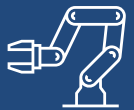




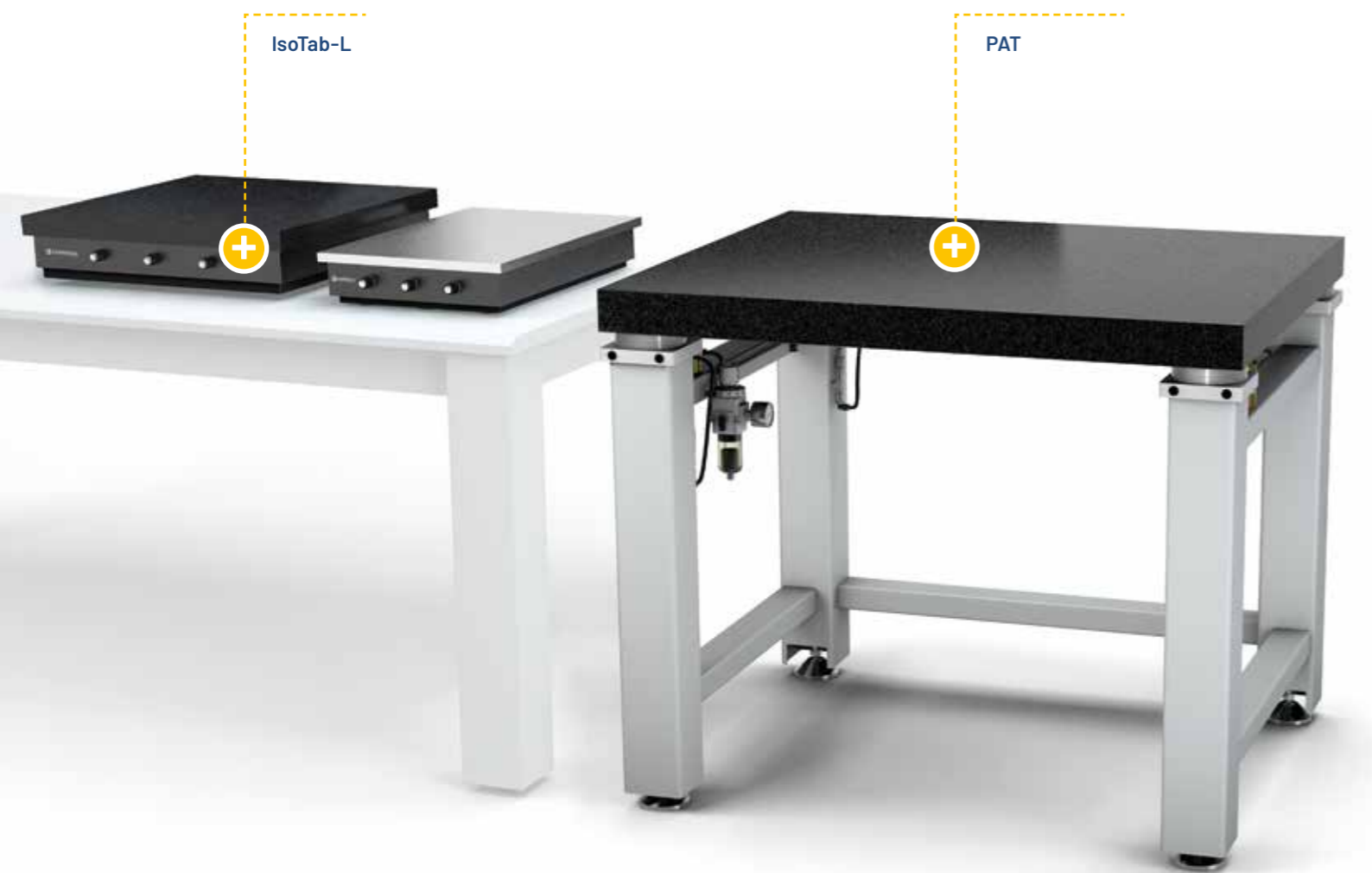
PRECISION AIRE TABLES & TABLETOPS

INDUSTRIAL
MACHINERY &
AUTOMATION



FABREEKA® ISOLATED TABLES AND TABLETOPS

SIMPLE AND SMART – THE PERFECT SOLUTION FOR QUALITY OPTIMIZATION

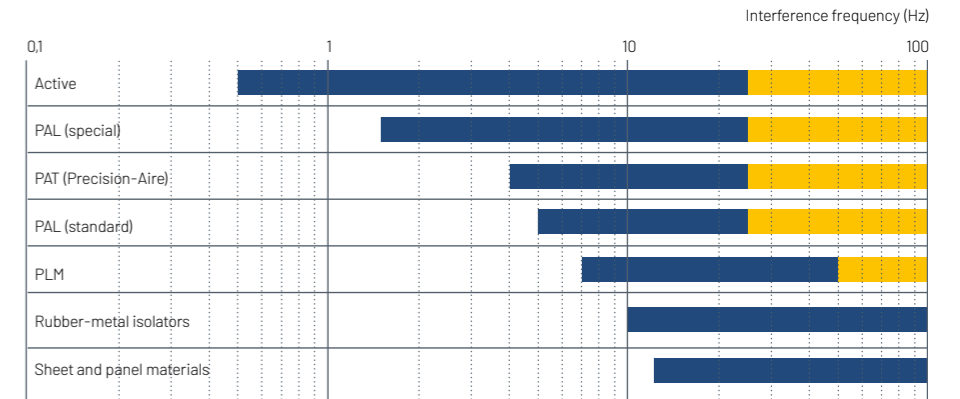


High-precision equipment only provides optimal results with every possible condition met. Our systems provide maximum vibration reduction – the result of a century of experience in vibration and shock isolation.

The Precision-Aire™ series table provides a self-leveling work surface and low frequency isolation in laboratories, cleanrooms and inspection areas where impact noise and structural vibration can decrease performance, reliability and accuracy.

A range of sizes and work surface options are available. The tables require a continuous air supply of no more than 7 bar. The work surface is isolated by pneumatic isolators. Leveling valves provide accurate, repeatable leveling of the work surface. The pneumatic isolators utilize laminar flow damping which improves settling after movement and stability for varying load conditions.

APPLICATION AREAS FOR ISOLATORS



MAIN FEATURES / BENEFITS

- Fabreeka vibration-isolated tables help to provide measuring and analysis equipment to full performance, reliability and accuracy
- Can support loads from 100 to 1,200 kg
- Isolate work surfaces with vertical and horizontal natural frequencies natural frequencies of 1.5 Hz
- Level control and optional very quiet air compressor
- Wide range of perfectly integrated accessories

BENEFITS VS. SOFT-PASSIVE SYSTEM

- Significantly better performance due to very low natural frequencies
- Constant performance over the entire load range
- Constant performance over the entire life time
- Measuring device always aligned even in case of load changes or displacement, by automatic level control
- Adjustable pneumatic damping for optimum adaptation to the application

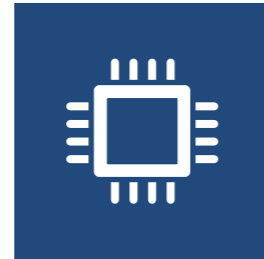
INDUSTRIES

USING PNEUMATIC ISOLATION DEVICES

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



MICROSCOPES: AFM, SEM, TEM



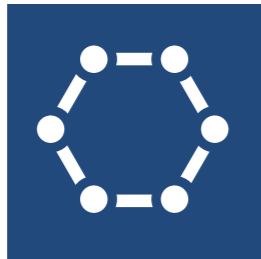
SEMICONDUCTORS



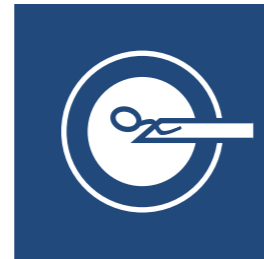
AUTOMOTIVE

MACHINES

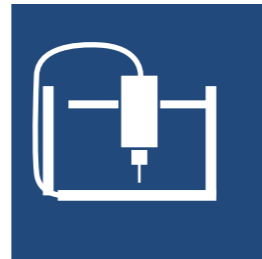
Semiconductor chip manufacturing is a very complicated process involving tens of different machines on the production floor. Most of these processes require dedicated precision equipment, chiefly high-resolution units subject to aggressive moving-stage motion.



NANO INSTRUMENTS



IVF AND LIFE SCIENCE



PRECISION MACHINES

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



PRECISION MEDICAL DEVICES



PRECISION MEASURING EQUIPMENT



PRECISION BALANCES

SEMICON-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 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 pneumatic vibration isolation systems. We adapt off-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

| | |
|------------------------|-------------------------------------|
| PAT | Precision Aire Table 8 |
| ISOTab-L | Tabletop Isolation Systems 12 |

PRECISION AIRE TABLE & ISO-TAB-L

For extremely sensitive laboratories and measuring equipment the manufacturer often specifies limit values for acceptable vibration levels.

If this is not the case, we can find guide values for amplitudes of mechanical vibrations in addition in the VDI guideline VDI 2038-2.

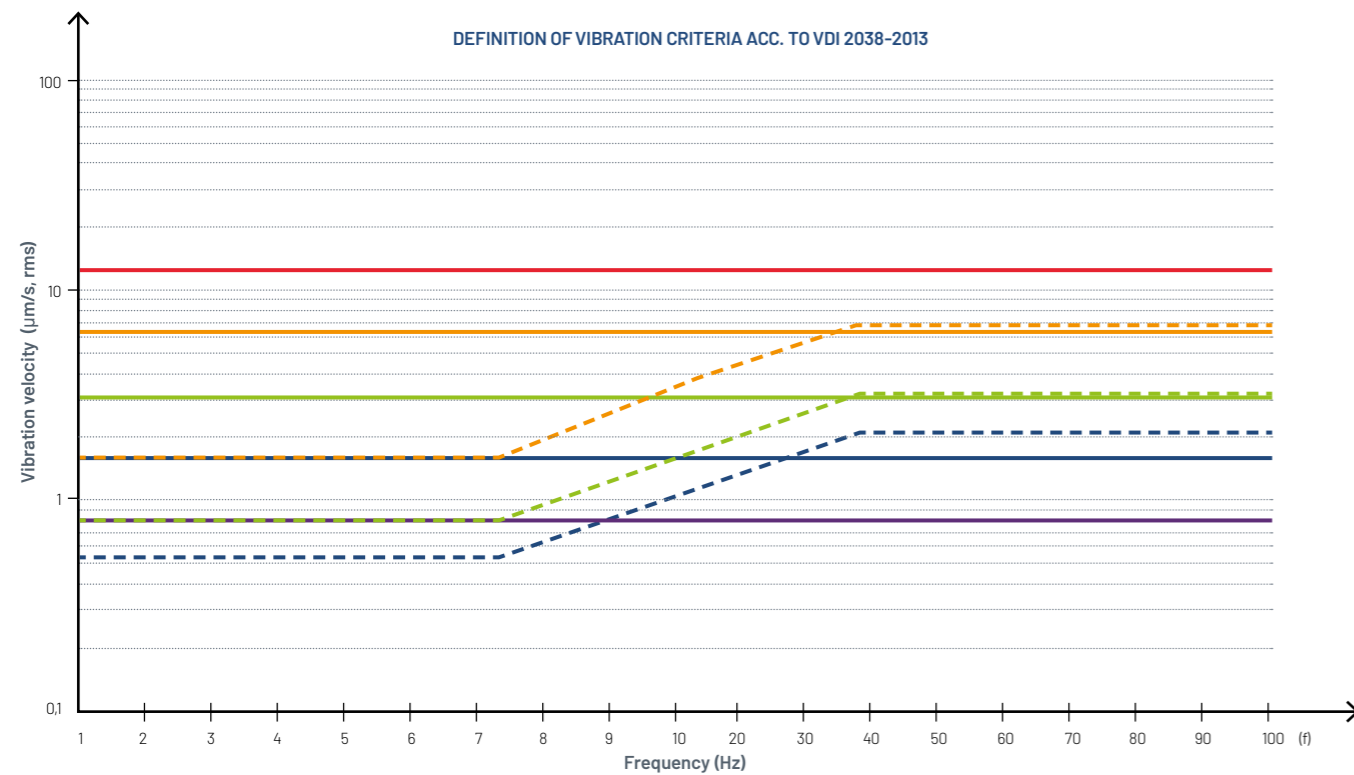
The "Vibration Criteria" (VC lines) listed therein are frequently used internationally for the evaluation of locations for vibration-sensitive equipment.

For modern, high-precision requirements, the VC lines have been extended to include the so-called "nano lines" [Heiland et. al., 2005].

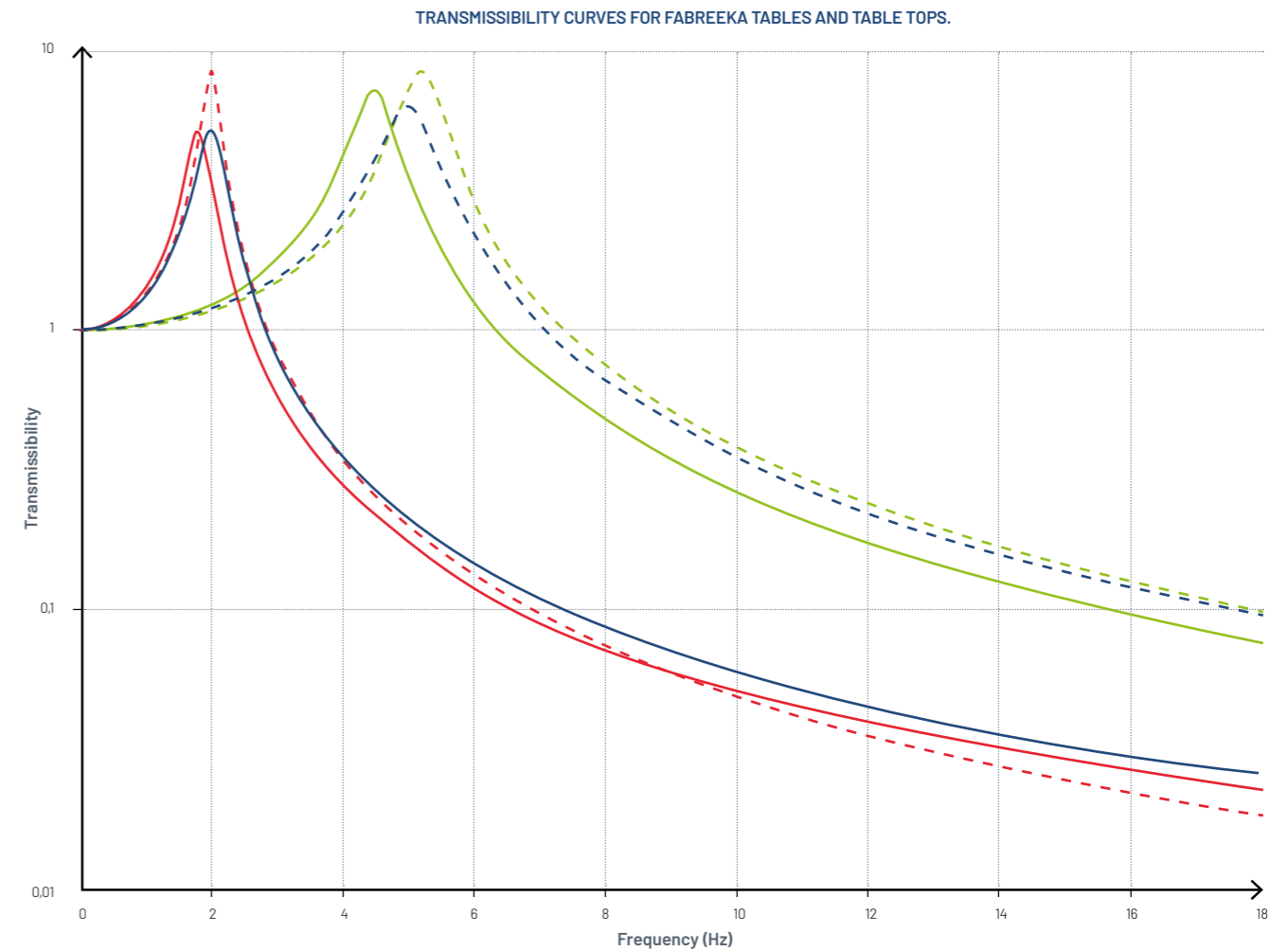
It has been shown in extensive comparisons with high-resolution SEM and TEM that the listed structural sizes can be represented if the limit values are observed.

Depending on the natural frequency and damping of a vibration isolator, disturbing frequencies are passed through in different amounts. The dimension can be calculated via the transfer function. The graph below shows the transfer function graphically for

different table designs. With the help of this graph, it is possible to estimate the reduction of disturbing frequencies by using this product. The inverse of the transfer function is the degree of isolation.



- 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.



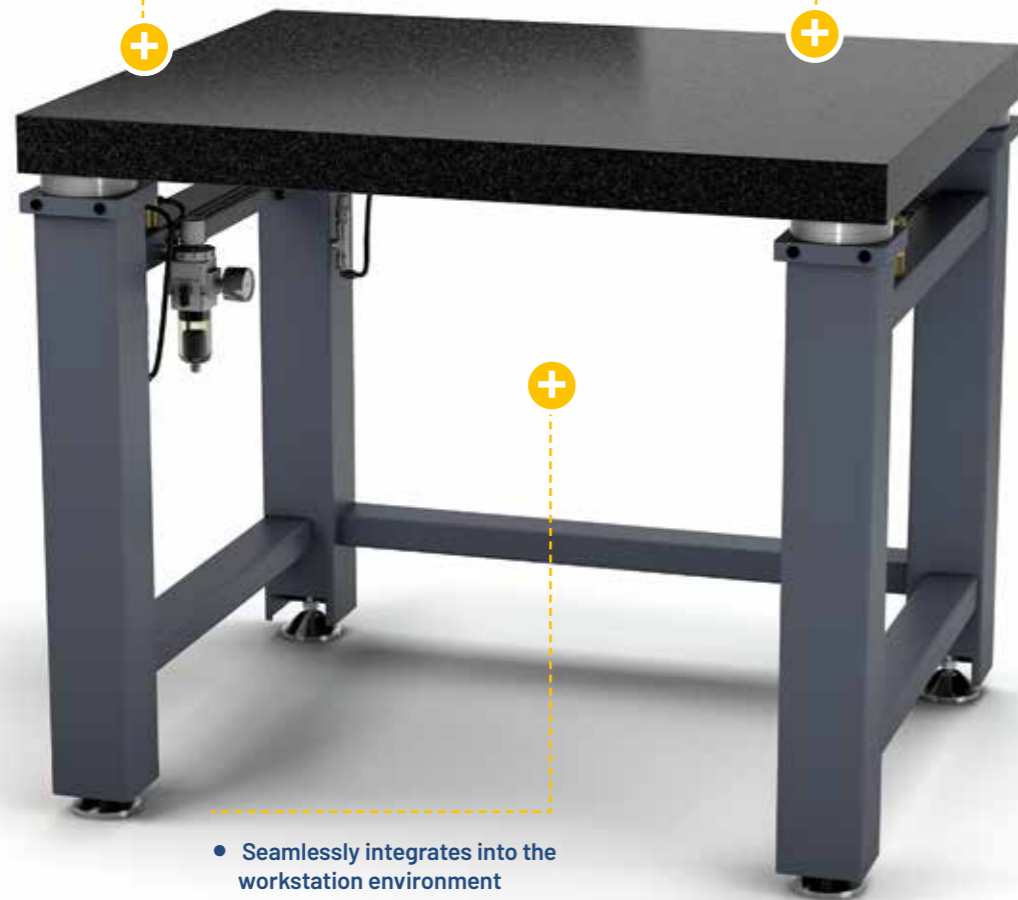
- PAT Standard**
vertical: 2 Hz
horizontal: 5 Hz
- PAT with Pendulum air spring**
vertical: 1,8 Hz
horizontal: 2 Hz
- ISOtabL**
vertical: 4,5 Hz
horizontal: 5,2 Hz

PAT

PRECISION AIRE TABLE

- Custom dimensions and special attachments available on request

- Isolation of unwanted vibrations for sensitive equipment
- Significantly reduces vibrations and disturbances



- Seamlessly integrates into the workstation environment
- Requires no follow-up tuning

| Model No. | Size (mm) | Load capacity (kg) |
|---------------|------------------|--------------------|
| PAT75/75-A4* | 750 x 750 x 760 | 370 |
| PAT90/75-A4* | 900 x 750 x 760 | 350 |
| PAT120/75-A4* | 1200 x 750 x 760 | 320 |
| PAT150/75-A4* | 1500 x 750 x 760 | 260 |

Designs: SIX with steel plate 25 mm (covered with inox laminate), G60 with granite plate 60 mm, BB with 50 mm Breadboard top

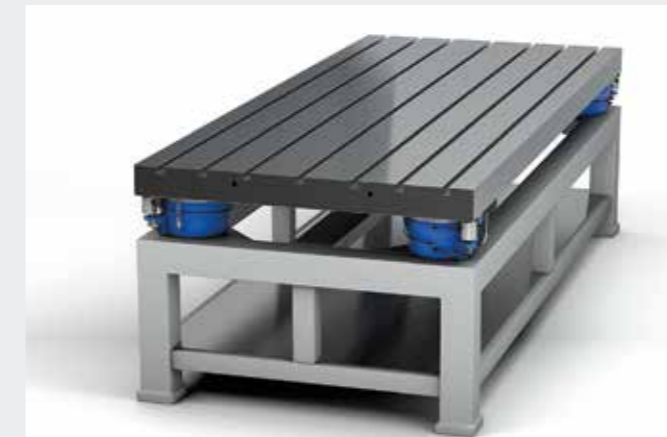
VARIOUS OPTIONS AVAILABLE

According to the customer's requirements the working surfaces are available in granite as well as stainless steel and breadboards, with thicknesses of 60 mm, 25 mm and 50 mm. The Breadboards are available in 50 mm thickness with sealed M6 holes and 25 mm pitch. Custom hole patterns and camera/laser ports for OEM applications can also be supplied.

The extensive range of accessories for these special tables and air suspension systems include arm supports, movable shelves, casters, and front and rear protective bars.

The protective bars are necessary for mounting movable shelves and enclosures.

If you have special requirements and need one of our special designs, require additional equipment or simply wish some technical support, please contact one of our engineers for a non-binding and cost-free consultation.



Heavy duty version with cast iron mounting plate



Cost-effective version with simple top-mounted PLM air springs



Special version with top-mounted PAL air springs and 140 mm granite top



Standard version with 25 mm stainless steel plate but with additional protective bar

ISO**Tab-L** VIBRATION ISOLATION SOLUTIONS TABLETOP

- Custom dimensions and special attachments available on request



- Seamlessly integrates into the workstation environment
- Requires no follow-up tuning

- Isolation of unwanted vibrations for sensitive equipment
- Significantly reduces vibrations and disturbances

ISO Tab-L tabletop platforms are ideal for desktops in laboratories and Q.C. rooms, where they effectively isolate structural and floor vibration. Isolation is provided in the vertical and horizontal axes by pneumatic isolators located beneath the work surface. A protective shroud is supplied with all models which is isolated from the working surface and protects the system from accidental jarring.

The compact design of the ISO Tab-L enables a working height of 75 to 95 mm and will support and isolate precision instruments weighing between 22 kg and 405 kg.

Leveling of the table surface is performed via the regulator control units with air supplied from a manual pump or a dedicated source. The pressure at each isolator can be adjusted manually to accommodate changes in load distribution.



| Model No. | Size (mm) | Number of spring elements | Load capacity (kg) | Weight (kg) |
|-----------|-------------------|---------------------------|--------------------|-------------|
| ISO-13* | 300 x 450 x 105** | 3 | 110 | 20 |
| ISO-23* | 450 x 450 x 105** | 3 | 110 | 25 |
| ISO-24* | 450 x 450 x 105** | 4 | 145 | 25 |
| ISO-33* | 450 x 600 x 105** | 3 | 110 | 30 |
| ISO-34* | 450 x 600 x 105** | 4 | 145 | 30 |
| ISO-43* | 600 x 900 x 105** | 3 | 85 | 60 |
| ISO-44* | 600 x 900 x 105** | 4 | 130 | 60 |
| ISO-53* | 600 x 900 x 106** | 3 | 360 | 60 |
| ISO-54* | 600 x 900 x 106** | 4 | 480 | 60 |

* Designs: Granite Series G - Polished Aluminum Series A
 ** Height at standard version Series G - Height of Series A is 90 mm



FABREEKA®

THE COMPANY

Fabreeka® has been leading the international market in shock and vibration isolation since 1936. Our facility 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

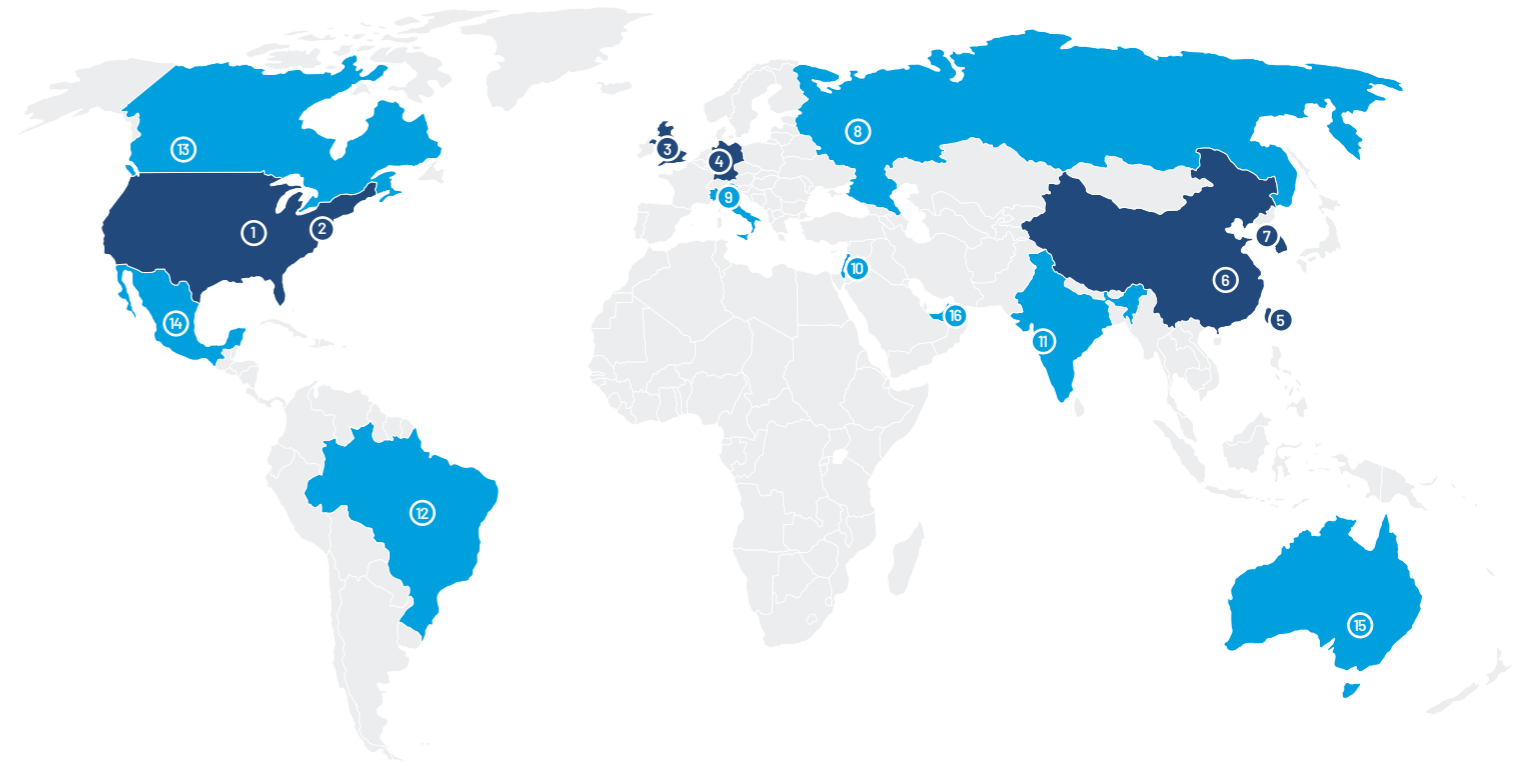
PATENTED TOP-PERFORMING SYSTEMS

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

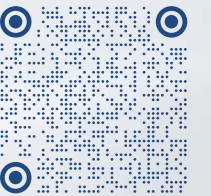
- 8 Russia
- 9 Italy
- 10 Israel
- 11 India
- 12 Brazil
- 13 Western Canada
- 14 Mexico
- 15 Australia
- 16 United Arab Emirates (UAE)

YOUR MOTION. OUR SOLUTION.

STABILILUS

THE GLOBAL MOTION CONTROL SOLUTION PROVIDER TO THE INDUSTRY

- Specialized industrial brands with unique solutions and expertise for each market.
- Wide product range – from simple to complex requirements across all industries.
- Broad global presence that closely connects us with all markets.



Stabilus group of industrial brands

STABILILUS

Globally leading series gas spring manufacturer meeting highest automotive quality standards for industrial products in all plants.



FABREEKA[®]

A STABILILUS COMPANY

Leading supplier for **individual vibration isolation and shock control** solutions.



ACE

A STABILILUS COMPANY

Expert in **industrial damping** and deceleration with **excellent customer support** satisfying most demanding application requirements.



HAHN

GASFEDERN
A STABILILUS COMPANY

Experienced provider of **customized and special** gas springs with **very fast** time to market.



General Aerospace

A STABILILUS COMPANY

Innovative supplier of distinctive **airline motion control solutions**.



TECH PRODUCTS

A STABILILUS COMPANY

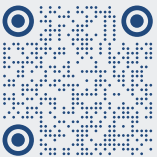
Experienced manufacturer of **elastomeric vibration isolators and shock mounts**.



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