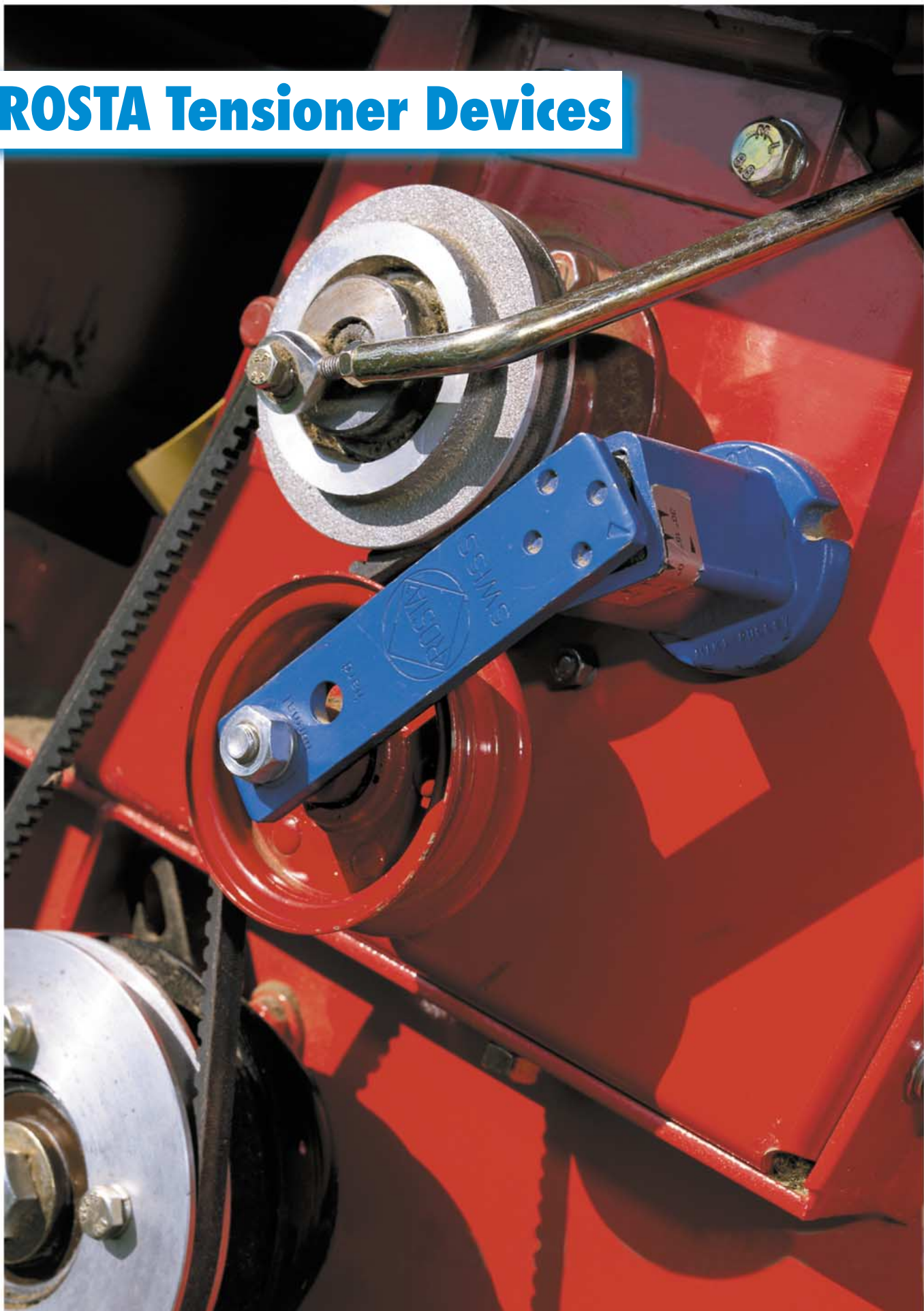


ROSTA Tensioner Devices





Tensioning Technology

Chain Tensioning

Roller chains are power transmission components with positive transmission which, by virtue of their design are subject, depending on quality, to elongation as a result of wear of 1 to 3% of their total length. In spite of this elongation, due to aging, a roller chain transmits the occurring torques effectively providing it is periodically retensioned. Without tension adjustment, the slack side of the chain becomes steadily longer, oscillates and reduces the force transmitting wrap angle of the chain on the chain wheels. The chain no longer runs smoothly off the teeth of the chain wheels, producing uneven running of the entire drive and supporting wear (polygon effect). The service life of the chain drive can be extended considerably by the use of an automatic chain tension adjuster.

The ROSTA tensioning element prevents the slack side of the chain from «sagging» or «slapping» by its automatic operation and very wide tensioning range for compensating this given elongation. The ROSTA tensioning element is based on the ROSTA rubber spring principle. **According to application it is supplemented with the appropriate sprocket wheel or chain rider set for chain drives or with the belt roller or pulley in belt tensioner applications** (see page 35 «Product Range» or page 38 «Allocation Table»). **Assembling of the sprocket wheel and chain rider sets or the belt roller on the tensioning element is carried out on the customer's side.**

Pretensioning

With the ROSTA tensioning element the necessary travel and simultaneously the corresponding initial tension force can be accurately adjusted by a torsion angle scale and indicating

arrow. Excessive initial pretensioning of the chain should be avoided in order to reduce the tensile force and surface pressure on the links.

Vibration Damping

The ROSTA tensioning element, based on a system of rubber springs, absorbs considerably the chain vibration due to internal molecular friction in the rubber inserts. The rubber spring effectively absorbs the vibrations, resulting from the polygon effect, which also positively influences the noise level of the complete chain drive.

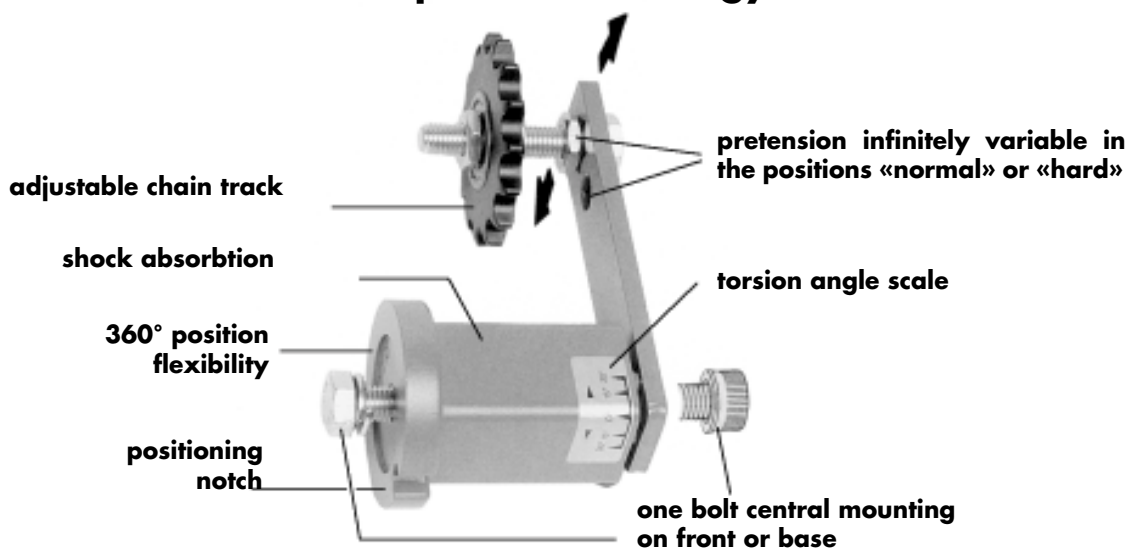
Installation

The sprocket wheel or chain rider is installed in arm position «normal» or «hard» in the required position and secured with the supplied nuts.

The laterally adjustable bearing on the thread permits simple and rapid adjustment of the wheel or rider to the chain track. The central fixing of the tensioning element with a single screw saves a great deal of time in installation. In addition, only one fixing hole is required on the «machine side».

On smooth, clean and torsionally rigid surfaces the resistance of the frictional contact between the tensioner housing and the machine element is a **multiple** of the maximum initial tensioning torque at 30°. In almost all applications therefore, any additional securing of the tensioner housing can be dispensed. Only with rough, uneven or highly corroded mounting surfaces could the torsional resistance be insufficient on account of the **point application** nature of the frictional contact. In these exceptional cases we recommend the mounting of a locking pin through the positioning notch on to the machine structure.

Superior Technology





Product Range



ROSTA Tensioning Element Type SE, SE-G, SE-W

Page 36

The tensioning element with the specification SE (SE 11 to SE 50) is the mostly used standard unit for tensioning all kind of chain and belt drives. The Elastomeric inserts based on a high elastic natural rubber with a good shape memory. This unit is designed for applications in temperatures from -40° to $+180^{\circ}$ F.

The tensioning element type SE-G (marked with yellow dot) has zinc-plated steel parts and therefore is specially designed for «outdoor» applications; e.g. for building machines. In addition, the type SE-G is equipped with oil resistant synthetic inserts for applications in oily areas, like in gear-boxes and crank-cases.

The tensioning element type SE-W (marked with red dot) is equipped with heat resistant elastomeric inserts. It is developed for applications in temperatures from $+180^{\circ}$ to $+250^{\circ}$ F, such as belt tensioners for diesel engines, chain tensioner in driers, belt scraper in hot surroundings, etc. Due to the characteristics of the elastomeric compound, the resulting tension pressure of the type SE-W reduces by 40%, compared to the standard type SE and the type SE-G.

All tensioner arms are made out of steel; the housings up to the size SE 27 are of powdered metal, the sizes SE 38 and 50 of cast GG 20. The surface of the type SE-G is zinc-plated, the types SE and SE-W are painted with a protection lacquer. Each tensioning element is equipped with a zinc-plated fixation screw and spring washer.

ROSTA Tensioning Element Type SE-B «Boomerang»

Page 36

The ROSTA tensioning element type SE-B «Boomerang» compensate the slack in extremely long chain drives. The «Boomerang» with its bended double arm, equipped with two sprocket wheels, offers a triple compensation of the slack.

ROSTA Tensioning Element Type SE-F

Page 37

The ROSTA tensioning element type SE-F is designed for front mounting applications on «blind» frame structures. Rubber quality, tensioning pressure, material and surface protection are identical to the type SE. The special fixation screw with distance bushing is zinc-plated and secured in the housing by means of a rubber O-ring.

ROSTA Tensioning Element Type SE-I (Inox)

Page 37

The ROSTA tensioning elements type SE-I are all made out of stainless steel. They are available off-the-shelf in four different sizes: SE-I 15, 20, 30 and 40 (SE-I 20 ~ SE 18, SE-I 30 ~ SE 27, SE-I 40 ~ SE 38). The stainless steel quality complies with the DIN 1.4301 and AISI 304 specifications. These tensioning elements have been primarily designed for applications in the food industry and the chemical process technology. They are all equipped with rubber inserts of Rubmix 10 quality.

ROSTA Sprocket Wheel Set Type N

Page 38

The ROSTA sprocket wheel set completes the tensioning element for applications in chain drives. The sprocket wheel runs on a self-lubricating ball bearing 2 Z.

ROSTA Chain Rider Set Type P

Page 39

The ROSTA chain rider set, assembled on the tensioning element, is a low-cost and low noise alternative for tensioning chain drives. The high-quality rider is made of friction resistant industrial plastic and allows the use on both rider sides. The max. permissible chain speed should not exceed 6 ft./sec.

ROSTA Tensioning Roller Type R

Page 38

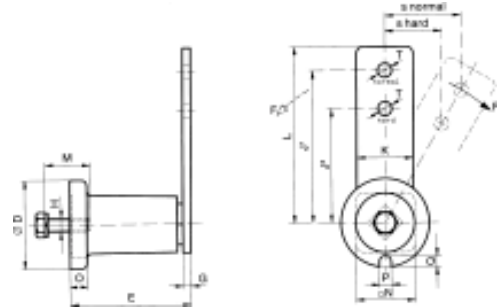
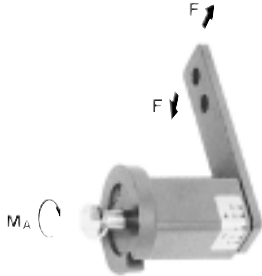
The ROSTA roller installed on the relevant SE unit is an ideal belt tensioner. The roller is made of high-quality industrial plastic material with two self-lubricating ball bearings 2 Z.



Tensioner Device

Type SE/SE-G/SE-W

Standard Mounting



Technical Data

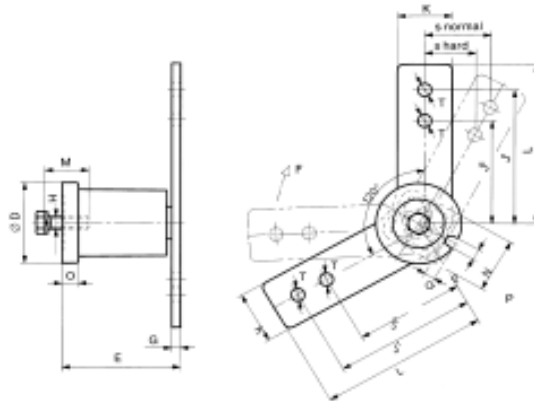
UPC #	Type*	UPC #	Type*	UPC #	Type*	F max. in lbs (J ¹ -value for Type-W)			s max. in inches		Torque M _A in ft.-lbs.	Weight in lbs.
						normal	hard	(J ²)	normal	hard		
17 451	SE 11	26 709	SE 11-G			17.98		23.83	1.57	1.18	7.38	0.44
17 452	SE 15	25 597	SE 15-G	57 517	SE 15-W	30.35	(18.21)	37.77	1.97	1.57	18.44	0.88
17 453	SE 18	17 490	SE 18-G	53 285	SE 18-W	78.68	(47.21)	98.24	1.97	1.57	36.14	1.32
17 454	SE 27	17 491	SE 27-G	53 287	SE 27-W	179.85	(107.91)	233.80	2.56	1.97	63.43	3.75
17 455	SE 38	17 492	SE 38-G	53 289	SE 38-W	337.22	(202.33)	421.52	3.44	2.76	154.89	7.83
17 456	SE 45	17 493	SE 45-G	53 291	SE 45-W	584.51	(350.70)	730.63	4.43	3.54	302.40	14.11
53 341	SE 50	63 652	SE 50-G	57 519	SE 50-W	899.24	(539.54)	1124.05	4.92	3.94	553.16	19.84

Dimensions

UPC #	Type*	D	E	G	H	J ¹	J ²	K	L	M	N	O	P	Q	T
17 451	SE 11	1.38	2.01	0.20	M 6	3.15	2.36	0.79	3.56	0.79	0.87	0.24	0.33	0.20	0.39
17 452	SE 15	1.77	2.52	0.20	M 8	3.94	3.15	0.98	4.43	0.98	1.18	0.31	0.33	0.24	0.53
17 453	SE 18	2.28	3.11	0.28	M 10	3.94	3.15	1.18	4.53	1.18	1.38	0.41	0.33	0.31	0.53
17 454	SE 27	3.07	4.25	0.31	M 12	5.12	3.94	1.97	6.10	1.57	2.05	0.59	0.41	0.39	0.53
17 455	SE 38	3.74	5.51	0.39	M 16	6.89	5.51	2.36	8.07	1.57	2.60	0.59	0.49	0.47	0.81
17 456	SE 45	4.53	7.87	0.47	M 20	8.86	7.09	2.76	10.24	1.97	3.15	0.71	0.49	0.47	0.81
53 341	SE 50	5.12	8.27	0.79	M 24	9.84	7.87	3.15	11.42	2.36	3.07	0.79	0.67	0.67	0.81

* Type SE: standard quality – surface painted
 Type SE-G: oil resistant – surface zine-plated (with yellow mark)
 Type SE-W: heat resistant – surface painted (with red mark)

ROSTA-Tensioner Device Type SE-B



Technical Data (Dimensions see list above SE 18 and SE 27)

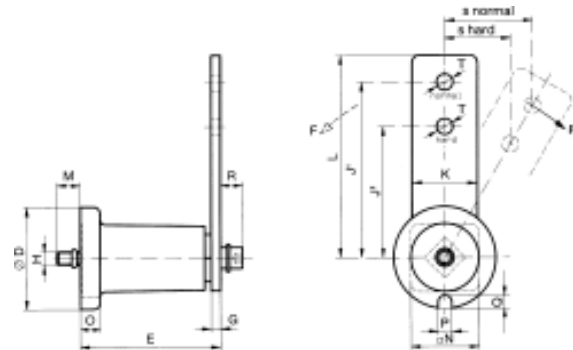
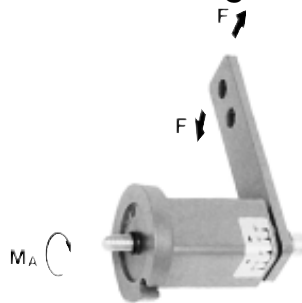
UPC #	Type	F max. in lbs of position		s max. in inches		Torque M _A in ft.-lbs.	Weight in lbs
		normal (J ¹)	hard (J ²)	normal	hard		
	SE-B 18	39.343	49.458	1.969	1.575	36.141	1.654
	SE-B 27	89.924	116.901	2.559	1.969	63.430	4.630



Tensioner Device

Type SE-F/SE-I

Front Mounting



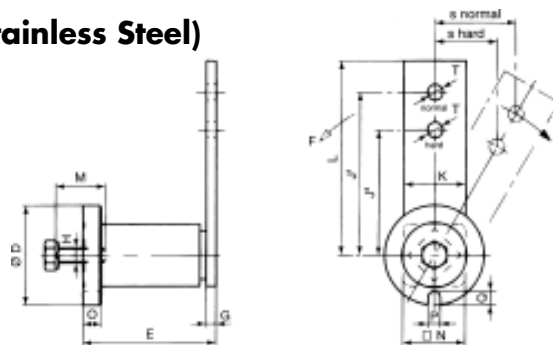
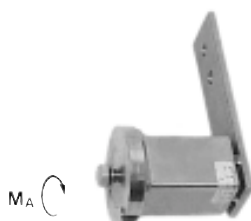
Technical Data

UPC #	Type	F max. in lbs. position		s max. in inches		Torque M_A in ft.-lbs.	Weight in lbs.
		normal J^1	hard J^2	normal	hard		
53 273	SE-F 15	30.35	37.77	1.97	1.57	12.54	0.88
53 275	SE-F 18	78.68	98.24	1.97	1.57	30.24	1.43
53 277	SE-F 27	179.85	233.80	2.56	1.97	61.22	4.08
53 279	SE-F 38	337.22	421.52	3.44	2.76	106.94	8.16
53 281	SE-F 45	584.51	730.63	4.43	3.54	261.83	15.21
53 283	SE-F 50	899.24	1124.05	4.92	3.94	508.91	22.27

Dimensions

UPC #	Type	D	E	G	H	J^1	J^2	K	L	M	N	O	P	Q	R	T
53 273	SE-F 15	1.77	2.52	0.20	M6	3.94	3.15	0.98	4.43	0.49	1.18	0.31	0.33	0.24	0.39	0.53
53 275	SE-F 18	2.28	3.11	0.28	M8	3.94	3.15	1.18	4.53	0.74	1.38	0.41	0.33	0.31	0.47	0.53
53 277	SE-F 27	3.07	4.25	0.31	M10	5.12	3.94	1.97	6.10	0.69	2.05	0.59	0.41	0.39	0.63	0.53
53 279	SE-F 38	3.74	5.51	0.39	M12	6.89	5.51	2.36	8.07	0.71	2.60	0.59	0.49	0.47	0.75	0.81
53 281	SE-F 45	4.53	7.87	0.47	M16	8.86	7.09	2.76	10.24	1.30	3.15	0.71	0.49	0.47	0.81	0.81
53 283	SE-F 50	5.12	8.27	0.79	M20	9.84	7.87	3.15	11.42	0.91	3.07	0.79	0.67	0.67	0.81	0.81

ROSTA Tensioner Device Type SE-I (Stainless Steel)



Technical Data

UPC #	Type	F max. in lbs. position		s max. in inches		Torque M_A in ft.-lbs.	Weight in lbs.
		normal J^1	hard J^2	normal	hard		
63 014	SE-I 15	33.72	41.59	1.97	1.57	18.44	0.77
63 015	SE-I 20	89.92	112.41	1.97	1.57	36.14	1.54
63 016	SE-I 30	193.34	251.79	2.56	1.97	63.43	4.23
63 017	SE-I 40	337.22	422.64	3.44	2.76	154.89	9.46

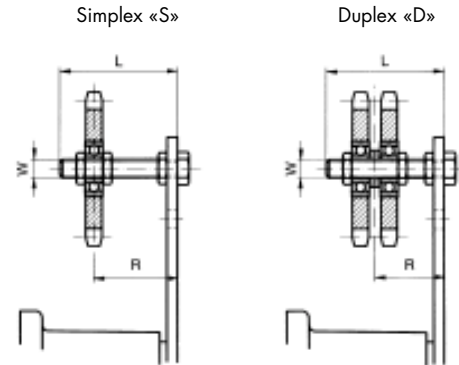
Dimensions

UPC #	Type	D	E	G	H	J^1	J^2	K	L	M	N	O	P	Q	T
63 014	SE-I 15	1.77	2.52	0.20	M 8	3.94	3.15	0.98	4.43	0.98	0.98	0.31	0.33	0.24	0.41
63 015	SE-I 20	2.36	3.07	0.24	M10	3.94	3.15	1.38	4.43	1.18	1.38	0.39	0.33	0.31	0.41
63 016	SE-I 30	3.15	4.21	0.31	M12	5.12	3.94	1.97	6.10	1.57	1.97	0.59	0.41	0.39	0.49
63 017	SE-I 40	3.94	5.51	0.39	M16	6.89	5.51	2.76	8.07	1.57	2.76	0.59	0.49	0.47	0.81



Sprocket Wheel Set

Type N



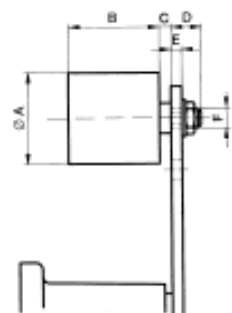
Allocation Table

UPC #	Bore	Lenght Thru Bore	No. of Teeth	UPC #	Bore	Lenght Thru Bore	No. of Teeth	Type	Chain ANSI	Element Type
Simplex «S»				Duplex «D»						
17 459	1/2	3/8	19	17 467	1/2	7/16	19	N3/8"-S/D	S D 35-1 2	SE 15
17 460	1/2	7/16	18	17 468	1/2	61/64	18	N1/2"-S/D	40-1 2	SE 18
17 461	1/2	7/16	18					N1/2"-S	41-1	SE 18
17 462	1/2	7/16	17	17 469	1/2	1 3/64	17	N5/8"-S/D	50-1 2	SE 27
17 463	1/2	7/16	15	17 470	5/8	1 21/64	15	N3/4"-S/D	60-1 2	SE 27
17 464	3/4	7/16	12	17 471	3/4	1 45/64	12	N1"-S/D	80-1 2	SE 38
17 465	3/4	39/64	11					N1-1/4"-S	100-1	SE 45
17 466	3/4	19/32	9					N1-1/2"-S	120-1	SE 45

Detail mass of a sprocket wheel see page 39 (mass W corresponds to mass A)

Tensioning Roller

Type R

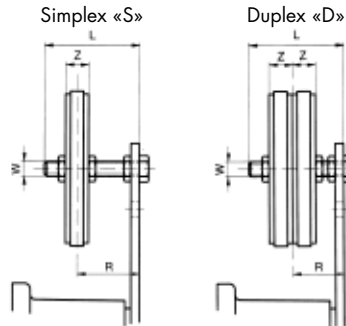


UPC #	Type	max. speed rpm.	A	B	C	D	E max.	F	Tensioning element Type	Weight in lbs.
63 115	R 11	8000	1.18	1.38	0.08	0.55	0.20	M8	SE 11	0.18
53 028	R 15/18	8000	1.57	1.77	0.24	0.63	0.28	M10	SE/SE-F 15 or 18	0.37
43 023	R 27	6000	2.36	2.36	0.31	0.67	0.28	M12	SE/SE-F 27	0.88
57 573	R 38	5000	3.15	3.54	0.31	0.98	0.39	M20	SE/SE-F 38	2.54
57 574	R 45/50	4500	3.54	5.31	0.39	1.06	0.47	M20	SE/SE-F 45 or 50	3.86



Chain Rider Set

Type P

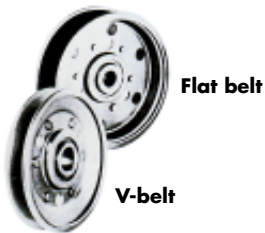


Technical Data

UPC #	UPC #	Type	Roller chain ANSI	W	L	Z	Adjusting range track R		Tensioning element Type
			«S» «D»				«S»	«D»	
Simplex «S»	Duplex «D»								
57 726	63 653	P ³ / ₈ "-8 S/D	35- 1 / 2	M8	1.77	0.40	0.75-1.34	0.98-1.18	SE 11
53 094	63 654	P ¹ / ₂ "-10 S/D	40- 1 / 2	M10	2.16	0.55	0.91-1.61	1.18-1.34	SE/SE-F 15
43 499	63 655	P ⁵ / ₂ "-10 S/D	50- 1 / 2	M10	2.16/2.75	0.65	0.95-1.54	1.34-1.81	SE/SE-F 15 or 18
43 387	63 656	P ³ / ₄ "-12 S/D	60- 1 / 2	M12	3.15	0.77	1.18-2.40	1.57-2.05	SE/SE-F 27

Tensioning Element Accessories

Flat belt/V-belt



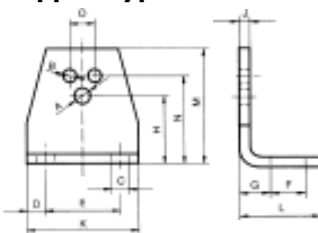
Flat Belt or Quiet Chain Idler

UPC #	Model Number	Overall Width	Flat Surface Width	Pulley O.D.	Bore	Length Thru Bore
17 472	CB4	1 7/16	1	4 5/8	1/2	23/32

V-Belt Pulley Idler

UPC #	Pulley Number	Belt Size	Pitch Diam.	Pulley O.D.	Bore	Length Thru Bore
17 473	A3	A	2 1/2	3	3/8	27/32
14 474	B5	B-C	3 3/4	5 1/16	1/2	23/32
17 475	B7	B-C	6	7 5/16	1/2	23/32

Support Type WS



UPC #	Type	fit to SE-	Dimensions in inches													Weight in lbs.	
			A	B	C	D	E	F	G	H	J	K	L	M	N		O
25 200	WS 11 - 15	11	0.26	0.22	0.28	0.30	1.18	0.51	0.45	1.06	0.16	1.77	1.18	1.81	1.38	0.39	0.18
25 201	WS 15 - 18	15	0.33	0.26	0.28	0.30	1.57	0.51	0.53	1.34	0.20	2.17	1.26	2.28	1.73	0.47	0.33
25 202	WS 18 - 27	18	0.41	0.33	0.37	0.39	1.97	0.61	0.65	1.69	0.24	2.76	1.50	2.91	2.17	0.79	0.62
25 203	WS 27 - 38	27	0.49	0.41	0.45	0.49	2.56	0.85	0.83	2.24	0.31	3.54	2.05	3.86	2.95	0.98	1.54
25 204	WS 38 - 45	38	0.65	0.49	0.55	0.59	3.15	0.94	0.83	2.60	0.31	4.33	2.17	4.57	3.35	1.38	1.98
25 205	WS 45 - 50	45	0.81	0.49	0.71	0.79	3.94	1.18	1.02	3.15	0.39	5.51	2.60	5.51	4.33	1.57	3.97

Bore A for the fixation of the ROSTA tensioner devices type SE.

Bores B for the fixation of the ROSTA rubber suspension units type DR-A, DK-A, DO-A.



Mounting Instructions

The tension pressure **F** is infinitely variable

Type of element		Angle of pretension 10°				Angle of pretension 20°				Angle of pretension 30°			
		normal		hard		normal		hard		normal		hard	
		F in lbs.	s in inches	F in lbs.	s in inches	F in lbs.	s in inches	F in lbs.	s in inches	F in lbs.	s in inches	F in lbs.	s in inches
SE/SE-G	11	3.37	0.55	4.50	0.39	8.99	1.10	11.91	0.79	17.98	1.57	23.83	1.18
SE/SE-F/SE-G	15	5.62	0.67	6.97	0.55	14.61	1.34	18.21	1.06	30.35	1.97	37.77	1.57
SE-W	15	3.37	0.67	4.50	0.55	8.77	1.34	10.79	1.06	18.21	1.97	22.71	1.57
SE/SE-F/SE-G	18	16.86	0.67	20.91	0.55	40.47	1.34	50.58	1.06	78.68	1.97	98.24	1.57
SE-W	18	10.12	0.67	12.59	0.55	24.28	1.34	30.35	1.06	47.21	1.97	58.90	1.57
SE/SE-F/SE-G	27	33.72	0.87	43.84	0.67	85.43	1.73	111.06	1.34	179.85	2.56	233.80	1.97
SE-W	27	20.23	0.87	25.18	0.67	51.26	1.73	66.54	1.34	107.91	2.56	140.28	1.97
SE/SE-F/SE-G	38	65.19	1.18	81.38	0.94	164.11	2.36	205.03	1.85	337.22	3.43	421.52	2.76
SE-W	38	39.12	1.18	48.78	0.94	98.47	2.36	123.20	1.85	202.33	3.43	252.91	2.76
SE/SE-F/SE-G	45	112.41	1.54	140.51	1.22	292.25	3.07	365.32	2.40	584.51	4.41	730.63	3.54
SE-W	45	67.44	1.54	84.30	1.22	175.35	3.07	219.19	2.40	350.70	4.41	438.38	3.54
SE/SE-F/SE-G	50	134.89	1.69	168.61	1.34	382.18	3.39	477.72	2.68	899.24	4.92	1124.05	3.94
SE-W	50	80.93	1.69	101.16	1.34	229.31	3.39	286.63	2.68	539.54	4.92	674.43	3.94

s = arm movement



Tensioning of: «SE, SE-G and SE-W»

Bolt «A» is slightly tightened, the tensioning housing held with a position and turned in the required wrench. The bolt «A» is then tightened applying to the suitable torque M_A .



Tension «SE-F»

For applications on «blind» frame structures. The adjustment of the tension is made as described for type SE, but final fixation with hexagonal key front bolt.



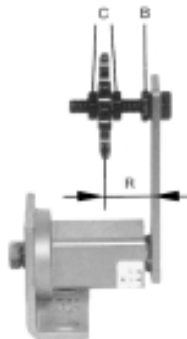
Central Fixing

ROSTA tensioning elements are fitted centrally on a sufficiently strong, flat part of the machine. If a direct mounting is not possible, we recommend to use the support **type WS**.



Positioning, Angle Torsion Scale

The angle torsion scale «V» on the tensioner housing always shows the pre-tensioning angle. The positioning notch «P» on the housing flange allows easy readjustment of the pre-tensioning level when a corresponding mark is set up on the support or the machine part.



Chain Track

The chain tension sprocket, as well as the chain rider, is held between 2 nuts «C». The chain track can be set exactly by adjusting within the range R (see pages 38 and 39). Locknut «B» is always tight.

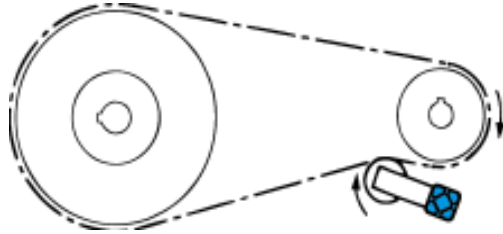


«Z»-Arrangement

If chain tension sprockets/chain riders or tensioning rollers are mounted on the outside of the lever, the spacing «Z» should be as little as possible. The max. tension F must not then exceed 50% = approx. 20° of pretension.

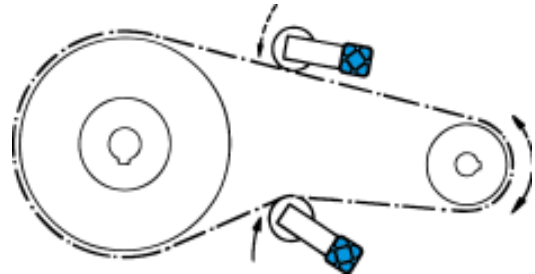


Mounting Instructions



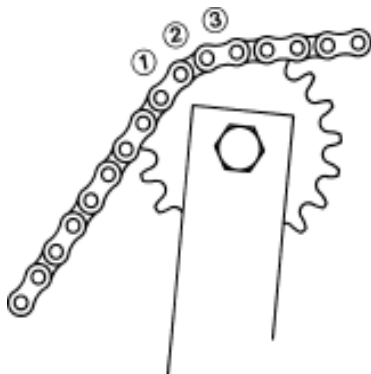
Normal Positioning

The ROSTA tensioning elements are always positioned on the slack side of the chain. They should be fitted as close as possible to the big wheel and guide the chain from the outer side. **The ideal position of the tensioning arm is nearly parallel to the chain drive.**



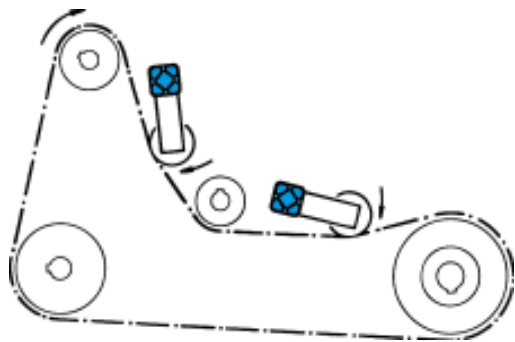
Reversible Chain Drives

The tensioning elements must be placed on both sides of the chain strand. Due to the reversible function there results a much higher pressure on the load side than on the slack side of the chain strand. We therefore advise to use oversized tensioning elements and a pretension angle of max 15°.



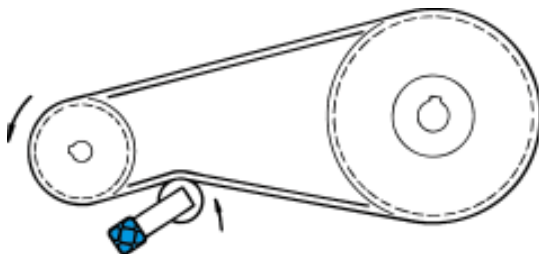
Chain Engagement

At least 3 teeth of the sprocket wheel must engage into the roller chain when tensioning the chain for the first time. The minimum number of engaged sprocket teeth between the tensioning wheel and chain strand is 3.



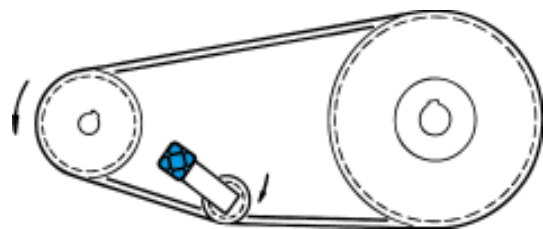
Mounting

The chain tensioner must be adjusted in the axial and angular direction. The tensioning arm should be nearly in parallel position to the chain and in the direction of the chain's drive. In case the chain drives are extremely long it is possible to fit several chain tensioners in order to obtain better tensioning and compensation.



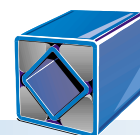
V-belt Tensioner – Outer Roller

Please refer to the instructions of the belt manufacturer for further information on the belt structure when mounting our ROSTA belt tensioning elements with flat rollers on the back of the belt. Inner or outer tension rollers must be positioned as far away as possible from the next V-belt pulley the belt is guided to.



V-belt Tensioner – Inner grooved Pulleys

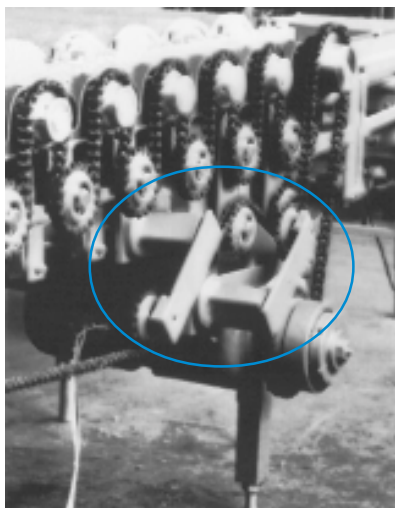
V-belt pulleys can be mounted as inner rollers at any position on the slack side of the V-belt (For drives with long axial distances and a high level of vibration we recommend to use pulleys with deep grooves).



Installations



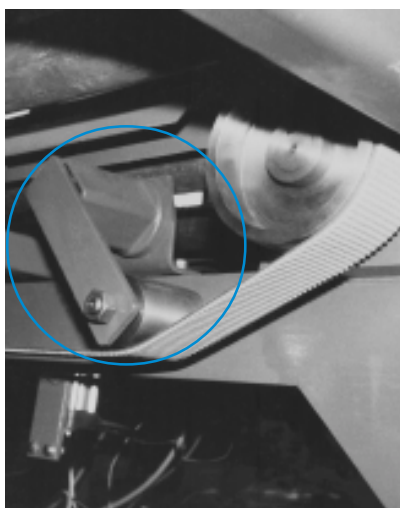
Conveyor-belt scraper with type SE



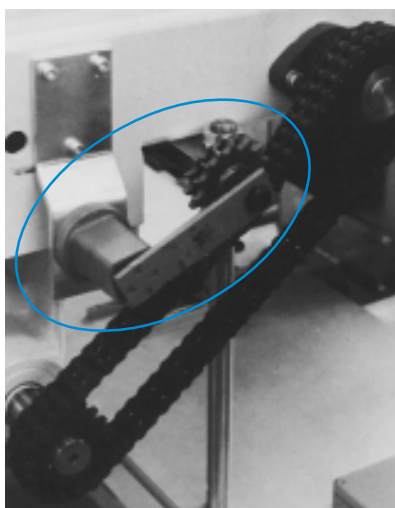
Chain tensioner for cleaning machine



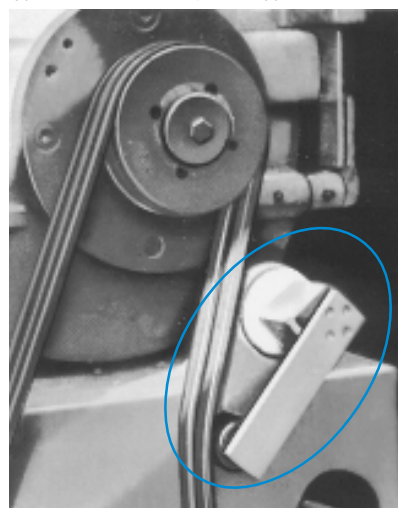
Flat belt drive with tensioning element type SE and tensioning roller type R



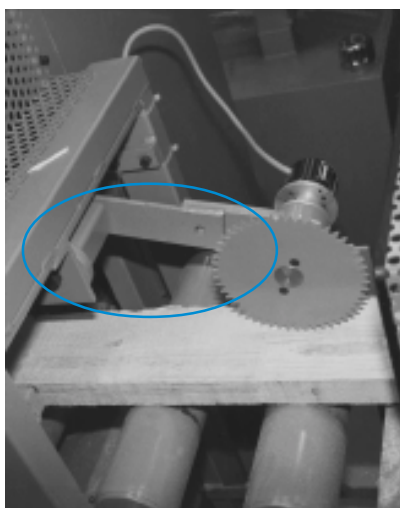
Transport belt in palletizing machine



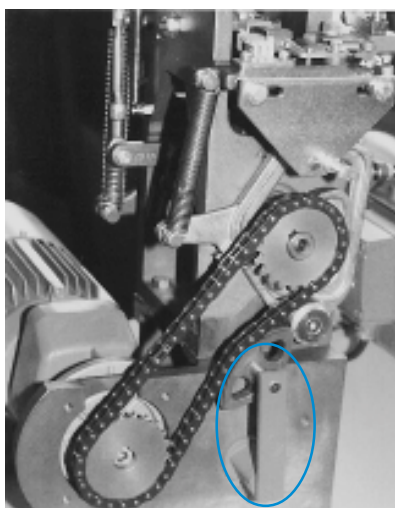
Duplex chain drive



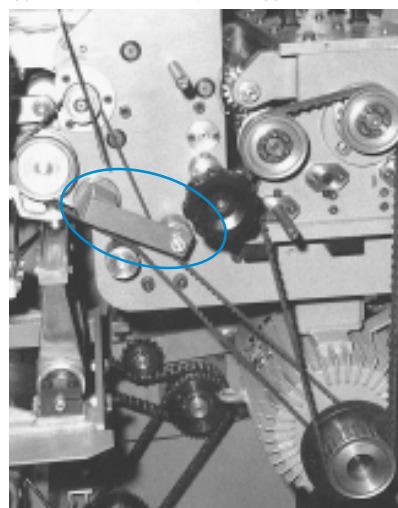
V-belt drive with tensioning element type SE and tensioning roller type R



Counting device in milling machine



Chain tensioner in textile machine



Toothed belt drive in printing machine