

# ELEKTROMATEN® KE

## Chain-drive

For driving:  
Roller shutters and rolling grilles

Series SG50  
KE 9.24

Series SG85  
KE 20.24 - KE 40.24

Series SG115  
KE 60.24 - KE 120.24

ELEKTROMATEN KE are special drives for industrial doors. The door shaft is driven by a chain-transmission. Prevention of doors falling back requires a safety brake of the appropriate size.

ELEKTROMATEN KE comprises of:

Worm gear, interchangeable output-shaft, emergency manual operator, integrated limit switches and electrical motor.

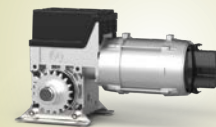
### Output side

The interchangeable output-shaft allows easy modification from left- to right-hand use.

### Approvals and certificates

#### ELEKTROMATEN

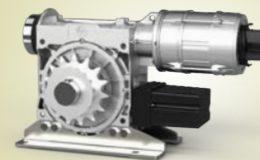
Type test according to:  
DIN EN 12453  
DIN EN 60335-1  
DIN EN 60335-2-103  
TÜV NORD CERT GmbH



SG50



SG85



SG115



1

### Emergency manual operation

- Hand crank NHK
- Rapid hand chain operator SK (KE 9.24)
- Hand chain operator KNH (≥KE 20.24)

1

2

3



2

### Limit switches

#### Mechanical limit NES

- 2 operating, 2 emergency- and 2 auxiliary limit switches

4



3

#### Digital limit DES

- Absolute encoder, after a power failure, re-adjustment is not required

5



4

### Mounting

- Foot angle (standard fitting)
- Bracket (as an additional part or mounted directly on the ELEKTROMATEN)



5

### Separate Safety Brake FG

- Prevention of doors falling back
- Suitable Safety Brakes for all types of ELEKTROMATEN KE can be found in Section 7.

6



6

### Special versions

- Increase of cycles per hour
- Higher protection class
- Other voltages and frequencies
- Explosion-proof according to ATEX (page 6.021)
- ELEKTROMATEN KE with built-on frequency inverter (page 2.031)

### Door controls

- Simple connection by means of non-interchangeable plug connections allowing simple exchange with other GfA control panels
- Control voltage: 24 V
- Frequency: 50 Hz / 60 Hz
- Mains supply: 1N~230 V, 3~230 V, 3N~400 V, 3~400 V

Details of all GfA door controls can be found in Section 8.

## 1. Technical data

ELEKTROMATEN		KE 9.24	KE 9.24 WS	KE 20.24	KE 30.24
Series		SG60	SG60	SG85	SG85
Output torque	Nm	90	90	200	300
Output speed	rpm	24	24	24	24
Output shaft / hollow shaft (Ø)	mm	25	25	40	40
Max. holding torque <sup>1)</sup>	Nm	90	90	200	300
Max. output speed OPEN / CLOSE for frequency inverter operation <sup>2)</sup>	rpm	42 / 24	--	42 / 42	42 / 42
Motor power	kW	0,37	0,45	0,40	0,85
Supply voltage	V	3~230 / 400	1N~230	3~230 / 400	3~230 / 400
Operating frequency	Hz	50	50	50	50
Operating current <sup>3)</sup>	A	2,1 / 1,2	3,9	3,1 / 1,8	4,4 / 2,6
Max. cycles per hour <sup>4)</sup>		12 (10,4)	9 (3,5)	11 (5,6)	11 (5,6)
Limit switch range <sup>5)</sup>		20 (40)	20 (40)	20 (40, 60, 110)	20 (40, 60, 110)
Max. hand force NHK / SK or KNH <sup>6)</sup>	N	62 / 165	62 / 165	168 / 187	212 / 105
Weight	kg	13	15	24	26
Spare parts: Catalogue page		9.051	9.051	9.055	9.055
Part no. installation drawing (dxf, dwg)		50000577	50000852	50000579	50000579
Part no. ELEKTROMATEN		10002208	10002268	10002232	10002233

ELEKTROMATEN		KE 40.24	KE 60.24	KE 80.24	KE 120.24
Series		SG85	SG115	SG115	SG115
Output torque	Nm	400	600	800	1200
Output speed	rpm	24	24	24	24
Output shaft / hollow shaft (Ø)	mm	40	55	55	55
Max. holding torque <sup>1)</sup>	Nm	400	600	800	1200
Max. output speed OPEN / CLOSE for frequency inverter operation <sup>2)</sup>	rpm	42 / 42	42 / 42	42 / 42	34 / 24
Motor power	kW	1,10	1,50	2,00	3,00
Supply voltage	V	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400
Operating frequency	Hz	50	50	50	50
Operating current <sup>3)</sup>	A	5,2 / 3,0	6,7 / 3,9	8,1 / 4,7	11,9 / 6,9
Max. cycles per hour <sup>4)</sup>		11 (5,6)	11 (6,9)	12 (8,3)	11 (6,9)
Limit switch range <sup>5)</sup>		20 (40, 60, 110)	20 (60, 110)	20 (60, 110)	20 (60, 110)
Max. hand force NHK / SK or KNH <sup>6)</sup>	N	255 / 126	193 / 156	302 / 244	234 / 189
Weight	kg	28	47	49	57
Spare parts: Catalogue page		9.055	9.056	9.056	9.056
Part no. installation drawing (dxf, dwg)		50000579	50000796	50000822	50000797
Part no. ELEKTROMATEN		10002234	10002538	10002539	10002570

Generally applies: Degree of protection IP65 (combined with WS 900: IP54), permissible temperature range -10 °C...+40 °C (+60 °C), operating sound pressure level SPL <70 dB(A)  
 1) Maximum torque that may act on the output shaft of the drive unit when the door is stationary · 2) We recommend the selection of GfA ELEKTROMATEN-FI for use with frequency inverter, OPEN drive speed at 87 Hz, see 3.7 · 3) The operating current in door drives can reach up to 4x the rated current for limited periods, see 3.6 and 3.7 · 4) One cycle consists of a complete opening and closing movement of the door. The value according to EN 60335-2-103 is given in brackets. If the limit switch range is not fully used, the number of possible cycles can be increased in relation to the reduced number of revolutions of the output shaft, see also 3.2 · 5) Maximum revolutions of hollow shaft · 6) See 3.4

## 2. Selection chart • for Roller shutters

ELEKTROMATEN	Tube	Transmission		Transmission		Transmission		Transmission	
	EN 10220	1:2		1:3		1:3,8		1:4,5	
	[mm]	F [N]	v <sub>a</sub> [cm/s]	F [N]	v <sub>a</sub> [cm/s]	F [N]	v <sub>a</sub> [cm/s]	F [N]	v <sub>a</sub> [cm/s]
KE 9.24 / KE 9.24 WS	101,6 x 3,6	2368	7,6	3553	5,1	4500	4,0	5329	3,4
	108,0 x 3,6	2250	8,0	3375	5,4	4275	4,2	5063	3,6
	133,0 x 4,0	1882	9,6	2824	6,4	3576	5,1	4235	4,3
	159,0 x 4,5	1609	11,2	2413	7,5	3057	5,9	3620	5,0
KE 20.24	133,0 x 4,0	4183	9,6	6275	6,4	7948	5,1	9412	4,3
	159,0 x 4,5	3575	11,2	5363	7,5	6793	5,9	8045	5,0
	177,8 x 5,0	3236	12,4	4853	8,3	6148	6,5	7280	5,5
	193,7 x 5,4	2995	13,4	4492	9,0	5690	7,1	6738	6,0
KE 30.24	219,1 x 5,9	2677	15,0	4015	10,0	5086	7,9	6023	6,7
	133,0 x 4,0	6275	9,6	9412	6,4	11922	5,1	14118	4,3
	159,0 x 4,5	5363	11,2	8045	7,5	10190	5,9	12067	5,0
	177,8 x 5,0	4853	12,4	7280	8,3	9221	6,5	10920	5,5
KE 40.24	193,7 x 5,4	4492	13,4	6738	9,0	8535	7,1	10108	6,0
	219,1 x 5,9	4015	15,0	6023	10,0	7629	7,9	9034	6,7
	159,0 x 4,5	7151	11,2	10726	7,5	13587	5,9	16089	5,0
	177,8 x 5,0	6471	12,4	9707	8,3	12295	6,5	14560	5,5
KE 60.24	193,7 x 5,4	5990	13,4	8985	9,0	11380	7,1	13477	6,0
	219,1 x 5,9	5353	15,0	8030	10,0	10171	7,9	12045	6,7
	244,5 x 6,3	4839	16,6	7259	11,1	9195	8,7	10888	7,4
	273,0 x 6,3	4369	18,4	6553	12,3	8300	9,7	9829	8,2
KE 80.24	298,5 x 7,1	4019	20,0	6028	13,3	7636	10,5	9042	8,9
	323,9 x 7,1	3722	21,6	5583	14,4	7072	11,4	8375	9,6
	177,8 x 5,0	9707	12,4	14560	8,3	18443	6,5	21840	5,5
	193,7 x 5,4	8985	13,4	13477	9,0	17071	7,1	20215	6,0
KE 120.24	219,1 x 5,9	8030	15,0	12045	10,0	15257	7,9	18068	6,7
	244,5 x 6,3	7259	16,6	10888	11,1	13792	8,7	16333	7,4
	273,0 x 6,3	6553	18,4	9829	12,3	12451	9,7	14744	8,2
	298,5 x 7,1	6028	20,0	9042	13,3	11454	10,5	13564	8,9
KE 80.24	323,9 x 7,1	5583	21,6	8375	14,4	10608	11,4	12562	9,6
	177,8 x 5,0	12942	12,4	19414	8,3	24590	6,5	29120	5,5
	193,7 x 5,4	11979	13,4	17969	9,0	22761	7,1	26954	6,0
	219,1 x 5,9	10707	15,0	16060	10,0	20343	7,9	24090	6,7
KE 120.24	244,5 x 6,3	9679	16,6	14518	11,1	18389	8,7	21777	7,4
	273,0 x 6,3	8737	18,4	13106	12,3	16601	9,7	19659	8,2
	298,5 x 7,1	8038	20,0	12057	13,3	15272	10,5	18085	8,9
	323,9 x 7,1	7444	21,6	11166	14,4	14144	11,4	16749	9,6
KE 120.24	177,8 x 5,0	19414	12,4	29120	8,3	36886	6,5	43680	5,5
	193,7 x 5,4	17969	13,4	26954	9,0	34141	7,1	40431	6,0
	219,1 x 5,9	16060	15,0	24090	10,0	30514	7,9	36136	6,7
	244,5 x 6,3	14518	16,6	21777	11,1	27584	8,7	32665	7,4
KE 120.24	273,0 x 6,3	13106	18,4	19659	12,3	24901	9,7	29488	8,2
	298,5 x 7,1	12057	20,0	18085	13,3	22907	10,5	27127	8,9
	323,9 x 7,1	11166	21,6	16749	14,4	21215	11,4	25124	9,6
	368,0 x 8,0	9897	24,4	14845	16,3	18804	12,8	22268	10,8

■ F = Lift [N]

■ v<sub>a</sub> = Initial speed [cm/s]

■ Includes 20 % friction for single-wall profiles (profile thickness 20 mm)

■ Read note in 3.2

## 3. Notes

### 3.1 European directive

In accordance with the product standard EN 13241 Doors- and EN 12453 Safety in use of power operated doors-Requirements.

### 3.2 Selection chart / Cycles per hour

The specified cycles per hour (see technical data) apply to even distribution and the limit switch range first mentioned. When using the temperature range +40 °C to +60 °C, the specified value must be halved. For other limit switch ranges, the values must be converted accordingly.

The selection chart includes 20 % friction for roller shutters with single-wall profiles (profile thickness 20 mm) and 10 % friction for sectional doors.

Reduce the weight by a further 20 % for vertical lifted doors and insulated shutters with double walled, thick and/or deep sections. Do not calculate using the tube diameter. The highest torque will occur normally after 1-2 turns of the barrel from close.

### 3.3 Gear self-braking / Brake

Drives without an electric brake have a self-sustaining worm gear and stop automatically.

On drives with an electric brake, stopping is achieved by the external brake. Brake inspection must always be carried out by qualified service engineers.

### 3.4 Manual operation

In accordance with EN 12453 and 12604 hand force up to 390 N is permissible. For large, heavy doors, manual operation is only used for closing the door. In the case of drive units with an electric brake; emergency manual operation is carried out against the closed brake (Read note in 3.3).

### 3.5 Safety brake / Locking torque / Holding torque

For rising loads a safety brake of the appropriate size must be fitted. The admissible drive speeds for the safety brake may not be exceeded. The locking torque moment must not exceed the admissible loads on mechanical components such as e.g. fixings, shafts, keys etc.

### 3.6 Motor overload protection

Motor overload protection must be able to withstand 4x the operating motor current because the starting current of the drive unit can reach these levels for short periods.

### 3.7 Use with external frequency inverter

We recommend ELEKTROMATEN FI with an integrated frequency inverter (page 2.031).

For external frequency inverters applies:

A higher than recommended drive speed puts extra load onto the gear. This extra load must be taken into account when sizing a drive by reducing the available output torque.

Increasing the drive speed by 10 % reduces the admissible drive torque by 5 %. In the case of higher drive speeds reduce the drive torque accordingly (enquire if necessary).

The admissible drive speeds may not be exceeded (see Technical data). The operating forces must comply with EN 12453, and the corresponding EMC directives must likewise be observed.

If selecting a frequency inverter, note that the starting current of the drive unit can reach 4x the operating motor current.

### 3.8 Chain drive

It is not allowed to exceed the admissible loads on chains, shafts, keys and bearings. Observe the direction of the power input.

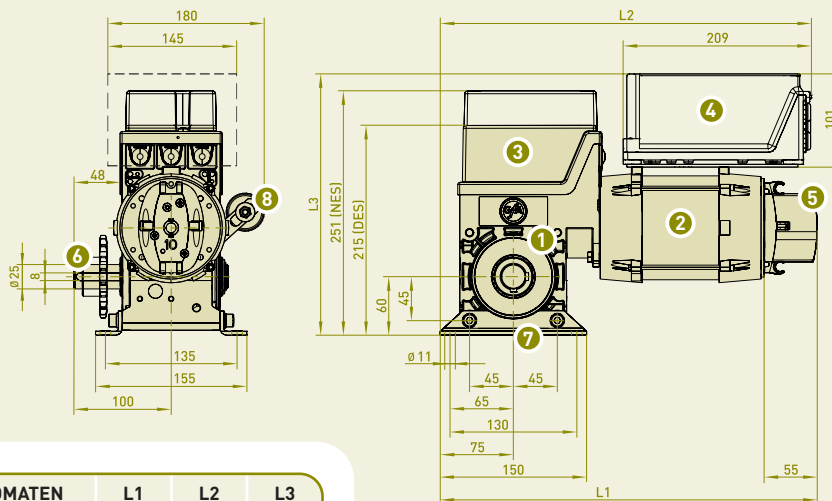
We recommend the use of drive sprockets with at least 15 teeth. The drive sprocket must not protrude beyond the end of the output-shaft.

The chain drive transmission is to be fitted with tensioning devices designed to prevent the chain riding up or disengaging.

## 4. Dimensions

### 4.1 KE 9.24 / KE 9.24 WS

SG50



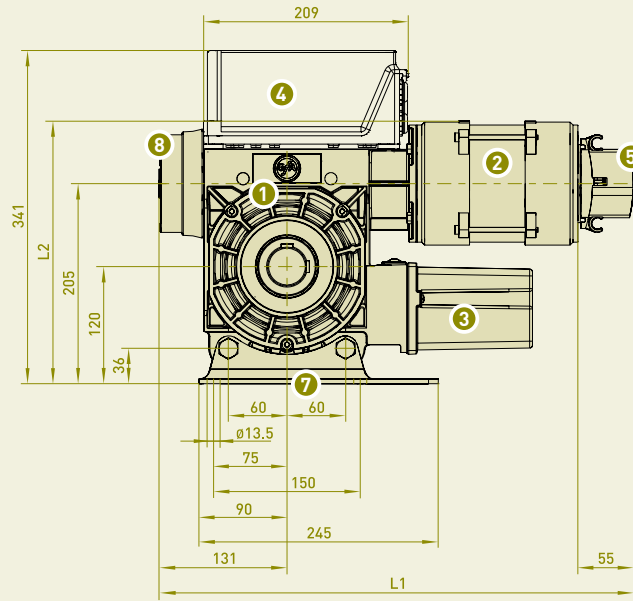
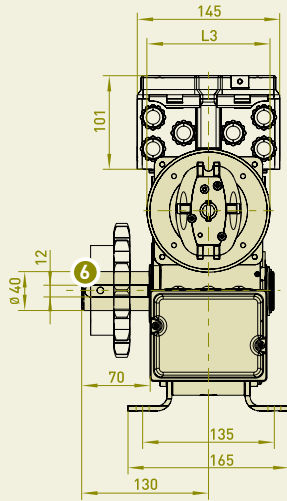
- 1 Worm gear
- 2 Motor
- 3 Limit switch
- 4 Optional: WS 900 control panel, removable, with 0,8 m cable
- 5 Hand crank NHK
- 6 Output-shaft (interchangeable)
- 7 Foot angle
- 8 Capacitor

ELEKTROMATEN	L1	L2	L3
KE 9.24	386	398	274
KE 9.24 WS 8	403	396	281

■ Permitted installation: Horizontal (as shown) or vertical (motor at the bottom)

## 4.2 KE 20.24 – KE 40.24

SG85



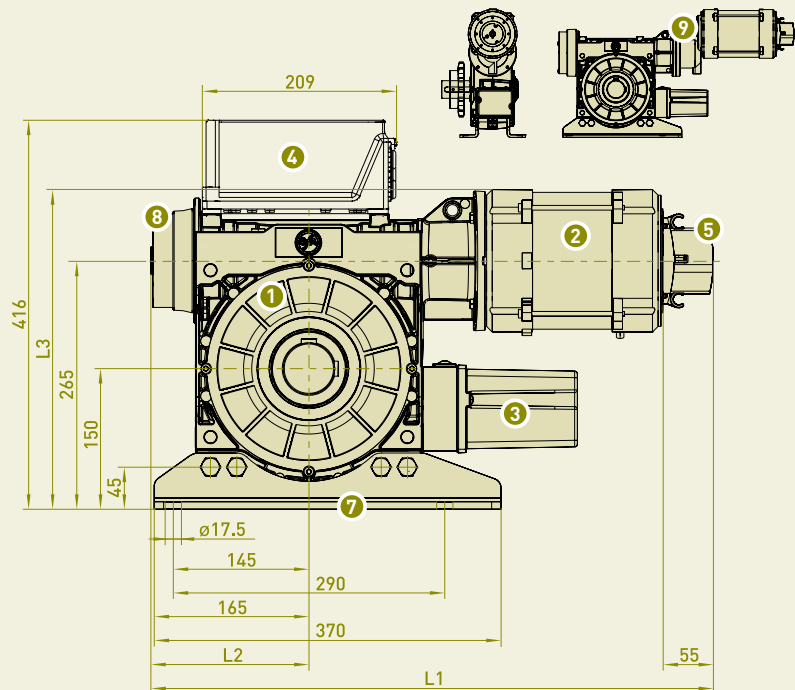
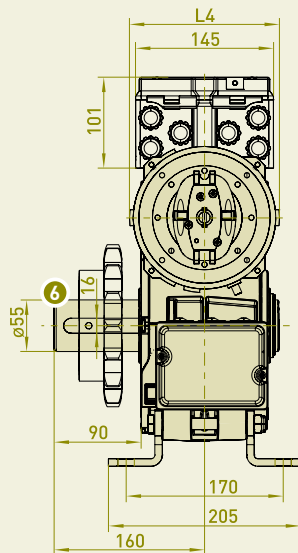
- 1 Worm gear
- 2 Motor
- 3 Limit switch
- 4 Optional: WS 900 control panel, removable, with 0,8 m cable
- 5 Hand crank NHK
- 6 Output-shaft (interchangeable)
- 7 Foot angle
- 8 Brake

ELEKTROMATEN	L1	L2	L3
KE 20.24	483	269	126
KE 30.24	515	279	130
KE 40.24	543	279	130

■ Permitted installation: Horizontal (as shown) or vertical (motor at the bottom)

## 4.3 KE 60.24 – KE 120.24

SG115

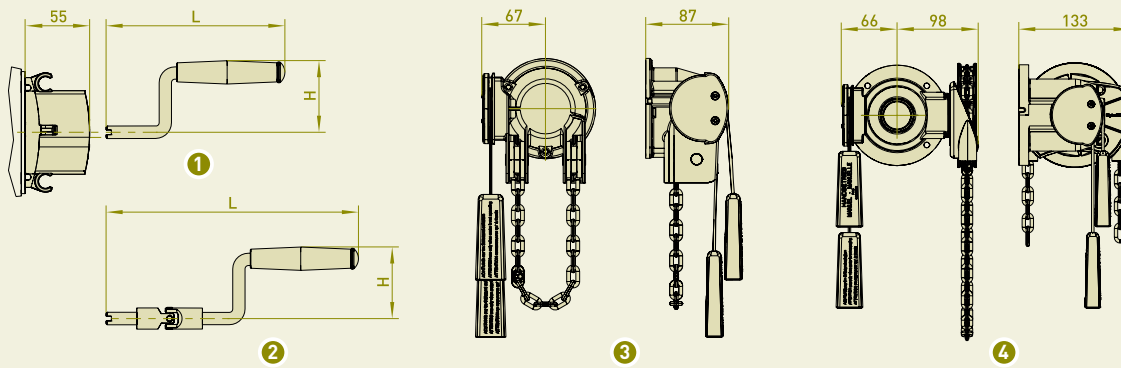


- 1 Worm gear
- 2 Motor
- 3 Limit switch
- 4 Optional: WS 900 control panel, removable, with 0,8 m cable
- 5 Hand crank NHK
- 6 Output-shaft (interchangeable)
- 7 Foot angle
- 8 Brake
- 9 Intermediate gear

ELEKTROMATEN	L1	L2	L3	L4
KE 60.24	600	169	341	152
KE 80.24	636	180	341	152
KE 120.24	735	180	397	152

■ Permitted installation: Horizontal (as shown) or vertical (motor at the bottom)

## 5. Emergency manual operation • for horizontal or vertical installation



- 1 Manual hand crank operation NHK (Standard)
- 2 Manual hand crank operation with knuckle joint NHHK
- 3 Rapid hand chain operator SK (KE 9.24)
- 4 Hand chain operator KNH (> KE 20.24)

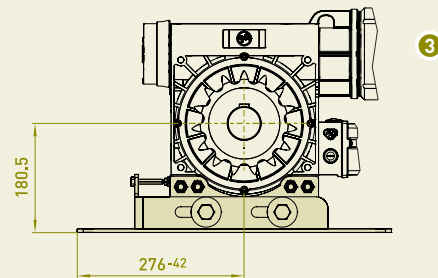
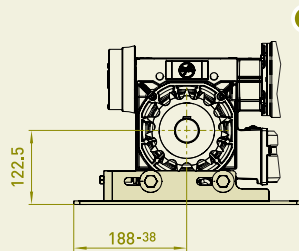
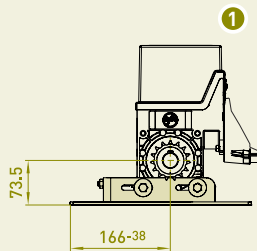
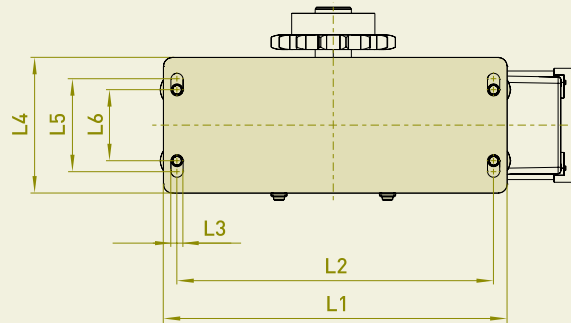
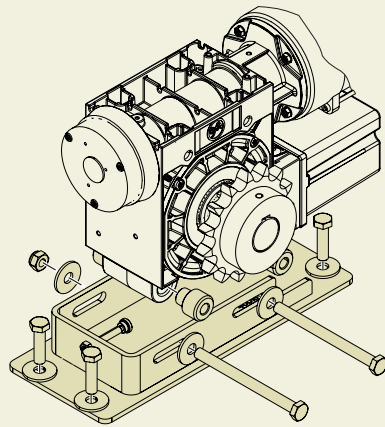
	For Series	Part.-no.	∅	L	H
1	SG50	30002591	10	255	91
1	SG85	30002749	12	235	122
1	SG115	30003112	12	265	192
2	SG50	30002715	10	415	111
2	SG85	30002750	12	425	152

■ Manual forces, see item 1 of technical data

■ Read note in 3.4

## 6. Attachments / Accessories

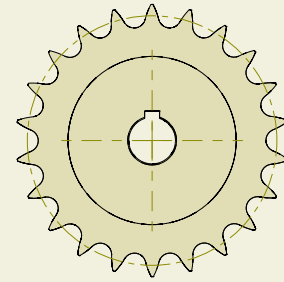
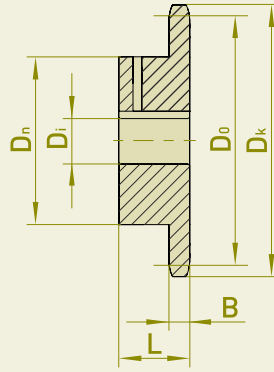
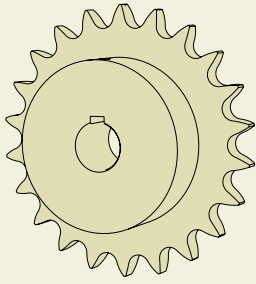
### 6.1 Bracket (as an additional part or mounted directly on the ELEKTROMATEN)



	For Series	Part no.	L1	L2	L3	L4	L5	L6
1	SG50	30005056	300	258,5	11,5	130	103,5	76,5
2	SG85	30005055	380	350	13,5	150	101,5	78,5
3	SG115	30005100	520	485	17,5	200	112,5	87,5

■ Mounting without Foot angles

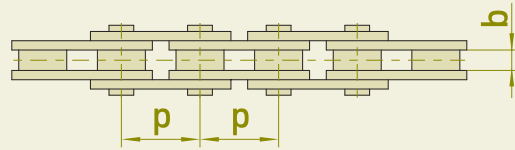
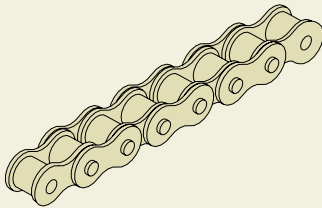
## 6.2 Sprockets



For ELEKTROMATEN	Designation	Teeth	Part no.	$D_k$	$D_0$	$D_n$	$D_i$	B	L
KE 9.24	08 B-1 (1/2" x 5/16")	15	30000237	65,5	61,1	45	25	7,2	28
		19	30000238	81,7	77,2	60	25	7,2	28
KE 20.24 / KE 30.24	12 B-1 (3/4" x 7/16")	15	30000219	99,8	91,6	70	40	11,1	35
		19	30000220	124,2	115,8	80	40	11,1	35
KE 30.24 / KE 40.24	16 B-1 (1" x 17,02 mm)	15	30000171	133,0	122,2	92	40	16,2	40
		19	30000321	165,2	154,3	100	40	16,2	45
KE 60.24	16 B-1 (1" x 17,02 mm)	15	30000173	133,0	122,2	92	55	16,2	40
		19	30000688	165,2	154,3	100	55	16,2	45
KE 80.24 / KE 120.24	20 B-1 (1 1/4" x 3/4")	15	30000920	167,9	152,7	118	55	18,5	45
		19	30003163	208,1	192,9	120	55	18,5	50

■ Additional sprockets in Section 9

## 6.3 Roller chains



Designation	p x b [inch]	p x b [mm]	Ultimate load of chain DIN 8187 [N]	Number of teeth's	Max. $M_{ab}$ [Nm]	Description	Part no.
08 B-1	1/2" x 5/16"	12,7 x 7,75	18.000	15	90	1,5 m	40005050
				19	115	5,0 m Link	40017783 40000613
12 B-1	3/4" x 7/16"	19,05 x 11,68	29.000	15	220	2,0 m	40003030
				19	280	5,0 m Link	40013909 40000615
16 B-1	1" x 17,02 mm	25,4 x 17,02	60.000	15	610	2,5 m	40005049
				19	770	5,0 m Link	40013910 40000617
20 B-1	1 1/4" x 3/4"	31,75 x 19,56	95.000	15	1200	3,0 m	40014878
				19	1520	5,0 m Link	40017784 40001111

■ For chain and sprockets, the maximum permitted torque  $M_{ab}$  on ELEKTROMATEN is as shown in the table (safety factor 6x the breaking strain)