isoloc.
Your perfection is our aim

Vibration Insulation | Vibration Damping | Vibration Absorption | Vibration Analysis

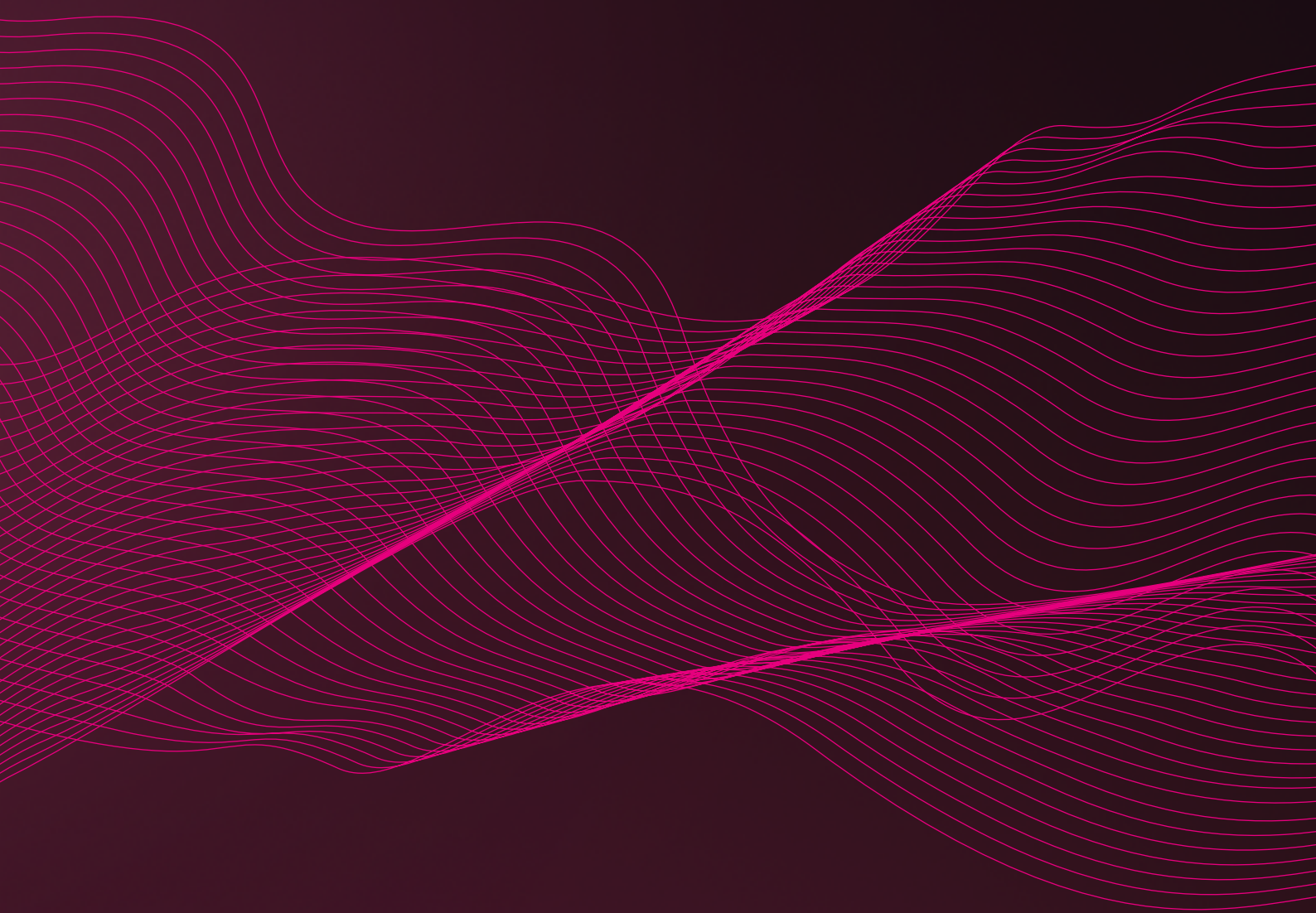## PRODUCT CATALOGUE
isoloc Schwingungstechnik GmbH

CONTENT
isoloc Programme

ISOLOC VIBRATION TECHNOLOGY

We Know All About Vibrations.

THE COMPANY

In 1996 Isoloc was founded in Stuttgart.

Since 2007 Mrs. Claudia Christen, daughter of the company founder, and Mr. Uwe Schürrle, the CEO since 2000 already, run the company.

The objective of the new isoloc company is the development of innovative and high-quality products "Made in Germany" in the field of setup technology and vibration insulation of machines and systems of any kind.

With our team of qualified experts we consequently continue to follow this objective. Today, our company is successfully active in all areas of the industry, whether in Stuttgart, Beijing or São Paulo.

We develop economic and optimal solutions for you.

Thereby the size of the machine does not play any role. We mount smaller machine tools as well as large forging presses, however also machines of the industries of forming technology, plastics, print and paper, chemistry, wood processing, foodstuff, electro and construction. Also insulations of buildings such as the Swiss Embassy in Berlin, and machine foundations (vibration foundations) for heavy machines and systems are part of our wide range of offer.

We succeed to optimise your machines with regard to vibration technology – resulting in a measurable quality improvement of your products and an increased productivity - by state-of-the-art measurement and analysis technology as well as calculations.

At the same time, the noise level in the production halls is reduced; because we also take the health of your employees into consideration.

We are your competent and reliable partner in all questions and queries related to vibration technology and machine optimisation.

Your perfection is our aim!

Claudia Christen,
Associate / Proprietor

Uwe Schürrle,
Managing Director

VIBRATION TECHNOLOGY
Introduction

WHAT ARE VIBRATIONS?

Vibrations are timely modifications of state variables. The state of a vibrating mechanical system can be described by different variables such as distance, angle, speed, acceleration etc. According to the course of time, vibrations can be categorised in different groups. It is differentiated between deterministic and stochastic vibrations.

DETERMINISTIC VIBRATIONS

In case of deterministic vibrations, the instantaneous values for certain periods can be accurately described due to the knowledge of the previous course of time, for example harmonious, periodic and transient vibrations.

STOCHASTIC VIBRATIONS

Stochastic vibrations are vibrations for which no exact value of a status variable for a future period can be calculated based on the knowledge of the previous course of time. They are also called random vibrations or non-deterministic vibrations and are divided in stationary stochastic and transient stochastic vibrations.

SHOCKS

Shocks are mechanical vibrations that are perceived by humans. These are vibrations with frequencies between 1 Hz and 100 Hz in general.

STRUCTURE-BORNE SOUND VIBRATIONS

Structure-borne sound vibrations are mechanical vibrations of rigid bodies of a frequency range between 20 Hz and 5 kHz. Structure-borne sound largely spreads in a larger surrounding of machines, and in the first place effects as then secondarily radiated air-borne sound on the humans – mostly disturbing.

VIBRATIONS AND THEIR CONSEQUENCES

Vibrations e.g. occurred by machines or road traffic expand in the ground and can effect a building, a sensitive measuring device or a machine as a point excitation. Since buildings and machines are vibrating systems, the vibrations in the structure of these systems are increased, which can lead to malfunctions and thereby result also in quality and productivity losses. Damages occur if the permissible dynamic loads are reached or exceeded, e.g. on a building.

Mechanical vibrations even effect humans inside a building. Such stresses are health-damaging to people in the long run.

Structure-borne sound vibration, which is radiated as air-borne sound endangers the health of humans by increased noise level.

MEASURES TO REDUCE VIBRATIONS

· Vibration insulation, structure-borne sound insulation (vibration damping).
· Shock insulation.
· Vibration absorption.
· Vibration damping.
· Relative damping.
· Constructive corrective measures.

VIBRATION INSULATION IS A COMPENSATION OF MASS FORCES

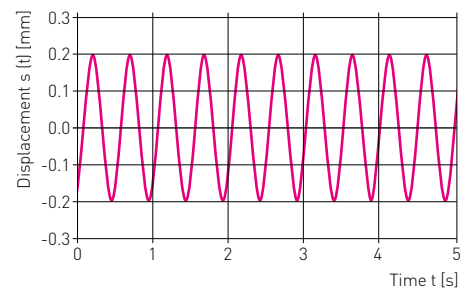For example the forces arising by a press are reduced by a vibration insulation.

SOURCE INSULATION

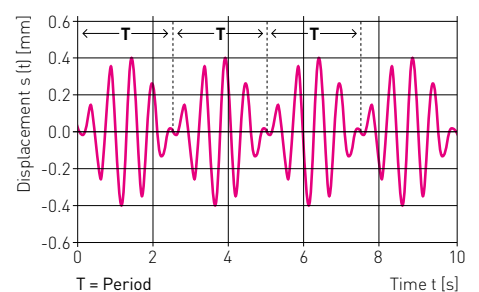Objective of the source insulation is to reduce the forces arising from a machine.

RECEIVER INSULATION

Objective of the receiver insulation is to reduce the vibrations, which influence a vibrating system by the surrounding.
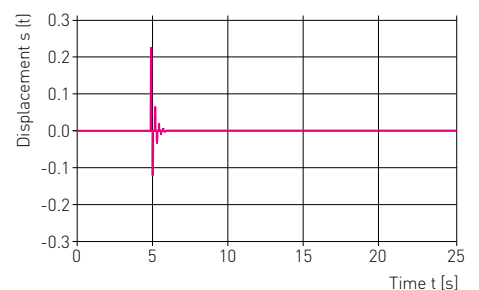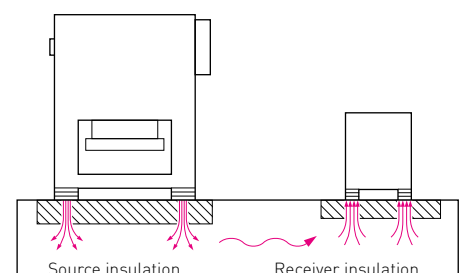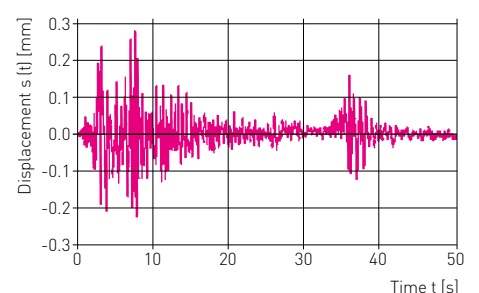
Harmonious vibrations:

Periodic vibrations:

T = Period

Impact-like vibrations:

Inordinate vibrations:

Source insulation   Receiver insulation

AMPLITUDE FREQUENCY RESPONSE

The amplitude frequency response $\alpha_4(\eta)$ is particularly suitable to assess a vibration insulation. It describes the amplitude ratio between vibration excitation and vibration response depending on frequency ratio η, in case of a vibration insulation for a vibration system with a single degree of freedom. In case of source insulation, the ratio between the excitation force amplitude $F_e(t)$ and the floor force amplitude $F_u(t)$ is considered, in case of receiver insulation, the ratio between the vibration displacement amplitudes and the base point $u(t)$ and the vibration displacement amplitudes of the mass to be insulated $z(t)$ are considered.

The amplitudes frequency response is the same for both types of vibration insulation, source- and receiver insulation.

REINFORCEMENT AREA

The reinforcement area is within $0<\eta<\sqrt{2}$, and $\alpha_4(\eta) \geq 1$ applies.
During a broadband excitation, e.g. a shock, reinforcement takes place also.
Resonance exists if an excitation frequency complies with the natural frequency of the elastic mountings.
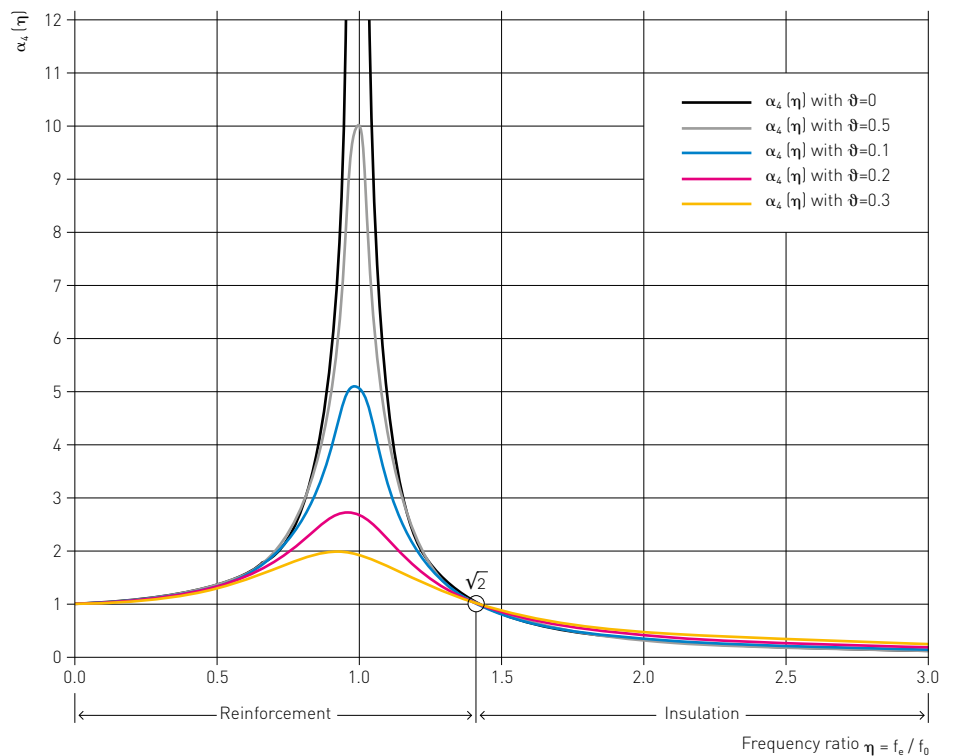The damping level significantly influences the reinforcement of the vibration amplitudes in the reinforcement area of the vibrating system with a single degree of freedom. The higher the damping ratio, the lower the vibration reinforcement.

INSULATION RANGE

The insulation range is in $\eta>\sqrt{2}$ and $\alpha_4(\eta)<1$ applies.

Due to the decoupling of the machine with an elastic mounting, a compensation of mass forces arises. This means increased rigid-body motions of the machine and thereby a significantly reduced release of vibration energy to the surrounding.

Amplitude Frequency Response α_4:

Legend:
- $\alpha_4(\eta)$ with $\vartheta=0$
- $\alpha_4(\eta)$ with $\vartheta=0.5$
- $\alpha_4(\eta)$ with $\vartheta=0.1$
- $\alpha_4(\eta)$ with $\vartheta=0.2$
- $\alpha_4(\eta)$ with $\vartheta=0.3$

Reinforcement — Insulation

Frequency ratio $\eta = f_e / f_0$

In contrary to the reinforcement area, a lower damping ratio effects the insulation range positively. The lower the damping ratio of the system, the higher the effect of the insulation degree, which is defined by:

$$I(f_e) = [1 - \alpha_4(f_e)] \cdot 100\%$$

Due to the opposing influences of the damping in the reinforcement and insulation area, the dimensioning of a vibration insulation is an optimisation challenge for engineers. The basic principle described above applies also to structure-borne sound and shock insulation.

DAMPING

The term describes the conversion of kinetic energy in other, for the vibration system not relevant types of energy anymore, or the leading away of energy out of the considered limit of the vibration system. Both is energy dissipation, which corresponds in this sense to an energy extraction of the system. The damping of an elastomer is the amount of mechanical

energy that is transformed in thermic energy during deformation. Essential part in this physical effect is the friction on a molecular level within the elastomer.

Damping is not a destruction of energy as this is often wrongly worded. Not always does damping has a positive effect on a vibration system. The effect of a vibration insulation is the worse, the greater the damping is.

Decaying curves for a vibration system with a single degree of freedom (1FG)

- $\vartheta=1\%$
- $\vartheta=5\%$
- $\vartheta=20\%$

5
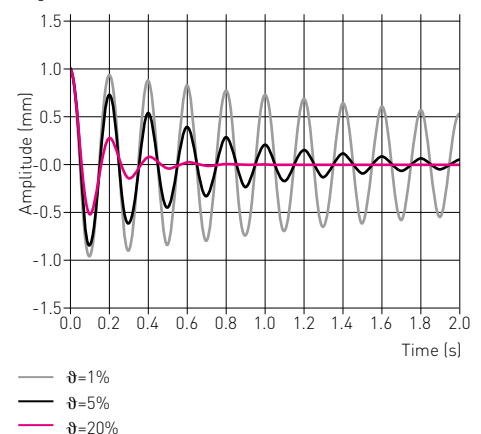
ISOLOC IPL
VIBRATION INSULATION PANELS
AND IPK INSULATION PACKS

For Vibration-, Shock- And Structure-Borne Sound Insulation.
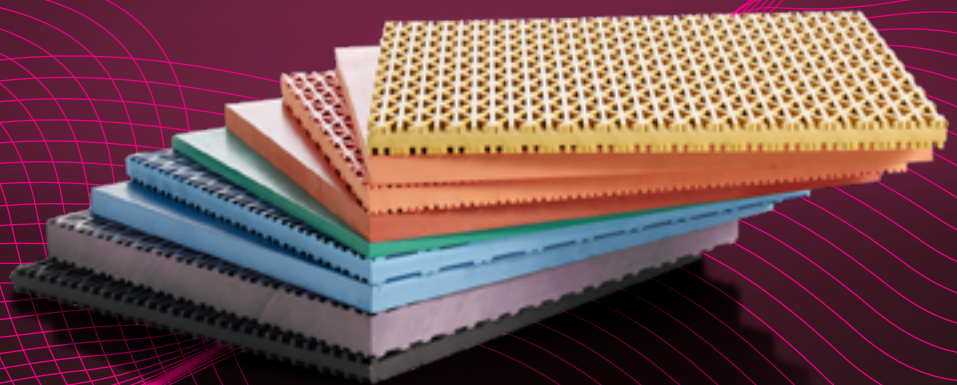
IPL VIBRATION INSULATION PANELS

Nowadays, all areas of industry cannot do any longer without vibration insulation panels based on synthetic elastomers as construction elements.

Our products were optimised to the specific requirements of the vibration insulation and machine installation technology.

You can easily distinguish the different qualities by our colour guide system.

CHARACTERISTICS

- Broad range of application for most various requirements by different elastomer mixtures.
- Natural frequencies up to 5 Hz vertically due to highest elasticity.
- High damping degrees up to 30 %.
- Very good level stability at very heavy loads, such as IPL 30 due to fibre meshing up to 5 N/mm².
- High friction coefficients enable a free installation of machines and systems as far as possible.
- Very good durability and high service life.

YOUR BENEFIT

Protection of your machines against natural and external vibrations, which results generally in less failures, and thereby also in less necessary repairs and reduced costs for tools and maintenance.

Increase of jerk and kv factor influences the Total Cost of Ownership (TCO) resp. Life Cycle Cost (LCC) by improved productivity.

More friendly working conditions at less noise by structure-borne insulation.

Easy design. Isoloc vibration insulation panels can be produced in any desired shape almost.

No additional damping elements are required since isoloc vibration insulation panels act as spring and damper at the same time.
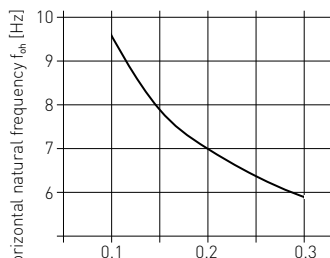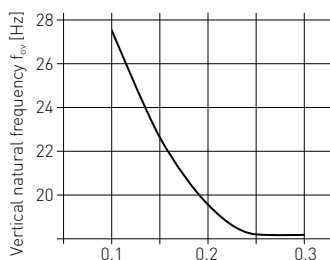
IPL VIBRATION INSULATION PANELS
For Vibration Insulated Installations Of Machines
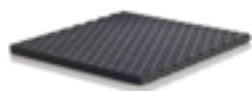
IPL 6

Article no.: 10610

Dimensions: 500 x 500 x 15 mm *

Friction coefficient:
on steel up to 0.95 / on concrete up to 0.90

Vertical and horizontal
dynamic natural frequencies:**

Compressive stress σ
from 0.1 to 0.3 N/mm²

IPL 10

Article no.: 11010

Dimensions: 500 x 500 x 15 mm *

Friction coefficient:
on steel up to 0.60 / on concrete up to 0.77

Vertical and horizontal
dynamic natural frequencies:**

Compressive stress σ
from 0.1 to 0.5 N/mm²

IPL 17

Article no.: 11710

Dimensions: 500 x 500 x 15 mm *

Friction coefficient:
on steel up to 0.60 / on concrete up to 0.77

Vertical and horizontal
dynamic natural frequencies:**

Compessive stress σ
from 0.4 to 2.0 N/mm²

IPL 20

Article no.: 12010

Dimensions: 500 x 500 x 15 mm *

Friction coefficient:
on steel up to 1.34 / on concrete up to 1.04

Vertical and horizontal
dynamic natural frequencies:**

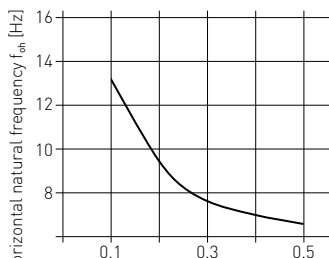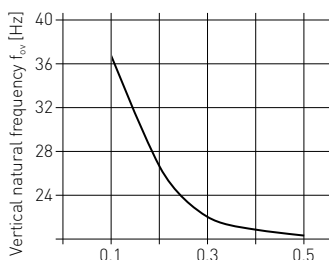
Compressive stress σ
from 0.4 to 1.2 N/mm²

Due to the very good elasticity and damping isoloc IPL 6 vibration insulation panels are best suitable for source and receiver insulation of machines and devices of all kinds, also on upper floors. Due to the high damping they are good for impact insulations since the unavoidable resonance exceedings are reduced. Very low natural frequencies in IPL 6 layerings.

Good anti-slip protection, also on concrete and steel, ensures a safe standing of the machine.

Isoloc IPL 10 vibration insulation panels are ideal for very good vibration and structure-borne sound insulations, in particular in machine installations on upper floors and in sprung insulations. Low tunings become possible by layering. Good anti-slip protection, also on concrete and steel, ensures safe standing of machine.

For the receiver insulation of sensitive machines. For the source insulation of smaller and medium-sized presses by layering.

The heavy duty isoloc IPL 17 vibration insulation panel has low natural frequencies due to its high elasticity. Its non-linear natural frequencies from 0.8 N/mm² result in a very advantageous vibration characteristic in changing stresses.

For source insulation of machines such as e.g. presses, punching machines, test stands, stone manufacturing machines and many others.

Isoloc IPL 20 vibration insulation panel with very high damping offers good structure-borne sound insulation and high anti-slip protection, also on concrete and steel, for a safe standing of the machine.

For source and receiver insulation and vibration damping of pumps, compressors, pressure machines and many others.
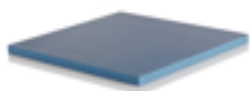
IPL 20-2

Article no.: 12250

Dimensions: 500 x 500 x 15 mm *

Friction coefficient:

on steel up to 1.34 / on concrete up to 1.04

Vertical and horizontal
dynamic natural frequencies:**

IPL 25

Article no.: 12510

Dimensions: 500 x 500 x 25 mm *

Friction coefficient:

on steel up to 1.34 / on concrete up to 1.04

Vertical and horizontal
dynamic natural frequencies:**

IPL 30

Article no.: 13010

Dimensions: 500 x 500 x 15 mm *

Friction coefficient:

on steel up to 0.95 / on concrete up to 1.30

Vertical and horizontal
dynamic natural frequencies:**

IPL 40

Article no.: 14010

Dimensions: 500 x 500 x 8 mm *

Friction coefficient:

on steel up to 1.48 / on concrete up to 1.24

Vertical and horizontal
dynamic natural frequencies:**
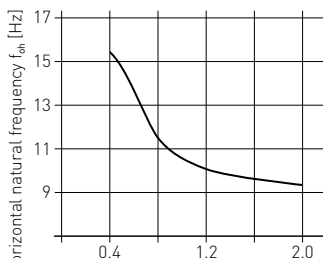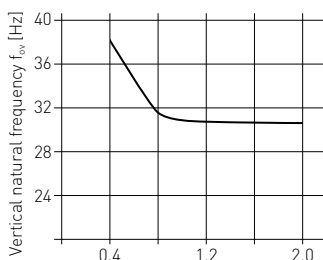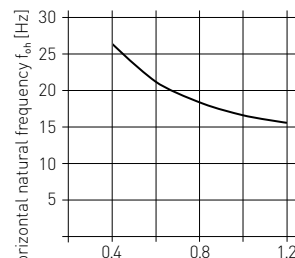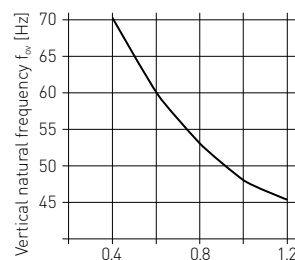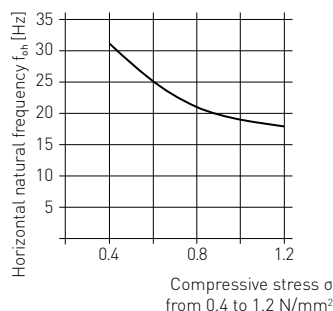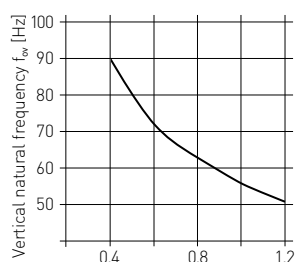

Compressive stress σ
from 0.4 to 1.2 N/mm²

Compressive stress σ
from 0.4 to 1.7 N/mm²

Compressive stress σ
from 1.0 to 5.0 N/mm²

Compressive stress σ
from 0.4 to 2.0 N/mm²

The highly level stable isoloc IPL 20-2 vibration insulation panel is applied particularly in highly dynamic tool machines. Its damping is very good and therefore guarantees low tipping movements of the machine. Next to a good vibration insulation it offers excellent anti-slip protection for the safe stand of the machines.

For application of source/receiver insulation and vibration damping.

The isoloc IPL 25 vibration insulation panel is of the same elastomer as the IPL 20 vibration insulation panel. Due to the larger thickness of the material of 25 mm however, the load-bearing capacity in IPL 25 is higher.

For application of source insulation of presses and punching machines.

The most load-bearing isoloc IPL 30 vibration insulation panel with fibre meshing meets the highest requirements with regard of the level stability (creeping). It offers a favourable ratio of the vertical and horizontal stiffness for a »calm« machine standing.

For application of source/receiver insulation of machine tools.

Due to high load-bearing capacity and a very low construction height (= minimum material usage) is the isoloc IPL 40 vibration insulation panel economic in particular. For the usage of source insulation of food stuff machines. The special model IPL 40-V1 is also permissible for the food stuff industry.

* Dimension length x width x height (panel thickness), other dimensions and special cuts upon request. Dimensional tolerances according to DIN ISO 3302-1 class L3

** The values can deviate up to ± 25%. They refer to a one-mass-oscillator with decoupled degrees of freedom as well as to a rigid subsoil and an ambient temperature of 20° C.

IPK VIBRATION INSULATION PACKS
For Vibration, Shock and Structure-Borne Sound Insulation

IPK 62   IPK 63   IPK 64   IPK 65   IPK 66

PROPERTIES IPK

For an effective vibration insulation a possibly low (vertical) natural frequency of the insulation element is required. Isoloc IPK vibration insulation packs meet this requirement. Therefore they are most suitable for the usage in source and receiver insulation.

A vertical, dynamic natural frequency of below 5 Hz is achieved with isoloc IPK vibration insulation packs. Thereby the technically most important areas of vibration and structure-borne sound insulation can be optimally covered. The very high friction coefficients enable a free and unanchored installation of almost all machines.

APPLICATION IPK

Also in high dynamic loads, isoloc IPK vibration insulation packs keep their elastic properties for many years, mostly for a lifetime of a machine. Heavy presses in the field of hot forming have been operating in a three-shift operation with constantly high insulation /damping for years.

· For vibration insulation in many applications, for example in sprung foundations for presses or fine processing machines.
· Also in connection with our UMS Universal Precision Machine Shoes (pat.).
· Furthermore for measuring machines, scales and laboratory devices, or for complete building setups, test benches, transformers, air conditioners and mills.
· For optimal use, the application of our measuring and analysing technologies is recommended prior to that.

IPK 62 – 66

With isoloc IPK 62 up to IPK 66 vibration insulation packs one achieves an excellent degree of insulation. By the very high damping the rigid-body motions (amplitudes) of the machine are reduced and quickly dissipate.

APPLICATION

· In sprung foundations of machines of all types, on installation of floors.
· Source insulation of hydraulic presses for example.
· Receiver insulation for measuring machines, robot systems, test devices, microscopes and many more.

PRODUCT DETAILS

Dimensions: 500 x 500 x h mm *
Friction coefficient:
on steel up to 0.95 / on concrete up to 0.90
Load (in N): 25 000 up to 75 000

Type	Art.-No.	Height h
IPK 62	11240	33 mm
IPK 63	11340	51 mm
IPK 64	11460	69 mm
IPK 65	11560	87 mm
IPK 66	11660	105 mm

Vertical dynamic natural frequencies:**
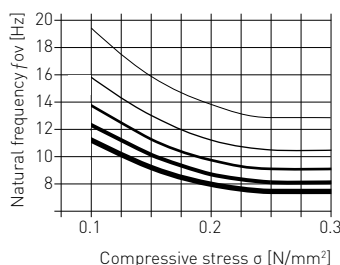
Horizontal dynamic natural frequencies:**
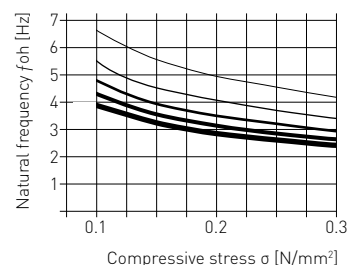
— IPK 62
— IPK 63
— IPK 64
— IPK 65
— IPK 66

IPK 102   IPK 103   IPK 104   IPK 105   IPK 106   IPK 172   IPK 173   IPK 174   IPK 175   IPK 176

IPK 102 – 106

Vibration insulation packs isoloc IPK 102 up to IPK 106 can be applied for higher load-bearing capacities than the vibration insulation packs isoloc IPK 62 to IPK 66.

APPLICATION

- In sprung foundations for machines of all types, installtions on upper floors
- Source insulation of transformers, hydraulic presses, punching presses for example.
- Receiver insulation for measuring machines, robot systems, test devices, microscopes and many more.

IPK 172 – 176

Vibration insulation packs isoloc IPK 172 up to IPK 176 for very high load bearing capacities. They have a favourable vibration behaviour since the natural frequencies do not vary during different compressive stress due to the non-linear properties (from 80 N/cm^2).

APPLICATION

- In sprung foundations for machines of all types, installations on upper floors.
- Source insulation of hydraulic presses for example.

PRODUCT DETAILS

Dimensions: 500 x 500 x h mm *

Friction coefficient:
on steel up to 0.60 / on concrete up to 0.77

Load (in N): 25 000 up to 125 000

Type	Art.-No.	Height h
IPK 102	11210	33 mm
IPK 103	11310	51 mm
IPK 104	11410	69 mm
IPK 105	11510	87 mm
IPK 106	11610	105 mm

PRODUCT DETAILS

Dimensions: 500 x 500 x h mm *

Friction coefficient:
on steel up to 0.60 / on concrete up to 0.77

Load (in N): 100 000 up to 500 000

Type	Art.-No.	Height h
IPK 172	11250	33 mm
IPK 173	11350	51 mm
IPK 174	11450	69 mm
IPK 175	11550	87 mm
IPK 176	11650	105 mm

Vertical dynamic natural frequencies:**

Horizontal dynamic natural frequencies:**

Vertical dynamic natural frequencies:**

Horizontal dynamic natural frequencies:**

— IPK 102
— IPK 103
— IPK 104
— IPK 105
— IPK 106
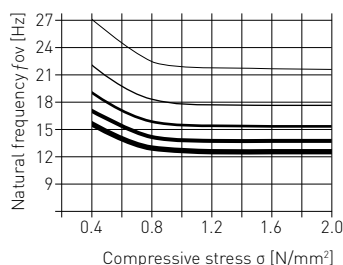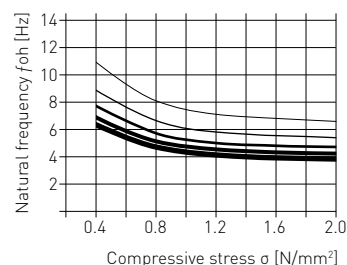
— IPK 172
— IPK 173
— IPK 174
— IPK 175
— IPK 176

* Dimension length x width x height (panel thickness). other dimensions and special cuts upon request. Dimensional tolerances according to DIN ISO 3302-1 class L3

** The values can deviate up to ± 25%. They refer to a one-mass-oscillator with decoupled degrees of freedom as well as to a rigid subsoil and an ambient temperature of 20° C.

GPL ANTI-SLIP PROTECTION PANELS

GPL 3025

GPL 3050

GPL 4025

GPL 4050

GPL ANTI-SLIP PROTECTION PANELS

· Free installation of machines without special anchoring.
· Levelling of larger unevenness of the ground.
· Cut according to desired dimension possible.

Application in connection with UMS Universal Precision Machine Shoes (pat.) or our vibration insulation panels. Free, unanchored installation of machines, also in case of larger horizontal forces. The basic dimension is 500 x 500 mm. Special cuts available upon request.

GPL 3025

Dimension *	Article No.
500 x 500 x 2.8 mm	23210
500 x 250 x 2.8 mm	23211
500 x 125 x 2.8 mm	23212
250 x 250 x 2.8 mm	23213
200 x 200 x 2.8 mm	23216
150 x 150 x 2.8 mm	23222
100 x 100 x 2.8 mm	23231

GPL 3050

Dimension *	Article No.
500 x 500 x 5.0 mm	23550
500 x 250 x 5.0 mm	23551
500 x 125 x 5.0 mm	23552
250 x 250 x 5.0 mm	23553
200 x 200 x 5.0 mm	23556
150 x 150 x 5.0 mm	23562
100 x 100 x 5.0 mm	23571

GPL 4025

Dimension *	Article No.
500 x 500 x 2.8 mm	24210
500 x 250 x 2.8 mm	24211
500 x 125 x 2.8 mm	24212
250 x 250 x 2.8 mm	24213
200 x 200 x 2.8 mm	24216
150 x 150 x 2.8 mm	24222
100 x 100 x 2.8 mm	24231

GPL 4050

Dimension *	Article No.
500 x 500 x 5.0 mm	24550
500 x 250 x 5.0 mm	24551
500 x 125 x 5.0 mm	24552
250 x 250 x 5.0 mm	24553
200 x 200 x 5.0 mm	24556
150 x 150 x 5.0 mm	24562
100 x 100 x 5.0 mm	24571

Type	Static friction coefficients
GPL 3025	on steel up to 0.99 / on concrete up to 1.31
GPL 3050	on steel up to 1.09 / on concrete up to 1.29

Type	Static friction coefficients
GPL 4025	on steel up to 0.99 / on concrete up to 2.30
GPL 4050	on steel up to 1.15 / on concrete up to 1.41

* Dimension length x width x height (thickness of panel), other dimensions and special cuts upon request. Dimensional tolerances according to DIN ISO 3302-1 class L3

IPL INSULATION DISCS

IPL 6   IPL 10   IPL 17   IPL 20   IPL 20-2   IPL 25   IPL 30   IPL 40

IPL INSULATION DISCS

For circular surfaces and machine supports. Insulation discs of all types of vibration insulation panels are available. They can be glued e.g. on existing mounting elements as well.

Delivery with drilling for vibration-caused decoupling of anchoring bolts upon request.

OIL- AND CHEMICAL RESISTANCE IPL/IPK/GPL

· Our insulation panels have a high resistance against alkaline solutions, acids and organic and non-organic lubricants.
· Also for hydraulic media with low inflammability, cleaning agents etc. and the application in oil pans.

Very high durability of all insulation panels.

Diameter*	Article No.		
	IPL 6	**IPL 10**	**IPL 17**
Ø 35 mm	10337	11237	11737
Ø 50 mm	10338	11238	11738
Ø 75 mm	10335	11235	11739
Ø 100 mm	10331	11231	11741
Ø 120 mm	10330	11230	11742
Ø 150 mm	10322	11222	11743
Ø 200 mm	10316	11216	11745
Ø 250 mm	10313	11213	11746

Diameter*	Article No.		
	IPL 20	**IPL 20-2**	**IPL 25**
Ø 35 mm	12237	12281	12541
Ø 50 mm	12238	12282	12542
Ø 75 mm	12235	12283	12543
Ø 100 mm	12231	12284	12544
Ø 120 mm	12230	12285	12545
Ø 150 mm	12222	12286	12546
Ø 200 mm	12216	12287	12547
Ø 250 mm	12213	12288	12548

Diameter*	Article No.	
	IPL 30	**IPL 40**
Ø 35 mm	13237	14237
Ø 50 mm	13238	14238
Ø 75 mm	13235	14235
Ø 100 mm	13231	14231
Ø 120 mm	13230	14230
Ø 150 mm	13222	14222
Ø 200 mm	13216	14216
Ø 250 mm	13213	14214

Type	Durability Mineral oils	Alkaline Solutions up to 50%	Acids up to 50%
IPL 6	●	++	+
IPL 10	+	●	+
IPL 17	+	●	+
IPL 20 / IPL 20-2	+	++	+
IPL 25	+	++	+
IPL 30	++	-	●
GPL 3025 / 3050	++	-	●
IPL 40 V-1	-	-	++
IPL 40*	++	-	●
GPL 4025 / 4050	++	-	●

* Standard

Legend:

-   not resistant
●   relative resistance (no permanent durability)
+   well resistant
++ very resistant

* Dimension length x width x height (thickness of panel), other dimensions and special cuts upon request. Dimensional tolerances according to DIN ISO 3302-1 class L3

ISOLOC UMS
MACHINE SHOES

For Precise Installation –
Even For The Heaviest Machines.
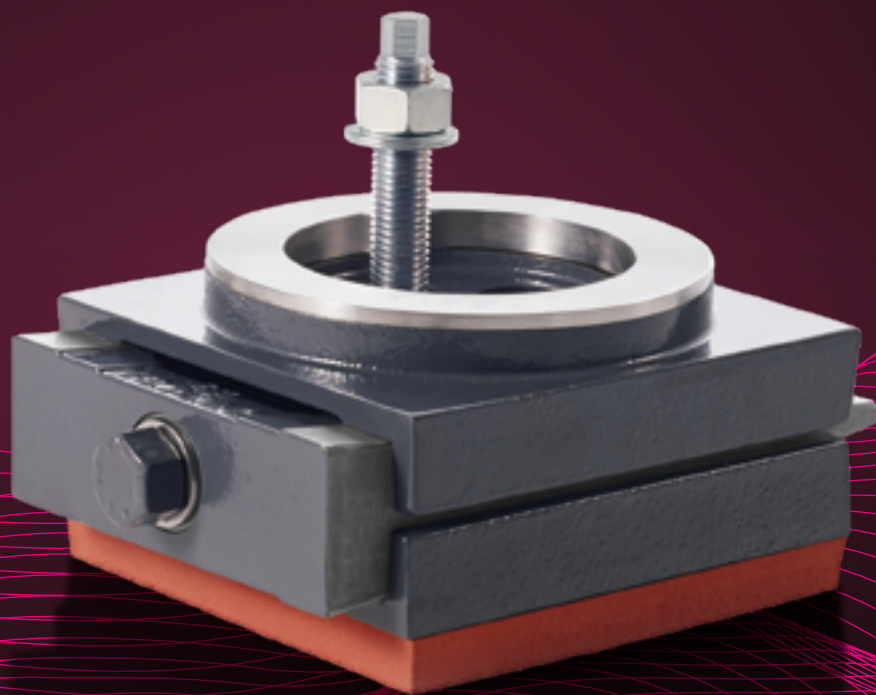
ISOLOC UMS MACHINE SHOES

UMS Universal Precision Machine Shoes (pat.) have thousandfold proven in all types of industries and production processes. They are prerequisite for best production results.
Even heaviest loads can be levelled exactly and without any jerking movements, due to the patented construction that differentiates itself from all other levelling devices.
Long and not inherently rigid machines resp. substructures or interconnected machine lines can be aligned quickly and very precisely.

TYPES

UMS machine shoes are available in the following types:

- Free-standing
- Screwed-on
- Bolt-through
- With or without inclination compensation

YOUR BENEFIT

- Fast and cost-effective alignment of long and not inherently rigid machines resp. substructures or interconnected machine lines.
- Up to 50% time-saving of installation due to precision levelling and free installation.
- Improvement of dynamic characteristics of machines at low noise.

We set high standards concerning the reliability and durability of our products. Due to this reason our machine shoes are produced of high-quality grey cast iron or cast iron with spheroidal graphite. Guide bolts and levelling spindle are of high-strength steel.

All rigidity calculations are performed via FEM and then reviewed and certified by independent inspection bodies such as TÜV Rheinland, LGA or KIT in Karlsruhe.

Thereby it is ensured that numerical values – statics and dynamics load capacity – are complied with also in practice.
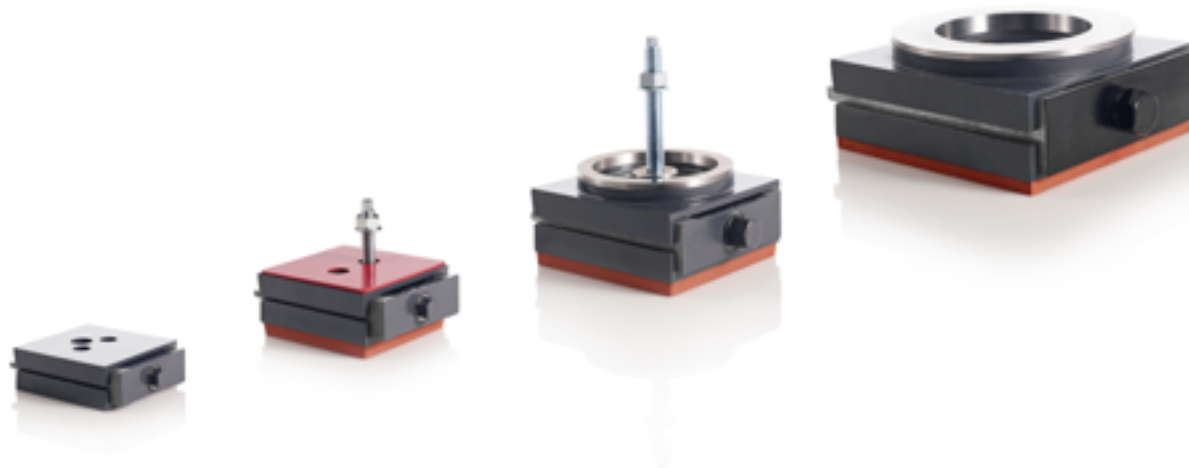
UMS MACHINE SHOES
Equipment & Dimension

UMS ASF

Screwed-on or free-standing types possible. On request also with base enlarging panels BV for special requirements, e.g. in case of very high dynamics of a machine or for the reduction of surface pressure onto the floor. There is an anti-slip protection panel GPL 3025 on the top and a vibration insulation panel at the bottom.

UMS DSF

Bolt-through for floor anchoring of the machine or free-standing use possible. The top is delivered with anti-slip protection panels GPL 3025; the bottom is assembled with vibration insulation panels.
Bolt and RONKAP element must be ordered separately.

UMSD ASF/DSF

The double wedge construction of spheroidal graphite cast ensures a particularly low torque during levelling. All lifting forces are precisely focussed in the centre. Application of base extension panels BV possible. The top is delivered with anti-slip protection panels GPL 3025; the bottom is assembled with vibration insulation panels.

	ArtNo.	Type	F max[1]
IPL 10	30510	UMS 5-ASF/10	6 000
	30810	UMS 8-ASF/10	11 000
	31810	UMS 18-ASF/10	19 000
	33010	UMS 30-ASF/10	31 000
	34510	UMS 45-ASF/10	45 000
	310010	UMS100-ASF/10	101 000
IPL 17	30515	UMS 5-ASF/17	24 000
	30815	UMS 8-ASF/17	42 000
	31815	UMS 18-ASF/17	75 000
	33015	UMS 30-ASF/17	125 000
	34515	UMS 45-ASF/17	180 000
	310015	UMS100-ASF/17	405 000
IPL 20	30520	UMS 5-ASF/20	14 500
	30820	UMS 8-ASF/20	26 000
	31820	UMS 18-ASF/20	45 500
	33020	UMS 30-ASF/20	75 000
	34520	UMS 45-ASF/20	108 000
	310020	UMS100-ASF/20	243 000
IPL 20-2	305202	UMS 5-ASF/20-2	14 500
	308202	UMS 8-ASF/20-2	26 000
	318202	UMS 18-ASF/20-2	45 500
	330202	UMS 30-ASF/20-2	75 000
	345202	UMS 45-ASF/20-2	108 000
	3100202	UMS100-ASF/20-2	243 000
IPL 25	305250	UMS 5-ASF/25	20 570
	308250	UMS 8-ASF/25	35 700
	318250	UMS 18-ASF/25	64 600
	330250	UMS 30-ASF/25	106 250
	345250	UMS 45-ASF/25	153 000
	3100250	UMS100-ASF/25	344 250
IPL 30	30530	UMS 5-ASF/30	60 000
	30830	UMS 8-ASF/30	100 000
	31830	UMS 18-ASF/30	190 000
	33030	UMS 30-ASF/30	300 000
	34530	UMS 45-ASF/30	450 000
	310030	UMS100-ASF/30	1 000 000
IPL 40	30540	UMS 5-ASF/40	24 000
	30840	UMS 8-ASF/40	42 000
	31840	UMS 18-ASF/40	75 000
	33040	UMS 30-ASF/40	125 000
	34540	UMS 45-ASF/40	180 000
	310040	UMS100-ASF/40	405 000

	ArtNo.	Type	F max[1]
IPL 10	30511	UMS 5-DSF/10	6 000
	30811	UMS 8-DSF/10	11 000
	31811	UMS 18-DSF/10	19 000
	33011	UMS 30-DSF/10	31 000
	34511	UMS 45-DSF/10	45 000
	310011	UMS100-DSF/10	101 000
IPL 17	30516	UMS 5-DSF/17	24 000
	30816	UMS 8-DSF/17	42 000
	31816	UMS 18-DSF/17	75 000
	33016	UMS 30-DSF/17	125 000
	34516	UMS 45-DSF/17	180 000
	310016	UMS100-DSF/17	405 000
IPL 20	30521	UMS 5-DSF/20	14 500
	30821	UMS 8-DSF/20	26 000
	31821	UMS 18-DSF/20	45 500
	33021	UMS 30-DSF/20	75 000
	34521	UMS 45-DSF/20	108 000
	310021	UMS100-DSF/20	243 000
IPL 20-2	305212	UMS 5-DSF/20-2	14 500
	308212	UMS 8-DSF/20-2	26 000
	318212	UMS 18-DSF/20-2	45 500
	330212	UMS 30-DSF/20-2	75 000
	345212	UMS 45-DSF/20-2	108 000
	3100212	UMS100-DSF/20-2	243 000
IPL 25	305251	UMS 5-DSF/25	20 570
	308251	UMS 8-DSF/25	35 700
	318251	UMS 18-DSF/25	64 600
	330251	UMS 30-DSF/25	106 250
	345251	UMS 45-DSF/25	153 000
	3100251	UMS100-DSF/25	344 250
IPL 30	30531	UMS 5-DSF/30	60 000
	30831	UMS 8-DSF/30	100 000
	31831	UMS 18-DSF/30	190 000
	33031	UMS 30-DSF/30	300 000
	34531	UMS 45-DSF/30	450 000
	310031	UMS100-DSF/30	1 000 000
IPL 40	30541	UMS 5-DSF/40	24 000
	30841	UMS 8-DSF/40	42 000
	31841	UMS 18-DSF/40	75 000
	33041	UMS 30-DSF/40	125 000
	34541	UMS 45-DSF/40	180 000
	310041	UMS100-DSF/40	405 000

	ArtNo.	Type	F max[1]
IPL 10	33510	UMSD 35-ASF/10	50 000
	33511	UMSD 35-DSF/10	50 000
IPL 17	33515	UMSD 35-ASF/17	200 000
	33516	UMSD 35-DSF/17	200 000
IPL 20	33520	UMSD 35-ASF/20	120 000
	33521	UMSD 35-DSF/20	120 000
IPL 20-2	335202	UMSD 35-ASF/20-2	120 000
	335212	UMSD 35-DSF/20-2	120 000
IPL 25	335250	UMSD 35-ASF/25	170 000
	335251	UMSD 35-DSF/25	170 000
IPL 30	33530	UMSD 35-ASF/30	450 000
	33531	UMSD 35-DSF/30	450 000
IPL 40	33540	UMSD 35-ASF/40	200 000
	33541	UMSD 35-DSF/40	200 000

[1] F max in N

$F_{max} = F_{VSP} + F_G + F_{dyn}$ in N

F_{VSP}: bolt preload force in floor anchoring
F_G: proportional weight force of machine
F_{dyn}: proportional dynamic forces

DIMENSIONS

	Type	L x B**	Height h_1*	(IPL equipment) Height h_2*	Adjustment range V*	a*	K*	e*	c*	d_1*	d_2*	d_4*	Sw_3
ASF	UMS 5	110 x 110	50	(IPL 10-30) 68 / (IPL 25) 78 / (IPL 40) 61	+5 / −4	145	13	36	55	22	M16	–	17
	UMS 8	150 x 144	56	(IPL 10-30) 74 / (IPL 25) 84 / (IPL 40) 67	+6 / −4	185	13	52	75	22	M16	–	22
	UMS 18	200 x 190	71	(IPL 10-30) 89 / (IPL 25) 99 / (IPL 40) 82	+6 / −4	224	23	76	110	25	M20	–	30
	UMS 30	250 x 250	90	(IPL 10-30) 108 / (IPL 25) 118 / (IPL 40) 101	+9 / −5	285	27	96	125	25	M20	–	36
	UMS 45	300 x 300	90	(IPL 10-30) 108 / (IPL 25) 118 / (IPL 40) 101	+7 / −7	337	27	114	150	26	M24	–	46
	UMS100	450 x 450	150	(IPL 10-30) 168 / (IPL 25) 178 / (IPL 40) 161	+10 / −10	540	40	150	225	35	M30	–	80
	UMSD35	400 x 250	70	(IPL 10-30) 88 / (IPL 25) 98 / (IPL 40) 81	+10 / −10	400	24	150	200	26	M24	–	19
DSF	UMS 5	110 x 110	50	(IPL 10-30) 68 / (IPL 25) 78 / (IPL 40) 61	+5 / −4	145	13	36	55	22	22	–	17
	UMS 8	150 x 144	56	(IPL 10-30) 74 / (IPL 25) 84 / (IPL 40) 67	+6 / −4	185	13	52	75	22	22	–	22
	UMS 18	200 x 190	71	(IPL 10-30) 89 / (IPL 25) 99 / (IPL 40) 82	+6 / −4	224	23	76	110	25	25	–	30
	UMS 30	250 x 250	90	(IPL 10-30) 108 / (IPL 25) 118 / (IPL 40) 101	+9 / −5	285	27	96	125	25	25	–	36
	UMS 45	300 x 300	90	(IPL 10-30) 108 / (IPL 25) 118 / (IPL 40) 101	+7 / −7	337	27	114	150	26	26	–	46
	UMS100	450 x 450	150	(IPL 10-30) 168 / (IPL 25) 178 / (IPL 40) 161	+10 / −10	540	40	150	225	35	35	–	80
	UMSD35	400 x 250	70	(IPL 10-30) 88 / (IPL 25) 98 / (IPL 40) 81	+10 / −10	400	24	150	200	26	26	–	19

DIMENSIONS ASF / DSF / UMSD
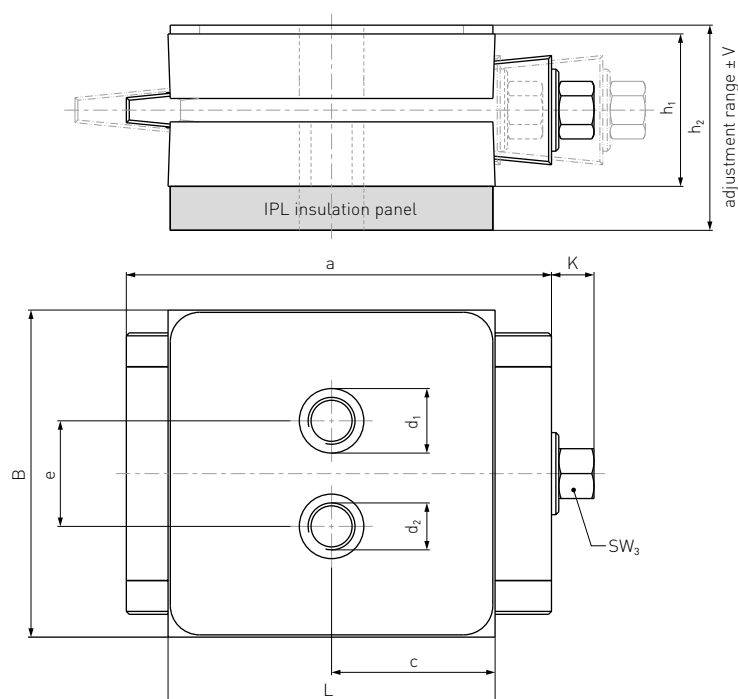
* all dimensions in mm
** length x width in mm

UMS MACHINE SHOES
Equipment & Dimension

UMS ASA

Screwed-on machine shoe with inclination adjustment for a stable mounting on inclined floors or uneven machine support surfaces. The ball ring ensures a tension-free adjustment of uneven floors up to 3°. The bottom is assembled with vibration insulation panels. The machine shoe must be anchored with the machine after levelling.

UMS DSA

Bolt-through machine shoe for floor anchoring of the machine with inclination adjustment for stable mounting of the machine on uneven floor. The machine must be anchored with the floor through the machine pedestal after levelling. A vibration-caused decoupling of the bolt takes place by our RONKAP insulation discs. The bottom is assembled with vibration insulation panels.

UMS ASA-Z

To be screwed-on at the centre of the machine, with inclination adjustment. For safe mounting on inclined floors or uneven machine support surfaces. The ball ring ensures a tension-free adjustment of uneven floors up to 3°. The bottom is assembled with vibration insulation panels. The machine shoe must be anchored with the machine after levelling.

	Art.-No.	Type	F max[1]
IPL 10	30512	UMS 5-ASA/10	6 000
	30812	UMS 8-ASA/10	11 000
	31812	UMS18-ASA/10	19 000
	33012	UMS30-ASA/10	31 000
	34512	UMS45-ASA/10	45 000
IPL 17	30517	UMS 5-ASA/17	24 000
	30817	UMS 8-ASA/17	42 000
	31817	UMS18-ASA/17	75 000
	33017	UMS30-ASA/17	125 000
	34517	UMS45-ASA/17	180 000
IPL 20	30522	UMS 5-ASA/20	14 500
	30822	UMS 8-ASA/20	26 000
	31822	UMS18-ASA/20	45 500
	33022	UMS30-ASA/20	75 000
	34522	UMS45-ASA/20	108 000
IPL 20-2	305222	UMS 5-ASA/20-2	14 500
	308222	UMS 8-ASA/20-2	26 000
	318222	UMS18-ASA/20-2	45 500
	330222	UMS30-ASA/20-2	75 000
	345222	UMS45-ASA/20-2	108 000
IPL 25	305252	UMS 5-ASA/25	20 570
	308252	UMS 8-ASA/25	35 700
	318252	UMS18-ASA/25	64 600
	330252	UMS30-ASA/25	106 250
	345252	UMS45-ASA/25	153 000
IPL 30	30532	UMS 5-ASA/30	60 000
	30832	UMS 8-ASA/30	100 000
	31832	UMS18-ASA/30	190 000
	33032	UMS30-ASA/30	300 000
	34532	UMS45-ASA/30	450 000
IPL 40	30542	UMS 5-ASA/40	24 000
	30842	UMS 8-ASA/40	42 000
	31842	UMS18-ASA/40	75 000
	33042	UMS30-ASA/40	125 000
	34542	UMS45-ASA/40	180 000

	Art.-No.	Type	F max[1]
IPL 10	30513	UMS 5-DSA/10	6 000
	30813	UMS 8-DSA/10	11 000
	31813	UMS18-DSA/10	19 000
	33013	UMS30-DSA/10	31 000
	34513	UMS45-DSA/10	45 000
IPL 17	30518	UMS 5-DSA/17	24 000
	30818	UMS 8-DSA/17	42 000
	31818	UMS18-DSA/17	75 000
	33018	UMS30-DSA/17	125 000
	34518	UMS45-DSA/17	180 000
IPL 20	30523	UMS 5-DSA/20	14 500
	30823	UMS 8-DSA/20	26 000
	31823	UMS18-DSA/20	45 500
	33023	UMS30-DSA/20	75 000
	34523	UMS45-DSA/20	108 000
IPL 20-2	305232	UMS 5-DSA/20-2	14 500
	308232	UMS 8-DSA/20-2	26 000
	318232	UMS18-DSA/20-2	45 500
	330232	UMS30-DSA/20-2	75 000
	345232	UMS45-DSA/20-2	108 000
IPL 25	305253	UMS 5-DSA/25	20 570
	308253	UMS 8-DSA/25	35 700
	318253	UMS18-DSA/25	64 600
	330253	UMS30-DSA/25	106 250
	345253	UMS45-DSA/25	153 000
IPL 30	30533	UMS 5-DSA/30	60 000
	30833	UMS 8-DSA/30	100 000
	31833	UMS18-DSA/30	190 000
	33033	UMS30-DSA/30	300 000
	34533	UMS45-DSA/30	450 000
IPL 40	30543	UMS 5-DSA/40	24 000
	30843	UMS 8-DSA/40	42 000
	31843	UMS18-DSA/40	75 000
	33043	UMS30-DSA/40	125 000
	34543	UMS45-DSA/40	180 000

	Art.-No.	Type	F max[1]
IPL 10	30512Z	UMS 5-ASA-Z/10	6 000
	30812Z	UMS 8-ASA-Z/10	11 000
	31812Z	UMS18-ASA-Z/10	19 000
IPL 17	30517Z	UMS 5-ASA-Z/17	24 000
	30817Z	UMS 8-ASA-Z/17	42 000
	31817Z	UMS18-ASA-Z/17	75 000
IPL 20	30522Z	UMS 5-ASA-Z/20	14 500
	30822Z	UMS 8-ASA-Z/20	26 000
	31822Z	UMS18-ASA-Z/20	45 500
IPL 20-2	305222Z	UMS 5-ASA-Z/20-2	14 500
	308222Z	UMS 8-ASA-Z/20-2	26 000
	318222Z	UMS18-ASA-Z/20-2	45 500
IPL 25	305252Z	UMS 5-ASA-Z/25	20 570
	308252Z	UMS 8-ASA-Z/25	35 700
	318252Z	UMS18-ASA-Z/25	64 600
IPL 30	30532Z	UMS 5-ASA-Z/30	60 000
	30832Z	UMS 8-ASA-Z/30	100 000
	31832Z	UMS18-ASA-Z/30	190 000
IPL 40	30542Z	UMS 5-ASA-Z/40	24 000
	30842Z	UMS 8-ASA-Z/40	42 000
	31842Z	UMS18-ASA-Z/40	75 000

[1] F max in N
$F_{max} = F_{VSP} + F_G + F_{dyn}$ in N
F_{Vsp}: bolt preload force in floor anchoring
F_G: proportional weight force of machine
F_{dyn}: proportional dynamic forces

DIMENSIONS

	Type	L x B**	Height h_1*	(IPL-equipment) Height h_2*	Adjustment range V*	a*	K*	e*	c*	d_1*	d_2*	d_4*	Sw_3
ASA	UMS 5	110 x 110	65	(IPL 10-30) 80 / (IPL 25) 90 / (IPL 40) 73	+5 / −4	145	13	36	55	22	M16	94	17
	UMS 8	150 x 144	72	(IPL 10-30) 87 / (IPL 25) 97 / (IPL 40) 80	+6 / −4	185	13	52	75	22	M16	130	22
	UMS 18	200 x 190	93	(IPL 10-30) 108 / (IPL 25) 118 / (IPL 40) 101	+6 / −4	224	23	76	110	25	M20	172	30
	UMS 30	250 x 250	120	(IPL 10-30) 135 / (IPL 25) 145 / (IPL 40) 128	+9 / −5	285	27	96	125	25	M20	232	36
	UMS 45	300 x 300	120	(IPL 10-30) 135 / (IPL 25) 145 / (IPL 40) 128	+7 / −7	337	27	114	150	26	M24	282	46
DSA	UMS 5	110 x 110	65	(IPL 10-30) 80 / (IPL 25) 90 / (IPL 40) 73	+5 / −4	145	13	36	55	22	22	94	17
	UMS 8	150 x 144	72	(IPL 10-30) 87 / (IPL 25) 97 / (IPL 40) 80	+6 / −4	185	13	52	75	22	22	130	22
	UMS 18	200 x 190	93	(IPL 10-30) 108 / (IPL 25) 118 / (IPL 40) 101	+6 / −4	224	23	76	110	25	25	172	30
	UMS 30	250 x 250	120	(IPL 10-30) 135 / (IPL 25) 145 / (IPL 40) 128	+9 / −5	285	27	96	125	25	25	232	36
	UMS 45	300 x 300	120	IPL 10-30) 135 / (IPL 25) 145 / (IPL 40) 128	+7 / −7	337	27	114	150	26	26	282	46
ASA-Z	UMS 5	110 x 110	72	(IPL 10-30) 87 / (IPL 25) 97 / (IPL 40) 80	+4 / −4	145	13	–	–	–	M16	94	17
	UMS 8	150 x 144	76	(IPL 10-30) 92 / (IPL 25) 102 / (IPL 40) 85	+5 / −4	185	13	–	–	–	M16	130	22
	UMS 18	200 x 190	93	(IPL 10-30) 108 / (IPL 25) 118 / (IPL 40) 101	+6 / −4	224	23	–	–	–	M20	172	30

DIMENSIONS ASA/DSA
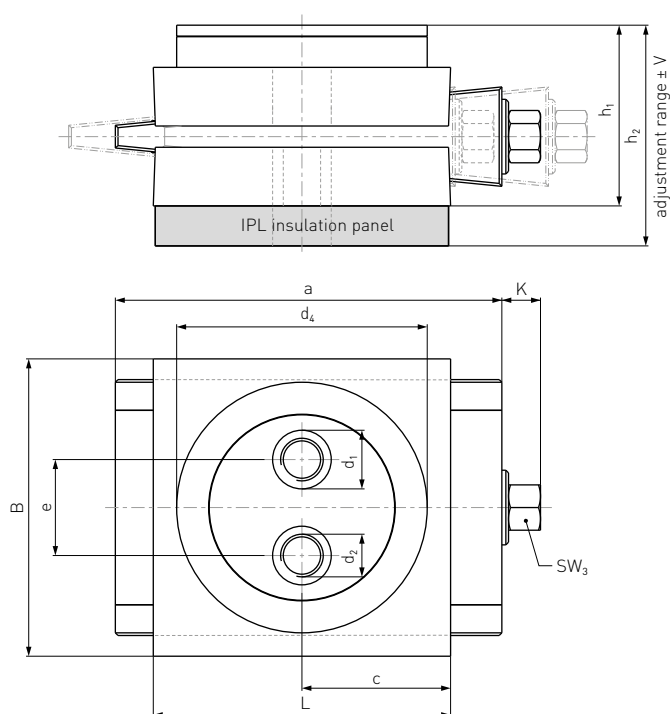
DIMENSIONS ASA-Z
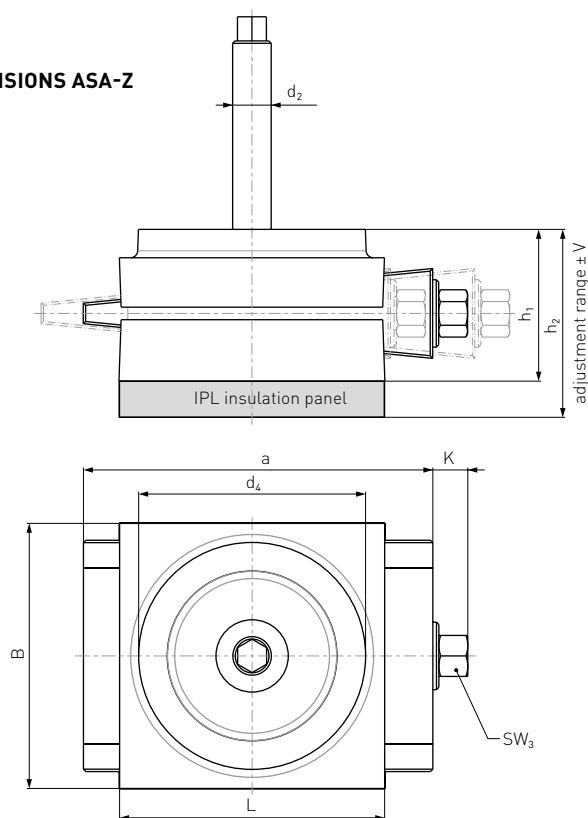
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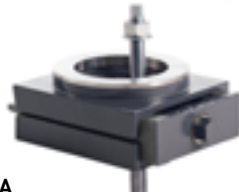** length x width in mm

UMS MACHINE SHOES WITHOUT IPL
Dimensions

UMS KDS

Bolt-through machine shoe, which must be inserted with a floor anchoring. Recommended purely for the adjustment of the height of the machine since it does not provide vibration insulation. The machine shoe must be anchored after levelling.

UMS KDSA

Bolt-through machine shoe, which must be inserted with floor anchoring. Recommended purely to adjust the height of the machine since it does not provide vibration insulation. With inclination compensation to adjust the floor inclinations or uneven machine support surfaces. The machine shoe must be anchored after levelling.

UMSD KDS

Bolt-through machine shoe with floor anchoring without insulation. Recommended for machines where a vibration insulation is not desired directly at the machine support or not at all. Very flat, due to the double-wedge construction. The machine shoe must be anchored after levelling.

	Art.-No.	Type	L x B**	Height h_1*	F max[1]	Adjustment range V*	a*	K*	e*	c*	d_1*	d_2*	d_4*	Sw$_3$
KDS	30500	UMS 5	110 x 110	50	60 000	+5 / −4	145	13	36	55	22	22	–	17
	30800	UMS 8	150 x 144	56	100 000	+6 / −4	185	13	52	75	22	22	–	22
	31800	UMS 18	200 x 190	71	190 000	+6 / −4	224	23	76	110	25	25	–	30
	33000	UMS 30	250 x 250	90	400 000	+9 / −5	285	27	96	125	25	25	–	36
	34500	UMS 45	300 x 300	90	600 000	+7 / −7	337	27	114	150	26	26	–	46
	310000	UMS 100	450 x 450	150	1 000 000	+10 / -10	540	40	150	225	35	35	–	80
	33500	UMSD35	400 x 250	70	450 000	+10 / -10	400	24	150	200	26	26	-	19
KDSA	30503	UMS 5	110 x 110	65	60 000	+5 / −4	145	13	36	55	22	22	94	17
	30803	UMS 8	150 x 144	72	100 000	+6 / −4	185	13	52	75	22	22	130	22
	31803	UMS 18	200 x 190	93	190 000	+6 / −4	224	23	76	110	25	25	172	30
	33003	UMS 30	250 x 250	120	400 000	+9 / −5	285	27	96	125	25	25	232	36
	34503	UMS 45	300 x 300	120	600 000	+7 / −7	337	27	114	150	26	26	282	46

DIMENSIONS KDS/UMSD
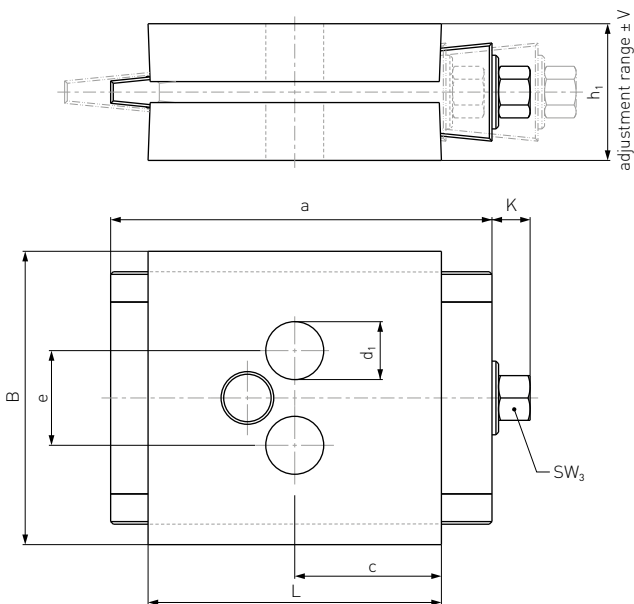
DIMENSIONS KDSA
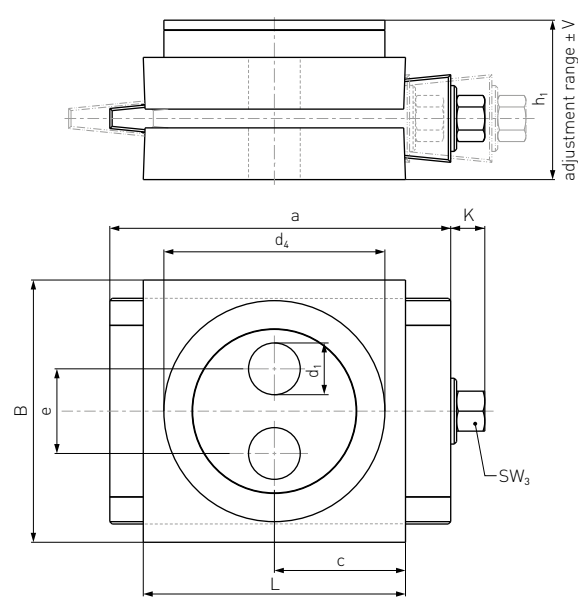
[1] F max in N
$F_{max} = F_{VSP} + F_G + F_{dyn}$ in N
F_{Vsp}: bolt preload force in floor anchoring
F_G: proportional weight force of machine
F_{dyn}: proportional dynamic forces

NV LEVELLER
Dimensions

NV LEVELLER NOW NEW WITH INCREASED ADJUSTABLE
MACHINE WEIGHT

The NV 1 leveller is a machine installation element, which is applied
where a particularly precise setting is required with little setting space
available. It is best suitable for machines, which must be installed in a
friction-locked manner. The special construction enables an extremely
easy and very precise levelling. For example, a serial connection of two
levellers with simultaneous setting is possible also.

CONSTRUCTION

As standard, all load-bearing and moving parts of the NV leveller are
produced of high-quality steel. Upon request we deliver the NV also with
vibration insulation – please ask us.

TECHNOLOGY

Levelling takes place via the ends of the worm gear located at the side,
at which an inner and external hexagon head is attached respectively.
This enables the extremely easy and very precise adjustment on both
sides. The NV leveller requires very little setting space since only the
upper part of the element moves vertically (±) during levelling.

The machine can be inserted optionally bolted on to the leveller (M20) or
anchored to the floor with through-hole (M16). An integrated inclination
adjustment prevents tension in the machine bed on uneven supporting
surfaces. The leveller can be levelled up to a proportional machine load
of 40 kN. Total loading capacity is 50 kN. A complete revolution of the
spindle (360°) leads to an adjustment of approx. 0.04 mm.

APPLICATION

Special machines, print and paper machinery, alignment of tools,
devices etc.

DIMENSIONS

Art.-No.	F max[1]	L*	b*	h*	d*	V**	a_1*	a_2*	c*	e*	SW_1	SW_2	SW_3	SW_4	SW_5
NV 1 35000	50 000	150	110	52	60	+15	33	23	47	25	24	14	30	14	50

optionally M20
for screwing-on or M16 for
bolt-through
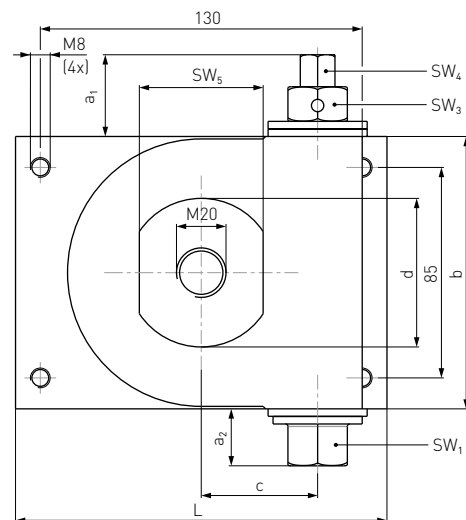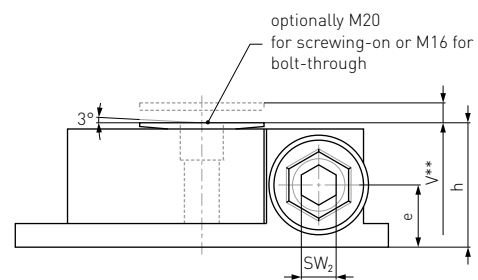
Serially connected leveller elements.
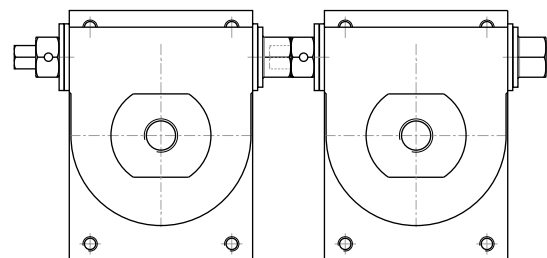
[1] F_{max} in N
* all dimensions in mm
** adjustment range

ISOLOC MULTI*DAM*® MD-2axis

High Stability In All
Spatial Directions.

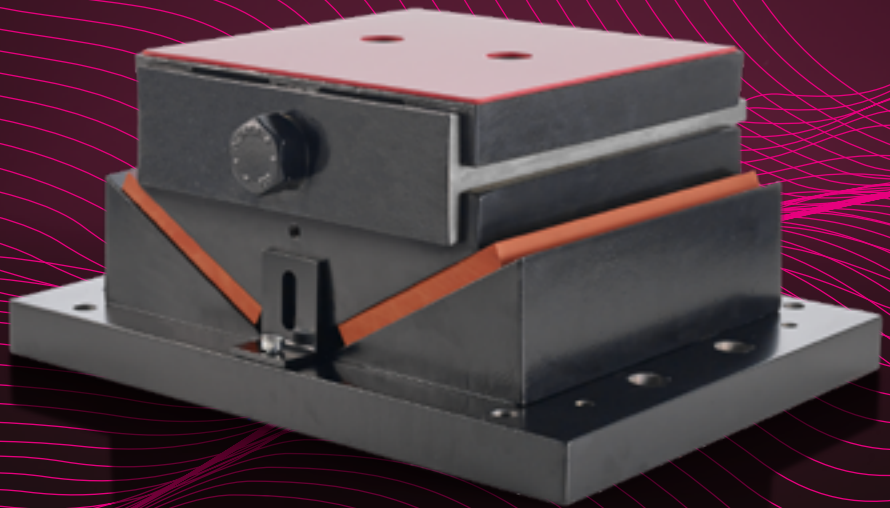**HIGH STABILITY IN HORIZONTAL DIRECTION**

The isoloc MULTI*DAM* machine setup system complies with highest demands to vibration insulation and vibration damping.

The isoloc MULTI*DAM* machine setup system is highly suitable for the insulation of forces coming from a machine and for damping of vibrations and shocks, which simultaneously effect all spatial directions with same intensity. Thereby, next to the vertical also the horizontal loads and dynamic forces are taken up. This ensures a highly-effective vibration insulation, particularly in machines with large dynamic mass forces. The machines stand more calm – a significant benefit of this construction.

INCLINED ELASTOMER SPRINGS

By inclination of the elastomer springs shear load and pressure load are "combined". Since elastomer springs subjected to pressure load are mostly "softer" by the factor 2-3 in horizontal than in vertical direction, on one side this can be used to reduce the vertical natural frequencies f_{0z} of the elastomer springs and at the same time to increase the horizontal natural frequencies f_{0x} and f_{0y}, which stabilise the positioned machine.

In general the ratio between the vertical and horizontal natural frequency is:

· In standard elements f_{0z} / f_{0xy} ≈ 2 - 3
· In isoloc MULTI*DAM* f_{0z} / f_{0y} ≈ 1.5 - 2

ADVANTAGES

Adjustable dynamic properties. The horizontal stiffness is considerably increased and the vertical stiffness is slightly reduced. Very high damping (up to 30%), excellent vibration, structure-borne sound and shock insulation. Adjustable to your machine requirements. Free or screwed-on installation in connection with the isoloc UMS Universal Precision Machine Shoes.
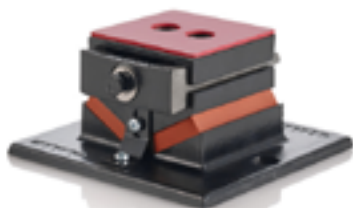
YOUR BENEFIT

· Better dynamic characteristics of the machines.
· Calm machine standing.
· Higher acceleration.
· Setting of higher jerk possible.
· Higher productivity.
· Better dimension accuracy.
· Better surface quality.
· Lower wear-and-tear of machines and tools.
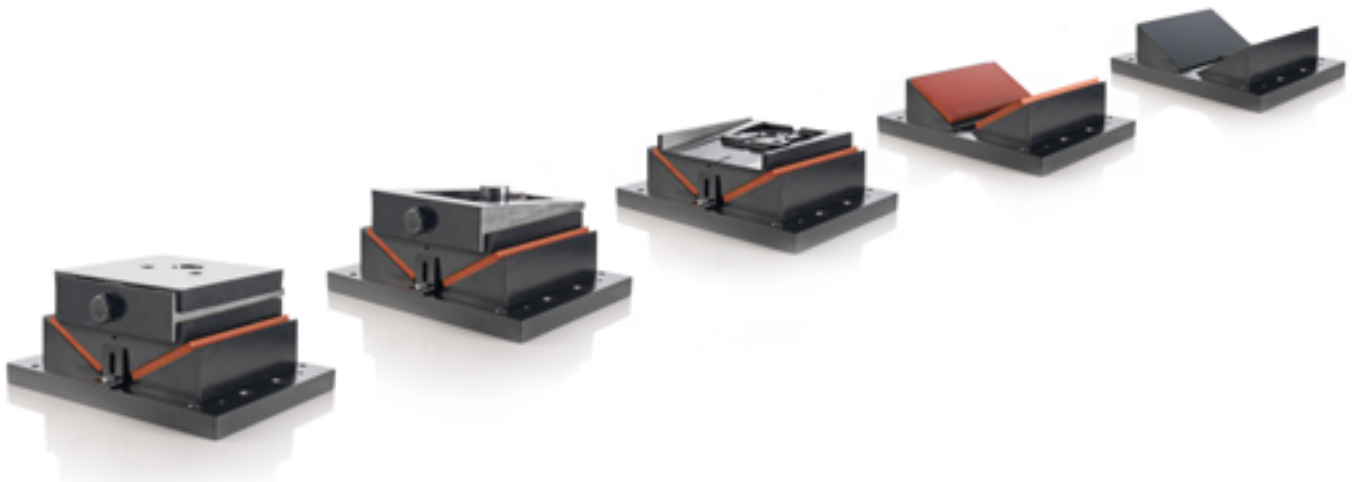
MULTI*DAM*® MD-2axis
Equipment & Dimensions

EQUIPMENT WITH IPL OR IPK

IPL 6

Art.-No.	Type	F max[1]
820560	MD2+UMS 5-ASF/6	3 600
820860	MD2+UMS 8-ASF/6	6 400
821860	MD2+UMS18-ASF/6	11 400
824560	MD2+UMS45-ASF/6	27 000
826006	MD2+UMS100-ASF/6	60 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.10	24	10	16
0.15	20	8	13
0.20	17	7	12
0.25	16	6	11
0.30	16	6	10

IPL 10

Art.-No.	Type	F max[1]
820510	MD2+UMS 5-ASF/10	6 000
820810	MD2+UMS 8-ASF/10	11 000
821810	MD2+UMS18-ASF/10	19 000
824510	MD2+UMS45-ASF/10	45 000
826010	MD2+UMS100-ASF/10	100 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.10	33	13	22
0.20	24	10	16
0.30	19	8	13
0.40	18	7	12
0.50	18	7	12
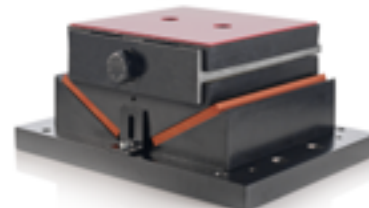
IPL 17

Art.-No.	Type	F max[1]
820515	MD2+UMS 5-ASF/17	24 000
820815	MD2+UMS 8-ASF/17	42 000
821815	MD2+UMS18-ASF/17	75 000
824515	MD2+UMS45-ASF/17	180 000
826015	MD2+UMS100-ASF/17	400 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.40	31	15	22
0.80	27	13	19
1.20	25	11	17
1.60	24	10	16
2.00	23	10	15

IPK 62

Art.-No.	Type	F max[1]
8205602	MD2+UMS 5-ASF/62	3 600
8208602	MD2+UMS 8-ASF/62	6 400
8218602	MD2+UMS18-ASF/62	11 400
8245602	MD2+UMS45-ASF/62	27 000
8260062	MD2+UMS100-ASF/62	60 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.10	17	7	11
0.15	14	6	9
0.20	12	5	8
0.25	11	5	8
0.30	11	4	7

IPK 102

Art.-No.	Type	F max[1]
8205102	MD2+UMS 5-ASF/102	6 000
8208102	MD2+UMS 8-ASF/102	11 000
8218102	MD2+UMS18-ASF/102	19 000
8245102	MD2+UMS45-ASF/102	45 000
8260102	MD2+UMS100-ASF/102	100 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.10	23	9	15
0.20	17	7	11
0.30	14	5	9
0.40	13	5	9
0.50	13	5	8

IPK 172

Art.-No.	Type	F max[1]
8205152	MD2+UMS 5-ASF/172	24 000
8208152	MD2+UMS 8-ASF/172	42 000
8218152	MD2+UMS18-ASF/172	75 000
8245152	MD2+UMS45-ASF/172	180 000
8260152	MD2+UMS100-ASF/172	400 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.40	21	10	17
0.80	17	9	13
1.20	15	8	11
1.60	15	7	10
2.00	15	6	10

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[1]   F max in N ($\rightarrow \sigma_D$=maximal)
*   The values can deviate up to ± 25%. They refer to a
    one-mass-oscillator with decoupled degrees of
    freedom as well as to a rigid subsoil and an ambient
   temperature of 20° C.
σ_D Compressive stress N/mm²
f_{0z} Vertical natural frequency in Hz
f_{0x} Horizontal natural frequency in Hz in x-direction
f_{0y} Horizontal natural frequency in Hz in y-direction

DIMENSIONS MULTI*DAM*

	Type	L x B**	l*	b*	K*	h*	adjustment range V*	a*	d_1*	d_2*	g*	c*	e*	d_3*	Sw_3	α
IPL	MD2+UMS 5	205 x 205	110	110	13	107	+5 / −4	145	22	M16	85	55	36	22	17	30°
	MD2+UMS 8	225 x 250	150	144	13	128	+6 / −4	185	22	M16	102	75	52	22	22	30°
	MD2+UMS18	260 x 370	200	190	23	164	+6 / −4	224	25	M20	145	110	76	26	30	30°
	MD2+UMS45	375 x 500	300	300	27	237	+7 / −7	337	26	M24	213	150	114	26	46	30°
	MD2+UMS100	590 x 724	450	450	40	412	+10 / −10	500	35	M30	318.5	225	150	39	80	30°
IPK	MD2+UMS 5	205 x 205	110	110	13	127	+5 / −4	145	22	M16	85	55	36	22	17	30°
	MD2+UMS 8	225 x 250	150	144	13	148	+6 / −4	185	22	M16	102	75	52	22	22	30°
	MD2+UMS18	260 x 370	200	190	23	182	+6 / −4	224	25	M20	145	110	76	26	30	30°
	MD2+UMS45	375 x 500	300	300	27	258	+7 / −7	337	26	M24	213	150	114	26	46	30°
	MD2+UMS100	590 x 724	450	450	40	430	+10 / −10	500	35	M30	318.5	225	150	39	80	30°

IPL insulation panel
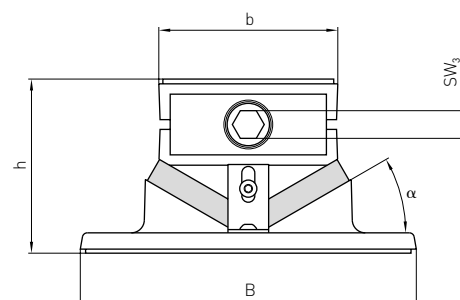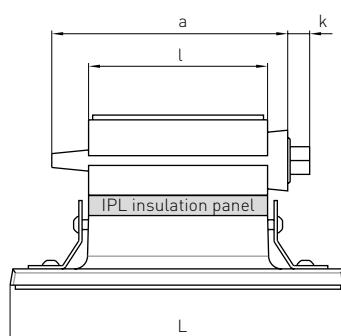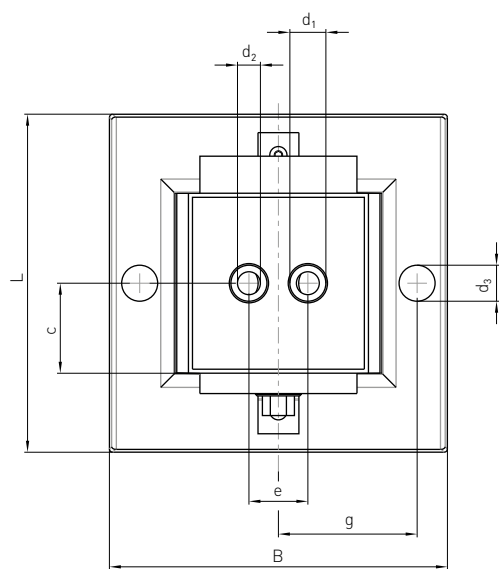
* all dimensions in mm
** length x width in mm

ISOLOC MULTI*DAM*® MD-4axis
For Machines With Very High Dynamics.
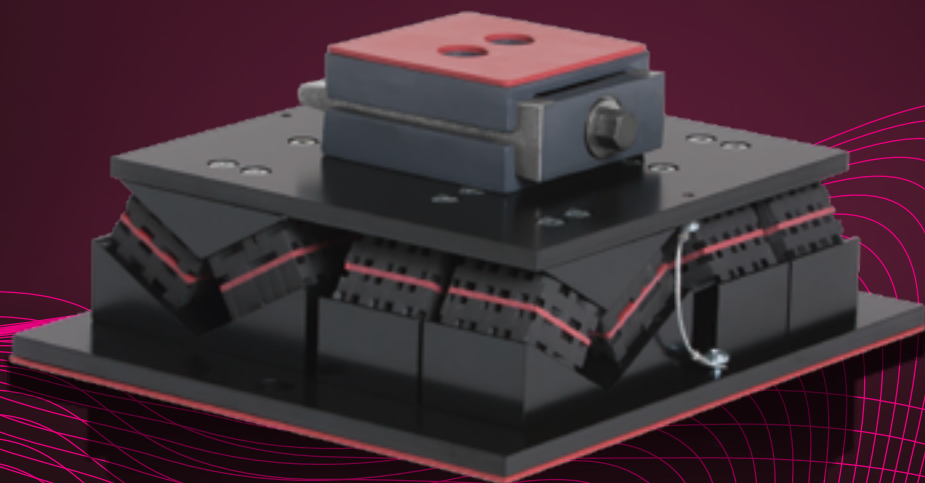
HIGH STABILITY IN ALL SPATIAL DIRECTIONS

The new patented isoloc MULTI*DAM*® machine mounting system is ideally suited for vibration insulated setup of machines with high dynamics. Due to the special arrangement of the 8 respectively 16 inclined contact surfaces, force exciters in all spatial directions are better absorbed than in conventional elements and are transmitted in a considerably reduced way in the ground (source insulation).
This enables a highly-efficient vibration insulation, especially in machines with dynamic mass forces, e.g. 5-axis processing centres.
By the opposite facing, inclined double contact surfaces of the elastomer springs, these are forcibly actuated. The machines stand calmer and more stable - a considerable benefit of this construction.

INCLINED ELASTOMER SPRINGS

By inclination of the elastomer springs shear load and pressure load are „combined". Since elastomer springs subjected to pressure load are mostly "softer" by the factor 2-3 in horizontal than in vertical direction, on one side this can be used to reduce the vertical natural frequencies f_{0z} of the elastomer springs and at the same time to increase the horizontal natural frequencies f_{0x} und f_{0y}, which stabilise the positioned machine.
In general the ratio between the vertical and horizontal natural frequency is:

· In standard elements f_{0z} / f_{0xy} ≈ 2 - 3
· In isoloc MULTIDAM f_{0z} / f_{0xy} ≈ 1.5 - 2

ADVANTAGES

The horizontal stiffness is considerably increased and at the same time the vertical stiffness reduced. Very high damping (up to 30%), excellent vibration, structure-borne sound and shock insulation. Free or screwed-on installation in connection with the isoloc UMS Universal Precision Machine Shoes.

YOUR BENEFIT

· Better dynamic characteristics of the machines by less vibration amplitudes in horizontal direction.
· Calm machine standing.
· Setting of higher jerk and accelerations possible.
· Higher productivity.
· Better work piece surfaces.
· Lower wear-and-tear of machines and tools.
· Reduced vibrations and noise in the production halls.

MULTI*DAM*® MD-4axis
Equipment & Dimensions

EQUIPMENT MULTI*DAM* MD-4AXIS WITHOUT UMS

IPL 6	Art.-No.	Type	F max[1]
	840806	MD4-8LP/6	6 000
	841606	MD4-16LP/6	12 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.10	20	11	11
0.15	16	9	9
0.20	15	9	9
0.25	15	9	9
0.30	16	9	9

IPL 10	Art.-No.	Type	F max[1]
	840810	MD4-8LP/10	10 000
	841610	MD4-16LP/10	20 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.10	27	16	16
0.20	21	12	12
0.30	18	10	10
0.40	17	10	10
0.50	18	9	9

IPL 17	Art.-No.	Type	F max[1]
	840817	MD4-8LP/17	40 000
	841617	MD4-16LP/17	80 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.40	31	19	19
0.80	27	16	16
1.20	25	14	14
1.60	24	13	13
2.00	23	13	13

IPK 62	Art.-No.	Type	F max[1]
	8408062	MD4-8LP/62	6 000
	8416062	MD4-16LP/62	12 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.10	14	8	8
0.15	12	7	7
0.20	11	6	6
0.25	11	6	6
0.30	11	6	6

IPK 102	Art.-No.	Type	F max[1]
	8408102	MD4-8LP/102	10 000
	8416102	MD4-16LP/102	20 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.10	19	11	11
0.20	15	9	9
0.30	13	7	7
0.40	12	7	7
0.50	13	7	7

IPK 172	Art.-No.	Type	F max[1]
	8408172	MD4-8LP/172	40 000
	8416172	MD4-16LP/172	80 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.40	21	14	14
0.80	17	11	11
1.20	15	10	10
1.60	15	9	9
2.00	15	8	8

DIMENSIONS MULTI*DAM* MD-4AXIS WITHOUT UMS

	Type		L x B**	l**	b**	h**	d1**	d2**	a**	α
IPL	MD4	8LP	250 x 210	180	180	76	M16	18	214	30°
	MD4	16LP	340 x 290	250	250	76	M16	18	304	30°
IPK	MD4	8LP	250 x 210	180	180	96	M16	18	214	30°
	MD4	16LP	340 x 290	250	250	96	M16	18	304	30°
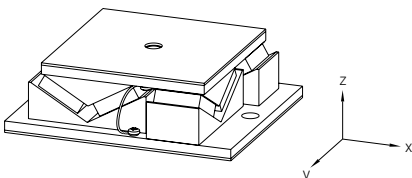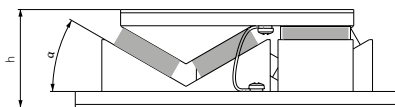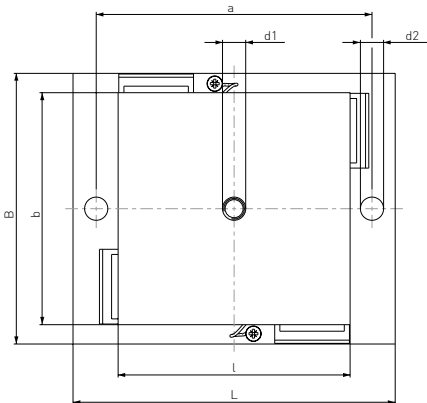
[1]   F max in N (→σ_D=maximal)
*   The values can deviate up to ± 25%. They refer to a one-mass-oscillator with decoupled degrees of freedom as well as to a rigid subsoil and an ambient temperature of 20° C.
**   All dimensions in mm
σ_D Compressive stress N/mm²
f_{0z} Vertical natural frequency in Hz
f_{0x} Horizontal natural frequency in Hz in x-direction
f_{0y} Horizontal natural frequency in Hz in y-direction

EQUIPMENT MULTI*DAM* MD-4AXIS WITH UMS

	Art.-No.	Type	F max[1]
IPL 6	840806A	MD4-8LP/UMS5/6	6 000
	841606A	MD4-16LP/UMS5/6	12 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.10	20	11	11
0.15	16	9	9
0.20	15	9	9
0.25	15	9	9
0.30	16	9	9

	Art.-No.	Type	F max[1]
IPL 10	840810A	MD4-8LP/UMS5/10	10 000
	841610A	MD4-16LP/UMS5/10	20 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.10	27	16	16
0.20	21	12	12
0.30	18	10	10
0.40	17	10	10
0.50	18	9	9

	Art.-No.	Type	F max[1]
IPL 17	840817A	MD4-8LP/UMS5/17	40 000
	841617B	MD4-16LP/UMS8/17	80 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.40	31	19	19
0.80	27	16	16
1.20	25	14	14
1.60	24	13	13
2.00	23	13	13

	Art.-No.	Type	F max[1]
IPK 62	8408062A	MD4-8LP/UMS5/62	6 000
	8416062A	MD4-16LP/UMS5/62	12 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.10	14	8	8
0.15	12	7	7
0.20	11	6	6
0.25	11	6	6
0.30	11	6	6

	Art.-No.	Type	F max[1]
IPK 102	8408102A	MD4-8LP/UMS5/102	10 000
	8416102A	MD4-16LP/UMS5/102	20 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.10	19	11	11
0.20	15	9	9
0.30	13	7	7
0.40	12	7	7
0.50	13	7	7

	Art.-No.	Type	F max[1]
IPK 172	8408172A	MD4-8LP/UMS5/172	40 000
	8416172B	MD4-16LP/UMS8/172	80 000

Natural frequencies f

σ_D	f_{0z}*	f_{0x}*	f_{0y}*
0.40	21	14	14
0.80	17	11	11
1.20	15	10	10
1.60	15	9	9
2.00	15	8	8

DIMENSIONS MULTI*DAM* MD-4AXIS WITH UMS

	Type	L x B**	l**	b**	h**	V** adjustment range	d_1**	d_2**	d_3**	a**	c**	L1**	L2**	L3**	k**	α	SW3**
IPL	MD4-8LP/UMS5-ASF	250 x 210	180	180	126	+5 / −4	M16	22	18	214	36	110	110	145	13	30°	17
	MD4-16LP/UMS5-ASF	340 x 290	250	250	126	+5 / −4	M16	22	18	304	36	110	110	145	13	30°	17
	MD4-16LP/UMS8-ASF	340 x 290	250	250	132	+6 / −4	M16	22	18	304	52	144	150	185	13	30°	22
IPK	MD4-8LP/UMS5-ASF	250 x 210	180	180	147	+5 / −4	M16	22	18	214	36	110	110	145	13	30°	17
	MD4-16LP/UMS5-ASF	340 x 290	250	250	147	+5 / −4	M16	22	18	304	36	110	110	145	13	30°	17
	MD4-16LP/UMS8-ASF	340 x 290	250	250	153	+6 / −4	M16	22	18	304	52	144	150	185	13	30°	22
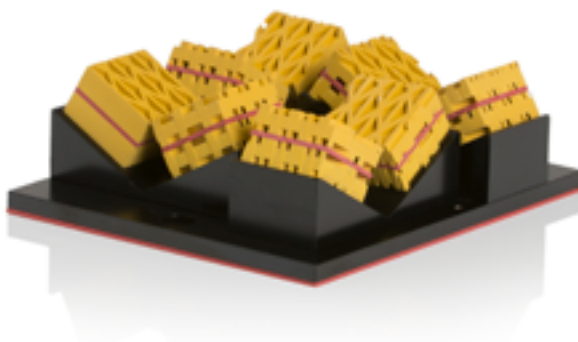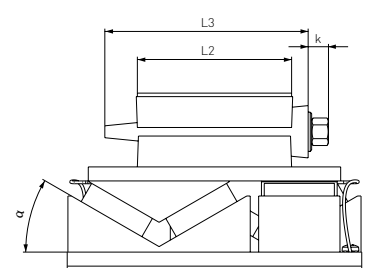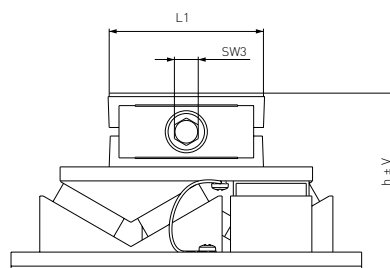
[1] F max in N (→σ_D=maximal)
* The values can deviate up to ± 25%. They refer to a one-mass-oscillator with decoupled degrees of freedom as well as to a rigid subsoil and an ambient temperature of 20° C.
** All dimensions in mm
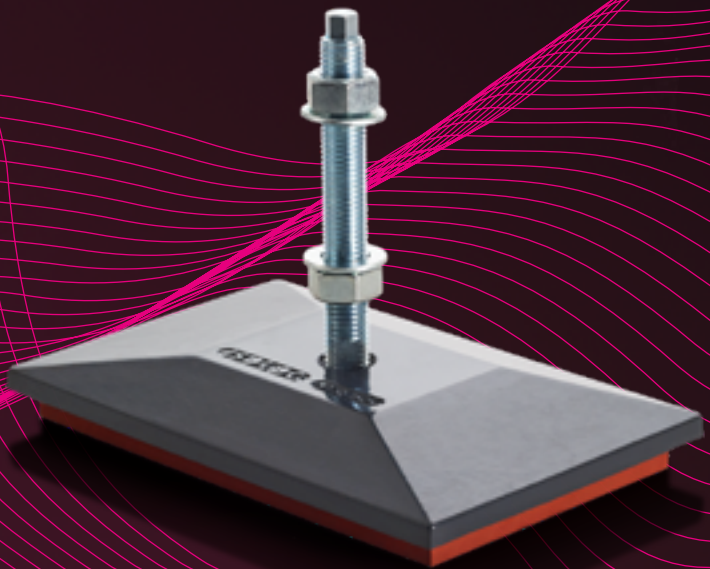σ_D Compressive stress N/mm²
f_{0z} Vertical natural frequency in Hz
f_{0x} Horizontal natural frequency in Hz in x-direction
f_{0y} Horizontal natural frequency in Hz in y-direction

ISOLOC LEVELLING DISCS

For Vibration Insulated
Machine Installations.

ISOLOC LEVELLING DISCS NT / NTE / NTR

Levelling discs are suitable for inexpensive, vibration insulated and mounting-free instal-lation – preferably for machines, which have adjustment screws already.

Isoloc NT levelling discs offer effective vibration and structure-borne sound insulation, noise reduction and safe anti-slip protection, especially for smaller and lighter machines. Further to that, they have good levelling properties and adjust floor inclinations up to 5°.

Isoloc NTE stainless steel levelling discs are particularly flat designed. They are preferably suitable for the use in the food or chemical industry and where corrosion resistance is very important.

Isoloc NTR levelling elements have a rectangular shape and are particularly suitable for heavy loads.
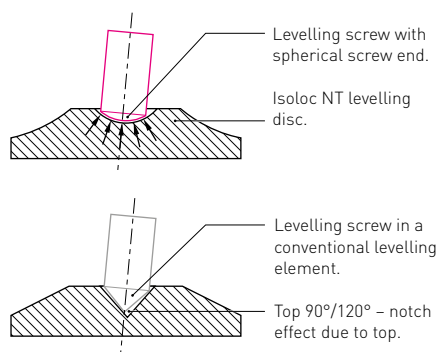
EQUIPMENT

Isoloc NT/NTE/NTR levelling discs can be as-sembled also with isoloc IPK insulation packs according to vibration technical requirements.

SYSTEM DESCRIPTION

Due to the larger supporting surface with the screw – subject to geometrical causes - axial forces are better dispersed. A notch effect, such as in tapered screw tips does not take place in this construction.

Isoloc NT levelling disc: ball R18 at the isoloc screw and at the levelling disc = joint funtion = always full-face support!

Levelling screw with spherical screw end.

Isoloc NT levelling disc.

Levelling screw in a conventional levelling element.

Top 90°/120° – notch effect due to top.

ISOLOC LEVELLING DISCS NTS / NTSE

Isoloc levelling discs NTS/NTSE have thousandfold proved preferably for the mounting-free installation of smaller and medium-weight machines. They are equipped with all advantages of the vibration and structure-borne sound insulation, ensure a fast and technically easy levelling - however, are still inexpensive.

Isoloc NTS levelling discs level automatically uneven floors up to 5°. NTSE stainless steel levelling discs are particularly suitable for the use in the food and chemical industry.

The use of levelling discs is recommended for all types of production machines, which can be positioned vibration insulated and without anchoring. Due to their modular construction, the use of levelling screws is variable and thereby they can be screwed-on easily to the drillings of the machine bed.

Levelling screw and NTS levelling disc are interconnected by a particularly easy to handle system. At any time, the installed machine can be replaced easily since the complete isoloc NTS levellling disc remains at the machine support during lifting of the machine.

SCOPE OF DELIVERY

The levelling discs must be used together with our levelling screws. Therefore, always specify the desired size and length of the screw.

LEVELLING DISCS NT / NTE / NTR
Equipment & Dimensions

NT LEVELLING DISCS

NT levelling discs are well suitable for a recei-ver insulation of smaller and lighter machines. Compensation of floor inclinations up to 5°. Source insulation for machines with lower dynamics.

NTE LEVELLING DISCS

NTE stainless steel levelling discs are prefer-ably suitable for the use in the food or chemical industry and where corrosion resistance is particularly important. Well suitable for a recei-ver insulation of smaller and lighter machines. Compensation of floor inclinations up to 5°. Source insulation for machines with lower dynamics.
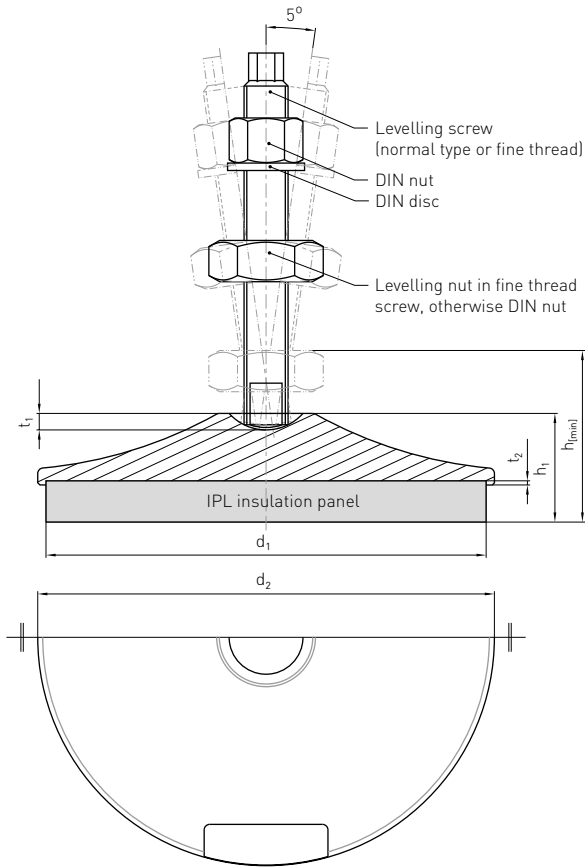
NTR LEVELLING ELEMENTS

NTR levelling elements are well suitable for a receiver insulation. Compensation of floor inclinations up to 5°. Source insulation for machines with lower dynamics. Suitable for high static loads.

	Art.-No.	Type	F max [1]
IPL 6	40506	NT 50/ 6	580
	40806	NT 80/ 6	1 500
	41006	NT100/ 6	2 300
	41206	NT120/ 6	3 300
	41606	NT160/ 6	6 000
IPL 10	40501	NT 50/10	950
	40801	NT 80/10	2 500
	41001	NT100/10	4 000
	41201	NT120/10	5 600
	41601	NT160/10	10 000
IPL 17	40505	NT 50/17	3 800
	40805	NT 80/17	10 000
	41005	NT100/17	15 000
	41205	NT120/17	22 000
	41605	NT160/17	40 000
IPL 20	40502	NT 50/20	2 400
	40802	NT 80/20	6 000
	41002	NT100/20	9 500
	41202	NT120/20	13 500
	41602	NT160/20	24 000
IPL 20-2	4050202	NT50/20-2	2 400
	4080202	NT80/20-2	6 000
	4100202	NT100/20-2	9 500
	4120202	NT120/20-2	13 500
	4160202	NT160/20-2	24 000
IPL 25	40509	NT 50/25	2 900
	40809	NT 80/25	8 500
	41009	NT100/25	13 300
	41209	NT120/25	19 200
	41608	NT160/25	34 000
IPL 30	40503	NT 50/30	5 000
	40803	NT 80/30	10 000
	41003	NT100/30	20 000
	41203	NT120/30	40 000
	41603	NT160/30	60 000
IPL 40	40504	NT 50/40	3 800
	40804	NT 80/40	10 000
	41004	NT100/40	15 000
	41204	NT120/40	22 000
	41604	NT160/40	40 000

	Art.-No.	Type	F max [1]
IPL 6	40516	NTE 50/ 6	580
	40816	NTE 80/ 6	1 500
	41016	NTE100/ 6	2 300
	41216	NTE120/ 6	3 300
	41616	NTE160/ 6	6 000
IPL 10	40511	NTE 50/10	950
	40811	NTE 80/10	2 500
	41011	NTE100/10	4 000
	41211	NTE120/10	5 600
	41611	NTE160/10	10 000
IPL 17	40515	NTE 50/17	3 800
	40815	NTE 80/17	10 000
	41015	NTE100/17	15 000
	41215	NTE120/17	22 000
	41615	NTE160/17	40 000
IPL 20	40512	NTE 50/20	2 400
	40812	NTE 80/20	6 000
	41012	NTE100/20	9 500
	41212	NTE120/20	13 500
	41612	NTE160/20	24 000
IPL 20-2	4051202	NTE50/20-2	2 400
	4081202	NTE80/20-2	6 000
	4101202	NTE100/20-2	9 500
	4121202	NTE120/20-2	13 500
	4161202	NTE160/20-2	24 000
IPL 25	40519	NTE 50/25	2 900
	40819	NTE 80/25	8 500
	41019	NTE100/25	13 300
	41219	NTE120/25	19 200
	41619	NTE160/25	34 000
IPL 30	40513	NTE 50/30	5 000
	40813	NTE 80/30	10 000
	41013	NTE100/30	20 000
	41213	NTE120/30	40 000
	41613	NTE160/30	60 000
IPL 40	40514	NTE 50/40	3 800
	40814	NTE 80/40	10 000
	41014	NTE100/40	15 000
	41214	NTE120/40	22 000
	41614	NTE160/40	40 000
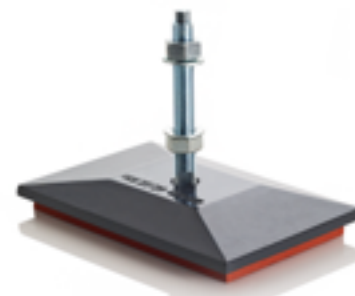
	Art.-No.	Type	F max [1]
IPL 6	42006	NTR1525/ 6	11 250
IPL 10	42001	NTR1525/10	18 750
IPL 17	42005	NTR1525/17	75 000
IPL 20	42002	NTR1525/20	45 000
IPL 20-2	4200202	NTR1525/20-2	45 000
IPL 25	42009	NTR1525/25	56 000
IPL 30	42003	NTR1525/30	100 000
IPL 40	42004	NTR1525/40	75 000

[1] F max in N, only in connection with the respective screw size
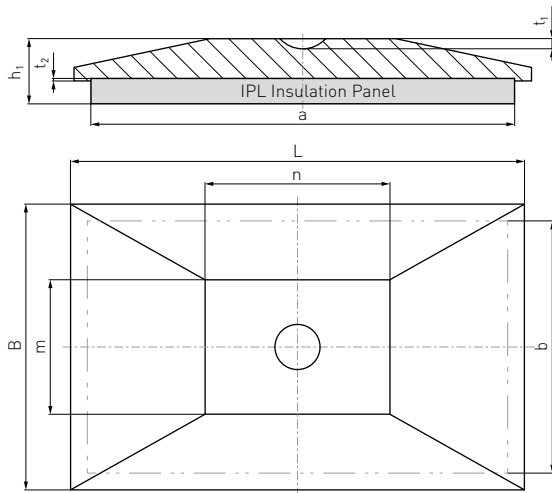
LEVELLING DISC NT / NTE

5°

Levelling screw
(normal type or fine thread)

DIN nut
DIN disc

Levelling nut in fine thread
screw, otherwise DIN nut

t_1

t_2 h_1 $h_{[min]}$

IPL insulation panel

d_1

d_2

LEVELLING ELEMENT NTR

t_1

h_1 t_2

IPL Insulation Panel

a

L

n

B m b

LEVELLING NUT

For the use of fine thread screws for NT/
NTR levelling discs.

Min. height:
= Dimension $h_{[min]}$
= Height levelling disc h_1 + Height
levelling nut h_2

h_2

M

SW$_3$

DIMENSIONS NT / NTE / NTR

	Ø d_1*	(IPL-equipment) Height h_1*	d_2*	t_1*	t_2*
NT	50	(IPL 6-30) 26 / (IPL 25) 36 / (IPL 40) 19	54	6	1.5
	80	(IPL 6-30) 28 / (IPL 25) 38 / (IPL 40) 21	84	6	1.5
	100	(IPL 6-30) 31 / (IPL 25) 41 / (IPL 40) 24	106	6	1.5
	120	(IPL 6-30) 33 / (IPL 25) 43 / (IPL 40) 26	126	6	1.5
	160	(IPL 6-30) 39 / (IPL 25) 49 / (IPL 40) 32	166	6	1.5
NTE	50	(IPL 6-30) 24 / (IPL 25) 34 / (IPL 40) 17	54	6	1.5
	80	(IPL 6-30) 24 / (IPL 25) 34 / (IPL 40) 17	84	6	1.5
	100	(IPL 6-30) 26 / (IPL 25) 36 / (IPL 40) 19	104	6	1.5
	120	(IPL 6-30) 26 / (IPL 25) 36 / (IPL 40) 19	124	6	1.5
	160	(IPL 6-30) 27 / (IPL 25) 37 / (IPL 40) 20	166	6	1.5

	a x b*	(IPL-equipment) Height h_1*	L*	B*	t_1*	t_2*	m*	n*
NTR	250 x 150	(IPL 6-30) 39 / (IPL 25) 49 / (IPL 40) 32	270	170	6	1.5	80	110

M	SW$_3$*	h_2*	$h_{[min]}$*
M 10 x 1	24	12	12 + h1
M 10	16	8	8 + h1
M 12 x 1	24	12	12 + h1
M 12	18	10	10 + h1
M 16 x 1.5	36	15	15 + h1
M 16	24	13	13 + h1
M 20 x 1.5	55	20	20 + h1
M 20	30	16	16 + h1
M 24 x 1.5	55	24	24 + h1
M 24	36	19	19 + h1
M 30 x 1.5	55	25	25 + h1
M 30	46	24	24 + h1

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* all dimensions in mm

M Thread
SW$_3$ Wrench size
h_2 Height of levelling nut
$h_{[min]}$ Min. height ± 2mm

LEVELLING DISCS NTS / NTSE
Equipment & Dimensions

NTS LEVELLING DISCS

NTS levelling discs are well suitable for receiver insulation of smaller and lighter machines and for the compensation of floor inclinations up to 5°. Source insulation for machines with low dynamics. The screw is undetachably connected to the disc.
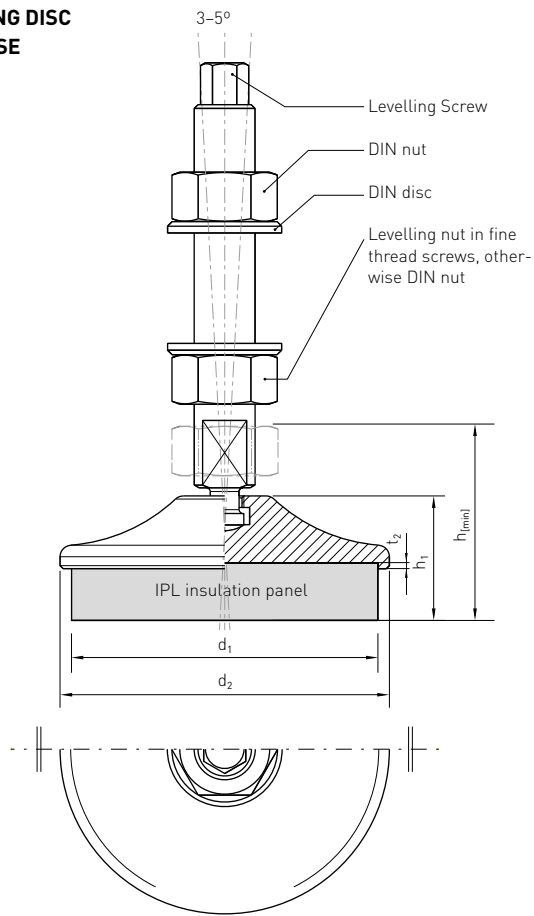
NTSE LEVELLING DISCS

NTSE stainless steel levelling discs are particularly suitable for the use in the food and chemical industry. They are well suitable for receiver insulation of smaller and lighter machines and for the compensation of floor inclinations up to 5°. Source insulation for machines with lower dynamics. The screw is undetachably connected to the disc.

	Art.-No.	Type	F max [1]
IPL 6	50506	NTS 50/ 6	580
	50806	NTS 80/ 6	1 500
	51006	NTS100/ 6	2 300
	51206	NTS120/ 6	3 300
	51506	NTS150/ 6	5 300
	52006	NTS200/ 6	9 400
	52506	NTS250/ 6	14 700
	53006	NTS300/ 6	21 200
IPL 10	50501	NTS 50/10	950
	50801	NTS 80/10	2 500
	51001	NTS100/10	4 000
	51201	NTS120/10	5 600
	51501	NTS150/10	8 800
	52001	NTS200/10	15 000
	52501	NTS250/10	24 000
	53001	NTS300/10	35 000
IPL 17	50505	NTS 50/17	3 800
	50805	NTS 80/17	10 000
	51005	NTS100/17	15 000
	51205	NTS120/17	22 000
	51505	NTS150/17	35 000
	52005	NTS200/17	62 000
	52505	NTS250/17	95 000
	53005	NTS300/17	130 000

	Art.-No.	Type	F max [1]
IPL 20	50502	NTS 50/20	2 400
	50802	NTS 80/20	6 000
	51002	NTS100/20	9 500
	51202	NTS120/20	13 500
	51502	NTS150/20	21 000
	52002	NTS200/20	37 500
	52502	NTS250/20	59 000
	53002	NTS300/20	85 000
IPL 20-2	5050202	NTS 50/20-2	2 400
	5080202	NTS 80/20-2	6 000
	5100202	NTS100/20-2	9 500
	5120202	NTS120/20-2	13 500
	5150202	NTS150/20-2	21 000
	5200202	NTS200/20-2	37 500
	5250202	NTS250/20-2	59 000
	5300202	NTS300/20-2	85 000
IPL 25	50509	NTS 50/25	2 900
	50809	NTS 80/25	8 500
	51009	NTS100/25	13 300
	51209	NTS120/25	19 200
	51509	NTS150/25	30 000
	52009	NTS200/25	53 000
	52509	NTS250/25	83 000
	53009	NTS300/25	120 000
IPL 30	50503	NTS 50/30	5 000
	50803	NTS 80/30	10 000
	51003	NTS100/30	20 000
	51203	NTS120/30	40 000
	51503	NTS150/30	50 000
	52003	NTS200/30	70 000
	52503	NTS250/30	100 000
	53003	NTS300/30	140 000
IPL 40	50504	NTS 50/40	3 800
	50804	NTS 80/40	10 000
	51004	NTS100/40	15 000
	51204	NTS120/40	22 000
	51504	NTS150/40	35 000
	52004	NTS200/40	62 000
	52504	NTS250/40	95 000
	53004	NTS300/40	130 000

	Art.-No.	Type	F max [1]
IPL 6	50516	NTSE 50/ 6	580
	50816	NTSE 80/ 6	1 500
	51016	NTSE100/ 6	2 300
	51216	NTSE120/ 6	3 300
	51516	NTSE150/ 6	5 300
IPL 10	50511	NTSE 50/10	950
	50811	NTSE 80/10	2 500
	51011	NTSE100/10	4 000
	51211	NTSE120/10	5 600
	51511	NTSE150/10	8 800
IPL 17	50515	NTSE 50/17	3 800
	50815	NTSE 80/17	10 000
	51015	NTSE100/17	15 000
	51215	NTSE120/17	22 000
	51515	NTSE150/17	35 000
IPL 20	50512	NTSE 50/20	2 400
	50812	NTSE 80/20	6 000
	51012	NTSE100/20	9 500
	51212	NTSE120/20	13 500
	51512	NTSE150/20	21 000
IPL 20-2	5051202	NTSE 50/20-2	2 400
	5081202	NTSE 80/20-2	6 000
	5101202	NTSE100/20-2	9 500
	5121202	NTSE120/20-2	13 500
	5151202	NTSE150/20-2	21 000
IPL 25	50519	NTSE 50/25	2 900
	50819	NTSE 80/25	8 500
	51019	NTSE100/25	13 300
	51219	NTSE120/25	19 200
	51519	NTSE150/25	30 000
IPL 30	50513	NTSE 50/30	5 000
	50813	NTSE 80/30	10 000
	51013	NTSE100/30	20 000
	51213	NTSE120/30	40 000
	51513	NTSE150/30	50 000
IPL 40	50514	NTSE 50/40	3 800
	50814	NTSE 80/40	10 000
	51014	NTSE100/40	15 000
	51214	NTSE120/40	22 000
	51514	NTSE150/40	35 000

[1] F max in N, only in connection with the respective screw size

**LEVELLING DISC
NTS / NTSE**

3–5°

Levelling Screw

DIN nut

DIN disc

Levelling nut in fine thread screws, otherwise DIN nut

IPL insulation panel

$h_{[min]}$

t_2

h_1

d_1

d_2

DIMENSIONS NTS / NTSE

	Ø d_1*	(IPL-equipment) Height h_1*	d_2*	t_2*
NTS	50	(IPL 6-30) 31 / (IPL 25) 41 / (IPL 40) 24	55	2.5
	80	(IPL 6-30) 32 / (IPL 25) 42 / (IPL 40) 25	85	2.5
	100	(IPL 6-30) 35 / (IPL 25) 45 / (IPL 40) 28	106	2.5
	120	(IPL 6-30) 35 / (IPL 25) 45 / (IPL 40) 28	126	4.0
	150	(IPL 6-30) 41 / (IPL 25) 51 / (IPL 40) 34	156	4.0
	200	(IPL 6-30) 49 / (IPL 25) 59 / (IPL 40) 42	208	4.0
	250	(IPL 6-30) 53 / (IPL 25) 63 / (IPL 40) 46	258	4.0
	300	(IPL 6-30) 61 / (IPL 25) 71 / (IPL 40) 54	308	4.0
NTSE	50	(IPL 6-30) 31 / (IPL 25) 41 / (IPL 40) 24	54	2.5
	80	(IPL 6-30) 32 / (IPL 25) 42 / (IPL 40) 25	84	2.5
	100	(IPL 6-30) 35 / (IPL 25) 45 / (IPL 40) 28	106	2.5
	120	(IPL 6-30) 35 / (IPL 25) 45 / (IPL 40) 28	126	2.5
	150	(IPL 6-30) 41 / (IPL 25) 51 / (IPL 40) 34	156	4.0

M	SW_3*	h_2*	$h_{[min]}$*
M 10 x 1	24	12	12 + h_1
M 10	16	8	8 + h_1
M 12 x 1	24	12	12 + h_1
M 12	18	10	10 + h_1
M 16 x 1.5	36	15	15 + h_1
M 16	24	13	13 + h_1
M 20 x 1.5	55	20	20 + h_1
M 20	30	16	16 + h_1
M 24 x 1.5	55	24	24 + h_1
M 24	36	19	19 + h_1
M 30 x 1.5	55	25	25 + h_1
M 30	46	24	24 + h_1

LEVELLING NUT

For the use of fine thread screws for NTS levelling discs.

Min. height:
= Dimension $h_{[min]}$
= Height levelling disc h_1 + Height levelling nut h_2

h_2

M

SW_3

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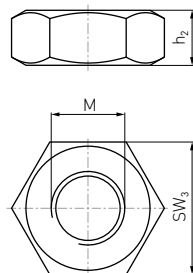
* all dimensions in mm

M Thread
SW_3 Wrench size
h_2 Height levelling nut
$h_{[min]}$ Min. height ± 2mm

ISOLOC FE*DAM*®

For Very Low Tuning In
Source And Receiver Insulations
Of Machines And Systems.
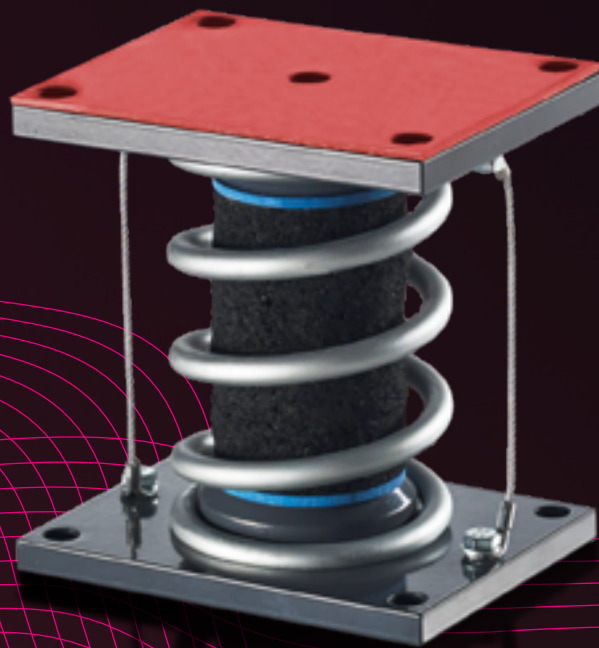
FE*DAM* MACHINE MOUNTING SYSTEMS

The patended FE*DAM* machine mounting system is a steel spring insulator, which can be delivered with or without damping, according to the type. It has a high elasticity and therefore large spring distances. In practice, phenomena such as ageing, creeping and plastic deformation can often be neglected in this kind of elements. Thereby very low tunings with natural frequencies of $f_{ov} \approx 3$ up to 5 Hz are achievable, depending on the load. The damping degree D is 1% up to 10% in elements with damper centre. The damper can be attached inside as well as outside of the spring.

FE*DAM* machine mounting systems are also suitable for the use of:

· Source insulation (emission protection): Forces from a machine or system are transmitted into the surrounding in reduced form.

Also suitable for:

· Receiver insulation (immission protection): Vibration distances, vibration speeds or accelerations due to existing vibrations at the respective installation place are transmitted in reduced form to the machine or system.

To restrict the vibration amplitudes it must be clarified whether a machine will be positioned directly on the FE*DAM* elements, or if mounting in connection with a foundation is required for the reduction of the vibration motion of the mass.

In any case it must be ensured that supplies are elastically decoupled.

FE*DAM* elements can be used free-standing or screwed together with foundation and machine.

FE*DAM* machine mounting systems can take also smaller loads in transverse direction in addition to their load in longitudinal direction (vertical) – subjected that the ends of the spring are moved parallel to each other due to the applied force transversely to the longitudinal spring axle, and the spring ends cannot raise.

FE*DAM* elements are used for source insulation of ventilators, fans, blowers, air conditioners, compressors, emergency generators, pumps, textile machines, smaller presses, thermal power stations etc.; furthermore for the receiver insulation of vibration sensitive measuring machines, measuring devices, scales, test stands, control cabinets etc.

FE*DAM*®
Types & Dimensions
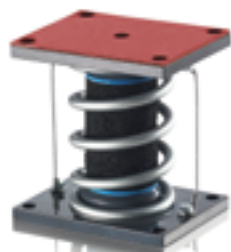
FE*DAM* 1
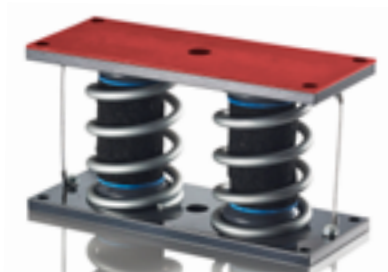
FE*DAM* 2
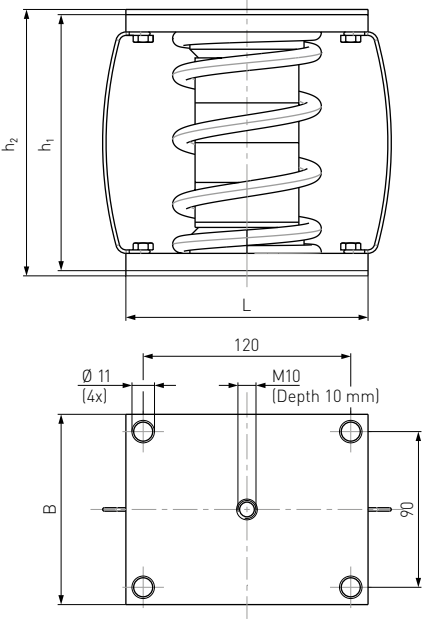
FE*DAM* 4

	Type	Art.-No.	Fstat. in N**		L x B*	h₂*	Vertical natural frequency in Hz***	Deflection*	Vertical element stiffness in N/mm	Damping degree
FE*DAM* 1	FE*DAM*-1-3.0-A03	81001A	150 to	1 800	140 x 110	154	9 to 4	3 to 45	45	0.03 – 0.10
	FE*DAM*-1-8.0-B02	81001B	600 to	4 800	140 x 110	157	9 to 3	3 to 30	198	0.01 – 0.05
	FE*DAM*-1-13.3-C02	81001C	1 000 to	8 000	140 x 110	151	9 to 3	3 to 30	325	0.01 – 0.04
FE*DAM* 2	FE*DAM*-2-6.0-A03	81002A	300 to	3 600	280 x 110	154	9 to 4	3 to 45	90	0.03 – 0.10
	FE*DAM*-2-16.0-B02	81002B	1 200 to	9 600	280 x 110	157	9 to 3	3 to 30	396	0.01 – 0.05
	FE*DAM*-2-26.6-C02	81002C	2 000 to	16 000	280 x 110	151	9 to 3	3 to 30	650	0.01 – 0.04
FE*DAM* 3	FE*DAM*-3-9.0-A03	81003A	450 to	5 400	280 x 280	154	9 to 4	3 to 45	135	0.03 - 0.10
	FE*DAM*-3-24.0-B02	81003B	1 800 to	14 400	280 x 280	157	9 to 3	3 to 30	594	0.01 - 0.05
	FE*DAM*-3-39.9-C02	81003C	3 000 to	24 000	280 x 280	151	9 to 3	3 to 30	975	0.01 - 0.04
FE*DAM* 4	FE*DAM*-4-12.0-A03	81004A	600 to	7 200	280 x 280	154	9 to 4	3 to 45	180	0.03 – 0.10
	FE*DAM*-4-32.0-B02	81004B	2 400 to	19 200	280 x 280	157	9 to 3	3 to 30	792	0.01 – 0.05
	FE*DAM*-4-53.2-C02	81004C	4 000 to	32 000	280 x 280	151	9 to 3	3 to 30	1300	0.01 – 0.04
FE*DAM* 5	FE*DAM*-5-15.0-A03	81005A	750 to	9 000	320 x 320	154	9 to 4	3 to 45	225	0.03 - 0.10
	FE*DAM*-5-40.0-B02	81005B	3 000 to	24 000	320 x 320	157	9 to 3	3 to 30	990	0.01 - 0.05
	FE*DAM*-5-66.5-C02	81005C	5 000 to	40 000	320 x 320	151	9 to 3	3 to 30	1625	0.01 - 0.04
FE*DAM* 6	FE*DAM*-6-18.0-A03	81006A	900 to	10 800	320 x 320	154	9 to 4	3 to 45	270	0.03 - 0.10
	FE*DAM*-6-48.0-B02	81006B	3 600 to	28 800	320 x 320	157	9 to 3	3 to 30	1188	0.01 - 0.05
	FE*DAM*-6-79.8-C02	81006C	6 000 to	48 000	320 x 320	151	9 to 3	3 to 30	1950	0.01 - 0.04

FE*DAM* FOR HIGHER LOADINGS - WITHOUT DAMPING CORE

	Type	Art.-No.	Fstat. in N**		L x B*	h₂*	Vertical natural frequency in Hz***	Deflection*	Vertical element stiffness in N/mm	Damping degree
FE*DAM* 1	FE*DAM*-1-50.0-E00	81001E	7 000 to	30 000	140 x 110	172	9 to 4	3 to 15	1970	< 0.01
FE*DAM* 2	FE*DAM*-2-100.0-E00	81002E	14 000 to	60 000	280 x 110	172	9 to 4	3 to 15	3940	< 0.01
FE*DAM* 3	FE*DAM*-3-150.0-E00	81003E	21 000 to	90 000	280 X 280	172	9 to 4	3 to 15	5910	< 0.01
FE*DAM* 4	FE*DAM*-4-200.0-E00	81004E	28 000 to	120 000	280 x 280	172	9 to 4	3 to 15	7880	< 0.01
FE*DAM* 5	FE*DAM*-5-250.0-E00	81005E	35 000 to	150 000	320 x 320	172	9 to 4	3 to 15	9850	< 0.01
FE*DAM* 6	FE*DAM*-6-300.0-E00	81006E	42 000 to	180 000	320 x 320	172	9 to 4	3 to 15	11820	< 0.01

*   all dimensions in mm
**   recommended permissible load range
*** The values can deviate up to ± 25%. They refer to a one-mass-oscillator with decoupled degrees of freedom as well as to a rigid subsoil and an ambient temperature of 20° C.
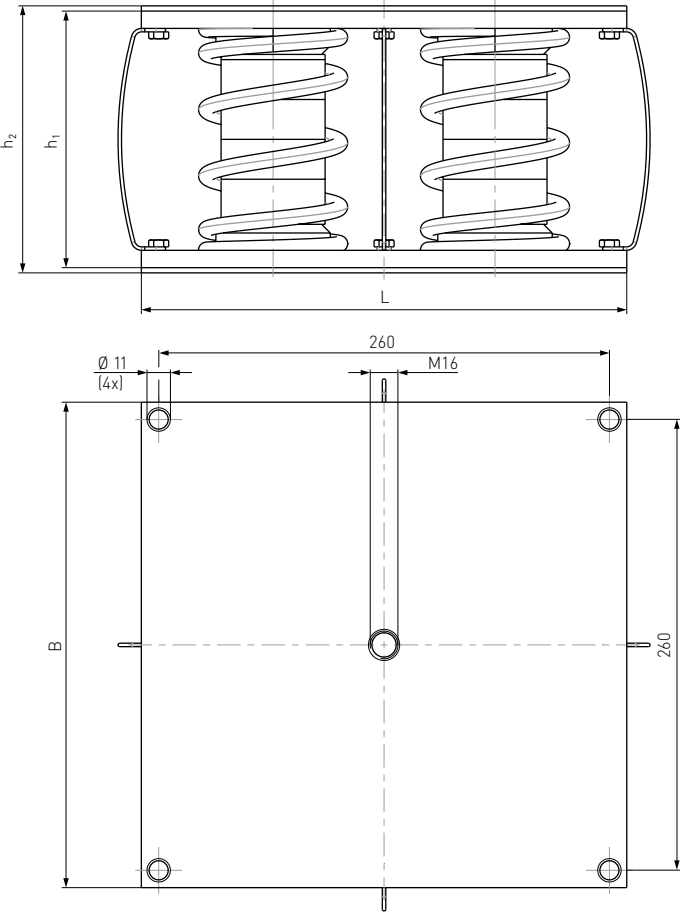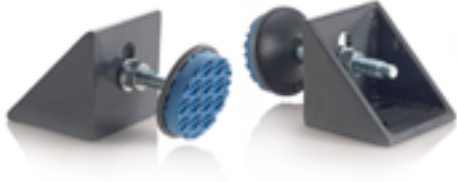
FE*DAM* 1

h_2 h_1 L

120
Ø 11 (4x) M10 (Depth 10 mm)
B 90

FE*DAM* 2

h_2 h_1 L

260
Ø 11 (4x) M16
B 90

FE*DAM* 4

h_2 h_1 L

260 M16
Ø 11 (4x)
B 260
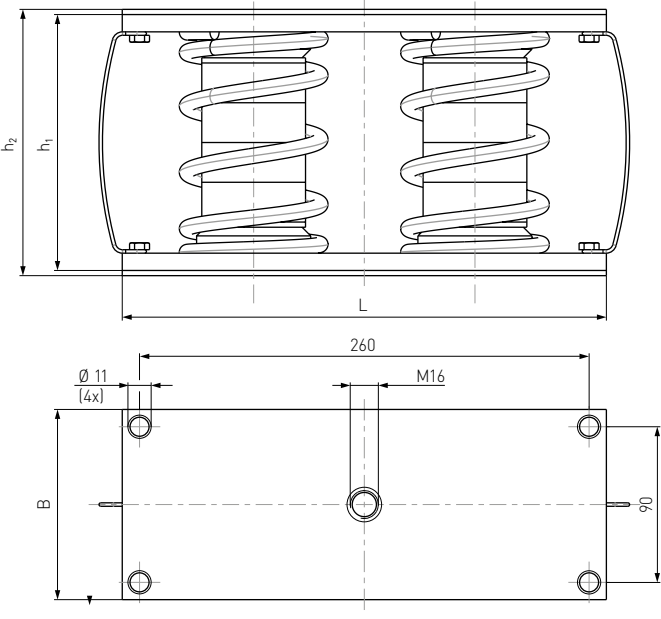
HOAW
Horizontal Supports

PROPERTIES

HOAW horizontal supports are the proved angle supports for the elastic absorption of horizontal forces. They are used to limit rigid-body motions of an elastically mounted machine.

HOAW horizontal supports are also for the alignment of long machines in the x-y axle. After successful alignment of the beds, the element can be removed again and the drill holes be closed.

The installation of HOAW is easy and uncomplicated. They are supplied completely preassembled:

• HOAW 1 + HOAW 2 with NTS levelling discs, screws and adhesive anchor for screws.

• HOAW 2 A + HOAW 3 + HOAW 4 with UMS machine shoes, screws and adhesive anchors.

Horizontal support of an elastically mounted pumping foundation.
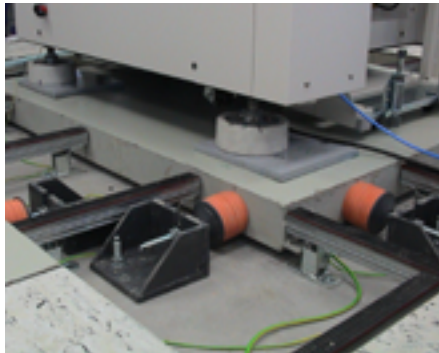
Restrictions of the horizontal vibration motions in foundations of machines of the electronic parts production mounted on IPK 66.

HOAW 4

DIMENSIONS HOAW

	Art.-No.	$F_{h\,max.}$**	a*	b*	h*	d*	j*	g*	c_1*	c_2*	e*	f*	V***
HOAW 1	60610	6 000 N	100	100	100	18	23	27	35	35	40	40	55
HOAW 2	60620	21 000 N	180	180	180	18	50	40	45	45	75	95	95
HOAW 2A	60620 A	40 000 N	180	180	180	18	50	40	45	45	75	95	10
HOAW 3	60621	350 000 N	250	400	260	26	100	100	50	100	–	–	20
HOAW 4	60622	350 000 N	260	320	320	26	80	80	60	100	–	–	14
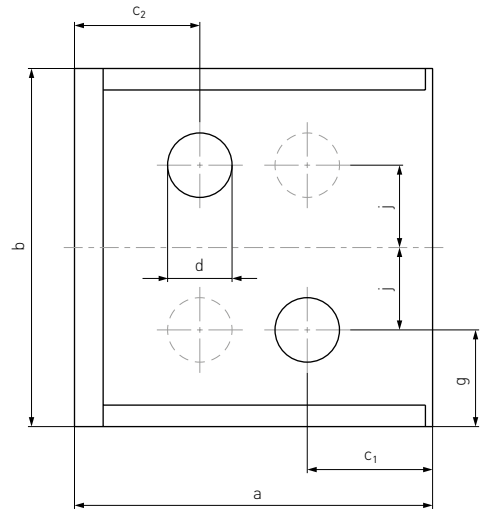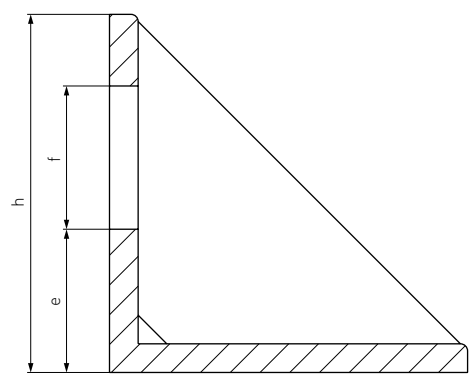
* all dimensions in mm
** depending on levelling disc / machine shoe used
*** adjustment range horizontal

ISOLOC ACCESSORIES
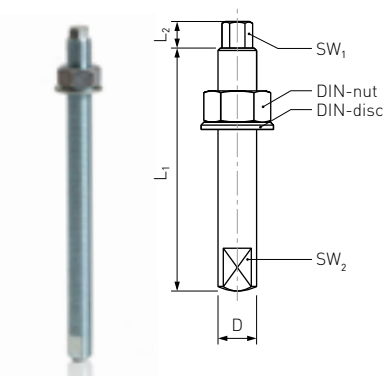
SCREW FOR UMS MACHINE SHOES

For screwing-on the UMS machine shoes at the machine or for bolt-through (anchoring) of the machine installed on the UMS with the floor. The standard screws for UMS are of galvanised steel and are always completely delivered with a DIN nut and DIN disc. In most cases UMS machine shoes can be inserted without mounting screws since they provide high anti-slip protection. However, if the machine shoe must be firmly anchored, we recommend to use the screws produced by us.

Art.-No.	for UMS Type	D x L₁*	L₂*	SW₁*	SW₂*
73130	UMS 5 / UMS 8	M 16 x 100	12	11	11
73131	UMS 5 / UMS 8	M 16 x 125	12	11	11
73132	UMS 5 / UMS 8	M 16 x 150	12	11	11
73134	UMS 5 / UMS 8	M 16 x 200	12	11	11
73139	UMS 5 / UMS 8	M 16 x 300	12	11	11
73140	UMS 18 / UMS 30	M 20 x 100	12	13	13
73142	UMS 18 / UMS 30	M 20 x 150	12	13	13
73144	UMS 18 / UMS 30	M 20 x 200	12	13	13
73149	UMS 18 / UMS 30	M 20 x 300	12	13	13
73152	UMS 45 / UMSD 35	M 24 x 150	12	17	17
73154	UMS 45 / UMSD 35	M 24 x 200	12	17	17
73159	UMS 45 / UMSD 35	M 24 x 300	12	17	17

Definition of screw length for UMS-ASF:

L1 ≈ UMS Height h1
  + Height machine support
  + Height disc DIN 125
  + Height nut DIN 934
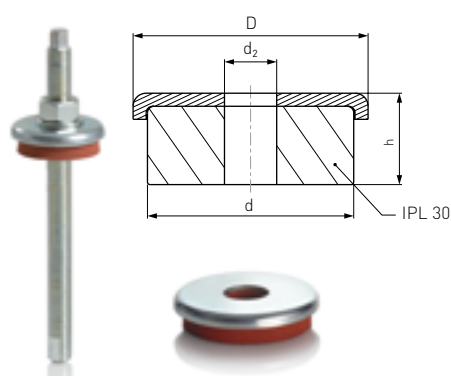
RONKAP INSULATION DISCS FOR SCREW DECOUPLING

· For vibration related decoupling of screws, which are anchored with the floor.
· For the prevention of vibration bridges.

BENEFITS

· No pushing-in of screw nuts or discs of the screws into the vibration insulation panel IPL by the steel sheet cap.
· Also possible with all other insulation panel equipment, subject to which type of insulation was planned underneath the machine.

MAIN USAGE AREA

· If used in connection with the Universal Precision Machine Shoes UMS-DSF or –DSA, if these are bolt-through.

Art.-No.	Type	ØD*	Ød*	Ød₂*	h*	max. tight.torque**
70001	RONKAP 1	58	50	22	18	M 16: 26 Nm
						M 20: 28 Nm
70002	RONKAP 2	82	74	26	18	M 20: 57 Nm
						M 24: 67 Nm
70003	RONKAP 3	108	100	32	19	M 24: 138 Nm
						M 30: 170 Nm
70004	RONKAP 4	37	35	13	18	
70005A	RONKAP 5A	25	22	11	7.5	

Assignment RONKAP to UMS

RONKAP 1	UMS 5 / UMS 8
RONKAP 2	UMS 18 / UMS 30 / UMSD 35 / UMS 45
RONKAP 3	UMSD 35 / UMS 45 / UMS 100
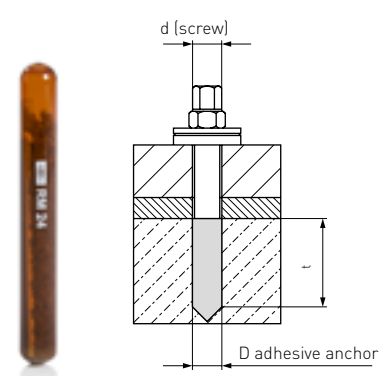
ADHESIVE ANCHORS

RM adhesive anchors for the safe and quick fastening of screws into the floor.

· No concreting.
· High safety by high vibration resistance, also in strong vibrations.
· Without expansion forces, permits low spacing and edge distances to protect your floor from larger cracks.
· High permissible loads in the concrete compression area.
· Cylindrical drill hole, small diameter.
· No special tools necessary.
· Low spacing and edge distances.
· Easy handling.
· High safety due to extreme vibration resistance.
· Recommended accessories for anchoring screws in bolt-through UMS machine shoes.
· Assembly guide is attached.

Art.-No.	Type	ØD*	Ød*	t*
74017	Adhesive anchor M16	18	M 16	125
74021	Adhesive anchor M20	25	M 20	170
74025	Adhesive anchor M24	28	M 24	210
74031	Adhesive anchor M30	35	M 30	280

* all dimensions in mm
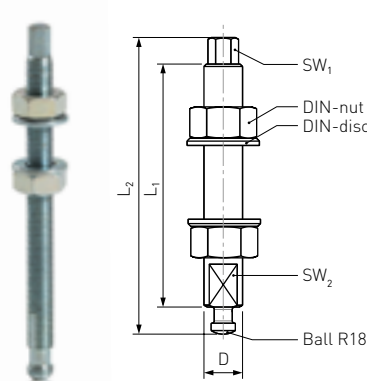** only with IPL 30
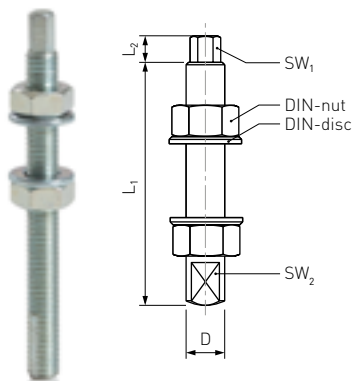
NORMAL/FINE THREAD SCREWS FOR NT / NTE

All levelling screws are delivered completely pre-fabricated with support nut, counter nut (DIN 934) and washers (DIN 125). For NT galvanised ** screws are available. For NTE we recommend stainless steel screws produced by us.

For levelling discs NT / NTE

Art.-No.	Dim* D	Art.-No.	Dim* D	L_1*	L_2*	SW_1*	SW_2*
73110	M10	71010	M 10 x 1	100	12	7	7
73112	M10	–	–	150	12	7	7
73120	M12	71020	M 12 x 1	100	12	7	7
73122	M12	71022	M 12 x 1	150	12	7	7
73130	M16	71030	M 16 x 1.5	100	12	11	11
73131	M16	–	–	125	12	11	11
73132	M16	71032	M 16 x 1.5	150	12	11	11
73134	M16	–	–	200	12	11	11
73139	M16	–	–	300	12	11	11
73140	M20	–	–	100	12	13	13
73142	M20	71042	M 20 x 1.5	150	12	13	13
73144	M20	71044	M 20 x 1.5	200	12	13	13
73149	M20	–	–	300	12	13	13
73152	M24	71052	M 24 x 1.5	150	12	17	17
73154	M24	71054	M 24 x 1.5	200	12	17	17
73159	M24	–	–	300	12	17	17
73163	M30	71064	M 30 x 1.5	200	12	19	19

Stainless steel screws – in particular for NTSE

Art.-No.	Dim* D	Art.-No.	Dim* D	L_1*	L_2*	SW_1*	SW_2*
73122E	M12	–	–	150	12	7	7
73132E	M16	–	–	150	12	11	11
73142E	M20	–	–	150	12	13	13

NORMAL/FINE THREAD SCREWS FOR NTS / NTSE

All levelling screws are delivered completely pre-fabricated with support nut, counter nut (DIN 934) and washers (DIN 125). For NTS galvanised*** screws are suitable. For NTSE we recommend our stainless steel screws.

For levelling discs NTS 50 / 80 / 100

Art.-No.	Dim* D	Art.-No.	Dim* D	L_1*	L_2*	SW_1*	SW_2*
70510	M10	70550	M 10 x 1	100	122	7	–
70512	M12	70552	M 12 x 1	100	122	8	8
70514	M12	70554	M 12 x 1	150	172	8	8
70516	M16	70556	M 16 x 1.5	100	122	11	11
70518	M16	70558	M 16 x 1.5	150	172	11	11
70520	M20	70560	M 20 x 1.5	100	122	13	13
70522	M20	70562	M 20 x 1.5	150	174	13	13

Stainless steel screws – in particular for NTSE 50 / 80 / 100 / 120

Art.-No.	Dim* D	Art.-No.	Dim* D	L_1*	L_2*	SW_1*	SW_2*
70518E	M16	70558E	M 16 x 1.5	150	172	11	11
70522E	M20	70562E	M 20 x 1.5	150	174	13	13

For levelling discs NTS 120 / 150 / 200 / 250 / 300

Art.-No.	Dim* D	Art.-No.	Dim* D	L_1*	L_2*	SW_1*	SW_2*
70030	M16	72030	M 16 x 1.5	100	124	11	11
70032	M16	72032	M 16 x 1.5	150	174	11	11
70142	M20	72142	M 20 x 1.5	150	174	13	13
70144	M20	72144	M 20 x 1.5	200	230	13	13
70152	M24	72152	M 24 x 1.5	150	174	17	17
70154	M24	72154	M 24 x 1.5	200	230	17	17

Stainless steel screws – in particular for NTSE 150

Art.-No.	Dim* D	Art.-No.	Dim* D	L_1*	L_2*	SW_1*	SW_2*
70144E	M20	72144E	M 20 x 1.5	200	230	13	13
70154E	M24	72154E	M 24 x 1.5	200	230	17	17
		72064E	M 30 x 1.5	200	230	19	19

IPL ADHESIVE

Due to a good solvent resistance of some vibration insulation panels a special adhesive must be used for fixation. This is recommended to stick panels together among themselves or with the subsurface, e.g. with steel panels/ carriers. This adhesive based on cyanacrylate bonds the contact points, which must be absolutely free of dust, fat and oil, within seconds.

Available sizes

Art.-No.	Type	Adhesive area
80217	50 ml-bottle	ca. 5 000 cm² (0.5 m²)
80215	500 ml-bottle	ca. 50 000 cm² (5.0 m²)

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* all dimensions in mm
** please see levelling disc NT page 33
*** please see levelling disc NTS page 35

ISOLOC INDIVIDUAL SOLUTIONS

For Particular Requirements In Vibration
Insulated Machine Installations.

INDIVIDUAL ISOLOC SOLUTIONS

A particular focus of the isoloc offer – next to the versatile use of standard elements – are individual solutions, meaning particularly defined solutions for vibration problems of machine, location, production conditions etc.

Whether for heavy presses of hundred tons, highly-dynamic machine tools or the installation of machines and systems on upper floors – we find the best possible solution always, taylor-made for your specific use.

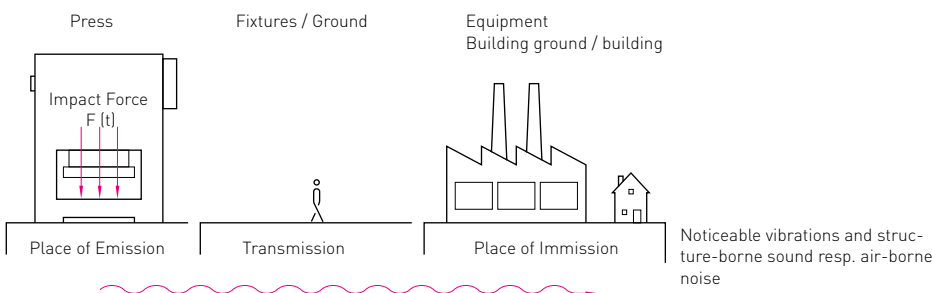### FOR TRANSFORMING MACHINES SUCH AS PRESSES, PUNCHES AND HAMMERS

1

Isoloc IL press mounting systems for vibration insulation are set up according to your machine, in consideration with the conditions at the place of installation. We have already equipped most modern press plants completely with isoloc IL press mounting systems. Read more on page 46.

FOR MACHINE TOOLS SUCH AS FIVE-AXLE OPERATING CENTRES AND TURNING/ MILLING MACHINES

The dynamic properties of a machine tool are significantly improved by its optimal installation. Since a machine is a vibrating system, the natural frequencies of this machine can be stimulated resonance-like by vibration of external excitation, however also by its own operation. Suitable vibration related measures, for example isoloc IL machine mounting systems, ensure the reduction of these vibration impacts resp. their prevention. Read more on page 48.

FOR HIGHLY SENSITIVE, NOT INHERENTLY RIGID MACHINES

2

In that case isoloc vibration insulation of the machine foundation, which mostly is arranged in a foundation bed (»underfloor«), nevertheless in smaller dimensions it can be above the ground (»overhead«), is recommended. We assist you already during the planning of the foundation. Upon request we provide static and dynamic calculations of the foundations. Read more on page 50.

IN VIBRATIONS OF BUILDINGS, MACHINES AND SYSTEMS

3

In the often occuring resonance either damping can be added or the excitation force amplitude be reduced if a modifaction of the »system parameter« is not possible.
For this task isoloc vibration absorbers are particularly suitable. By the application of a second vibrating system the problematic resonance exceedance of the original system is deferred. Instead of the critical vibration frequency, isoloc vibration absorber operates and thereby counteracts the vibration motion. These are very specific solutions in particular – please ask us specifically.

FOR VERY LOW TUNING OF SOURCE AND RECEIVER INSULATIONS

Should very low tunings be required – $f_{0v} = 3$ up to 5 Hz, our new spring-damper element isoloc FE*DAM* (pat.) machine mounting system is the correct choice. Read more from page 36.

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1. Press line in a South German body-press plant on isoloc IL press mounting systems.
2. Receiver insulation of automatic production machines for electronic parts.
3. Receiver insulation of the Swiss Embassy in Berlin with isoloc IL special mountings.

ISOLOC IL PRESS MOUNTING SYSTEMS
For The Installation Of Transforming Machines Such As Presses, Punching Machines Or Shears.

TASK

Vibration emissions occur during the operation of presses, meaning mechanical vibrations of the ground. These can be reduced by installing vibration insulated presses.

CAUSES OF VIBRATIONS OF THE GROUND

- Mass forces during press procedure.
- Mass forces during press procedure by deformation of the press frame.
- Excitation of the natural frequencies of the press foundation embedded in the ground by these mass forces.

The foundation vibrations of a press result in viscoelastical ground-borne vibrations. The transmission (transfer of vibrations – see illustration below) on the transmission between exciter and receiver depends significantly on the geological conditions, among others on the ground water level. Due to natural frequencies of buildings or building components on the transmission, additional excitations can occur and the vibrations can be intensified. These ground movements then impact a building or a sensitive device as support point excitations.

Furthermore the vibrations in a building or in a sensitive device are additionally increased since they represent vibrating systems due to their respective dynamic properties. To reduce the vibrations already at their source (here: the press), it must be installed vibration insulated.

YOUR BENEFIT

Isoloc IL press mounting systems for vibration insulation are individually constructed for your machines, in consideration of the conditions at the place of installation. We have already equipped the most modern press plants with isoloc IL press mounting systems. High effectiveness levels and convincing efficiency ideally complement each other.
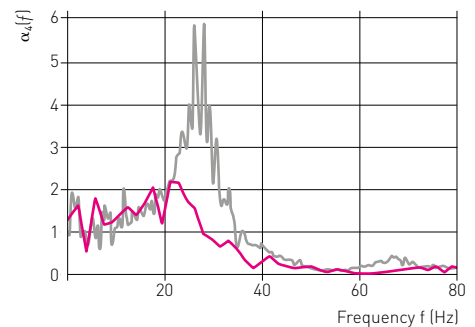
Amplitude frequency response (value of the transmission function) of a punching machine installed on a factory floor with cellar on conventional competitor elements, and thereafter on isoloc IL press mounting systems.

——— Competitor elements
——— Isoloc IL press mounting systems
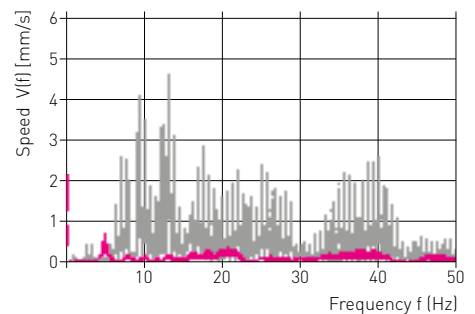
Amplitude spectrum of the vertical vibrations on a factory floor with a cellar. If isoloc IL press mounting systems are used, the vertical vibrations of the floor with cellar are multiply reduced.

——— Competitor elements
——— Isoloc IL press mounting systems

Press	Fixtures / Ground	Equipment Building ground / building

Impact Force F (t)

Place of Emission | Transmission | Place of Immission

Noticeable vibrations and structure-borne sound resp. air-borne noise

ADVANTAGES

- Reduction of transmission of vibrations to the surrounding (building, machine tools, neighbourhood etc.).
- Low dynamic stresses of machines and their components (for example electronic components).
- Protection of press foundation.
- Protection of other machines against vibration impacts, higher quality, machine performance and service life of the tool as a result of reduced vibrations.
- Better working conditions for humans and machine.
- Reduction of tilting movements due to optimal construction of isoloc IL press mounting systems.
- Higher stroke rates of the presses, particularly in high speeds, which result in higher productivity.
- Low height, maintenance-free.
- Cost-effective price/performance ratio.
- No additional steel frame needed, particularly during the installation of forging presses, thereby low costs and less space requirement.
- Easy and cost-effective refitting.
- Fast and precise levelling by integration of isoloc UMS Universal Precision Machine Shoes (pat.).

DIMENSIONING

To dimension your isoloc IL press mounting system we should be informed about the following:

- Total mass of the press to be mounted.
- Size of the moveable masses.
- External dimensions of the press.
- Centre of gravity of the machine.
- Existing supporting surfaces below the press.
- Preferred insulation degree.
- Excitation frequency resp. disturbing frequency range.
- If necessary also the max. permissible vertical and horizontal amplitudes of the vibration insulated mounted press.

If possible the dynamic properties of the building ground should be provided. If these properties do not exist, we suggest measurement related examinations, which we are pleased to take over on your behalf.

Only if all parameters are thoroughly determined we are able to solve your problem to your satisfaction.

OFFER

We are pleased to furnish you with an offer, if you provide us with the respective technical data. You will find the contact form and the questionnaire on our website: www.isoloc.de.

EUMUCO forging press on isoloc press mounting systems with complete media protection.

Direct insulation of a 4,400 kN heavy EUMUCO forging press with isoloc press mounting systems HPD500. The transmission of disturbing forces that are impact-like, transient and periodic can be significantly reduced.

ISOLOC MACHINE MOUNTING SYSTEMS
For The Installation Of Machine Tools

VIBRATIONS INFLUENCE THE QUALITY OF WORK, PRODUCTIVITY AND THEREBY THE EFFICIENCY OF MACHINE TOOLS

Nowadays high speed technology depends considerably on the performance of the machine tool. Thereby fast-turning main spindles and highly dynamic machine axles are required.

Machine structures are dynamically more stressed and more prone towards vibration impacts.
The protection of the machine from forming ground vibrations, resp. vibrations of the foundation produced thereby, which cause vibrations of the lowest natural frequencies to the machine structure, is therefore important. Here, isoloc provides remedy. An elastically, damped insulation is the most effective possibility to reduce the vibrations of the machine structure.

INFLUENCE OF THE INSTALLATION ON THE DYNAMIC BEHAVIOUR OF MACHINE TOOLS

Next of the static loads, the periodically changing dynamic loads are important in machine tools. Vibrations of the overall system "machine tool" occur because of the dynamic excitation forces due to operation or slide accelerations. However, the required high speeds for rapid traverse and feed rate, in particular in short mounting movements, can only be achieved if the acceleration capacity for the drives is sufficiently high.
In general the acceleration capacity is characterised by the achieved jerk, meaning the periodical change of the acceleration combined with the mass to be accelerated. However, in practice the jerk, theoretically achieved by the performance of the drive, and thereby the achievable acceleration and speed must often be limited, since it results in the excitation of natural vibrations of the machine structure in the lower frequency range.

The installation of a machine tool is an important constructional task, which is significantly relevant for the functionality (precision, quality) of a machine and for the environmental characteristics (vibrations). In general the installation elements and the foundation are part of the installation of a machine tool. Together with the machine and the building ground these components form an overall system, whose static and dynamic properties must be adjusted according to the respective requirements. The installation conditions can have a greater or lesser impact on the dynamic features. The dynamic characteristics at the effective working area are influenced by the method of installation due to the modified natural vibration modes of the machine.

Improvements of kv and jerk at 5-axle horizontal machine centres

Weight of machine: 150 kN
Spindle speed max. 30,000 U/min
Spindle power max. 125 kW
Torque max: 1,010 Nm

kv*
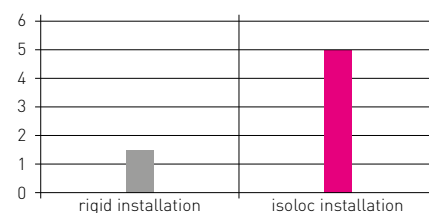
jerk j(t)**
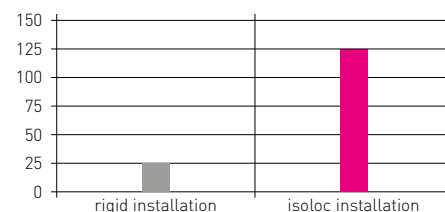
*   m/(min·mm)
**   m/s³
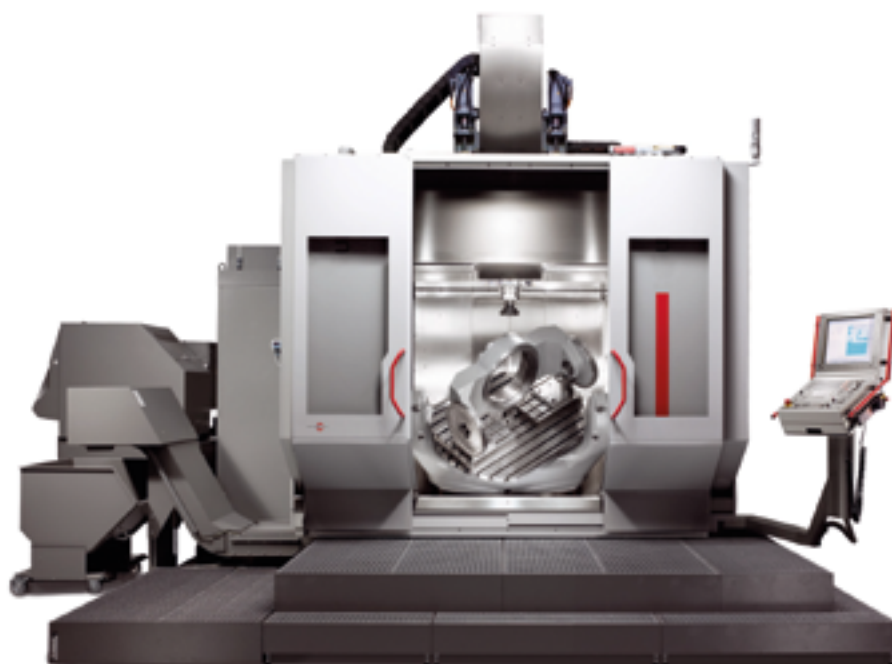
Installation of a machine on upper floors
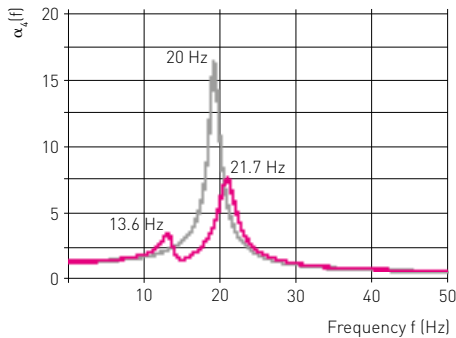
— Installation on upper floors with conventional elements
— With isoloc IL machine mounting systems
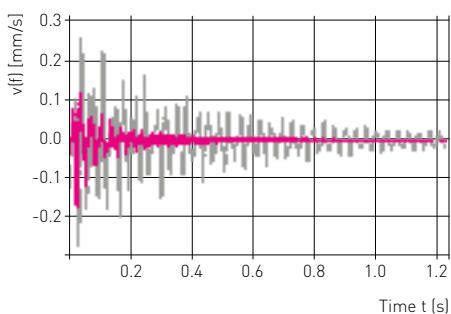
Vibration speed of a machine tool, which reduces very quickly and effectively due to optimally constructed isoloc machine mounting systems.
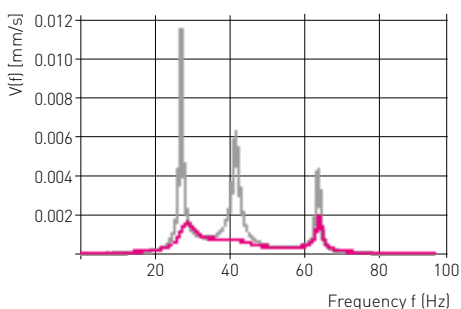
Amplitude spectrum of the vibration speed of a machine tool. By the use of isoloc machine mounting systems resonance increases are multiply reduced.

— Conventional installation elements
— Isoloc machine mounting systems

DIMENSIONING OF THE ELEMENTS

We consider the static and dynamic properties of the concerned machine and the place of installation and individually adjust the isoloc machine mounting systems.

YOUR ADVANTAGE AND YOUR BENEFIT

· Reduced processing time.
· Reduced unit costs.
· Reduced installation costs by easy and precise levelling – also of heaviest loads.
· Improved surface quality.
· Most often mounting-free installation.
· Less noise in production plants due to structure-borne noise insulation.
· Installation of machine possible on the floor.

INFLUENCE ON THE TOTAL COST OF OWNERSHIP (TCO) RESP. THE LIFE-CYCLE-COSTING (LCC)...

...by the improvement of the productivity, protection of the machine against natural and external vibrations and increase of jerk and kv factor, which can be achieved by a minimal amount of material, time and costs.

In general the installation of high-quality machines on high-quality, durable products such as our isoloc elements leads to fewer defects and thereby to less needed repairs and reduced tools and maintenance costs.
An amortisation is achieved within a very short time.

EVERYTHING FROM A SINGLE SOURCE

Since years reputed machine tool manufacturers use isoloc system solutions for their initial machine tool equipment. The dynamic characteristics of the machines are effectively optimised. We offer you quality solutions, in particular for new constructions.

We are able to dimension the isoloc IL machine mounting systems according to your requirement and deliver them quickly, if you provide us with your machine data. You will find the contact form on www.isoloc.de
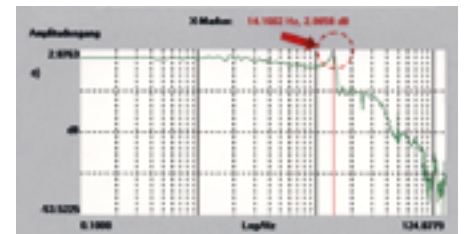
Competitor elements (kv factor approx. 1.5)*
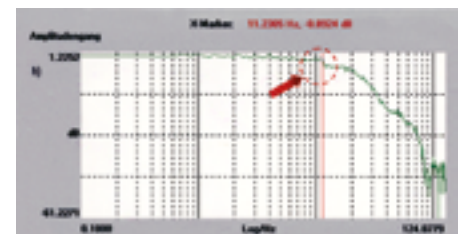
Isoloc elements (kv factor approx. 3.0)*

By the optimised installation of a machine tool the kv factor can be increased. Thereby the servo lag reduces in high traversing speeds. A good mounting accuracy can be achieved. For comparison: both graphics display the amplitude frequencies of a rigidly and elastically installed machine tool.

* KV FACTOR: ratio of the respective (actual) speed to servo lag (= system deviation) during mounting. Kv is thereby a dimension for the increase of speed in steady state. The kv factor is a specific value for the mounting control, e.g. in machine tools, which include a loop gain. It indicates by which speed a certain mounting error can be made nil: the greater the kv, the faster the system.

ISOLOC VIBRATION INSULATION
For Foundations

SPRUNG FOUNDATION INSULATION

Sprung foundation insulation can be broadly defined as any vibration insulation, which is not directly attached underneath the machine, but underneath the foundation on which it is mounted. Such a machine foundation is mostly recessed in a foundation bed in the ground (»underfloor«), however, in smaller dimensions it can be arranged also above the ground »overhead«.

PURPOSE OF THE MEASURE

In constant natural frequency better dynamic characteristics are achieved compared to a directly vibration insulated installed machine due to the additional mass of the concrete block and the isoloc vibration insulation elements:

· Better dynamic characteristics of a machine due to reduced vibration movements.
· Improvement of the functionality accuracy.
· Very good vibration insulation.
· Reduction of wear and tear.
· Less stress of connected elements.
· Additonal stiffness of the machine.
· Reduced impact of mass forces on the machine components (greater durability of the bearings).

**AS EMISSION PROTECTION
(SOURCE INSULATION)**

For example in presses, punching machines, pneumatic hammers, printing machines, pumps, turbines, etc.

**AS IMMISSION CONTROL
(RECEIVER INSULATION)**

For example in grinding and measuring machines, microfinishing machines and in all vibration sensitive machines and devices.

VERY LOW TUNING FREQUENCIES POSSIBLE – HIGH INSULATION DEGREE

By the additional mass of the foundation block also non-torsion rigid machines with high elastic isoloc vibration insulation packs can be installed and very effectively insulated.

UNDISTURBED WORK DUE TO LOW AMPLITUDES

The additional mass of the foundation block or a steel panel minimises the amplitudes (of the overall insulated machine). Thereby, possibly any build up for example in resonance appearances, short circuit torques etc. is prevented. Furthermore this ensures trouble-free work despite low tuning of the insulation, also in greater dynamic excitation forces.

MICROFINISHING MACHINES NEXT TO PRESSES

To achieve the required surfaces and tolerances, a vibration insulation (receiver insulation) of the microfinishing machine is indispensable. Often, the necessary very low natural frequency of the insulation elements requires a sprung foundation insulation. However, in most cases an accurate analysis of the vibrations at the installation place is required, which is subject to vibration measuring.

FOR THAT REASON ISOLOC

We provide you with practical assistance – from the planning of the foundation up to the vibration measuring on-site; if required we provide you also with static calculations and reinforcement plans. You receive detailed drawings once the order is placed, for your contractor to be able to include isoloc know-how to his services. Upon request we will monitor the mounting of the isoloc materials at the construction site.

VIBRATION INSULATION FOR FOUNDATIONS

A sprung foundation is always a very individual solution, which must be tuned with regard to the vibrations according to the particular purpose. Please describe your problem to us - we will provide you with an extensive offer and after placing the order with the required detailed drawings. Also we are pleased to analyse your concern on-site by applying the most modern measuring technology and developing the necessary remedy measures thereof.
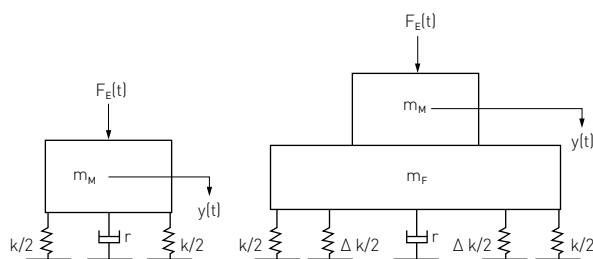
Replacement system for a vibration insulated installed machine (source insulation) without and with add-on mass and without and with add-on spring. Same natural frequency in both cases (f_0 = constant).
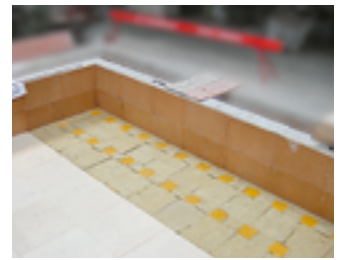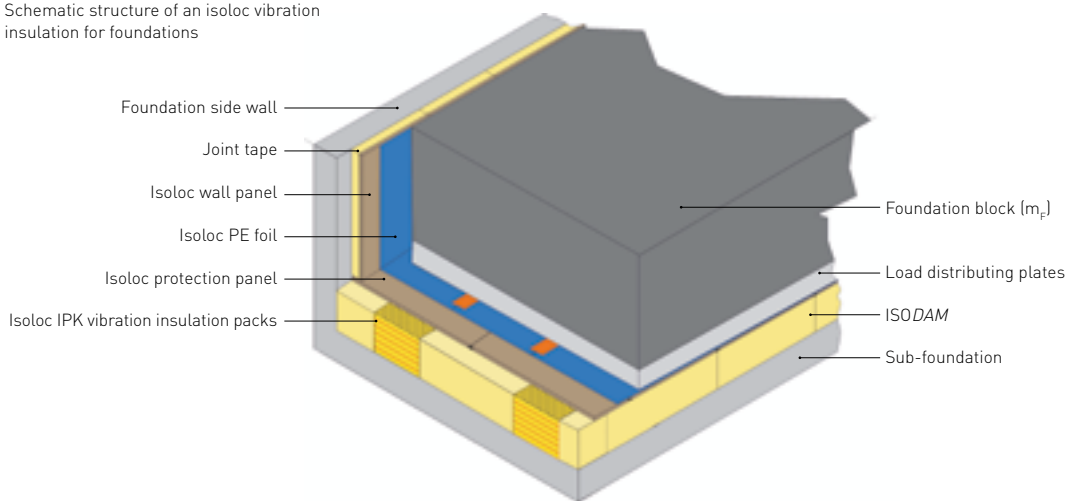
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Schematic structure of an isoloc vibration insulation for foundations

Foundation side wall

Joint tape

Isoloc wall panel

Isoloc PE foil

Isoloc protection panel

Isoloc IPK vibration insulation packs

Foundation block (m_F)

Load distributing plates

ISO*DAM*

Sub-foundation

ISOLOC VIBRATION MEASURING AND ANALYSIS TECHNOLOGY

CALCULATION AND SIMULATION

VIBRATION MEASUREMENTS AND ANALYSES

Isoloc supports you with the most modern measuring and assessment procedures, FEM calculations, modal analyses etc., and offers professional assistance in the solution finding process of vibration-related problems in machines and buildings. Our methods and assessment procedures comply with the latest insights and have proved in practice under the most difficult requirements.

COMPARISON

Extensive calculations are performed before we elaborate a solution, and if possible the results are confirmed resp. compared by a follow-up measuring procedure.

Therefore, often a vibration measuring and subsequent analysis on real objects on-site are indispensable. Our experienced engineers determine the vibrations, resp. the dynamic characteristics of an object to be protected, by the most modern measuring devices and the respective software tools.

PROCEDURE

Measuring:

· Determing the cause of interfering vibrations resp. the vibration excitations.
· Recording of the impacts of vibration excitations and interferences.
· Measurement-related resp. numerical determination of dynamic properties (natural frequencies, natural modes, damping).

Evaluation/Analysis:

· Discussing the measuring data and clarifying the solution possibilities with you.
· Determing the objective and the assessment criterion.

Elaboration of the solution:

· Selecting of solution to solve problems by isoloc vibration insulation elements, and an offer with suggestions of a remedy measure.
· Dimensioning of the selected measure.

Implementation:

· Realisation of the measure.
· Upon request we offer a follow-up examination to determine the efficiency level of the remedy measure (vibration insulation, vibration damping etc.) on-site and to assess possible residual vibrations.

MEASURING ON-SITE

For measuring on-site it is crucial which measuring criterion shall be recorded at which measuring sites. For the dimensioning of a remedy measure the following information is required:

· Excitations.
· Spectrum of the excitation.
· Excitation frequencies resp. number of revolutions.
· Dynamic characteristics of the object to be protected (natural frequencies and corresponding natural modes and damping of that system).
· Properties of the ground at place of installation.
· Natural frequency of the ceiling during a floor installation.

We assess the circumstances and elaborate an extensive solution proposal and offer for you. We discuss the measuring results and clarify the possibilities for a solution.

REDUCTION OF STRUCTURE-BORNE SOUND

According to the new EU regulations machine tool manufacturers must remove acoustic weak points, among others, at their machines and offer sound-reduced versions. One possibility is the reduction of structure-borne sound, meaning the mechanical vibrations of rigid bodies, which can result due to the operation of a machine.

Amplitude frequency responses of an elastically mounted machine with and without absorber.
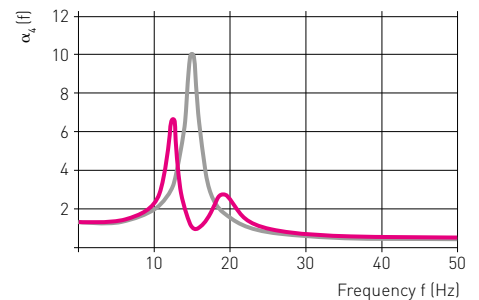
Amplitude frequency responses of an elastically mounted machine with corresponding frequency spectrums.
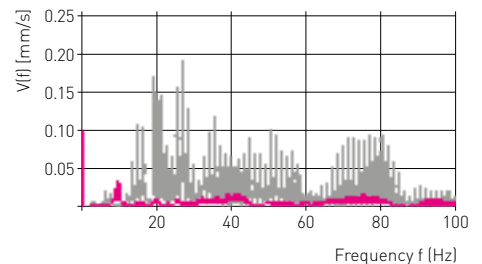
Time characteristics of the vibrations of a floor with cellar subsequently the operation of an elastically mounted punching machine.
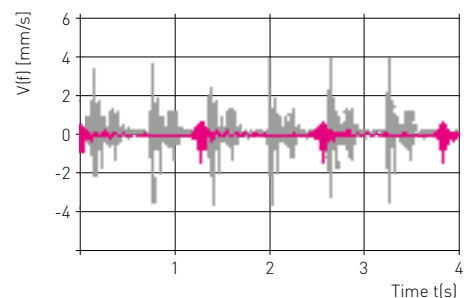
— Isoloc elements
— Competitor elements

ISOLOC FINITE ELEMENTS CALCULATION
Calculations On Statics And Dynamics

FINITE ELEMENT CALCULATIONS

A real mechanical system can be transformed in to a simplified calculation model (BM). The challenge is to describe the physical properties as accurate as possible and the structure as simple as possible at the same time. The Finite Element Method (FEM) and its programmes are powerful tools for a wide range of simulations.

The 3 most important objectives of FEM are:

- Predicting the static and dynamic characteristics of planned systems.
- Reproduction of occurred events (e.g. vibration speed v_i at a component point A).
- Identification of system parameters (e.g. stiffness K, damping ϑ, etc.).

The 2 isoloc FEM application areas are strength calculations and machine dynamics. Isoloc uses FEM to develop and protect new products and also numerous services for customers. FEM provides results, which serve the assessment of the suitability for use and the component optimisation.

Furthermore, FEM can carry out simulations with linear and non-linear material characteristics.
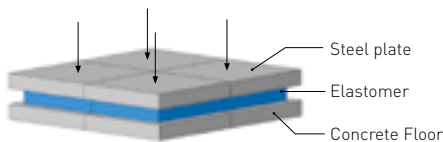
Pressure distribution plate – elastomer-concrete floor
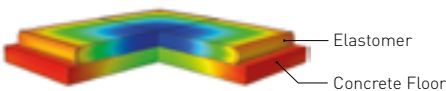
Stresses in 60 % of the permissible load

Isoloc elastomer panels demonstrate a non-linear characteristic in particular.
In statics, mechanical variables effect the structure seemingly endless with the same quantity. Mounting type, number of mountings and mounting position must be determined if a machine shall be installed elastically and vibration insulated. By a FEM calculation, the pressure forces F_i of the numerous mountings can be determined very fast and accurate. Individual components or entire component units can be analysed with regard to stresses σ in an additional calculation step.

In the dynamics, time-varying state variables take effect. The properties (e.g. stiffness K, damping ϑ) of a structure vary with the frequency f. A very essential part of the dynamics is the existence of mass forces, which counteract other vibrating components under certain conditions.
Thereby, this compensation of mass forces can lead to a considerable vibration reduction.

System parameters:

- Mass m
- Stiffness K
- Damping ϑ
- Centre of gravity S_i
- Mass moments of inertia J_{ik}

Input sizes:

- Forces F
- Torques M
- Deferrals u
- Pressure p
- Temperatures T

Output sizes:

- Forces F
- Torques M
- Deferrals u
- Distentions ε
- Stresses σ
- Temperatures T
- Speeds v
- Accelerations a
- Natural frequencies f
- Natural modes q

EXAMPLE 1

A steel frame with a motor and a compressor stands on an uneven concrete floor.

Harmoniously, the motor on the steel frame is vertically excited with F_{dyn} = ± 500 N. The 4 mounting elements are assessed directly underneath the motor resp. at the top point (A) of the motor.
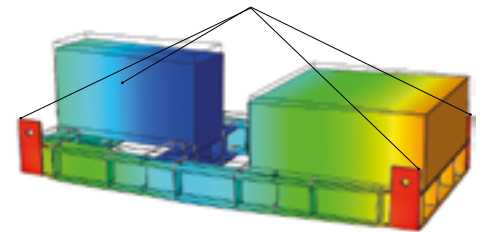
Objective 1:

- The steel frame shall be analysed with regard to deflections U3 during loading condition "Installation Hub".

Objective 2:

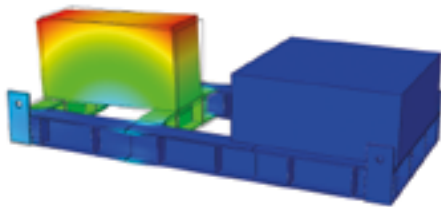- Elastic installation elements shall be dimensioned and layed out.
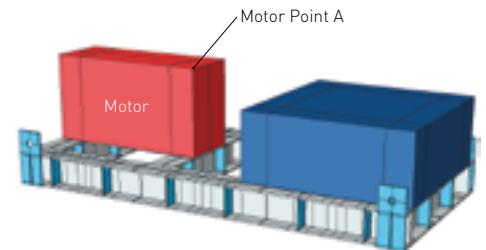
Calculation model as FE model

Deferrals U3 (U3, max = - 0.35 mm) in loading condition "Hub"

ISOLOC MODAL ANALYSIS AND DYNAMICS CALCULATIONS

Natural mode (f_1 = 63 Hz) of the 8x rigidly positioned system

Elastic installation with 8 x UMS8-ASF / 6-2

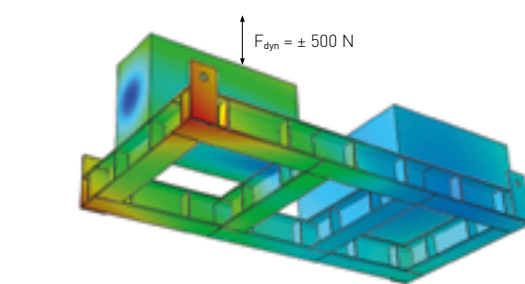$F_{dyn} = \pm$ 500 N

Deferrals (magnitude) u [mm] in the natural frequency f = 56.5 Hz (torsion of the frame)

u**, deferrals
(Avg:75%)

■	+2.866e−02
■	+2.627e−02
■	+2.389e−02
■	+2.150e−02
■	+1.911e−02
■	+1.672e−02
■	+1.433e−02
■	+1.194e−02
■	+9.554e−03
■	+7.166e−03
■	+4.777e−03
■	+2.389e−03
■	+0.000e+00

$F_{dyn} = \pm$ 500 N
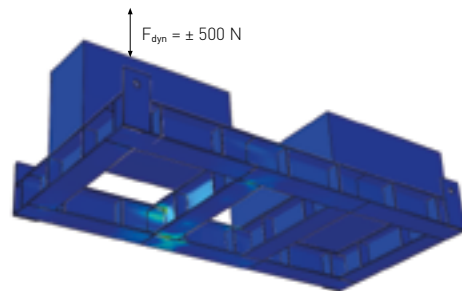
Stresses (of Mises) σ [N/mm²] in the natural frequency f = 56.5 Hz (torsion of the frame)

σ*, stresses
(Avg:75%)

■	+3.701e+00
■	+3.393e+00
■	+3.084e+00
■	+2.776e+00
■	+2.467e+00
■	+2.159e+00
■	+1.851e+00
■	+1.542e+00
■	+1.234e+00
■	+9.253e−01
■	+6.169e−01
■	+3.085e−01
■	+5.846e−05

Objective 3:

• The motor shall fall below the speed limit v_z = 8 mm/s up to f = 60 Hz.

Objective 4:

• The floor forces F_B shall be reduced against the excitation forces of f = 60 Hz up to f = 80 Hz.

Objective 3 can additionally be achieved also by the assembly of further mountings underneath the floor beams.

Objective 4 can additionally be achieved by the assembly of an absorption mass m.

For the vibration-related consideration of a structure (e.g. ceiling of a concrete hall, machine steel frame, milling cutter etc.) it is very crucial to know the natural modes and their natural frequencies to develop target-oriented measures regarding vibration reduction.

The 1. natural mode is the specific deformation of the component and its distributed mass in the direction of its lowest stiffness.

FEM can demonstrate weak points in structures and resonance points to prevent. The FEM modal analysis and the FEM operating vibration mode analysis provide the natural frequencies and natural modes of a structure within the frequency range.

The modal analysis develops qualitative deformation due to unity forces. The operating vibration mode analysis provides quantitative deformations due to dynamic excitation forces within the frequency range. Thereby measures regarding the reduction of vibrations can be derived, realistic test results can be verified, and by parameter variation a better understanding for the mechanical characteristics of the structure is possible.

Harmoniously, the motor of the steel frame is vertically excited by $F_{dyn} = \pm$ 500 N. Operating vibration mode analysis in harmonious excitation at f = 56.5 Hz of the elastically mounted system.

*σ [N/mm²]
**u [mm]

EXAMPLE 2

A milling machine (m = 5.5 t) shall be placed on a solid concrete floor without a cellar.

A milling machine ...

1. that is firmly screwed-on to the floor leads the excitation forces 1:1 into the floor (no vibration insulation (SI)).

2. that is mounted on 4 symmetrical mountings has advantages in the dynamics compared to a 3- point mounting.
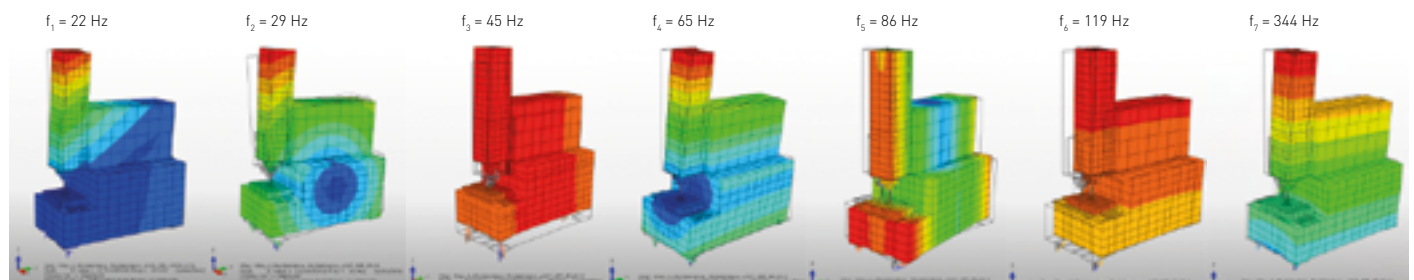
3. that is mounted on isoloc insulation panels (IPL) leads significantly reduced forces into the ground in certain frequency ranges.

4. that is elastically mounted on IPL with high damping demonstrates significantly reduced relative motions between spindle and workpiece.

5. that is elastically mounted on IPL can perform larger absolute movements due to the compensation of mass forces.

6. that is elastically mounted on IPL without screws remains safely at its position due to the very high friction.

A modal analysis comparison of the different installations demonstrates that the natural frequencies of the elastically installed milling machine are smaller than the ones of the "rigidly" installed machine, and that the bending or torsional natural mode of individual components develop less from each other due to the high damping of the isoloc elements.
The relative movements of components to one another, among others, between tool and workpiece are smaller than in rigid installation.

$f_1 = 22$ Hz $f_2 = 29$ Hz $f_3 = 45$ Hz $f_4 = 65$ Hz $f_5 = 86$ Hz $f_6 = 119$ Hz $f_7 = 344$ Hz

Natural modes (mode 1 - 7) of elastic installation

$f_1 = 112$ Hz $f_2 = 191$ Hz $f_3 = 264$ Hz $f_4 = 295$ Hz $f_5 = 321$ Hz $f_6 = 366$ Hz $f_7 = 434$ Hz
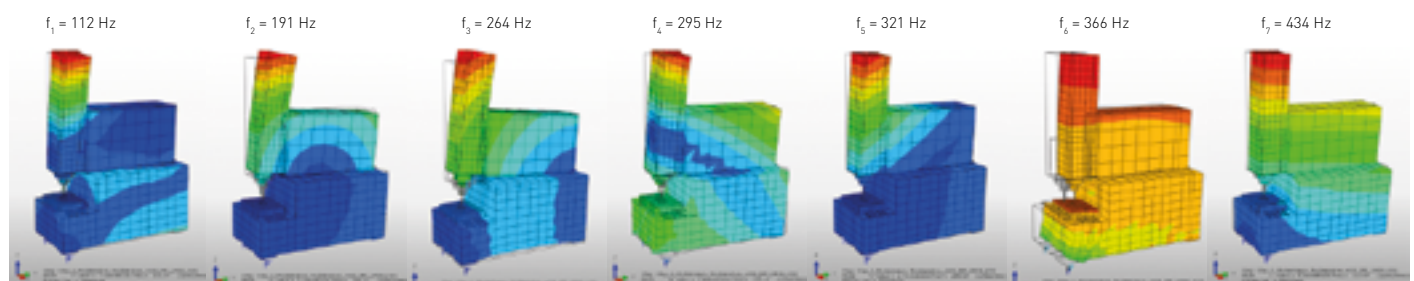
Natural modes (mode 1 – 7) of "rigid" installation

dark blue = no deformation
dark red = largest qualitative deformation

EXAMPLE 3

A machine shall be placed on an additional foundation with Δm.

Reasons for an additional foundation:

Modal analysis comparison of a concrete additional foundation with a HEB steel frame system with same dimensions.

1. A machine does not have sufficient own stiffness K, which increases by screwing-on the additional foundation.

2. With an additional foundation the vibration distances u(mm) reduce during constant insulation degree I.
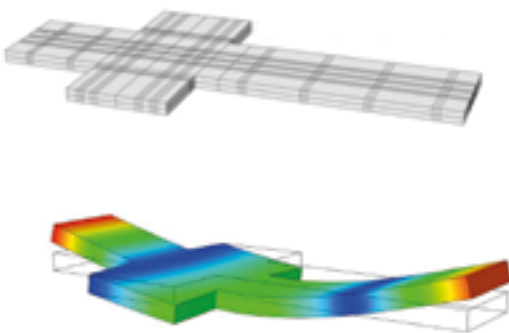
Mode 1: f = 19.6 Hz (concrete foundation)
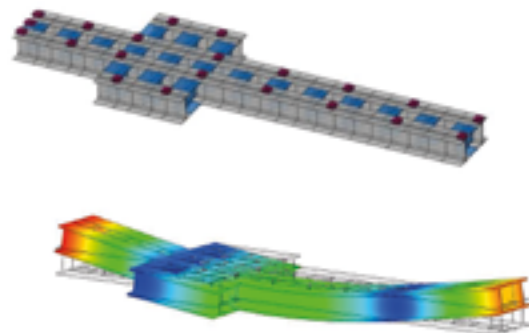
Mode 1: f = 49.5 Hz (HEB-steel frame)

ISOLOC VIBRATION ABSORBER
The Special Solution for Individual Tasks

VIBRATION ABSORPTION

The vibration absorber requires the coupling of an add-on element consisting of a mass and a spring and a given vibrating system (main system).

Vibration absorption is always a compensation of mass forces, whereby the mass forces develop on an add-on mass. The effect of the vibration absorption can also be understood as a diversion of induced energy on a substructure of the system. Within the resonance curve of the main system the absorption effect leads to a vibration reduction, outside the resonance range to a reinforcement of the amplitudes, whose brightness can be reduced by damping.

TASK

Vibrating systems (such as buildings, machines and installations) perform undesired vibrations by the impact of an excitation force. In the resonance range, the vibration amplitudes are particularly rumbling, often even dangerous.

ISOLOC VIBRATION ABSORBER

In such cases, an isoloc vibration absorber can be very successfully applied. Based on a main system, isoloc vibration absorbers represent add-on elements consisting of add-on mass and an add-on spring, simplified to be illustrated as a spring-system with a single degree of freedom.

A frequency splitting occurs (increase of the number of natural frequencies of the system) as a result of the isoloc vibration absorber. The elastic element is afflicted to damping during the technical realisation of the vibration absorber.

Relating to its content, the absorber effect is a compensation of mass forces since the excitation force is compensated as a result of mass force.

Compared to excitation force, phase-delayed damping forces develop in existing damping, which disturb the compensation effect and thereby result in a reduction of the absorber effect. However, damping is required to limit the amplitudes at the resonances occurring due to the absorber effect. Therefore, in practice the laying-out of a damped absorber is always an optimising task, subject to thoroughly measuring technology and analysis.

TYPES OF VIBRATION ABSORBERS

· Undamped absorber with a narrow-band effect for harmonious excitations with fixed or slightly variable excitation frequency.

· Damped absorber with relatively rumbling damping for harmonious excitations with a broad excitation frequency range, and for broad-band excitations.

Both absorption methods can be realised in various constructive methods: as spring absorber, pendulum absorber, rotating pendulum absorber or shock absorber. Vibration absorbers are e.g. used for chimneys, wind turbines, bridges, ceilings and machines.

Frequency separation by vibration absorption

— Main system without absorber
— Main system with undamped absorber
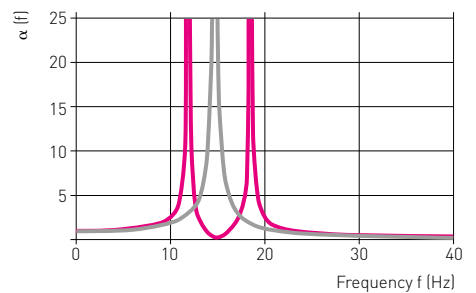
Transmission function with or without vibration absorber

— Without vibration absorbtion
— With damped vibration absorption

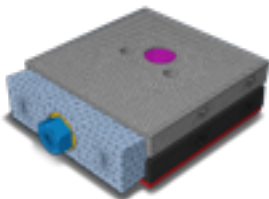Replacement system of a vibration absorber
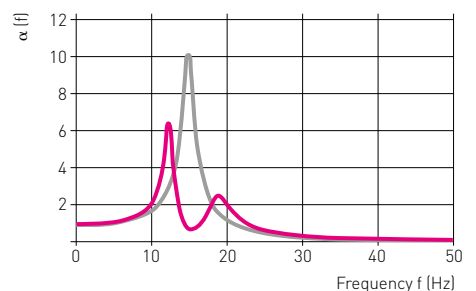
ISOLOC
PROVEN SAFETY
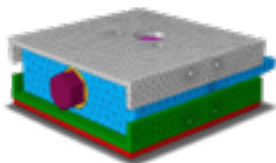
ISOLOC PRODUCTS – PROVEN QUALITY

Extensive precalculations and analyses during the developing phase within our company form the base for the future performance of our products.
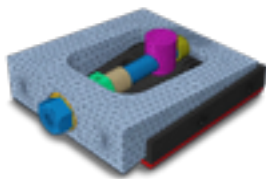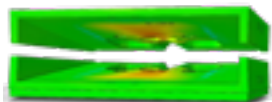

FEM analysis of UMS100 incl. accessory parts

FEM analysis of UMS100

FEM analysis of UMS100 in different positions

Stresses of UMS100 base and top panels in Fmax = 1.000 kN

WE LEAVE NOTHING TO CHANCE

All isoloc products have been inspected by TÜV Rheinland, LGA Nuremberg and TU Berlin and in our Research and Development division with regard to their functionality and max. static and dynamic load, and underwent extensive test series. The calculated values have been reviewed and confirmed by multiple neutral expert institutions.

Isoloc has an excellent equipped testing laboratory to ensure the high German product standards.

You can rely on isoloc!

Measuring of the adjustment torques during levelling of the isoloc UMS Universal Precision Machine Shoes in different loads. Also the max. load up to breakage is determined (LGA Nuremberg).

Breakage test of an UMS equipped with IPL

Determination of creeping characteristics of an isoloc IPL at KIT.
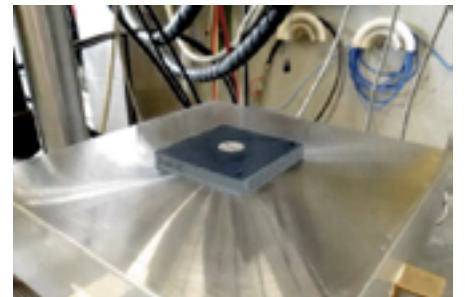
Test piece of an isoloc IPL under a testing machine
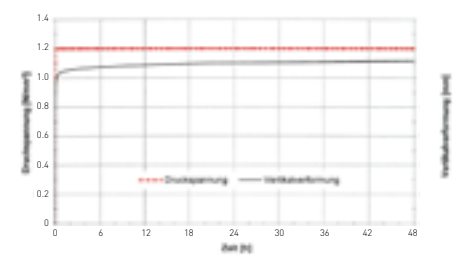

Deformation curve of an IPL panel

# ISOLOC CAD SERVICE

OUR SERVICE: CAD DATA

Isoloc offers you support in your construction work at the computer. We deliver 2D-/3D-data sets for an easy integration in to your constructions.

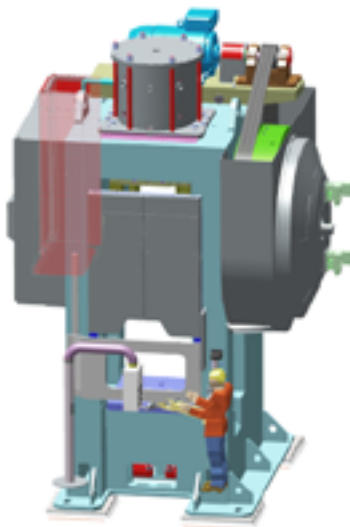Suitable data formats for the exchange of construction data are: STEP, IGES, DWG/DXF, U3D-PDF.

After registration and login you will find data sheets, drawings and 3D-models for almost any product on our download area on www.isoloc.de.
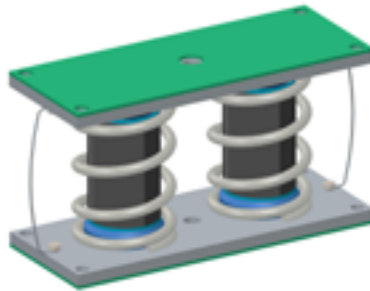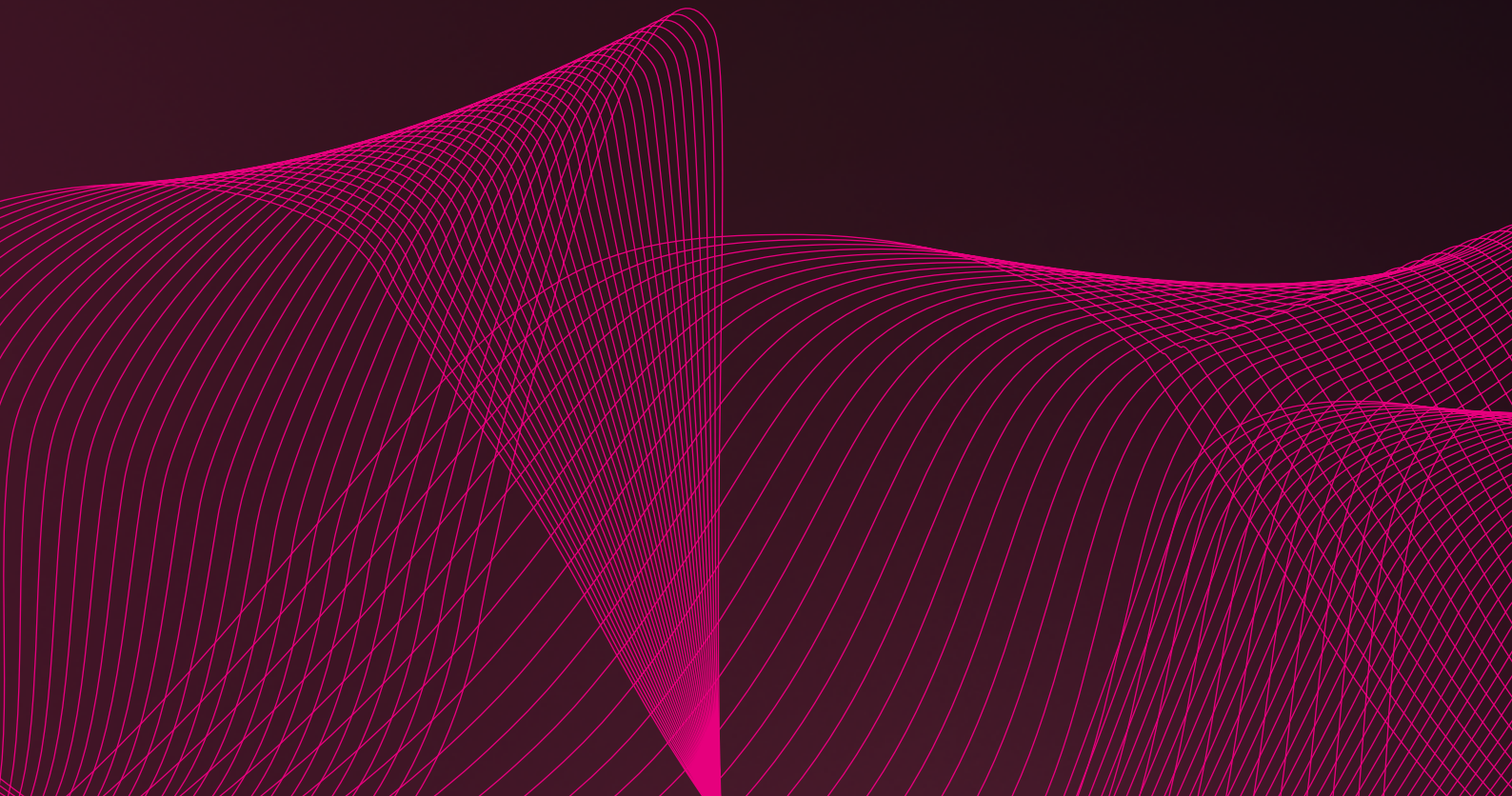
isoloc FE*DAM* F2-D
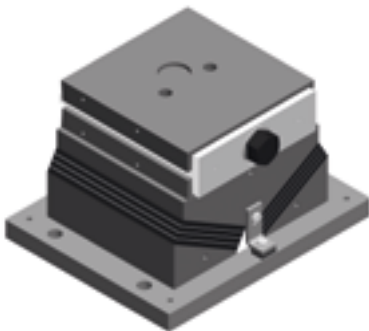
STEP model of the latest isoloc MD+UMS100 machine and press mounting system

CAD model of a forging press on isoloc press mounting systems