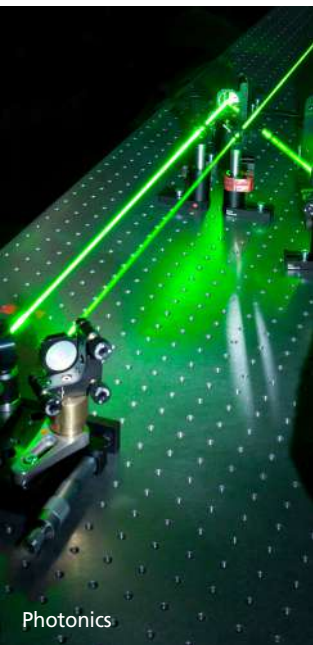
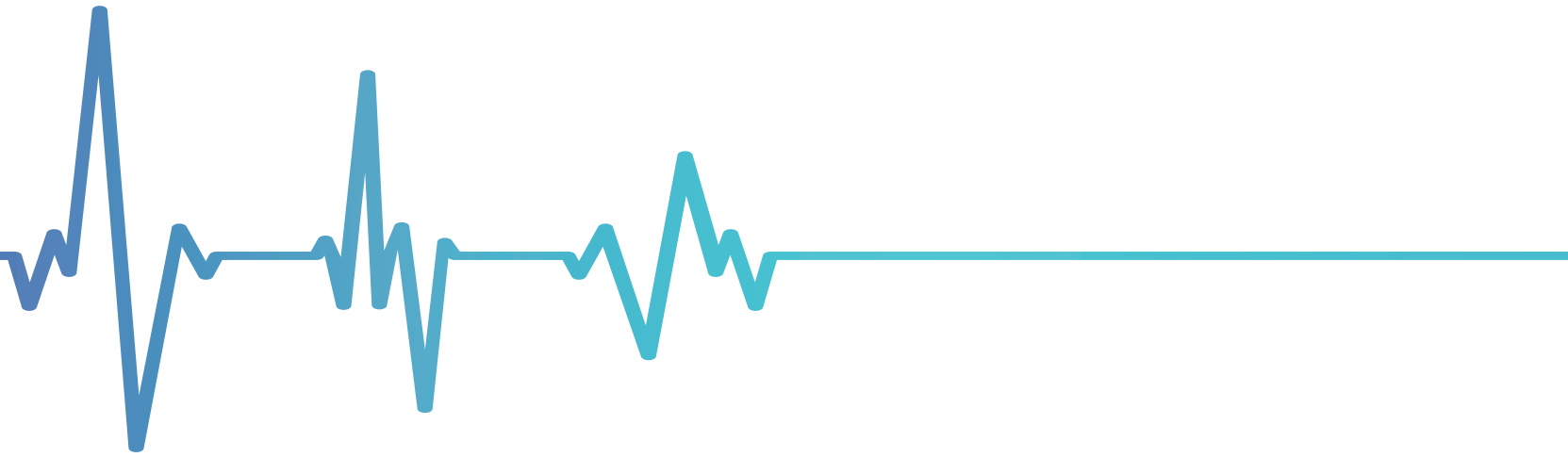


# VIBRATION ISOLATION SYSTEMS



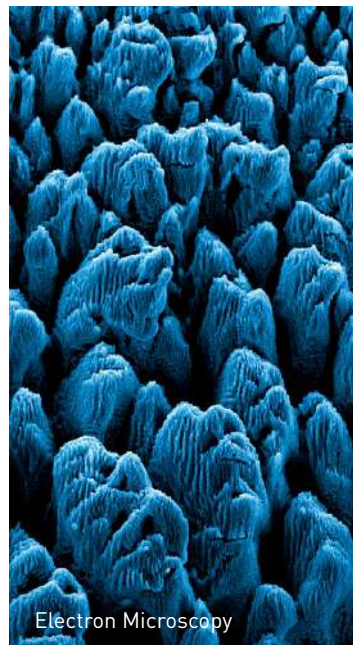
Photonics



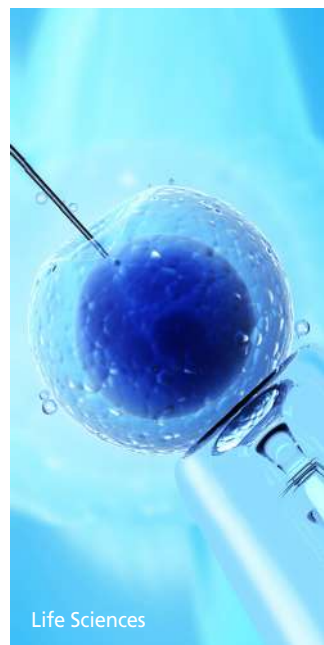
Semiconductor



Metrology



Electron Microscopy



Life Sciences

# DVIA-P Series

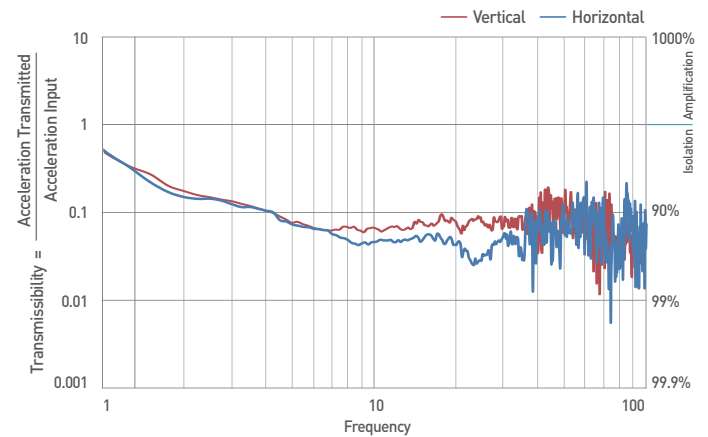
## Active Pneumatic Vibration Isolation System



### 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 x 110 mm	420 x 420 x 110 mm	450 x 450 x 120 mm	465 x 400 x 240 mm	645 x 600 x 284 mm	735 x 700 x 284 mm
Maximum Load Capacity	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 2 Hz / ≥80% at ≥4 Hz					
Settling Time	≥0.3 sec*					
Position Accuracy	±10 μm					
Input Voltage (V)	AC single phase 100 – 240 V					
Power Consumption (W)	100 W					
Required Air Pressure	≥5.5 kg/cm <sup>2</sup>					
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.

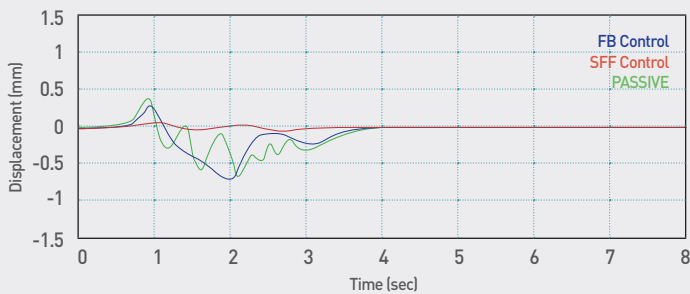
## Superior Vibration Isolation Performance in Low Frequency

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.

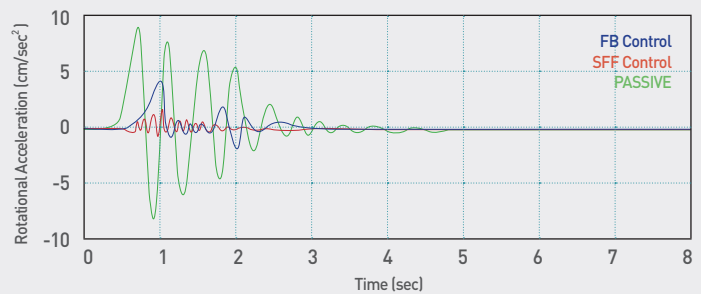
## On-Site Tuning for Maximum Performance

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 feedforward control systems, maximizing vibration isolation performance.

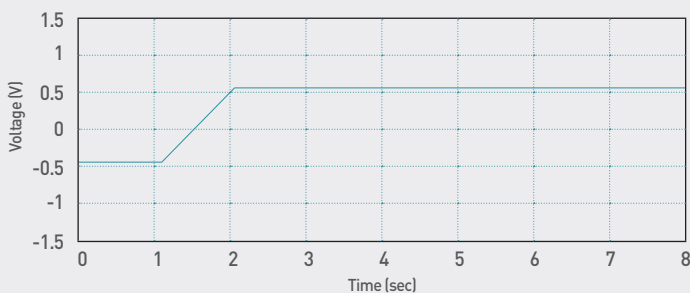
### Rotational Displacement



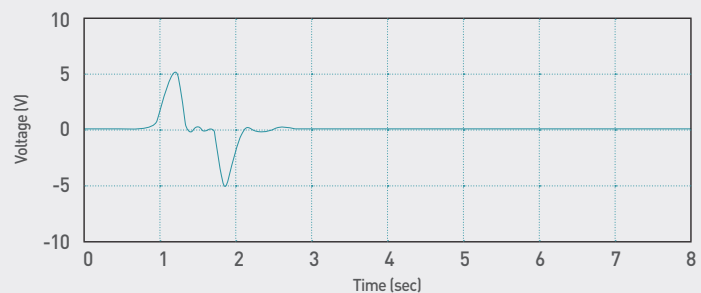
### Rotational Acceleration



### Position Signal of Stage



### Acceleration Signal of Stage



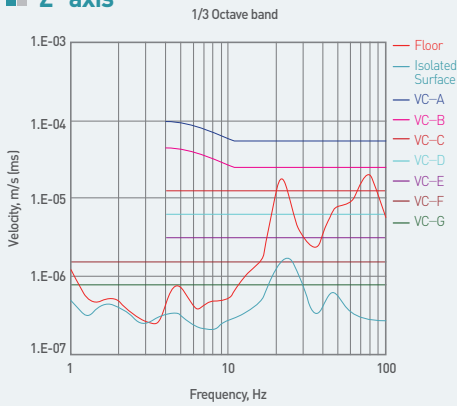
# Case Studies of DVIA-P series

## Wafer Bump Inspection Machine

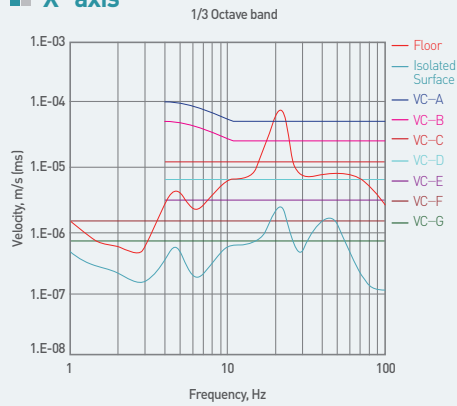
- A site survey indicated that the floor vibration was VC-B in z-axis, and VC-A in x and y axes.
- DVIA-P noticeably reduced the floor vibration to VC-E in all axes.

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

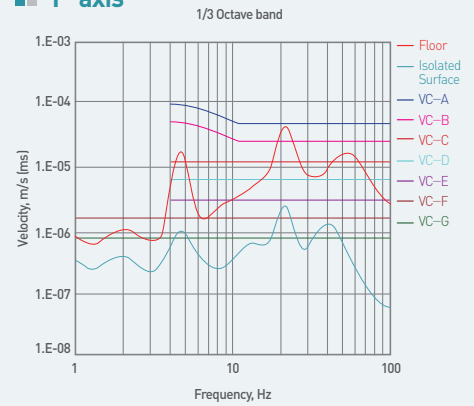
### Z-axis



### X-axis



### Y-axis

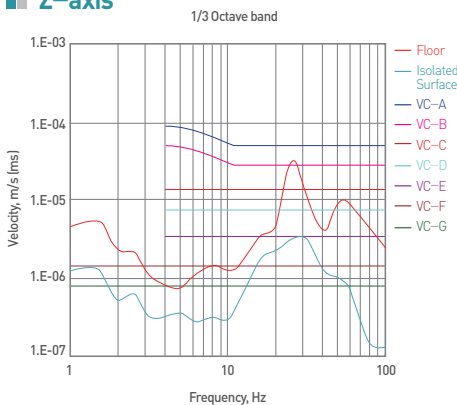


## ADVANTEST CD-SEM

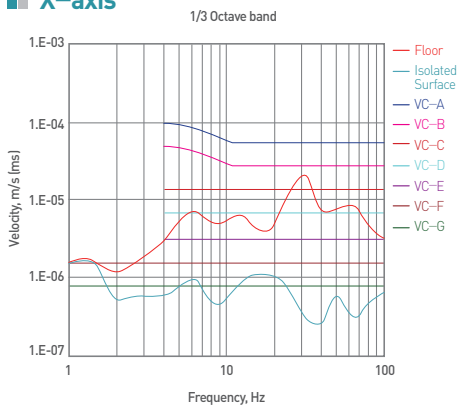
- A site survey indicated that the floor vibration of the installation site was VC-A in z-axis, VC-B in x-axis and VC-C in y-axis.
- DVIA-P reduced the floor vibration to VC-E in z-axis and VC-F in x and y axes.

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

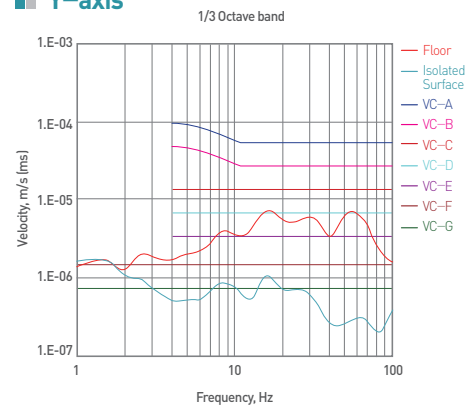
### Z-axis



### X-axis



### Y-axis





# Enabling Vision for the Future.

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