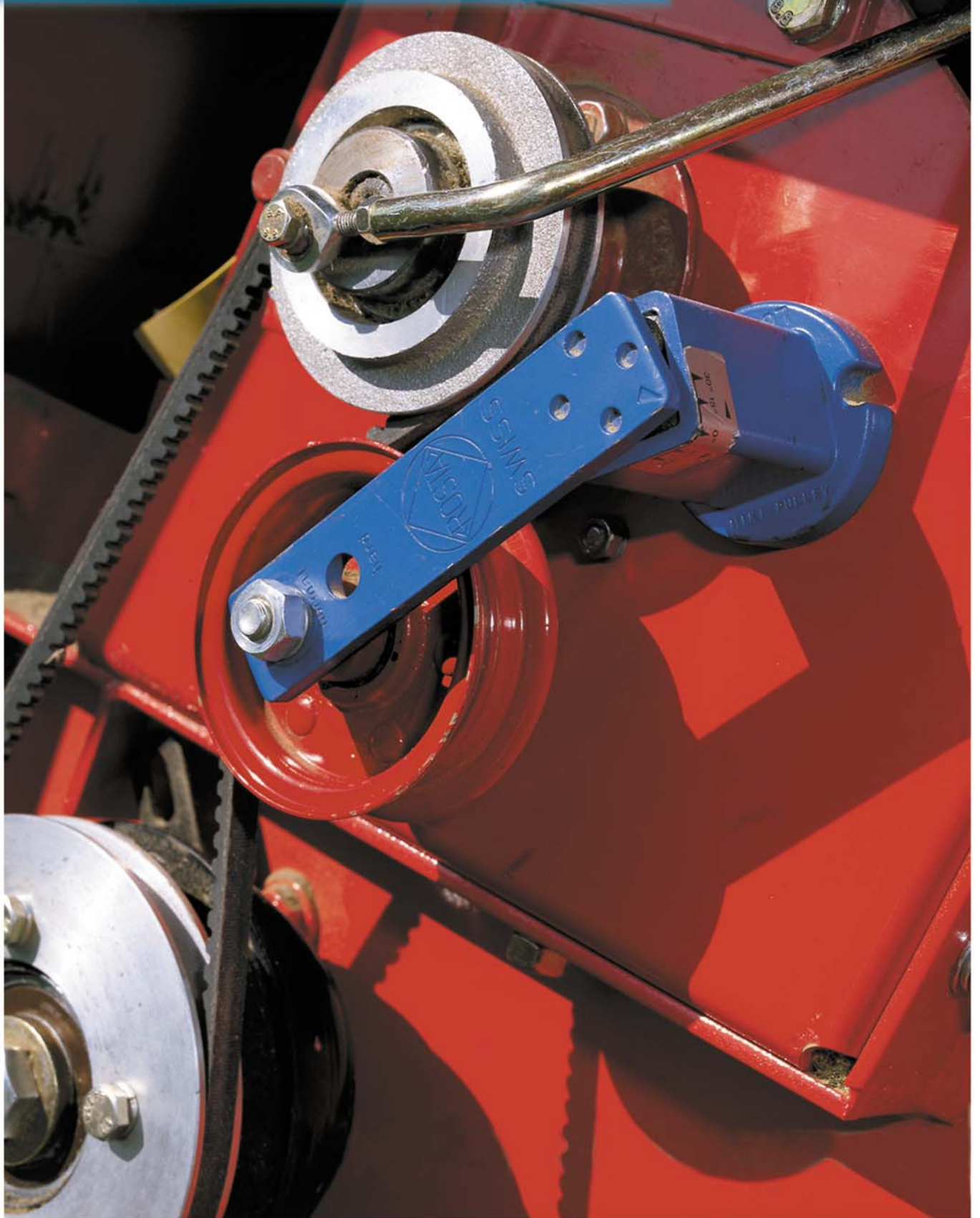


ROSTA Tensioner Devices





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.

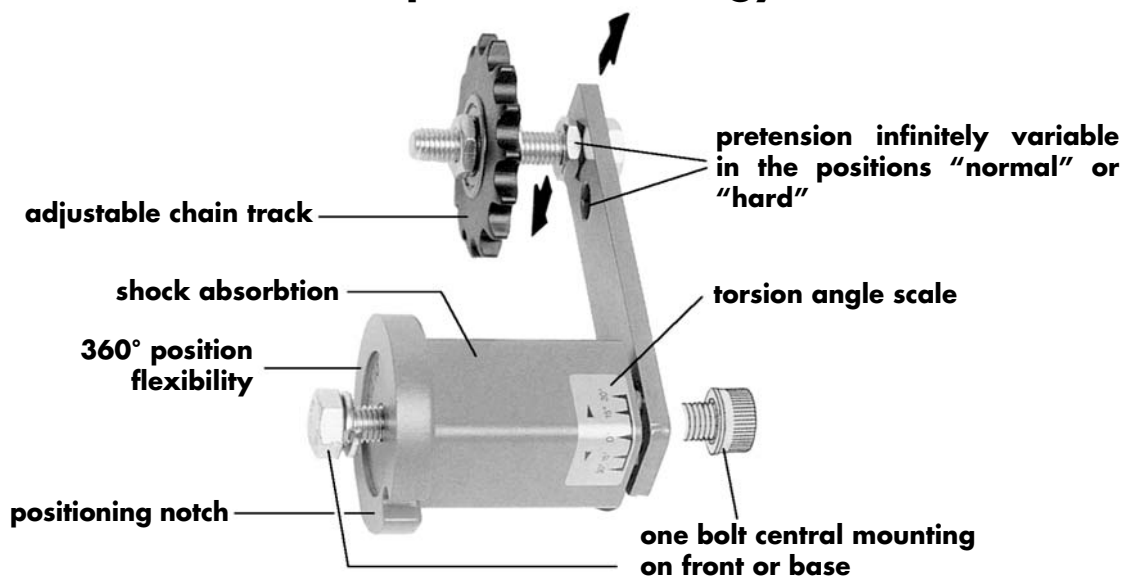
Installation

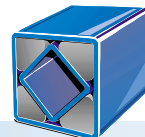
The sprocket wheel or chain rider is installed in arm position "normal" or "hard" in the required position and secured with the supplied nuts.

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 $+80^{\circ}\text{C}$ (-40° to $+180^{\circ}\text{F}$).

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 $+80^{\circ}$ to $+120^{\circ}\text{C}$ ($+180^{\circ}$ to $+250^{\circ}\text{F}$), 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.



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 1.5 m/sec.



ROSTA Tensioning Roller Type R

Page 38

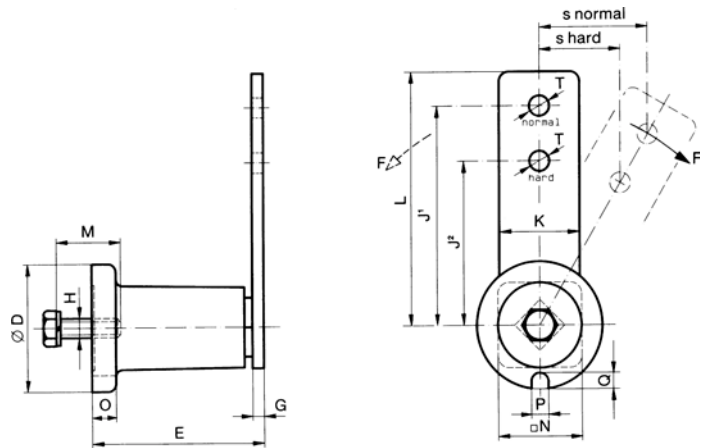
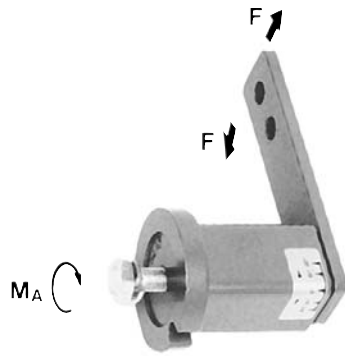
The ROSTA roller installed on the relevant SE unit is an ideal belt tensioner. The roller is made of high-quality industrial plastic material with two self-lubricating ball bearings 2 Z.



Tensioner Device

Type SE/SE-G/SE-W/SE-B

Standard Mounting



Technical Data

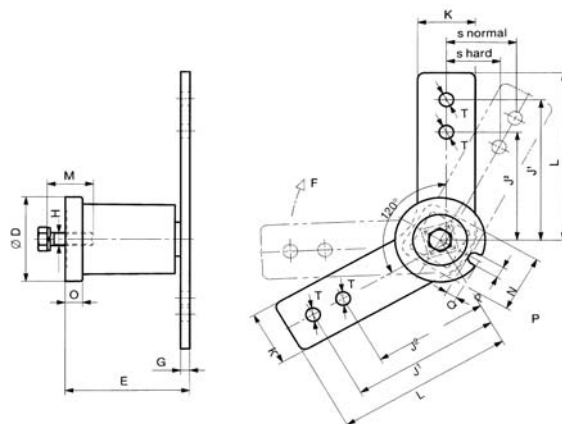
Art. N°	Type*	Art. N°	Type*	Art. N°	Type*	F max. in N (J-value for Type-W)				s max. in mm		Torque MA in Nm	Weight in kg
						normal (J ¹)	hard (J ²)	normal	hard				
06 011 001	SE 11	06 013 201	SE 11-G			80	106	40	30	10	0.20		
06 011 002	SE 15	06 013 202	SE 15-G	06 015 002	SE 15-W	135 (81)	168 (101)	50	40	25	0.40		
06 011 003	SE 18	06 013 203	SE 18-G	06 015 003	SE 18-W	350 (210)	437 (262)	50	40	49	0.60		
06 011 004	SE 27	06 013 204	SE 27-G	06 015 004	SE 27-W	800 (480)	1040 (624)	65	50	86	1.70		
06 011 005	SE 38	06 013 205	SE 38-G	06 015 005	SE 38-W	1500 (900)	4875 (1125)	87.5	70	210	3.55		
06 011 006	SE 45	06 013 206	SE 45-G	06 015 006	SE 45-W	2600 (1560)	3250 (1950)	112.5	90	410	6.40		
06 011 007	SE 50	06 013 207	SE 50-G	06 015 007	SE 50-W	4000 (2400)	5000 (3000)	125	100	750	9.00		

Dimensions

Art. N°	Type*	D	E	G	H	J ¹	J ²	K	L	M	N	O	P	Q	T
06 011 001	SE 11	35	51	5	M 6	80	60	20	90.5	20	22	6	8.5	5	8.5
06 011 002	SE 15	45	64	5	M 8	100	80	25	112.5	25	30	8	8.5	6	10.5
06 011 003	SE 18	58	79	7	M10	100	80	30	115	30	35	10.5	8.5	8	10.5
06 011 004	SE 27	78	108	8	M12	130	100	50	155	40	52	15	10.5	10	12.5
06 011 005	SE 38	95	140	10	M16	175	140	60	205	40	66	15	12.5	12	20.5
06 011 006	SE 45	115	200	12	M20	225	180	70	260	50	80	18	12.5	12	20.5
06 011 007	SE 50	130	210	20	M24	250	200	80	290	60	78	20	17	17	20.5

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

ROSTA-Tensioner Device Type SE-B



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

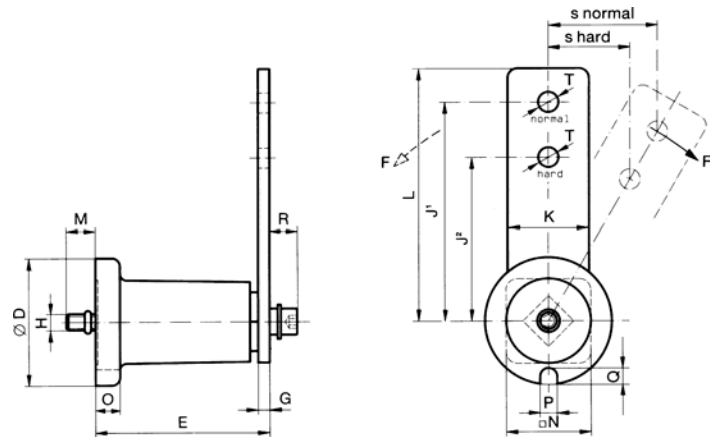
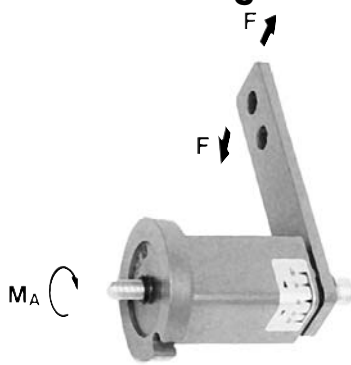
Art. N°	Type	F max. in N of position		s max. in mm		Torque MA in Nm	Weight in kg
		normal (J ¹)	hard (J ²)	normal	hard		
06 021 003	SE-B 18	175	220	50	40	49	0.75
06 021 004	SE-B 27	400	520	65	50	86	2.10



Tensioner Device

Type SE-F/SE-I

Front Mounting



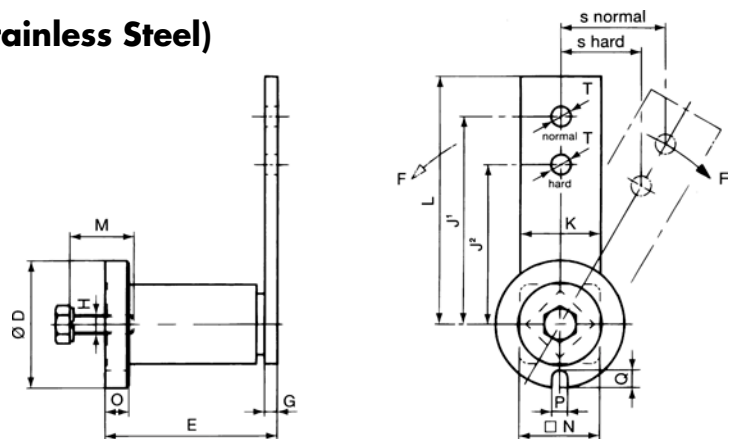
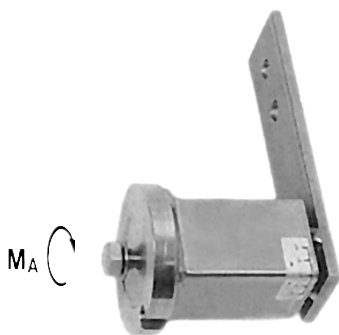
Technical Data

Art. N°	Type	F max. in N of position		s max. in mm		Torque MA in Nm	Weight in kg
		normal (J ¹)	hard (J ²)	normal	hard		
06 061 002	SE-F 15	135	168	50	40	17	0.40
06 061 003	SE-F 18	350	437	50	40	41	0.65
06 061 004	SE-F 27	800	1040	65	50	83	1.85
06 061 005	SE-F 38	1500	1875	87.5	70	145	3.70
06 061 006	SE-F 45	2600	3250	112.5	90	355	6.90
06 061 007	SE-F 50	4000	5000	125	100	690	10.10

Dimensions

Art. N°	Type	D	E	G	H	J ¹	J ²	K	L	M	N	O	P	Q	R	T
06 061 002	SE-F 15	45	64 ^{+1/-0.5}	5	M 6	100	80	25	112.5	12.4	30	8	8.5	6	10	10.5
06 061 003	SE-F 18	58	79 ^{+1/-0.5}	7	M 8	100	80	30	115	18.9	35	10.5	8.5	8	12	10.5
06 061 004	SE-F 27	78	108 ^{+2/-0.5}	8	M10	130	100	50	155	17.5	52	15	10.5	10	16	12.5
06 061 005	SE-F 38	95	140 ^{+2/-0.5}	10	M12	175	140	60	205	18.0	66	15	12.5	12	19	20.5
06 061 006	SE-F 45	115	200 ^{+3/-1}	12	M16	225	180	70	260	33.0	80	18	12.5	12	20.5	20.5
06 061 007	SE-F 50	130	210 ^{+3/-1}	20	M20	250	200	80	290	23.0	78	20	17	17	20.5	20.5

ROSTA Tensioner Device Type SE-I (Stainless Steel)



Technical Data

Art. N°	Type	F max. in N of position		s max. in mm		Torque MA in Nm	Weight in kg
		normal (J ¹)	hard (J ²)	normal	hard		
06 071 101	SE-I 15	150	185	50	40	25	0.35
06 071 102	SE-I 20	400	500	50	40	49	0.70
06 071 103	SE-I 30	860	1120	65	50	86	1.92
06 071 104	SE-I 40	1500	1880	87.5	70	210	4.29

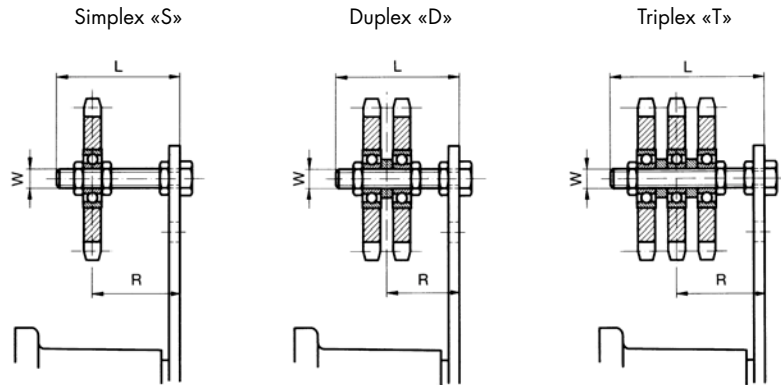
Dimensions

Art. N°	Type	D	E	G	H	J ¹	J ²	K	L	M	N	O	P	Q	T
06 071 101	SE-I 15	45	64	5	M 8	100	80	25	112.5	25	25	8	8.5	6	10.5
06 071 102	SE-I 20	60	78	6	M10	100	80	35	112.5	30	35	10	8.5	8	10.5
06 071 103	SE-I 30	80	107	8	M12	130	100	50	155	40	50	15	10.5	10	12.5
06 071 104	SE-I 40	100	140	10	M16	175	140	70	205	40	70	15	12.5	12	20.5



Sprocket Wheel Set

Type N



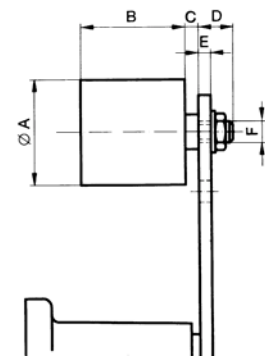
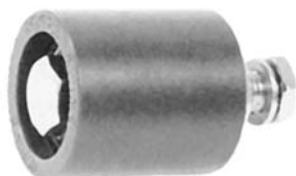
Allocation Table

Art. N°	L	R	Art. N°	L	R	Art. N°	L	R	Type	Chain ANSI	Element Type
Simplex «S»			Duplex «D»			Triplex «T»					
06 510 001	55	23 - 43	06 520 001	55	28 - 39	06 530 001	70	33 - 48	N3/8"-10S/D N3/8"-10T	S D T ANSI 35 - 1/2 ANSI 35 - 3	SE 15/18 SE 18
06 510 002	55	23 - 44	06 520 002	55	30 - 37	06 530 002	80	41 - 51	N1/2"-10S/D N1/2"-12T	ANSI 40 - 1/2 ANSI 40 - 3	SE 18 SE 27
06 510 003	80	27 - 65	06 520 003	80	36 - 57	06 530 003	80	43 - 50	N5/8"-12S/D/T	ANSI 50 - 1/2/3	SE 27
06 510 004	80	27 - 65	06 520 004	80	37 - 56				N3/4"-12S/D	ANSI 60 - 1/2	SE 27
06 510 005	100	40 - 80	06 520 005	120	50 - 90	06 530 005	120	59 - 80	N3/4"-20S/D/T	ANSI 60 - 1/2/3	SE 38
06 510 006	100	40 - 80	06 520 006	120	55 - 84	06 530 006	160	74 - 108	N1"-20S/D N1"-20T	ANSI 80 - 1/2 ANSI 80 - 3	SE 38 SE 45
06 510 007	100	48 - 80	06 520 007	140	68 - 120	06 530 007	160	86 - 105	N1-1/4"-20S/D/T	ANSI 100-1/2/3	SE 45/50
06 510 008	140	48 - 120	06 520 008	140	73 - 97	06 530 008	180	98 - 111	N1-1/2"-20S/D/T	ANSI 120-1/2/3	SE 45/50

Detail mass of a sprocket wheel see page 39 (mass W corresponds to mass A)
Larger sprockets available on request (ANSI 140/160)

Tensioning Roller

Type R

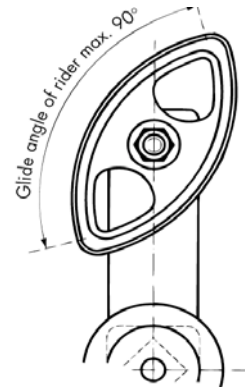
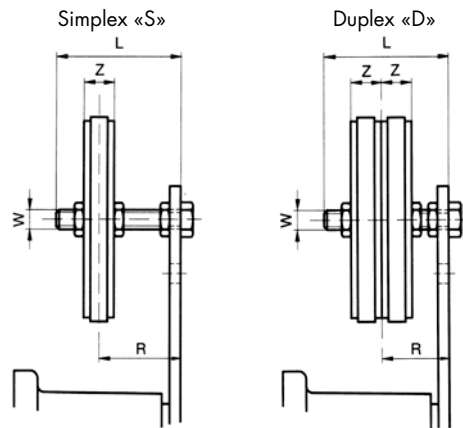


Art. N°	Type	max. speed rpm.	A	B	C	D	E max.	F	Tensioning element Type	Weight in kg
06 580 001	R 11	8000	30	35	2	14	5	M8	SE 11	0.08
06 580 002	R 15/18	8000	40	45	6	16	7	M10	SE/SE-F 45 or 50	0.17
06 580 003	R 27	6000	60	60	8	17	7	M12	SE/SE-F 27	0.40
06 580 004	R 38	5000	80	90	8	25	10	M20	SE/SE-F 38	1.15
06 580 005	R 45/50	4500	90	135	10	27	12	M20	SE/SE-F 45 or 50	1.75



Chain Rider Set

Type P

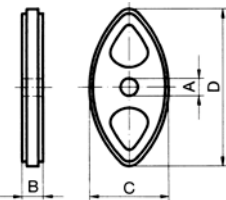


Technical Data

Art. N°	Art. N°	Type	Roller chain ANSI	W	L	Z	Adjusting range track R		Tensioning element Type
Simplex «S»	Duplex «D»		«S» «D»				«S»	«D»	
06 550 001	06 560 001	P ³ / ₈ "- 8 S/D	ANSI 35 1 / 2	M8	45	10.2	19-34	25-30	SE 11
06 550 002	06 560 002	P ¹ / ₂ "-10 S/D	ANSI 40 1 / 2	M10	55	13.9	23-41	30-34	SE/SE-F 15
06 550 003	06 560 003	P ⁵ / ₈ "-10 S/D	ANSI 50 1 / 2	M10	55/70	16.6	24-39	34-46	SE/SE-F 15 or 18
06 550 004	06 560 004	P ³ / ₄ "-12 S/D	ANSI 60 1 / 2	M12	80	19.5	30-61	40-52	SE/SE-F 27

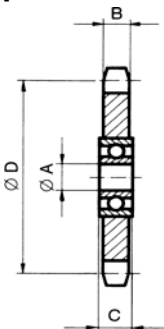
Tensioning Element Accessories

Chain Rider Type P



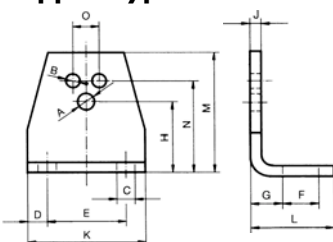
Art. N°	Type	Roller chain ANSI	A ^{0,2}	B	C	D	Weight in kg
06 540 001	P ³ / ₈ "	ANSI 35	8	10.2	40	75	0.02
06 540 002	P ¹ / ₂ "	ANSI 40	10	13.9	50	96	0.03
06 540 003	P ⁵ / ₈ "	ANSI 50	10	16.6	65	126	0.05
06 540 004	P ³ / ₄ "	ANSI 60	12	19.5	74	148	0.07

Sprocket Wheel Type N



Art. N°	Type	Roller chain ANSI	Number of teeth	A	B	C	D	Weight in kg
06 500 001	N ³ / ₈ "-10	ANSI 35	15	10	5.3	9	45.81	0.06
06 500 002	N ¹ / ₂ "-10	ANSI 40	15	10	7.2	9	61.08	0.15
06 500 003	N ¹ / ₂ "-12	ANSI 40	15	12	7.2	12	61.08	0.15
06 500 004	N ⁵ / ₈ "-12	ANSI 50	15	12	9.1	12	76.36	0.27
06 500 005	N ⁵ / ₈ "-20	ANSI 50	15	20	9.1	15	76.36	0.29
06 500 006	N ³ / ₄ "-12	ANSI 60	15	12	11.1	12	91.63	0.47
06 500 007	N ³ / ₄ "-20	ANSI 60	15	20	11.1	15	91.63	0.47
06 500 008	N1"-20	ANSI 80	13	20	16.1	15	106.14	0.88
06 500 009	N1 ¹ / ₄ "-20	ANSI 100	13	20	18.5	15	132.67	1.60
06 500 010	N1 ¹ / ₂ "-20	ANSI 120	11	20	24.1	15	135.23	1.93

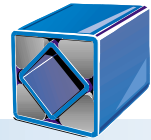
Support Type WS



Art. N°	Type	A	B	C	D	E	F	G	H	J	K	L	M	N	O	Weight in kg
06 590 001	WS 11-15	6.5	5.5	7	7.5	30	13	11.5	27	4	45	30	46	35	10	0.08
06 590 002	WS 15-18	8.5	6.5	7	7.5	40	13	13.5	34	5	55	32	58	44	12	0.15
06 590 003	WS 18-27	10.5	8.5	9.5	10	50	15.5	16.5	43	6	70	38	74	55	20	0.28
06 590 004	WS 27-38	12.5	10.5	11.5	12.5	65	21.5	21	57	8	90	52	98	75	25	0.70
06 590 005	WS 38-45	16.5	12.5	14	15	80	24	21	66	8	110	55	116	85	35	0.90
06 590 006	WS 45-50	20.5	12.5	18	20	100	30	26	80	10	140	66	140	110	40	1.80

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.

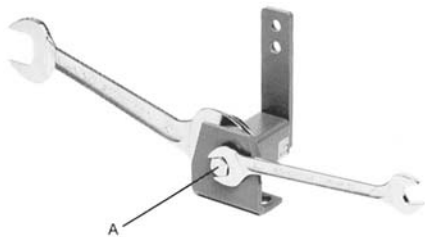


Mounting Instructions

The tension pressure F is infinitely variable

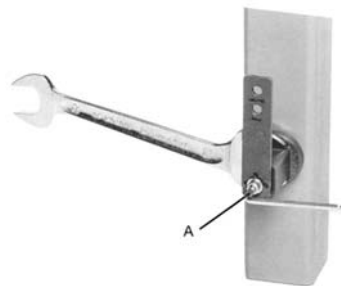
Type of element	Angle of pretension 10°				Angle of pretension 20°				Angle of pretension 30°			
	normal		hard		normal		hard		normal		hard	
	F in N	s in mm	F in N	s in mm	F in N	s in mm	F in N	s in mm	F in N	s in mm	F in N	s in mm
SE/SE-G 11	15	14	20	10	40	28	53	20	80	40	106	30
SE/SE-F/SE-G 15	25	17	31	14	65	34	81	27	135	50	168	40
SE-W 15	15	17	20	14	39	34	48	27	81	50	101	40
SE/SE-F/SE-G 18	75	17	93	14	180	34	225	27	350	50	437	40
SE-W 18	45	17	56	14	108	34	135	27	210	50	262	40
SE/SE-F/SE-G 27	150	22	195	17	380	44	494	34	800	65	1040	50
SE-W 27	90	22	112	17	228	44	296	34	480	65	624	50
SE/SE-F/SE-G 38	290	30	362	24	730	60	912	47	1500	87	1875	70
SE-W 38	174	30	217	24	438	60	548	47	900	87	1125	70
SE/SE-F/SE-G 45	500	39	625	31	1300	78	1625	61	2600	112	3250	90
SE-W 45	300	39	375	31	780	78	975	61	1560	112	1950	90
SE/SE-F/SE-G 50	600	43	750	34	1700	86	2125	68	4000	125	5000	100
SE-W 50	360	43	450	34	1020	86	1275	68	2400	125	3000	100

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 .



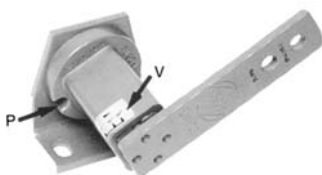
Tension "SE-F"

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.



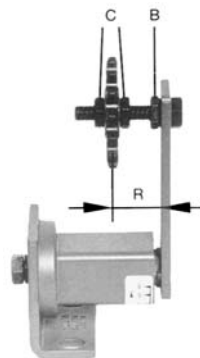
Central Fixing

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 pretensioning angle. The positioning notch "P" on the housing flange allows easy readjustment of the pretensioning level when a corresponding mark is set up on the support or the machine part.



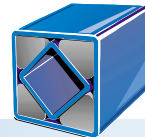
Chain Track

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.

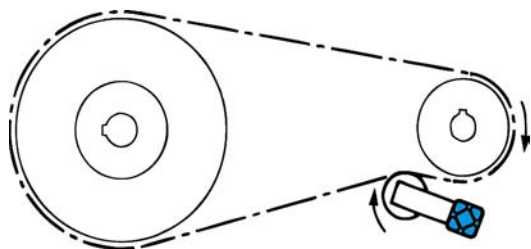


"Z"-Arrangement

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.

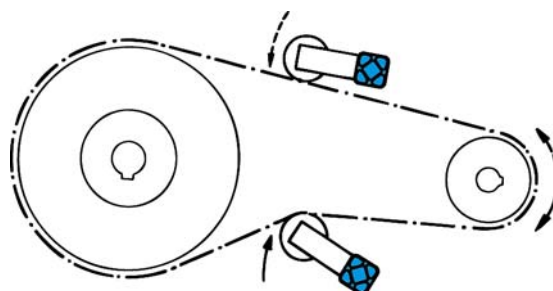


Mounting Instructions



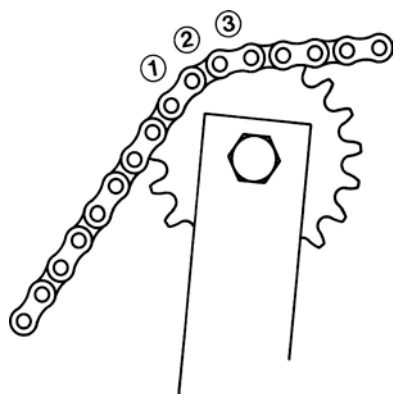
Normal Positioning

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.**



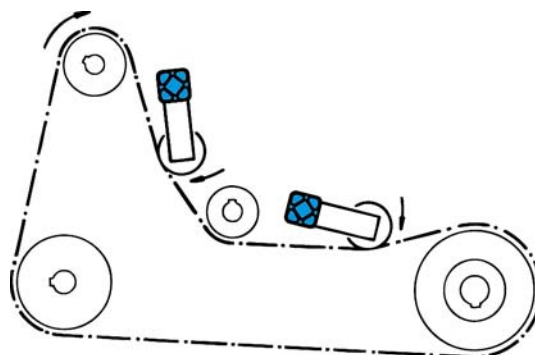
Reversible Chain Drives

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°.



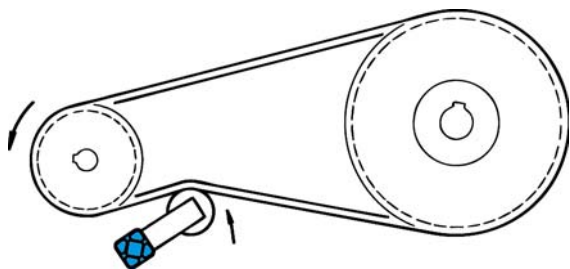
Chain Engagement

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.



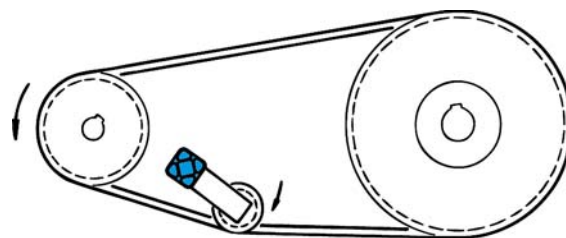
Mounting

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.

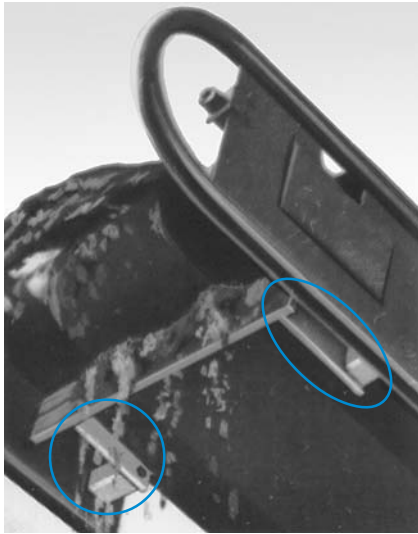


V-belt Tensioner – Inner grooved Pulleys

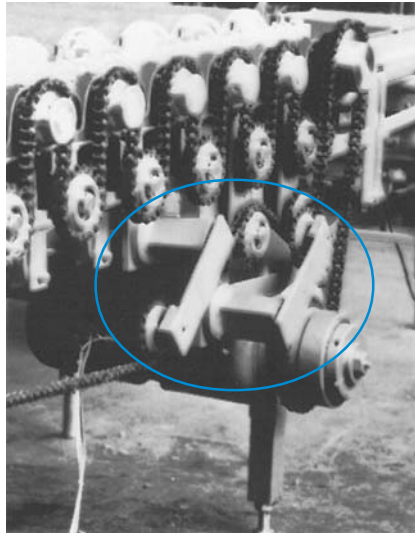
V-belt pulleys can be mounted as inner rollers at any position on the slack side of the V-belt (For drives with long axial distances and a high level of vibration we recommend to use pulleys with deep grooves).



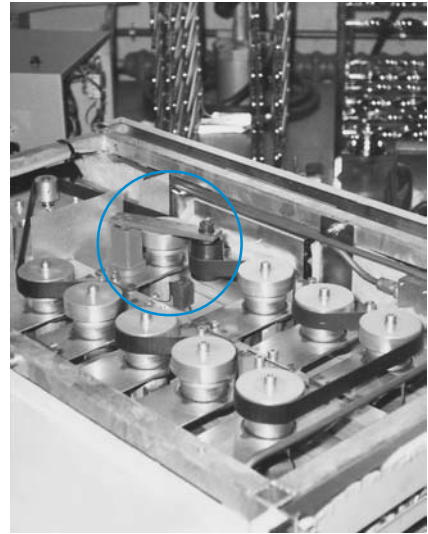
Installations



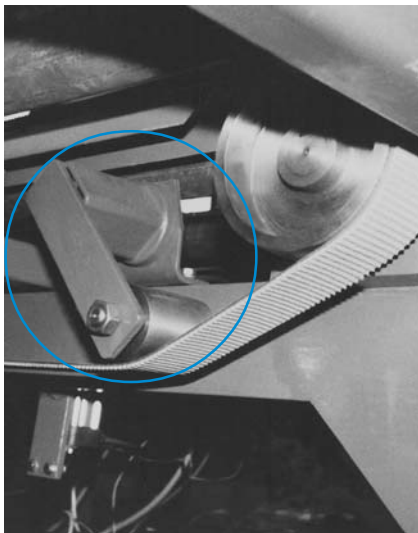
Conveyor-belt scraper with type SE



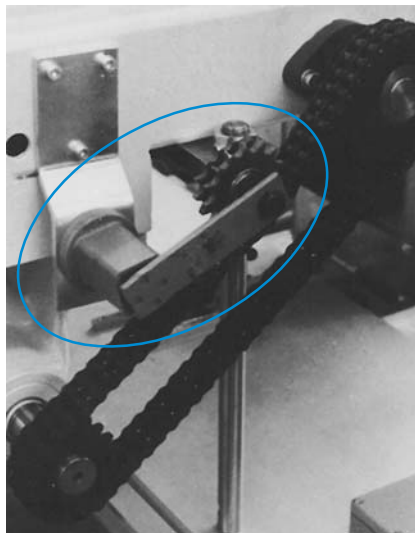
Chain tensioner for cleaning machine



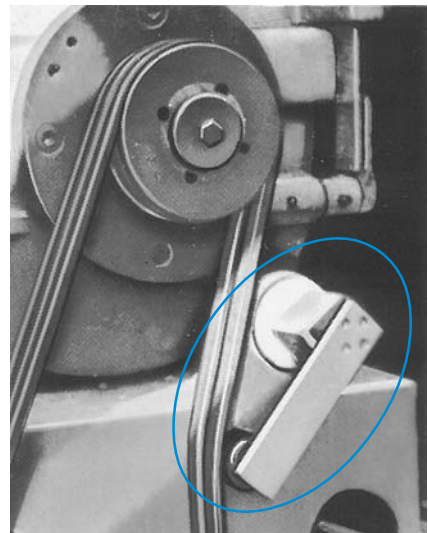
Flat belt drive with tensioning element type SE and tensioning roller type R



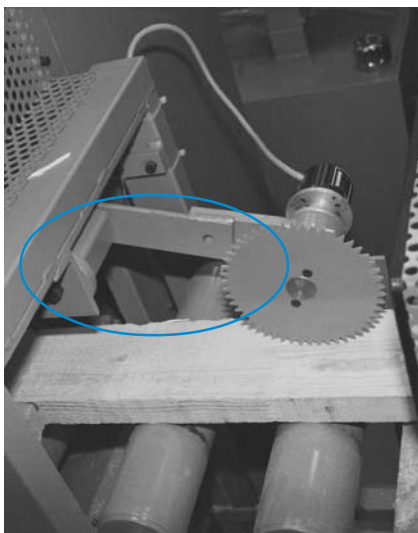
Transport belt in palletizing machine



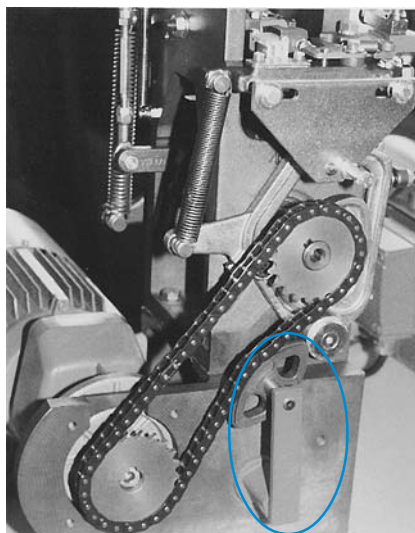
Duplex chain drive



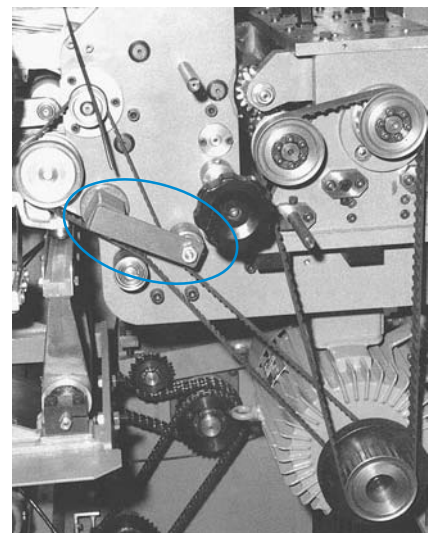
V-belt drive with tensioning element type SE and tensioning roller type R



Counting device in milling machine



Chain tensioner in textile machine



Toothed belt drive in printing machine