FABREEKA®
A STABILUS COMPANY

HIGH-TECH ISOLATION SOLUTIONS

ACTIVE ISOLATION SYSTEMS

INDUSTRIAL MACHINERY & AUTOMATION

FABREEKA®

THE COMPANY

Fabreeka® has been leading the international market in shock and vibration isolation since 1936. Our facilitiy at Büttelborn near Darmstadt includes our European administration as well as installation, service, quality assurance and warehousing.

Our products can be found in specialties such as measurement and laboratory technology, building services and mechanical engineering. Our in-house and field staff provide vibration measurements in the field as well as installation services, consulting and training.

This brochure describes our pneumatic isolation table and table top isolation systems product range. Don't hesitate to contact us if you have any questions or need advice on an ideal solution for your vibration issues. Our team of qualified engineers at Fabreeka® would be pleased to discuss the matter with you on the phone or meet you at your premises.

Please refer to the last page for our contact details and locations.

Many companies offer products for vibration isolation and shock control. Fabreeka® demonstrably delivers sophisticated technical solutions. Understanding customer-specific requirements and matching proven products to the solution required has been one of our strengths for than hundred years.

OUR VISION

Our vision is to ensure the best results with the highest accuracy and throughput while maintaining the lowest failure rate for every item of precision equipment on the market used in research, manufacturing and measurement.

OUR MISSION

Our mission is to improve, innovate, and supply advanced technology across the world, and to bring inspiration and confidence to scientists, developers, manufacturers and consumers by ensuring a vibration-free environment for optimal results.

THE TEAM

EXPERIENCE

Our team of mechanical and civil engineers, physicists, and experts from industry share a vast wealth of experience in automation, electronics and real-time processing.

CUSTOMIZABLE SOLUTIONS

Tailored to customer and industry needs

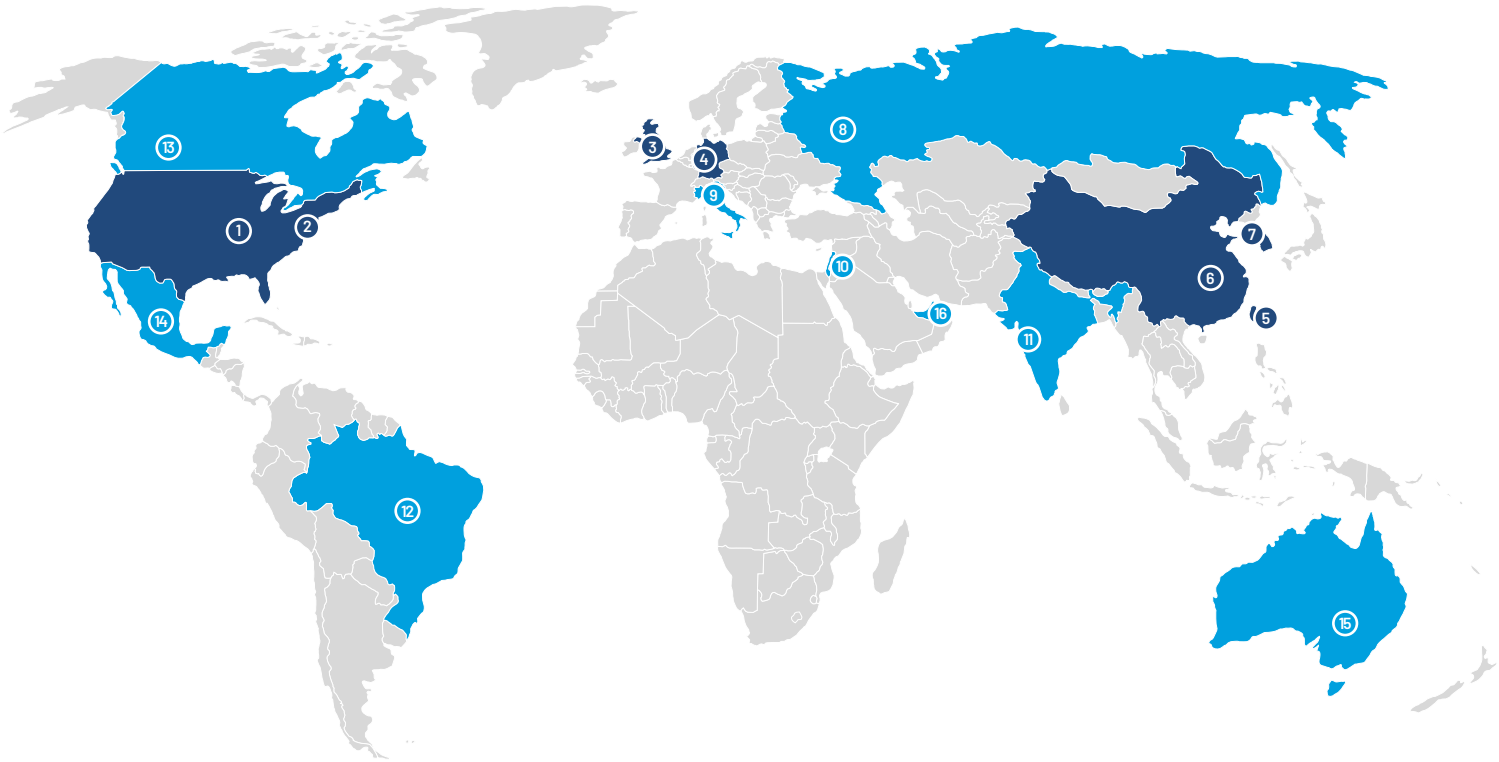
PATENTED TOP-PERFORMING SYSTEMS

Innovative, user-friendly

DESIGN-FOCUSED R&D

In-house manufacturing

GLOBAL THINKING



FABREEKA Locations

1. **United States**
   Tech Products Corporation
2. **United States**
   Fabreeka International Inc.
3. **United Kingdom**
   ACE Fabreeka UK
4. **Germany**
   Fabreeka GmbH
5. **Taiwan**
   Fabreeka International Inc.
6. **China**
   Stabilus
7. **South Korea**
   Stabilus

FABREEKA Representations/Distributors

8. **Russia**
9. **Italy**
10. **Israel**
11. **India**
12. **Brazil**
13. **Western Canada**
14. **Mexico**
15. **Australia**
16. **United Arab Emirates (UAE)**

FABREEKA® ACTIVE ISOLATION SYSTEMS
SIMPLE AND SMART – THE PERFECT SOLUTION FOR QUALITY OPTIMIZATION

High-precision equipment only provides optimal results with every possible condition met. Our systems provide maximum vibration reduction – the result of a century of experience in vibration and shock isolation.

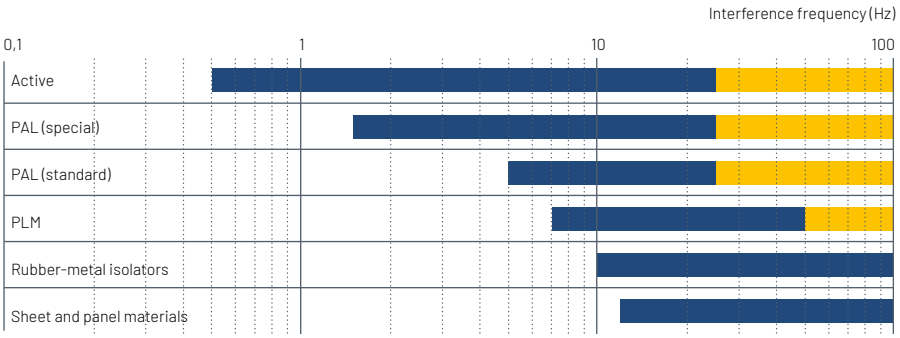
Fabreeka® systems take the industry standard to the next level in vibration isolation for precision instruments. Our goal is to lead the world market in designing and manufacturing innovative high-technology vibration isolation systems and solutions for vibration sensitive instruments, equipment, and processes.

We use a fully decoupled patented architecture for isolating vibrations from the floor, environment, machines or equipment such as moving stages, fans, and internal motors.

Settling times for high-acceleration stages in semiconductor machines typically lie between 200 and 300 ms.

Chip manufacturers designing new fabs to meet vibration specs can achieve significant savings by using Fabreeka® devices for sensitive equipment.

APPLICATION AREAS FOR ISOLATORS



Fabreeka® active systems vs. other vibration isolation approaches

vs. air-based systems

- Tenfold isolation at 3 Hz
- Hundredfold isolation at 10 Hz
- No air supply needed
- No frame required
- Compact dimensions
- Easy to use with lightweight equipment

vs. soft passive systems

- No special skills required for set up
- Isolates most of the surrounding environment
- Insensitive to COG shift and significant weight change

vs. competing active systems

- Wider active frequency bandwidth
- Much longer actuator stroke
- Lighter weight
- Significantly lower height
- LESS EXPENSIVE

INDUSTRIES
USING ACTIVE VIBRATION ISOLATION DEVICES

A wide field of industries alongside medical engineering and ultra-precision measuring applications have come to use microtechnology and nanotechnology.

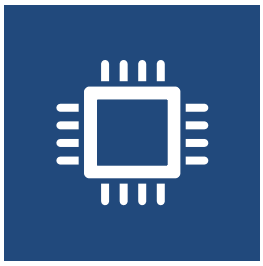
Machines

Semiconductor chip manufacturing is a very complicated process involving tens of different machines on the production floor. Most of these processes require dedicated precision equipment, chiefly high-resolution units subject to aggressive moving-stage motion.

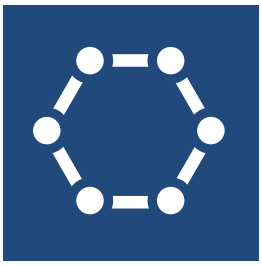
Semiconductor-manufacturing machines are affected by vibrations from the floor or environment, or their own moving parts.

Vibrations from various sources reduce throughput and cause excessive wear.

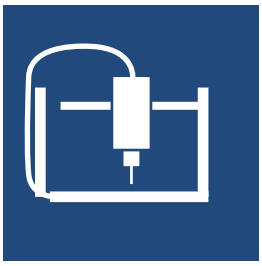

MICROSCOPES: AFM, SEM, TEM


SEMICONDUCTORS


AUTOMOTIVE


NANOINSTRUMENTS


IVF AND LIFE SCIENCE


PRECISION MACHINES


PRECISION MEDICAL DEVICES


PRECISION MEASURING EQUIPMENT


PRECISION BALANCES

Fabs

Fabs are designed so as to keep vibration levels within the specs of sensitive equipment. Most floors in fabs do not meet the design spec; and even if they do, equipment on the fab floor increases vibration levels over time (Colin Gordon Associates, 2004).

Vibration levels are usually measured before the fab is equipped, but degrade by around 10 – 15 dB over the first two years with increasing amounts of production and maintenance equipment.

Production technology developing from 10 to 7 to 5 nm node pose their own challenges by increasing demands on measuring and inspection equipment.

Fabs that are already struggling to meet floor vibration criteria for the current technology node will have even more difficulty in the next node.

Vibration isolation platforms are needed for the equipment to function up to spec.

PRODUCT LINES
STANDARD – OEM – CUSTOMIZED

STANDALONE OFF-THE-SHELF PRODUCTS

Our standard systems are designed for easy installation with minimal technical support required.

INTEGRATED OEM SOLUTIONS

Our technology integrates into equipment from other manufacturers.

CUSTOMIZED SOLUTIONS

If our off-the-shelf products are not compatible with your needs, we are happy to tailor our technology for a custom solution.

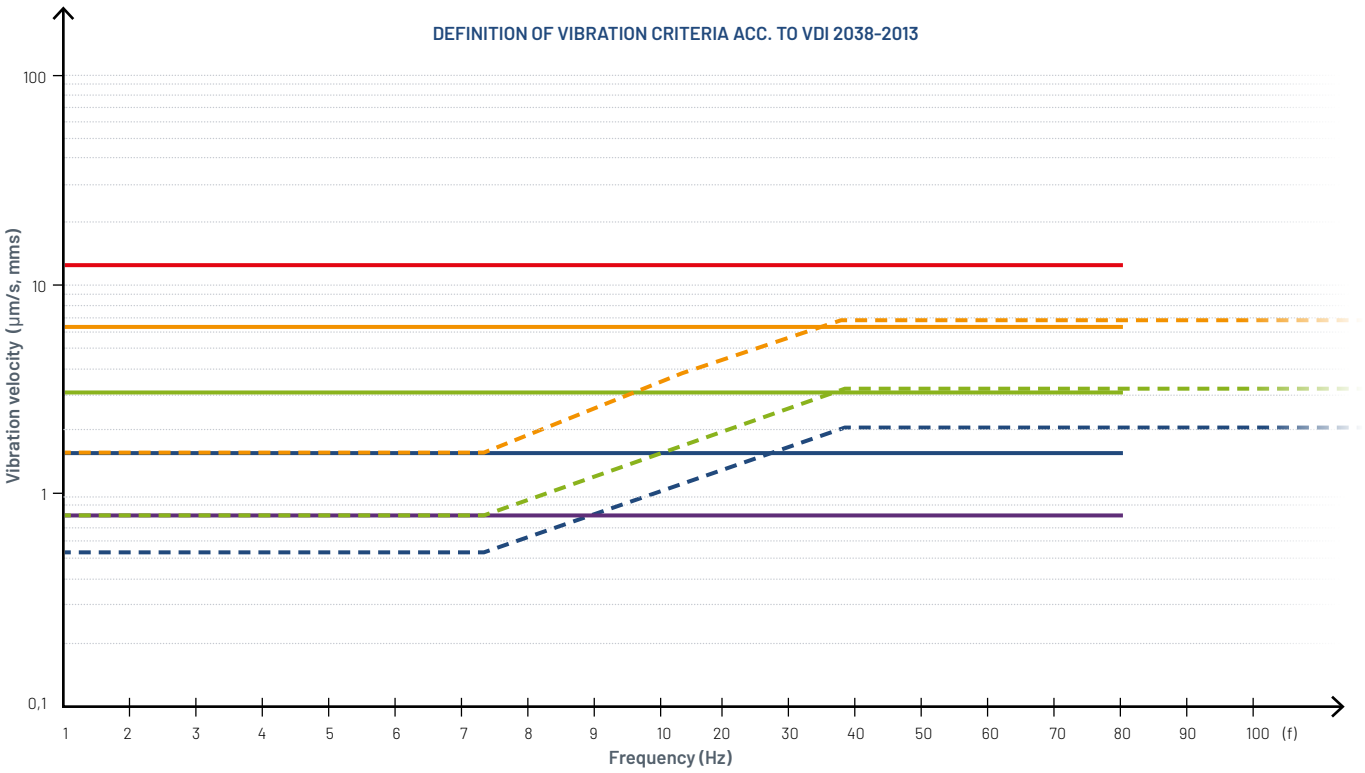
Fabreeka® offers a wide range of active vibration isolation systems. We adapt of-the-shelf systems to specific OEM specifications on technical performance or dimensional constraints towards completely bespoke solutions that meet the most exacting customer requirements.

PRODUCT OVERVIEW

ISO*TablA*
ACTIVE VIBRATION ISOLATION SOLUTIONS

The decoupled architecture (patent pending) in every Fabreeka® active isolation system provides significant advantages compared to other systems available on the market. We supply standard systems as well as highly customized OEM solutions depending on the intended application.

Fabreeka® active systems use linear motor technology as an active drive, thus lengthening the active actuator stroke compared to commonly used piezoelectric technology. As a result, ISO-Tabl-A platforms have active bandwidths starting at 0.5 Hz to reduce environmental vibration by 10 dB at frequencies as low as 1 Hz. Nano-E specifications can be reached at very low frequencies.



VC-C
Appropriate standard for optical microscopes to 1000x

Lithography and inspection equipment to 1000 nm detail size

VC-D
Suitable in most instances for demanding equipment, including many electron microscopes, detail size 100-300 nm

VC-E
Challenging criterion to achieve for equipment of highest precision, detail size <100 nm

VC-F
Criterion for extremely quiet research rooms, more than difficult to reach

VC-G
Criterion for extremely quiet research rooms, more than difficult to reach

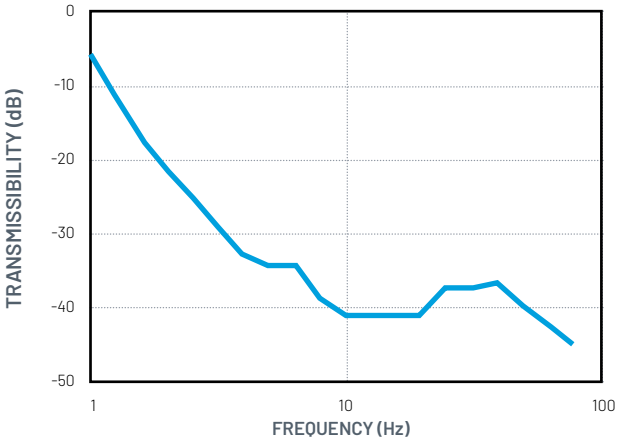
VC-nanoD
Very difficult to reach criterion for Nanotec REM, detail size 1 nm

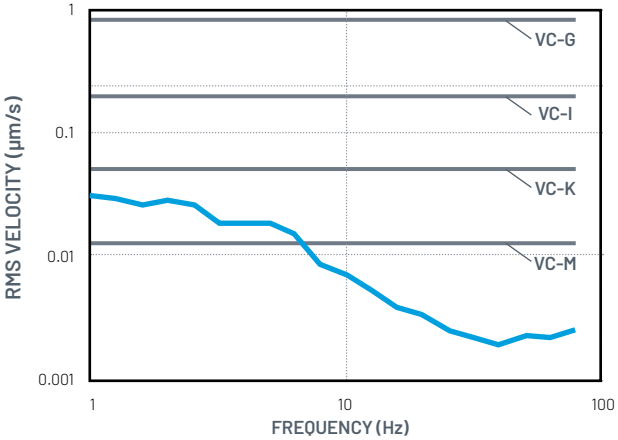
VC-nanoE
Extremely difficult to reach criterion for Nanotec REM, detail size 0,2 – 0,5 nm

VC-nanoEF
Most strict criterion for SEM and TEM of nanotechnology in the sub-Angstrom range.

ISO*ModA* PRO AND ISO*TablA* PRO

- **Isolation starts below 1 Hz, -5 dB at 1 Hz and reaches >40 dB at 10 Hz**
- **Meets ultra-low vibration criteria VC-L from 1 Hz, and VC-N above 10 Hz**
- **Large range of payload weights up to several tons**
- **For most challenging applications in fields of Metrology, Microscopy, Semiconductor production and quality control, In-vitro-fertilization etc.**





MEASURED WITH WILCOXON 731A IN ONE-THIRD OCTAVE BANDS ACCORDING TO ANSI S1.11-2014 STANDARD

KEY FEATURES

- Isolation in all six degrees of freedom
- Active vibration isolation <1 Hz - 100 Hz
- AC power from an electrical outlet is sufficient; no compressed air supply is needed
- No natural low frequency resonance and, as a result, excellent vibration characteristics also in frequency ranges below 5 Hz
- Excellent position stability – inherent stiffness typically 20 – 30 times higher than that of a 1 Hz passive isolator
- Exceptionally compact dimensions
- Two-year warranty
- Long term tests and quality control procedures

ISO*TablA*
ACTIVE VIBRATION ISOLATION SOLUTIONS

- Custom dimensions and special attachments available on request
- Active vibration control < 1 Hz – 100 Hz
- Active control with six degrees of freedom

- Seamlessly integrates into the workstation environment
- Requires no follow-up tuning
- Counteracts unwanted vibrations for sensitive equipment
- Significantly reduces vibrations and disturbances

Product line	Dimensions (mm)	Load capacity (kg)
ISO*TablA*-0-80	400 x 300 x 80	0-80
ISO*TablA*-0-80	500 x 400 x 80	0-80
ISO*TablA*-0-160	600 x 500 x 80	0-160

Isolation technology	ISO ***TabI A*** control technology based on piezoelectric type acceleration pickup, fast signal processing and electro-dynamic force transducers.
Force directions	Active compensation in all six degrees of freedom.
Isolation performance	Isolation starts at 1.5 Hz and reaches >30 dB at 10 Hz
Active bandwidth	Isolation <1 Hz – 100 Hz
Response time	instantanious
Stroke of the actuator	5 mm Vertical, ± 1.5 mm Horizontal
Max. correction forces	Vertical ± 12 N, Horizontal ± 8 N

* The low-pass characteristics of the spring-mass combination dominate the dynamic behavior of the isolation system above 200 Hz. The part of the active isolation decreases with increasing frequency.

** The settling time and maximum compensation level depend on several conditions such as payload, frequency and load distribution. The mentioned settling time value is exemplary for a centric load of 80 kg. T he settling time defines the time until an incoming vibration is compensated.

ISO*BlocA*
MODULAR - MEDIUM CAPACITY ACTIVE ISOLATION BLOCS

- Steel support frame
- Acoustic enclosure

- Manual load adjustment
- Rack mountable external control unit

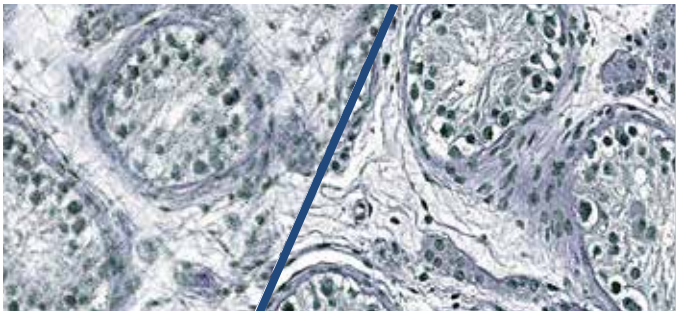
- Various breadboards with or without mounting holes (M6/25 or 1/4-20")

Product line	Dimensions (mm)	Load capacity (kg)
ISO*BlocA*-0-350	636x120x110	0 - 350
ISO*BlocA*-0-700	636x120x110	0 - 700

ISO***Bloc A*** systems are element based modular vibration isolation systems, consisting of at least two isolation elements and an external control unit. The primary model, the ISO***Bloc A*** has been designed for the isolation of high static loads. For applications with frequent load changes or without access to the isolation elements, we offer the option of an automatic load adjustment.

The compact dimensions and its flexibility render this product series ideal for installations in customer-specific applications. A typical example is the combination with an optical breadboard. It serves as a mechanical link between the isolation elements and can be used for a variety of laboratory set-ups e.g. interferometer or other laser set-ups.

MICROSCOPE IMAGE COMPARISON USING ISO**Bloc**A ANTI-VIBRATION SYSTEM



Without active vibration isolation **With active vibration isolation**

Isolation technology	ISO***Bloc A*** control technology based on piezoelectric type acceleration pickup, fast signal processing and electro-dynamic force transducers.
Control electronics	External control unit
Force directions	Active compensation in all six degrees of freedom.
Isolation performance	Isolation starts below 1 Hz, -5 dB at 1 Hz and reaches >40 dB at 10 Hz
Active bandwidth	Isolation < 1 Hz-100 Hz
Response time	instantanious
Stroke of the actuator	5 mm Vertical, ± 1.5 mm Horizontal
Max. correction forces – 2 element configuration	Vertical ± 12 N, Horizontal ± 8 N

* The low-pass characteristics of the spring-mass combination dominate the dynamic behavior of the isolation system above 200 Hz. The part of the active isolation decreases with increasing frequency.

** The settling time and maximum compensation level depend on several conditions such as payload, frequency and load distribution. The mentioned settling time value is exemplary for a centric load of 80 kg. T he settling time defines the time until an incoming vibration is compensated.

ISO*ModA*
MODULAR - HIGH CAPACITY ACTIVE ISOLATION MODULES

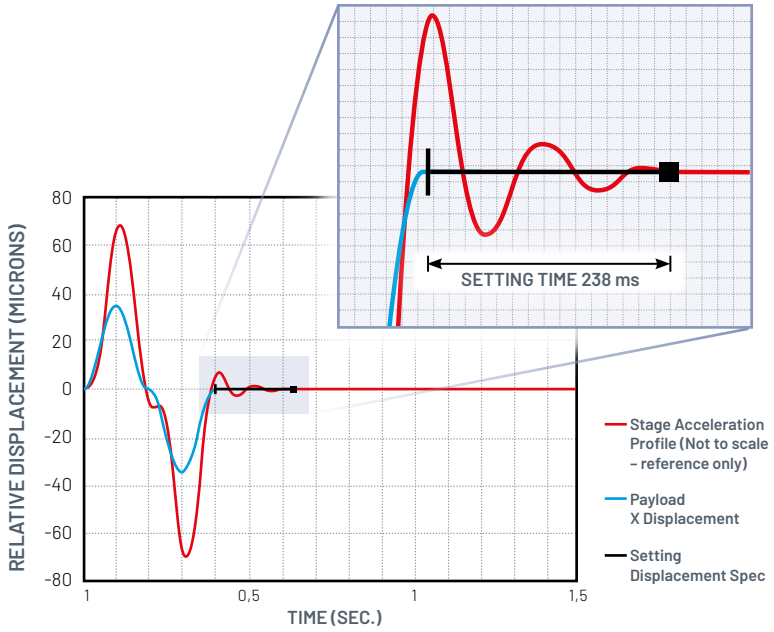
- Unlimited number of isolators in one system
- Active in six degrees of freedom for a set of min. 3

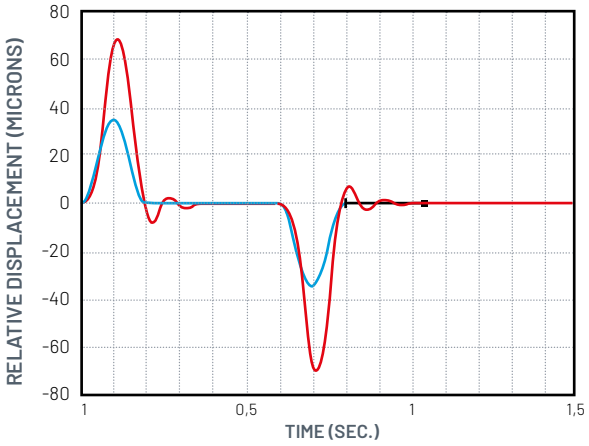
- available for static and highly dynamic applications
- Load: 100 - 1,000 kg on each isolator
- Maximum load available – unlimited
- Ability to support massive machines, equipment and systems
- Application-specific designs, products and capabilities to meet your needs

Product line	Dimensions (mm)	Load capacity/isolator (kg)
ISO*ModA*-100-400	240x240x115	100-400
ISO*ModA*-300-600	240x240x115	300-600
ISO*ModA*-500-800	240x240x115	500-800
ISO*ModA*-700-1000	240x240x115	700-1000

Our lightweight and compact modular active vibration isolation systems counteract the vibrations that affect sensitive equipment. The streamlined design allows easy installation. Developed by engineers, physicists and leading industry consultants with expertise in precision instruments, ISO***Mod A*** is a revolutionary device that plays an essential role in reducing vibrations and disturbances.

Equipment can be placed on an unlimited number of isolators installed independently of one another. ISO***Mod A*** has the capacity to support load capacities of massive machines and heavy tool systems.





System Parameters

Payload Height	892 kg
Stage Mass in Selected Axis	42 kg
Stage Velocity (max)	0,5 m/s
Stage Acceleration (max)	5.0 m/s²
Stage Acceleration s-curve time	100 ms
Stage Moving time	400.0 ms
Distance Stage Moves	100 mm
Payload Dynamic Position Error Spec	0.1 µm

System Parameters

Payload Height	892 kg
Stage Mass in Selected Axis	42 kg
Stage Velocity (max)	0,5 m/s
Stage Acceleration (max)	5.0 m/s²
Stage Acceleration s-curve time	100 ms
Stage Moving time	800.0 ms
Distance Stage Moves	300 mm
Payload Dynamic Position Error Spec	0.1 µm

FABREEKA®
A STABILUS COMPANY

HIGH-TECH ISOLATION SOLUTIONS

Fabreeka GmbH Deutschland
Hessenring 13
64572 Büttelborn
Germany
T +49 6152 - 9597-0
F +49 6152 - 9597-40
info@fabreeka.de
www.fabreeka.de

QR code takes you to our International Locations

@fabreeka_international_inc

@facebook.com/FabreekaIntl