ROSTA Oscillating Mountings

Elastic Suspensions for Screens and Shaker Conveyors
High dampening – long lifetime – overload proof

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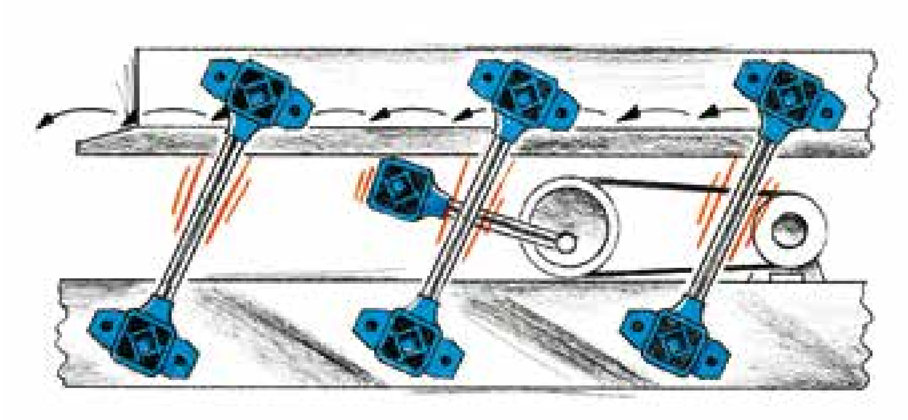
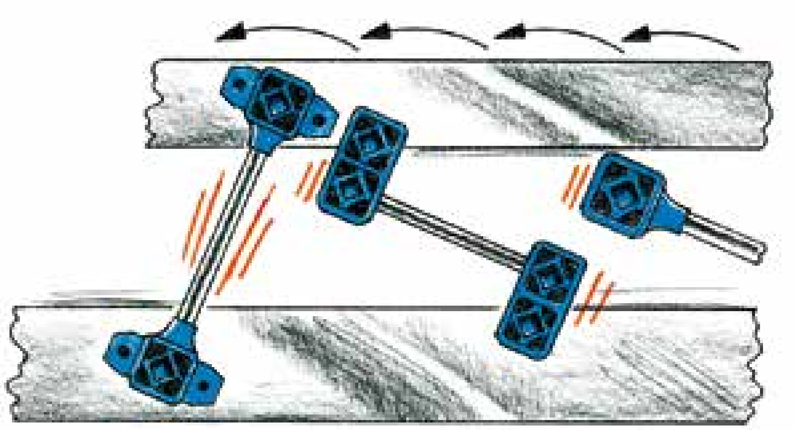
ROSTA Oscillating

elastic suspensions for all types of screening



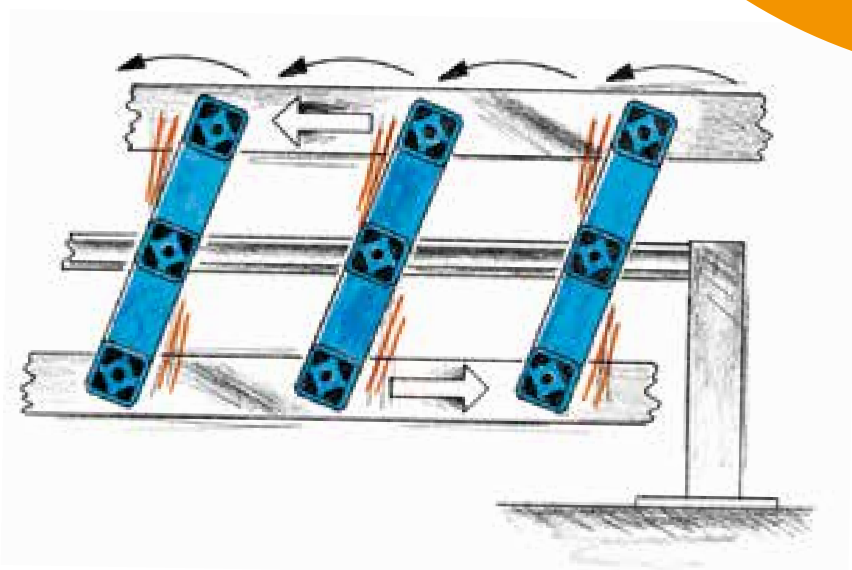
Rocker arms and drive heads for crank shaft driven shaker conveyors
– maintenance-free and long lasting guide arms for shakers
– resilient rod heads for alternating loads

AU Rocker Arm



Spring accumulators for natural frequency shakers
– for the powerful, harmonic actuation of feeders
– energy-saving and silent power packs

Double rocker arms for high speed shaker conveyors
– 1:1 mass balancing, reaction neutral suspensions
– high dynamic spring rates for natural frequency systems



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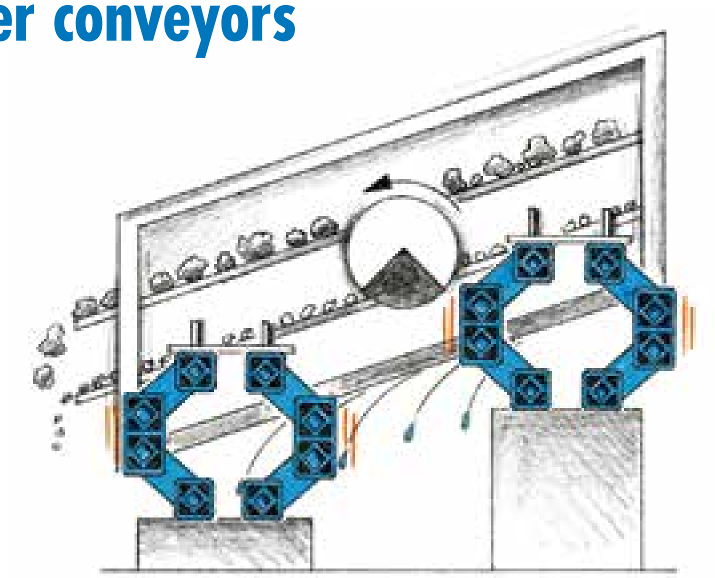
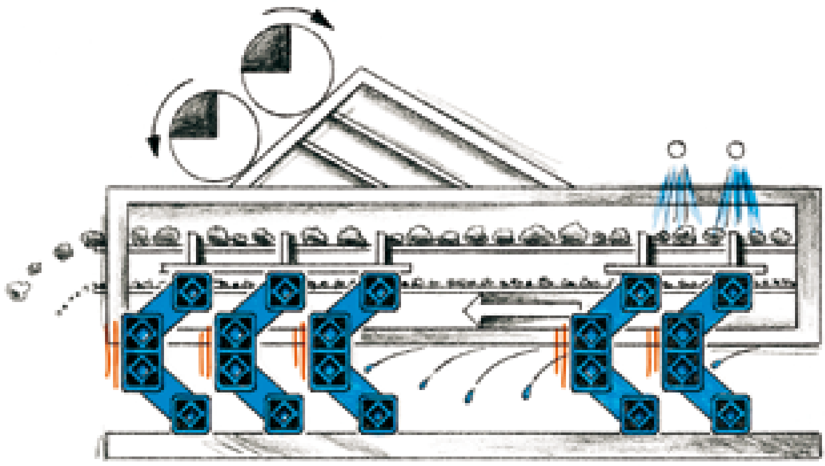
Mountings

machines and shaker conveyors

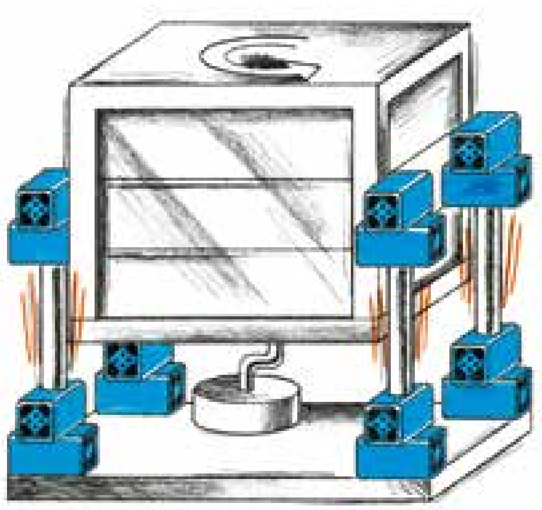


Vibration absorbing mounts for circular and linear motion screens
- long lasting
- high isolation degree
- corrosion-resistant
- overload-proof



AB Screen Mount

AK Universal Joint



Universal joint suspensions for gyratory sifters
- long lasting articulations for guiding horizontal gyrations
- offering extremely high supporting force, up to 40'000 N per mounting

maintenance-free, long lasting, noiseless, corrosion-resistant and overload-proof for all oscillatory equipments and machinery

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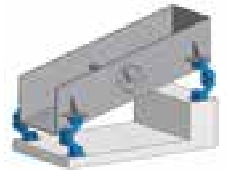
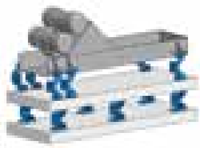
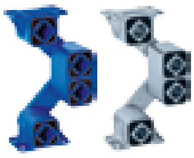
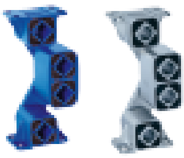
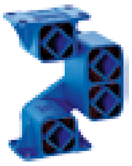
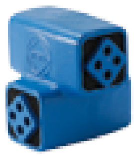
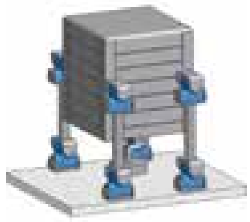
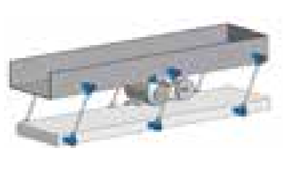
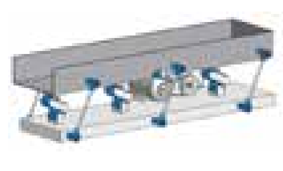
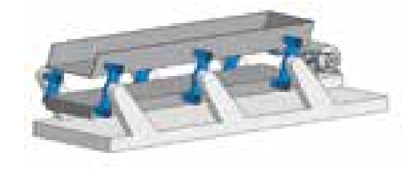
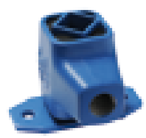
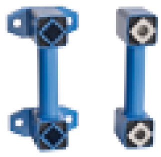
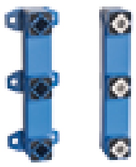
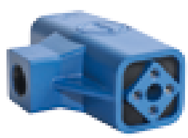
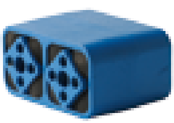
Selection table for free oscillating systems (with unbalanced excitation)

					
		One mass system circular motion screen	**One mass system linear motion screen**	**Two mass system with counterframe**	**One mass system linear motion screen hanging**
	**AB** **ABI** Page 2.10	**Oscillating Mounting** – universal mounting. High vibration isolation and low residual force transmission. Natural frequencies approx. 2–3 Hz. 9 sizes from 50 N to 20'000 N per element.			
	**AB-HD** **ABI-HD** Page 2.12	**Oscillating Mounting** for impact loading and high production peaks. (Heavy Duty) Natural frequencies approx. 2.5–4 Hz. 8 sizes from 150 N to 14'000 N per element.			
	**AB-D** Page 2.14		**Oscillating Mounting** in compact design. Optimal in two mass systems as counterframe mounting. Natural frequencies approx. 3–4.5 Hz. 7 sizes from 500 N to 16'000 N per AB-D.		
	**HS** Page 2.15				**Oscillating Mounting** for hanging systems. Natural frequencies approx. 3–4 Hz. 5 sizes from 500 N to 14'000 N per HS.

Selection table for gyratory sifters

	**AK** Page 2.36	**Universal Joint** for the support or suspension of positive drive or freely oscillating gyratory sifting machines. 10 sizes up to 40'000 N per AK.	**Gyratory sifter upright staying** 	**Gyratory sifter hanging** 
	**AV** Page 2.38	**Single Joint** specially designed with large rubber volume for the suspension of gyratory sifting machines. Models with right-hand and left-hand threads. 5 sizes up to 16'000 N per AV.		

Selection table for guided systems (crank driven)

				
		One mass shaker "brute-force" system	**One mass shaker** "natural frequency" system	**Two mass shaker** "fast-runner" system with reaction force-compensation
	**AU** Page 2.25	**Single Rocker** with adjustable length. Models with right-hand and left-hand threads. 7 sizes up to 5'000 N per rocker suspension.		
	**AS-P** **AS-C** Page 2.26	**Single Rocker** with decided center distance. 6 sizes up to 2'500 N for flange fixation. 6 sizes up to 2'500 N for central fixation.		
	**AD-P** **AD-C** Page 2.27			**Double Rocker** with decided center distance. 5 sizes up to 2'500 N for flange fixation. 4 sizes up to 1'600 N for central fixation.
	**AR** Page 2.28	**Single rocker** and **double rocker** with adjustable length, connection of the AR elements using round pipe. Two mass shakers with design feasibility of two-directional conveying. 2 sizes up to 800 N per rocker suspension.		
	**ST** Page 2.29	**Drive Head** for crank drive transmission in shaker conveyors. Models with right-hand and left-hand threads. 9 sizes up to 27'000 N per drive head.		
	**DO-A** Page 2.30		**Spring Accumulator** with high dynamic spring value for feeder systems running close to resonance frequency. A spring accumulator consists of 2 DO-A elements. 5 sizes up to dynamic spring value of 320 N/mm.	

Notes regarding some special shaker systems:

– For free oscillating systems on pages 2.16–2.19
– For guided systems on pages 2.31 – 2.33
– For gyratory sifters on page 2.34

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Technology of free oscillating systems with unbalanced excitation

Introduction

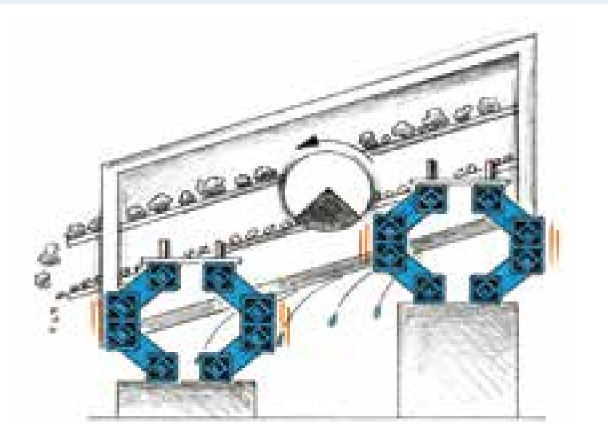
Free oscillating systems are either activated in using exciters, unbalanced motors or unbalanced shafts.
The oscillation amplitude, type of vibration and the direction of vibration of the screen are determined by the dimensioning and arrangement of these actuators. The excitation force, the angle of inclination of the excitation, the inclination of the screen-box and the position of the center of gravity determine the resulting oscillation amplitude of the device. The oscillation amplitude, and thereby the conveying speed of the machine, can be optimized by augmenting these.

ROSTA spring suspensions support the desired oscillation movement of the screen machine. Through their shape and function, they help to achieve a purely linear conveyor motion without unwanted lateral tumbling.

These ideal spring suspensions harmonically support the running of the vibrating screen. Because of their high spring deflection capacity, they offer a good detuning of the excitation frequency with a very low natural frequency, which guarantees a high isolation effect with regard to the machine substructure. The ROSTA mounts effectively dissipate the large residual force peaks at start-up and shut-down, when passing through the natural frequency of the suspension.

Oscillating Mountings

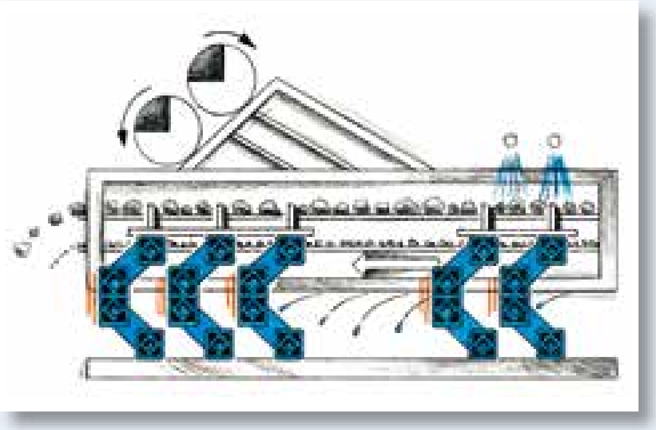
Circular motion screens



Circular motion screens or circular vibrators are normally excited by unbalanced weights that create a circular rotating oscillation of the screening frame. Relatively low accelerations of the screened material are achieved with this form of excitement. Circular vibrators thereby normally work with a screening frame inclination of 15° to 30°, so that an adequate material throughput is ensured.

It is recommended to mount circular vibratory screens of this kind on ROSTA type AB or AB-HD oscillating mountings. Experience has shown that the positioning of the AB suspensions under circular vibrators should be a mirror-inverted of each other, which, with the above-mentioned frame inclination, will counteract the tendency of the shifting of the center of gravity. If the suspension of the screening frame requires two supporting suspensions per brace support for reasons of capacity, these should also be preferably arranged in mirror-inverted manner for the above-mentioned reason.

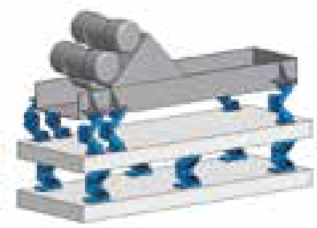
Linear motion screens



Linear motion screens or linear vibrators are normally excited by two unbalanced motors or by means of linear exciters, as well as through double unbalanced shafts (Eliptex), which generate a linear or slightly elliptical oscillation of the screening frame. Depending on the inclination positioning of the exciter, the angle of throw of the screened product can be adapted to the desired form of processing. A very high acceleration of the screened product, i.e. a higher material throughput, is achieved with linear vibrating screens. The screening frame of the linear vibrator is normally in the horizontal position.

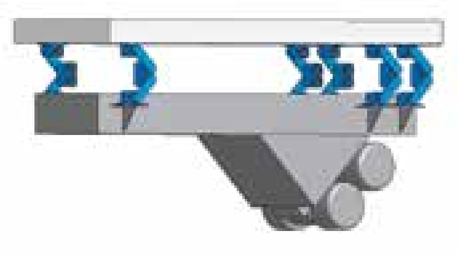
Linear vibrating screens are preferably mounted on ROSTA oscillating mountings type AB or AB-HD. Depending on the positioning of the exciter on the screening frame, the feed-end: discharge-end load distribution can be different. The feed-end side is normally lighter, as the exciters are positioned close to the discharge-end and thereby pull the material through the screening frame; in many cases, the feed-end: discharge-end distribution is thereby 40% to 60%. In the interest of an even suspension, it is thereby recommended to mount the screening frame on six or more ROSTA oscillating mountings. All oscillating mountings should stand in the same direction, with the "knee" pointing in the discharge-end direction.

Linear motion screens with counterframe



If, due to the demands of the process, large screens are mounted at a very high position in a building or in a purely steel construction, the transmission of the residual forces of a single-mass machine can set the entire structure into unwanted vibrations. Or if a new and more powerful machine is mounted in an existing building, the residual force transmission could be too high for the older building. The residual force transmission is drastically reduced through the mounting of a counterframe under the screen, with only a negligible loss of oscillation amplitude (compensation movement of the counterframe reduces the oscillation amplitude).
ROSTA also has the ideal supports for the suspension of counterframes, the very compact mountings type AB-D.

Discharge chutes hanging under silos and bunkers

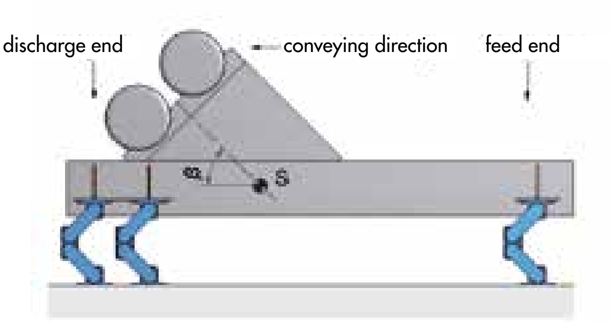


Discharge chutes under silos are normally supported by means of complicated yoke constructions and are suspended on pressure springs. With its HS suspensions (HS = hanging screen), ROSTA offers the possibility of the direct, cost-effective suspension of the discharge unit on silos and bunkers. The geometry of the HS suspensions has been designed to accommodate tensile loads.

Technology

Design layout and evaluation

Subject	Symbol	• Example	Unit
Mass of the empty channel and drive	m_0	680	kg
Products on the channel		200	kg
of which approx. 50% coupling *		100	kg
Total vibrating mass *	m	780	kg
Mass distribution: feed end	% feed end	33	%
discharge end	% discharge end	67	%
Acceleration due to gravity	g	9.81	m/s^2
Load per corner feed end	$F_{feed\ end}$	1263	N
Load per corner discharge end	$F_{discharge\ end}$	2563	N
• Element choice in example		**6x AB 38**	
Working torque of both drives	AM	600	kgcm
Oscillating stroke empty channel	sw_0	8.8	mm
Oscillating stroke in operation	sw	7.7	mm
Motor revolutions	n_s	960	rpm
Centrifugal force of both drives	Fz	30'319	N
Oscillating machine factor	K	4.0	
Machine acceleration	$a = K \cdot g$	4.0	g
• Natural frequency suspensions	**fe**	**2.7**	**Hz**
Degree of isolation	W	97	%



Calculation formulas

Loading per corner

$$F_{feed\text{-}end} = \frac{m \cdot g \cdot \%\ feed\text{-}end}{2 \cdot 100} \qquad F_{discharge\text{-}end} = \frac{m \cdot g \cdot \%\ discharge\text{-}end}{2 \cdot 100} \quad [\,N\,]$$

Oscillating stroke (Amplitude peak to peak)

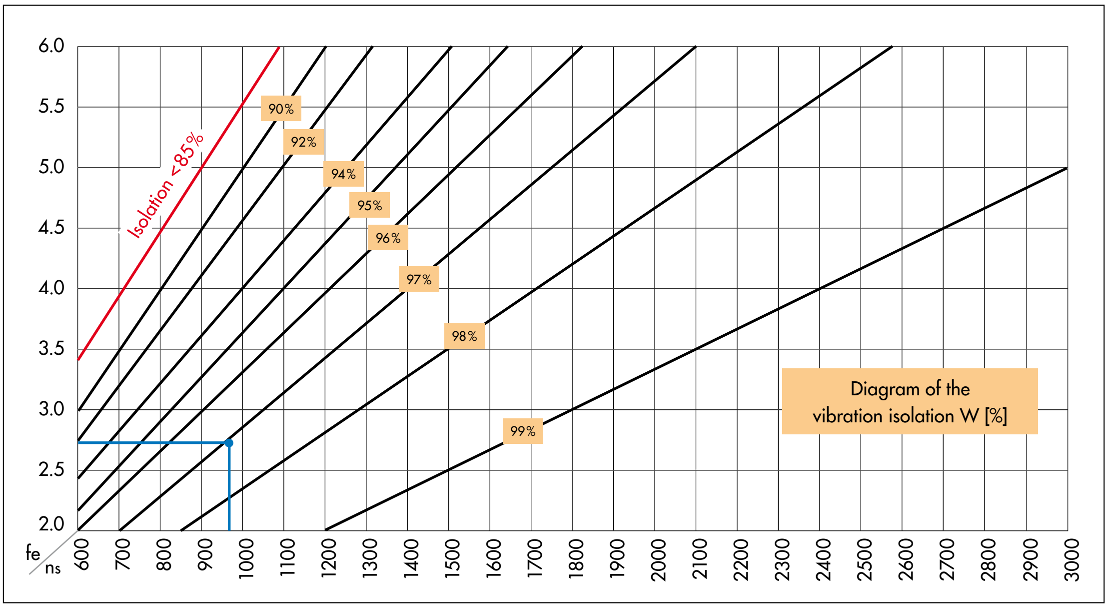
$$sw_0 = \frac{AM}{m_0} \cdot 10 \qquad sw = \frac{AM}{m} \cdot 10 \quad [\,mm\,]$$

Centrifugal force

$$F_z = \frac{\left(\frac{2\pi}{60} \cdot n_s\right)^2 \cdot AM \cdot 10}{2 \cdot 1000} = \frac{n_s^2 \cdot AM}{18'240} \quad [\,N\,]$$

Oscillating machine factor

$$K = \frac{\left(\frac{2\pi}{60} \cdot n_s\right)^2 \cdot sw}{2 \cdot g \cdot 1000} = \frac{n_s^2 \cdot sw}{1'789'000} \quad [\,-\,]$$



Vibration isolation

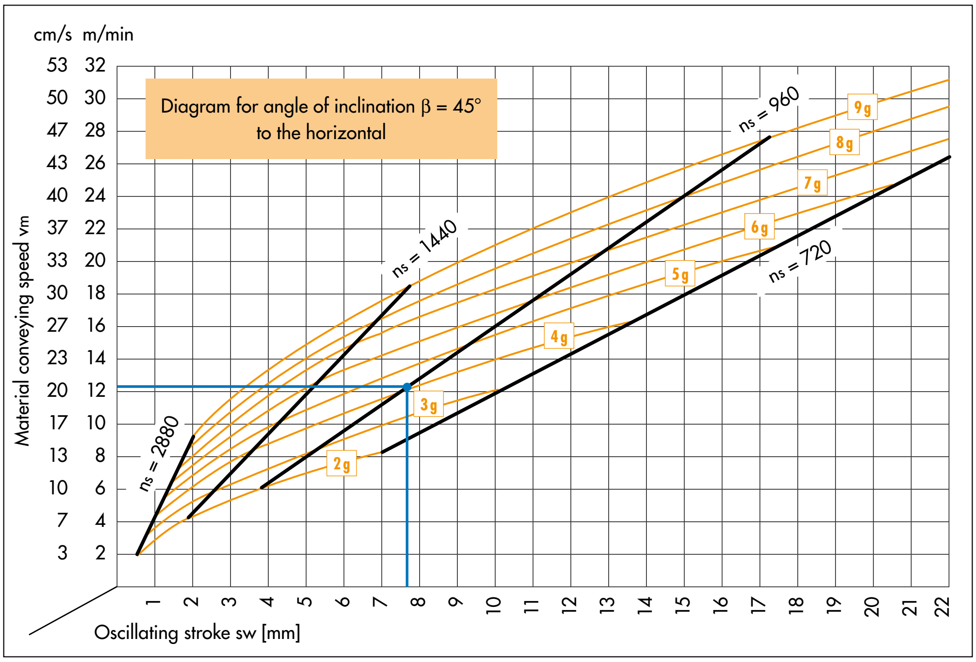
$$W = 100 - \frac{100}{\left(\frac{n_s}{60 \cdot f\,e}\right)^2 - 1} \quad [\,\%\,]$$

• Example:
The proportion of the relationship between exciter frequency 16 Hz (960 rpm) and mount frequency 2.7 Hz is offering a degree of isolation of 97%.

* The following has to be observed for the determination of the coupling effect and material flow:
– High coupling or sticking of humid bulk material
– Channel running full
– Fully stacked screen deck with humid material
– Weight distribution with and without conveyed material
– Centrifugal force does not run through the center of gravity (channel full or empty)
– Sudden impact loading occurs
– Subsequent additions to the screen structure (e.g. additional screening deck)

Technology

Determination of the average material conveying speed vm



Main influencing factors:

- Conveying ability of the material
- Height of the bulk goods
- Screen box inclination
- Position of unbalanced motors
- Position of the center of gravity

The material speed on circular motion screens does vary, due to differing screen-box inclination angles.

- **Example:**

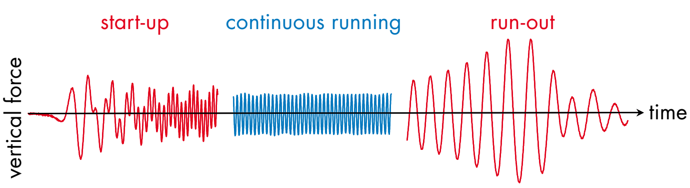
The horizontal line out of the intercept point of stroke (7.7 mm) and motor revolutions (960 rpm) is indicating an average theoretical speed of 12.3 m/min or 20.5 cm/sec.

Oscillating Mountings

Resonance amplification and continuous running

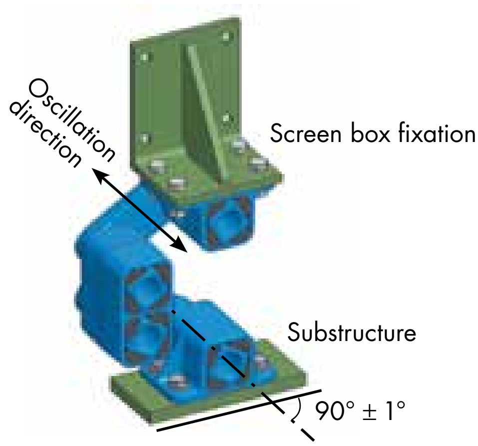
At the screen start-up and run-out the suspension elements are passing through the resonance frequency. By the resulting amplitude superelevation the four rubber suspensions in the AB mountings do generate a high level of damping which is absorbing the remaining energy after only a few strokes. The screen box stops its motion within seconds.

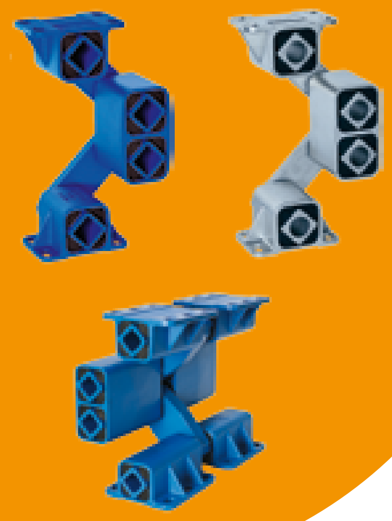
Laboratory measurements of a typical development of the residual forces on a ROSTA screen suspension:



Alignment of the elements

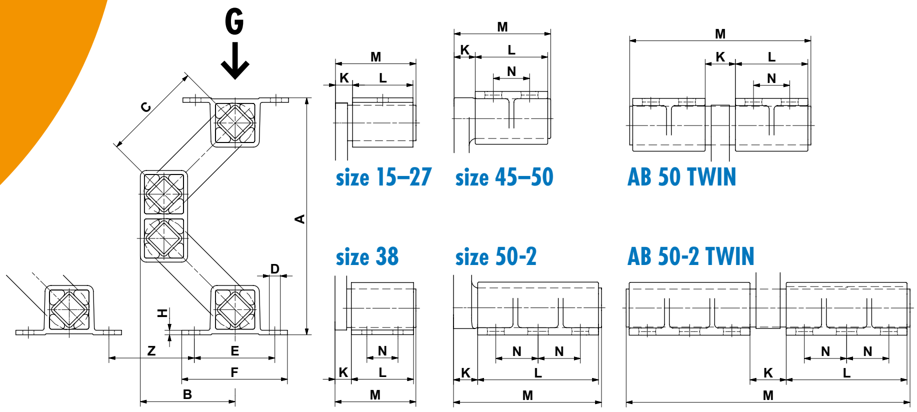
If the suspensions for linear motion screens are arranged as shown on page 2.7, a harmonic, noiseless oscillation of the screen will result. The rocker arm fixed to the screen carries out the greater part of the oscillations. The rocker arm fixed to the substructure remains virtually stationary and ensures a low natural frequency, and thereby also a good vibration isolation. The mounting axis has to be arranged to be at right angles (90°) to the conveying axis, with maximum tolerance of ±1°.





Oscillating Mountings

Type AB (standard blue)
Type ABI (stainless steel)



	Art. No.	Type	Load capacity Gmin. – Gmax. [N]	A un-loaded	A* max. load	B un-loaded	B* max. load	C	D	E	F	H	K	L	M	N	Weight [kg]
	07 051 056	**AB 15**	50 – 160	168	114	70	88	80	ø7	50	65	3	10	40	52	–	0.5
new	07 171 107	**ABI 15**	70 – 180						7x10								0.9
	07 051 057	**AB 18**	120 – 350	208	146	88	109	100	ø9	60	80	3.5	14	50	67	–	1.2
new	07 171 114	**ABI 18**							9x15								1.7
	07 051 058	**AB 27**	250 – 800	235	170	94	116	100	ø11	80	105	4.5	17	60	80	–	2.2
new	07 171 109	**ABI 27**							11x20								3.3
	07 051 059	**AB 38**	600 – 1'600	305	225	120	147	125	ø13	100	125	6	21	80	104	40	5.1
new	07 171 110	**ABI 38**							13x20								7.6
	07 051 054	**AB 45**	1'200 – 3'000	353	257	141	172	140	13x26	115	145	8	28	100	132	58	11.5
new	07 171 111	**ABI 45**				137	168										13.5
	07 051 061	**AB 50**	2'500 – 6'000	380	277	150	184	150	17x27	130	170	12	35	120	160	60	19.1
new	07 171 112	**ABI 50**															21.9
	07 051 055	**AB 50-2**	4'200 – 10'000	380	277	150	184	150	17x27	130	170	12	40	200	245	70	32.2
new	07 171 113	**ABI 50-2**															35.4
	07 051 008	**AB 50 TWIN**	5'000 – 12'000	380	277	150	184	150	17x27	130	170	12	50	120	300	60	35.0
	07 051 009	**AB 50-2 TWIN**	8'400 – 20'000	380	277	150	184	150	17x27	130	170	12	60	200	470	70	54.0

	Art. No.	Type	Natural frequency Gmin. – Gmax. [Hz]	Z	Dynamic spring value cd vertical [N/mm]	Dynamic spring value cd horizontal [N/mm]	Capacity limits 720 min^{-1} sw max. [mm]	720 min^{-1} K max. [–]	960 min^{-1} sw max. [mm]	960 min^{-1} K max. [–]	1440 min^{-1} sw max. [mm]	1440 min^{-1} K max. [–]	Light metal profile	Steel welded construction	Nodular cast iron	ROSTA blue painted	Stainless steel casting
	07 051 056	**AB 15**	4.0 – 2.8	65	10	6	14	4.1	12	6.2	8	9.3	x	x		x	
new	07 171 107	**ABI 15**															x
	07 051 057	**AB 18**	3.7 – 2.6	80	20	14	17	4.9	15	7.7	8	9.3	x	x		x	
new	07 171 114	**ABI 18**															x
	07 051 058	**AB 27**	3.7 – 2.7	80	40	25	17	4.9	14	7.2	8	9.3	x	x		x	
new	07 171 109	**ABI 27**															x
	07 051 059	**AB 38**	3.0 – 2.4	100	60	30	20	5.8	17	8.8	8	9.3	x	x		x	
new	07 171 110	**ABI 38**															x
	07 051 054	**AB 45**	2.8 – 2.3	115	100	50	21	6.1	18	9.3	8	9.3	x	x	x	x	
new	07 171 111	**ABI 45**															x
	07 051 061	**AB 50**	2.4 – 2.1	140	190	85	22	6.4	18	9.3	8	9.3			x	x	
new	07 171 112	**ABI 50**															x
	07 051 055	**AB 50-2**	2.4 – 2.1	140	320	140	22	6.4	18	9.3	8	9.3			x	x	
new	07 171 113	**ABI 50-2**															x
	07 051 008	**AB 50 TWIN**	2.4 – 2.1	140	380	170	22	6.4	18	9.3	8	9.3		x	x	x	
	07 051 009	**AB 50-2 TWIN**	2.4 – 2.1	140	380	170	22	6.4	18	9.3	8	9.3		x	x	x	
					Values in nominal load range at 960 min^{-1} and sw of 8 mm		Acceleration > 9.3 g is not recommended						Material structure				

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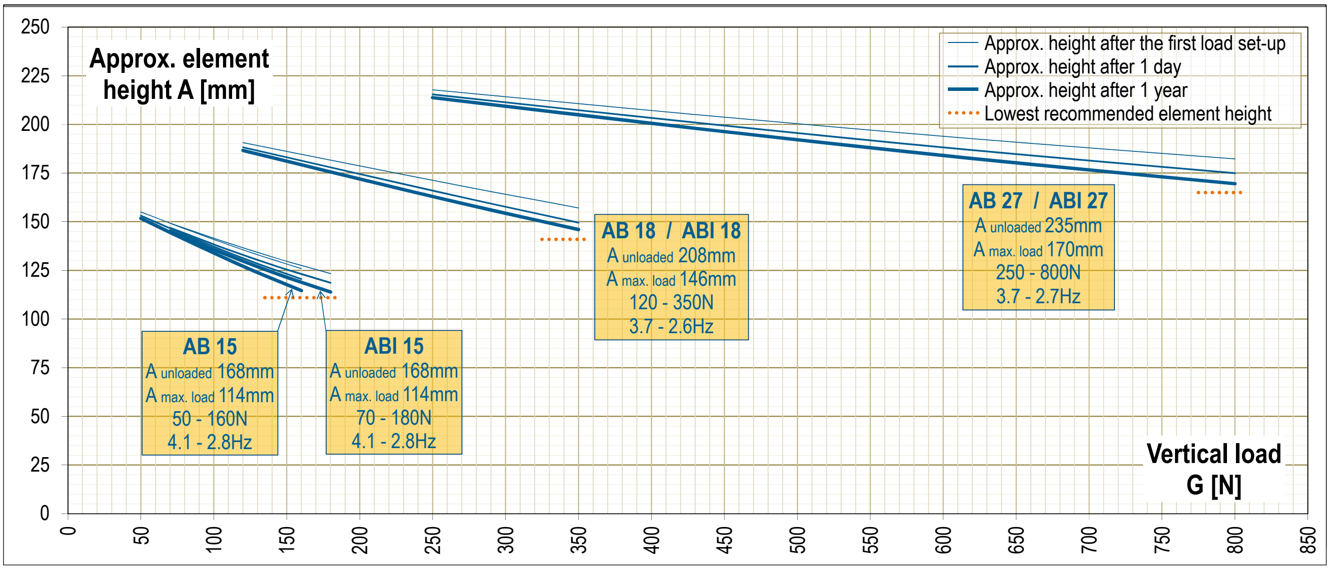
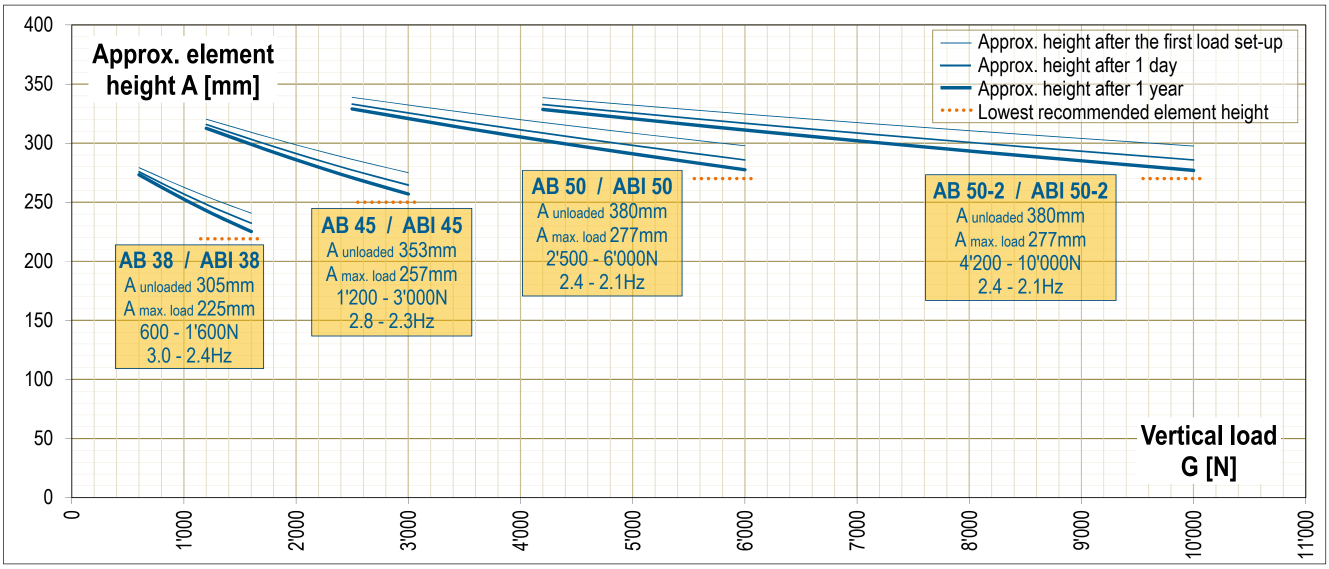
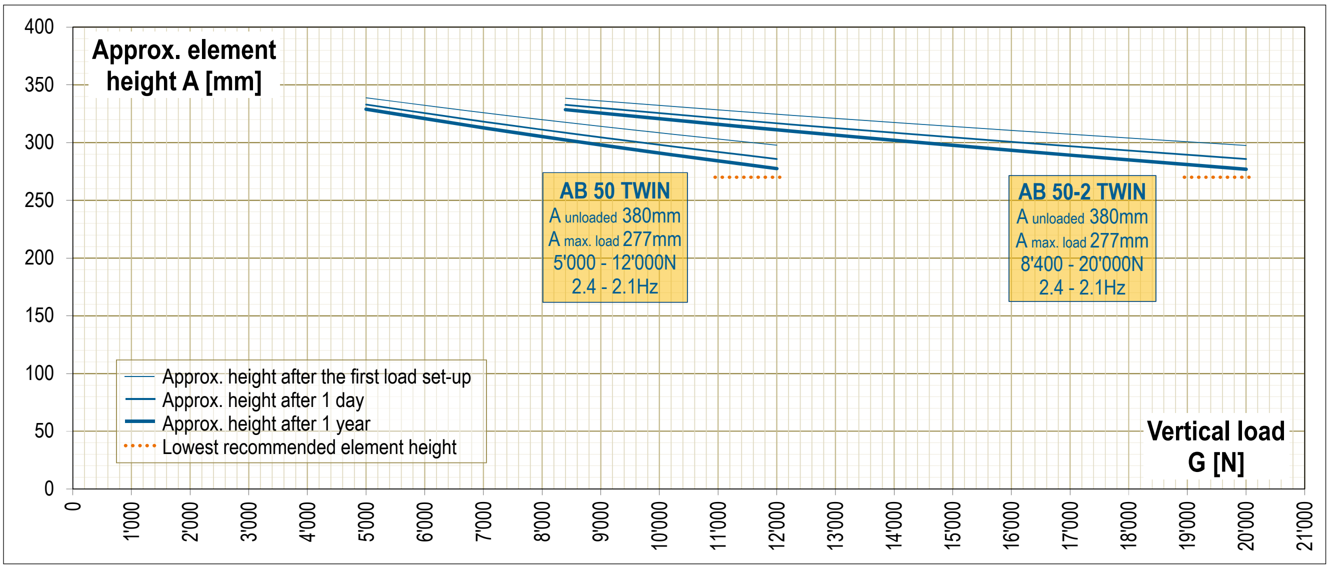
* compression load Gmax. and cold flow compensation (after approx. 1 year).

Element heights and cold flow behaviour AB and ABI







Oscillating Mountings

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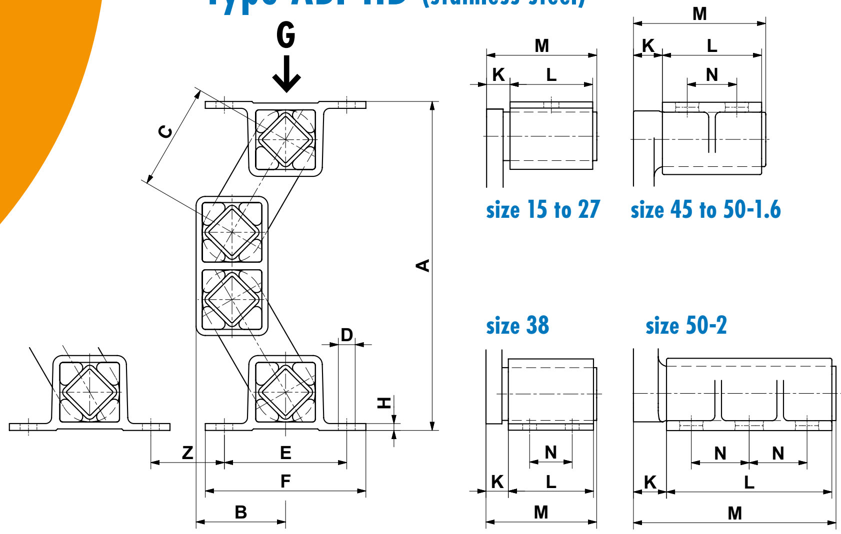
Oscillating Mountings

Type AB-HD (standard blue)
Type ABI-HD (stainless steel)



Art. No.	Type	Load capacity Gmin. – Gmax. [N]	A un-loaded	A* max. load	B un-loaded	B* max. load	C	D	E	F	H	K	L	M	N	Weight [kg]
new 07 171 121	ABI-HD 15	150 – 400	132	107	36	50	45	7x10	50	65	3	10	40	52	–	0.8
new 07 171 128	ABI-HD 18	300 – 700	171	141	47	64	60	9x15	60	80	3.5	14	50	67	–	1.5
07 051 070	AB-HD 27	500 – 1'250	215	182	59	78	70	ø11	80	105	4.5	17	60	80	–	2.0
new 07 171 123	ABI-HD 27							11x20								3.3
07 051 071	AB-HD 38	1'200 – 2'500	293	246	79	106	95	ø13	100	125	6	21	80	104	40	4.9
new 07 171 124	ABI-HD 38							13x20								7.3
07 051 072	AB-HD 45	2'000 – 4'200	346	290	98	130	110	13x26	115	145	8	28	100	132	58	11.3
new 07 171 125	ABI-HD 45				94	126										13.6
07 051 062	AB-HD 50	3'500 – 8'400	376	313	105	141	120	17x27	130	170	12	40	120	165	60	20.4
new 07 171 126	ABI-HD 50															22.3
07 051 063	AB-HD 50-1.6	4'800 – 11'300	376	313	105	141	120	17x27	130	170	12	40	160	205	70	27.1
07 051 060	AB-HD 50-2	6'000 – 14'000	376	313	105	141	120	17x27	130	170	12	45	200	250	70	32.4
new 07 171 127	ABI-HD 50-2															35.8

Art. No.	Type	Natural frequency Gmin. – Gmax. [Hz]	Z	Dynamic spring value: cd vertical [N/mm]	cd horizontal [N/mm]	Capacity limits by different rpm: 720 min⁻¹ sw max. [mm]	720 min⁻¹ K max. [–]	960 min⁻¹ sw max. [mm]	960 min⁻¹ K max. [–]	1440 min⁻¹ sw max. [mm]	1440 min⁻¹ K max. [–]	Light metal profile	Steel welded construction	Nodular cast iron	ROSTA blue painted	Stainless steel casting
new 07 171 121	ABI-HD 15	5.8 – 3.6	35	18	10	8	2.3	7	3.6	5	5.8					x
new 07 171 128	ABI-HD 18	4.9 – 3.2	50	32	20	10	2.9	9	4.6	7	8.1					x
07 051 070	AB-HD 27	4.8 – 3.1	60	70	33	12	3.5	10	5.2	8	9.3	x	x		x	
new 07 171 123	ABI-HD 27															x
07 051 071	AB-HD 38	3.6 – 2.7	90	100	48	15	4.3	13	6.7	8	9.3	x	x		x	
new 07 171 124	ABI-HD 38															x
07 051 072	AB-HD 45	3.3 – 2.5	100	150	72	17	4.9	14	7.2	8	9.3	x	x	x	x	
new 07 171 125	ABI-HD 45															x
07 051 062	AB-HD 50	3.2 – 2.4	120	270	130	18	5.2	15	7.7	8	9.3			x	x	
new 07 171 126	ABI-HD 50															x
07 051 063	AB-HD 50-1.6	3.2 – 2.4	120	360	172	18	5.2	15	7.7	8	9.3		x	x	x	
07 051 060	AB-HD 50-2	3.2 – 2.4	120	450	215	18	5.2	15	7.7	8	9.3			x	x	
new 07 171 127	ABI-HD 50-2															x
				Values in nominal load range at 960 min⁻¹ and sw of 8 mm		Acceleration > 9.3 g is not recommended						Material structure				

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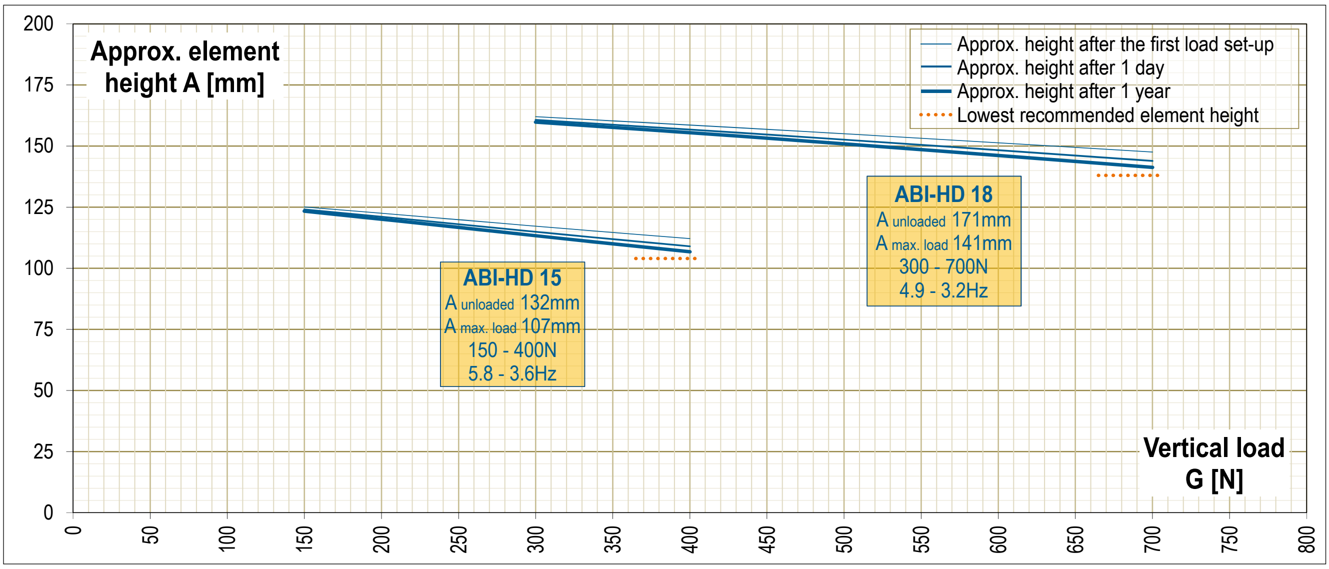
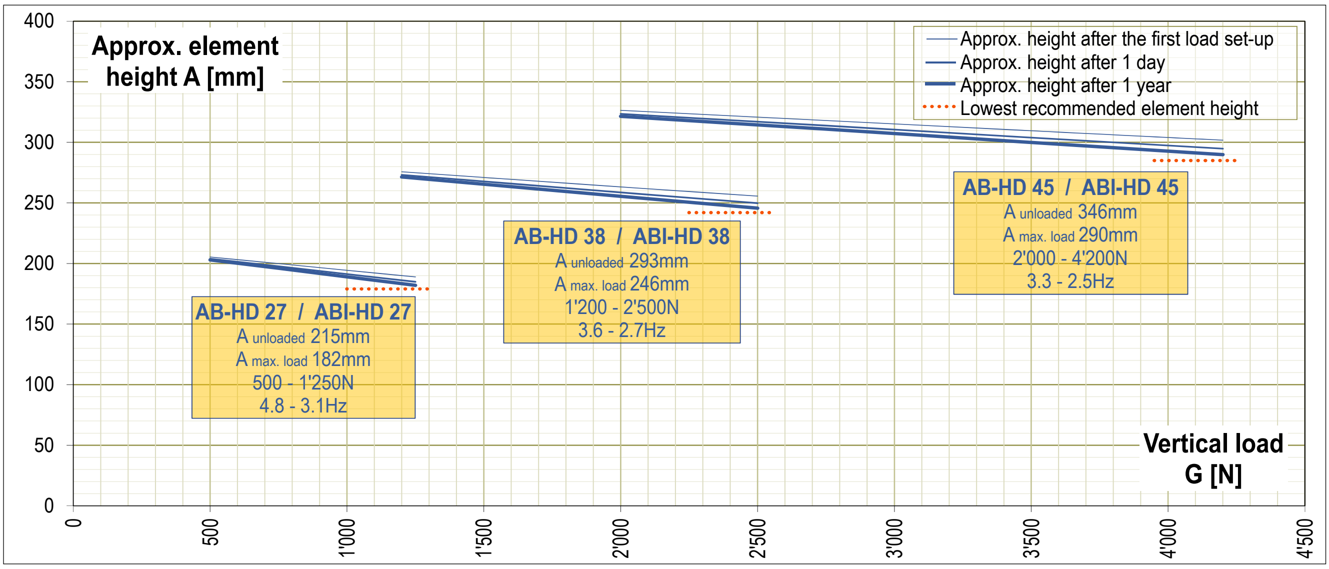
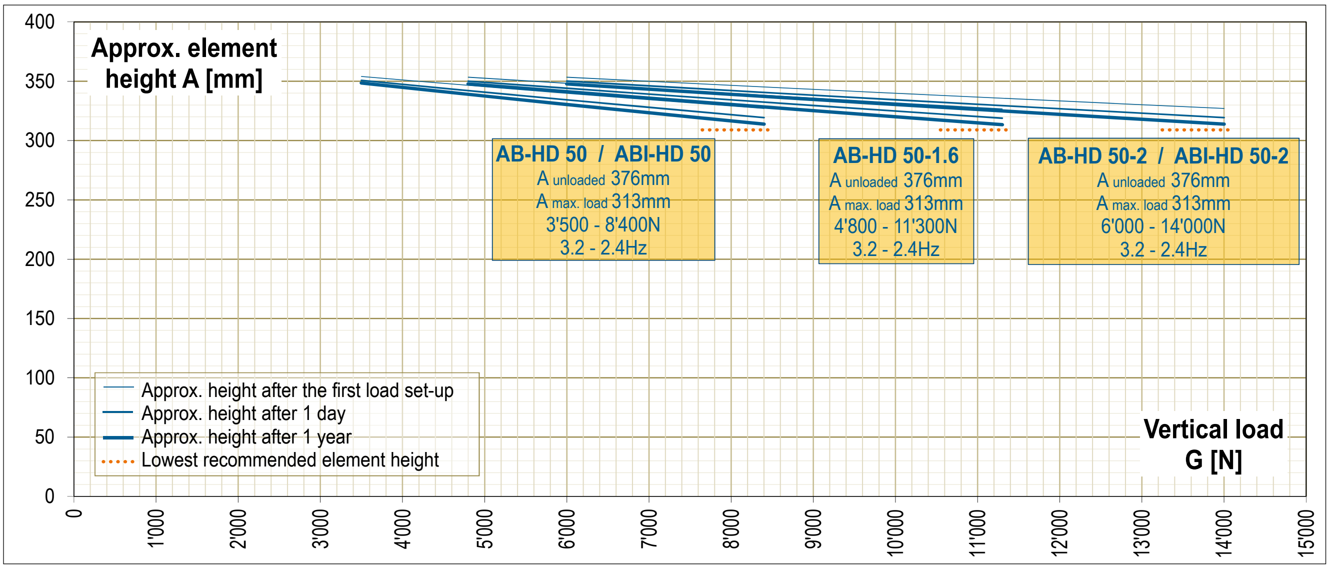
Please find elements for higher load capacities on page 2.17.
* compression load Gmax. and cold flow compensation (after approx. 1 year).

Element heights and cold flow behaviour AB-HD and ABI-HD







Oscillating Mountings

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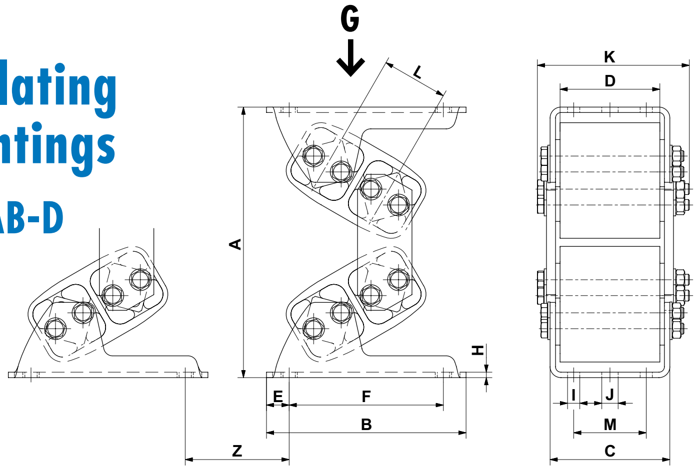
Oscillating Mountings

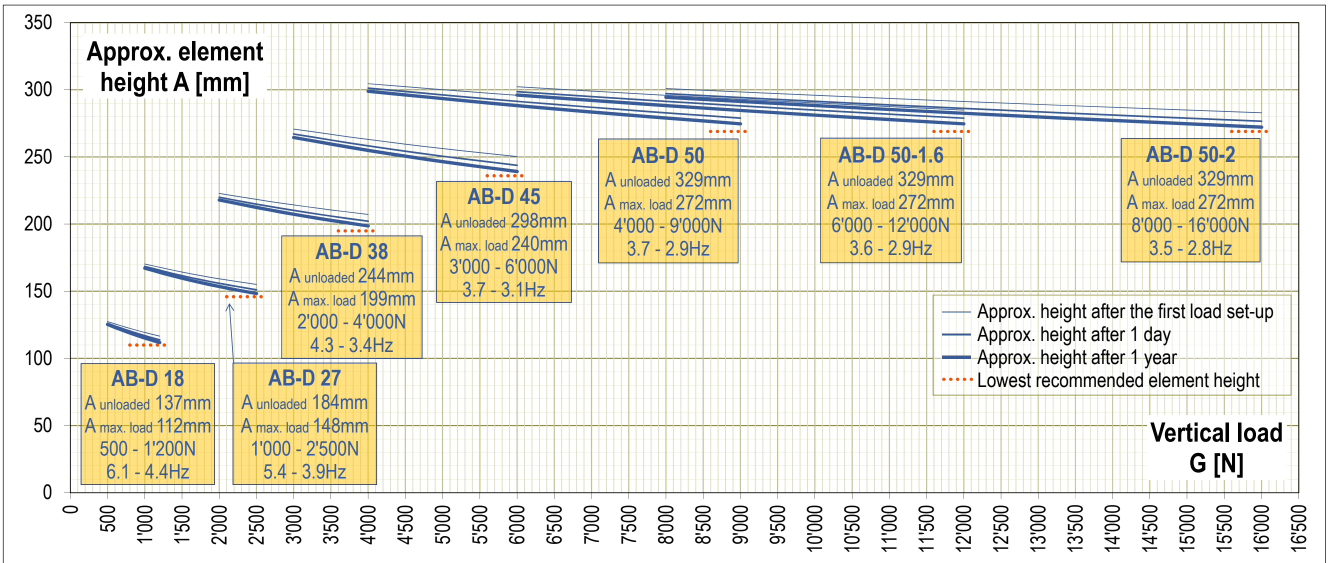
Type AB-D



Art. No.	Type	Load capacity Gmin. – Gmax. [N]	A un-loaded	A* max. load	B	C	D	E	F	H	I	J	K	L	M	Weight [kg]
07 281 000	AB-D 18	500 – 1'200	137	112	115	61	50	12.5	90	3	9	9	74	31	30	1.3
07 281 001	AB-D 27	1'000 – 2'500	184	148	150	93	80	15	120	4	9	11	116	44	50	2.9
07 281 002	AB-D 38	2'000 – 4'000	244	199	185	118	100	17.5	150	5	11	13.5	147	60	70	7.5
07 281 003	AB-D 45	3'000 – 6'000	298	240	220	132	110	25	170	6	13.5	18	168	73	80	11.5
07 281 004	AB-D 50	4'000 – 9'000	329	272	235	142	120	25	185	6	13.5	18	166	78	90	22.0
07 281 005	AB-D 50-1.6	6'000 – 12'000	329	272	235	186	160	25	185	8	13.5	18	214	78	90	25.5
07 281 006	AB-D 50-2	8'000 – 16'000	329	272	235	226	200	25	185	8	13.5	18	260	78	90	29.0

Art. No.	Type	Natural frequency Gmin.–Gmax. [Hz]	Z	Dynamic spring value: cd vertical [N/mm]	cd at sw [mm]	cd horizontal [N/mm]	Capacity limits by different rpm: 720 min^{-1} sw max. [mm]	720 min^{-1} K max. [–]	960 min^{-1} sw max. [mm]	960 min^{-1} K max. [–]	1440 min^{-1} sw max. [mm]	1440 min^{-1} K max. [–]	Light metal profile	Steel plate	Nodular cast iron	ROSTA blue painted
07 281 000	AB-D 18	6.1–4.4	30	100	4	20	5	1.4	5	2.6	4	4.6	x	x		x
07 281 001	AB-D 27	5.4–3.9	35	160	4	35	7	2.0	6	3.1	5	5.8	x	x		partial
07 281 002	AB-D 38	4.3–3.4	40	185	6	40	9	2.6	8	4.1	6	7.0	x	x		partial
07 281 003	AB-D 45	3.7–3.1	55	230	8	70	11	3.2	9	4.6	7	8.1	x	x		partial
07 281 004	AB-D 50	3.7–2.9	55	310	8	120	12	3.5	10	5.2	8	9.3	x	x	x	x
07 281 005	AB-D 50-1.6	3.6–2.9	55	430	8	160	12	3.5	10	5.2	8	9.3	x	x	x	x
07 281 006	AB-D 50-2	3.5–2.8	55	540	8	198	12	3.5	10	5.2	8	9.3	x	x	x	x
				Values in nominal load range at 960 rpm			Acceleration > 9.3 g is not recommended						Material structure (zinc-plated couplings)			

Element heights and cold flow behaviour AB-D



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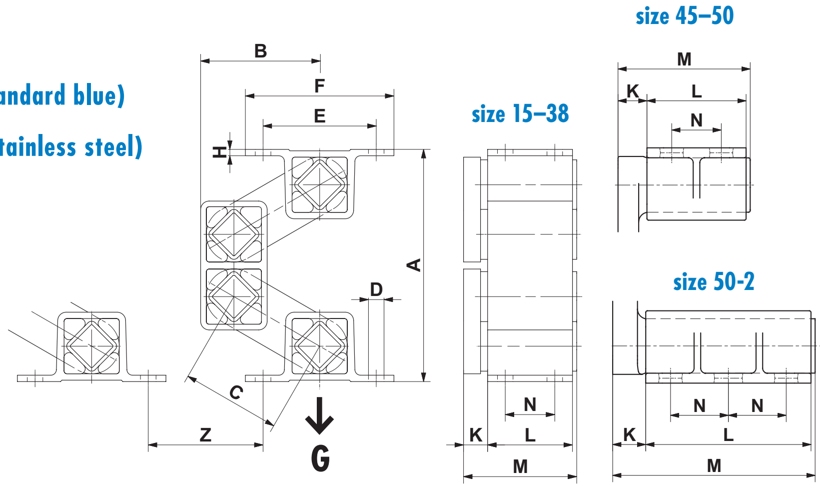
* compression load Gmax. and cold flow compensation (after approx. 1 year).

Oscillating Mountings

Type HS for hanging screens (standard blue)
Type HSI for hanging screens (stainless steel)



Art. No.	Type	Load capacity Gmin. – Gmax. [N]	A un-loaded	A* max. load	B un-loaded	B* max. load	C	D	E	F	H	K	L	M	N	Weight [kg]
new 07 321 101	**HSI 15**	150 – 400	99	125	53	42	45	ø7	50	65	3	10	40	52	25	0.8
new 07 321 102	**HSI 18**	300 – 700	127	159	69	56	60	ø9	60	80	3.5	14	50	67	30	1.5
07 311 001	**HS 27**	500 – 1'250	164	202	84	68	70	ø11	80	105	4.5	17	60	80	35	1.6
new 07 321 103	**HSI 27**															3.4
07 311 002	**HS 38**	1'200 – 2'500	223	275	114	92	95	ø13	100	125	6	21	80	104	40	4.9
new 07 321 104	**HSI 38**							13x20								7.3
07 311 003	**HS 45**	2'000 – 4'200	265	325	138	113	110	13x26	115	145	8	28	100	132	58	11.3
new 07 321 105	**HSI 45**				134	109										13.6
07 311 004	**HS 50**	3'500 – 8'400	288	357	148	118	120	17x27	130	170	12	40	120	165	60	20.4
new 07 321 106	**HSI 50**															22.3
07 311 005	**HS 50-2**	6'000 – 14'000	288	357	148	118	120	17x27	130	170	12	45	200	250	70	32.4
new 07 321 107	**HSI 50-2**															35.8

Art. No.	Type	Natural frequency Gmin. – Gmax. [Hz]	Z	Dynamic spring value: cd vertical [N/mm]	cd horizontal [N/mm]	Capacity limits by different rpm: 720 min^{-1} sw max. [mm]	720 min^{-1} K max. [–]	960 min^{-1} sw max. [mm]	960 min^{-1} K max. [–]	1440 min^{-1} sw max. [mm]	1440 min^{-1} K max. [–]	Light metal profile	Steel welded construction	Nodular cast iron	ROSTA blue painted	Stainless steel casting
new 07 321 101	**HSI 15**	5.2–4.7	35	17	10	8	2.3	7	3.6	5	5.8					x
new 07 321 102	**HSI 18**	4.5–4.0	50	30	19	10	2.9	9	4.6	7	8.1					x
07 311 001	**HS 27**	4.2–3.8	60	65	32	12	3.5	10	5.2	8	9.3	x	x		x	
new 07 321 103	**HSI 27**															x
07 311 002	**HS 38**	3.6–3.3	90	95	46	15	4.3	13	6.7	8	9.3	x	x		x	
new 07 321 104	**HSI 38**															x
07 311 003	**HS 45**	3.3–3.0	100	142	70	17	4.9	14	7.2	8	9.3	x	x	x	x	
new 07 321 105	**HSI 45**															x
07 311 004	**HS 50**	3.2–2.9	120	245	120	18	5.2	15	7.7	8	9.3			x	x	
new 07 321 106	**HSI 50**															x
07 311 005	**HS 50-2**	3.2–2.9	120	410	200	18	5.2	15	7.7	8	9.3			x	x	
new 07 321 107	**HSI 50-2**															x
				Values in nominal load range at 960 min^{-1} and sw of 8 mm		Acceleration > 9.3 g is not recommended						Material structure				

CE for HS 50 according 2006/42/EG (hanging load bearing capacities)

The HS Mountings shall be fastened with the foreseen amount of screws (existing fixation holes or slots) of quality 8.8 with consideration of the prescribed fastening torque.

* tensile load Gmax. and cold flow compensation (after approx. 1 year).

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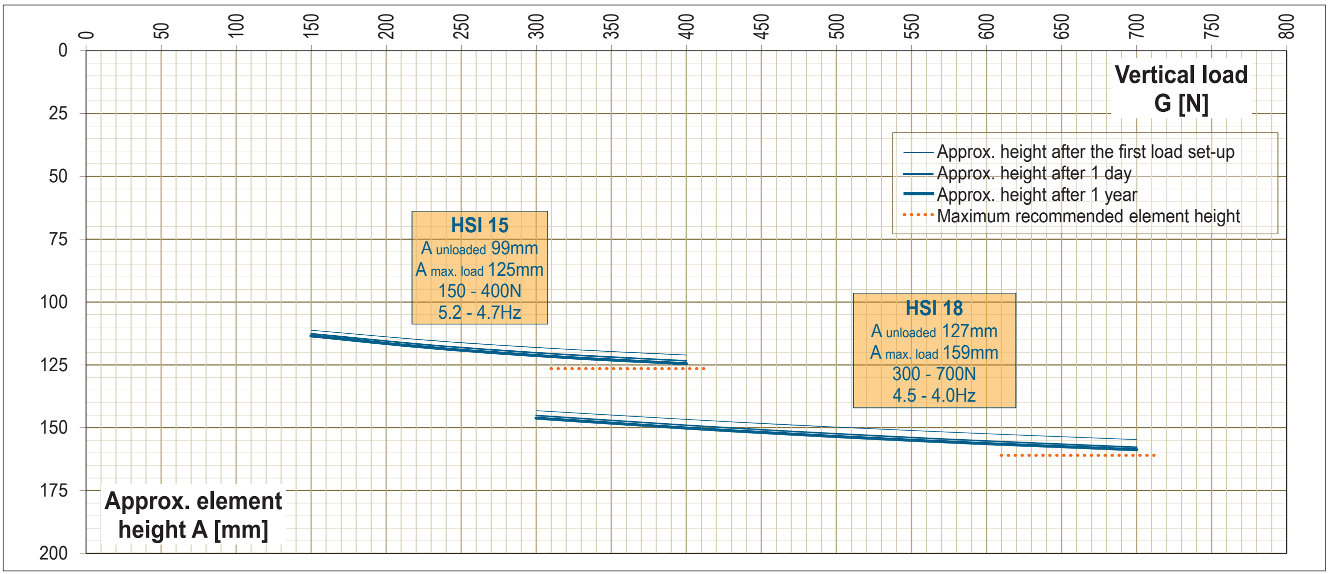
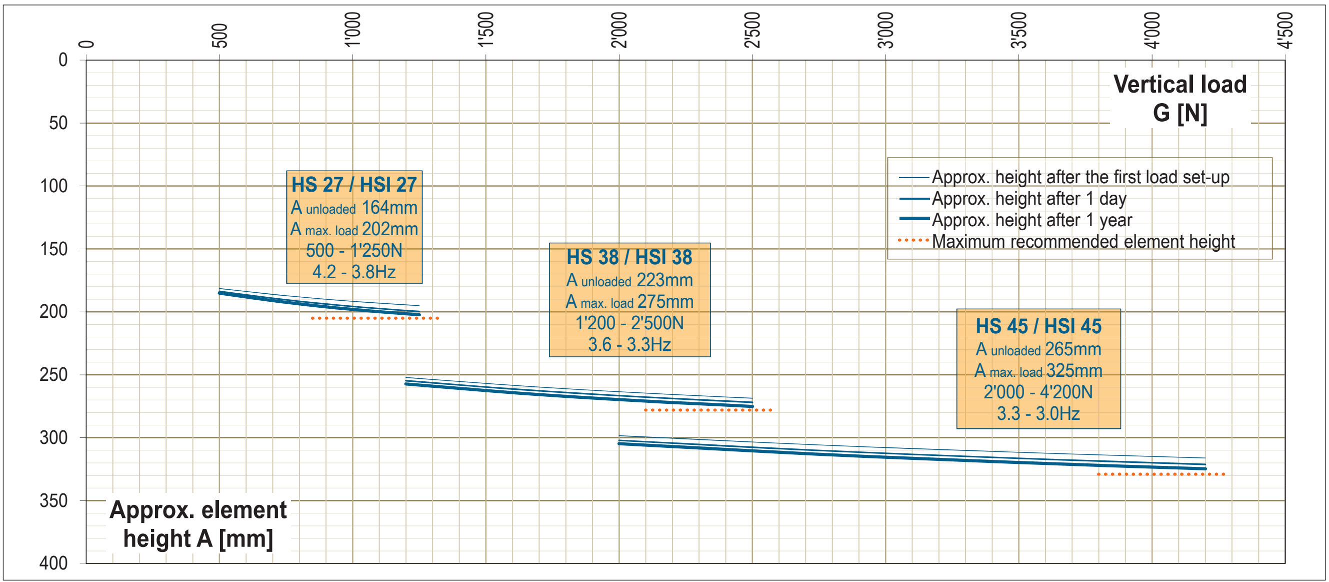
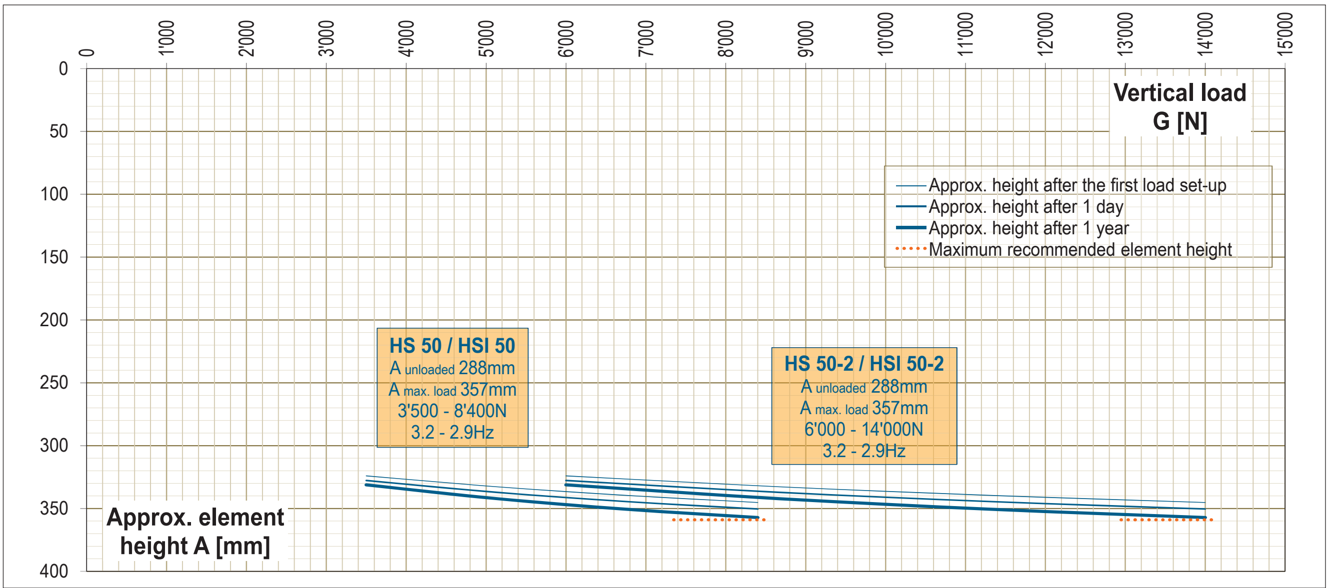
Element heights and cold flow behaviour HS and HSI







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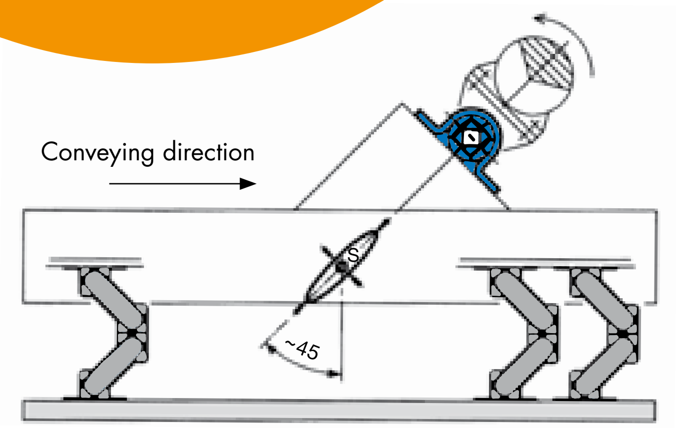
ROSTA Oscillating Mountings and Accessories for individual Customer Solutions

Pendulum joint, the cost-efficient drive solution with only one unbalanced motor

If a single vibration motor is built onto an elastic pendulum joint (e.g. a DK element), the device will carry out a slightly elliptical oscillation shape (linear movement). The final oscillation motion is dependent on the distance between pendulum axis and motor axis. The pendulum suspension has only been used on rather smaller feeding devices. The inclination angle of the motor configuration is approx. 45°.



ROSTA components for pendulum mounts are mentioned in the general catalogue "Rubber suspension units".

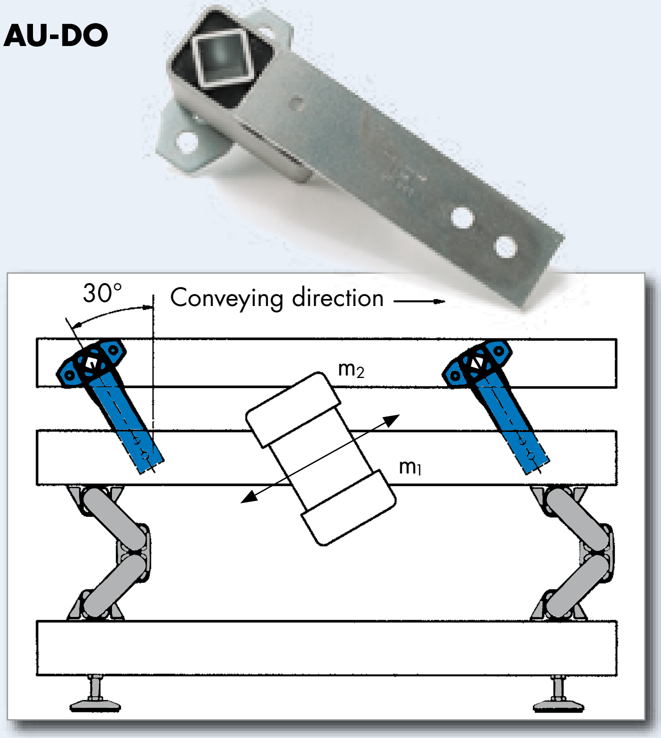
Allocation table

Art. No. DK	Type	Centrifugal force max.	Number of brackets	Type	Art. No. BK
01 071 008	**DK-A 27 x 60**	1'000 N	1	**BK 27**	01 520 004
01 071 011	**DK-A 38 x 80**	2'000 N	2	**BK 38**	01 520 005
01 071 014	**DK-A 45 x 100**	3'500 N	2	**BK 45**	01 520 006
01 071 015	**DK-A 45 x 150**	5'250 N	3	**BK 45**	01 520 006
01 071 017	**DK-A 50 x 200**	10'000 N	3	**BK 50**	01 520 007
01 071 018	**DK-A 50 x 300**	15'000 N	4	**BK 50**	01 520 007

Suspensions of spiral or coil feeders

Spiral-shaped conveyors are used in processing systems where bulk goods should stay on the conveying trough in the smallest possible space for a long period in order to cool down or dry. Not infrequently, the resulting channel length can be 25–30 meters in a spiral tower that is only five meters high! With a spiral conveyor supported on ROSTA Oscillating Mountings Type AB-D, there is no need for additional fall-prevention devices such as cable bracings or securing pipes in the spiral, as is the case for helical spring supports. If a spring breaks here, the complete spiral tower tilts – unless it has been secured with cable bracings.
ROSTA AB-D suspensions offer a high isolation effect, clearly defined oscillations up to the topmost spiral and absolute stability for the spiral tower.

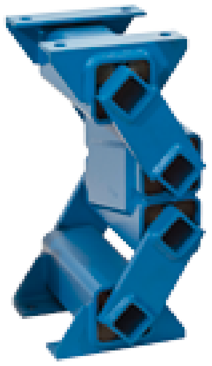
AU-DO

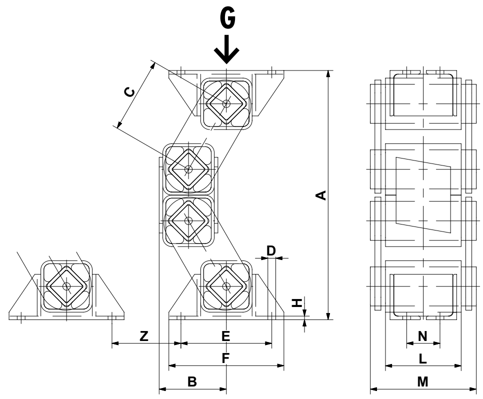


The AU-DO rocker suspensions have been mainly developed for the channel support in continuously loaded, base frame excited two-mass oscillation systems with unbalanced drive (energetic amplification). The base frame m_1 is excited by means of unbalanced motors and the spring accumulators of the AU-DO rocker suspensions amplify the marginal frame oscillation amplitude into a considerable throw amplitude on the conveying channel m_2. The base frame is ideally supported on ROSTA Oscillating Mountings Type AB. These systems are characterised by low, hardly measurable residual force transmission into the substructure and are therefore suitable for installation on steel frameworks and intermediate floors in processing buildings. Additional customer benefits are the low-noise operation, the low involved motor power and the simple installation.

The AU-DO elements are available in 5 sizes.
We will be glad to calculate your specific system, please ask for our relevant questionnaire.

Customized Oscillating Mountings Type AB-HD with low natural frequency and high load capacity





Art.-No.	Type	Load capacity Gmin. – Gmax. [N]	A un-loaded	A* max. load	B un-loaded	B* max. load	C	øD	E	F	H	L	M	N	Weight [kg]
07 051 076	**AB-HD 70-3**	9'000 – 20'000	592	494	160	215	180	22	200	260	9	300	380	200	82
07 051 080	**AB-HD 100-2.5****	15'000 – 37'000	823	676	222	302	250	26	300	380	12	250	350	110	170
07 051 081	**AB-HD 100-4****	25'000 – 60'000	823	676	222	302	250	26	300	380	12	400	500	260	230

Art.-No.	Type	Natural frequency Gmin. – Gmax. [Hz]	Z	Dynamic spring value cd vertical [N/mm]	Dynamic spring value cd horizontal [N/mm]	Capacity limits by different rpm 720 min^{-1} sw max. [mm]	720 min^{-1} K max. [–]	960 min^{-1} sw max. [mm]	960 min^{-1} K max. [–]	1440 min^{-1} sw max. [mm]	1440 min^{-1} K max. [–]	Steel welded construction	ROSTA blue painted
07 051 076	**AB-HD 70-3**	2.4 – 2.1	200	670	320	25	7.3	18	9.3	8	9.3	x	x
07 051 080	**AB-HD 100-2.5****	2.4 – 1.8	250	1150	530	30	8.6	18	9.3	8	9.3	x	x
07 051 081	**AB-HD 100-4****	2.4 – 1.8	250	1840	850	30	8.6	18	9.3	8	9.3	x	x
				Values in nominal load range at 960 rpm and sw of 8 mm		Acceleration > 9.3 g is not recommended						Material structure	

These types can be combined with one another (identical heights and operation behaviour)

* compression load Gmax. and cold flow compensation (after approx. 1 year).
** We will be glad to calculate your specific system, please ask for our relevant questionnaire.

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Washing- and dewatering-screen for vegetables on AB Mountings

Vegetable-feeder on stainless steel ABI Mountings

Selection-screen for potato chips on stainless steel AB Mountings

Washing- and dewatering-screen for vegetables on AB Mountings

Circular motion screen for minerals on AB TWIN Mountings

Circular motion screen for gravel on AB TWIN Mountings

Circular motion screen in mobile crushing plant on AB Mountings

Fluid-bed cooler on AB-D Mountings

Pre-selection screen for gemstone on AB Mountings

Cement screening and feeding device on AB Mountings

Wheat-cleaning plant on AB Mountings

Pasta-feeding channel hanging on HS Mountings

Technology of crank shaft driven shaker conveyors

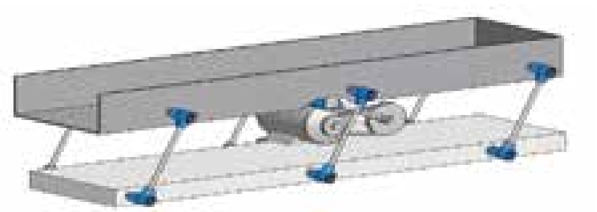
Introduction

Oscillating shaker conveyors with crank shaft drive are widely used for the transportation and selection of bulk material. A shaker conveyor consist of a heavy and (infinitely) stiff designed shaker and/or screening trough, which is supported by several pairs of guiding rocker arms. The rocker arms are also connected with the lower base frame which is anchored in the building foundation by means of tie bolts. The eccentric shaft transmitting the oscillations to the trough is always driven by elastic belt drive to compensate the hits by the dead centers of the crank shaft drive. A driving rod with an elastic drive head connects the crank drive with the base frame of the trough and transmits the required oscillations for the transport of the bulk material on the feeder. According to the length, stiffness and weight of the shaker trough several pairs of supporting and guiding rocker arms are required between base frame and conveyor.

Relatively **slow** acting oscillating conveyors are usually designed as positive movement systems ("brute-force" systems) transmitting the high reaction forces of the crank reverse motion into the building foundation. Faster running shaker conveyors with crank shaft drive are therefore usually designed as two mass systems with direct compensation of the reaction forces by the counter-mass hanging at the lower end of so said double rocker arms directly underneath the trough mass ("fast-runner" systems).

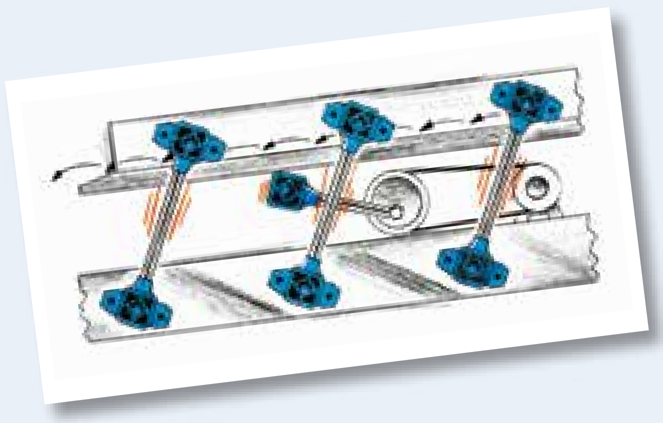
To achieve a very "smooth" course of motions on **fast** acting shaker conveyors based on one or two masses the installation of additional **spring accumulators** offering an actuation of the shaker system close by the resonance frequency ("natural frequency" systems) is recommended. These pre-loaded spring accumulators compensate the hard hits of the crank shaft drive at the dead centers and are heavily supporting the eccentric trough motion with their high dynamic stiffness.

One mass shaker conveyor systems without spring accumulators

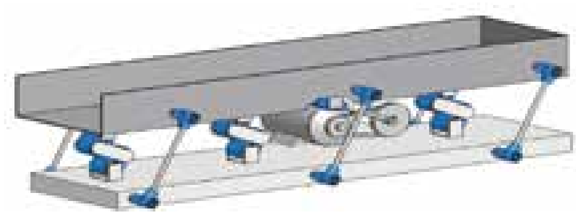
Design	Characteristics	ROSTA elements
 "brute-force" system as basic version	acceleration: **1.1 to 1.7 g-forces** conveying speed: **6 to 15 m/min** trough lengths: **max. 12 to 15 meters**	oscillating mountings: **AU, AS-P, AS-C, AR** drive heads: **ST**

The "brute-force" shaker conveyor system is widely used in the processing industries due to its constructive simplicity and cost efficient design method. It characterizes by a massive feeding trough mounted on several pairs of guiding rocker arms connected with a ground frame and driven by a crank shaft system. The relatively low costs for the design and construction of this feeding system are favouring this standard shaker for the use in many processing operations where rather low material speeds are fully adequate. Too high speeds and too long strokes would generate in this one mass system too high shocks by the change in direction of the crank shaft drive. Therefore, accelerations of >1,7 g-forces are not applicable with this "brute-force" shaker.

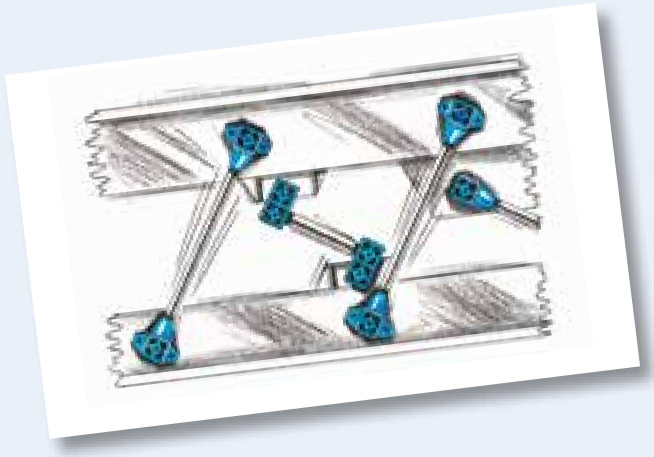
To avoid high material fatigue stress on the trough structure, the relevant design should feature heavy stiffening rips and border strips to make the feeding channel more or less "infinitely" stiff. One mass shaker conveyors have to be bolted down on the foundations by means of tie anchors.



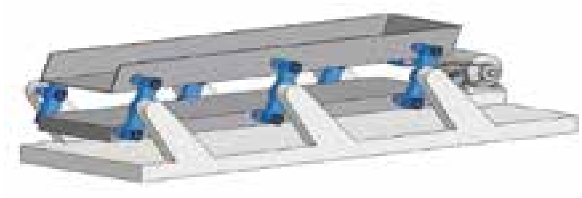
One mass shaker conveyor systems equipped with spring accumulators

Design	Characteristics	ROSTA elements
 "natural frequency" system offering smooth course	acceleration: **1.1 to 2.2 g-forces** conveying speed: **6 to 22 m/min** trough lengths: **up to 20 meters**	oscillating mountings: **AU, AS-P, AS-C, AR** drive heads: **ST** spring accumulators: **DO-A elements**

These "natural frequency" feeding system generally shows the same constructive design like the "brute-force" shaker, but is disposed with additional spring accumulator sets installed between trough structure and ground frame in order to reduce the hard hits by the change in direction of the crank shaft drive. Furthermore, due to the high dynamic stiffness of the spring accumulator sets, the course of motions of the trough becomes harmonic, energy-saving and gentle avoiding material stress and early fatigue cracks on the structure. This system runs very silent due to the permanent, bidirectional spring action support at the stroke ends. The max. acceleration of this one mass system should not exceed 2.2 g-forces. The quantity and size of the required spring accumulators depends on the trough weight and the relevant rpm's of the crank shaft drive.

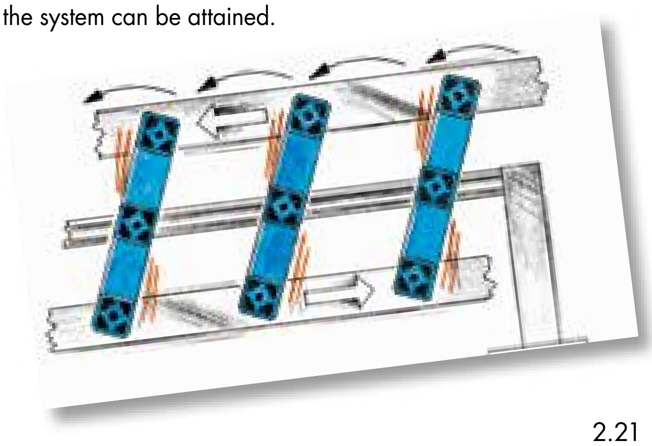


Two mass shaker conveyor systems with direct reaction force-compensation

Design	Characteristics	ROSTA elements
 "fast-runner" system offering high capacities	acceleration: **1.5 to 5.0 g-forces** conveying speed: **10 to 45 m/min** trough lengths: **up to 25 meters**	oscillating mountings: **AD-P, AD-C, AR** drive heads: **ST** spring accumulators: **additional DO-A elements**

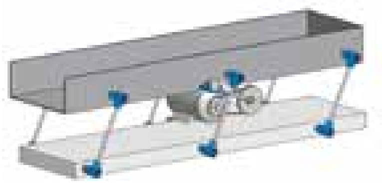
This system is the "fast-runner" among the crank shaft driven shaker conveyors offering a very high material throughput. The lower counter-mass frame, directly connected with the feeding trough by means of ROSTA double rocker arms, fully compensates the resulting inertia forces of the mass 1 (trough) provided that its overall weight is identical with the trough weight. The upper shaker trough and also the counter-mass frame (or trough) offer a **procedural** field of applications. Both are feeding bulk material in the same direction; e.g. adding a sieve fraction in the upper trough bottom the small particles are sorted out and drop on the lower counter-mass or counter-trough being also shaken to the discharge-end of the machine.

For the most part, these two mass high-speed shaker conveyors are designed as smooth running "natural frequency" systems. Adding a quantitatively sufficient number of double rocker arms between trough, machine frame and counter-mass, the resulting high dynamic stiffness of the elastic suspensions keeps the shaker machine running close to the natural frequency of the rocker arms. Otherwise, also by installing some additional DO-A spring accumulators between machine frame and trough or between machine frame and counter-mass a natural frequency acting of the system can be attained.



Technology

1. One mass systems without spring accumulators: Calculation



	Subject	Symbol	Example	Unit
Length, weight	Trough length	L	2.5	m
	Weight empty trough	m_0	200	kg
	Weight of feeding material		50	kg
	Material coupling factor 50% *	m_m	25	kg
	Weight of oscillating mass *	$m = m_0 + m_m$	225	kg
Drive parameter	Eccentric radius	R	12	mm
	Stroke	$sw = 2 \cdot R$	24	mm
	Rpm on trough	n_s	340	min^{-1}
	Gravity acceleration	g	9.81	m/s^2
	Oscillating machine factor	K	1.6	
	Acceleration	$a = K \cdot g$	1.6	g
	Total spring value of system	c_t	285	N/mm
Rocker arms	Distance between rockers max.	L_{max}	1.5	m
	Quantity of rockers	z	6	
	Load per rocker	G	368	N
	Selection osc. elements (e. g.)		**12x AU 27**	
	Selection ROSTA-elements: AU, AR, AS-P, AS-C			
	Center distance of elements	A	200	mm
Drive	Acceleration force	F	3423	N
	Selection drive head		**1x ST 45**	
	Drive capacity approx.	P	1.0	kW
Spring value of natural frequency shaker	Dynamic torque	Md_d	2.6	Nm/°
	Dynamic spring value per rocker	c_d	7.4	N/mm
	Dynamic spring value of all rockers	$z \cdot c_d$	44.7	N/mm
	Resonant ability factor	i	0.16	

* the following factors have to be considered by the definition of the material coupling:
- high coupling factor or sticking of wet and humid material
- possible stemming of the trough

Calculation formulas

Oscillating machine factor

$$K = \frac{\left(\frac{2\pi}{60} \cdot n_s\right)^2 \cdot R}{g \cdot 1000} = \frac{n_s^2 \cdot R}{894'500} \quad [-]$$

Total spring value of system

$$c_t = m \cdot \left(\frac{2\pi}{60} \cdot n_s\right)^2 \cdot 0.001 \quad [\text{N/mm}]$$

Minimum quantity of rockers

$$z = \left(\frac{L}{L_{max}} + 1\right) \cdot 2 \quad [-]$$

Load per rocker

$$G = \frac{m \cdot g}{z} \quad [\text{N}]$$

Acceleration force (ST selection)

$$F = m \cdot R \cdot \left(\frac{2\pi}{60} \cdot n_s\right)^2 \cdot 0.001 = c_t \cdot R \quad [\text{N}]$$

Drive capacity approx.

$$P = \frac{F \cdot R \cdot n_s}{9550 \cdot 1000 \cdot \sqrt{2}} \quad [\text{kW}]$$

Dynamic spring value per rocker

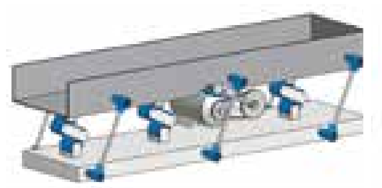
$$c_d = \frac{Md_d \cdot 360 \cdot 1000}{A^2 \cdot \pi} \quad [\text{N/mm}]$$

Resonant ability factor

$$i = \frac{z \cdot c_d}{c_t} \quad [-]$$

By a resonant ability factor $i \geq 0{,}8$ the system is usually titled "natural frequency shaker".

2. One mass system with spring accumulators: Calculation



Calculation analog chapter 1 with following additions:

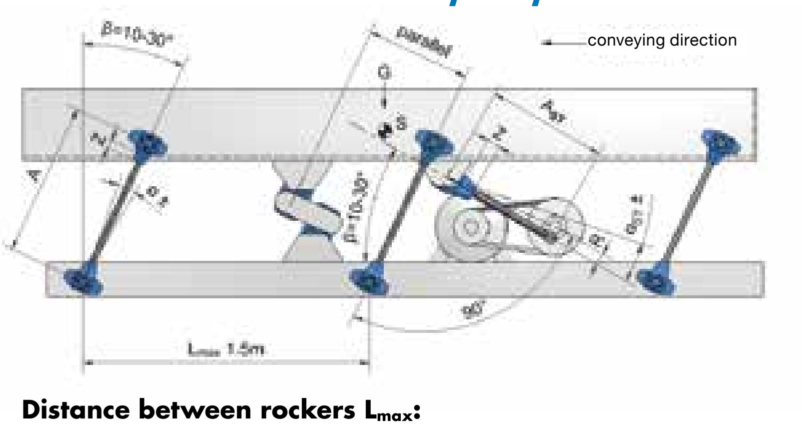
	Subject	Symbol	Example	Unit
Spring accumulators	Quantity	z_s	2	
	Dynamic spring value per item	c_s	100	N/mm
	Dynamic spring value of all items	$z_s \cdot c_s$	200	N/mm
	Resonant ability factor	i_s	0.86	
	Selection of accumulators	**2x cons. of 2x DO-A 45 x 80**		

Resonant ability factor with accumulators

$$i_s = \frac{z \cdot c_d + z_s \cdot c_s}{c_t} \quad [-]$$

By a resonant ability factor $i_s \geq 0.8$ the system is usually titled "natural frequency shaker".

3. One mass shaker conveyor systems: Installation instructions



Distance between rockers L_{max}:

- Usually, the distance between the rocker arms on the trough alongside is up to 1.5 meters, depending on the stiffness of the trough.
- By trough widths >1.5 m we do recommend to provide the trough bottom side with a third, centrical row of rocker arms for stability reasons.

Mounting position drive head ST:

For one mass shaker systems it is recommendable to position the drive head slightly ahead of the center of gravity of the trough, towards the discharge end.

Rocker mounting angle β:

According to the relevant processing function of the shaker conveyor, the rocker arms are positioned at mounting angles between 10° to 30° in relation to the perpendicular line. (The ideal combination of fast conveying speed with high material throw is given by a rocker inclination angle of 30°.) The power input position of the drive-rod from the eccentric drive should stay at right angles to the rocker arms, this orthogonal positioning offers a harmonic course of the drive system.

Angle of oscillation α:

The machine parameters, angle of oscillation and revolutions should be determined in the admissible area of operations (see chapter 5).

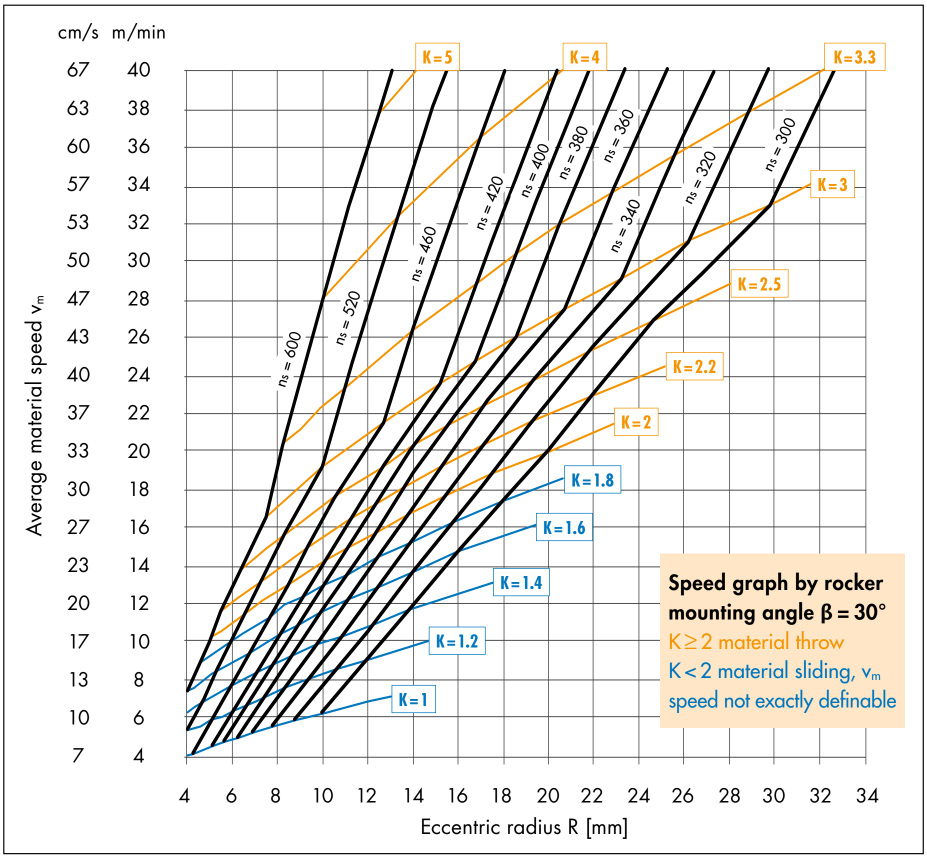
Screw quality:

The screw quality should be grade 8.8 secured by the required tightening moment.

Depth of thread engagement Z:

The depth of engagement should be at least 1.5 x the thread nominal width.

4. Average material speed on shakers v_m



Main influence factors

- layer height of material
- property trough bottom (slip-resistance)
- mounting angle β of the rockers
- feeding capability of the material depending on size, form and humidity of the grains, e.g. very dry and fine grained material is submitted to slippage factors up to 30%.

Example: One mass system with eccentric drive

Out of the intersection point **R = 12 mm** and the revolutions **n_s = 340 min^{-1}** is resulting a theoretical material speed of **v_m = 12 m/min** or **20 cm/sec.**

By acceleration factors **K > 2** and rocker mounting angles of **β = 30°** (to the perpendicular line) the vertical acceleration is getting bigger than 1 g, therefore the material starts lifting from the trough bottom = material throw.

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5. Maximum rocker load G, revolutions n_s and angle of oscillation α

Size (e.g. AU 15)	max. load capacity per rocker [N]				max. revolutions n_s [min^{-1}] *	
	K < 2	K = 2	K = 3	K = 4	$\alpha \pm 5°$	$\alpha \pm 6°$
15	100	75	60	50	640	480
18	200	150	120	100	600	450
27	400	300	240	200	560	420
38	800	600	500	400	530	390
45	1'600	1'200	1'000	800	500	360
50	2'500	1'800	1'500	1'200	470	340
60	5'000	3'600	3'000	2'400	440	320

Please contact ROSTA for the permissible load indications by higher accelerations and for rocker elements offering higher load capacities. Usually are the revolutions n_s between 300 to 600 min^{-1} and the oscillation angles max. ±6°.
* basics: "permissible frequencies" in the Technology part of the ROSTA catalogue.

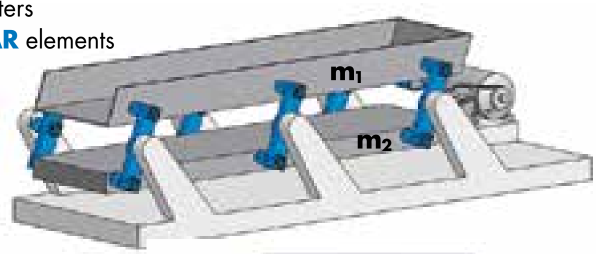
The angle of oscillation α of each oscillating component (rockers accumulators and drive head) has to be settled within the permissible range (n_s and α).

Calculation oscillation angle for rockers

Eccentric radius R [mm]
Center distance A [mm]
Oscillation angle α ± [°]

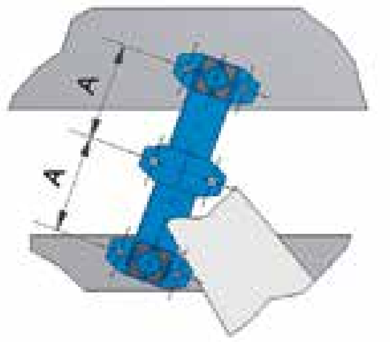
$$\alpha = \arctan\left(\frac{R}{A}\right) [°]$$

6. Two mass shaker systems with direct reaction force-compensation



- Maximum acceleration forces of approx. 5 g, shaker lengths up to 25 meters
- Equipped with ROSTA double rockers **AD-P, AD-C** and/or made out of **AR** elements
- Ideal compensation when $m_1 = m_2$
- Element selection analogue chapter 1, but with load of the two masses:
  Actuated mass (+ material coupling of feeding mass) m_1 [kg]
  Driven mass (+ material coupling of feeding mass) m_2 [kg]
  Total oscillating mass $m = m_1 + m_2$ [kg]

  Dynamic spring value c_d per double rocker $c_d = \dfrac{3 \cdot Md_d \cdot 360 \cdot 1000}{2 \cdot A^2 \cdot \pi}$ [N/mm]



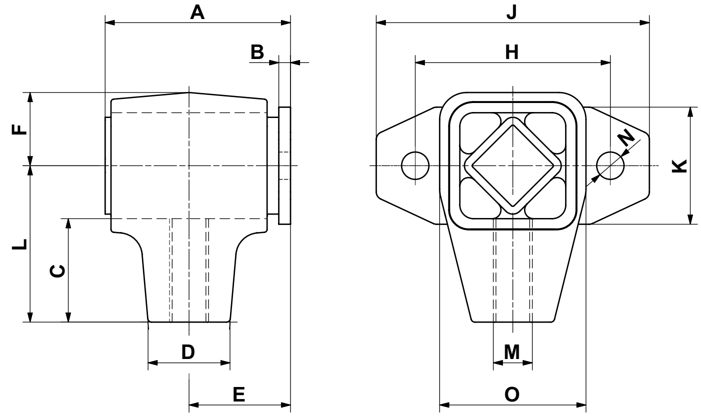
- Calculation of c_t and F based on the total mass (m_1 and m_2)
- Power input from eccentric drive with **ST arbitrary** on m_1 or m_2 at **any point** alongside m_1 or m_2
- On demand, special double rocker arms with varying center distances A are available as "customized rockers"

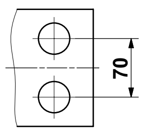
The 9 installation steps for a two mass system with double rocker arms:

1. All fixation holes for the rockers in trough, counter-mass and machine frame have to be drilled very accurately previous the final machine assembling.
2. Installation of the middle elements of the rocker arms on the central machine frame, all inclination angles duly adjusted (e.g. 30°), tightening of the screws with required fastening torque.
3. Lifting of the counter-mass with accurate horizontal alignment until the bores in the counter-mass frame stay congruent with the bore holes of the lower element. Jamming of the counter-mass with e.g. wooden chocks.
4. Tightening of the fixation screws on counter-mass with required fastening torque.
5. Inserting of the feeding trough into machine frame structure. Accurate horizontal alignment until the bores in the trough stay congruent with the bore holes of the upper element. Jamming of the trough with e.g. wooden chocks.
6. Tightening of the fixation screws on trough with required fastening torque.
7. Installation of the driving rod with drive head ST in "neutral" position i.e. eccentric drive should stay in between the two stroke ends. Length adjustment of the driving rod and tightening of the counternuts.
8. Removal of the jamming chocks under counter-mass and trough.
9. Test start of the shaker conveyor.

Oscillating Mountings

Type AU





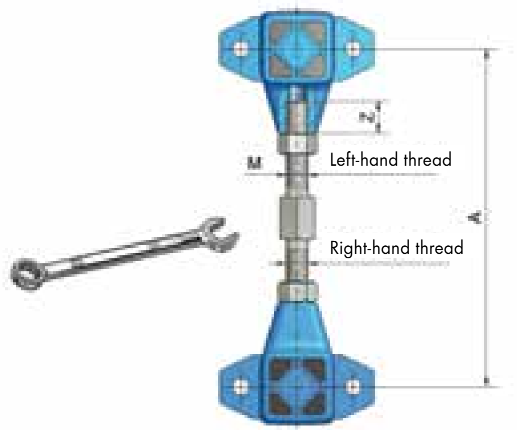
Fixation flange
AU 60

Art. No.	Type	G [N] K<2	Mdd [Nm/°]	A	B	C	□D	E	F	H	J	K	L	M	øN	O	Weight [kg]	Material structure	
07 011 001	**AU 15**	100	0.44	50	4	29	20	28	17	50	70	25	40	M10	7	33	0.2	Light metal casting	Steel welded construction, ROSTA blue painted
07 021 001	**AU 15L**													M10-LH					
07 011 002	**AU 18**	200	1.32	62	5	31.5	22	34	20	60	85	35	45	M12	9.5	39	0.4		
07 021 002	**AU 18L**													M12-LH					
07 011 003	**AU 27**	400	2.6	73	5	40.5	28	40	27	80	110	45	60	M16	11.5	54	0.7		
07 021 003	**AU 27L**													M16-LH					
07 011 004	**AU 38**	800	6.7	95	6	53	42	52	37	100	140	60	80	M20	14	74	1.6		
07 021 004	**AU 38L**													M20-LH					
07 011 005	**AU 45**	1'600	11.6	120	8	67	48	66	44	130	180	70	100	M24	18	89	2.6		
07 021 005	**AU 45L**													M24-LH					
07 011 006	**AU 50**	2'500	20.4	145	10	69.5	60	80	47	140	190	80	105	M36	18	93	6.7	Nodular cast	
07 021 006	**AU 50L**													M36-LH					
07 011 007	**AU 60**	5'000	38.2	233	15	85	80	128	59	180	230	120	130	M42	18	116	15.7		
07 021 007	**AU 60L**													M42-LH					

G = max. load in N per element or rocker, by higher accelerations K, consult chapter 5 on page 2.24.
Mdd = dynamic element torque in Nm/° by oscillation angles α ±5° in speed range of n_S = 300 – 600 min^{-1}.

Connection rod

All connection rods have to be provided by the customer. It is recommendable to use rods with right-hand and left-hand threaded fixation stubs and also ROSTA AU elements with right-hand and left-hand threads. In this combination the rocker length or center distance can be adjusted infinitely. In using only right-hand threaded rods, the final length adjustment of the rockers is less accurate – especially by the fine tuning of the shaker course it requires an exact length adjustment of all rocker arms to avoid lateral sliding of the trough.
The center distance A has to be identical by all attached rocker arms. The depth of thread engagement Z has to be at least **1.5x M.**



Further basic information and calculations on pages 2.22 – 2.24.

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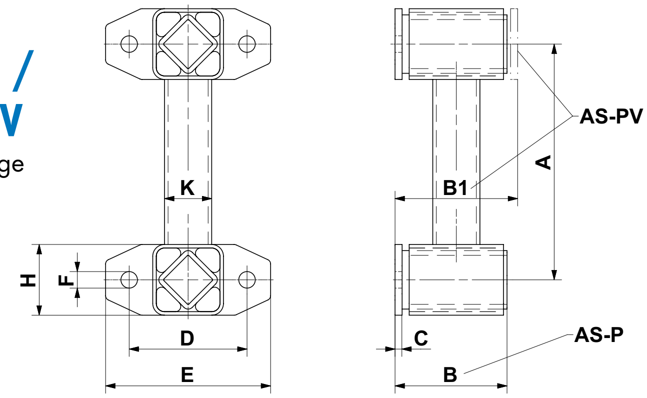
Single Rockers

AS-P / AS-PV

for flange fixation

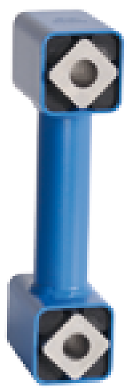


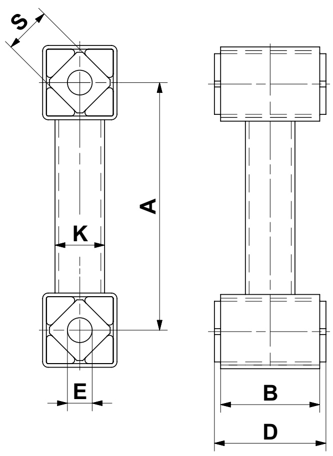
Type AS-PV with inverted flange

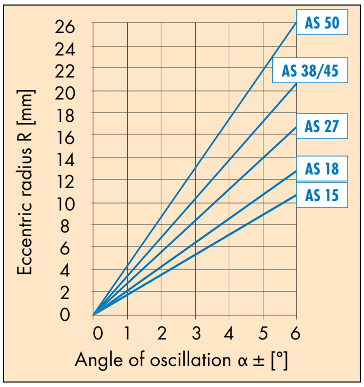
Art. No.	Type	G [N] K<2	Cd [N/mm]	A	B	B1	C	D	E	øF	H	øK	Weight [kg]	Material structure
07 081 001	AS-P 15	100	5	100	50	–	4	50	70	7	25	18	0.5	Steel welded constructions, ROSTA blue painted
07 091 001	AS-PV 15				–	56								
07 081 002	AS-P 18	200	11	120	62	–	5	60	85	9.5	35	24	0.8	
07 091 002	AS-PV 18				–	68								
07 081 003	AS-P 27	400	12	160	73	–	5	80	110	11.5	45	34	1.4	
07 091 003	AS-PV 27				–	80								
07 081 004	AS-P 38	800	19	200	95	–	6	100	140	14	60	40	3.6	
07 091 004	AS-PV 38				–	104								
07 081 005	AS-P 45	1’600	33	200	120	–	8	130	180	18	70	45	5.5	
07 091 005	AS-PV 45				–	132								
07 081 006	AS-P 50	2’500	37	250	145	–	10	140	190	18	80	60	8.3	
07 091 006	AS-PV 50				–	160								

AS-C

for frictional center connection







Art. No.	Type	G [N] K<2	Cd [N/mm]	A	B	$D_{-0.3}^{0}$	øE	øK	□S	Weight [kg]	Material structure Inner square	Material structure Housing
07 071 001	AS-C 15	100	5	100	40	45	10 $^{+0.4}_{+0.2}$	18	15	0.4	Light metal profile	Steel welded construction, ROSTA blue painted
07 071 002	AS-C 18	200	11	120	50	55	13 $^{0}_{-0.2}$	24	18	0.6		
07 071 003	AS-C 27	400	12	160	60	65	16 $^{+0.5}_{+0.3}$	34	27	1.3		
07 071 004	AS-C 38	800	19	200	80	90	20 $^{+0.5}_{+0.2}$	40	38	2.6		
07 071 005	AS-C 45	1’600	33	200	100	110	24 $^{+0.5}_{+0.2}$	45	45	3.9		
07 071 006	AS-C 50	2’500	37	250	120	130	30 $^{+0.5}_{+0.2}$	60	50	6.1		

G = max. load in N per rocker, by higher K consult chapter 5 on page 2.24.

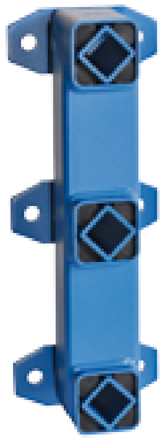
Cd = dynamic spring value by oscillation angles α ±5° in speed range of ns = 300–600 min^{-1}

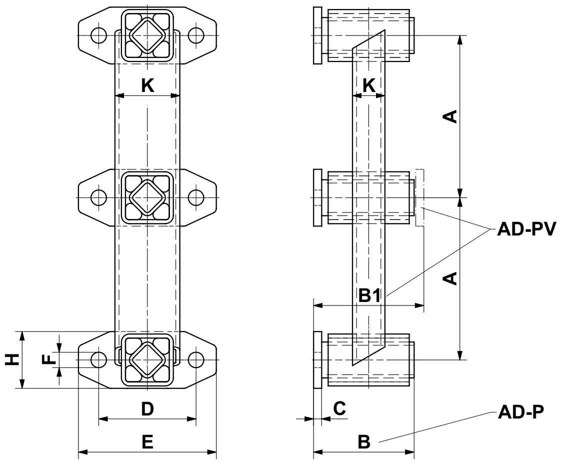
Further basic information and calculations on pages 2.22–2.24.

Double Rockers

AD-P / AD-PV

for flange fixation



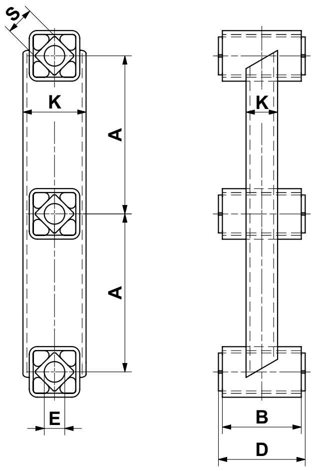


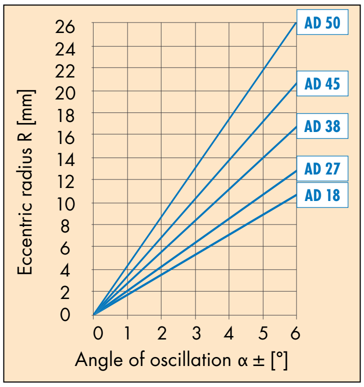
Type AD-PV with inverted flange

Art. No.	Type	G [N] K=2	G [N] K=3	Cd [N/mm]	A	B	B1	C	D	E	øF	H	K	Weight [kg]	Material structure
07 111 001	AD-P 18	150	120	23	100	62	–	5	60	85	9.5	35	40 x 20	1.2	Steel welded constructions, ROSTA blue painted
07 121 001	AD-PV 18					–	68								
07 111 002	AD-P 27	300	240	31	120	73	–	5	80	110	11.5	45	55 x 34	2.6	
07 121 002	AD-PV 27					–	80								
07 111 003	AD-P 38	600	500	45	160	95	–	6	100	140	14	60	70 x 50	5.0	
07 121 003	AD-PV 38					–	104								
07 111 004	AD-P 45	1'200	1'000	50	200	120	–	8	130	180	18	70	80 x 40	8.5	
07 121 004	AD-PV 45					–	132								
07 111 005	AD-P 50	1'800	1'500	56	250	145	–	10	140	190	18	80	90 x 50	12.9	
07 121 005	AD-PV 50					–	160								

AD-C

for frictional center connection





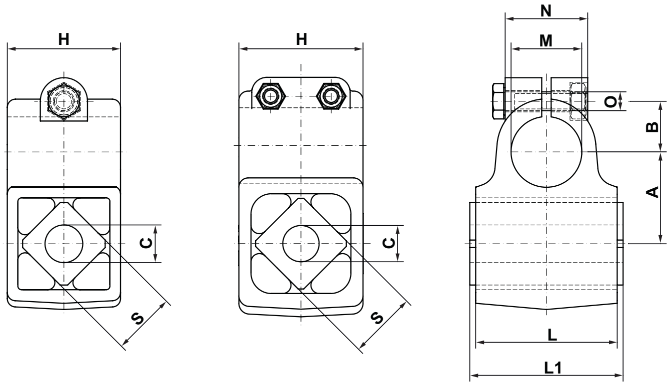
Art. No.	Type	G [N] K=2	G [N] K=3	Cd [N/mm]	A	B	D $_{-0.3}^{0}$	øE	K	□S	Weight [kg]	Material structure Inner square	Material structure Housing
07 101 001	AD-C 18	150	120	23	100	50	55	13 $_{-0.2}^{0}$	40x20	18	0.8	Light metal profile	Steel welded construction, ROSTA blue painted
07 101 002	AD-C 27	300	240	31	120	60	65	16 $_{+0.3}^{+0.5}$	55x34	27	1.8		
07 101 003	AD-C 38	600	500	45	160	80	90	20 $_{+0.2}^{+0.5}$	70x50	38	4.1		
07 101 004	AD-C 45	1'200	1'000	50	200	100	110	24 $_{+0.2}^{+0.5}$	80x40	45	6.1		

G = max. load in N per rocker, by different K consult chapter 5 on page 2.24.
cd = dynamic spring value by oscillation angles α ±5° in speed range of ns = 300–600 min^{-1}

Further basic information and calculations on pages 2.22–2.24.

Oscillating Mountings

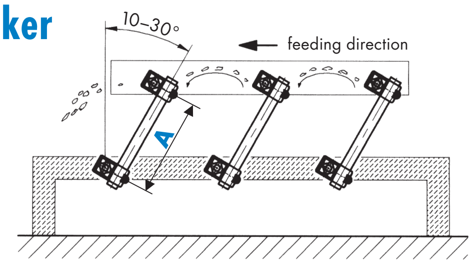
Type AR



Art. No.	Type	G [N] K<2	Mdd [Nm/°]	$A_{\pm 0.2}$	B	ø C	H	L	$L1^{\ 0}_{-0.3}$	ø M	N	O	□S	Weight [kg]	Material structure
07 291 003	**AR 27**	400	2.6	39	21.5	$16^{+0.5}_{+0.3}$	48	60	65	30	35	M8	27	0.5	Light metal profile Light metal casting blue painted
07 291 004	**AR 38**	800	6.7	52	26.5	$20^{+0.5}_{+0.2}$	64	80	90	40	50	M8	38	1.0	
new 07 291 005	**AR 45**	1600	11.6	65	32.5	$24^{+0.5}_{+0.2}$	82	100	110	50	60	M10	45	2.0	

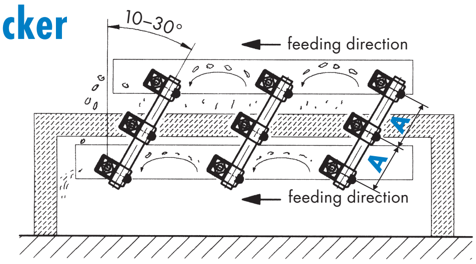
G = max. load in N per rocker, by higher K consult chapter 5 on page 2.24.
Mdd = dynamic element torque in Nm/° by oscillating angles $\alpha \pm 5°$ in speed range of ns = 300–600 min^{-1}

Single Rocker



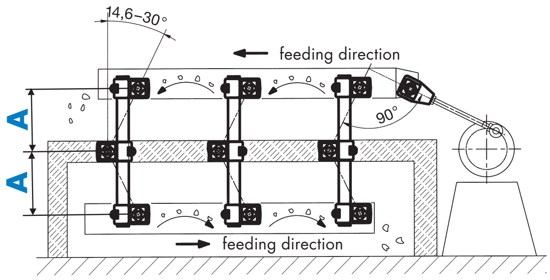
The two AR mounts are inserted on the round connecting tube. The required center distance should be positioned on the straightening plate (parallelism), subsequently tightening of the two collars with the required fastening torque.

Double Rocker



The three AR mountings are inserted on the round connecting tube (please check required material thickness by the relevant center distance on below-mentioned table). The counter-mass can be used as second trough with identical feeding direction.

Two-Way Rocker



The three AR mounts are inserted on the round connecting tube, with the direction inverted center element. This so said "boomerang"-configuration is offering on the counter-mass trough a direction inverted flow of material, what could simplify selection and screening processing.

Dimensioning of the connecting tubes

The connecting tubes have to be provided by the customer. For Single Rockers with AR27 or AR38 the wall thickness of 3 mm up to center distance A = 300 mm is fully sufficient. For Double Rockers see below-mentioned table.

Type	Tube-ø	min. thickness of tube	max. center distance A	min. mounting angle β [°] with two-way rocker
AR 27	30	3 4 5	160 220 300	26.0 19.5 14.6
AR 38	40	3 4 5	200 250 300	27.5 22.6 19.1
AR 45	50	5 8	300 400	23.4 18.0

Further basic information and calculations on pages 2.22–2.24.
By differing center distances A, please consult ROSTA.

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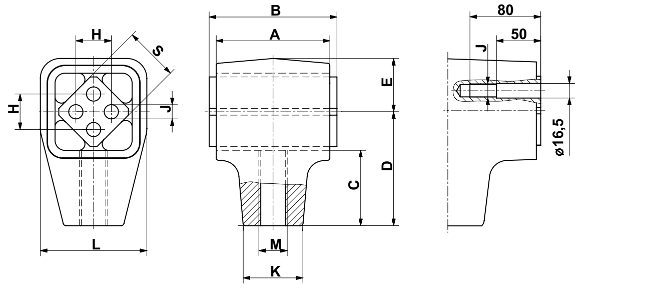
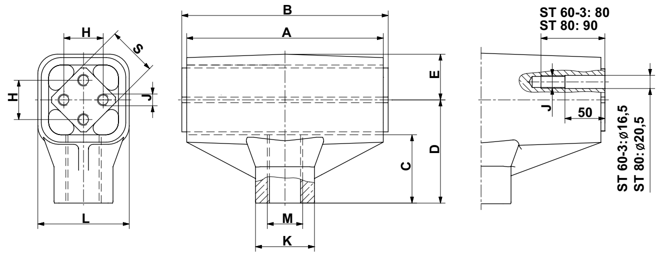
Drive Heads

Type ST





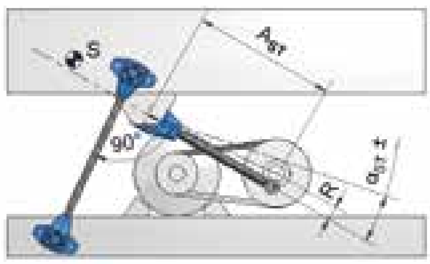
Art. No.	Type	F max. [N]	n_s [min^{-1}] max. α_{ST} ±5°	A	B	C	D	E	H	J $^{+0.5}_{0}$	□K	L	M	□S	Weight [kg]	Material structure			Bolting on inner square
07 031 001	**ST 18**	400	600	50	55 $^{0}_{-0.3}$	31.5	45	20	12 $^{\pm 0.3}$	6	22	39	M12	18	0.2	Light metal casting	Light metal profile	Housing ROSTA blue painted	End-to-end screw or threaded bar quality 8.8
07 041 001	**ST 18L**												M12-LH						
07 031 002	**ST 27**	1'000	560	60	65 $^{0}_{-0.3}$	40.5	60	27	20 $^{\pm 0.4}$	8	28	54	M16	27	0.4				
07 041 002	**ST 27L**												M16-LH						
07 031 003	**ST 38**	2'000	530	80	90 $^{0}_{-0.3}$	53	80	37	25 $^{\pm 0.4}$	10	42	74	M20	38	1.1				
07 041 003	**ST 38L**												M20-LH						
07 031 004	**ST 45**	3'500	500	100	110 $^{0}_{-0.3}$	67	100	44	35 $^{\pm 0.5}$	12	48	89	M24	45	1.8				screw quality 8.8
07 041 004	**ST 45L**												M24-LH						
07 031 005	**ST 50**	6'000	470	120	130 $^{0}_{-0.3}$	69.5	105	47	40 $^{\pm 0.5}$	M12 x 40	60	93	M36	50	5.5	Nodular cast iron			
07 041 005	**ST 50L**												M36-LH						
07 031 015	**ST 50-2**	10'000	470	200	210 $^{0}_{-0.3}$	69.5	105	47	40 $^{\pm 0.5}$	M12 x 40	60	93	M36	50	6.9				
07 041 015	**ST 50-2L**												M36-LH						
07 031 026	**ST 60**	13'000	440	200	210 $^{\pm 0.2}$	85	130	59	45	M16	80	117	M42	60	15.6		Steel	ROSTA blue painted	Shoulder studs quality 8.8 for optimizing frictional connection
07 041 026	**ST 60L**												M42-LH						
07 031 016	**ST 60-3**	20'000	440	300	310 $^{\pm 0.2}$	85	130	59	45	M16	75	117	M42	60	20.2				
07 041 016	**ST 60-3L**												M42-LH						
07 031 027	**ST 80**	27'000	380	300	310 $^{\pm 0.2}$	100	160	77	60	M20	90	150	M52	80	36.7				
07 041 027	**ST 80L**												M52-LH						

n_s = max. revolutions by oscillation angle ±5°; if osc. angle is below, higher rpm's are applicable, consult "permissible frequencies" in the Technology part of the ROSTA general catalogue.

$F_{max.}$ ➔ Calculation of the acceleration force F on page 2.22.

Length of driving rod A_{ST} and eccentric radius R

To follow the guidelines of the permissible frequencies the angle of oscillation α_{ST} should not exceed ±5.7°. This angle is corresponding to the ratio R : A_{ST} of 1 : 10.



Calculation of the oscillation angle for ST

Eccentric radius R [mm]
Center distance A_{ST} [mm]
Oscillation angle α_{ST} ±[°]

$$\alpha_{ST} = \arcsin\left(\frac{R}{A_{ST}}\right) \; [°]$$

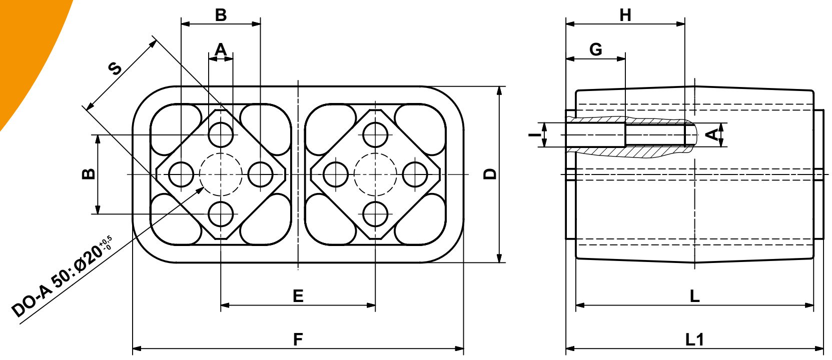
Series connection of 4 pcs. ST 50

Installation guidelines

For the installation of the drive heads type ST under the trough-bottom it requires a stiff structure, ideally a heavy and rather long frame construction surrounding the power input from the eccentric drive. Too light and too short mounting structures for the drive heads could be submitted to early material fatigue and generate cracks on the feeding trough. The drive heads have to be installed fully free of play (frictional connection). By multiple power transmission with several drive heads, all driving rods have to be adjusted on exactly the same length. The force transmission from the eccentric drive should stay **right-angled** to the guiding rocker arms. This supports a smooth course of the shaker.

Further basic information and calculations on pages 2.22–2.24.

Spring Accumulators
Type DO-A



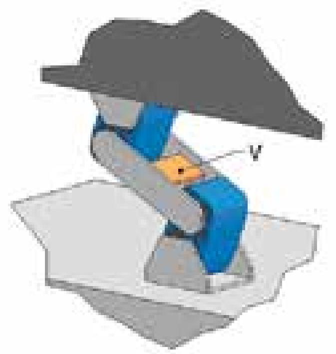
Art. No.	Type	c_s [N/mm]	A	B ±0.5	D	E	F	ø I	□S	G	H	L	L1 $^{0}_{-0.3}$	Weight [kg]	Material structure
01 041 013	DO-A 45 x 80	100	$12^{+0.5}_{0}$	35	85	73	150	–	45	–	–	80	90	1.9	Light metal profile, ROSTA blue painted
01 041 014	DO-A 45 x 100	125								–	–	100	110	2.3	
01 041 016	DO-A 50 x 120	190	M12	40	ca. 89	78	ca. 168	12.25	50	30	60	120	130	5.5	Light metal profile, nodular cast iron, ROSTA blue painted
01 041 019	DO-A 50 x 160	255								30	60	160	170	7.4	
01 041 017	DO-A 50 x 200	320								40	70	200	210	8.5	

c_s = dynamic spring value of the complete accumulator by oscillating angle of ±5° and revolutions n_s between 300–600 min^{-1}

1 spring accumulator is always consisting of 2 pcs. DO-A elements!

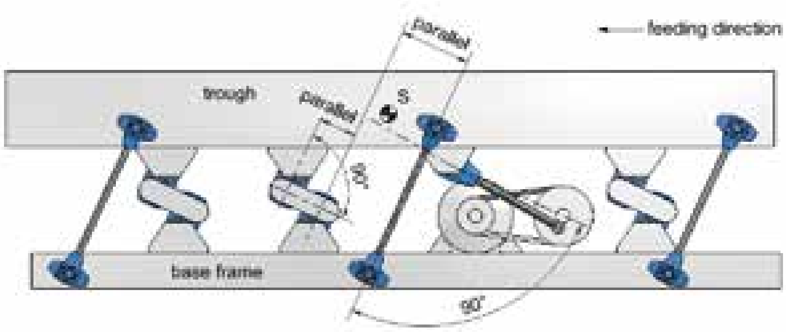
Operating parameters

Angle of oscillation DO-A (series connection)	Accumulator cons. of 2 x DO-A 45				Accumulator cons. of 2 x DO-A 50			
	R	sw	max. ns	max. K	R	sw	max. ns	max. K
±6°	15.3	30.6	360	2.2	16.4	32.8	340	2.1
±5°	12.8	25.6	500	3.6	13.6	27.2	470	3.4
±4°	10.2	20.4	740	6.2	10.9	21.8	700	6.0



Installation guidelines

The connection structures (forks) between the ROSTA DO-A elements have to be provided by the customer. The two side plates have to stay **right-angled** (90°) in regard to the DO-A element axis. It is recommendable to weld a cross bracing (V) between the side plates.
The two DO-A elements of the accumulator have to stay **parallel** to each other and also **parallel** to the rocker arms of the trough. Their fixation on trough and base frame shall be made by means of a stiff fork structure. The fixation of the DO-A elements (on inner element section) shall be made with shoulder studs.



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Further basic information and calculations on pages 2.22–2.24.

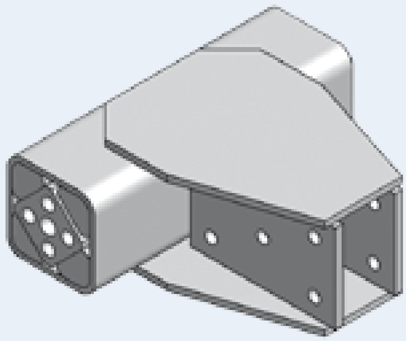
ROSTA Oscillating Mountings and Accessories for Customized Applications

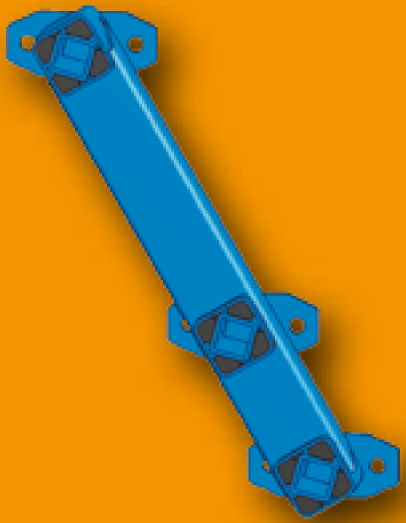
Asymmetrical double rockers for high-speed shaker conveyors

To achieve highest material speed (up to 60 m/min) on shaker conveyors we recommend the installation of ROSTA double rocker arms with **asymmetrical center distances** between the elastic suspensions (ratio 2 : 1). Usually, the eccentric drive-input goes on the counter-mass frame which is connected to the **shorter arm end** and therefore weighs 200% of the upper feeding trough. The trough is connected to the **longer arm end** of the rocker. That is why it describes the **double stroke** in relation to the counter-mass. This gear ratio offers a long material throw on the trough by low reaction-force transmittance on the overall machine structure.
Please ask for our special application manual **asymmetrical double rockers.**

Oversized drive heads for heavy-duty crank shaft driven shaker conveyors

The biggest standardized ROSTA drive head type **ST 80** is laid out to transmit acceleration forces up to 27'000 N on shaker troughs. For the actuation of e.g. heavy feeding hoppers or very long wood-waste shaker conveyors this capacity is not sufficient.
For the actuation of very large crank shaft driven shaker conveyors ROSTA also supplys the drive heads type **ST 80-4** and **ST 100-5** with acceleration force capacities F of **36'000 N** respectively **63'000 N** per head. These two heads are all made in steel welded construction and offer instead of the usually centrical tapped bore a **box-shaped holding fixture** for the drive rod (see drawing below). These two drive heads are not available from stock and will be manufactured only upon request (longer delivery time).





ROSTA Oscillating Mountings and Accessories for Customized Applications

ROSTA rocker arms AS-P and AD-P with shifted fixation flanges (30° position)

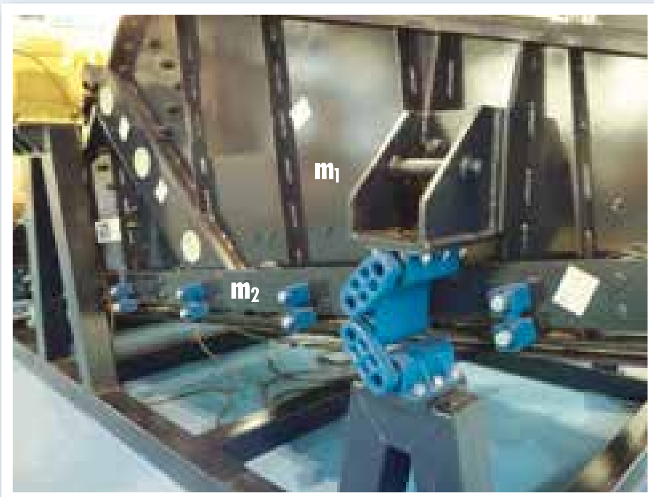
The fixation flanges of the standardized ROSTA single and double rocker arms type AS-P and AD-P are installed at right angle (90°) to the rocker arm axis. The practical experience showed that most of the shaker manufacturers install the rocker arms at inclination angle of 30° out of the vertical line to obtain an ideal combination of fast material feeding and high screening throw.

In case of very concise mounting conditions with low-pitched feeding troughs and slim machine frames and counter-masses the right-angled fixation flange sometimes protrudes the machine structure – and in extremely crowded constructions a bolted assembly through both flange bores is simply impractical.

For such applications ROSTA offers as **customized parts** AS-P and AS-D rocker arms with fixation flanges staying 30° to the rocker arm axis allowing a very low mounting option of the rockers on trough and frame. Due to the rocker installation **by pairs** it is necessary to order **right** and **left hand** execution of the relevant rocker arms.

ROSTA guiding rods for "Flip-Flow" two mass shaker systems

Free oscillating screening systems with counter-mass frames and directly actuated **flexible screen mats** offer the great benefit of the **mesh self-cleaning.** Furthermore, the flexible mats generate a **very high** and **wide material throw** on the screen deck. In these systems the counter-mass m_2 does usually overswing the screen-box mass m_1 at the ratio of 2 : 1 generating the so-called "Trampoline-Effect" with wide throws and the self-cleaning of the screen meshes. For the elastic suspension and the linear guiding of the counter-mass frames in "Flip-Flow" systems ROSTA offers different guiding-rods and spring accumulators, which are supporting the phase-shifted acting of the two masses. (Please ask for our manual **"Dual Amplifying Systems"**).

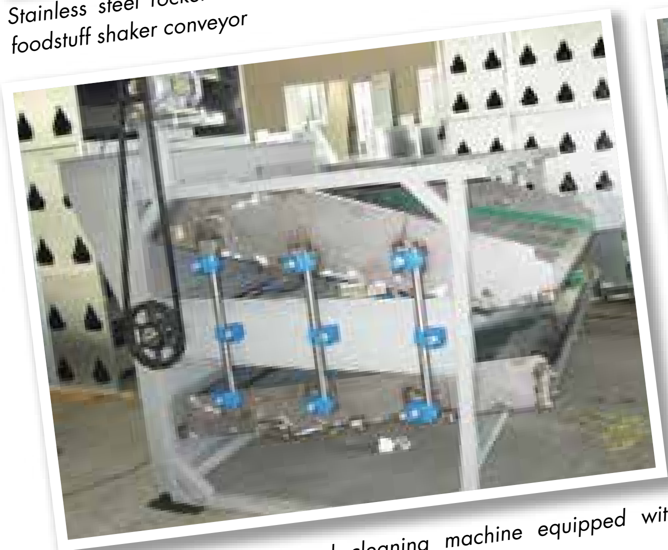


Two-mass "natural frequency" shaker conveyor equipped with double rocker arms made out in light metal casting

Two-mass shaker conveyor for the transport of bulk material equipped with double rocker arms AD-P 50

Stainless steel rocker arms in welded construction supporting a foodstuff shaker conveyor

One mass shaker conveyor with built-in screening fraction for the transport and sorting of wood-chips



Two-directional acting seed cleaning machine equipped with AR-"Boomerang" double rocker arms

20-meter long two mass shaker conveyor for tobacco leaves equipped with double rocker arms AD-PV 45

Gyratory sifter machines (plan sifter)
Technology

Introduction

Gyratory sifters stay mainly in use in the processing sectors of the flour and grain conditioning, in the pharmaceutical powder preparation and in the chipboard industry for the selection and cleaning of the different wood-chip sizes.

The circular screening motion is offering a fast and complete covering of the entire screen surface = very high throughput.

Customized solutions

Gyratory screening machine installed on 8 pcs. AK-I 40 universal joints (joints made out of stainless steel)

Wood-chip sorting screen mounted on 8 pcs. AK 100-4 suspensions

Free oscillating gyratory sifter for the flour selection on 8 pcs. AV 38 elements

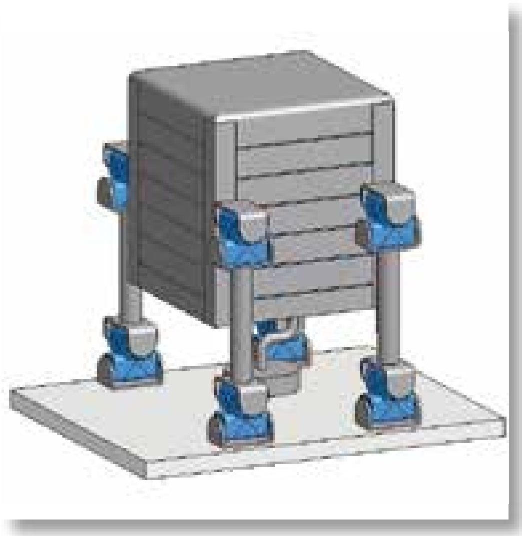
Hanging gyratory sifters

Hanging gyratory sifters are almost exclusively used in the milling sector for the sorting of the different types of flour (white flour, dark flour, black flour). These screens, which are equipped with a central unbalanced shaft, normally hang from the building ceiling on rattan or round fibre-glass rods. Due to the relatively high weight of the screening machines, several rattan or fibre-glass rods are needed at each corner of the box to ensure the suspension. In cases of very high humidity in the buildings, both types of rods can slip out of the clamps. Furthermore, it is very difficult to set it up so that all the rods support approximately the same weight.

For these applications, ROSTA recommends the use of the AV mounts, which have a very high carrying capacity. Only one mounting set is thereby needed for each corner of the screening box. In addition, the AV mountings can be delivered with right-hand and left-hand threads, which facilitates the horizontal adjustment of the box. The AV mountings have a long service life, and do not have to be periodically replaced, as it is the case with the rattan rods.

Upright staying gyratory sifters with eccentric shaft drive

Upright staying gyratory sifter machines frequently have this classical type of crank drive. These screens are mainly used in the flour processing sector, as well as in chipboard manufacturing plants. An eccentric shaft driven by belts transfers the circular movement to the screen box. The screen box is supported by four legs, each consisting of two ROSTA universal joints. The weight of the box lies completely on the four supports, which accurately guide the box movement.



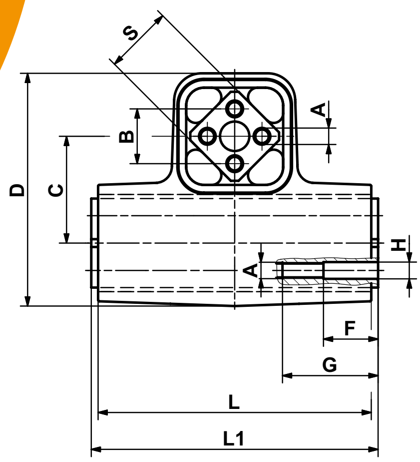
Upright staying gyratory sifters with unbalanced shaft drive

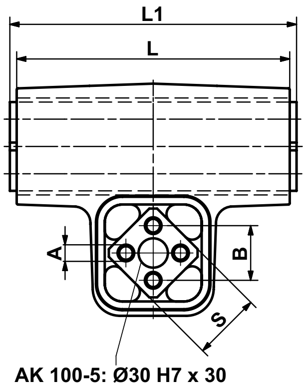
A very cost-efficient version of the upright staying gyratory sifter. Requires no complicated eccentric drive. The AK mountings or even the AV mountings must be overdimensioned, however, due to the lack of a precisely defined guidance.

Please contact ROSTA for projects using upright staying gyratory sifters with unbalanced shaft drive.

Oscillating Mountings for Gyratory Sifters

Type AK – Universal Joints





Art. No.	Type	Max. load G [N] by system: hanging	staying crank driven	staying free oscillating	A	B	C	D	F	G	ø H	L	L1 ±0.2	□S
07 061 001	**AK 15**	**160**	**128**	**80**	$5^{+0.5}_{0}$	$10^{\pm 0.2}$	27	54	–	–	–	60	65	15
07 061 002	**AK 18**	**300**	**240**	**150**	$6^{+0.5}_{0}$	$12^{\pm 0.3}$	32	64	–	–	–	80	85	18
07 061 003	**AK 27**	**800**	**640**	**400**	$8^{+0.5}_{0}$	$20^{\pm 0.4}$	45	97	–	–	–	100	105	27
07 061 004	**AK 38**	**1'600**	**1'280**	**800**	$10^{+0.5}_{0}$	$25^{\pm 0.4}$	60	130	–	–	–	120	130	38
07 061 005	**AK 45**	**3'000**	**2'400**	**1'500**	$12^{+0.5}_{0}$	$35^{\pm 0.5}$	72	156	–	–	–	150	160	45
07 061 011	**AK 50**	**5'600**	**4'480**	**2'800**	M12	$40^{\pm 0.5}$	78	172	40	70	12.25	200	210	50
07 061 012	**AK 60**	**10'000**	**8'000**	**5'000**	M16	45	100	218	50	80	16.5	300	310	60
07 061 013	**AK 80**	**20'000**	**16'000**	**10'000**	M20	60	136	283	50	90	20.5	400	410	80
07 061 009	**AK 100-4**	**30'000**	**24'000**	**15'000**	M24	75	170	354	50	100	25	400	410	100
07 061 010	**AK 100-5**	**40'000**	**32'000**	**20'000**	M24	75	170	340	50	100	25	500	510	100

G = max. load in N per support column

Art. No.	Type	Weight [kg]	Material structure: Inner square	Housing	Protection	Bolting on inner square
07 061 001	**AK 15**	0.4	Light metal profile	Steel welded construction	ROSTA blue painted	End-to-end screw or threaded bar quality 8.8
07 061 002	**AK 18**	0.6				
07 061 003	**AK 27**	1.9		Nodular cast iron		
07 061 004	**AK 38**	3.7				
07 061 005	**AK 45**	6.7				
07 061 011	**AK 50**	11.4				Shoulder studs quality 8.8 for optimizing frictional connection
07 061 012	**AK 60**	37.4	Steel			
07 061 013	**AK 80**	85.4				
07 061 009	**AK 100-4**	124				
07 061 010	**AK 100-5**	137		Steel welded construct.		

Usual drive parameters out of practice

– Driving speed n_s up to approx. 380 min^{-1}
– Oscillation angle α up to approx. ±3.5°

General advises

The operating parameters shall not exceed the guidelines of the "frequency spectrum" in the Technology part of the ROSTA general catalogue.

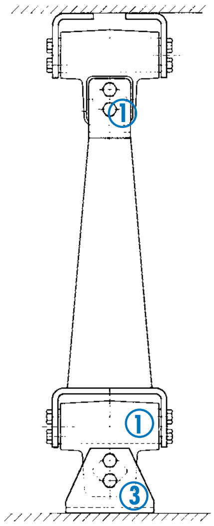
Calculation Example

Machine type: staying sifter with positive crank drive

Description	Symbol	Example	Unit	Calculation formula
Total oscillating mass (material included)	m	1600	kg	**Angle of oscillation**
Eccentric radius	R	25	mm	$\alpha = \arctan\left(\frac{R}{X}\right)$ [°]
Length of support column	X	600	mm	
Angle of oscillation (out of R and X)	$\alpha \pm$	2.4	°	
Revolutions	n_s	230	min^{-1}	
Quantity of support columns	z	4	pcs.	**Load per column**
Load per column	G	3924	N	$G = \frac{m \cdot g}{z}$ [N]
Max. load capacity per column with AK 50 mounts	G_{max}	4480	N	

Element selection: 4 columns consisting of 2 pcs. AK 50 → **8 psc. AK 50**

Installation guidelines for AK universal joints

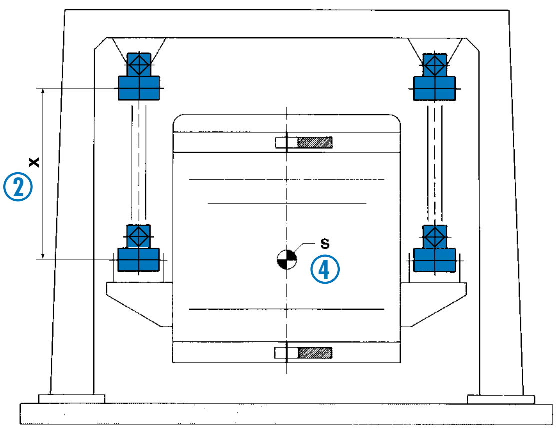


① Install the two AK per column in the same line, in order that the distance X between the two inner squares of the 90° "distorted" element parts and the two inner squares of the "in-line" element parts is identical.

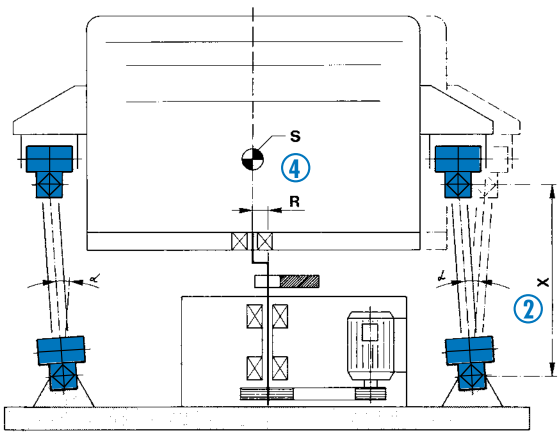
② Install the four identical connection columns (provided by the customer) between the two AK. Also by slightly inclined screen-boxes the distance or length X of the connection columns has to be identical – compensate the inclination with e.g. the higher positioning of the fixation brackets by the discharge-end of the screen-box.

③ Up to the size AK 50 we do recommend to use our fixation brackets type **WS** for the AK mounting on machine frame and screen-box – see ROSTA general catalogue "Rubber suspensions".

④ To avoid unwanted tilting motions or screen-box distortions (by standstill) we do recommend the installation of the upper AK-brackets on the level of the center of gravity "S" of the screen-box.



Hanging and freely oscillating gyratory sifter



Staying gyratory sifter with positive crank shaft drive

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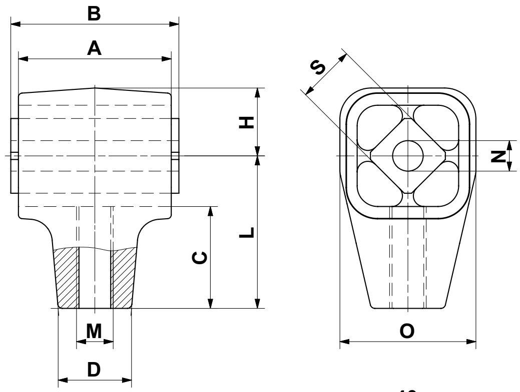
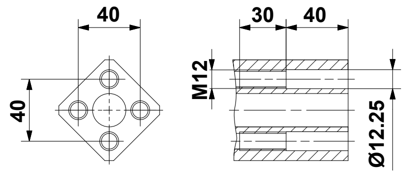
Oscillating Mountings for hanging Gyratory Sifters

Type AV





Inner square AV 50 and AV 50L

Art. No.	Type	G [N] per suspension	A	B±0.2	C	□D	H	L	M	ø N	O	□S
07 261 001	**AV 18**	600 – 1'600	60	65	40.5	28	27	60	M16	$13^{0}_{-0.2}$	54	18
07 271 001	**AV 18L**								M16-LH			
07 261 002	**AV 27**	1'300 – 3'000	80	90	53	42	37	80	M20	$16^{+0.5}_{+0.3}$	74	27
07 271 002	**AV 27L**								M20-LH			
07 261 003	**AV 38**	2'600 – 5'000	100	110	67	48	44	100	M24	$20^{+0.5}_{+0.2}$	89	38
07 271 003	**AV 38L**								M24-LH			
07 261 014	**AV 40**	4'500 – 7'500	120	130	69.5	60	47	105	M36	$20^{+0.5}_{+0.2}$	93	40
07 271 014	**AV 40L**								M36-LH			
07 261 005	**AV 50**	6'000 – 16'000	200	210	85	80	59	130	M42	–	116	50
07 271 005	**AV 50L**								M42-LH			

G = max. load in N per suspension
Elements for higher load on request

Art. No.	Type	Weight [kg]	Material structure: Inner square	Material structure: Housing	Material structure: Protection	Bolting on inner square
07 261 001	**AV 18**	0.4	Light metal profile	Light metal casting	ROSTA blue painted	End-to-end screw or threaded bar quality 8.8.
07 271 001	**AV 18L**					
07 261 002	**AV 27**	1.0				
07 271 002	**AV 27L**					
07 261 003	**AV 38**	1.7				
07 271 003	**AV 38L**					
07 261 014	**AV 40**	5.0		Nodular cast iron		
07 271 014	**AV 40L**					
07 261 005	**AV 50**	12.3				M12 shoulder studs quality 8.8.
07 271 005	**AV 50L**					

General advises

The operating parameters shall not exceed the guidelines of the "frequency spectrum", see Technology part in the ROSTA general catalogue.

The threaded connection rod has to be provided by the customer.

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Calculation Example

Description	Symbol	Example	Unit
Total oscillating mass (material included)	m	800	kg
Eccentric radius ②	R	20	mm
Length of suspension rod	X	600	mm
Angle of oscillation (out of R and X), shall not exceed ±2° ②	β±	1.9	°
Revolutions	n_s	230	min^{-1}
Quantity of suspension rods	z	4	pcs.
Load per suspension rod	G	1962	N
Max. load capacity per rod with AV 27 mountings	G_{max}	3000	N

Calculation formula

Angle of oscillation

$$\beta = \arctan\left(\frac{R}{X}\right) [°]$$

Load per suspension rod

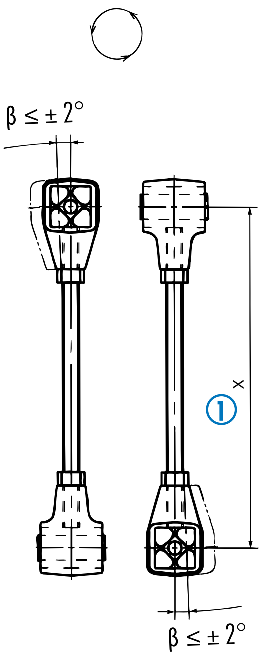
$$G = \frac{m \cdot g}{z} [N]$$

Element Selection:
4 pcs. AV 27 and 4 pcs. AV 27 L (left-hand threaded), the two AV elements per suspension rod have to be installed crosswise (90° offset).

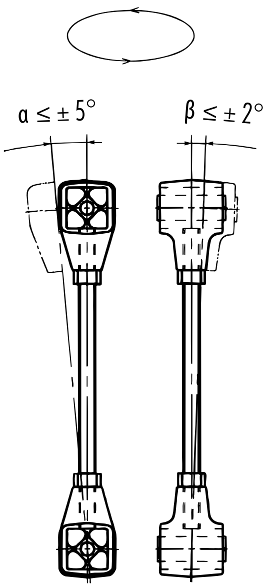
Installation guidelines for AV mountings

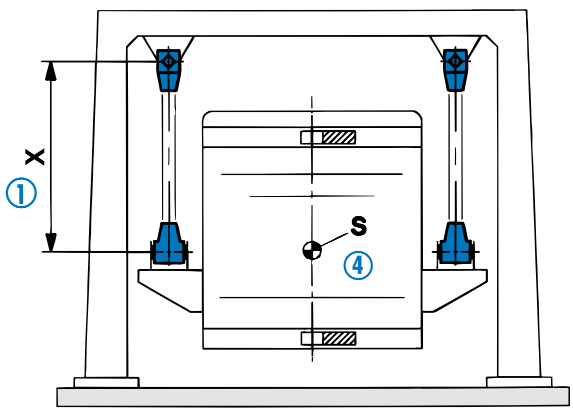
① With the right-hand and left-hand threaded connection in the AV housing the length X of the suspension rod can easily be adjusted, this length has to be identical for all four suspension rods. **The indicated angular oscillating limitations have to be respected!**
② Only the **crosswise** (90° offset) installation of the two AV elements per suspension rod is guaranteeing for a harmonic and circular motion of the screen-box.
③ The crosswise installation of the AV elements has to be identical on all four suspension rods, e.g. all upper AV mounts shall stay 90° offset. (For the suspension or support of the discharge-ends of "ROTEX" sifter types the two elements per rod shall stay parallel to each other.)
④ To avoid unwanted tilting motions or screen-box distortions (by standstill) we do recommend the installation of the lower AV-brackets on the level of the center of gravity "S" of the screen-box.
⑤ Please consult ROSTA by the selection of AV elements for staying, free oscillating gyratory sifters.

② circular oscillation



③ elliptical oscillation





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Swinging Applications!

Examples:

Oscillating Mountings

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