performance.

DVIA–UD Series

DVIA–UB Series

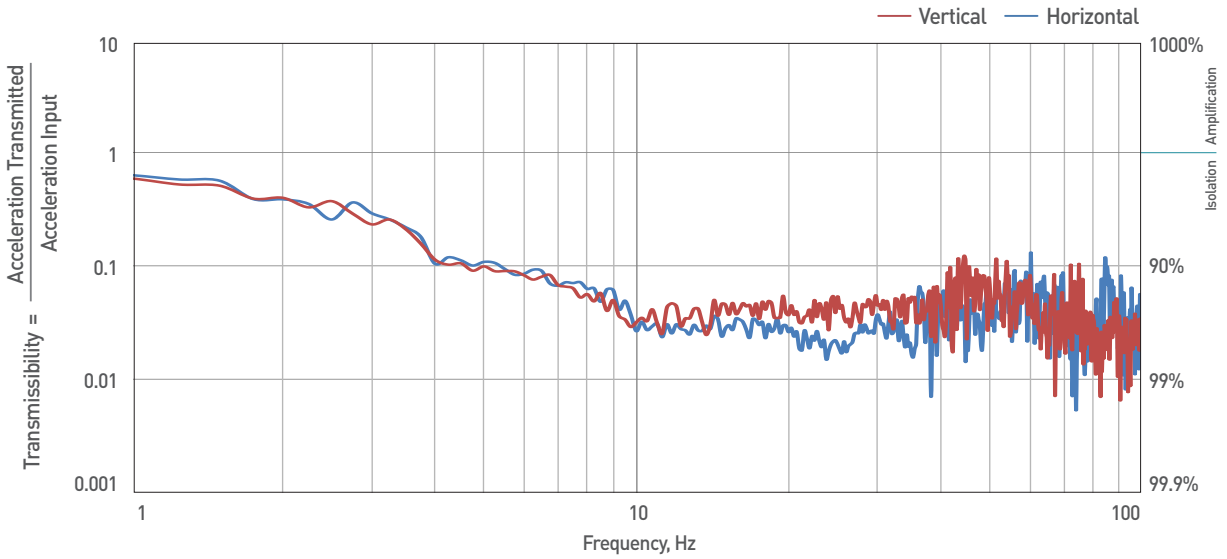
· Desk Platform Option (DVIA–UD series)

DVIA–UD series is an ergonomic desk isolation platform with integrated DVIA–U active vibration isolators, enables users to sit and perform the most demanding applications comfortably. DVIA–UD can be custom designed to fit specific application dimensions and form factors.

· Base Platform Option (DVIA–UB series)

DVIA–UB series is a base isolation platform with integrated DVIA–U active isolators, designed for tall and heavy metrology tools such as electron microscopes.

Vibration Isolation Performance



Specifications

Model No.		Modular Platform		Desk Platform	Base Platform
		DVIA–U350	DVIA–U700	DVIA–UD350	DVIA–UB700
Dimensions (W x D x H)	Isolator Unit	783 x 205 x 96 mm	818 x 220 x 96 mm	783 x 205 x 96 mm	818 x 220 x 96 mm
	Platform	n/a		Customize to Fit	
Maximum Load Capacity		150 – 350 kg	350 – 700 kg	150 – 350 kg	350 – 700 kg
Actuator		Electromagnetic Actuator			
Maximum Actuator Force		Vertical : 6 N Horizontal : 3 N	Vertical : 12 N Horizontal : 6 N	Vertical : 6 N Horizontal : 3 N	Vertical : 12 N Horizontal : 6 N
Active Isolation Range		0.5 – 100 Hz			
Degrees of Freedom		6 degrees			
Vibration Isolation Performance		≥90% at ≥4 Hz			
Settling Time		≤0.3 sec*			
Input Voltage (V)		AC 80 – 260 V / 50 – 60 Hz			
Power Consumption (W)		Maximum 65 W <20 W in normal	Maximum 195 W <60 W in normal	Maximum 65 W <20 W in normal	Maximum 195 W <60 W in normal
Operating Range	Temperature (°C)	5 – 50 °C			
	Humidity (%)	20 – 90%			

*0.3 sec settling time is measured after 90% reduction of input. (The settling time varies with several conditions, such as payload, force, natural frequency, etc.)

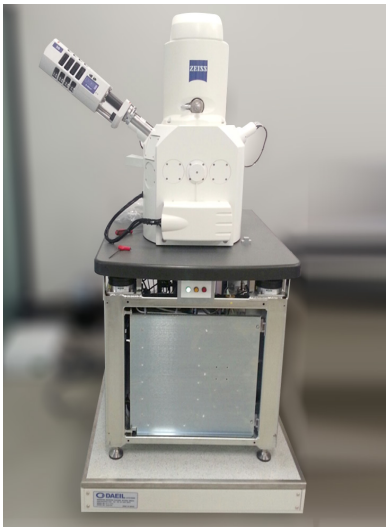
Cell Sorter Metrology

Electron Microscopy

Applications

- Scanning Electron Microscopy (SEM)
- Transmission Electron Microscopy (TEM)
- Scanning Tunneling Microscopy (STM)
- Scanning Probe Microscopy (SPM)
- Nuclear Magnetic Resonance Spectroscopy (NMR)
- High–Peformance Metrology Tools

DVIA–UB Case Study #1

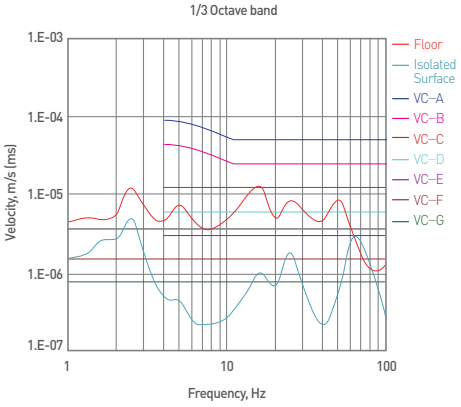


ZEISS EV018 SEM

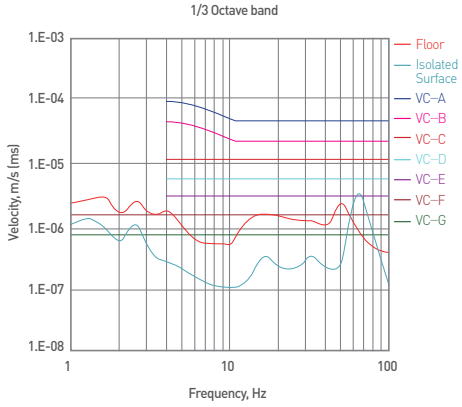
- The site survey indicated the floor vibration was VC–B in z–axis, VC–E in x–axis and VC–D in y–axis.
- DVIA–UB reduced the floor vibration to VC–E in all axes.
- After installing the DVIA–UB, the measured sample image has improved.

VC-Curves		
Test Direction	Floor	Isolated Surface
Z-axis	VC-B	VC-E
X-axis	VC-E	VC-E
Y-axis	VC-D	VC-E

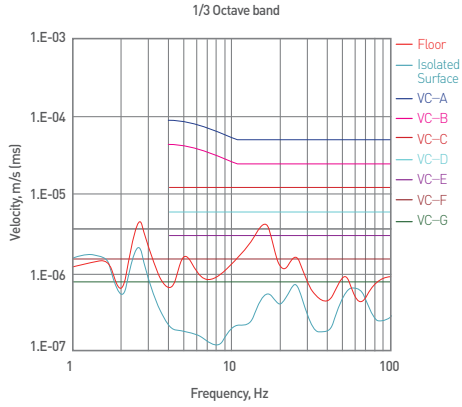
Z–axis



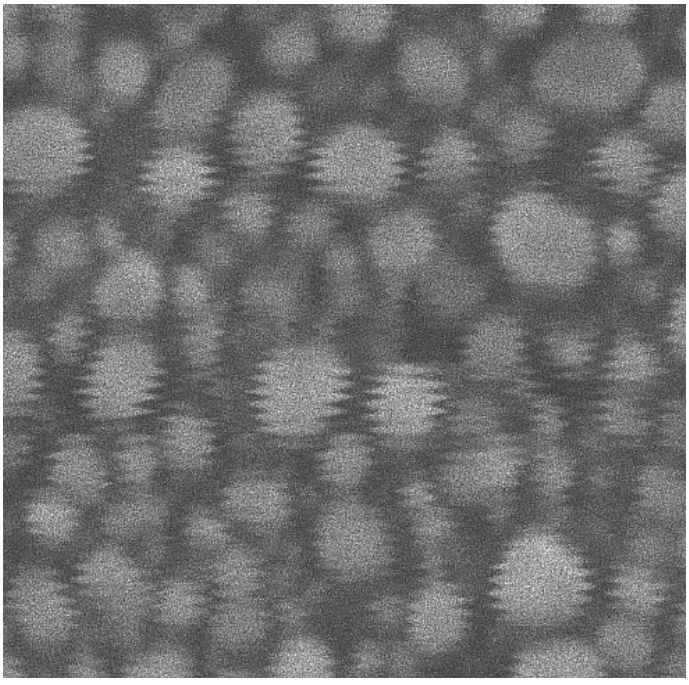
X–axis



Y–axis



Before



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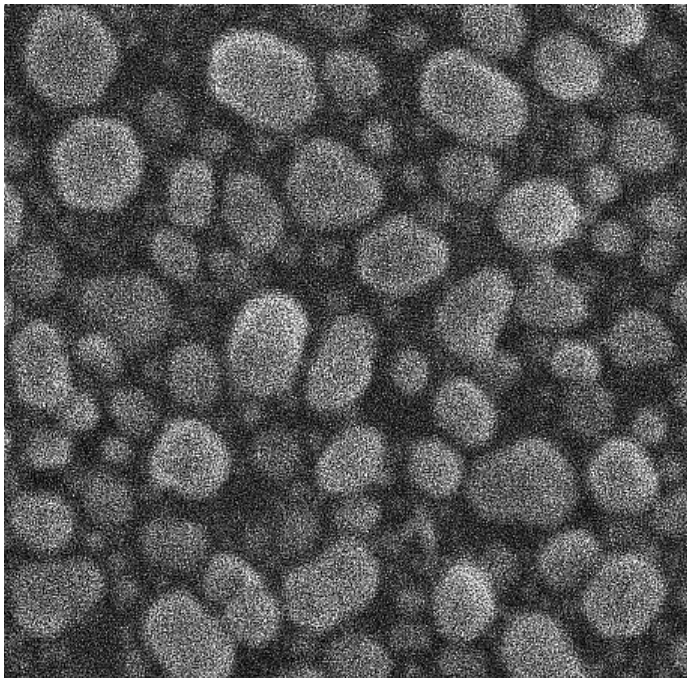
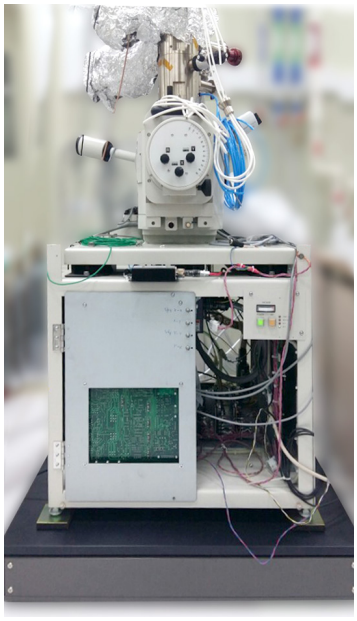


DVIA–UB Case Study #2

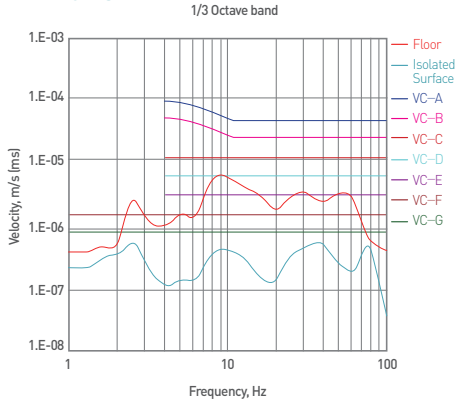


SEM

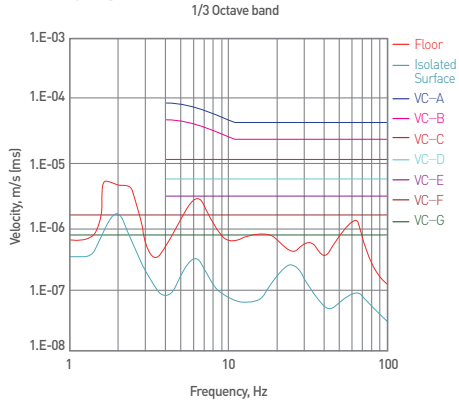
- The site survey indicated that the floor vibration was VC–C in z–axis, VC–E in x–axis and y–axis.
- DVIA–UB reduced the floor vibration to VC–G in z–axis, VC–F in x–axis and y–axis.

VC-Curves		
Test Direction	Floor	Isolated Surface
Z-axis	VC-C	VC-G
X-axis	VC-E	VC-F
Y-axis	VC-E	VC-F

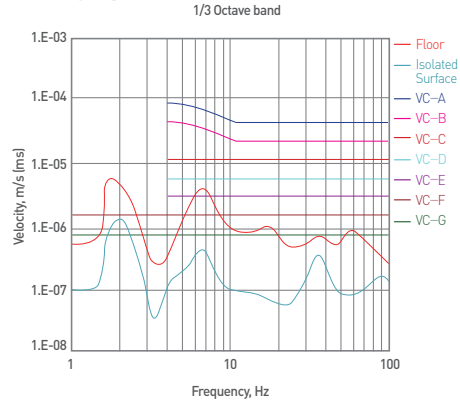
Z–axis



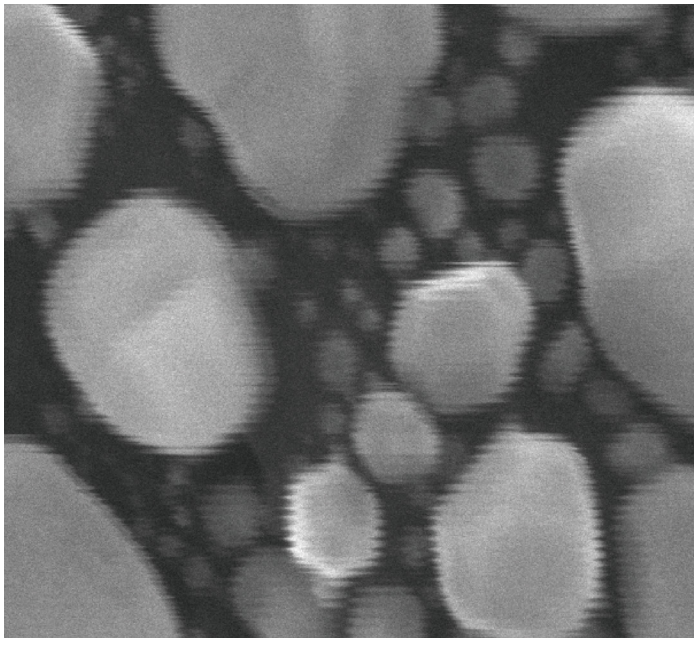
X–axis



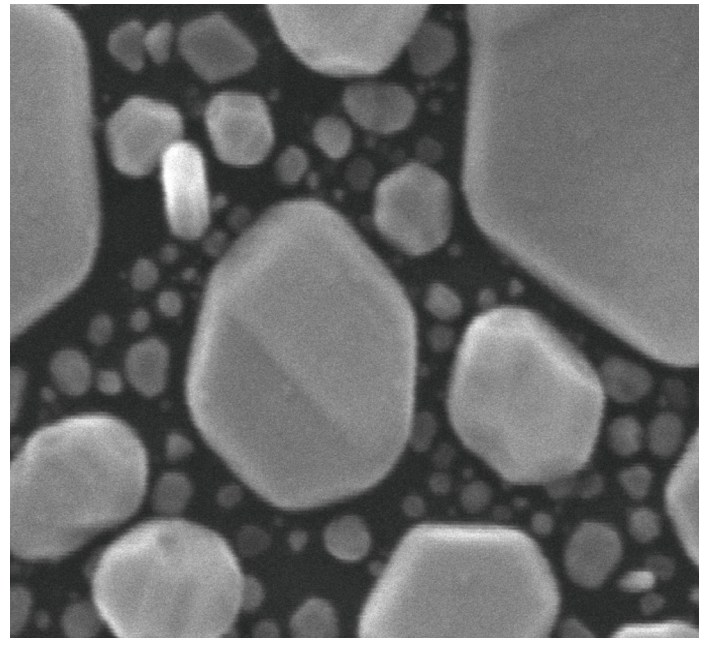
Y–axis



Before

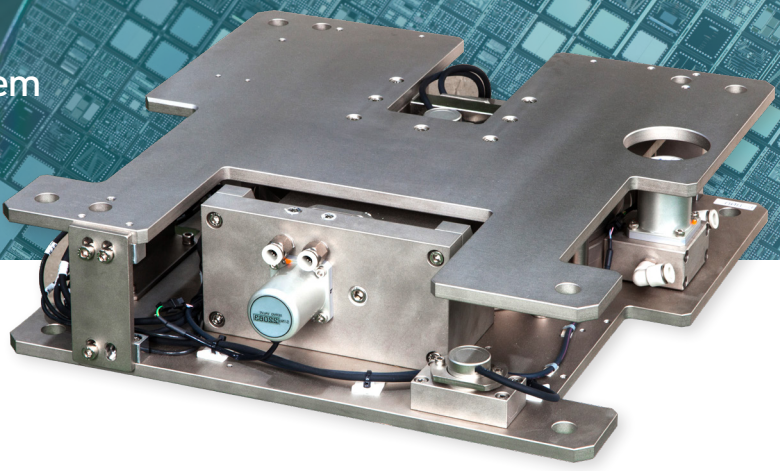


After



DVIA-P Series

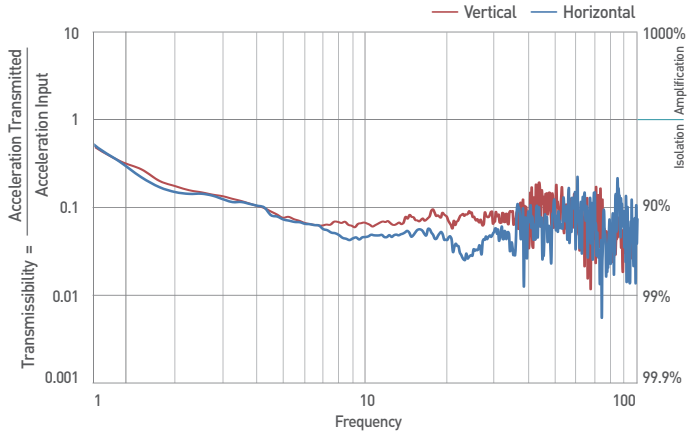
Active Pneumatic Vibration Isolation System



Ultimate Active Vibration Isolation System for Semiconductor/Display Metrology Tools

DVIA–P series is an active pneumatic vibration isolation system, specially designed to control vibrations for advanced semiconductor and display metrology and inspection tools that are integrated with ultra–precision motorized linear stages. These tools require vibration isolation in the low frequency as well as the ultra–fast settling time. The DVIA–P isolators incorporate extremely sensitive sensors and powerful pneumatic actuators, generating enormous force to counteract incoming vibrations from building floors and tools.

Vibration Isolation Performance



Specifications

Model No.	DVIA-P2200	DVIA-P4000	DVIA-P7000	DVIA-P10000	DVIA-P20000	DVIA-P30000
Isolator Dimensions (W x D x H)	350 x 350 x110 mm	420 x 420 x110 mm	450 x 450 x120 mm	465 x 400 x 240 mm	645 x 600 x 284 mm	735 x 700 x 284 mm
Maximum Load Cacitiy	1100 – 3700 kg	2100 – 7000 kg	3600 – 12000 kg	5000 – 17000 kg	11000 – 38000 kg	15000 - 50000 kg
Maximum Actuator Force	Vertical: 36260 N Horizontal: 588 N	Vertical: 68600 N Horizontal: 2646 N	Vertical: 117600 N Horizontal: 4410 N	Vertical: 167580 N Horizontal: 8330 N	Vertical: 372400 N Horizontal: 11760 N	Vertical: 490000 N Horizontal: 11760 N
Actuator	Pneumatic Actuator					
Degrees of Freedom	6 degrees					
Active Isolation Range	0.5 – 150 Hz					
Vibration Isolation Performance	40 – 70% at 1 Hz / ≥90% at ≥2 Hz					
Settling Time	≥0.3 sec*					
Position Accuracy	±10 um					
Input Voltage (V)	AC single phase 100 – 240 V					
Power Consumption (W)	100 W					
Required Air Pressure	≥5.5 kg/cm^2					
Air Consumption	Standard valve : 60 NL/min High speed response valve : 250 NL/min					

*0.3 sec settling time is measured after a 90% reduction of the input. (The settling time varies with several conditions, such as the payload, force, natural frequency, etc.)

Features

· Optimal Vibration Solution for Metrology Tools with Integrated Linear Stages

The stage feedforward control system in DVIA–P series effectively compensates residual vibrations caused by the motorized linear stages, based on the analog input and the acceleration data in real–time.

· Fast Settling Time & Excellent Position Accuracy

The position sensors continuously measure the position of the isolation system and then maintain its the position through a digital signal processor. As a result, the position accuracy of the system is significantly improved. Furthermore, accelerometers instantly detect vibrations originating from the floor or the moving stages, then transmit the digital signals to operate pneumatic actuators to cancel out the vibrations.

· Smart control system with a digital processor

A digital controller of DVIA–P Series employs a A/D 19–channel 16–bit and a D/A 10–channel 24–bit D/A converter to obtain synchronous sampling of vibrations. The digital controller controls the system by constantly calculating all sources of vibration, then transmitting signals to drive the pneumatic actuators.

· Powerful Pneumatic Actuators to Support Moving Stage Applications

The integrated pneumatic actuators in DVIA–P series generate the significant amount of force to support the semiconductor / display metrology tools with integrated motorized linear stages.

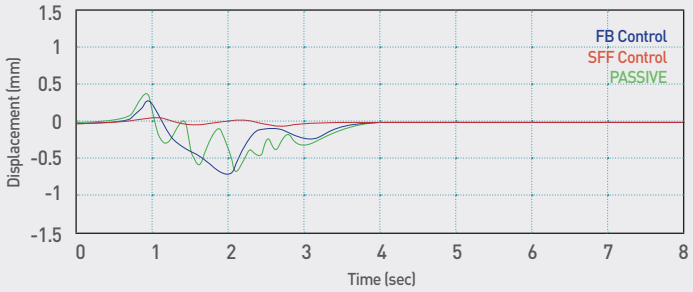
· Superior Vibration Isolation Performance in Low Frequency

DVIA–P isolators incorporate pneumatic actuators and extremely sensitive sensors with feedforward and feedback control systems to maximize vibration isolation performance in 1 – 10 Hz.

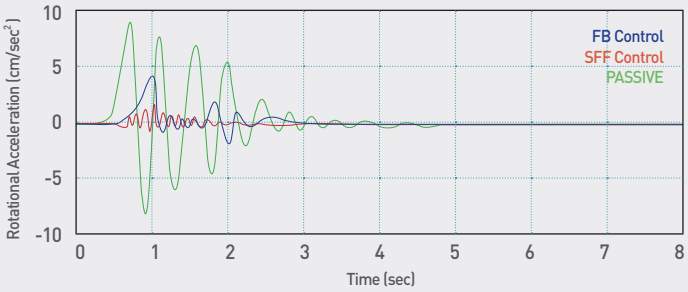
· On–Site Tuning for Maximum Performance

Vibration levels vary with environment, location, vibration sources, etc. Therefore, we offer on–site tuning by our experienced engineers to guarantee the maximum performance level and customers' satisfaction. The engineer conduct a site survey to measure vibration data which is used to tune the feedback and feedfoward control systems, maximizing vibration isolation performance.

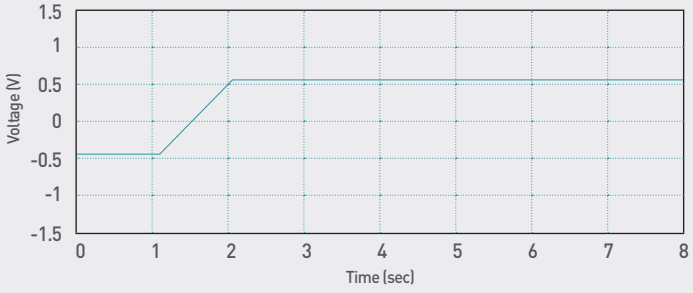
Rotational Displacement



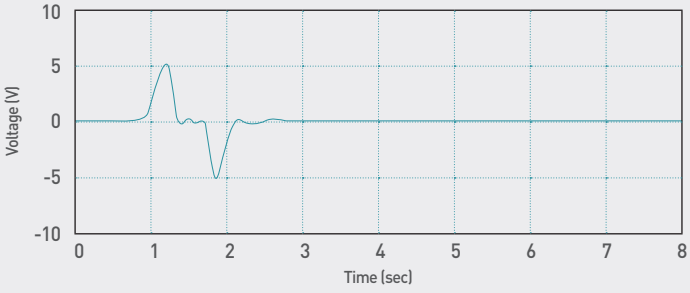
Rotational Acceleration



Position Signal of Stage



Acceleration Signal of Stage



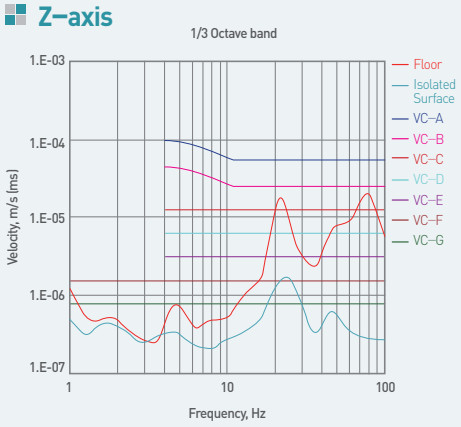
Case Studies of DVIA–P series

Wafer Bump Inspection Machine

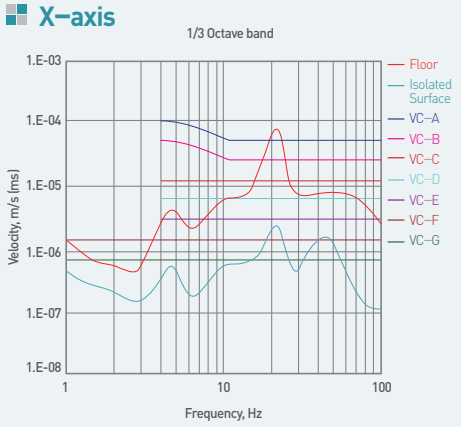
- A site survey indicated that the floor vibration was VC–B in z–axis, and VC–A in x and y axes.
- DVIA–P noticeably reduced the floor vibration to VC–E in all axes.

	VC-Curves	
Test Direction	Floor	Isolated Surface
Z-axis	VC-B	VC-E
X-axis	VC-A	VC-E
Y-axis	VC-A	VC-E

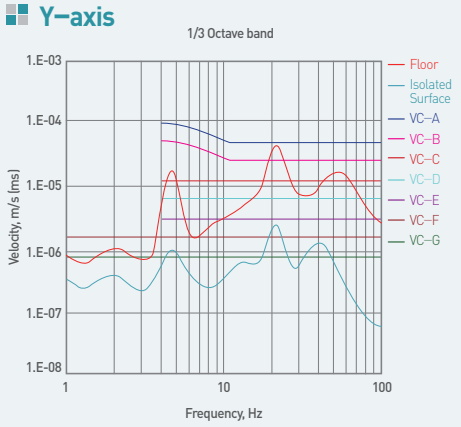
Z–axis



X–axis



Y–axis

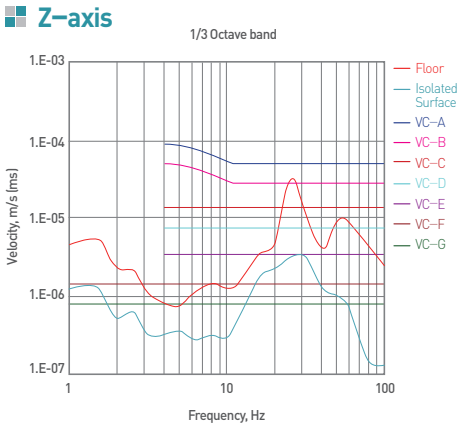


ADVANTEST CD–SEM

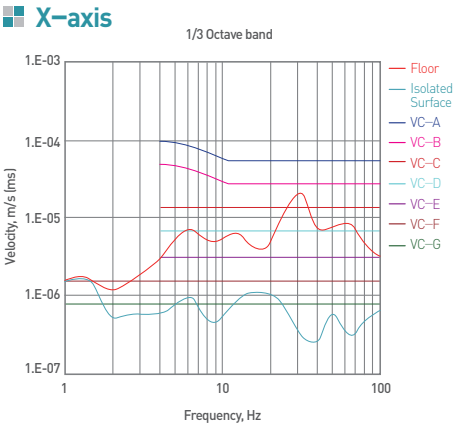
- A site survey indicated that the floor vibration of the installation site was VC–A in z–axis, VC–B in x–axis and VC–C in y–axis.
- DVIA–P reduced the floor vibration to VC–E in z–axis and VC–F in x and y axes.

	VC-Curves	
Test Direction	Floor	Isolated Surface
Z-axis	VC–A	VC–E
X-axis	VC–B	VC–F
Y-axis	VC–C	VC–F

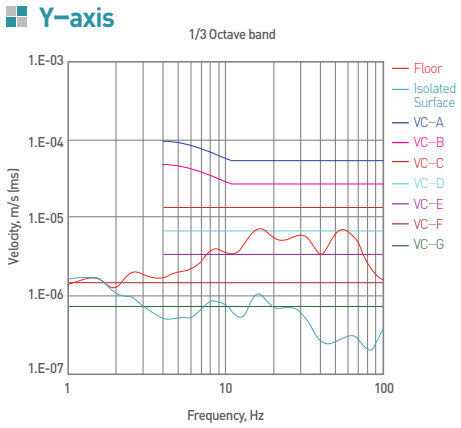
Z–axis



X–axis



Y–axis



DVIO Series Optical Tables

Optical Tables

Ever since 1993, DAEIL SYSTEMS has been designing and manufacturing optical tables. Our optical tables are designed for challenging applications that are susceptible to vibration like optical experiments, spectroscopy, interferometry, holography, microscopy, nanopositioning, ultrafast research, etc. The lightweight but incredibly rigid steel honeycomb table top is combined with uniquely designed pneumatic vibration isolators, efficiently reducing vibration.

Optical Table Tops

Grade : **Research Grade :** High-resoulution applications such as Holography, Nanopositioning and Utlrafast Research.

Scientific Grade : General applications such as Raman Spectroscopy, Bio-Imaging and Micromaching.

Features :
- Maximum stiffness-to-mass ratio
- Superior rigid steel honeycomb core structure
- Honeycomb table top with excellent vibration immunity
- Broadband damping to reduce resonance amplitudes and deflection
- Mounting holes individually sealed with nylon cups

Scientific Grade Optical Tables

Table Supports

Type : Vbiration isolation required? → Pneumatic isolators
Vbiration isolation not required? → Rigid isolators

Stability & Portability required? → Tie-Bar support
Confined space? → Self-Standing support

Features :
- Superior vibration isolation performance
- Dual chamber design – effective damping
- Automatic leveling system – leveling valves
- Excellent leveling repeatability

Research Grade Optical Tables

Why do we need optical tables?

An optical table is a vibration isolated platform, specially designed to support applications of photonics and laser and to isolate the various sources of vibration that disturb optics and lase related experiments and metrology. The optical table top is designed to be as stiff as possible to minimize relative motion between existing optical elements that are mounted on the optical table top. The high–performance pneumatic isolators reduce the floor vibrations and provides effective damping to reduce the vibration amplitudes and the system deflection at resonance.

The primary goal of an optical table is to minimize relative motion between components placed on the surface of the optical table top.

Static Rigidity

Static rigidity defines the ability of an optical table top to minimize deflections and relative motion between components when a static load is placed on the table top. Therefore, the higher static rigidity contributes to maintain the precise and better alignment of the elements, as a result, the system performance will not be disturbed.

Moreover, the higher static rigidity is highly correlated with a high natural frequency of the table top, preventing the coincidence with low frequency vibrations that are not reduced by vibration isolators.

Dynamic Rigidity

Dynamic rigidity defines the ability of an optical table top to resist deflection in response to external forces such as floor vibrations, acoustic noise and mechanical sources on the surface of the table top. The table top with the higher dynamic rigidity damps the structural resonance due to the vibrations passed through pneumatic isolators.

Pneumatic Vibration Isolator

Pneumatic isolators of the optical table reduce the floor vibration before it is transmitted to the table top surface. When the forced frequency vibration is lower than the natural frequency of the isolators, vibration is transmitted directly to the table top. When the forced frequency vibration concides with natural frequency of the isolators, vibration is amplified. Thus, it is critical to design the isolator with the lower natural frequency.

Damping is another essential factor when designing pneumatic isolators. Damping decreases the amplitude of vibration caused by resonance, improving the system stability and providing the fast settling time.

Non–Magnetic Optical Table

Ordering Charts

Optical Table (Breadboard 50t + Support)

Model No.	Dimensions W x D x H(mm)	Dimensions W x D x H (in.)
DVIO-I/R-0906M/E-50t(H)	900 x 600 x H	36 x 24 x H
DVIO-I/R-0907M/E-50t(H)	900 x 700 x H	36 x 28 x H
DVIO-I/R-0975M/E-50t(H)	900 x 750 x H	36 x 30 x H
DVIO-I/R-0909M/E-50t(H)	900 x 900 x H	36 x 36 x H
DVIO-I/R-1005M/E-50t(H)	1000 x 500 x H	40 x 20 x H
DVIO-I/R-1006M/E-50t(H)	1000 x 600 x H	40 x 24 x H
DVIO-I/R-1007M/E-50t(H)	1000 x 700 x H	40 x 28 x H
DVIO-I/R-1075M/E-50t(H)	1000 x 750 x H	40 x 30 x H
DVIO-I/R-1009M/E-50t(H)	1000 x 900 x H	40 x 36 x H
DVIO-I/R-1010M/E-50t(H)	1000 x 1000 x H	40 x 40 x H
DVIO-I/R-1206M/E-50t(H)	1200 x 600 x H	48 x 24 x H
DVIO-I/R-1207M/E-50t(H)	1200 x 700 x H	48 x 28 x H
DVIO-I/R-1275M/E-50t(H)	1200 x 750 x H	48 x 30 x H
DVIO-I/R-1209M/E-50t(H)	1200 x 900 x H	48 x 36 x H
DVIO-I/R-1210M/E-50t(H)	1200 x 1000 x H	48 x 40 x H
DVIO-I/R-1212M/E-50t(H)	1200 x 1200 x H	48 x 48 x H
DVIO-I/R-1306M/E-50t(H)	1300 x 600 x H	52 x 24 x H
DVIO-I/R-1506M/E-50t(H)	1500 x 600 x H	60 x 24 x H
DVIO-I/R-1507M/E-50t(H)	1500 x 700 x H	60 x 28 x H
DVIO-I/R-1575M/E-50t(H)	1500 x 750 x H	60 x 30 x H
DVIO-I/R-1509M/E-50t(H)	1500 x 900 x H	60 x 36 x H
DVIO-I/R-1510M/E-50t(H)	1500 x 1000 x H	60 x 40 x H
DVIO-I/R-1512M/E-50t(H)	1500 x 1200 x H	60 x 48 x H
DVIO-I/R-1806M/E-50t(H)	1800 x 600 x H	72 x 24 x H
DVIO-I/R-1807M/E-50t(H)	1800 x 700 x H	72 x 28 x H
DVIO-I/R-1809M/E-50t(H)	1800 x 900 x H	72 x 36 x H
DVIO-I/R-1812M/E-50t(H)	1800 x 1200 x H	72 x 48 x H
DVIO-I/R-2010M/E-50t(H)	2000 x 1000 x H	80 x 40 x H
DVIO-I/R-2012M/E-50t(H)	2000 x 1200 x H	80 x 48 x H
DVIO-I/R-2409M/E-50t(H)	2400 x 900 x H	96 x 36 x H
DVIO-I/R-2412M/E-50t(H)	2400 x 1200 x H	96 x 48 x H

Optical Table (Breadboard 100t + Support)

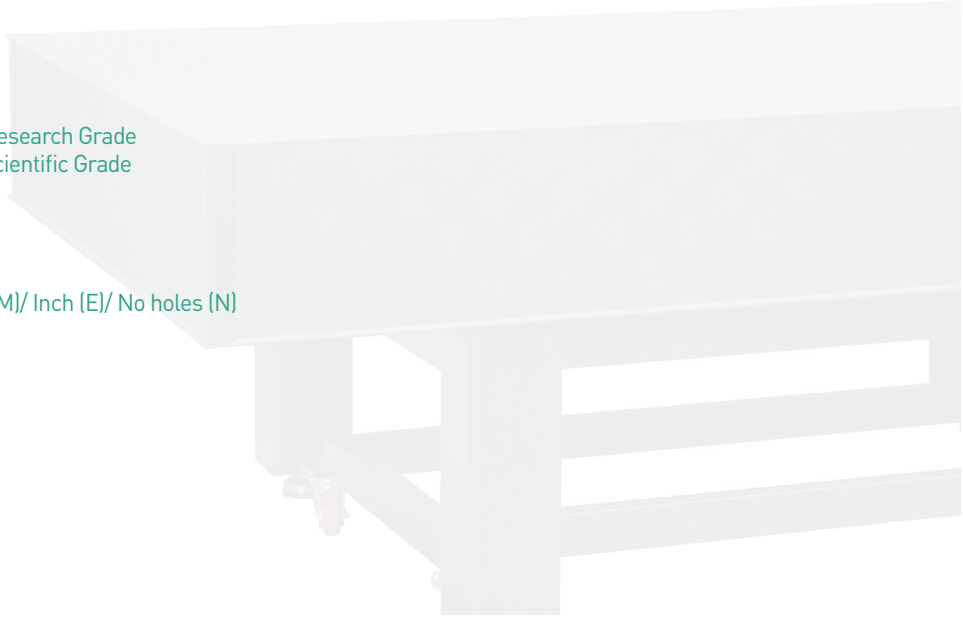
Model No.	Dimensions W x D x H(mm)	Dimensions W x D x H (in.)
DVIO-I/R-0906M/E-100t(H)	900 x 600 x H	36 x 24 x H
DVIO-I/R-0907M/E-100t(H)	900 x 700 x H	36 x 28 x H
DVIO-I/R-0975M/E-100t(H)	900 x 750 x H	36 x 30 x H
DVIO-I/R-0909M/E-100t(H)	900 x 900 x H	36 x 36 x H
DVIO-I/R-1005M/E-100t(H)	1000 x 500 x H	40 x 20 x H
DVIO-I/R-1006M/E-100t(H)	1000 x 600 x H	40 x 24 x H
DVIO-I/R-1007M/E-100t(H)	1000 x 700 x H	40 x 28 x H
DVIO-I/R-1075M/E-100t(H)	1000 x 750 x H	40 x 30 x H
DVIO-I/R-1009M/E-100t(H)	1000 x 900 x H	40 x 36 x H
DVIO-I/R-1010M/E-100t(H)	1000 x 1000 x H	40 x 40 x H
DVIO-I/R-1206M/E-100t(H)	1200 x 600 x H	48 x 24 x H
DVIO-I/R-1207M/E-100t(H)	1200 x 700 x H	48 x 28 x H
DVIO-I/R-1275M/E-100t(H)	1200 x 750 x H	48 x 30 x H
DVIO-I/R-1209M/E-100t(H)	1200 x 900 x H	48 x 36 x H
DVIO-I/R-1210M/E-100t(H)	1200 x 1000 x H	48 x 40 x H
DVIO-I/R-1212M/E-100t(H)	1200 x 1200 x H	48 x 48 x H
DVIO-I/R-1506M/E-100t(H)	1500 x 600 x H	60 x 24 x H
DVIO-I/R-1507M/E-100t(H)	1500 x 700 x H	60 x 28 x H
DVIO-I/R-1575M/E-100t(H)	1500 x 750 x H	60 x 30 x H
DVIO-I/R-1509M/E-100t(H)	1500 x 900 x H	60 x 36 x H
DVIO-I/R-1510M/E-100t(H)	1500 x 1000 x H	60 x 40 x H
DVIO-I/R-1512M/E-100t(H)	1500 x 1200 x H	60 x 48 x H
DVIO-I/R-1806M/E-100t(H)	1800 x 600 x H	72 x 24 x H
DVIO-I/R-1807M/E-100t(H)	1800 x 700 x H	72 x 28 x H
DVIO-I/R-1809M/E-100t(H)	1800 x 900 x H	72 x 36 x H
DVIO-I/R-1812M/E-100t(H)	1800 x 1200 x H	72 x 48 x H
DVIO-I/R-2010M/E-100t(H)	2000 x 1000 x H	80 x 40 x H
DVIO-I/R-2012M/E-100t(H)	2000 x 1200 x H	80 x 48 x H
DVIO-I/R-2409M/E-100t(H)	2400 x 900 x H	96 x 36 x H
DVIO-I/R-2410M/E-100t(H)	2400 x 1000 x H	96 x 40 x H
DVIO-I/R-2412M/E-100t(H)	2400 x 1200 x H	96 x 48 x H

*Custom dimensions and configurations are available upon request.

Ordering Information

DVIO-I/R-2010 M/E/N-200t (800H)-R.G/S.G

- R.G : Research Grade
- S.G : Scientific Grade
- Total Table Height
- Table Top Thickness
- Standard Mounting Holes : Metric (M)/ Inch (E)/ No holes (N)
- Table Top Dimensions (W X D)
- I : Pneumatic Support
- R : Rigid Support



Optical Table (Table Top 200t + Support)

Model No.	Dimensions W x D x H (mm)	Dimensions W x D x H (in.)
DVIO-I/R-1010M/E-200t (H)-R.G/S.G	1000 x 1000 x H	40 x 40 x H
DVIO-I/R-1212M/E-200t (H)-R.G/S.G	1200 x 1200 x H	48 x 48 x H
DVIO-I/R-1575M/E-200t (H)-R.G/S.G	1500 x 750 x H	60 x 30 x H
DVIO-I/R-1509M/E-200t (H)-R.G/S.G	1500 x 900 x H	60 x 36 x H
DVIO-I/R-1510M/E-200t (H)-R.G/S.G	1500 x 1000 x H	60 x 40 x H
DVIO-I/R-1512M/E-200t (H)-R.G/S.G	1500 x 1200 x H	60 x 48 x H
DVIO-I/R-1515M/E-200t (H)-R.G/S.G	1500 x 1500 x H	60 x 60 x H
DVIO-I/R-1807M/E-200t (H)-R.G/S.G	1800 x 700 x H	72 x 28 x H
DVIO-I/R-1875M/E-200t (H)-R.G/S.G	1800 x 750 x H	72 x 30 x H
DVIO-I/R-1809M/E-200t (H)-R.G/S.G	1800 x 900 x H	72 x 36 x H
DVIO-I/R-1810M/E-200t (H)-R.G/S.G	1800 x 1000 x H	72 x 40 x H
DVIO-I/R-1812M/E-200t (H)-R.G/S.G	1800 x 1200 x H	72 x 48 x H
DVIO-I/R-1815M/E-200t (H)-R.G/S.G	1800 x 1500 x H	72 x 60 x H
DVIO-I/R-2009M/E-200t (H)-R.G/S.G	2000 x 900 x H	80 x 36 x H
DVIO-I/R-2010M/E-200t (H)-R.G/S.G	2000 x 1000 x H	80 x 40 x H
DVIO-I/R-2012M/E-200t (H)-R.G/S.G	2000 x 1200 x H	80 x 48 x H
DVIO-I/R-2015M/E-200t (H)-R.G/S.G	2000 x 1500 x H	80 x 60 x H
DVIO-I/R-2409M/E-200t H)-R.G/S.G	2400 x 900 x H	96 x 36 x H
DVIO-I/R-2410M/E-200t (H)-R.G/S.G	2400 x 1000 x H	96 x 40 x H
DVIO-I/R-2412M/E-200t (H)-R.G/S.G	2400 x 1200 x H	96 x 48 x H
DVIO-I/R-2415M/E-200t (H)-R.G/S.G	2400 x 1500 x H	96 x 60 x H
DVIO-I/R-2508M/E-200t (H)-R.G/S.G	2500 x 800 x H	100 x 32 x H
DVIO-I/R-3009M/E-200t (H)-R.G/S.G	3000 x 900 x H	120 x 36 x H
DVIO-I/R-3010M/E-200t (H)-R.G/S.G	3000 x 1000 x H	120 x 40 x H
DVIO-I/R-3012M/E-200t (H)-R.G/S.G	3000 x 1200 x H	120 x 48 x H
DVIO-I/R-3015M/E-200t (H)-R.G/S.G	3000 x 1500 x H	120 x 60 x H
DVIO-I/R-3612M/E-200t (H)-R.G/S.G	3600 x 1200 x H	144 x 48 x H
DVIO-I/R-3615M/E-200t (H)-R.G/S.G	3600 x 1500 x H	144 x 60 x H

Optical Table (Table Top 300t + Support)

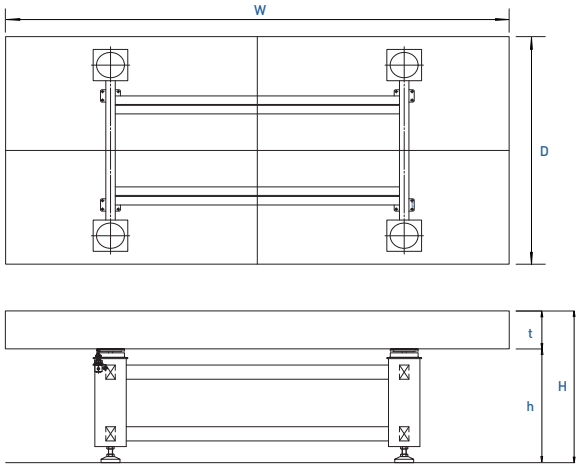
Model No.	Dimensions W x D x H (mm)	Dimensions W x D x H (in.)
DVIO-I/R-1010M/E-300t (H)-R.G/S.G	1000 x 1000 x H	40 x 40 x H
DVIO-I/R-1212M/E-300t (H)-R.G/S.G	1200 x 1200 x H	48 x 48 x H
DVIO-I/R-1575M/E-300t (H)-R.G/S.G	1500 x 750 x H	60 x 30 x H
DVIO-I/R-1509M/E-300t (H)-R.G/S.G	1500 x 900 x H	60 x 36 x H
DVIO-I/R-1510M/E-300t (H)-R.G/S.G	1500 x 1000 x H	60 x 40 x H
DVIO-I/R-1512M/E-300t (H)-R.G/S.G	1500 x 1200 x H	60 x 48 x H
DVIO-I/R-1515M/E-300t (H)-R.G/S.G	1500 x 1500 x H	60 x 60 x H
DVIO-I/R-1875M/E-300t (H)-R.G/S.G	1800 x 750 x H	72 x 30 x H
DVIO-I/R-1809M/E-300t (H)-R.G/S.G	1800 x 900 x H	72 x 36 x H
DVIO-I/R-1810M/E-300t (H)-R.G/S.G	1800 x 1000 x H	72 x 40 x H
DVIO-I/R-1812M/E-300t (H)-R.G/S.G	1800 x 1200 x H	72 x 48 x H
DVIO-I/R-1815M/E-300t (H)-R.G/S.G	1800 x 1500 x H	72 x 60 x H
DVIO-I/R-2009M/E-300t (H)-R.G/S.G	2000 x 900 x H	80 x 36 x H
DVIO-I/R-2010M/E-300t (H)-R.G/S.G	2000 x 1000 x H	80 x 40 x H
DVIO-I/R-2012M/E-300t (H)-R.G/S.G	2000 x 1200 x H	80 x 48 x H
DVIO-I/R-2015M/E-300t (H)-R.G/S.G	2000 x 1500 x H	80 x 60 x H
DVIO-I/R-2409M/E-300t (H)-R.G/S.G	2400 x 900 x H	96 x 36 x H
DVIO-I/R-2410M/E-300t (H)-R.G/S.G	2400 x 1000 x H	96 x 40 x H
DVIO-I/R-2412M/E-300t (H)-R.G/S.G	2400 x 1200 x H	96 x 48 x H
DVIO-I/R-2415M/E-300t (H)-R.G/S.G	2400 x 1500 x H	96 x 60 x H
DVIO-I/R-2515M/E-300t (H)-R.G/S.G	2500 x 1500 x H	100 x 60 x H
DVIO-I/R-3009M/E-300t (H)-R.G/S.G	3000 x 900 x H	120 x 36 x H
DVIO-I/R-3010M/E-300t (H)-R.G/S.G	3000 x 1000 x H	120 x 40 x H
DVIO-I/R-3012M/E-300t (H)-R.G/S.G	3000 x 1200 x H	120 x 48 x H
DVIO-I/R-3015M/E-300t (H)-R.G/S.G	3000 x 1500 x H	120 x 60 x H
DVIO-I/R-3612M/E-300t (H)-R.G/S.G	3600 x 1200 x H	144 x 48 x H
DVIO-I/R-3615M/E-300t (H)-R.G/S.G	3600 x 1500 x H	144 x 60 x H

Optical Table (Table Top 400t + Support)

Model No.	Dimensions W x D x H (mm)	Dimensions W x D x H (in.)
DVIO-I/R-1812M/E-400t (H)-R.G/S.G	1800 x 1200 x H	72 x 48 x H
DVIO-I/R-1815M/E-400t (H)-R.G/S.G	1800 x 1500 x H	72 x 60 x H
DVIO-I/R-2010M/E-400t (H)-R.G/S.G	2000 x 1000 x H	80 x 40 x H
DVIO-I/R-2012M/E-400t (H)-R.G/S.G	2000 x 1200 x H	80 x 48 x H
DVIO-I/R-2015M/E-400t (H)-R.G/S.G	2000 x 1500 x H	80 x 60 x H
DVIO-I/R-2409M/E-400t (H)-R.G/S.G	2400 x 900 x H	96 x 36 x H
DVIO-I/R-2410M/E-400t (H)-R.G/S.G	2400 x 1000 x H	96 x 40 x H
DVIO-I/R-2412M/E-400t (H)-R.G/S.G	2400 x 1200 x H	96 x 48 x H
DVIO-I/R-2415M/E-400t (H)-R.G/S.G	2400 x 1500 x H	96 x 60 x H
DVIO-I/R-3009M/E-400t (H)-R.G/S.G	3000 x 900 x H	120 x 36 x H
DVIO-I/R-3010M/E-400t (H)-R.G/S.G	3000 x 1000 x H	120 x 40 x H
DVIO-I/R-3012M/E-400t (H)-R.G/S.G	3000 x 1200 x H	120 x 48 x H
DVIO-I/R-3015M/E-400t (H)-R.G/S.G	3000 x 1500 x H	120 x 60 x H
DVIO-I/R-3612M/E-400t (H)-R.G/S.G	3600 x 1200 x H	144 x 48 x H
DVIO-I/R-3615M/E-400t (H)-R.G/S.G	3600 x 1500 x H	144 x 60 x H

*Custom dimensions and configurations are available upon request.

* 4 POST



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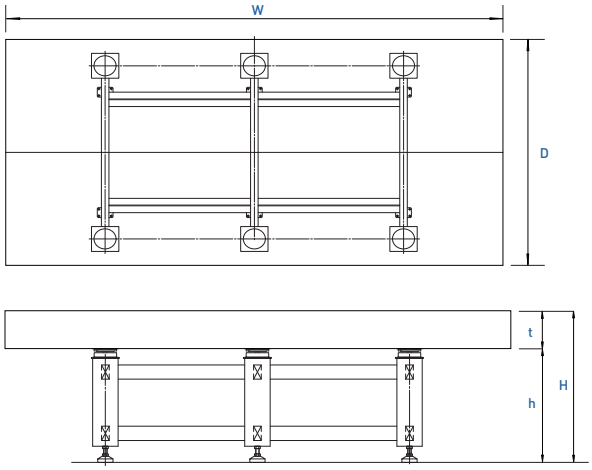
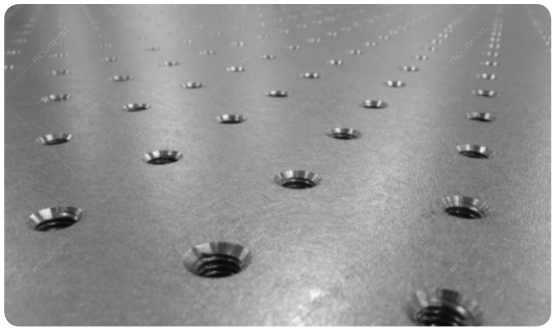


Optical Table Top

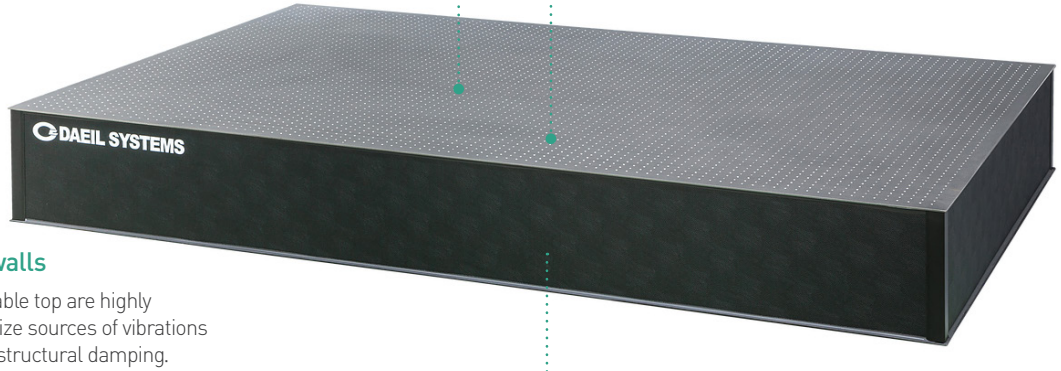
Tapped and Clean Surface

The table top surface is precision tapped and delicately sanded to provide a non–reflecting surface. Moreover, the surface is completely cleaned to remove residual metal particles and cutting fluids.



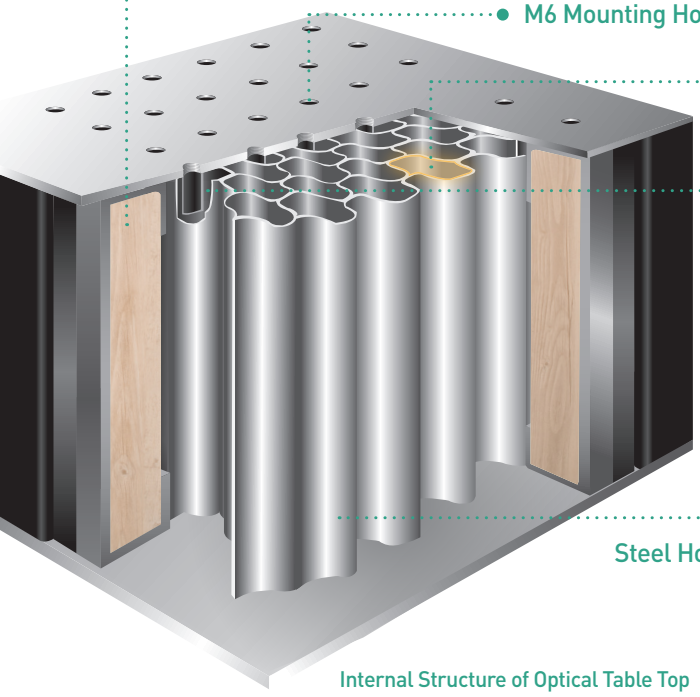
Individually Sealed Mounting Holes

Spill–proof and non–corrosive nylon cups are individually epoxy–bonded under each mounting hole to prevent spilling of liquids from contaminating the honeycomb core



Damped Sidewalls

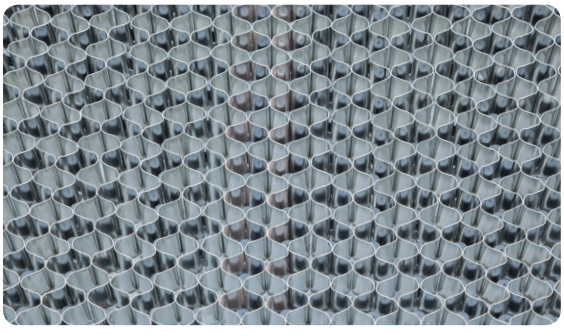
Sidewalls of the table top are highly damped to minimize sources of vibrations and reinforce the structural damping.



Internal Structure of Optical Table Top

Steel Honeycomb Core

The corrugated honeycomb steel layers are vertically epoxy bonded with a stainless steel top skin, a carbon steel bottom skin and sidewalls. This steel honeycomb core structure provides the highest core density and the smallest honeycomb cell size, making the optical table top super rigid. As the smallest honeycomb cells contribute to increase the elastic selection modulus, the natural frequency of the table top is increased, which the table top is less likely to respond to external forces. Our optical table top is all steel constructed, ensuring the long term thermal stability.



Compliance Curve

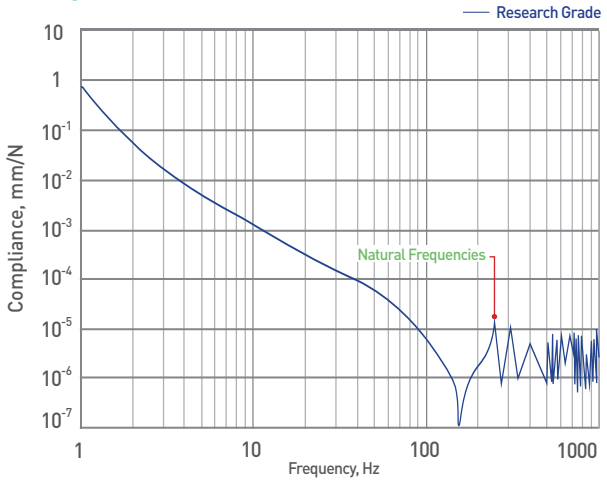
Quantification of Dynamic Rigidity – Compliance

Compliance is defined as the ratio of the magnitude of the displacement amplitude to the magnitude of the external force. When a table top is subjected to an external force, the lower compliance, the less a table top deflects and the greater compliance, the more a table top deflects. A well–designed optical table top has the higher resonant frequency and the lower compliance, meaning that the excellent damping characteristic minimizes the relative displacement by rapidly damping the external force.

$$C = \frac{|X|}{|F|}$$

C = Compliance
F = Magnitude of the external force
X = Magnitude of the displacement amplitude

Compliance Curve



A compliance curve shows the dynamic performance of an optical table top. A compliance curve displays the table top's resonant frequencies and its maximum amplification at resonance, and these can be used to calculate the relative motion of the two components on the table top.

Dynamic Deflection Coefficient

The dynamic deflection coefficient is defined as a measure of table top's movement in response to external forces. The dynamic deflection coefficient is derived from the table top's minimum resonant frequency and maximum amplification at resonance as shown in the compliance curve. The dynamic deflection coefficient is used to compare dynamic performance of table tops directly and provides an idea of choosing appropriate optical table tops for various applications.

$$\left(\frac{Q}{f_n^3}\right)^{1/2}$$

Q = Maximum Amplification at Resonance, Damping efficiency
f_n = Resonance Frequency

Maximum Relative Motion

The maximum relative motion is defined as a calculation of the highest relative motion value between two points on a surface of a table top at the resonant frequency. The smaller the relative motion indicates a well–designed optical table top.

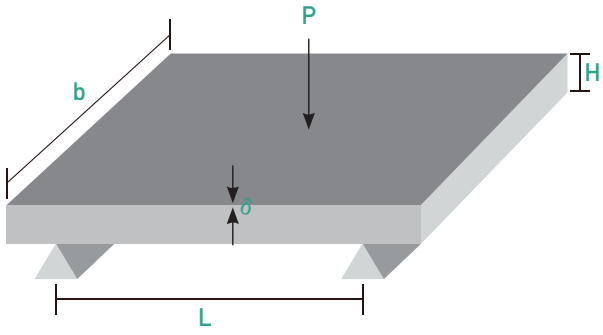
Deflection Under Load

Deflection under load refers to how much a table top sags between its isolators when a static load is placed on a table top.

$$\text{Deflection} = \frac{PL^3}{24Eb\,TH^2} + \frac{PL}{4GHb}$$

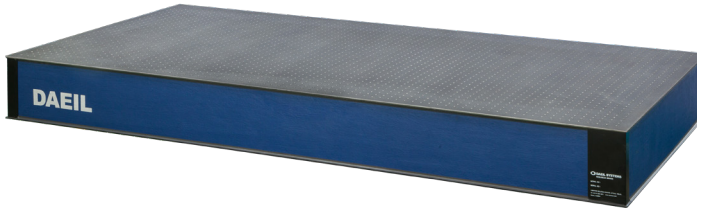
P = applied force by a load
L = distance between isolators (Table length X 0.56)
b = width of table top
H = thickness of table top
T = thickness of skins
E = young's modulus of the skin material
G = shear modulus of the core

Static Deflection Under a Load



Research Grade Optical Table Top

Our unique damping techniques are integrated in the research grade table tops to provide the highest structural damping level and stiffness for the most challenging laser and optics related experiments.



Scientific Grade Optical Table Top

DAEIL's scientific grade optical table top is based on the broadband damping which minimizes relative motions in a wide frequency, offering a promised performance and quality for extensive applications.

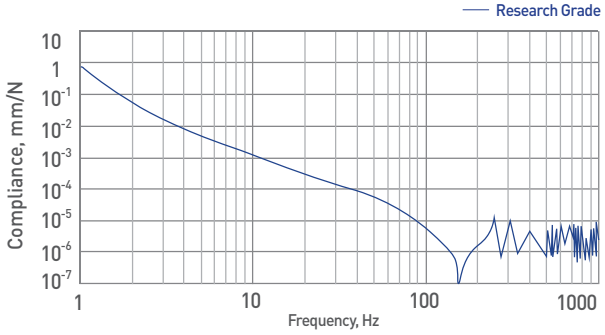
Non–Magnetic Optical Table Top

The non–magnetic table top is made of 304 series non–magnetic stainless steel for cleanrooms and applications that are easily disturbed by magnetic fields. The non–magnetic table top provides the maximum cleanroom compatibility and it can be customized to equipment specifications.

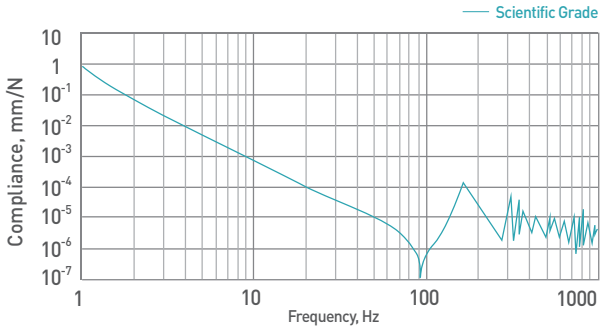
Specifications

Construction		
Core	Steel honeycomb core, 0.25 mm (1 in.) thick foil	
Core Cell Size	2.9 cm^2 (0.4 in^2)	
Core Shear Modulus	19339 kgf/cm^2 (275,000 psi)	
Surface Flatness	±0.1 mm (±0.004 in.) over 600 x 600 mm (2 x 2 ft.)	
Top Skin	430 series ferromagnetic stainless steel, 4.0 mm thick	
Bottom Skin	4.5 mm thick steel	
Side Walls	2.0 mm thick steel plate with highly damped composite wood	
Mounting Holes	M6–1.0 (1/4–20)	
Mounting Hole Pattern	25 mm (1 in.) grid	
Mounting Hole Borders	37.5 mm (1.5 in.)	
Mounting Hole Sealing	21 mm deep cylindrical cup (chemical resistant nylon material)	
Damping	Broadband damping	
Performance		
	Research Grade	Scientific Grade
Deflection Underload	1.2 x 10^{-3} mm	1.2 x 10^{-3} mm
Maximum Relative Motion	7.5 x 10^{-8} mm	1.9 x 10^{-7} mm
Maximum Dynamic Deflection Coefficient	0.3 x 10^{-3}	0.6 x 10^{-3}

Compliance Curve



Complaince was measured on 2400 X 1200 X 300 mm table top.



Compliance was measured on 2400 x 1200 x 300 mm table top.

Ordering Charts

Optical Table Top 200t

Model No.	Dimensions W x D x t (mm)	Dimensions W x D x t (in.)	Weight (kg)
DVIO–B–1010M/E–200t–R.G/S.G	1000 x 1000 x 200	40 x 40 x 8	139
DVIO–B–1212M/E–200t–R.G/S.G	1200 x 1200 x 200	48 x 48 x 8	201
DVIO–B–1575M/E–200t–R.G/S.G	1500 x 750 x 200	60 x 30 x 8	157
DVIO–B–1509M/E–200t–R.G/S.G	1500 x 900 x 200	60 x 36 x 8	188
DVIO–B–1510M/E–200t–R.G/S.G	1500 x 1000 x 200	60 x 40 x 8	209
DVIO–B–1512M/E–200t–R.G/S.G	1500 x 1200 x 200	60 x 48 x 8	251
DVIO–B–1515M/E–200t–R.G/S.G	1500 x 1500 x 200	60 x 60 x 8	313
DVIO–B–1807M/E–200t–R.G/S.G	1800 x 700 x 200	72 x 28 x 8	175
DVIO–B–1875M/E–200t–R.G/S.G	1800 x 750 x 200	72 x 30 x 8	188
DVIO–B–1809M/E–200t–R.G/S.G	1800 x 900 x 200	72 x 36 x 8	226
DVIO–B–1810M/E–200t–R.G/S.G	1800 x 1000 x 200	72 x 40 x 8	251
DVIO–B–1812M/E–200t–R.G/S.G	1800 x 1200 x 200	72 x 48 x 8	301
DVIO–B–1815M/E–200t–R.G/S.G	1800 x 1500 x 200	72 x 60 x 8	376
DVIO–B–2009M/E–200t–R.G/S.G	2000 x 900 x 200	80 x 36 x 8	251
DVIO–B–2010M/E–200t–R.G/S.G	2000 x 1000 x 200	80 x 40 x 8	278
DVIO–B–2012M/E–200t–R.G/S.G	2000 x 1200 x 200	80 x 48 x 8	334
DVIO–B–2015M/E–200t–R.G/S.G	2000 x 1500 x 200	80 x 60 x 8	417
DVIO–B–2409M/E–200t–R.G/S.G	2400 x 900 x 200	96 x 36 x 8	301
DVIO–B–2410M/E–200t–R.G/S.G	2400 x 1000 x 200	96 x 40 x 8	334
DVIO–B–2412M/E–200t–R.G/S.G	2400 x 1200 x 200	96 x 48 x 8	401
DVIO–B–2415M/E–200t–R.G/S.G	2400 x 1500 x 200	96 x 60 x 8	501
DVIO–B–2508M/E–200t–R.G/S.G	2500 x 800 x 200	100 x 32 x 8	278
DVIO–B–3009M/E–200t–R.G/S.G	3000 x 900 x 200	120 x 36 x 8	376
DVIO–B–3010M/E–200t–R.G/S.G	3000 x 1000 x 200	120 x 40 x 8	417
DVIO–B–3012M/E–200t–R.G/S.G	3000 x 1200 x 200	120 x 48 x 8	501
DVIO–B–3015M/E–200t–R.G/S.G	3000 x 1500 x 200	120 x 60 x 8	626
DVIO–B–3612M/E–200t–R.G/S.G	3600 x 1200 x 200	144 x 48 x 8	601
DVIO–B–3615M/E–200t–R.G/S.G	3600 x 1500 x 200	144 x 60 x 8	751

Optical Table Top 300t

Model No.	Dimensions W x D x t (mm)	Dimensions W x D x t (in.)	Weight (kg)
DVIO–B–1010M/E–300t–R.G/S.G	1000 x 1000 x 300	40 x 40 x 12	165
DVIO–B–1212M/E–300t–R.G/S.G	1200 x 1200 x 300	48 x 48 x 12	238
DVIO–B–1575M/E–300t–R.G/S.G	1500 x 750 x 300	60 x 30 x 12	186
DVIO–B–1509M/E–300t–R.G/S.G	1500 x 900 x 300	60 x 36 x 12	223
DVIO–B–1510M/E–300t–R.G/S.G	1500 x 1000 x 300	60 x 40 x 12	248
DVIO–B–1512M/E–300t–R.G/S.G	1500 x 1200 x 300	60 x 48 x 12	297
DVIO–B–1515M/E–300t–R.G/S.G	1500 x 1500 x 300	60 x 60 x 12	372
DVIO–B–1875M/E–300t–R.G/S.G	1800 x 750 x 300	72 x 30 x 12	223
DVIO–B–1809M/E–300t–R.G/S.G	1800 x 900 x 300	72 x 36 x 12	268
DVIO–B–1810M/E–300t–R.G/S.G	1800 x 1000 x 300	72 x 40 x 12	297
DVIO–B–1812M/E–300t–R.G/S.G	1800 x 1200 x 300	72 x 48 x 12	357
DVIO–B–1815M/E–300t–R.G/S.G	1800 x 1500 x 300	72 x 60 x 12	446
DVIO–B–2009M/E–300t–R.G/S.G	2000 x 900 x 300	80 x 36 x 12	297
DVIO–B–2010M/E–300t–R.G/S.G	2000 x 1000 x 300	80 x 40 x 12	330
DVIO–B–2012M/E–300t–R.G/S.G	2000 x 1200 x 300	80 x 48 x 12	396
DVIO–B–2015M/E–300t–R.G/S.G	2000 x 1500 x 300	80 x 60 x 12	495
DVIO–B–2409M/E–300t–R.G/S.G	2400 x 900 x 300	96 x 36 x 12	357
DVIO–B–2410M/E–300t–R.G/S.G	2400 x 1000 x 300	96 x 40 x 12	396
DVIO–B–2412M/E–300t–R.G/S.G	2400 x 1200 x 300	96 x 48 x 12	476
DVIO–B–2415M/E–300t–R.G/S.G	2400 x 1500 x 300	96 x 60 x 12	594
DVIO–B–2515M/E–300t–R.G/S.G	2500 x 1500 x 300	100 x 60 x 12	620
DVIO–B–3009M/E–300t–R.G/S.G	3000 x 900 x 300	120 x 36 x 12	446
DVIO–B–3010M/E–300t–R.G/S.G	3000 x 1000 x 300	120 x 40 x 12	495
DVIO–B–3012M/E–300t–R.G/S.G	3000 x 1200 x 300	120 x 48 x 12	594
DVIO–B–3015M/E–300t–R.G/S.G	3000 x 1500 x 300	120 x 60 x 12	743
DVIO–B–3612M/E–300t–R.G/S.G	3600 x 1200 x 300	144 x 48 x 12	713
DVIO–B–3615M/E–300t–R.G/S.G	3600 x 1500 x 300	144 x 60 x 12	891

Optical Table Top 400t

Model No.	Dimensions W x D x t (mm)	Dimensions W x D x t (in.)	Weight (kg)
DVIO–B–1812M/E–400t–R.G/S.G	1800 x 1200 x 400	72 x 48 x 16	471
DVIO–B–1815M/E–400t–R.G/S.G	1800 x 1500 x 400	72 x 60 x 16	589
DVIO–B–2010M/E–400t–R.G/S.G	2000 x 1000 x 400	80 x 40 x 16	436
DVIO–B–2012M/E–400t–R.G/S.G	2000 x 1200 x 400	80 x 48 x 16	524
DVIO–B–2015M/E–400t–R.G/S.G	2000 x 1500 x 400	80 x 60 x 16	654
DVIO–B–2409M/E–400t–R.G/S.G	2400 x 900 x 400	96 x 36 x 16	471
DVIO–B–2410M/E–400t–R.G/S.G	2400 x 1000 x 400	96 x 40 x 16	524
DVIO–B–2412M/E–400t–R.G/S.G	2400 x 1200 x 400	96 x 48 x 16	628
DVIO–B–2415M/E–400t–R.G/S.G	2400 x 1500 x 400	96 x 60 x 16	785
DVIO–B–3009M/E–400t–R.G/S.G	3000 x 900 x 400	120 x 36 x 16	589
DVIO–B–3010M/E–400t–R.G/S.G	3000 x 1000 x 400	120 x 40 x 16	654
DVIO–B–3012M/E–400t–R.G/S.G	3000 x 1200 x 400	120 x 48 x 16	785
DVIO–B–3015M/E–400t–R.G/S.G	3000 x 1500 x 400	120 x 60 x 16	981
DVIO–B–3612M/E–400t–R.G/S.G	3600 x 1200 x 400	144 x 48 x 16	942
DVIO–B–3615M/E–400t–R.G/S.G	3600 x 1500 x 400	144 x 60 x 16	1178

*Custom dimensions and configurations are available upon request.

Ordering Information

DVIO-B-2412 M/E/N-300t-R.G/S.G

- R.G : Research Grade
- S.G : Scientific Grade
- Table Top Thickness
- Standard Mounting Holes : Metric (M) / Inch (E) / No holes (N)
- Table Top Dimensions (W X D)

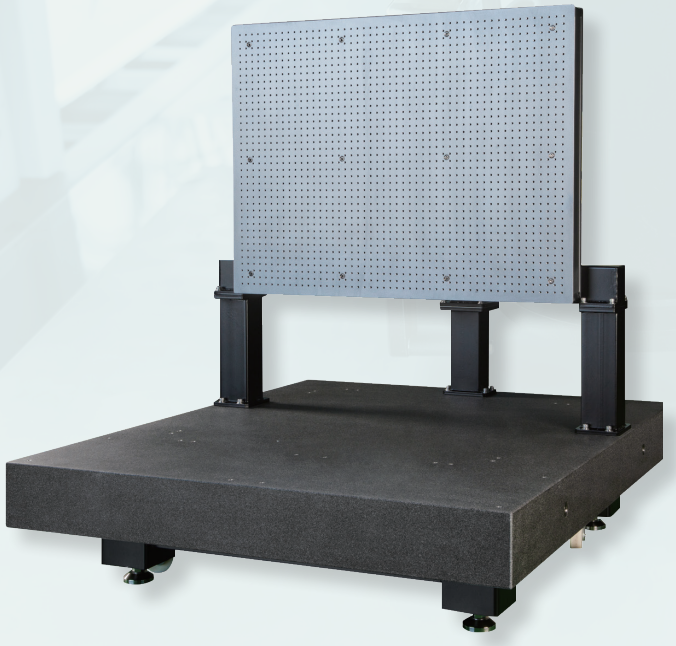
Optical Breadboards

25 mm, 50 mm, and 100 mm thick optical breadboards provide excellent rigidity and damping, effectively reducing the relative motion over a wide frequency range.

Specifications

Construction	
Core	Steel honeycomb core, 0.25 mm (1 in.) thick foil
Core Cell Size	2.9 cm^2 (0.4 in^2)
Core Shear Modulus	19339 kgf/cm^2 (275,000 psi)
Surface Flatness	±0.1 mm (±0.004 in.) over 600 x 600 mm (2 x 2 ft.)
Top Skin	430 series ferromagnetic stainless steel 4.0 mm thick
Bottom Skin	4.5 mm thick steel
Side Walls	2.0 mm thick steel plate with highly damped composite wood
Mounting Holes	M6–1.0 (1/4–20)
Mounting Hole Patterns	25 mm (1 in.) grid
Mounting Hole Borders	37.5 mm (1.5 in.)
Mounting Hole Sealing	21 mm deep cylindrical cup (chemical resistant nylon material)
Damping	Broadband damping

Custom Optical Breadboards



Custom Vertical Laser Support Structure

Custom Optical Breadboard

Custom Optical Breadbaord

Ordering Charts

Optical Breadboard 25t

Model No.	Dimensions W x D x t (mm)	Dimensions W x D x t (in.)	Weight (kg)
DVIO–B–0504M/E–25t	500 x 400 x 25	20 x 16 x 1	14
DVIO–B–0603M/E–25t	600 x 300 x 25	24 x 12 x 1	13
DVIO–B–0605M/E–25t	600 x 500 x 25	24 x 20 x 1	22
DVIO–B–0606M/E–25t	600 x 600 x 25	24 x 24 x 1	25
DVIO–B–0707M/E–25t	700 x 700 x 25	28 x 28 x 1	39
DVIO–B–0806M/E–25t	800 x 600 x 25	32 x 24 x 1	34
DVIO–B–0906M/E–25t	900 x 600 x 25	36 x 24 x 1	38
DVIO–B–0907M/E–25t	900 x 700 x 25	36 x 28 x 1	47
DVIO–B–0909M/E–25t	900 x 900 x 25	36 x 36 x 1	57
DVIO–B–1006M/E–25t	1000 x 600 x 25	40 x 24 x 1	42
DVIO–B–1007M/E–25t	1000 x 700 x 25	40 x 38 x 1	53
DVIO–B–1206M/E–25t	1200 x 600 x 25	48 x 24 x 1	50
DVIO–B–1207M/E–25t	1200 x 700 x 25	48 x 28 x 1	63
DVIO–B–1209M/E–25t	1200 x 900 x 25	48 x 36 x 1	76
DVIO–B–1509M/E–25t	1500 x 900 x 25	60 x 36 x 1	95

Optical Breadboard 50t

Model No.	Dimensions W x D x t (mm)	Dimensions W x D x t (in.)	Weight (kg)
DVIO–B–0504M/E–50t	500 x 400 x 50	20 x 16 x 2	18
DVIO–B–0605M/E–50t	600 x 500 x 50	24 x 20 x 2	27
DVIO–B–0606M/E–50t	600 x 600 x 50	24 x 24 x 2	32
DVIO–B–0707M/E–50t	700 x 700 x 50	28 x 28 x 2	43
DVIO–B–0806M/E–50t	800 x 600 x 50	32 x 24 x 2	42
DVIO–B–0906M/E–50t	900 x 600 x 50	36 x 24 x 2	47
DVIO–B–0907M/E–50t	900 x 700 x 50	36 x 28 x 2	55
DVIO–B–0975M/E–50t	900 x 750 x 50	36 x 30 x 2	59
DVIO–B–0909M/E–50t	900 x 900 x 50	36 x 36 x 2	71
DVIO–B–1005M/E–50t	1000 x 500 x 50	40 x 20 x 2	44
DVIO–B–1006M/E–50t	1000 x 600 x 50	40 x 24 x 2	53
DVIO–B–1007M/E–50t	1000 x 700 x 50	40 x 38 x 2	61
DVIO–B–1075M/E–50t	1000 x 750 x 50	40 x 30 x 2	66
DVIO–B–1009M/E–50t	1000 x 900 x 50	40 x 36 x 2	79
DVIO–B–1010M/E–50t	1000 x 1000 x 50	40 x 40 x 2	87
DVIO–B–1206M/E–50t	1200 x 600 x 50	48 x 24 x 2	63
DVIO–B–1207M/E–50t	1200 x 700 x 50	48 x 28 x 2	74
DVIO–B–1275M/E–50t	1200 x 750 x 50	48 x 30 x 2	79
DVIO–B–1209M/E–50t	1200 x 900 x 50	48 x 36 x 2	94
DVIO–B–1210M/E–50t	1200 x 1000 x 50	48 x 40 x 2	105
DVIO–B–1212M/E–50t	1200 x 1200 x 50	48 x 48 x 2	126
DVIO–B–1306M/E–50t	1300 x 600 x 50	52 x 24 x 2	68
DVIO–B–1506M/E–50t	1500 x 600 x 50	60 x 24 x 2	79
DVIO–B–1507M/E–50t	1500 x 700 x 50	60 x 28 x 2	92
DVIO–B–1575M/E–50t	1500 x 750 x 50	60 x 30 x 2	98
DVIO–B–1509M/E–50t	1500 x 900 x 50	60 x 36 x 2	118
DVIO–B–1510M/E–50t	1500 x 1000 x 50	60 x 40 x 2	131
DVIO–B–1512M/E–50t	1500 x 1200 x 50	60 x 48 x 2	157
DVIO–B–1806M/E–50t	1800 x 600 x 50	72 x 24 x 2	94
DVIO–B–1807M/E–50t	1800 x 700 x 50	72 x 28 x 2	110
DVIO–B–1809M/E–50t	1800 x 900 x 50	72 x 36 x 2	141
DVIO–B–1812M/E–50t	1800 x 1200 x 50	72 x 48 x 2	188
DVIO–B–2010M/E–50t	2000 x 1000 x 50	80 x 40 x 2	174
DVIO–B–2012M/E–50t	2000 x 1200 x 50	80 x 48 x 2	209
DVIO–B–2409M/E–50t	2400 x 900 x 50	96 x 36 x 2	188
DVIO–B–2412M/E–50t	2400 x 1200 x 50	96 x 48 x 2	251

Optical Breadboard 100t

Model No.	Dimensions W x D x t (mm)	Dimensions W x D x t (in.)	Weight (kg)
DVIO–B–0504M/E–100t	500 x 400 x 100	20 x 16 x 4	25
DVIO–B–0605M/E–100t	600 x 500 x 100	24 x 20 x 4	37
DVIO–B–0606M/E–100t	600 x 600 x 100	24 x 24 x 4	44
DVIO–B–0707M/E–100t	700 x 700 x 100	28 x 28 x 4	60
DVIO–B–0906M/E–100t	900 x 600 x 100	36 x 24 x 4	66
DVIO–B–0907M/E–100t	900 x 700 x 100	36 x 28 x 4	77
DVIO–B–0975M/E–100t	900 x 750 x 100	36 x 30 x 4	83
DVIO–B–0909M/E–100t	900 x 900 x 100	36 x 36 x 4	99
DVIO–B–1005M/E–100t	1000 x 500 x 100	40 x 20 x 4	61
DVIO–B–1006M/E–100t	1000 x 600 x 100	40 x 24 x 4	74
DVIO–B–1007M/E–100t	1000 x 700 x 100	40 x 38 x 4	86
DVIO–B–1075M/E–100t	1000 x 750 x 100	40 x 30 x 4	92
DVIO–B–1009M/E–100t	1000 x 900 x 100	40 x 36 x 4	110
DVIO–B–1010M/E–100t	1000 x 1000 x 100	40 x 40 x 4	122
DVIO–B–1206M/E–100t	1200 x 600 x 100	48 x 24 x 4	88
DVIO–B–1207M/E–100t	1200 x 700 x 100	48 x 28 x 4	103
DVIO–B–1275M/E–100t	1200 x 750 x 100	48 x 30 x 4	110
DVIO–B–1209M/E–100t	1200 x 900 x 100	48 x 36 x 4	132
DVIO–B–1210M/E–100t	1200 x 1000 x 100	48 x 40 x 4	147
DVIO–B–1212M/E–100t	1200 x 1200 x 100	48 x 48 x 4	176
DVIO–B–1506M/E–100t	1500 x 600 x 100	60 x 24 x 4	110
DVIO–B–1507M/E–100t	1500 x 700 x 100	60 x 28 x 4	129
DVIO–B–1575M/E–100t	1500 x 750 x 100	60 x 30 x 4	138
DVIO–B–1509M/E–100t	1500 x 900 x 100	60 x 36 x 4	165
DVIO–B–1510M/E–100t	1500 x 1000 x 100	60 x 40 x 4	183
DVIO–B–1512M/E–100t	1500 x 1200 x 100	60 x 48 x 4	220
DVIO–B–1806M/E–100t	1800 x 600 x 100	72 x 24 x 4	132
DVIO–B–1807M/E–100t	1800 x 700 x 100	72 x 28 x 4	154
DVIO–B–1809M/E–100t	1800 x 900 x 100	72 x 36 x 4	198
DVIO–B–1812M/E–100t	1800 x 1200 x 100	72 x 48 x 4	264
DVIO–B–2010M/E–100t	2000 x 1000 x 100	80 x 40 x 4	245
DVIO–B–2012M/E–100t	2000 x 1200 x 100	80 x 48 x 4	293
DVIO–B–2409M/E–100t	2400 x 900 x 100	96 x 36 x 4	264
DVIO–B–2410M/E–100t	2400 x 1000 x 100	96 x 40 x 4	293
DVIO–B–2412M/E–100t	2400 x 1200 x 100	96 x 48 x 4	352

*Custom dimensions and configurations are available upon request.

Ordering Information

DVIO-B-0506 M/E/N-50t

- Breadboard Thickness
- Standard Mounting Holes : Metric (M) / Inch (E) / No holes (N)
- Breadboard Dimensions

Optical Aluminum Plates

Black anodizing finish aluminum plate reduces light reflections and provides a working surface with mounting holes.

Specifications

Material	6061 Aluminum
Finish	15 um Black anodized
Thickness	12 mm / 15 mm
Mounting Hole	M6–1.0 (1/4–20)
Mounting Hole Pattern	25 mm (1 in.) grid
Mounting Hole Borders	12.5 mm (0.5 in.)

Ordering Information

DSAP-0906 M/E/N-15t

- Thickness (mm)
- Standard Mounting Holes : Metric (M) / Inch (E) / No holes (N)
- Dimensions (W x D)

Ordering Chart

Model No.	Dimensions W x D x t (mm)	Dimensions W x D x t (in.)	Weight (kg) 12t / 15t
DSAP–0302M/E–12t/15t	300 x 200 x 12/15	12 x 8 x 0.5/0.6	2 / 2
DSAP–0303M/E–12t/15t	300 x 300 x 12/15	12 x 12 x 0.5/0.6	3 / 4
DSAP–0304M/E–12t/15t	300 x 400 x 12/15	12 x 16 x 0.5/0.6	4 / 5
DSAP–0345M/E–12t/15t	300 x 450 x 12/15	12 x 18 x 0.5/0.6	4 / 6
DSAP–0305M/E–12t/15t	300 x 500 x 12/15	12 x 20 x 0.5/0.6	5 / 6
DSAP–0306M/E–12t/15t	300 x 600 x 12/15	12 x 24 x 0.5/0.6	6 / 7
DSAP–0307M/E–12t/15t	300 x 700 x 12/15	12 x 28 x 0.5/0.6	7 / 9
DSAP–0404M/E–12t/15t	400 x 400 x 12/15	16 x 16 x 0.5/0.6	5 / 7
DSAP–0405M/E–12t/15t	400 x 500 x 12/15	16 x 20 x 0.5/0.6	7 / 8
DSAP–4545M/E–12t/15t	450 x 450 x 12/15	18 x 18 x 0.5/0.6	7 / 8
DSAP–0406M/E–12t/15t	400 x 600 x 12/15	16 x 24 x 0.5/0.6	8 / 10
DSAP–0407M/E–12t/15t	400 x 700 x 12/15	16 x 28 x 0.5/0.6	9 / 11
DSAP–4575M/E–12t/15t	450 x 750 x 12/15	18 x 30 x 0.5/0.6	11 / 14
DSAP–0502M/E–12t/15t	500 x 200 x 12/15	20 x 8 x 0.5/0.6	3 / 4
DSAP–0505M/E–12t/15t	500 x 500 x 12/15	20 x 20 x 0.5/0.6	8 / 10
DSAP–0506M/E–12t/15t	500 x 600 x 12/15	20 x 24 x 0.5/0.6	10 / 12
DSAP–0507M/E–12t/15t	500 x 700 x 12/15	20 x 28 x 0.5/0.6	11 / 14
DSAP–0575M/E–12t/15t	500 x 750 x 12/15	20 x 30 x 0.5/0.6	12 / 15
DSAP–0508M/E–12t/15t	500 x 800 x 12/15	20 x 32 x 0.5/0.6	13 / 16
DSAP–0509M/E–12t/15t	500 x 900 x 12/15	20 x 36 x 0.5/0.6	15 / 18
DSAP–0606M/E–12t/15t	600 x 600 x 12/15	24 x 24 x 0.5/0.6	12 / 15

Model No.	Dimensions W x D x t (mm)	Dimensions W x D x t (in.)	Weight (kg) 12t / 15t
DSAP–0607M/E–12t/15t	600 x 700 x 12/15	24 x 28 x 0.5/0.6	14 / 17
DSAP–0609M/E–12t/15t	600 x 900 x 12/15	24 x 36 x 0.5/0.6	18 / 22
DSAP–0707M/E–12t/15t	700 x 700 x 12/15	28 x 28 x 0.5/0.6	16 / 20
DSAP–7575M/E–12t/15t	750 x 750 x 12/15	30 x 30 x 0.5/0.6	18 / 23
DSAP–0909M/E–12t/15t	900 x 900 x 12/15	36 x 36 x 0.5/0.6	26 / 33
DSAP–1003M/E–12t/15t	1000 x 300 x 12/15	40 x 12 x 0.5/0.6	10 / 12
DSAP–1004M/E–12t/15t	1000 x 400 x 12/15	40 x 16 x 0.5/0.6	13 / 16
DSAP–1005M/E–12t/15t	1000 x 500 x 12/15	40 x 20 x 0.5/0.6	16 / 20
DSAP–1006M/E–12t/15t	1000 x 600 x 12/15	40 x 24 x 0.5/0.6	19 / 24
DSAP–1007M/E–12t/15t	1000 x 700 x 12/15	40 x 28 x 0.5/0.6	23 / 28
DSAP–1008M/E–12t/15t	1000 x 800 x 12/15	40 x 32 x 0.5/0.6	26 / 32
DSAP–1009M/E–12t/15t	1000 x 900 x 12/15	40 x 36 x 0.5/0.6	29 / 37
DSAP–1010M/E–12t/15t	1000 x 1000 x 12/15	40 x 40 x 0.5/0.6	32 / 41
DSAP–1011M/E–12t/15t	1000 x 1100 x 12/15	40 x 44 x 0.5/0.6	36 / 45
DSAP–1012M/E–12t/15t	1000 x 1200 x 12/15	40 x 48 x 0.5/0.6	39 / 49
DSAP–1203M/E–12t/15t	1200 x 300 x 12/15	48 x 12 x 0.5/0.6	12 / 15
DSAP–1206M/E–12t/15t	1200 x 600 x 12/15	48 x 24 x 0.5/0.6	23 / 29
DSAP–1209M/E–12t/15t	1200 x 900 x 12/15	48 x 36 x 0.5/0.6	35 / 44
DSAP–1505M/E–12t/15t	1500 x 500 x 12/15	60 x 20 x 0.5/0.6	24 / 30
DSAP–1506M/E–12t/15t	1500 x 600 x 12/15	60 x 24 x 0.5/0.6	29 / 37
DSAP–1845M/E–12t/15t	1800 x 450 x 12/15	72 x 20 x 0.5/0.6	26 / 33

*Custom dimensions and configurations are available upon request.

Optical Table Supports

The primary goal of designing vibration isolators is to lower the natural frequency of the isolators as low as possible, to reduce ambient vibrations in buildings, before the vibrations can reach and disturb an optical table top.
DAEIL offers two types of optical table supports: pneumatic isolators and rigid non–isolators. Our pneumatic isolators provide the industry leading vibration isolation performance and exceptional damping via the dual–chamber design. Rigid isolator is used for equipment requiring no vibration isolation and rigid platforms. The table supports are available in Tie–Bar and Self–Standing configuration.

Pneumatic Supports

Tie–Bar Type

Self–Standing Type

Pneumatic supports incorporate the high–performance pneumatic vibration isolators to effectively reduce floor vibrations and provide damping.

Rigid Supports

Tie–Bar Type

Self–Standing Type

Elastomer pads are mounted onto each rigid isolators, providing a high load capacity and a rigid platform.

Pneumatic Supports

Tie–Bar Type

Pneumatic isolators are welded to a tie–bar frame, leveling feet and casters are mounted to a tie–bar, providing mobility and easy installation.

4 Post System

6 Post System

Self–Standing Type

4, 6, or 8 self–standing supports can be installed according to equipment specifications and dimensions of a table top.

Features

Dual Chamber Design

DAEIL's pneumatic vibration isolators consist of the two chambers that are uniquely designed, developed to lower its natural frequency.

Exceptional Vibration Isolation Performance

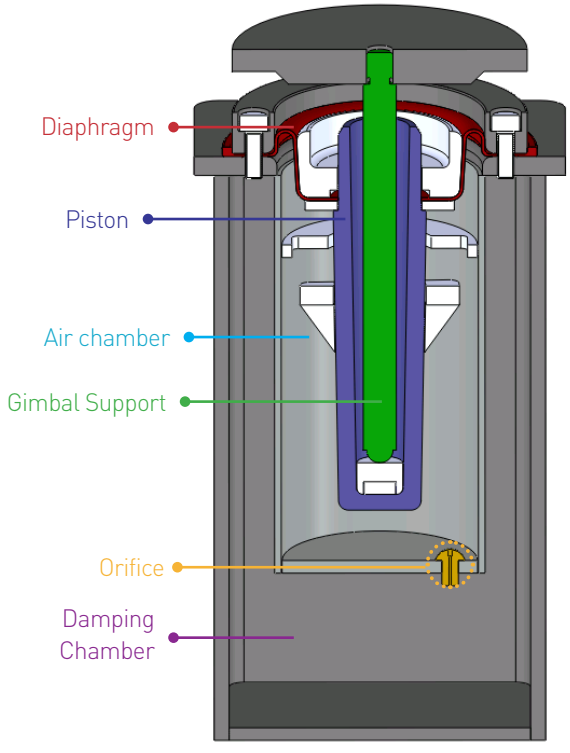
The size of an air chamber is optimized and sealed with a ultra–soft rolling diaphragm and a piston, softening the stiffness to further improve the vertical vibration isolation performance. A gimbal support of the pneumatic isolator as a mechanical filter system acts as a gimbal to minimize friction and reduce horizontal displacements.

Superior Damping

The second chamber is a damping chamber which is linked with the air chamber through a orifice. As the air chamber creates the restoring force, the air flows into the damping chamber, and the orifice dissipate the energy in the air, damping the system and improves stability. As the piston moves up and down, air is forced to move through this orifice, producing a damping force on the payload. This type of damping is very strong for large displacements of the piston and less for small displacements. This allows for fast settling of the payload, without compromising small amplitude vibration isolation performance. The orifice installed between the air chamber and the damping chamber quickly restricts the movement of the optical table top or the external force applied to the optical table top.

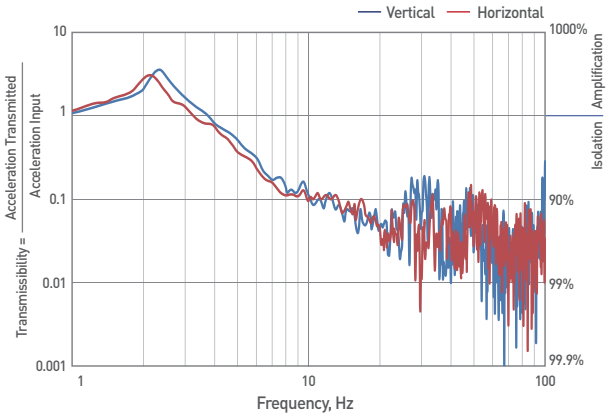
Automatic Leveling – Leveling Valves

The high–performance leveling valves automatically relevel a table top, offering a wide range of valves options starting from the standard valves with repeatability of ±1.0 mm to the precision valves with repeatability of ±0.05 mm. If the settling time, leveling accuracy and leveling repeatability are required to meet equipment specifications, then the precision leveling valves must be selected.



Cutaway View of Pneumatic Isolator

Vibration Isolation Performance



Specifications

Isolation System	Pneumatic Isolation
Resonant Frequency	Vertical/Horizontal = 1.2 – 3.0 Hz
Vibration Isolation at 10 Hz	Vertical/Horizontal = 80 – 90%
Accuracy of Leveling Repeatability	Standard Leveling Valve = ±1.0 mm (0.04 in.) Precision Leveling Valve = ±0.05 mm (0.002 in.)
Maximum Load Capacity	3000 kg
Automatic Leveling	Yes
Height Adjustment	±20 mm
Required Air Supply	3 – 5 kg/cm^2 nitrogen or compressed air

Ordering Information (Tie–Bar Type)

DVIO-S-2412 I-600h

- Support Height
- I : Pneumatic Isolator
- Table Top Dimensions (W x D)

Ordering Information (Self–Standing Type)

DVIO-S-M/L/P4 (500h)

- Support Height
- Quantity of Pneumatic Isolators
- Size of Pneumatic Isolator

Ordering Chart (Tie–Bar Type)

Model No.	Dimensions (A x B x h) (mm)	Cross Section (K) (mm)	Isolator Size	Maximum Payload Capacity (kg)	Number of Isolators
DVIO–S–0906I–h DVIO–S–1006I–h	750 x 450 x h	100	ISO–S	300	4
DVIO–S–0975I–h DVIO–S–1075I–h	750 x 650 x h	100	ISO–S	300	4
DVIO–S–0909I–h DVIO–S–0910I–h DVIO–S–1009I–h DVIO–S–1010I–h	750 x 600 x h	100	ISO–S	300	4
DVIO–S–1206I–h	900 x 450 x h	100	ISO–S	300	4
DVIO–S–1209I–h DVIO–S–1210I–h	900 x 750 x h	100	ISO–S	300	4
DVIO–S–1212I–h	900 x 900 x h	100	ISO–S	300	4
DVIO–S–1212I–h	900 x 900 x h	125	ISO–M	500	4
DVIO–S–1275I–h	900 x 600 x h	100	ISO–S	300	4
DVIO–S–1506I–h DVIO–S–1806I–h	1150 x 450 x h	100	ISO–S	300	4
DVIO–S–1509I–h DVIO–S–1510I–h DVIO–S–1809I–h DVIO–S–2009I–h DVIO–S–2010I–h	1150 x 750 x h	125	ISO–M	500	4
DVIO–S–1512I–h DVIO–S–1812I–h DVIO–S–2012I–h	1150 x 900 x h	125	ISO–M	500	4
DVIO–S–1512I–h DVIO–S–1812I–h DVIO–S–2012I–h	1150 x 900 x h	150	ISO–L	1000	4
DVIO–S–1515I–h DVIO–S–1815I–h DVIO–S–2015I–h	1150 x 1150 x h	150	ISO–L	1000	4
DVIO–S–1575I–h	1150 x 600 x h	100	ISO–S	300	4
DVIO–S–2409I–h DVIO–S–2410I–h	1400 x 700 x h	150	ISO–L	1000	4
DVIO–S–2412I–h	1400 x 900 x h	150	ISO–L	1000	4
DVIO–S–2415I–h	1400 x 1150 x h	150	ISO–L	1000	4
DVIO–S–3009I–h DVIO–S–3010I–h	1600 x 700 x h	150	ISO–L	1000	4
DVIO–S–3012I–h	1800 x 900 x h	150	ISO–L	1500	6
DVIO–S–3012I–h	1800 x 900 x h	175	ISO–P	2000	4
DVIO–S–3015I–h	1800 x 1150 x h	150	ISO–L	1500	6
DVIO–S–3015I–h	1600 x 1150 x h	175	ISO–P	2000	4
DVIO–S–3612I–h	2100 x 900 x h	150	ISO–L	1500	6
DVIO–S–3615I–h	2100 x 1150 x h	150	ISO–L	1500	6
DVIO–S–3615I–h	1900 x 1150 x h	175	ISO–P	2000	4

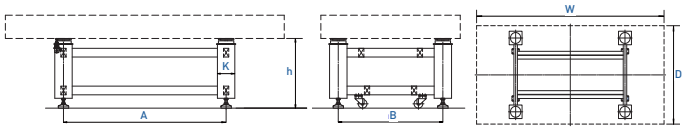
*The recommended payload is 70% of maximum payload capacity.
*Custom dimensions and configurations are available upon request.

Ordering Chart (Self–Standing Type)

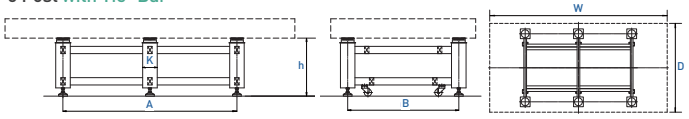
Model No.	Dimensions ΦD x h (mm)	Maximum Payload Capacity (kg /1set)
DVIO–S–M4(h)	216 X h	500
DVIO–S–L4(h)		1000
DVIO–S–L6(h)	216 x h or 267 x h	1500
DVIO–S–P4(h)		2000
DVIO–S–P6(h)		3000

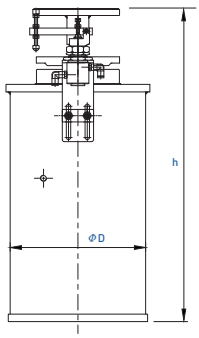
*The recommended payload is 70% of maximum payload.
*The diameter of the self–standing support depends on dimensions of the optical table top.
*Custom dimensions and configurations are available upon request.

4 Post with Tie–Bar



6 Post with Tie–Bar





Self–Standing

Rigid Supports

Tie–Bar Type

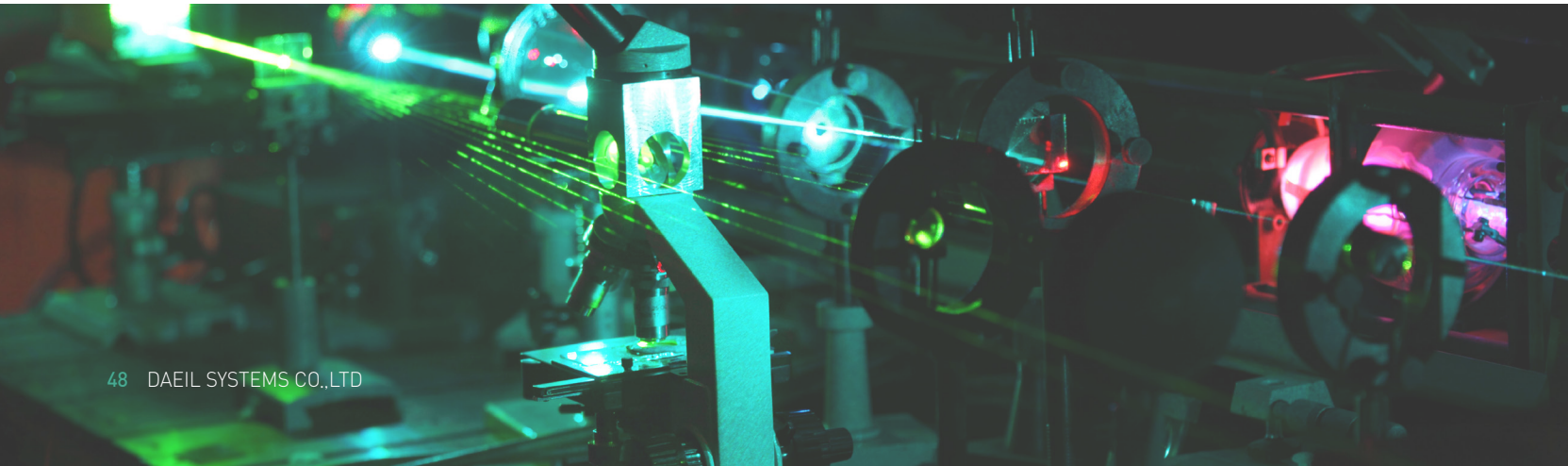
The rigid non–isolating isolators are welded to a tie–bar and leveling feet and casters are mounted to a tie–bar, providing mobility and easy installation.

4 Post System

6 Post System

Self–Standing Type

4, 6, or 8 self–standing supports can be installed according to a payload and dimensions of a table top.



Ordering Information (Tie–Bar Type)

DVIO-S-2412 R-600h

- 600h — Support Height
- R : Rigid Support
- 2412 — Table Top Dimensions (W x D)

Ordering Chart (Tie–Bar Type)

Model No.	Dimensions (A x B x h) (mm)	Cross Section (K) (mm)	Maximum Payload Capacity (kg)	Number of Isolators
DVIO–S–0906R–h	750 x 450 x h	100	1700	4
DVIO–S–1006R–h				
DVIO–S–0975R–h	750 x 650 x h	100	1700	4
DVIO–S–1075R–h				
DVIO–S–0909R–h	750 x 750 x h	100	1700	4
DVIO–S–0910R–h				
DVIO–S–1009R–h				
DVIO–S–1010R–h				
DVIO–S–1206R–h	900 x 450 x h	100	1700	4
DVIO–S–1209R–h	900 x 750 x h	100	1700	4
DVIO–S–1210R–h				
DVIO–S–1212R–h	900 x 900 x h	100	1700	4
DVIO–S–1275R–h	900 x 600 x h	100	1700	4
DVIO–S–1506R–h	1150 x 450 x h	125	1700	4
DVIO–S–1806R–h				
DVIO–S–1509R–h	1150 x 750 x h	125	1700	4
DVIO–S–1510R–h				
DVIO–S–1809R–h				
DVIO–S–2009R–h				
DVIO–S–2010R–h				
DVIO–S–1512R–h	1150 x 900 x h	125	1700	4
DVIO–S–1812R–h				
DVIO–S–2012R–h				
DVIO–S–1515R–h	1150 x 1150 x h	125	1700	4
DVIO–S–1815R–h				
DVIO–S–2015R–h				
DVIO–S–1575R–h	1150 x 600 x h	125	1700	4
DVIO–S–2409R–h	1400 x 700 x h	150	1700	4
DVIO–S–2410R–h				
DVIO–S–2412R–h	1400 x 900 x h	150	1700	4
DVIO–S–2415R–h	1400 x 1150 x h	150	1700	4
DVIO–S–3009R–h	1600 x 700 x h	150	1700	4
DVIO–S–3010R–h				
DVIO–S–3012R–h	1800 x 900 x h	150	2500	6
DVIO–S–3015R–h	1800 x 1150 x h	150	2500	6
DVIO–S–3612R–h	2100 x 900 x h	150	2500	6
DVIO–S–3615R–h	2100 x 1150 x h	150	2500	6

*Custom dimensions and configurations are available upon request.

Ordering Information (Self–Standing Type)

DVIO-S-R4 (500h)

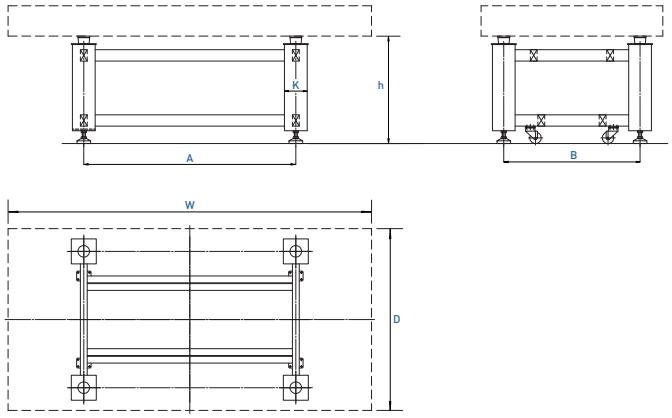
- 500h — Support Height
- R4 — Number of Isolators
- R : Rigid Support

Ordering Chart (Self–Standing Type)

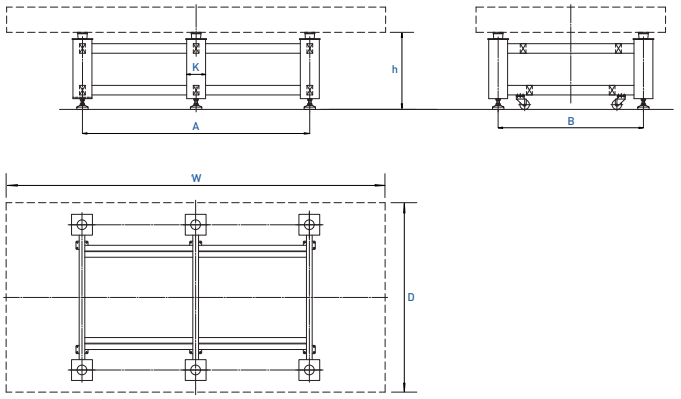
Model No.	Dimensions ΦD x h (mm)	Maximum Payload Capacity (kg/1set)
DVIO–S–R4(h)	267 x h	1700
DVIO–S–R6(h)		2500

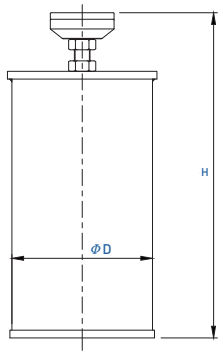
*Custom dimensions and configurations are available upon request.

4 Post with Tie–Bar



6 Post with Tie–Bar





Self–Standing

Optical Table Accessories

Overhead Shelf System

DOTS series, overhead optical table shelf system offers extra space to store power suppliers, controllers, oscilloscopes, laser diode drivers, and other instruments. The height of the shelf can be easily adjusted to secure more space.

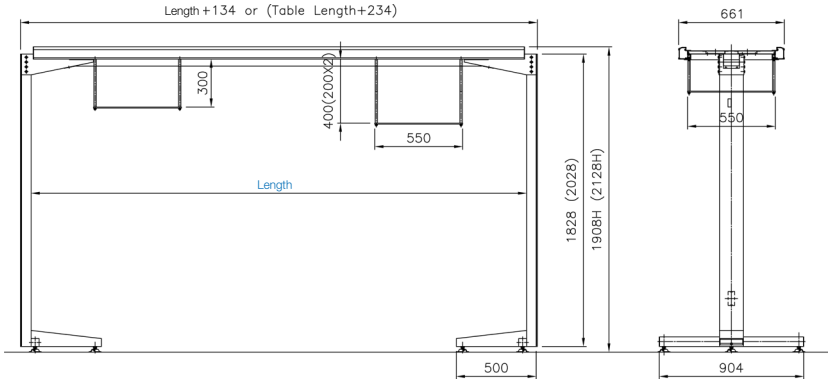
Features

- Eletrical outlets mounted on both sides of the shelf (Custom outlet strips are available)
- Formed Steel Stricture, black powder coating finish
- Leveling feet to compensate uneven floors
- Hanging shelf is adjustable in height
- Self–standing overhead shelf
- Current overload protection

Ordering Chart

Model No.	Length	Hanging Shelves (EA)	Electrical Sockets (EA)
DOTS–4	4 ft (120 cm)	1	4
DOTS–5	5 ft (150 cm)	2	5
DOTS–6	6 ft (180 cm)	2	6
DOTS–7	7 ft (210 cm)	3	7
DOTS–8	8 ft (240 cm)	3	8
DOTS–10	10 ft (300 cm)	4	10
DOTS–12	12 ft (360 cm)	6	12

*Custom dimensions and configurations are available upon request.

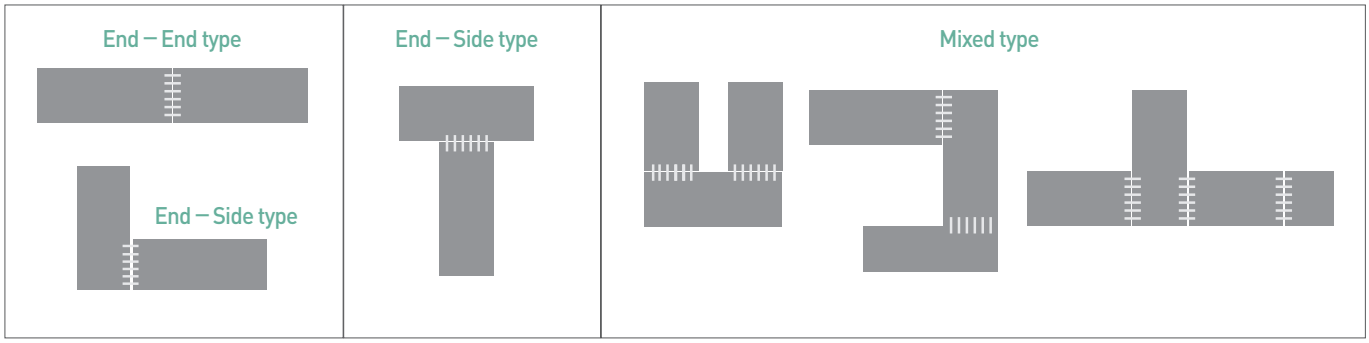


Joined Table System

Coupling multiple optical table tops enable users to have a larger sizes of optical tables in various configurations to meet complex beam–path requirements. A set of 26 mm thick steel and precision ground joiner plates are welded to the table top, providing a rigid and stable connection between optical tables without adversely affecting damping, stiffness and surface flatness across the joined tables. DAEIL' s unique alignment techniques ensure that the surface flatness across the multiple table tops are maintained.

Features

- Coupling the table tops with different thickness provides different height of work surfaces.
- Ideal for large and multiple optical tables that are difficult to move around or install.
- All joined optical tables are delicately preassembled and inspected at our factory to ensure the damping, stiffness and flatness are maintained.
- The joined table is delivered as separate pieces and reassembled at the installation site.



Custom joined table configurations are available upon request.

Optical Table Enclosure

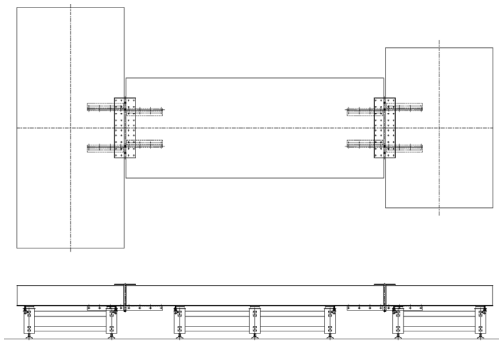
The enclosure for the optical table is made of a durable aluminum frame and acrylic panel to protect the equipment from acoustic noise heat, light, and air currents.

Enclsoure with Transparent Panels

- The aluminum frame can be either directly mounted on optical table tops or free standing on floors.
- Hinged or sliding doors, overhead shelves and wire holes options are available.
- Delivered in parts and assembled at the installation site.
- Custom dimensions and configurations are available upon request.

Table Yoke

Table Yoke connects two optical tables together to form a larger optical table. The coupled tables can be supported with either pneumatic or rigid supports.



Ordering Chart

Model No.	Application
DOTY–200	200 mm Optical Table Top
DOTY–300	300 mm Optical Table Top

*Custom dimensions and configurations are available upon request.

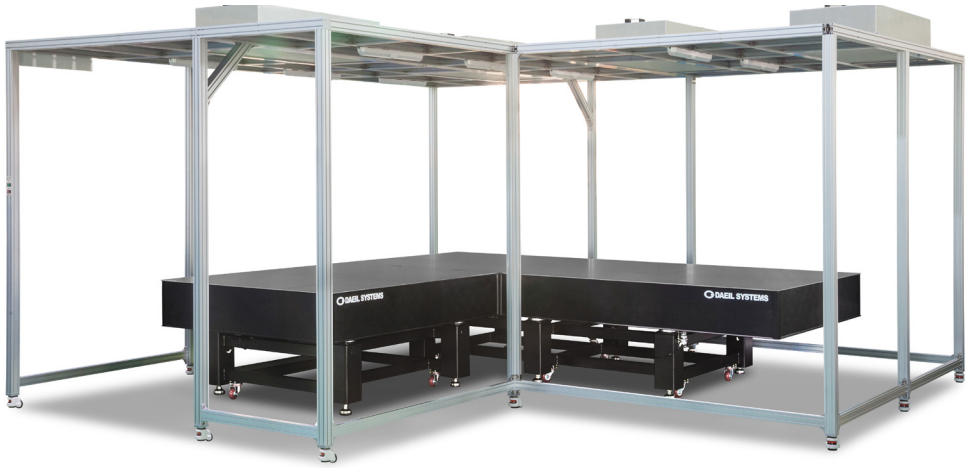
Dark Booth

The aluminum frame covered with blackout curtains offers 99.99% light isolation for the experiments that are sensitive to light such as image measurements, exposure testings and optic experiments.
Fluorescent lights or LED penlights accessories allow users to adjust equipment inside dark booths.

- Specially processed aluminum profile and flame–retardant special curtain according to types of experiments
- Lighting device and a power supply options
- Can be custom designed and built to your specifications

Clean Booth

A clean booth is a portable clean room installed with High–Efficiency Particular Air (HEPA) filters, removing at least 99.97% of airborne particles 0.3 micrometers in diameter. Cleanliness level of a clean booth is defined by the number of particles per cubic meter at a specified particle size.



- Quantity of FFU is determined based on dimensions and required cleanroom class of a clean booth.
- Construction: Aluminium profile structure
- Enclosure: Anti–static vinyl curtain
- Easy installation
- Modular, portable design
- Flourescent lamp / LED
- Frame structure supported by casters

Specifications

Construction		
Dimensions	Customize to fit	
Frame	Aluminium profile	
Walls	Anti–static vinyl curtain	
Doors	Folding / Strip / Zip	
Lighting	Fluorescent lamp / LED	
Input Voltage (V)	220 V / 60 Hz	
Fan Filter Unit		
Size	Large	Small
Dimensions (mm)	1180 x 580 x 330 (Large)	580 x 580 x 330 (Small)
Airflow Capacity (CMM)	H:18 M:15 L:10	H:9 M:7 L:5
Average Airflow Velocity (m/s)	H:0.45 M:0.35 L:0.25	
HEPA Filter	Remove at least 99.97% of 0.3 μm particles	
Noise Level	〈 58 dB	

Air Compressor

DAEIL's quiet, compact air compressor provides clean and compressed air to your vibration isolation systems.

Specifications

Operating Pressure	40 – 80 PSI
Pressure Control	Preset Minimum Pressure by Automatic Switch
Air Delivery	30 L/min at 80 PSI
Tank Capacity	13 Liters
Maximum Air Pressure	8 kg/cm^2, 115 PSI
Electrical Power	220 V / 60 Hz
Power Consumption	350 W
Dimensions (W x D x H)	435 x 280 x 490 mm
Weight	23 kg
Noise Level	40 dB
Air Discharge Outlet Diameter	Φ6 with One–Touch Fitting
Body Color	Light Gray
Pressure Indicator	1 EA
Drain Valve	1 EA

DVID Series Vibration Isolation Workstations

DVID–L
Lab Workstation

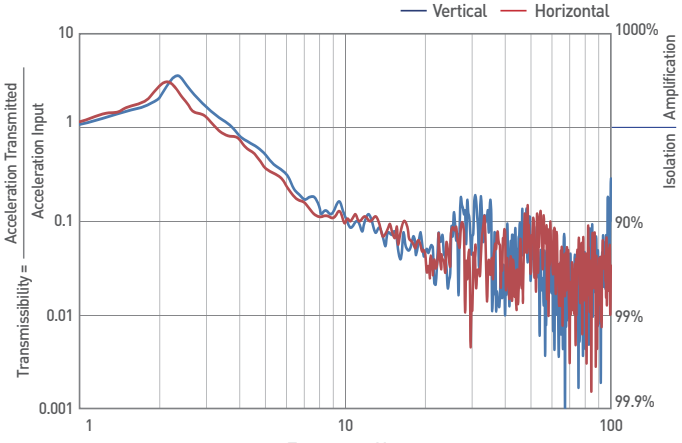
DVID–H
Optical Workstation

DVID–C
Cleanroom Workstation

DVID–T
Tabletop Workstation

DVID series is an ergonomic workstation with integrated workspace and pneumatic vibration isolators for mainly semiconductor, photonics, and life sciences metrology tools. The comprehensive workstation consists of a shelf, armrest, cabinet, etc., providing an ergonomic workspace all optional accessories can be custom designed to individual specifications. The workspace and the vibration isolated surface are separate to give an ergonomic workspace where users can place appliances or perform daily tasks. Vibration isolation and damping efficiency vary with types of pneumatic isolators and equipment. ISO–S isolator has the lower natural frequency meaning the ISO–S reduces low frequency vibrations more effectively but it is less stable due to its softness. ISO–S1 isolator is stiffer and its natural frequency is higher which indicates a stable system, and a greater load capacity, but degraded vibration isolation performance.

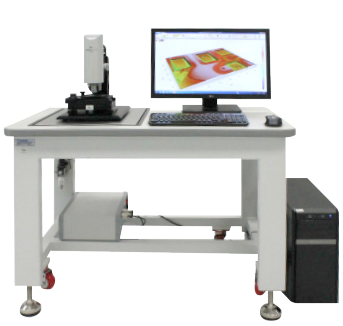
Vibration Isolation Performance



ISO-S

Applications

- Microscopy
- Optical Lithography
- Cell Injection
- Holography
- Probe Station
- Mask Aligner
- Thin Film Thickness Measurement
- Semiconductor / Display Inspection
- Interferometry
- Micro Balance



White Light Interferometry

Surface Metrology in Cleanroom

Confocal Microscopy

Tabletop SEM

DVID–L Series

Lab Workstation – Armrest Type

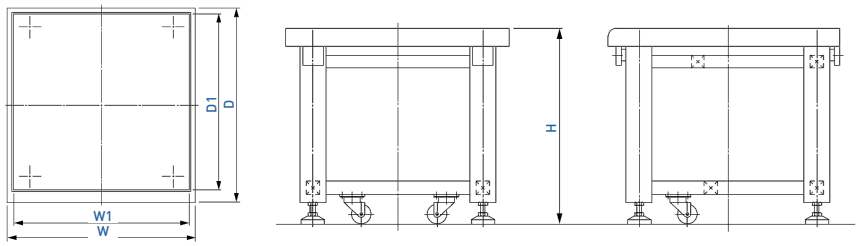
Laboratory workstations with armrest mounted on the edge of the top plate enables users to lean on and conduct various experiments. The top plate is stainless steel surface finish and supported by pneumatic vibration isolators to filter floor vibrations and provides damping. The lab workstations are ergonomically designed with open front and armrest to improve efficiency and bring a comfort in the work environment.

- Excellent vibration isolation performance in both vertical and horizontal axis
- Automatic leveling system
- Ergonomic design for seated users
- Optional accessories can be designed into the lab workstation.
- Custom–build to equipment / individual specifications

Ordering Information

DVID-L-1209-(750H)

- Total Table Height
- Vibration Isolated Surface (W1 X D1)



Ordering Chart

Model No.	Isolated Area W1 x D1 (mm)	Dimensions W x D x H (mm)	Weight (kg)
DVID–L–0506–(H)	500 x 600	555 x 685 x H	102
DVID–L–0607–(H)	600 x 700	655 x 785 x H	126
DVID–L–0608–(H)	600 x 800	655 x 885 x H	139
DVID–L–0707–(H)	700 x 700	755 x 785 x H	153
DVID–L–0709–(H)	700 x 900	755 x 985 x H	175
DVID–L–0808–(H)	800 x 800	855 x 885 x H	178
DVID–L–0907–(H)	900 x 700	955 x 785 x H	175
DVID–L–0908–(H)	900 x 800	955 x 885 x H	192
DVID–L–0909–(H)	900 x 900	955 x 985 x H	210
DVID–L–1008–(H)	1000 x 800	1055 x 885 x H	207
DVID–L–1009–(H)	1000 x 900	1055 x 985 x H	226
DVID–L–1010–(H)	1000 x 1000	1055 x 1085 x H	246
DVID–L–1208–(H)	1200 x 800	1255 x 885 x H	239
DVID–L–1209–(H)	1200 x 900	1255 x 985 x H	260

*Custom dimensions and configurations are available upon request.

Specifications

Construction		
Top Plate	Stainless Steel	
Armrest	Front Side / Front+Left+Right Sides / All Sides	
Performance		
Isolation System	Pneumatic Isolation	
Isolator Type	ISO–S	ISO–S1
Resonant Frequency	Vertical/Horizontal 1.5 – 3.0 Hz	Vertical/Horizontal 1.5 – 3.0 Hz
Vibration Isolation at 10Hz	80 – 90%	80 – 90%
Maximum Load Capacity	300 kg	600 kg
Automatic Leveling	Yes	
Leveling Repeatability	Standard Leveling Valve = ±1.0 mm Precision Leveling Valve = ±0.05 mm	
Required Air Supply	3 – 5 kg/cm^2 nitrogen or compressed air	
Height Adjustment	±20 mm	

DVID–L Series

Lab Workstation – Workspace Type

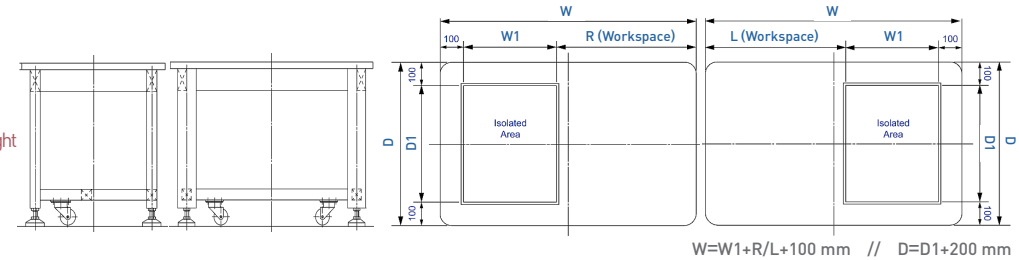
The melamine finish workspace of Lab workstations is separate from the vibration isolated surface, enabling users to place appliances and perform daily tasks efficiently.

- All–in–one lab workstation with integrated workspace and vibration isolated working surface
- Excellent vibration isolation performance
- Automatic leveling system
- Ergonomic design for seated users
- Optional accessories can be designed into the lab workstation
- Custom–build to equipment / individual specifications

Ordering Information

DVID-L-1209-L/R600-(750H)

- Total Table Height
- Workspace
- Isolated Surface
- L : Left Side
- R : Right Side



W=W1+R/L+100 mm // D=D1+200 mm

Ordering Chart

Model No.	Isolated Area W1 x D1 (mm)	Dimensions W x D x H (mm)	Weight (kg)
DVID–L–0405–L/R600–(H)	400 x 500	1100 x 700 x H	100
DVID–L–0506–L/R600–(H)	500 x 600	1200 x 800 x H	118
DVID–L–0507–L/R600–(H)	500 x 700	1200 x 900 x H	126
DVID–L–0606–L/R600–(H)	600 x 600	1300 x 800 x H	127
DVID–L–0607–L/R600–(H)	600 x 700	1300 x 900 x H	141
DVID–L–0608–L/R600–(H)	600 x 800	1300 x 1000 x H	152
DVID–L–0609–L/R600–(H)	600 x 900	1300 x 1100 x H	163
DVID–L–0707–L/R600–(H)	700 x 700	1400 x 900 x H	153
DVID–L–0806–L/R600–(H)	800 x 600	1500 x 800 x H	155
DVID–L–0808–L/R600–(H)	800 x 800	1500 x 1000 x H	183
DVID–L–0906–L/R600–(H)	900 x 600	1600 x 800 x H	163
DVID–L–0907–L/R600–(H)	900 x 700	1600 x 900 x H	198
DVID–L–0908–L/R600–(H)	900 x 800	1600 x 1000 x H	210
DVID–L–0909–L/R600–(H)	900 x 900	1600 x 1100 x H	233
DVID–L–1006–L/R600–(H)	1000 x 600	1700 x 800 x H	196
DVID–L–1007–L/R600–(H)	1000 x 700	1700 x 900 x H	210
DVID–L–1075–L/R600–(H)	1000 x 750	1700 x 950 x H	219
DVID–L–1207–L/R600–(H)	1200 x 700	1900 x 900 x H	226
DVID–L–1208–L/R600–(H)	1200 x 800	1900 x 1000 x H	252
DVID–L–1209–L/R600–(H)	1200 x 900	1900 x 1100 x H	278
DVID–L–1508–L/R600–(H)	1500 x 800	2200 x 1000 x H	283

*Custom dimensions and configurations are available upon request.

Specifications

Construction		
Top Plate	Stainless Steel	
Workspace	Melamine Laminate	
Performance		
Isolation System	Pneumatic Isolation	
Isolator Type	ISO–S	ISO–S1
Resonant Frequency	Vertical/Horizontal 1.5 – 3.0 Hz	Vertical/Horizontal 1.5 – 3.0 Hz
Vibration Isolation at 10 Hz	80 – 90%	80 – 90%
Maximum Load Capacity	300 kg	600 kg
Automatic Leveling	Yes	
Leveling Repeatability	Standard Leveling Valve = ±1.0 mm Precision Leveling Valve = ±0.05 mm	
Required Air Supply	3 – 5 kg/cm^2 nitrogen or compressed air	
Height Adjustment	±20 mm	

DVID–H Series

Optical Worksation – Optical Breadbaord Type

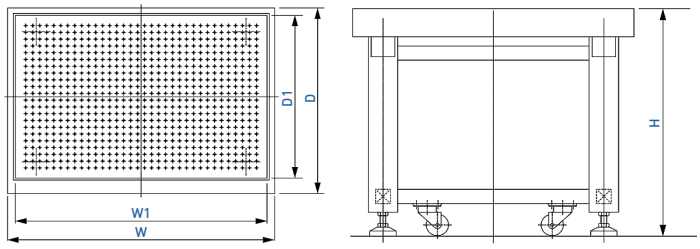
DVID–H series is a high–performance, ergonomic workstations with intergerated optical honeycomb breadboards providing stability and structural damping. Optional accessories are available for building a custom workstation to equipment specifications.

- Structural damping by honeycomb core breadboard
- Excellent vibration isolation performance
- Automatic leveling system
- Ergonomic design for seated users
- Optional accessories can be designed into the optical workstation
- Custom–build to equipment / individual specifications

Ordering Information

DVID-H-1209 M/E-50t-(750H)

- Total Table Height
- Thickness of Optical Breadboard
- Isolated Surface (W1XD1)
- Standard Mounting Holes : Metric (M) / Inch (E) / No holes (N)



Ordering Chart

Model No.	Isolated Area W1 x D1 (mm)	Dimensions W x D x H (mm)	Weight (kg) (50t/100t)
DVID–H–0907M/E–50t/100t–(H)	900 x 700	955 x 785 x H	232 / 252
DVID–H–0908M/E–50t/100t–(H)	900 x 800	955 x 885 x H	255 / 280
DVID–H–0909M/E–50t/100t–(H)	900 x 900	955 x 985 x H	280 / 308
DVID–H–1008M/E–50t/100t–(H)	1000 x 800	1055 x 885 x H	297 / 314
DVID–H–1009M/E–50t/100t–(H)	1000 x 900	1055 x 985 x H	305 / 336
DVID–H–1208M/E–50t/100t–(H)	1200 x 800	1255 x 885 x H	320 / 356
DVID–H–1209M/E–50t/100t–(H)	1200 x 900	1255 x 985 x H	353 / 391

*Custom dimensions and configurations are available upon request.

Specifications

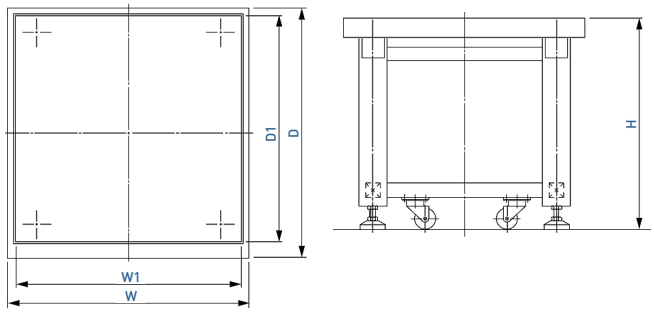
Construction		Performance	
Core	Steel honeycomb core, 0.25 mm (1 in.) thick foil	Isolation System	Pneumatic Isolation
Surface Flatness	±0.1 mm (±0.004 in.) over 600 mm² (2 ft.)	Isolator Type	ISO–S
Top Skin	430 series ferro magnetic stainless steel 4.0 mm thick	Resonant Frequency	Vertical/Horizontal 1.5 – 3.0 Hz
Bottom Skin	4.5 mm thick carbon steel plate	Vibration Isolation at 10 Hz	80 – 90%
Mounting Holes	M6–1.0 (1/4–20)	Maximum Load Capacity	300 kg
Mounting Hole Patterns	25 mm (1 in.) grid	Automatic Leveling	Yes
Mounting Hole Borders	37.5 mm (1.5 in.)	Leveling Repeatability	Standard Leveling Valve = ±1.0 mm Precision Leveling Valve = ±0.05 mm
Mounting Hole Sealing	21 mm deep chemical resistant nylon cap	Required Air Supply	3 – 5 kg/cm² nitrogen or compressed air
Damping	Broadband damping	Height Adjustment	±20 mm

DVID–C Series

Cleanroom Workstation – Armrest Type

All stainless steel cleanroom workstations are high–performance, anti–vibration table, designed to provide maximum cleanroom compatibility. An armrest mounted on the edge of the top plate, allowing users to lean on and perform various experiments. The armrest type DVID–C is ergonomically designed with open front and armrest to improve efficiency and bring a comfort in the work environment.

- Maximum cleanroom compatibility
- Excellent vibration isolation performance
- Automatic leveling system
- Ergonomic design for seated users
- Optional accessories can be designed into the cleanroom workstation
- Custom–build to equipment / individual specifications



Ordering Information

DVID-C-1209-(750H)

- Total Table Height
- Isolated Surface (W1 X D1)

Ordering Chart

Model No.	Isolated Area W1 x D1 (mm)	Dimensions W x D x H (mm)	Weight (kg)
DVID–C–0506–(H)	500 x 600	555 x 685 x H	110
DVID–C–0607–(H)	600 x 700	655 x 785 x H	136
DVID–C–0707–(H)	700 x 700	755 x 785 x H	158
DVID–C–0709–(H)	700 x 900	755 x 985 x H	180
DVID–C–0808–(H)	800 x 800	855 x 885 x H	182
DVID–C–0907–(H)	900 x 700	955 x 785 x H	180
DVID–C–0908–(H)	900 x 800	955 x 885 x H	195
DVID–C–0909–(H)	900 x 900	955 x 985 x H	213
DVID–C–1008–(H)	1000 x 800	1055 x 885 x H	210
DVID–C–1009–(H)	1000 x 900	1055 x 985 x H	232
DVID–C–1010–(H)	1000 x 1000	1055 x 1085 x H	250
DVID–C–1208–(H)	1200 x 800	1255 x 885 x H	243
DVID–C–1209–(H)	1200 x 900	1255 x 985 x H	265
DVID–C–1210–(H)	1200 x 1000	1255 x 1085 x H	288

*Custom dimensions and configurations are available upon request.

Specifications

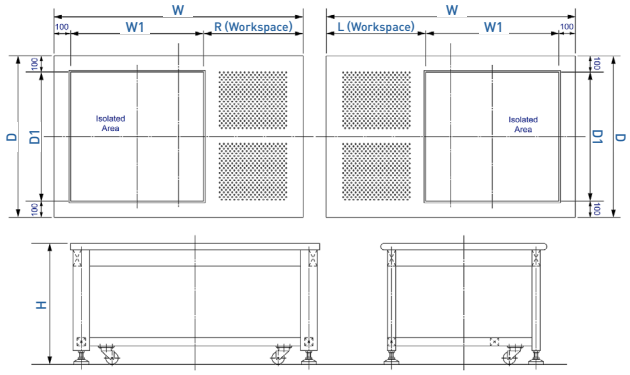
Construction		
Material	304 series Stainless Steel	
Armrest	Front Side / Front+Left+Right Sides / All Sides	
Performance		
Isolation System	Pneumatic Isolation	
Isolator Type	ISO–S	ISO–S1
Resonant Frequency	Vertical/Horizontal 1.5 – 3.0 Hz	Vertical/Horizontal 1.5 – 3.0 Hz
Vibration Isolation at 10Hz	80 – 90%	80 – 90%
Maximum Load Capacity	300 kg	600 kg
Automatic Leveling	Yes	
Leveling Repeatability	Standard Leveling Valve = ±1.0mm Precision Leveling Valve = ±0.05mm	
Required Air Supply	3 – 5 kg/cm^2 nitrogen or compressed air	
Height Adjustment	±20 mm	

DVID–C Series

Cleanroom Workstation – Workspace Type

All stainless steel cleanroom workstations are high–performance, anti–vibration table, designed to provide maximum cleanroom compatibility. The vibration isolated surface is separate from the workspace where users can place appliances and use computers to research more conveniently.

- Maximum cleanroom compatiability
- Excellent vibration isolation performance
- Automatic leveling system
- Ergonomic design for seated users
- Optional accessories can be designed into the cleanroom workstation
- Custom–build to equipment / individual specifications



W=W1+R/L+100 mm // D=D1+200 mm

Ordering Information

DVID-C-1209-L/R600-(750H)

- Total Table Height
- Workspace
- L : Left Side
  R : Right Side
- Vibration Isolated Surface (W1 X D1)

Ordering Chart

Model No.	Isolated Area W1 x D1 (mm)	Dimensions W x D x H (mm)	Weight (kg)
DVID–C–0405–L/R600–(H)	400 x 500	1100 x 700 x H	93
DVID–C–0406–L/R600–(H)	400 x 600	1100 x 800 x H	97
DVID–C–0465–L/R600–(H)	400 x 650	1100 x 850 x H	101
DVID–C–0407–L/R600–(H)	400 x 700	1100 x 900 x H	104
DVID–C–0506–L/R600–(H)	500 x 600	1200 x 800 x H	105
DVID–C–0507–L/R600–(H)	500 x 700	1200 x 900 x H	110
DVID–C–0606–L/R600–(H)	600 x 600	1300 x 800 x H	120
DVID–C–0607–L/R600–(H)	600 x 700	1300 x 900 x H	136
DVID–C–0608–L/R600–(H)	600 x 800	1300 x 1000 x H	146
DVID–C–0609–L/R600–(H)	600 x 900	1300 x 1100 x H	161
DVID–C–0707–L/R600–(H)	700 x 700	1400 x 900 x H	153
DVID–C–0806–L/R600–(H)	800 x 600	1500 x 800 x H	151
DVID–C–0808–L/R600–(H)	800 x 800	1500 x 1000 x H	182
DVID–C–0906–L/R600–(H)	900 x 600	1600 x 800 x H	165
DVID–C–0907–L/R600–(H)	900 x 700	1600 x 900 x H	180
DVID–C–0908–L/R600–(H)	900 x 800	1600 x 1000 x H	195
DVID–C–0909–L/R600–(H)	900 x 900	1600 x 1100 x H	213
DVID–C–1006–L/R600–(H)	1000 x 600	1700 x 800 x H	175
DVID–C–1007–L/R600–(H)	1000 x 700	1700 x 900 x H	194
DVID–C–1075–L/R600–(H)	1000 x 750	1700 x 950 x H	204
DVID–C–1207–L/R600–(H)	1200 x 700	1900 x 900 x H	213
DVID–C–1208–L/R600–(H)	1200 x 800	1900 x 1000 x H	239
DVID–C–1209–L/R600–(H)	1200 x 900	1900 x 1100 x H	265
DVID–C–1508–L/R600–(H)	1500 x 800	2200 x 1000 x H	276

*Custom dimensions and configurations are available upon request.

Specifications

Construction		
Material	304 series Stainless Steel	
Workspace		
Performance		
Isolation System	Pneumatic Isolation	
Isolator Type	ISO–S	ISO–S1
Resonant Frequency	Vertical/Horizontal 1.5 – 3.0 Hz	Vertical/Horizontal 1.5 – 3.0 Hz
Vibration Isolation at 10Hz	80 – 90%	80 – 90%
Maximum Load Capacity	300 kg	600 kg
Automatic Leveling	Yes	
Leveling Repeatability	Standard Leveling Valve = ±1.0mm Precision Leveling Valve = ±0.05mm	
Required Air Supply	3 – 5 kg/cm^2 nitrogen or compressed air	
Height Adjustment	±20 mm	

DVID–T Series

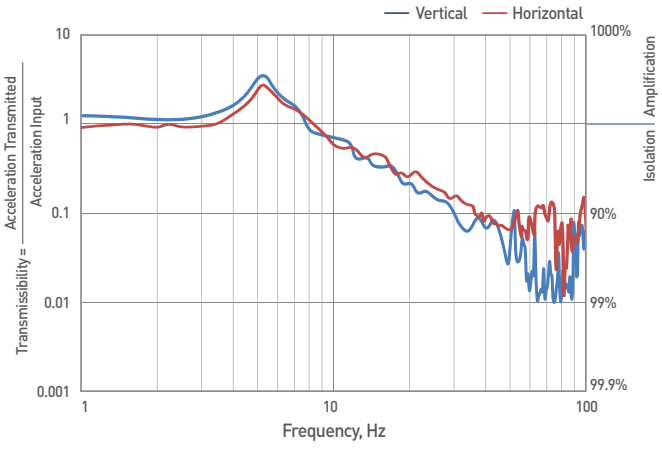
Tabletop Workstation

DVID–T series tabletop workstations provide outstanding tabletop vibration isolation specially for lightweight, low–profile precision instruments requiring pneumatic vibration isolation.

Stainless Steel Type

Optical Breadboard Type

Vibration Isolation Performance



Specifications

Construction	
Top Plate	Optical Breadboard / Stainless Steel
Performance	
Isolation System	Pneumatic Isolation
Isolator Type	ISO–B2
Resonant Frequency	7.0 – 8.0 Hz
Isolation Performance at 10Hz	80 – 90% at 20 Hz
Maximum Load Capacity	150 kg
Automatic Leveling	Yes
Leveling Repeatability	Standard Leveling Valve = ±1.0 mm
Required Air Supply	3 – 5 kg/cm^2 nitrogen or compressed air

Features

1. Portable, Compact Design

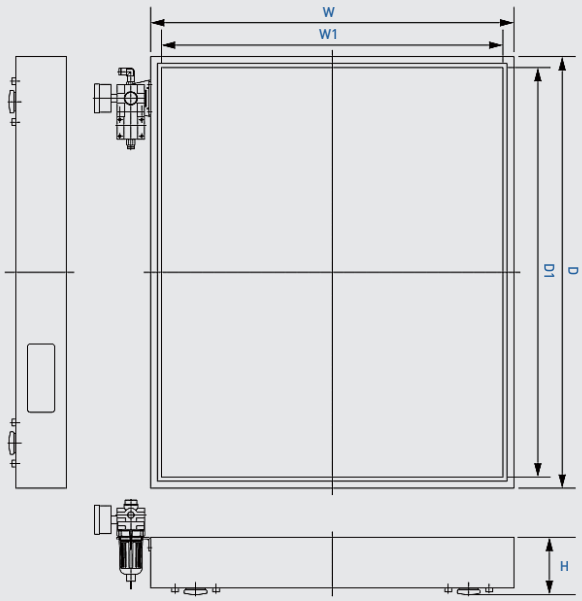
The compact, low–profile, lightweight taletop workstation is easy to install and carry.

2. Highly Damped Working Surface

The DVID–T series comes with ethier a stainless steel laminated top plate or a honeycomb breadboard based on users' applications and preferences.

3. Automatic leveling

If the tabletop platform is applied by an external force, the integrated leveling valves automatically relevel the platform.



W=W1+32 mm // D=D1+32 mm

Ordering Information

DVID-T-45A-25t

- Thickness of Top Plate
- Isolated Surface (W1 X D1)

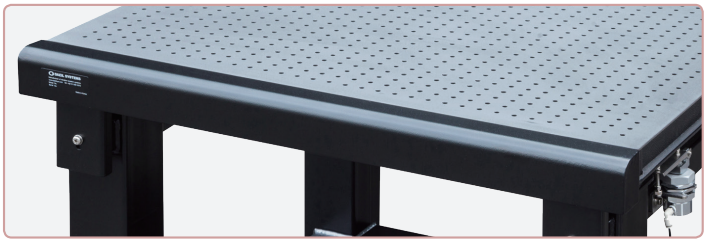
Ordering Chart (Stainless Steel Type)

Model No.	Isolated Area W1 x D1 (mm)	Dimensions W x D x H (mm)	Weight (kg)
DVID–T–45A	400 x 500	432 x 532 x 84	50
DVID–T–56A	500 x 600	532 x 632 x 84	65
DVID–T–66A	600 x 600	632 x 632 x 84	70
DVID–T–86A	800 x 600	832 x 632 x 84	80

Ordering Chart (Optical Breadboard Type)

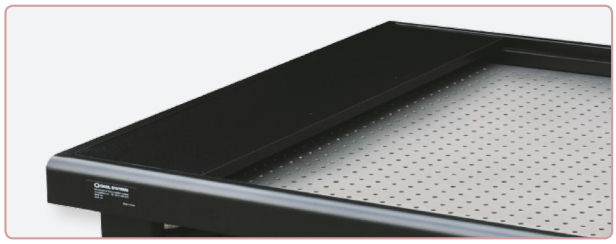
Model No.	Isolated Area W1 x D1 (mm)	Dimensions W x D x H (mm)	Weight (kg)
DVID–T–45A–25t	400 x 500	432 x 532 x 97	45
DVID–T–56A–25t	500 x 600	532 x 632 x 97	60
DVID–T–66A–25t	600 x 600	632 x 632 x 97	65
DVID–T–77A–25t	700 x 700	732 x 732 x 97	70
DVID–T–86A–25t	800 x 600	832 x 632 x 97	75
DVID–T–88A–25t	800 x 800	832 x 832 x 97	78
DVID–T–45A–50t	400 x 500	432 x 532 x 122	50
DVID–T–56A–50t	500 x 600	532 x 632 x 122	65
DVID–T–66A–50t	600 x 600	632 x 632 x 122	70
DVID–T–77A–50t	700 x 700	732 x 732 x 122	75
DVID–T–86A–50t	800 x 600	832 x 632 x 122	80
DVID–T–88A–50t	800 x 800	832 x 832 x 122	83

Accessories



Armrest

An armrest is used to prevent any direct interference onto the vibration Isolation tables and for users to work for hours at ease.



Sliding Shelf

Sliding shelves sits on front and back armrest of the workstations and provide a rigid surface to allow users to place other equipment for their applications.

Cabinet

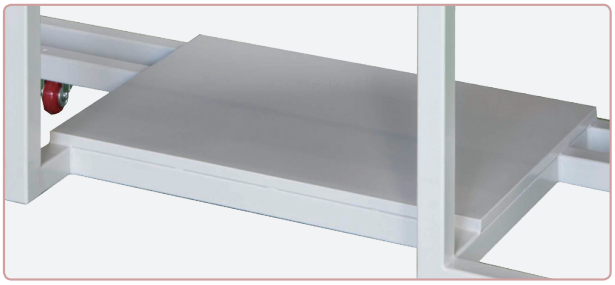
Cabinets provide additional space to store users' instrumetns inside the cabinet, protecting from external exposures or impact. Custom cabinets options are available.

Drawer

Drawers can be mounted to the anti–vibration workstations to provide space to store all sorts of materials.

Overhead & Under Shelf

Provides extra space to store other equipment.



Faraday Cage

A Faraday cage is a shielding structure with a copper mesh on the aluminum profile structure to prevent external static fields from affecting internal laboratory equipment. It is designed and manufactured according to specific equipment and usage requirements. Shelves can be placed inside to hold equipment such as wire holes and reagents for the wiring of the power supplies of equipment.

Table Enclosure

Table enclosures protect precision instruments from acoustic vibration, heat, light, and air currents. The side panels of the standard enclosure are acrylic panels and the frames are aluminium.

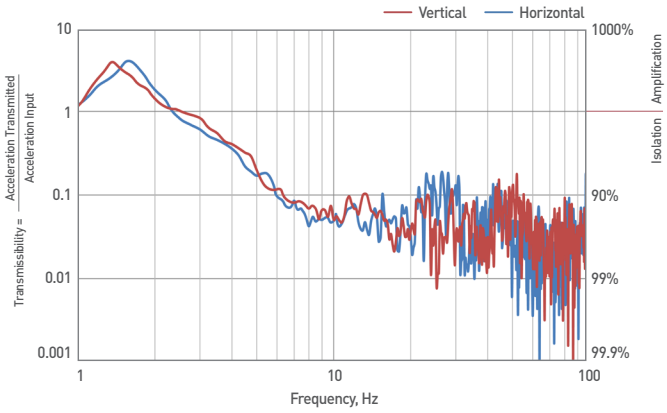
DVIP Series Low–Profile Vibration Isolation Platforms

DVIP–C
Cradle Vibration Isolation Platform

DVIP–B
Base Vibration Isolation Platform

DVIP Series is a custom, low–profile vibration Isolation platform, designed to isolate tall, large and heavy precision equipment with high center of gravity from floor vibrations. We design the optimal vibration isolation platforms to meet the requirements of equipment. A cradle platform is used when the payload has high CG.

Vibration Isolation Performance



Specifications

Isolation System	Pneumatic Isolation
Resonant Frequency	Vertical/Horizontal = 1.2 – 1.7 Hz
Vibration Isolation at 10 Hz	Vertical/Horizontal = 80 – 95%
Accuracy of Leveling Repeatability	Standard Leveling Valve = ±1.0 mm (0.04 in.) Precision Leveling Valve = ±0.05 mm (0.002 in.)
Maximum Load Capacity	3000 kg
Automatic Leveling	Yes
Required Air Supply	3 – 5 kg/cm^2 nitrogen or compressed air

Applications

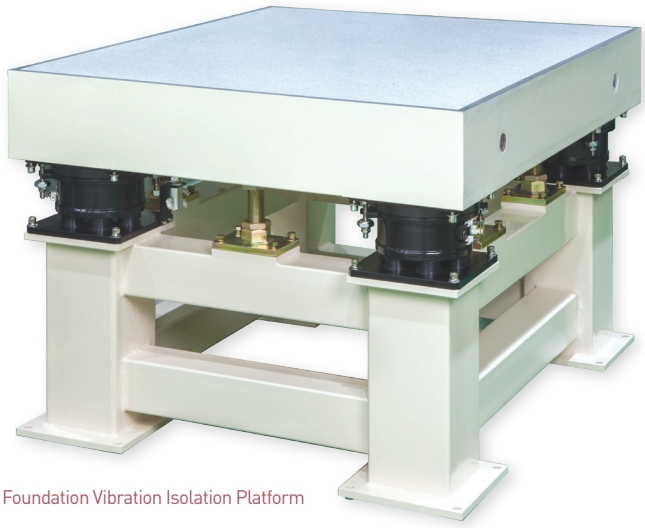
- Scanning Electron Microscopy
- Transmission Electron Microscopy
- Spectrometry Instruments
- Metrology Tools

Electron microscopes installed on DVIP–C
(Cradle Vibration Isolation Platform)

DVIF Series Foundation Vibration Isolation Platforms

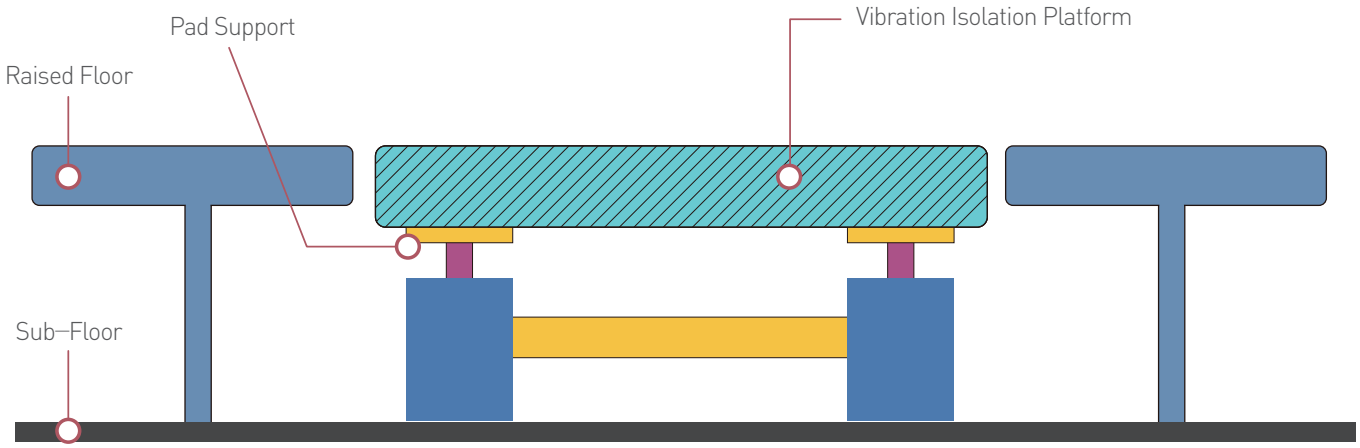
Most advanced, sophisticated tools in semiconductor fabrication plants have strict environmental requirements that must be met to avoid any reduction in system throughput or overlay performance. Therefore, these tools must be installed on a foundation vibration isolation platform that is not in physical contact with the rest of the raised floors.

The vibration isolation platform must be rigidly anchored to the structural sub–floor of the building to support the high forces transmitted to the platform from stage dynamic motion. We conduct post–installation site surveys to design the optimal vibration isolation platform according to the specific sites requirements.

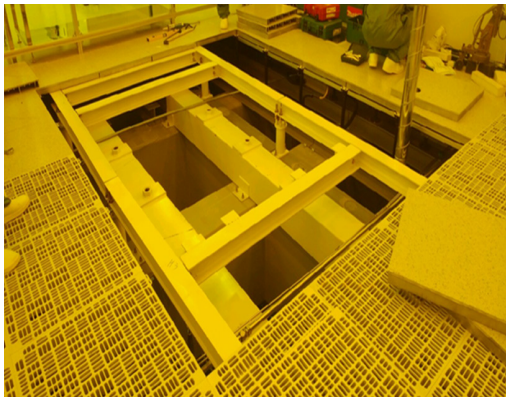


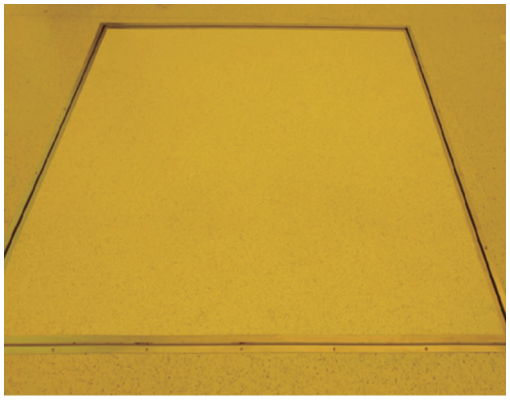
Foundation Vibration Isolation Platform

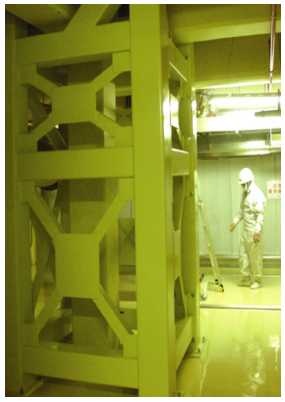
Configuration of Foundation Isolation Platform



Installation of Foundation Isolation Platform







DVIM Series Pneumatic Vibration Isolators

DVIM–G
Advanced Pneumatic Vibration Isolators

DVIM–M
Standard Pneumatic Vibration Isolators

DVIM–F
Basic Pneumatic Vibration Isolators

Pneumatic Vibration Isolator – Mount Type

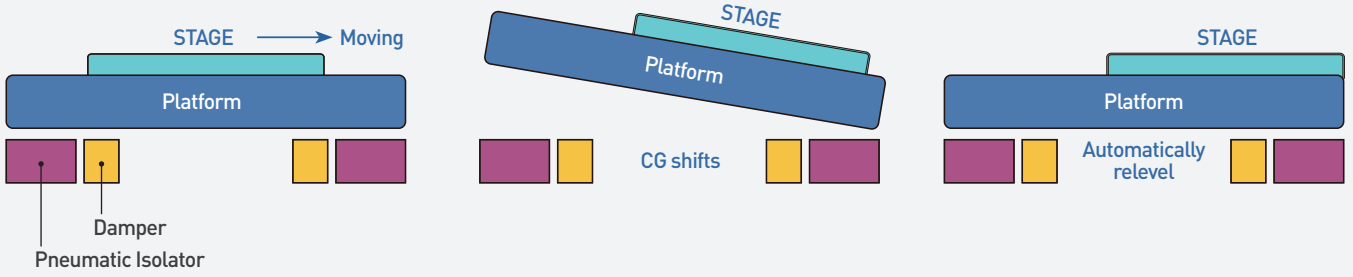
DVIM series is a pneumatic vibration isolation system for ultra–precision tools with motorized linear stages. The pneumatic isolators provide high–level of damping to minimize the forces of stage acceleration to deliver fast settling time and exceptional vibration isolation performance and to avoid any reduction in system throughput.

Applications

- Semiconductor/Display Metrology & Inspection Tools
- Precision Measuring Tools with Motorized Linear Stage
- OEM Applications

Fast Settling Time

The figure below shows how the DVIM series supports a platform with an integrated linear stage.



- Payload CG shifts as motorized linear stage travels.
- Air pressure of the pneumatic isolator is compressed by the high force from stage dynamic motion. The leveling valves attached to the pneumatic isolator, automatically relevel the vibration isolation platform.
- Oil dampers makes the isolation platform stiffer to resist the dynamic stage motion and reduce residual vibration causedby the stage motion quickly.
- The speed controller that controls the air flow rate adjusts stiffness of the pneumatic isolators to shorten the settling time.

DVIM–G Series

Advanced Pneumatic Vibration Isolator

DVIM–G series is an advanced pneumatic vibration isolator, providing highest damping level, fastest payload settling time and superior vibration isolation performance among DVIM series.

Features

- **Superior Vibration Isolation Performance**
  The DVIM–G employs the special mechanical filter system and unique design to lower its natural frequency as low as possible to effectively reduce the low frequency vibrations.

- **Dual Chamber System**
  The dual chamber system of DVIM–G consists of an air chamber and a damping chamber connected by two orifices : a variable orifice located outside of the chambers and an internal orifice located inside the chambers. These orifices control air flow between the chambers to increase damping efficiency and reduces settling time. As the high forces of stage acceleration occur, the air chamber makes a restoring force, and air flows into the damping chamber through the orifices. The orifices dissipate energy in the air, effectively damping the system.

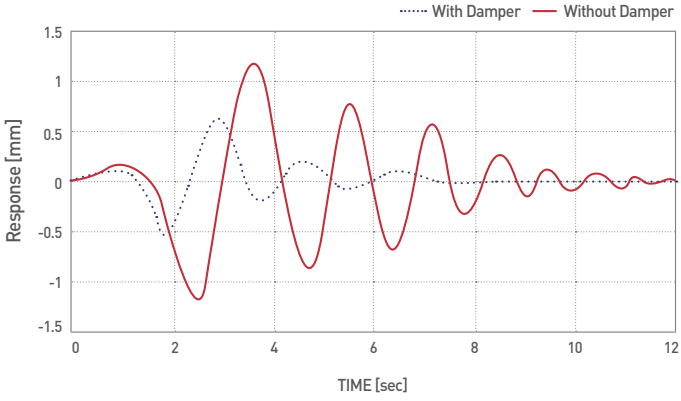
- **High–Performance Leveling Valves**
  Our leveling valves offer a wide range of valves options: The standard leveling valves with repeatability of ±0.1 mm and the precision leveling valves with repeatability of ±0.05 mm. We recommend the precision leveling valves if both the leveling accuracy and the releveling and settling time are requirements of tools.

- **Designed to Support Dynamic Stage Motion**
  The DVIM–G pneumatic isolators are equipped with the external oil dampers, the high–forces from stage acceleration are effectively damped and minimized, thus, the payload settling time is reduced, but stiffness of the isolation platform is increased. Unfortunately there is a trade–off between the natural frequency and damping. As damping is increased, the natural frequency of the pneumatic isolator shifts slightly higher and the efficiency of vibration isolation is decreased.

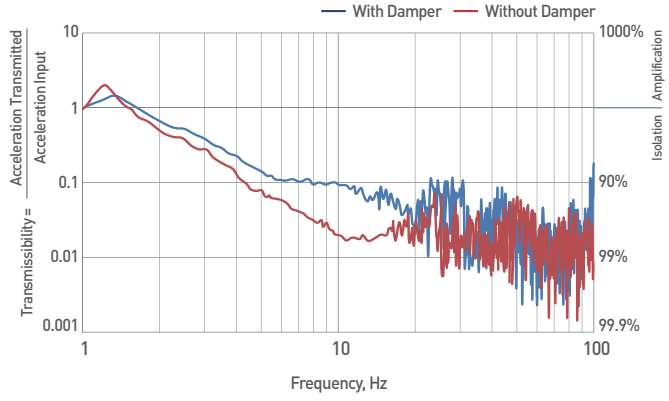
Specifications

Isolation System	Pneumatic Isolation
Resonant Frequency	Vertical/Horizontal = 1.2 – 1.5 Hz
Isolation Performance at 10 Hz	90 – 99%
Automatic Leveling	Yes
Leveling Repeatability	Standard Leveling Valve = ±1.0 mm Precision Leveling Valve = ±0.05 mm

Settling Time



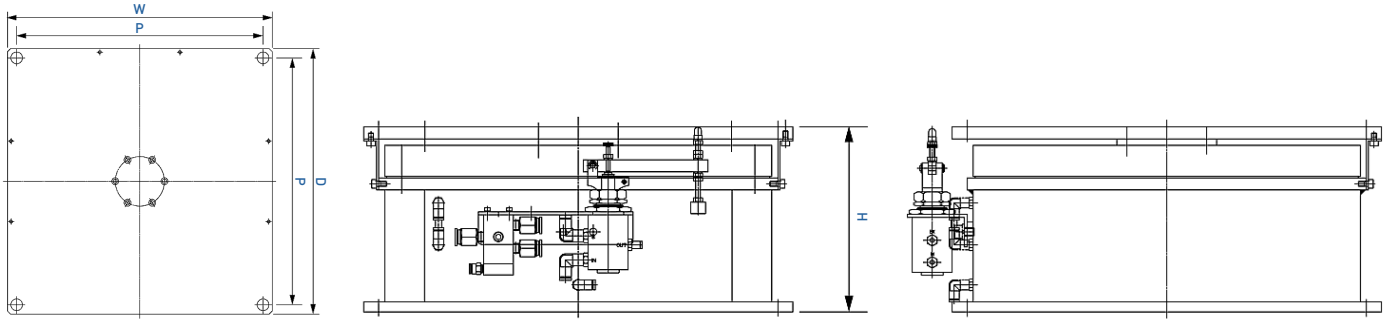
Vibration Isolation Performance



Ordering Chart (Without Oil Damper)

Model No.	Dimensions W x D x H (mm)	Location of Bolt Hole P x P (mm)	Weight (kg/EA)	Maximum Payload Per Isolator (kg)	Diameter of Bolt Hole (Φ)
DVIM–G–500	220 x 220 x 185	195 x 195	15	500	14
DVIM–G–1000	280 x 280 x 185	250 x 250	30	1000	14
DVIM–G–1500	320 x 320 x 185	290 x 290	45	1500	18
DVIM–G–2000	350 x 350 x 185	320 x 320	55	2000	18
DVIM–G–3000	430 x 430 x 185	400 x 400	90	3000	18
DVIM–G–4500	488 x 488 x 185	458 x 458	135	4500	19
DVIM–G–6000	548 x 548 x 185	518 x 518	180	6000	19

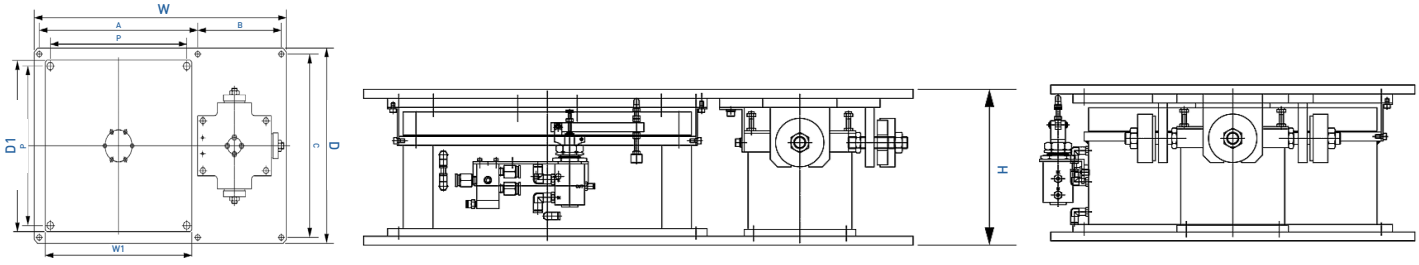
*Maximum load capacity is calculated at 3.5 bar air pressure *Recommended payload is 70% of maximum load capacity



Ordering Chart (With Oil Damper)

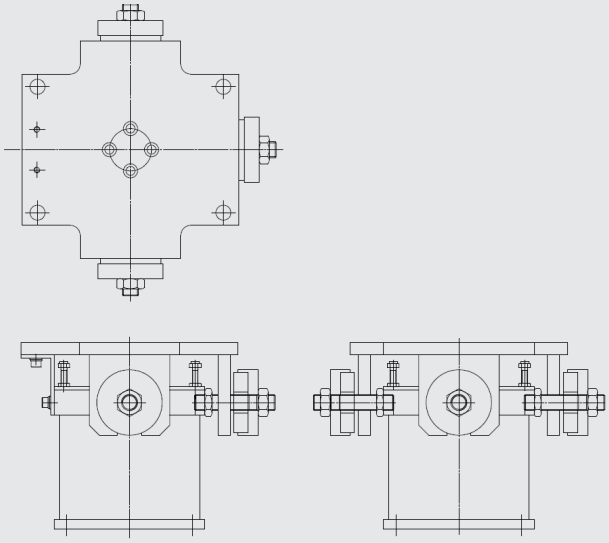
Model No.	Isolator Size W1 x D1 (mm)	Dimensions W x D x H (mm)	Location of Bolt Hole (Isolator) P x P (mm)	Location of Bolt Hole (Plate) A / B / C (mm)	Weight (kg/EA)	Maximum Payload Per Isolator (kg)	Diameter of Bolt Hole (Φ)
DVIM–G–500D	220 x 220	530 x 280 x 209	195 x 195	255 / 245 / 250	63	500	14
DVIM–G–1000D	280 x 280	590 x 340 x 209	250 x 250	315 / 245 / 310	88	1000	14
DVIM–G–1500D	320 x 320	630 x 380 x 209	290 x 290	355 / 245 / 350	110	1500	18
DVIM–G–2000D	350 x 350	660 x 410 x 209	320 x 320	385 / 245 / 380	126	2000	18
DVIM–G–3000D	430 x 430	740 x 490 x 209	400 x 400	465 / 245 / 460	178	3000	18
DVIM–G–4500D	488 x 488	798 x 548 x 209	458 x 458	518 / 245 / 518	237	4500	19
DVIM–G–6000D	548 x 548	858 x 608 x 209	518 x 518	578 / 245 / 578	298	6000	19

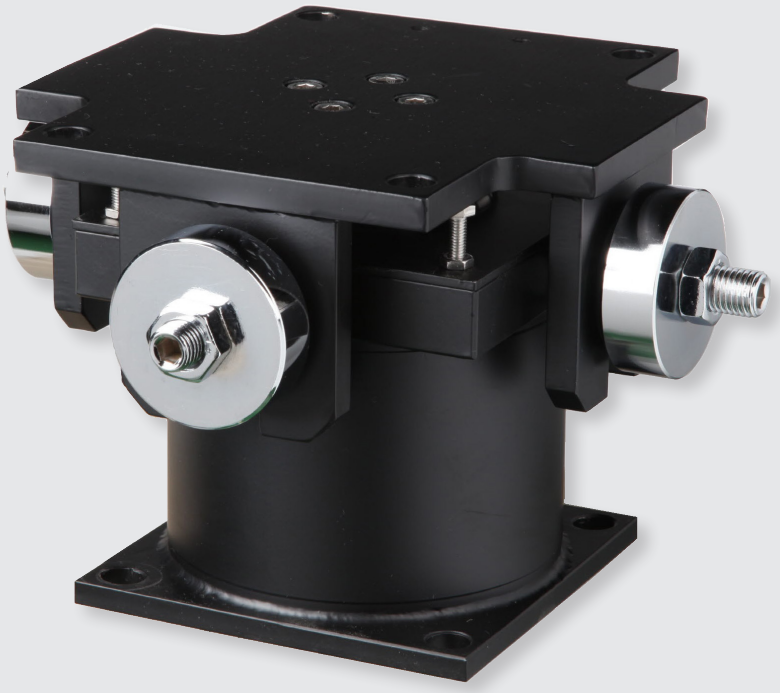
*Maximum load capacity is calculated at 3.5 bar air pressure *Recommended payload is 70% of maximum load capacity
*D indicates pneumatic isolators with external G–oil dampers.



G–Oil Damper

External G–Oil dampers are installed with stoppers to limit the linear stage from moving beyond certain stroke range in the three horizontal directions. The G–Oil damper provides high–level of damping by an oil inside the damper. The higher the viscosity of the oil, the stiffer pneumatic isolators which leads to reducing the settling time, but the transmissibility roll–off decreases.





Features

- Damping level can be adjusted by the viscosity of oil
- The high the oil viscosity decreases the efficiency of vibration isolation
- The visocitiy of oil and the quantity of oil dampers must be selected based on configurations and operating conditions of linear stages

DVIM–M Series

Standard Pneumatic Vibration Isolator

DVIM–M series is a standard pneumatic vibration isolator, offering excellent vibration isolation performance and damping for the fast payload settling time.

Features

- **Excellent Vibration Isolation Performance**
  DVIM–M series Provides the excellent vibration isolation performance in a wide range of frequency.

- **Dual Chamber System**
  The dual chamber system of DVIM–M consists of an air chamber and a damping chamber connected by two orifices : a variable orifice located outside of the chambers and an internal orifice located inside the chambers. These orifices control air flow between the chambers to increase damping efficiency and reduces settling time. As the high forces of stage acceleration ouccur, the air chamber makes a restoring force, and air flows into the damping chamber through the orifices. The orifices dissipate energy in the air, effectively damping the system.

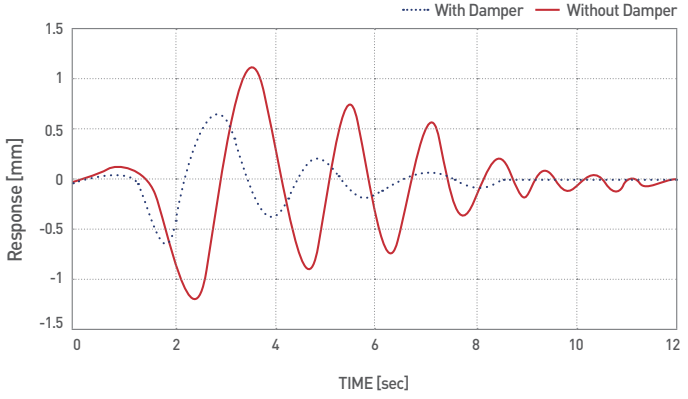
- **High–Performance Leveling Valves**
  Our leveling valves offer a wide range of valves options : The standard leveling valves with repeatability of ±0.1 mm and the precision leveling valves with repeatability of ±0.05 mm. We recommend the precision leveling valves if both the leveling accuracy and the releveling and settling time are requirements of tools.

- **Designed to Support Dynamic Stage Motion**
  The DVIM–M pneumatic isolators incorporating the built–in oil dampers, effectively damps the high–forces from stage acceleration, thus, the payload settling time is reduced, but stiffness of the isolation platform is increased. unfortunately there is a trade–off between the natural frequency and damping. As damping is increased, the natural frequency of the pneumatic isolator shifts slightly higher and the efficiency of vibration isolation is decreased.

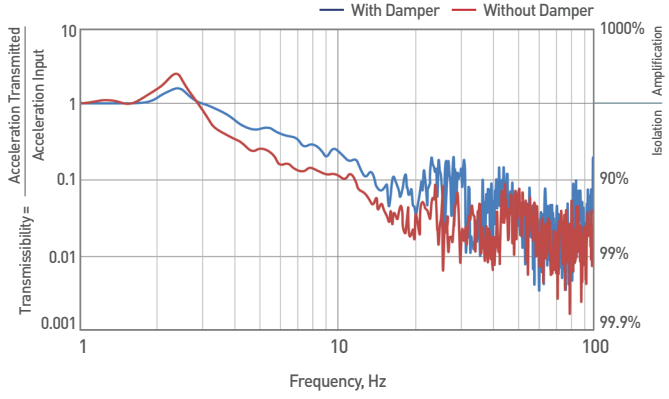
Specifications

Isolation System	Pneumatic Isolation
Resonant Frequency	Vertical/Horizontal = 2.3 – 2.8 Hz
Isolation Performance at 10Hz	80 – 90%
Automatic Leveling	Yes
Leveling Repeatability	Standard Leveling Valve = ±1.0 mm Precision Leveling Valve = ±0.05 mm

Settling Time



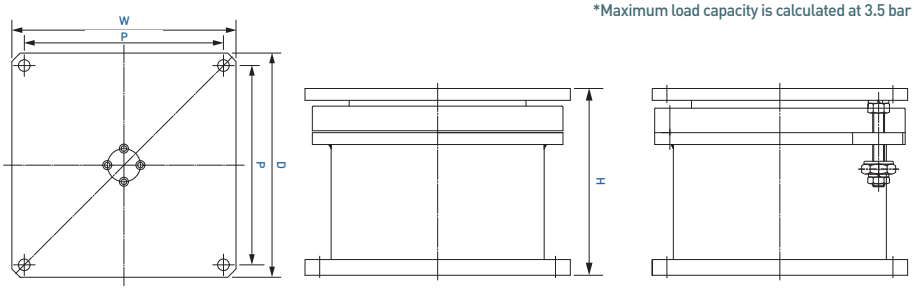
Vibration Isolation Performance



Ordering Chart (With Oil Damper)

Model No.	Dimensions W x D x H (mm)	Location of Bolt Hole P x P (mm)	Weight (kg/EA)	Maximum Payload Per Isolator (kg)	Diameter of Bolt Hole (Φ)
DVIM–M–600D	240 x 240 x 170	210 x 210	20	600	10
DVIM–M–900D	270 x 270 x 190	240 x 240	35	900	14
DVIM–M–1200D	290 x 290 x 190	260 x 260	43	1200	14
DVIM–M–1500D	320 x 320 x 190	290 x 290	50	1500	14
DVIM–M–2000D	370 x 370 x 190	340 x 340	56	2000	18
DVIM–M–2500D	390 x 390 x 190	360 x 360	63	2500	18
DVIM–M–3000D	440 x 440 x 190	410 x 410	80	3000	18
DVIM–M–4500D	450 x 450 x 190	420 x 420	85	4500	18

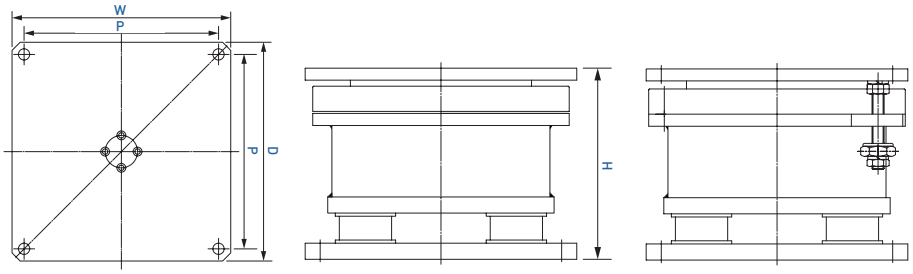
*Maximum load capacity is calculated at 3.5 bar air pressure *Recommended payload is 70% of maximum load capacity
*D indicates pneumatic isolators with built–in oil dampers



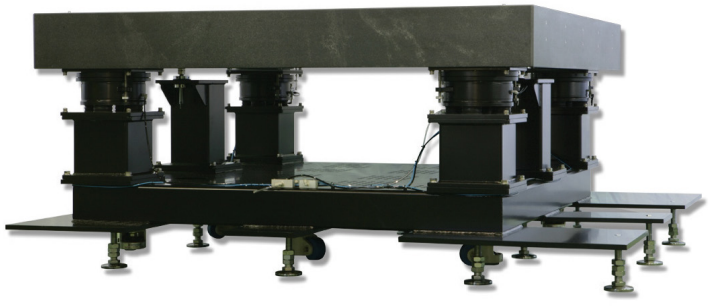
Ordering Chart (Without Oil Damper)

Model No.	Dimensions W x D x H (mm)	Location of Bolt Hole P x P (mm)	Weight (kg/EA)	Maximum Payload Per Isolator (kg)	Diameter of Bolt Hole (Φ)
DVIM–M–100	180 x 180 x 170	160 x 160	11	100	10
DVIM–M–300	200 x 200 x 170	180 x 180	16	300	

*Recommended payload is 70% of maximum load capacity *Maximum load capacity is calculated at 3.5 bar air pressure



Custom Isolation Platform with DVIM–M



DVIM–F Series

Basic Pneumatic Vibration Isolator

DVIM–F series is a basic pneumatic vibration isolator incorporating bellows air springs which are designed and built for durability, performance and value. The DVIM–F pneumatic isolators are suitable for the applications requiring less vibration isolation, damping and settling time, but durability.

Features

- **Exceptional Durability**
  The bellows air spring type is designed to perform in the toughest conditions and the long–term.

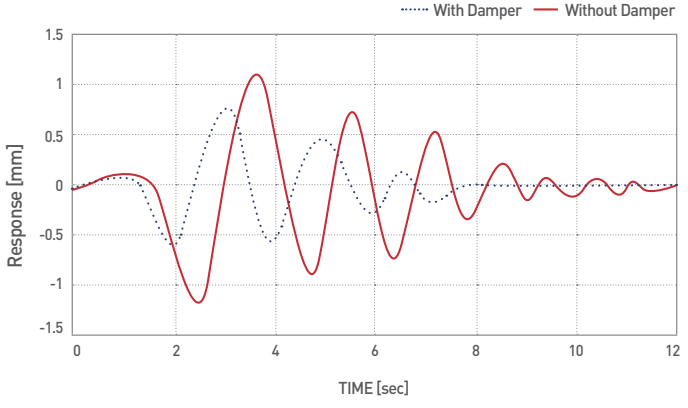
- **High–Performance Leveling Valves**
  Our leveling valves offer a wide range of valves options: The standard leveling valves with repeatability of ±0.1 mm and the precision leveling valves with repeatability of ±0.05 mm. We recommend the precision leveling valves if both the leveling accuracy and the releveling and settling time are requirements of tools.

Specifications

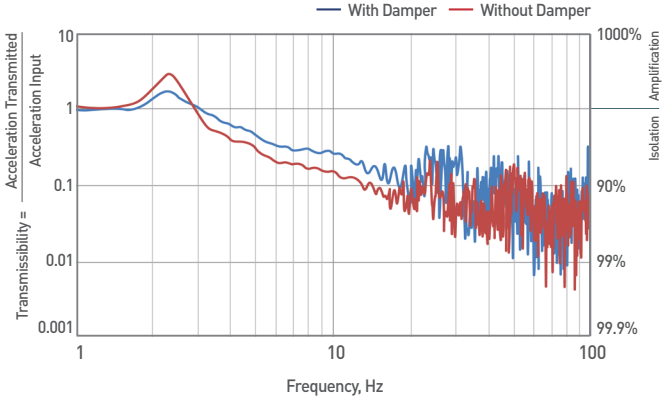
Isolation System	Pneumatic Isolation
Resonant Frequency	Vertical/Horizontal = 2.5 – 3.0 Hz
Isolation Performance at 10 Hz	70 – 80%
Automatic Leveling	Yes
Leveling Repeatability	Standard Leveling Valve = ±1.0 mm Precision Leveling Valve = ±0.05 mm

- **Designed to Support Dynamic Stage Motion**
  The DVIM–F pneumatic isolators incorporating the built–in oil dampers, effectively damps the high–forces from stage acceleration, thus, the payload settling time is reduced, but stiffness of the isolation platform is increased. Unfortunately there is a trade–off between the natural frequency and damping. As damping is increased, the natural frequency of the pneumatic isolator shifts slightly higher and the efficiency of vibration isolation is decreased.

Settling Time



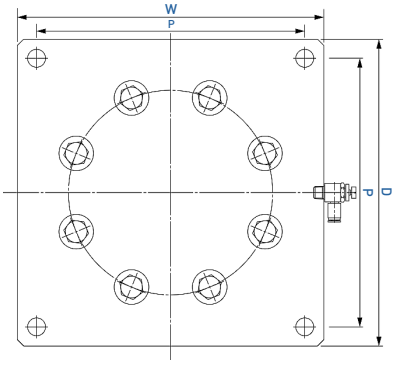
Vibration Isolation Performance

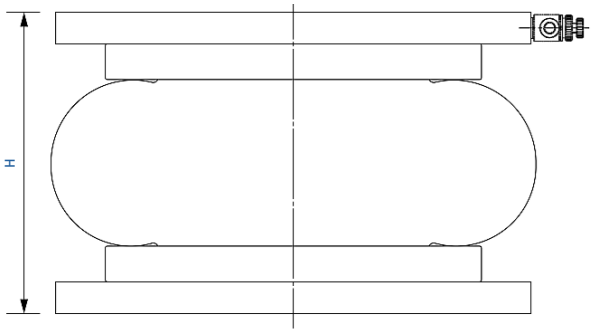


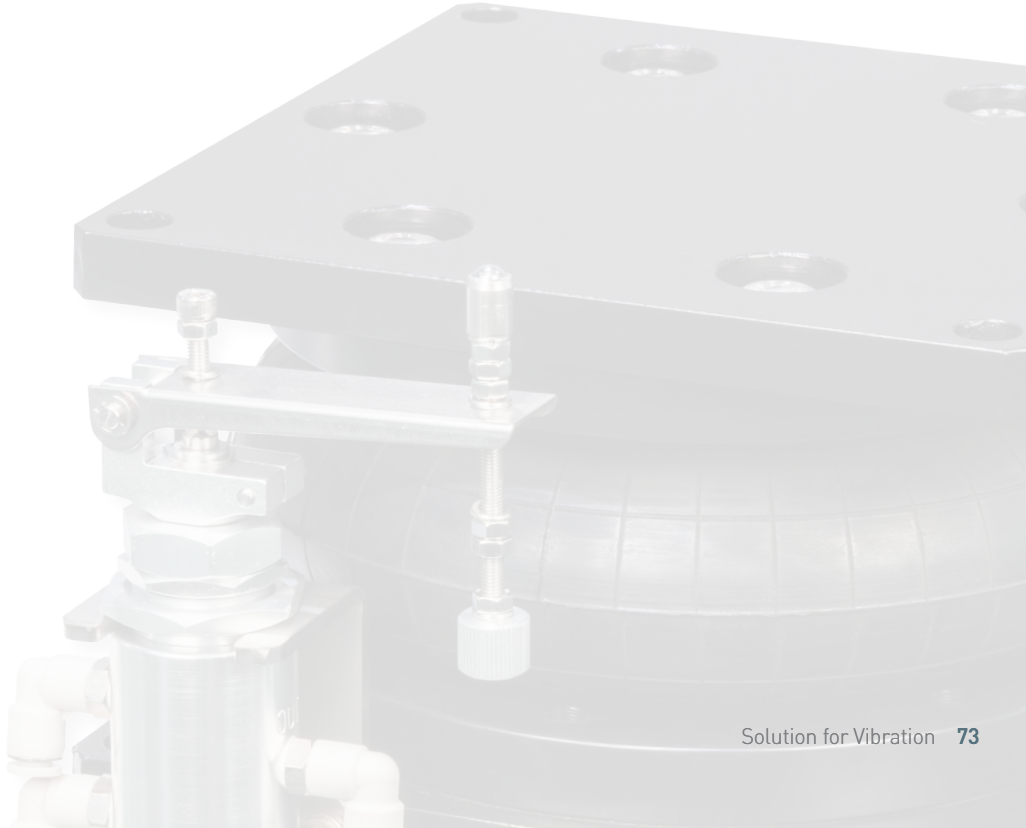
Ordering Chart

Model No.	Dimensions W x D x H (mm)	Location of Bolt Hole P x P (mm)	Weight (kg/EA)	Maximum Payload Per Isolator (kg)	Diameter of Bolt Hole (Φ)
DVIM–F–500D	220 x 220 x 152	195 x 195	20	500	14
DVIM–F–1000D	240 x 240 x 152	210 x 210	22	1000	
DVIM–F–1500D	300 x 300 x 152	270 x 270	30	1500	
DVIM–F–2000D	320 x 320 x 152	290 x 290	39	2000	
DVIM–F–2500D	360 x 360 x 172	330 x 330	47	2500	
DVIM–F–3000D	380 x 380 x 172	350 x 350	51	3000	

*Maximum load capacity is calculated at 3.5 bar air pressure *Recommended payload is 70% of maximum load capacity
*D indicates pneumatic isolators with built–in oil dampers







Air Spring

Air spring is excellent in absorbing high frequency vibration and environmental noise. Within effective strokes, rigidity, height, chamber volume and bearing capacity of the air spring can be adjusted by increasing and decreasing the internal air pressure. The air springs have been widely used in trains, automobiles, paper–making machines, lifting platforms, mechanical presses, vibrating conveyors, vibrating screens, pneumatic hammers, vibration test–beds, foundry machinery and other equipment where there is a need for absorbing shock, controlling strokes and damping. The type of the air springs comes in single, double and triple structures according to specifications and it can also be designed and manufactured with 4 or more convolutions if required.

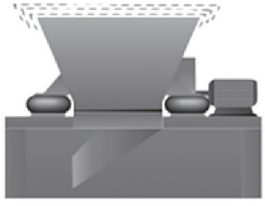
J – Series

H – Series

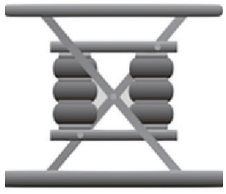
Features

- **Cost Effective**
  Air Springs are reasonably less expensive than pneumatic vibration isolators.
- **Compact Design**
  The height of the air springs can be adjusted up to 45 mm for the small model and 122 mm for the large model
- **Durability**
  Designed and built to operate dependably in the toughest conditions and in a wide range of industrial applications.
- **Easy Maintenance and Installation**
  Lubrication or any other maintenances are unnecessary as the air springs do not consist of control levers or pistons. The air springs can be easily installed in a confined space which minimizes installation time and costs.

Industrial Washing Machine



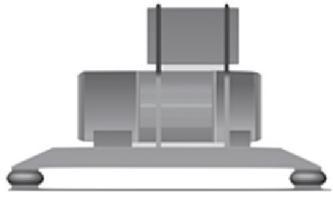
Vibration Screen



Pneumatic Lifting Platform

Vibrating Grinder

Industrial Centrifuge



Electronic Equipment Control Device

Application Area

- Electronic Equipment Control Device
- Press Machine
- Industrial Washing Machine
- Industrial Centrifuge
- Vibration Screen
- Automatic Control Console
- Vibration Grinder
- Pneumatic Lifting Platform

H Series Ordering Chart

Model (SINGLE)	Effective Diameter	Max Dia (0.7Mpa)	Load Per Air Spring			Natural Frequency (0.7Mpa)	Full Stroke (mm)		Weight
			0.2 Mpa	0.5 Mpa	0.7 Mpa		Min. Height	Max. Height	
086060H–1	50	110	44	123	175	5.18	42	90	1
120060H–1	80	130	122	313	444	3.79	42	65	1.6
150076H–1	104	160	164	435	621	3.5	46	85	1.4
188102H–1	120	210	208	587	862	3.05	52	115	2.25
215120H–1	125	233	294	768	1109	2.83	42	140	2.9
235118H–1	180	260	474	1185	1684	2.52	60	136	2.6
235150H–1	180	260	441	1205	1740	2.29	65	172	3.1
260135H–1	170	290	425	1150	1670	2.4	55	155	2.95
280126H–1	195	300	643	1662	2370	2.46	50	144	3.75
320124H–1	230	240	798	2071	2965	2.28	52	142	3.9

Model (SINGLE)	A Max Dia of Flange	B Amounting Diameter	C No. of Studs	D Length of Studs
086060H–1	112	86	4	26
120060H–1	109	91	6	
150076H–1	133	109	4	
188102H–1	175	141	6	
215120H–1	195	164	6	
235118H–1	203	175	8	
235150H–1	203	175	8	
260135H–1	230	175	8	
280126H–1	235	197	10	
320124H–1	235	197	10	

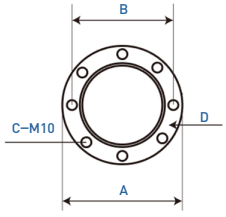
Model (DOUBLE)	Effective Diameter	Max Dia (0.7Mpa)	Load Per Air Spring			Natural Frequency (0.7Mpa)	Full Stroke (mm)		Weight
			0.2 Mpa	0.5 Mpa	0.7 Mpa		Min. Height	Max. Height	
130142H–2	80	150	80	219	314	3.12	72	162	4.4
160166H–2	100	175	149	413	593	2.3	82	190	2.35
168132H–2	120	185	229	589	832	2.53	72	151	2.2
200142H–2	150	220	326	843	1195	2.02	78	162	3.05
220200H–2	148	250	354	920	1310	1.89	90	229	3.22
230214H–2	150	255	388	1023	1457	1.93	88	246	4.05
350225H–2	250	380	1095	2851	4098	1.45	90	295	8.2
400217H–2	320	430	1753	4450	6300	1.66	90	249	11.1
520217H–2	440	550	3070	7850	11094	1.41	90	249	14.5
680262H–2	580	710	5278	13596	19313	1.35	90	302	18.6

Model (DOUBLE)	A Max Dia of Flange	B Amounting Diameter	C No. of Studs	D Length of Studs
130142H–2	140	112	6	26
160166H–2	160	135	6	26
168132H–2	184	156	8	26
200142H–2	180	152	8	26
220200H–2	203	175	8	26
230214H–2	223	185	8	26
350225H–2	322	284	14	26
400217H–2	396	358	18	33
520217H–2	508	470	24	33
680262H–2	642	605	32	33

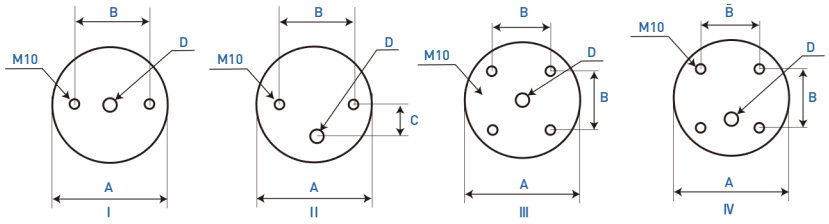
Model (TRIPLE)	Effective Diameter	Max Dia (0.7Mpa)	Load Per Air Spring			Natural Frequency (0.7Mpa)	Full Stroke (mm)		Weight
			0.2 Mpa	0.5 Mpa	0.7 Mpa		Min. Height	Max. Height	
200206H–3	150	220	229	635	888	1.68	116	236	3.75
250260H–3	185	270	507	1344	1924	1.7	116	299	5.5
255230H–3	200	280	566	1460	2070	1.3	116	264	5.55
330306H–3	250	355	1035	2730	3892	1.4	120	354	8.69
360306H–3	280	380	1250	3220	4570	1.3	122	360	8.25
480312H–3	400	510	2650	6883	9768	1.17	122	630	16.5
520312H–3	400	550	3046	7932	11262	1.32	122	360	20.1
580306H–3	500	600	3950	10181	14409	1.22	118	354	19.16
630376H–3	530	660	4243	11045	15612	0.94	122	436	24.1
680376H–3	580	710	5259	13620	19339	1.27	122	436	27.6

Model (TRIPLE)	A Max Dia of Flange	B Amounting Diameter	C No. of Studs	D Length of Studs
200206H–3	180	152	8	26
250260H–3	183	145	8	26
255230H–3	213	175	8	26
330306H–3	322	284	14	26
360306H–3	347	309	16	33
480312H–3	476	438	20	33
520312H–3	508	470	24	33
580306H–3	568	530	24	33
630376H–3	610	560	30	33
680376H–3	642	605	32	33

H series



J series



J Series Ordering Chart

Model (SINGLE)	Effective Diameter	Max Dia (0.7Mpa)	Load Per Air Spring			Natural Frequency (0.7Mpa)	Full Stroke (mm)		Weight
			0.2 Mpa	0.5 Mpa	0.7 Mpa		Min. Height	Max. Height	
150086J–1	106	160	149	395	566	3.42	55	100	1.4
188130J–1	120	210	167	438	636	3.25	55	149	1.9
215128J–1	125	230	287	760	1071	3.19	55	145	2.5
300110J–1	240	320	780	2122	3108	2.2	55	130	4.35
380150J–1	300	405	1323	3448	4907	1.94	65	175	7.4

Model (SINGLE)	A Max Dia of End Cap (mm)	End Retainer Style	B Blind Tap Spacing (mm)	C Fill Port Offset (mm)	D Air inlet (BSP)
150086J–1	114	I	44.5	0	1/4
188130J–1	135	II	44.5 (70)	0 (30)	1/4
215128J–1	160	I (II)	70 (89)	0 (40)	1/4
300110J–1	230	I (II)	140 (157)	0 (55)	1/4 (3/4)
380150J–1	310	I (II)	159 (159)	0 (79)	1/4 (3/4)

*BSP : BRITISH STANDARD PIPE

Model (DOUBLE)	Effective Diameter	Max Dia (0.7Mpa)	Load Per Air Spring			Natural Frequency (0.7Mpa)	Full Stroke (mm)		Weight
			0.2 Mpa	0.5 Mpa	0.7 Mpa		Min. Height	Max. Height	
130118J–2	100	150	135	382	561	2.98	65	137	1.55
146132J–2	106	165	163	423	607	2.81	80	151	1.7
235160J–2	180	255	540	1372	1963	1.8	80	183	3.5
330220J–2	250	355	1005	2556	3672	1.54	80	250	7.45
380228J–2	300	405	1460	3690	5251	1.52	90	260	10

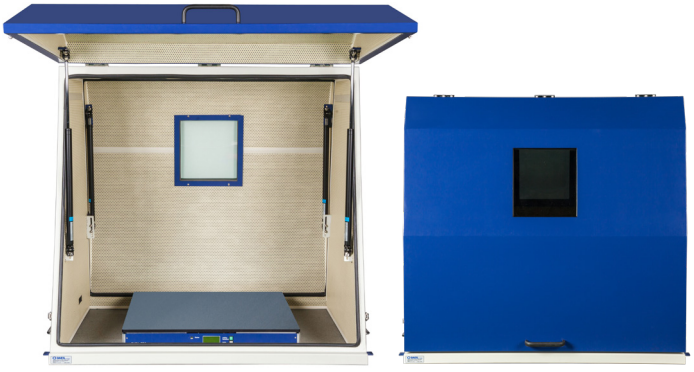
Model (DOUBLE)	A Max Dia of End Cap (mm)	End Retainer Style	B Blind Tap Spacing (mm)	C Fill Port Offset (mm)	D Air inlet (BSP)
130118J–2	114	I	44.5	0	1/4
146132J–2	114	I	44.5	0	1/4
235160J–2	160	I (II)	70 (89)	0 (40)	1/4 (3/4)
330220J–2	268	III (IV)	157	0 (73)	1/4 (3/4)
380228J–2	310	III (IV)	159	0 (79)	1/4 (3/4)

*BSP : BRITISH STANDARD PIPE

Acoustic/SEM Enclosure

Acoustic Enclosure (DAE)

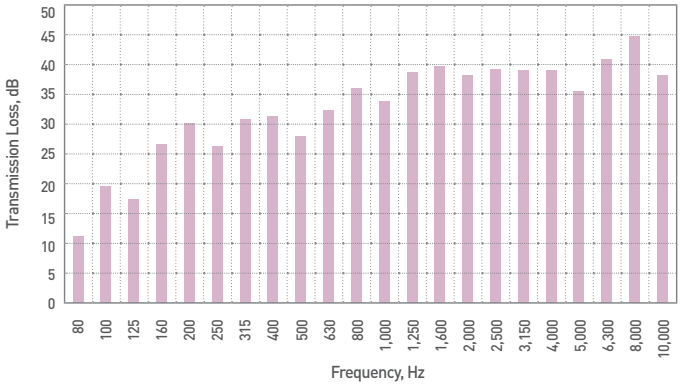
DAEIL' s acoustic enclosure is specifically designed to provide outstanding acoustic isolation in the nosiest environments for ultra–sensitive metrology instruments. Acoustic noise can critically disturb high–precision microscopes such as AFMs, and with our advanced acoustic isolation layering technology, the acoustic enclosure eliminates acoustic noise from adversely affecting measurement data.



Features

- Exceptional acoustic isolation performance across a broad frequency spectrum.
- Multiple layers of acoustic dampening material.
- Triple–paned window allows monitoring of inside without opening a door.
- Gas spring allows easy opening/closing of a door.
- Anti–vibration rubber and stiff granite plate are installed inside the acoustic chamber.
- Casters wheels are installed on the support frame, providing mobility.

Acoustic Isolation performance



Specifications

Frequency Range	3 Hz – 10 kHz
Noise Isolation	3 Layers of Sound Dampening Materials
Dimensions (W x D x H)	Standard (DVIA–T45 : 700 x 700 x 1450 mm) Standard (DVIA–T56 : 860 x 830 x 1500 mm) Custom options
Door Operation System	GAS Springs (2EA)

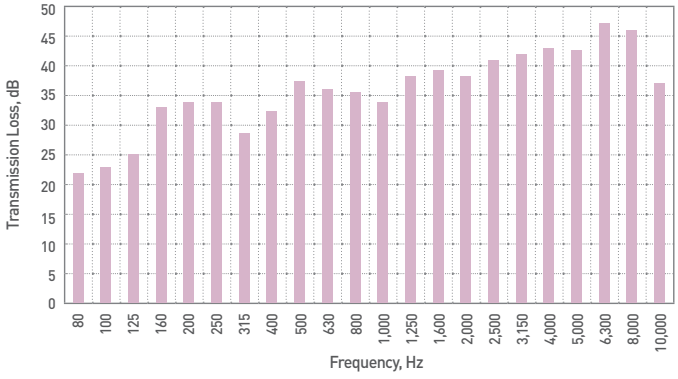
SEM Enclosure (DSE)

As electron microscope technology advances, a quiet and noise controlled environment is essentially required. DAEIL's SEM enclosure is an acoustic enclosure that specially designed for electron microscopes to provide an optimal environment where acoustic noise cannot be transmitted to the sensitive microscopes inside the enclosure. Our SEM enclosure has a cooling control system to prevent rising temperatures inside the enclosure, and the enclosure isolate environmental noises as well. In addition, users can add custom configurations and accessories according to specifications.

SEM Enclosure

Inside View

Acoustic Isolation Performance



Specifications

Frequency Range	3 Hz – 10 kHz
Noise Isolation	3 Layers of Sound Dampening Materials
Dimensions	Customize to Fit
Cooling System	Heat Dissipation System

Site Survey

As manufacturers of ultra–precision metrology tools have strict environmental requirements, installation sites must meet manufacturers specifications for vibration, acoustic noise, and magnetic fields for the optimal performance level of the tools. Site surveys determine if the installation site meets manufacturers allowable vibration, acoustic noise, and magnetic fields specifications and if the site exceeds these allowable specifications, then it must be determined whether a vibration isolation platform, acoustic enclosure, or magnetic fields control systems will mitigate the disturbances and maximize tool performance. DAEIL SYSTEMS is specialized measuring and analyzing the site survey data to design the optimal solution for the environments with various noise sources.

Site Survey Includes

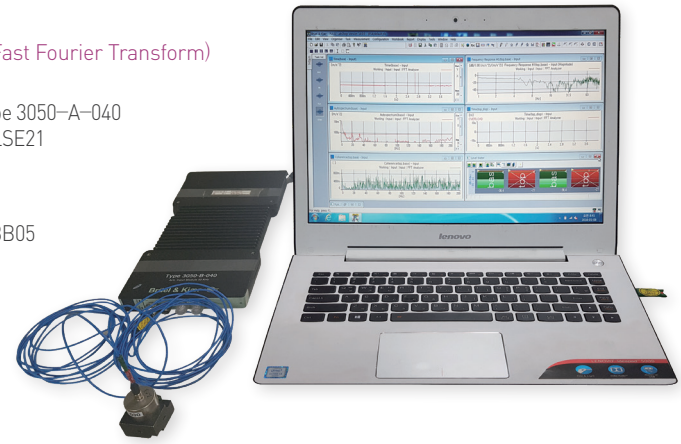
- Measurements of Vibration / Acoustic Noise / Magnetic Field
- Surveys performed by a certified engineer from DAEIL SYSTEMS
- A detailed report with the site measured, instrumentation, analysis of data, noise sources
- Recommendations for appropriate solutions to improve the environmental conditions

Features

- FFT Analyzer (Fast Fourier Transform)

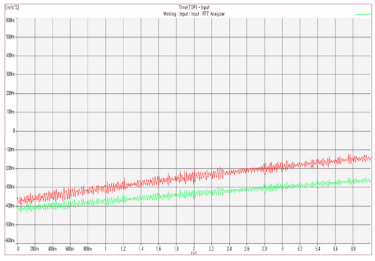
  Brüel & Kjær
  – Hardware: Type 3050–A–040
  – Software: PULSE21
- Accelerometer

  PCB
  – Model No: 393B05

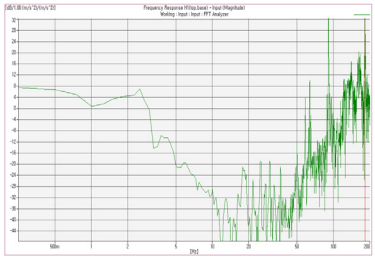


Autospectrum

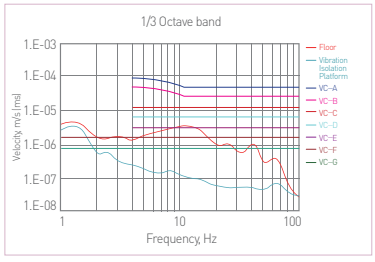
Time Signal



Transmissibility

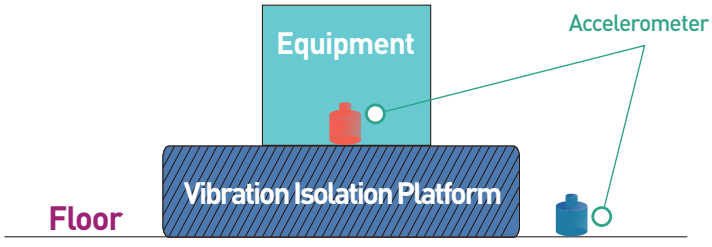


Analysis of Measured Data



Conducting a vibration site survey after DVIA–MB1000 installation

Vibration Site Survey Example



Brüel & Kjær's Analyzer

PCB's Accelerometer

Enabling Vision for the Future.

DAEIL SYSTEMS

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Enabling Vision for the Future.

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