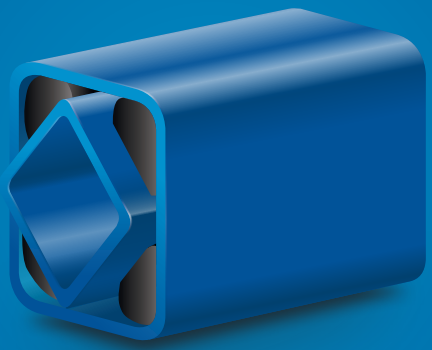
THE BLUE ONES FROM ROSTA

Components for increased output



Simple and clever

DEAR READER

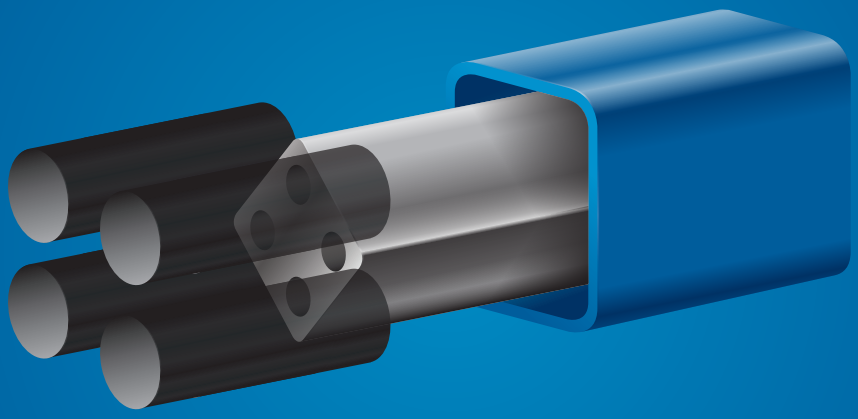
A unique success story for 75 years

Thanks to an innovative product idea, ROSTA is the world's leading manufacturer of rubber spring and damping systems. Since 1944, our consistent customer-centric approach has had top priority and contributes significantly to the sustained success of the company – enabling us to celebrate the 75th anniversary of our success story in 2019.

In addition to our headquarters and production site in Switzerland, ROSTA has 6 subsidiaries in Germany, Italy, Canada, the USA, China and Australia with over 120 employees. Our global network with over 30 partners in more than 40 countries positioning us to serve our customers far beyond our borders swiftly and promptly.

Many customers from all industries already benefit from our comprehensive know-how, becoming more profitable and competitive thanks to ROSTA products.

Our components are maintenance-free, noiseless, have a long service life and are used for a wide range of applications. Many years of experience in research and development in our own laboratory and the collaborative work with our partners and customers form an important knowledge base from which we can continue to offer innovative solutions.



Perfect combination

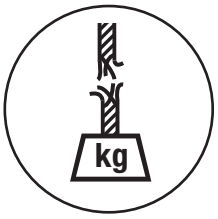
VIBRATION DAMPERS

Highly elastic and tearproof mounts for passive and active vibration dampening

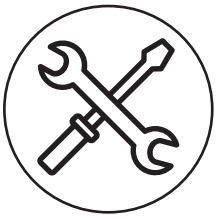
– Vibration-free mounting of motor test stands, emergency generators, compressors, etc.
– Tearproof mounting of suspended loads such as crane tracks and cable car cabins
– Anti-vibration machine leveling feet with balancing ball joints
– Impact-resistant vibration dampers for energy dissipation at belt transfer stations
– Standardised product range for high load capacities

Product advantages:

high degree of isolation



tearproof



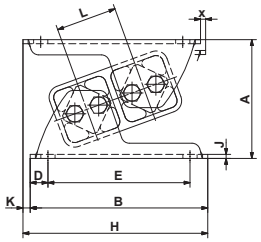
maintenance-free

Selection table vibration dampers

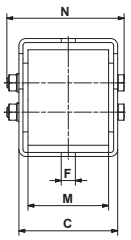
	Illustration	Type	Description	Page
Vibration dampers basic types		**ESL**	Vibration dampers for the absorption of tensile, pressure and shear load. Also ideal for wall and ceiling installations. 8 element sizes from 200 N to 19 000 N. Natural frequency between 3.5 – 8 Hz. Mounts are mainly used for overcritical machine installations (machine frequency > mount frequency).	4.3
		**AWI**	Vibration dampers for to absorb tensile and pressure loads. 7 element sizes from 180 N to 16 000 N. Natural frequency between 3 – 7 Hz. Mounts are mainly used for overcritical machine installations (machine frequency > mount frequency).	4.4
		**V**	Vibration dampers for the absorption of tensile, pressure and shear load. Also ideal for wall and ceiling installations. 6 element sizes from 300 N to 12 000 N. Natural frequency between 10 – 30 Hz. Mounts can be used for subcritical machine installations (machine frequency < mount frequency).	4.5
Vibration dampers additional types		**N**	Mounting feets consisting of insulating plate, top cover with built-in levelling jack-screw with spherical joint for compensation of up to 5° of floor unevenness. Insulating plate oil- and acid-proof. 3 element sizes from 1 500 N to 20 000 N. Natural frequency between 19 – 25 Hz.	4.6
		**NOX**	Mounting Feets consisting of insulating plate, stainless steel top cover with built-in stainless levelling jackscrew with spherical joint to compensate of up to 5° of floor unevenness. Insulating plate oil- and acid-proof. 2 element sizes from 5 000 N to 20 000 N. Natural frequency between 19 – 22 Hz.	
		**Base plate P**	Accessories for N and NOX for high shear forces or for assembling on a base or frame. The base plate must be bolted to the floor.	4.7
		**NE**	Adhesive cushioning plates made of closed-cell polyether urethane, no water absorption and good oil resistance. 3 element sizes from 500 N to 130 000 N. Natural frequency between 14 – 25 Hz.	4.8

Vibration damper

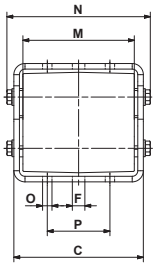
ESL



sizes 15 to 45



from size 50



Part no.	Type	Load $G_{min.}$ – $G_{max.}$ [N] on Z-axis	A unloaded	A* max. load	B	C	D	E	ø F
05 021 001	**ESL 15**	200 – 550	54	43	85	49	10	65	7
05 021 002	**ESL 18**	450 – 1 250	65	51	105	60	12.5	80	9.5
05 021 003	**ESL 27**	700 – 2 000	88	68	140	71	15	110	11.5
05 021 004	**ESL 38**	1 300 – 3 800	117	91	175	98	17.5	140	14
05 021 005	**ESL 45**	2 200 – 6 000	143	110	220	120	25	170	18
05 021 016	**ESL 50**	4 000 – 11 000	170	138	235	142	25	185	18
05 021 017	**ESL 50-1.6**	5 500 – 15 000	170	138	235	186	25	185	18
05 021 018	**ESL 50-2**	7 000 – 19 000	170	138	235	226	25	185	18

Part no.	Type	H	J	K	L	M	N	O	P	x max.	Weight [kg]	Natural frequency $G_{min.}$ – $G_{max.}$ [Hz]	Material structure
05 021 001	**ESL 15**	91	2	5.5	25.5	40	58.5	–	–	1.5	0.3	8.2 – 5.8	Aluminium profile, steel plate, nodular cast sizes 50 to 50-2), painted blue, zinc-plated couplings
05 021 002	**ESL 18**	111	2.5	5.5	31	50	69	–	–	1.9	0.6	7.5 – 5.0	
05 021 003	**ESL 27**	148	3	8	44	60	85.3	–	–	2.7	1.3	6.2 – 4.5	
05 021 004	**ESL 38**	182	4	7	60	80	117	–	–	3.6	3.1	5.5 – 4.0	
05 021 005	**ESL 45**	235	5	15	73	100	138	–	–	4.4	5.9	5.0 – 3.5	
05 021 016	**ESL 50**	244	6	9	78	120	162	13.5	90	10	10.7	5.0 – 3.5	
05 021 017	**ESL 50-1.6**	244	8	9	78	160	206	13.5	90	10	14.7	5.0 – 3.5	
05 021 018	**ESL 50-2**	244	8	9	78	200	246	13.5	90	10	18.0	5.0 – 3.5	

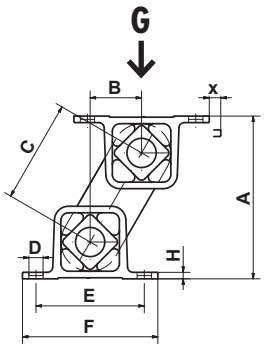
* compression load $G_{max.}$ and cold flow compensation (after approx. 1 year).

If no other units are specified, the numbers given are in mm.
The sizes 50 to 50-2 can be combined with one another (identical heights and operation behaviour).
The max. load on X-axis should not exceed 200 % of the Z-axis capacity.
The max. load on Y-axis should not exceed 20 % of the Z-axis capacity.
Applicable on tensile, pressure and shear load.

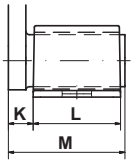
Vibration damper

AWI

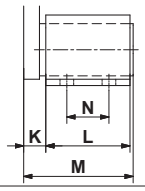
AWI R



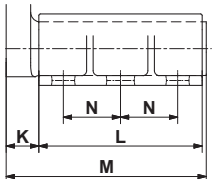
sizes 15 to 27



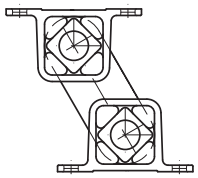
sizes 38 to 50



size 50-2



AWI L



Part no.	Type	Load $G_{min.} - G_{max.}$ [N]	A unloaded	A* max. load	B	C	D	E	F
05 111 101	**AWI 15R**	180 – 400	68	55	22.5	45	7 × 10	50	65
05 121 101	**AWI 15L**	180 – 400	68	55	22.5	45	7 × 10	50	65
05 111 102	**AWI 18R**	350 – 850	88	70	30	60	9 × 15	60	80
05 121 102	**AWI 18L**	350 – 850	88	70	30	60	9 × 15	60	80
05 111 103	**AWI 27R**	650 – 1 500	111	91	35	70	11 × 20	80	105
05 121 103	**AWI 27L**	650 – 1 500	111	91	35	70	11 × 20	80	105
05 111 104	**AWI 38R**	1 200 – 3 000	150	122	47.5	95	13 × 20	100	125
05 121 104	**AWI 38L**	1 200 – 3 000	150	122	47.5	95	13 × 20	100	125
05 111 105	**AWI 45R**	2 000 – 4 800	177	145	55	110	13 × 26	115	145
05 121 105	**AWI 45L**	2 000 – 4 800	177	145	55	110	13 × 26	115	145
05 111 106	**AWI 50R**	4 000 – 9 600	194	159	60	120	17 × 27	130	170
05 121 106	**AWI 50L**	4 000 – 9 600	194	159	60	120	17 × 27	130	170
05 111 108	**AWI 50-2R**	6 600 – 16 000	194	159	60	120	17 × 27	130	170
05 121 108	**AWI 50-2L**	6 600 – 16 000	194	159	60	120	17 × 27	130	170

Part no.	Type	H	K	L	M	N	x max.	Weight [kg]	Natural frequency $G_{min.} - G_{max.}$ [Hz]	Material structure
05 111 101	**AWI 15R**	3	10	40	52	–	14	0.5	7.2 – 4.5	Stainless steel casting GX5CrNi19-10 (1.4308)
05 121 101	**AWI 15L**	3	10	40	52	–	14	0.5	7.2 – 4.5	
05 111 102	**AWI 18R**	3.5	14	50	67	–	19	0.9	6.5 – 3.7	
05 121 102	**AWI 18L**	3.5	14	50	67	–	19	0.9	6.5 – 3.7	
05 111 103	**AWI 27R**	4.5	17	60	80	–	22	1.9	6.0 – 3.7	
05 121 103	**AWI 27L**	4.5	17	60	80	–	22	1.9	6.0 – 3.7	
05 111 104	**AWI 38R**	6	21	80	104	40	31	4.5	5.2 – 3.2	
05 121 104	**AWI 38L**	6	21	80	104	40	31	4.5	5.2 – 3.2	
05 111 105	**AWI 45R**	8	28	100	132	58	35	7.8	5.0 – 2.8	
05 121 105	**AWI 45L**	8	28	100	132	58	35	7.8	5.0 – 2.8	
05 111 106	**AWI 50R**	12	40	120	165	60	38	12.8	4.8 – 2.8	
05 121 106	**AWI 50L**	12	40	120	165	60	38	12.8	4.8 – 2.8	
05 111 108	**AWI 50-2R**	12	45	200	250	70	38	20.3	4.8 – 2.8	
05 121 108	**AWI 50-2L**	12	45	200	250	70	38	20.3	4.8 – 2.8	

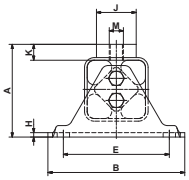
* compression load $G_{max.}$ and cold flow compensation (after approx. 1 year).

If no other units are specified, the numbers given are in mm.
The sizes 50 and 50-2 can be combined with one another (identical heights and operation behaviour).

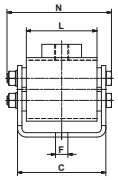
Vibration damper

V

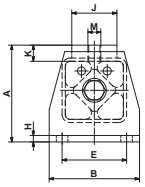
sizes 15 to 45



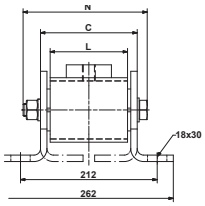
sizes 15 to 45



size 50



size 50



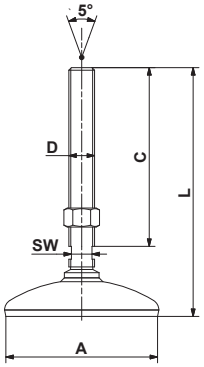
Part no.	Type	Load $G_{min.} - G_{max.}$ on X- and Z-axis	A	B	C	E	øF	H	øJ
05 011 001	**V 15**	300 – 800	49	80	51	55	9.5	3	20
05 011 002	**V 18**	600 – 1 600	66	100	62	75	9.5	3.5	30
05 011 003	**V 27**	1 300 – 3 000	84	130	73	100	11.5	4	40
05 011 024	**V 38**	2 600 – 5 000	105	155	100	120	14	5	45
05 011 005	**V 45**	4 500 – 8 000	127	190	122	140	18	6	60
05 011 006	**V 50**	6 000 – 12 000	150	140	150	100	–	10	70

Part no.	Type	K	L	M	N	Weight [kg]	Natural frequency $G_{min.} - G_{max.}$ [Hz]	Material structure
05 011 001	**V 15**	10	40	M10	59	0.3	30 – 23	Aluminium profile, welded steel housings, painted blue, zinc-plated couplings
05 011 002	**V 18**	13	50	M10	74	0.6	25 – 15	
05 011 003	**V 27**	14.5	60	M12	85	1.2	28 – 20	
05 011 024	**V 38**	17.5	80	M16	117	2.5	14 – 12	
05 011 005	**V 45**	22.5	100	M20	143	4.5	15 – 12	
05 011 006	**V 50**	25	120	M20	193	7.5	12 – 10	

If no other units are specified, the numbers given are in mm.
The max. load on Y-axis should not exceed 20 % of the X- resp. Z-axis capacity.
Momentary shock loads of 2.5 g in X- and Z-axis admissible.
Applicable on tensile, pressure and shear load.
V 50: Alternativ mounting position 180° turned.

Vibration damper

N / NOX

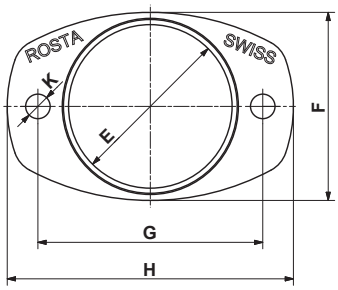


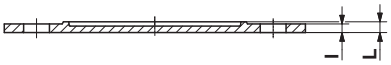
Part no.	Type	Load $G_{min.} - G_{max.}$ [N]	Natural frequency $G_{min.} - G_{max.}$ [Hz]	øA	C	D	L	SW	Weight [kg]	Material structure (rubber pad NBR with 50 ShA)
05 058 001	**N 80 M12**	1 500 – 6 000	25 – 22	80	55	M12	100	10	0.3	galvanised, base painted blue
05 058 002	**N 80 M16**	5 000 – 12 000	22 – 19	80	136	M16	182	13	0.5	galvanised, base painted blue
05 058 102	**NOX 80 M16**	5 000 – 12 000	22 – 19	80	136	M16	182	13	0.5	stainless steel 1.4301 and 1.4305
05 058 004	**N 120 M20**	10 000 – 20 000	22 – 19	120	139	M20	195	16	1.0	galvanised, base painted blue
05 058 103	**NOX 120 M20**	10 000 – 20 000	22 – 19	120	139	M20	195	16	0.9	stainless steel 1.4301 and 1.4305

If no other units are specified, the numbers given are in mm.

Vibration damper

P



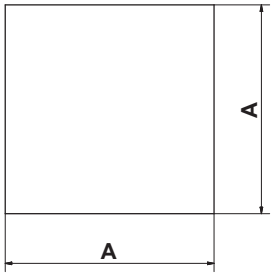


Part no.	**Type**	Accessory to	øE	F	G	H	I	øK	L	Weight [kg]	Material structure
05 060 101	**P 80**	N/NOX 80	80	92	110	140	4	12	5	0.1	Aluminium cast
05 060 102	**P 120**	N/NOX 120	120	135	170	210	5	16	7	0.3	

If no other units are specified, the numbers given are in mm.

Vibration damper

NE



Part no.	Type	Load $G_{min.} - G_{max.}$ [N]	Deflection $G_{min.} - G_{max.}$ [mm]	Natural frequency $G_{min.} - G_{max.}$ [Hz]	A	B	Weight [kg]	Material structure
05 100 901	**NE 50-12**	500 – 1 500	0.5 – 1.4	25 – 14	50	12.5	0.02	– Polyether-Urethane closed-cell – No water absorption – Working temperature –30 to +70 °C – Good oil-resistance
05 100 902	**NE 80-12**	1 500 – 4 500	0.5 – 1.4	25 – 14	80	12.5	0.06	
05 100 903	**NE 400-12**	44 000 – 130 000	0.5 – 1.4	25 – 14	400	12.5	1.54	

If no other units are specified, the numbers given are in mm.
Tolerances according to ISO3302-1:1999 class L3 and EC3. The deflection of the cushions by the mentioned max. catalogue load capacities is 1.4 mm.

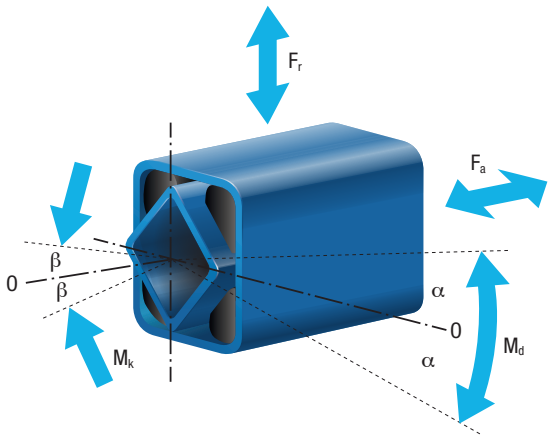
TECHNOLOGY

A unique spring system from experienced specialists

We at ROSTA have experienced the needs and solved the problems of our customers for 75 years. Together with our customers, we analyse their applications and concerns based on decades of experience. We help them to optimise their products and plants and improve their process safety. The result is higher productivity and a true competitive advantage.
Who doesn't want that?

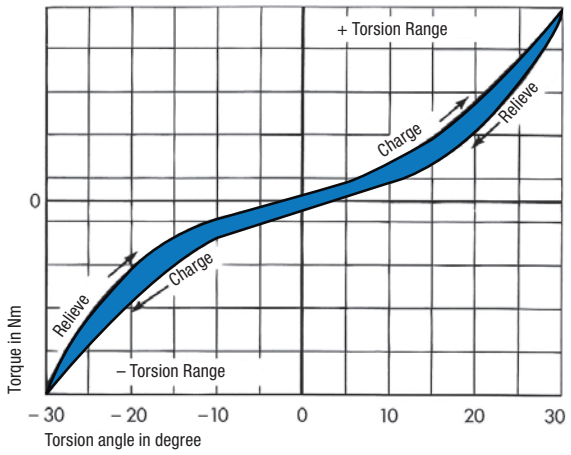
ROSTA Basics

Function



The ROSTA rubber suspension elements are mainly designed for applications as torsional spring devices offering operation angles of ± 30°. Depending on the particular function, not only torsional moments are generated by pivoting the spring device. According to the specific application additional radial F_r, axial F_a and / or cardanic M_k forces have usually to be taken in consideration. The occurring torques of the different elements and the additional load characteristics are indicated in the respective chapter.

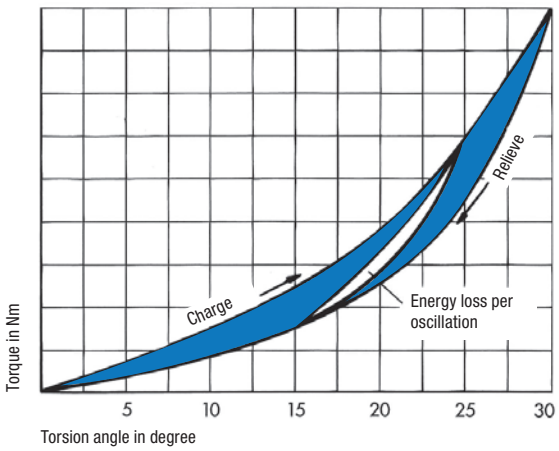
Spring characteristic

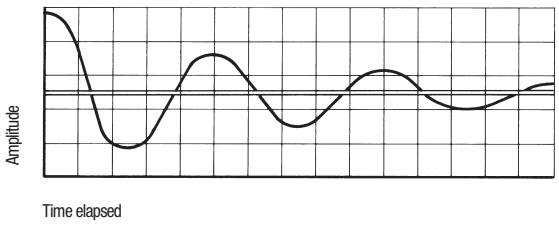


Due to the specific construction characteristics of the ROSTA rubber suspension element, pivoting the device ± results in a slightly progressive spring characteristic. The torsion angle is limited to ± 30 for most elements.

ROSTA Basics

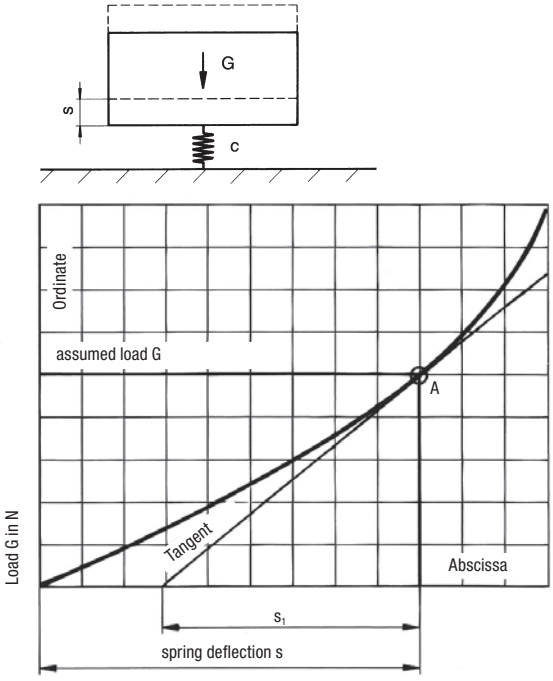
Damping





The occurring hysteresis in the ROSTA element is addicted to the resulting energy loss work in the rubber inserts during the pivoting activity of the spring device. In the process of the element actuation a part of the resulting energy is transformed into frictional work generating heat. The shaded surface between load and relieve headline indicates the effective energy loss. At element actuation out of the zero position up to 30°, the resulting average energy loss is at 15 to 20 %. At the actuation of a pre-tensioned element, the resulting ± working angle is usually only a few degrees, therefore the energy loss reduces within a limit (see graph).
Uniquely animated element oscillations fade within short term, due to the occurring energy loss at each following post-pulse oscillation. (Very important at the use of ROSTA screen mountings – during the operation procedure of the screen the resulting power loss in the ROSTA mountings is neglectable; during the running down phase, close to the resonance frequency of the suspensions, an important amplitude exaggeration occurs. The high energy loss in the ROSTA screen mountings dampens and absorbs these exaggerations within only a few post-pulse oscillations.)

Natural frequency



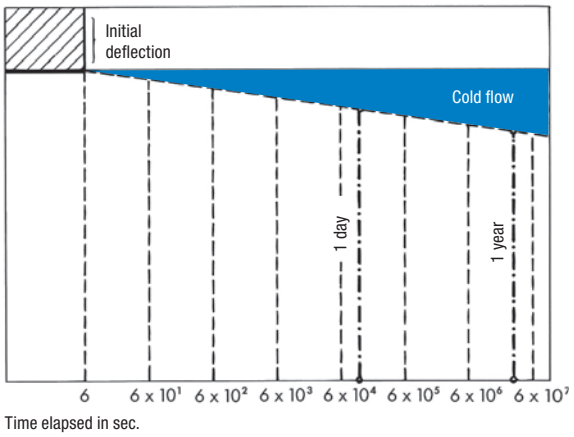
The determination of the natural frequency of a ROSTA suspension has to be carried out by spreading the tangent at the loading point «A» on the parabolic arc of the load deflection curve. The resulting distance s_1 on the axis of abscissa comes up to the arithmetical spring deflection in mm, required for the determination of the natural frequency.

$$\text{Natural frequency } n_e = \frac{300}{\sqrt{s_1 \text{ (in cm)}}} = \text{min}^{-1}$$

$$\text{or} \qquad f_e = \frac{5}{\sqrt{s_1 \text{ (in cm)}}} = \text{Hz}$$

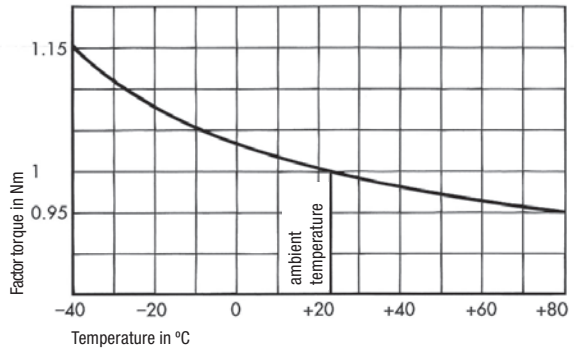
ROSTA Basics

Cold flow and settling of the rubber suspensions



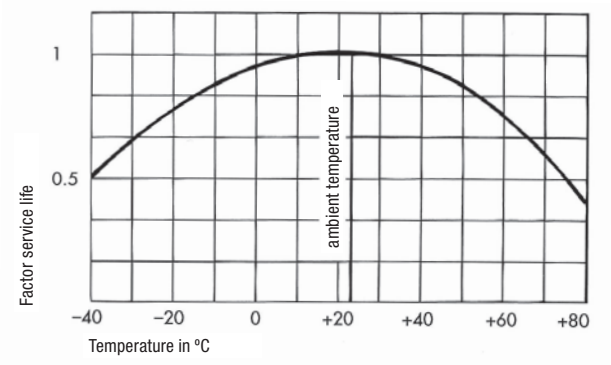
All elastic materials show more or less permanent measurable deformation over time when subjected to a load. This is noticeable in a relatively small additional deflection, the cold flow. This cold flow runs over a linear logarithmic time scale. The illustration shows that after being under a load for one day, already compensates for more than half of the flow deformation of a year; after one year of use, the overall element setting is largely compensated (depending on the temperature and frequency). Empirical findings show that the settling factor lies within a 3° to 5° loss of the element to the neutral 0° position, with combined vibrating bearings at approx. +10 % of the respective nominal deflection according to the catalogue specification.

Temperature influence



The ROSTA rubber suspension elements are designed in the standard rubber quality «Rubmix 10» for use in the temperature range of –40 °C to +80 °C. As the temperature rises, the mechanical torque strength decreases. This decrease is at a low approx. 5% in the upper temperature range (+80 °C). At lower ambient temperatures, i.e. in the minus range, the mechanical torsional stiffness increases (at –40 °C up to 15 %). The internal damping of the elements undergoes a similar process: when the temperature drops, the damping percentage increases and then falls again when the temperature rises. Due to the internal friction (energy loss work), the rubber inserts in the suspension elements warm up with every movement, meaning the effective element temperature may vary in relation to the ambient temperature.

Service life



Provided the rubber suspension elements are selected according to the technical specifications, i.e. are operating within the given frequencies and oscillation angles and under the mentioned surrounding conditions, no loss of performance and functionality can be expected for many years. Extremely low or high permanent surrounding temperatures considerably shorten the lifetime expectancy of the rubber suspension elements. The opposite service life curve indicates the relevant life deduction at extreme ± temperatures from factor 1 at room temperature of +22 °C.

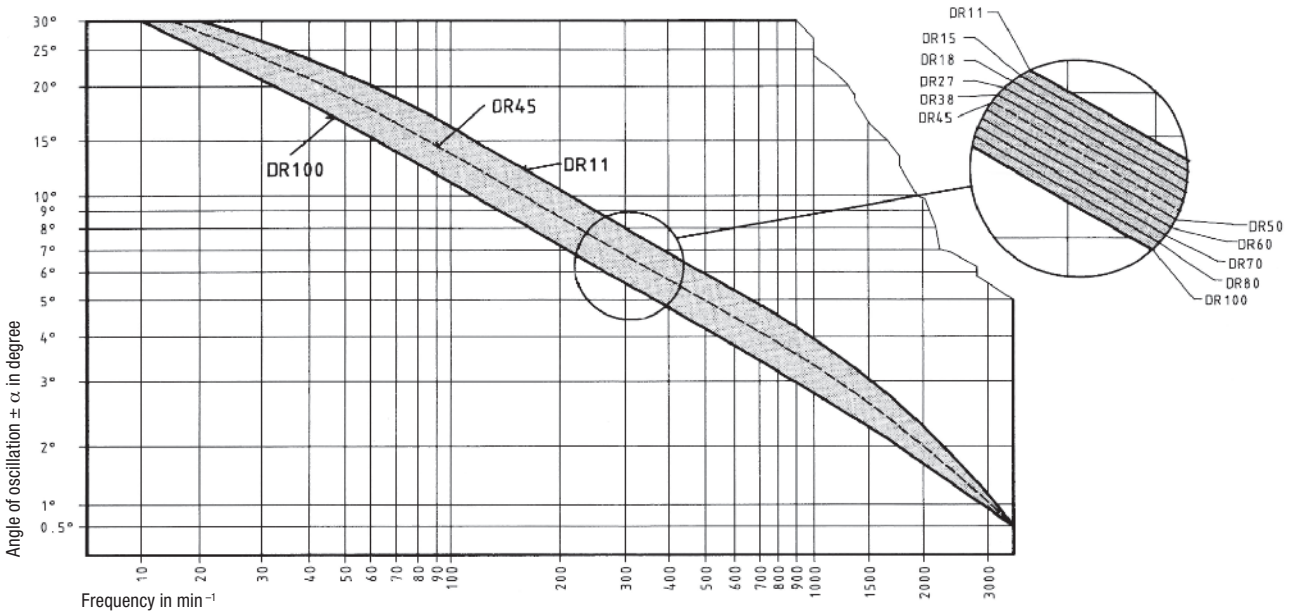
ROSTA Basics

Quality control and tolerances

Since December 1992 ROSTA AG has been an ISO 9001 standard certified development, manufacture and distribution company. All products undergo regular functional and quality testing. The rubber inserts are continuously tested and controlled on the test machines of the in-house laboratory with regard to Shore A hardness, compression set, abrasive wear, rebound resilience, tensile strength, breaking elongation and aging behaviour. The dimensional tolerance of the rubber inserts is defined according DIN 7715 standard and the Shore A hardness according to DIN 53505 standard. The inner-core profiles and housings of the rubber suspension elements are subject to the tolerance guidelines of the relevant production process and respective supplier (e. g. cast, extruded, edge rolled) and the individual material consistence (e. g. aluminium casting, steel tube, nodular cast iron part, etc.). The resulting torsional moments and spring deflections of the ROSTA rubber suspension elements are within a tolerance range of ± 15 % at the most, but usually lie in a much narrower range!

ISO 9001
ISO 14001
BUREAU VERITAS
Certification

Permissible frequencies



Alignment chart for determining the permissible frequencies and oscillation angles in relation to the respective rubber suspension element type (DR 11, 15, 18, etc.).
The higher the frequency in min^{-1}, the lower the oscillation angle should be and vice versa.

Example: (see blue indication on chart) A rubber suspension of type DR 50 may be rotated from the neutral position (0°) to an oscillation angle of ± 6° by a max. frequency of 340 min^{-1}.
For applications of «pre-tensioned» elements working, e. g. under 15° of pre-tension and describing oscillation angles of ± 5° at 250 min^{-1}, it is absolutely necessary to consult ROSTA.

ROSTA Basics

Rubber qualities

The majority of all ROSTA rubber suspension elements are equipped with the standard quality «Rubmix 10» rubber inserts. This rubber quality is based on a high content of natural rubber, offers good shape memory, low settling factors (cold flow), high mechanical strength and moderate aging behaviour (little embrittlement / hardening of the rubber inserts).

Where high oil consistency, heat resistance or even greater torques are required, other resilient inserts with the corresponding characteristics can be installed in the rubber suspension elements.

Special qualities on request.

Rubber quality	Factor in relation to the list «torque and loads» (chapter 2 rubber suspension elements)	Working temperature	Material	Comments
Rubmix 10	1.0	–40° to +80°C	NR	– Standard quality – Highest elasticity – Lowest cold flow
Rubmix 20	approx. 1.0	–30° to +90°C	CR	– Good oil-resistance – Elements marked with yellow dot
Rubmix 40	approx. 0.6	–35° to +120°C	EPDM-Silicone	– High temperature resistance – Elements marked with red dot
Rubmix 50	approx. 3.0	–35° to +90°C	PUR	– Max. oscillation angle ±20° – Limited oscillation frequencies – No permanent water contact – Elements marked with green dot

Chemical resistance

The standardised ROSTA rubber suspension elements are equipped with «Rubmix 10» elastic inserts. These have a high chemical resistance compared to many media. For specific applications, however, the elements must provided with additional protection or synthetically constructed elastomer inserts should be used («Rubmix 20», «Rubmix 40» or «Rubmix 50»), which will slightly the characteristics compared to the standard quality (see Rubber qualities).

The resistance table below is only a guideline and is incomplete. In practical use, data for the concentration of the respective medium and the operating temperature are required to determine the resistance. Please contact us in this regard.

Rubmix	10	20	40	50
Acetone	+	oo	++	oo
Alcohol	++	++	++	o
Benzene	oo	oo	oo	oo
Caustic soda solution up to 25% (20°)	++	++	++	oo
Citric acid	++	+	o	oo
Diesel	oo	+	oo	+
Formic acid	+	+	o	oo
Glycerine	+	+	++	oo
Hydraulic fluid	o	+	oo	oo
Hydrochloric acid up to 15%	++	+	o	oo
Javelle water	o	+	++	oo
Lactic acid	++	++	++	+

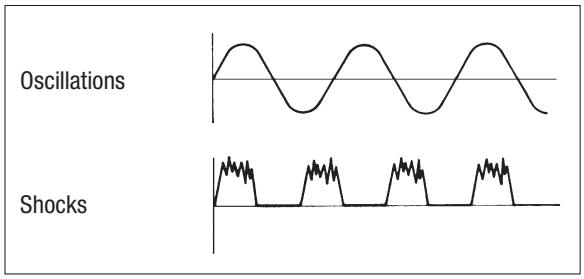
Rubmix	10	20	40	50
Liquid ammonia	+	+	++	oo
Lubricating grease and oil	oo	+	oo	+
Nitric acid up to 10%	oo	+	+	oo
Nitro thinner	oo	oo	oo	oo
Petrol (fuel)	oo	o	oo	++
Petroleum	oo	+	oo	++
Phosphoric acid up to 85%	oo	oo	oo	oo
Seawater	++	+	++	oo
Sulphuric acid up to 10%	+	o	o	oo
Tannic acid	++	+	++	oo
Toluene	oo	oo	oo	oo
Treacle	++	++	++	o

++ excellent consistency, + good consistency, o sufficient consistency, oo insufficient consistency

VIBRATION DAMPERS

Vibration dampers

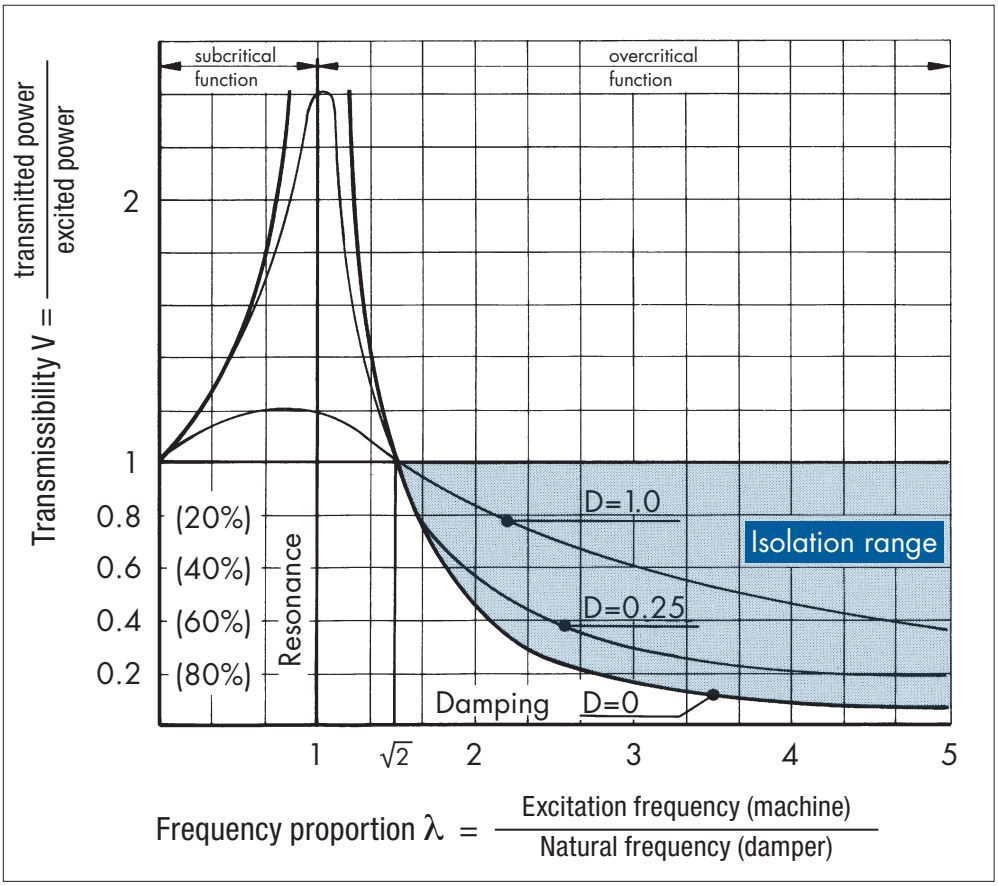
Isolation of oscillations and shocks



Manufacturers of vibration dampers usually offer different designs of machine mounts with varying natural frequencies, to meet the required detuning between the excitation frequency of the machine to be mounted and the natural frequency of the damper.

The vibration technology basically differentiates between two different oscillation patterns. Oscillations are usually eradicated with supercritical designed machine mounts, while shocks are eradicated with subcritical ones.

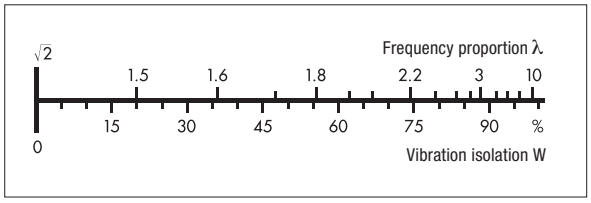
Frequency proportion λ



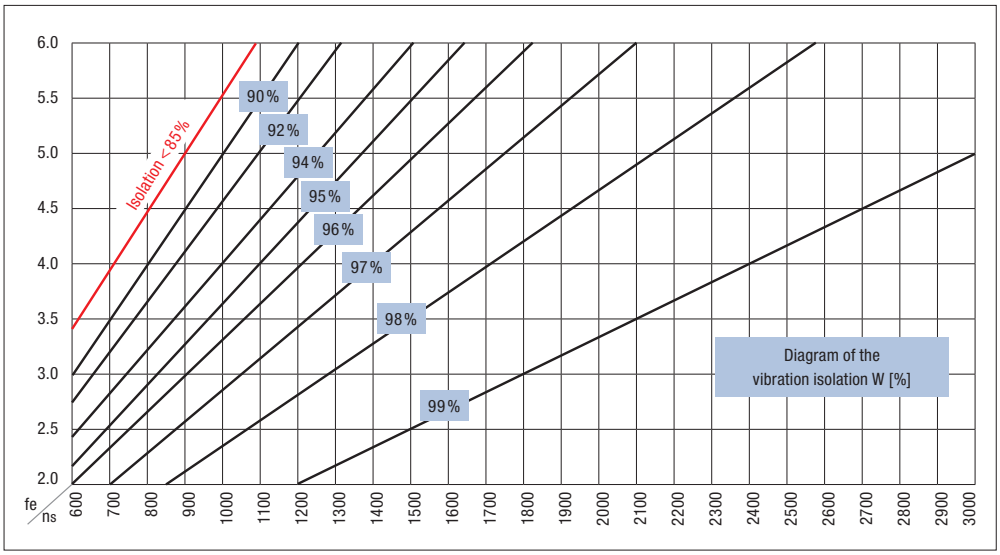
λ > √2: Overcritical: vibration isolation, definable effectiveness W, and efficient structure-borne sound insulation
λ = 1: Resonance range: amplified resonance, maximum values depend on the internal insulation D within the resonance range
λ < 1: Subcritical: no definable vibration isolation and lower structure-borne sound insulation

Vibration dampers

Overcritical installations (λ > √2)



For overcritical mounts, the natural frequency values of the mounts must be at least √2 below the excitation frequencies of the machine or unit. As a rule, a damper with a relatively large spring deflection performance under load is selected. Most units, compressors, motors, blowers and generators are mounted overcritical making them relatively «soft». The resulting frequency ratio provides information about the expected isolation effectiveness of the mount. The line scale opposite and the calculation give the expected insolation W as a %.



$$W = 100 - \frac{100}{\left(\frac{n_s}{60 \cdot fe}\right)^2 - 1} [\%]$$

n_s =
Revolution exciter
(machine) [rpm]

fe =
Natural frequency damper
[Hz]

Subcritical installations (λ < 1) and resonance range (λ = 1)

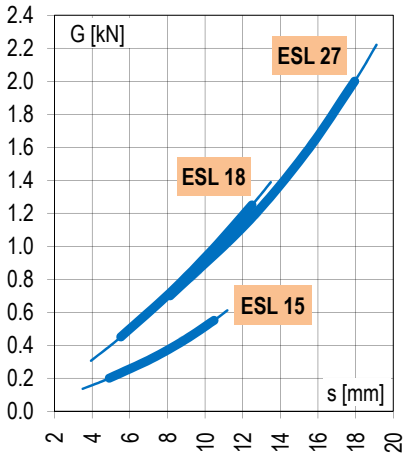
Subcritical installations
A damper with high mechanical strength and low deflection behaviour (high mounting stability) is usually used on subcritical mounts. With this type of mounting, it is possible to damp impacts and shocks from relatively slow-moving machines such as mixers, crushers (cone crushers), punching presses, shears, etc. On machines with subcritical mounts, the resulting efficacy of the isolation insulation cannot be calculated – it can only be determined by comparing the values before and after.

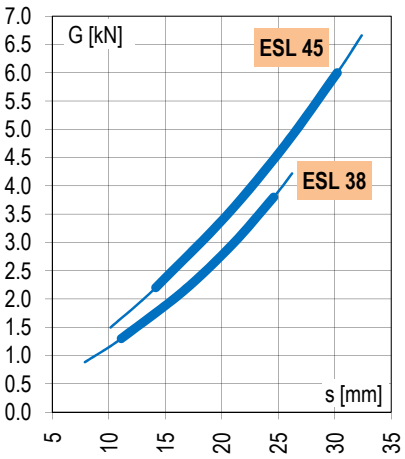
Resonance range
Any coincidence between the exciter frequency and the natural frequency of the damper lead to an undesired, uncontrollable swinging up of the machine to be stored.

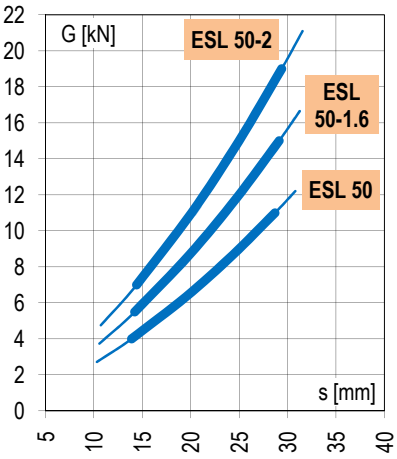
Vibration dampers

ESL: Deflection curves and setting behaviour

The deflection graphs already contain an initial cold flow that occurs after the first hours of operation. The final cold flow is approx. s × 1.09.
These deflection values are based on our catalogue data and are to be taken as guidelines. Please also refer to our tolerance data in chapter 7 «Technology – ROSTA Basics».



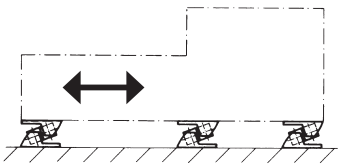




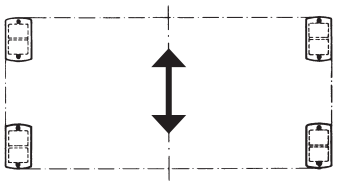
ESL: Installation guidelines

The ESL elements must generally be installed in the same direction.

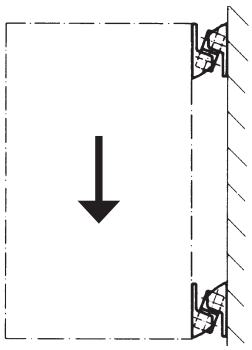
Dynamic forces longitudinal



Dynamic forces lateral



Wall mounting
(Please follow mounting direction)



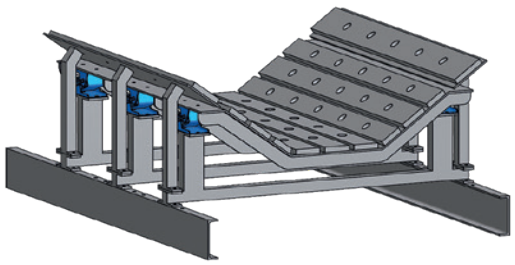
Vibration dampers

ESL: Transfer stations in belt conveyor systems

Size and quantity of ESL for the absorption of the occurring kinetic energy

Weight biggest lump [kg]	Drop height [m]																		
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
10	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
20	4	4	4	4	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6
30	4	4	4	4	4	6	6	6	6	6	6	6	6	6	8	8	8	8	8
40	4	4	4	4	6	6	6	6	6	6	8	8	8	8	6	6	6	6	6
50	4	4	4	6	6	6	6	6	8	8	8	6	6	6	6	6	6	8	8
60	4	4	6	6	6	6	8	8	8	6	6	6	6	6	8	8	8	8	8
70	4	6	6	6	6	8	8	6	6	6	6	6	8	8	8	8	8	8	8
80	4	6	6	6	8	8	6	6	6	6	8	8	8	8	8	8	8	8	8
90	4	6	6	6	8	6	6	6	6	8	8	8	8	8	8	8	8	8	8
100	4	6	6	8	8	6	6	6	8	8	8	8	8	8	8	8	8	8	8
110	6	6	6	8	6	6	6	8	8	8	8	8	8	8	8	8	8	10	10
120	6	6	8	8	6	6	8	8	8	8	8	8	8	8	8	10	10	10	10
130	6	6	8	6	6	6	8	8	8	8	8	8	8	8	10	10	10	10	12
140	6	6	8	6	6	8	8	8	8	8	8	8	8	10	10	10	10	12	12
150	6	6	8	6	6	8	8	8	8	8	8	8	10	10	10	12	12	12	12
200	6	8	6	8	8	8	8	8	8	10	10	12	12	12	14	14	16	16	16
300	8	6	8	8	8	10	10	12	12	14	16	16							
400	6	8	8	8	10	12	14	16	16										
500	8	8	8	10	12	14	16												

Typ	Max. absorption of energy per ESL
ESL 38	250 Nm
ESL 45	375 Nm
ESL 50	750 Nm
ESL 50-1.6	1 000 Nm
ESL 50-2	1 250 Nm

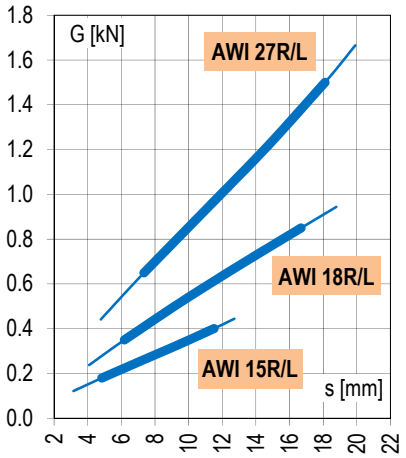


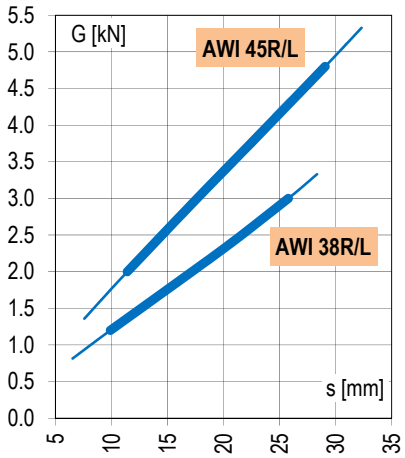
Transfer stations equipped with ROSTA Type ESL vibration dampers offer a progressive deflection characteristic that effectively dampens the kinetic energy created when the falling material makes impact. This protects the surface of the belt's coating from cracking, dramatically reduces the level of continuous material wear and protects the substructure from premature failure.

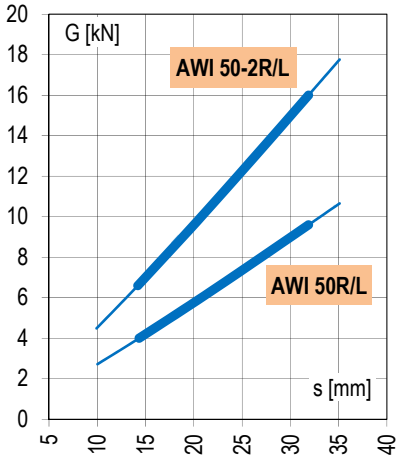
Vibration dampers

AWI: Deflection curves and setting behaviour

The deflection graphs already contain an initial cold flow that occurs after the first hours of operation. The final cold flow is approx. s × 1.09.
These deflection values are based on our catalogue data and are to be taken as guidelines. Please also refer to our tolerance data in chapter 7 «Technology – ROSTA Basics».



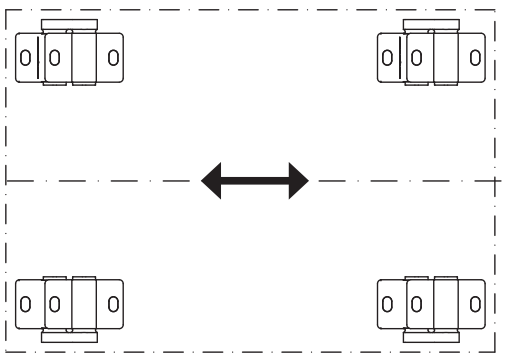




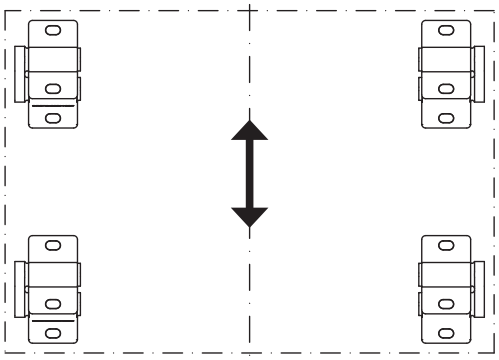
AWI: Installation guidelines

The AWI elements must generally be installed in the same direction.

Dynamic forces longitudinal



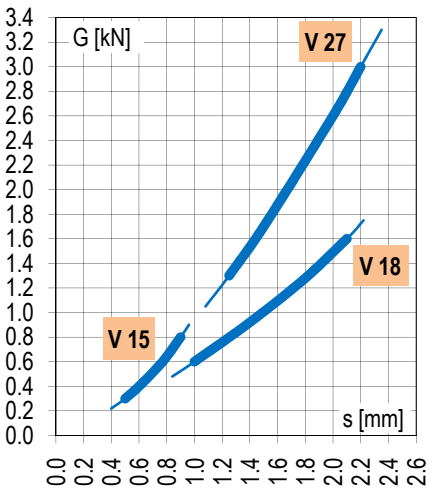
Dynamic forces lateral

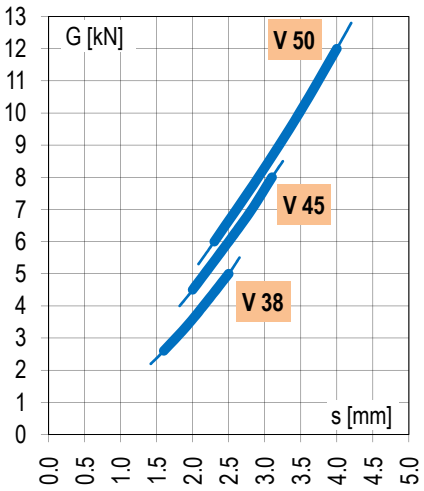


Vibration dampers

V: Deflection curves and cold flow behaviour

These deflection values are based on our catalogue data and are to be taken as guidelines.
Please also refer to our tolerance data in chapter 7 «Technology – ROSTA Basics».

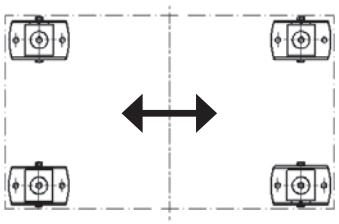




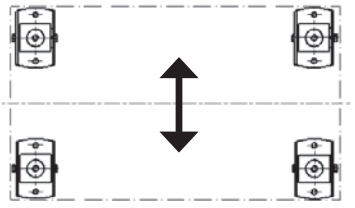
V: Installation guidelines

The V elements installed in the same direction hold load to G_{max} in X- and Z-direction.

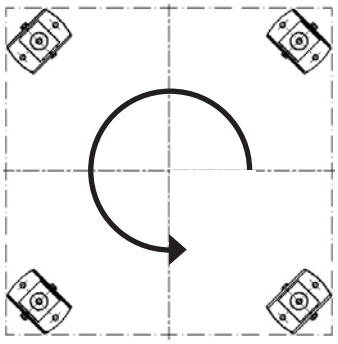
Dynamic forces longitudinal



Dynamic forces lateral



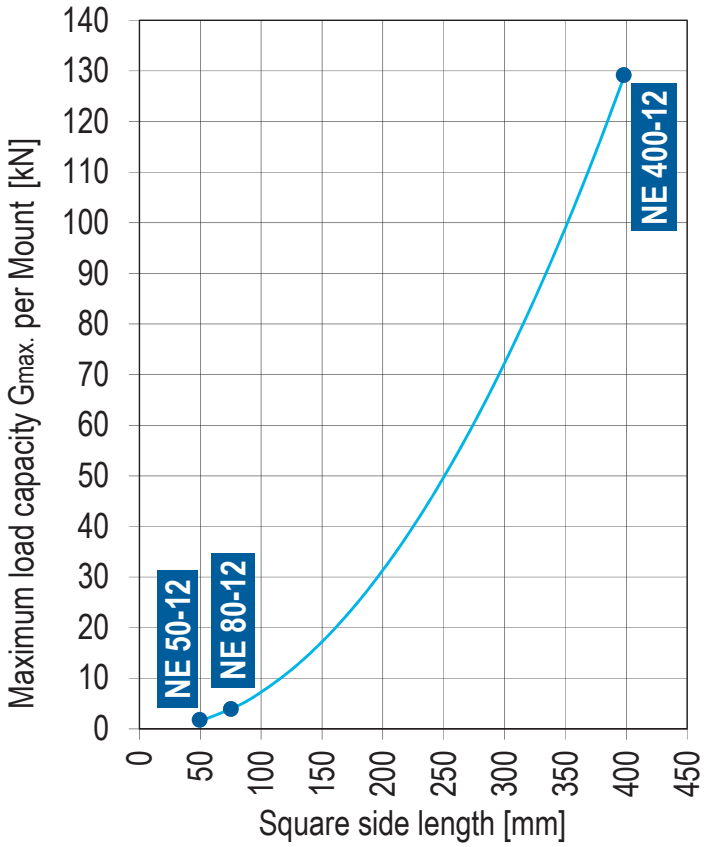
45° diagonal configuration by rotary motions. Reduced load capacities.



Vibration dampers

NE: Maximum load and options

Maximum load sizes NE 50-12 to 400-12:



Options on request:
– Adhesive layer
– Different length and width, maximum dimensions are 1.5 × 5 m.
– Material thickness of 8, 12.5 and 25 mm; multiple thickness 37.5 and 50 mm.

PRODUCTIVITY THROUGH COMPETENCE

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