

ELEKTROMATEN® KE FI

Chain-drive with built-on frequency inverter

For driving:
Roller shutters and rolling grilles

Series SG50
KE 9.60 FI

Series SG85
KE 20.60 FI / KE 40.40 FI

Series SG115
KE 50.80 FI - KE 120.30 FI

KE-ELEKTROMATEN FI 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.

KE-ELEKTROMATEN FI comprises of:

Worm gear with safety brake and hollow shaft, emergency manual operator, integrated limit switches and electrical motor with built-on frequency inverter.

Output side

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

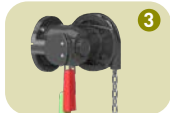
Built-on frequency inverter to be used with control panels TS 970, TS 971 or TS 981

- Individual adjustable output speed ¹⁾
- The speed appears directly into the display – extra work to evaluate frequency and speed is not required
- Soft start and soft stop
- Automatic optimising of acceleration and deceleration speed
- Adjustable distance for acceleration and deceleration speed
- Individual adjustment and programming of all functions from the ground by a selector switch with digital display

Approvals and certificates

ELEKTROMATEN and FI-motors

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



Emergency manual operation

- Hand crank NHK **1**
- Rapid hand chain operator SK (KE 9.60 FI) **2**
- Hand chain operator KNH (≥ KE 20.60 FI) **3**

Limit switches

- Digital limit DES **4**
- Absolute encoder, after a power failure, re-adjustment is not required

Mounting

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

¹⁾ See 3.6
²⁾ Use additional adapter part no. 30005855

Separate Safety Brake FG

- Prevention of doors falling back **5**
- Suitable Safety Brakes for all types of ELEKTROMATEN KE can be found in Section 7.

Door controls

- Simple connection to the limit switch by means of non-interchangeable plug connections allowing simple exchange with other GfA door controls
- Control voltage: 24 V DC
- Frequency: 50 Hz / 60 Hz
- Mains supply at motors with 0,85 kW / 1,5 kW: 1N-230V, 3~230V ²⁾, 3N~400 V
- Mains supply at motors with 4,5 kW: 3N~400 V, 3~400 V

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

1. Technical data

ELEKTROMATEN			KE 9.60 FI	KE 20.60 FI	KE 40.40 FI
Series			SG50	SG85	SG85
Output torque		Nm	90	200	400
Output speed	OPEN		10-60	10-60	9-40
	CLOSE > 2,5 m	rpm	10-30	10-35	9-35
	CLOSE ≤ 2,5 m ¹⁾		10-30	10-35	9-24
Output shaft / hollow shaft (∅)		mm	25	40	40
Max. holding torque ²⁾		Nm	90	200	400
Motor power		kW	0,85	1,50	1,50
Supply voltage		V	1N-230	1N-230	1N-230
Operating frequency		Hz	50 / 60	50 / 60	50 / 60
Operating current		A	6,6	7,3	7,3
Max. cycles per hour ³⁾			17 (16,6)	21 (20,0)	17 (16,4)
Limit switch range ⁴⁾			20 (40)	20 (40, 60)	20 (40, 60)
Max. handforce NHK / SK or KNH ⁵⁾		N	82 / 215	176 / 196	255 / 126
Weight		kg	23	39	40
Spare parts: Catalogue page			9.051	9.055	9.055
Part no. installation drawing (dxf,dwg)			50001548	50001549	50001549
Part no. ELEKTROMATEN			10004014	10003908	10003840

ELEKTROMATEN			KE 50.80 FI	KE 60.45 FI	KE 80.40 FI	KE 120.30 FI
Series			SG115	SG115	SG115	SG115
Output torque		Nm	500	600	800	1200
Output speed	OPEN		22-80	7-45	10-40	5-30
	CLOSE > 2,5 m	rpm	22-45	7-28	10-28	5-18
	CLOSE ≤ 2,5 m ¹⁾		22-30	7-28	10-28	5-18
Output shaft / hollow shaft (∅)		mm	55	55	55	55
Max. holding torque ²⁾		Nm	500	600	800	1200
Motor power		kW	4,50	4,50	4,50	4,50
Supply voltage		V	3-400	3-400	3-400	3-400
Operating frequency		Hz	50 / 60	50 / 60	50 / 60	50 / 60
Operating current		A	12,4	12,4	12,4	12,4
Max. cycles per hour ³⁾			19 (18,9)	12 (11,0)	12 (9,9)	11 (7,5)
Limit switch range ⁴⁾			20 (60)	20 (30)	20 (60)	20 (60)
Max. handforce NHK / SK or KNH ⁵⁾		N	287 / 232	193 / 156	302 / 244	234 / 189
Weight		kg	64	60	64	72
Spare parts: Catalogue page			9.056	9.056	9.056	9.056
Part no. installation drawing (dxf,dwg)			50001546	50001546	50001546	50001547
Part no. ELEKTROMATEN			10003981	10003904	10003905	10003906

Generally applies: Degree of protection IP65, permissible temperature range +5 °C...+40 °C (+60 °C), operating sound pressure level SPL <70 dB(A)

1) See 3.6 · 2) Maximum torque that may act on the output shaft of the drive unit when the door is stationary · 3) 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 · 4) Maximum revolutions of hollow shaft, E20 standard with DES · 5) See 3.4

2. Selection chart • for Roller shutters

ELEKTROMATEN	Tube EN 10220	Transmission 1:2	Transmission 1:3	Transmission 1:3,8	Transmission 1:4,5
	[mm]	F [N]	F [N]	F [N]	F [N]
KE 9.60 FI	101,6 x 3,6	2368	3553	4500	5329
	108,0 x 3,6	2250	3375	4275	5063
	133,0 x 4,0	1882	2824	3576	4235
	159,0 x 4,5	1609	2413	3057	3620
KE 20.60 FI	133,0 x 4,0	4183	6275	7948	9412
	159,0 x 4,5	3575	5363	6793	8045
	177,8 x 5,0	3236	4853	6148	7280
	193,7 x 5,4	2995	4492	5690	6738
KE 40.40 FI	219,1 x 5,9	2677	4015	5086	6023
	159,0 x 4,5	7151	10726	13587	16089
	177,8 x 5,0	6471	9707	12295	14560
	193,7 x 5,4	5990	8985	11380	13477
KE 50.80 FI	219,1 x 5,9	5353	8030	10171	12045
	244,5 x 6,3	4839	7259	9195	10888
	273,0 x 6,3	4369	6553	8300	9829
	298,5 x 7,1	4019	6028	7636	9042
KE 60.45 FI	323,9 x 7,1	3722	5583	7072	8375
	177,8 x 5,0	8089	12133	15369	18200
	193,7 x 5,4	7487	11231	14226	16846
	219,1 x 5,9	6692	10038	12714	15056
KE 80.40 FI	244,5 x 6,3	6049	9074	11493	13611
	273,0 x 6,3	5461	8191	10375	12287
	298,5 x 7,1	5024	7535	9545	11303
	323,9 x 7,1	4653	6979	8840	10468
KE 120.30 FI	177,8 x 5,0	9707	14560	18443	21840
	193,7 x 5,4	8985	13477	17071	20215
	219,1 x 5,9	8030	12045	15257	18068
	244,5 x 6,3	7259	10888	13792	16333
KE 80.40 FI	273,0 x 6,3	6553	9829	12451	14744
	298,5 x 7,1	6028	9042	11454	13564
	323,9 x 7,1	5583	8375	10608	12562
	177,8 x 5,0	12942	19414	24590	29120
KE 80.40 FI	193,7 x 5,4	11979	17969	22761	26954
	219,1 x 5,9	10707	16060	20343	24090
	244,5 x 6,3	9679	14518	18389	21777
	273,0 x 6,3	8737	13106	16601	19659
KE 80.40 FI	298,5 x 7,1	8038	12057	15272	18085
	323,9 x 7,1	7444	11166	14144	16749
	177,8 x 5,0	19414	29120	36886	43680
	193,7 x 5,4	17969	26954	34141	40431
KE 120.30 FI	219,1 x 5,9	16060	24090	30514	36136
	244,5 x 6,3	14518	21777	27584	32665
	273,0 x 6,3	13106	19659	24901	29488
	298,5 x 7,1	12057	18085	22907	27127
KE 120.30 FI	323,9 x 7,1	11166	16749	21215	25124
	368,0 x 8,0	9897	14845	18804	22268

■ F = Lift [N]

■ Read note in 3.2

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



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 Output speed

The maximum admissible speed is dependent on the door construction and type of the door. All materials must be designed to be used for doors with higher speeds.

The admissible closing speed shall be adjusted so that the operating forces must comply with EN 12453

3.7 Chain drive

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

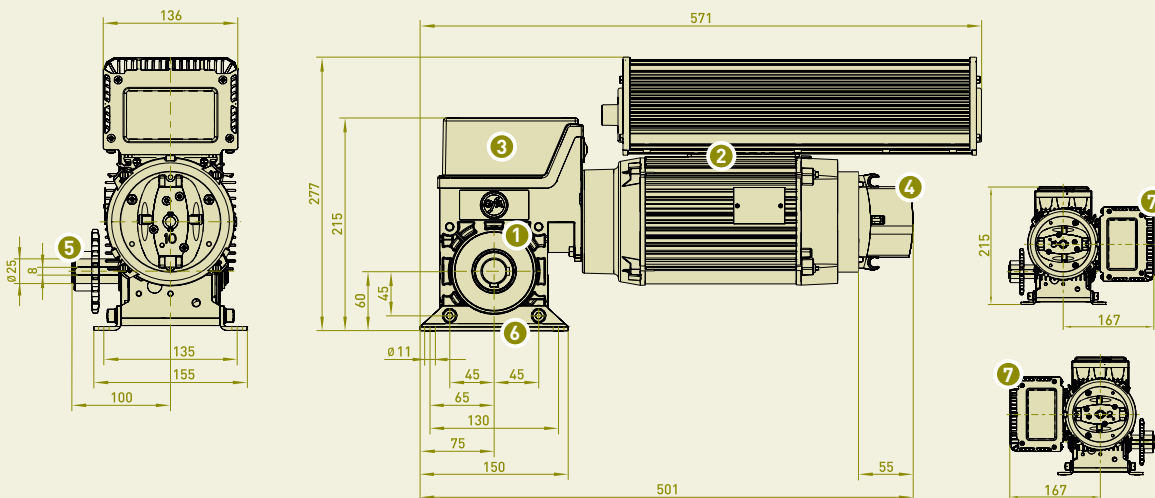
We recommend the use of drive sprockets with at least 15 teeth. The drive sprocket must not protrude beyond the end of the output-shaft.

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 9.60 FI

SG50

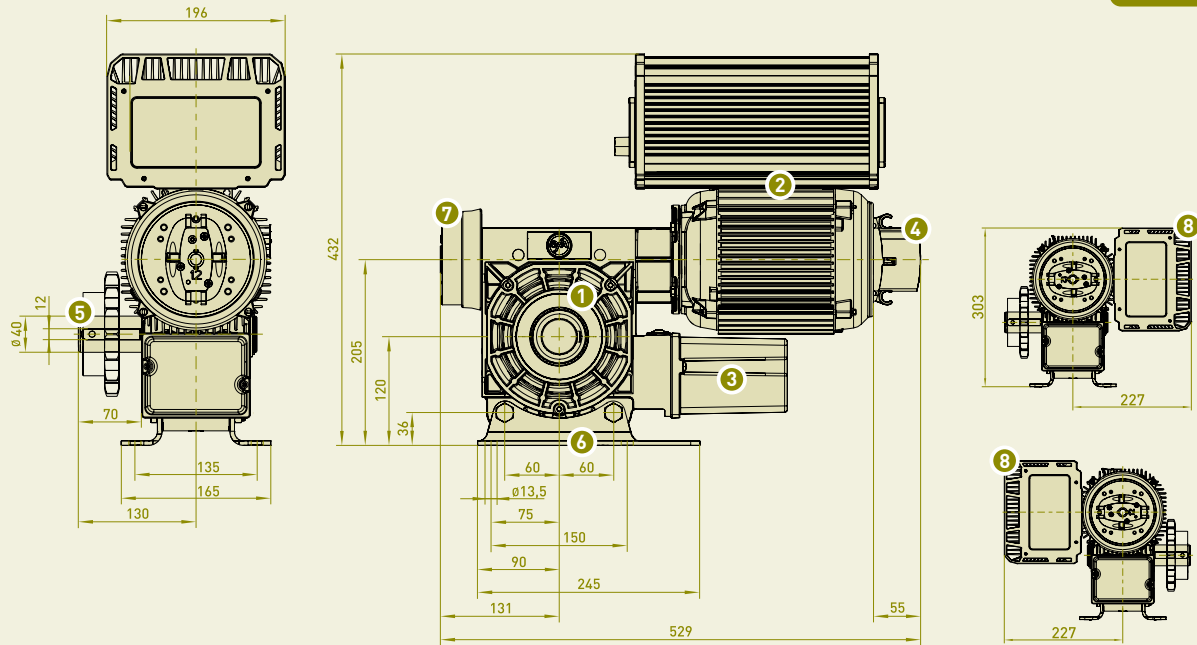


- 1 Worm gear
- 2 Motor with built-on frequency inverter
- 3 Limit switch
- 4 Hand crank NHK
- 5 Output-shaft (interchangeable)
- 6 Foot angle
- 7 Option: rotated motor (upon request)

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

4.2 KE 20.60 FI / KE 40.40 FI

SG85

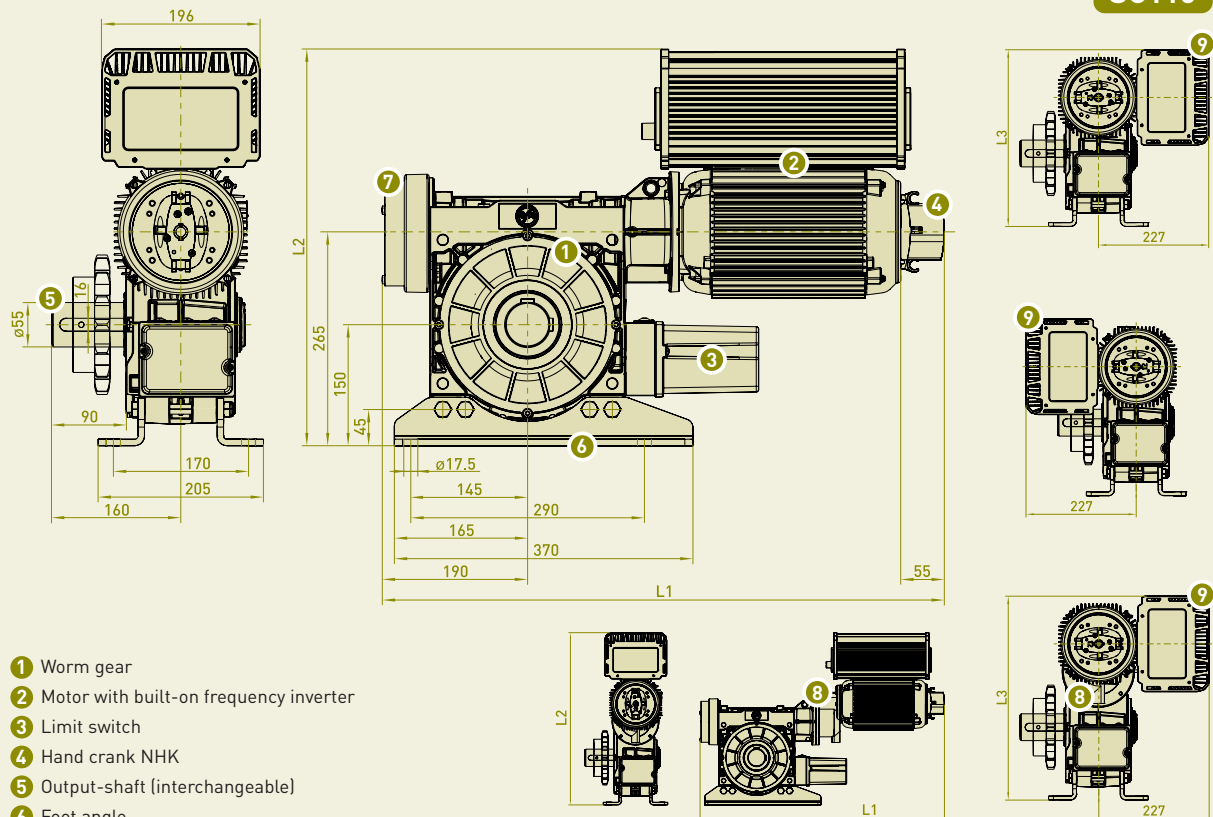


- 1 Worm gear
- 2 Motor with built-on frequency inverter
- 3 Limit switch
- 4 Hand crank NHK
- 5 Output-shaft (interchangeable)
- 6 Foot angle
- 7 Brake
- 8 Option: rotated motor (upon request)

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

4.3 KE 50.80 FI – KE 120.30 FI

SG115

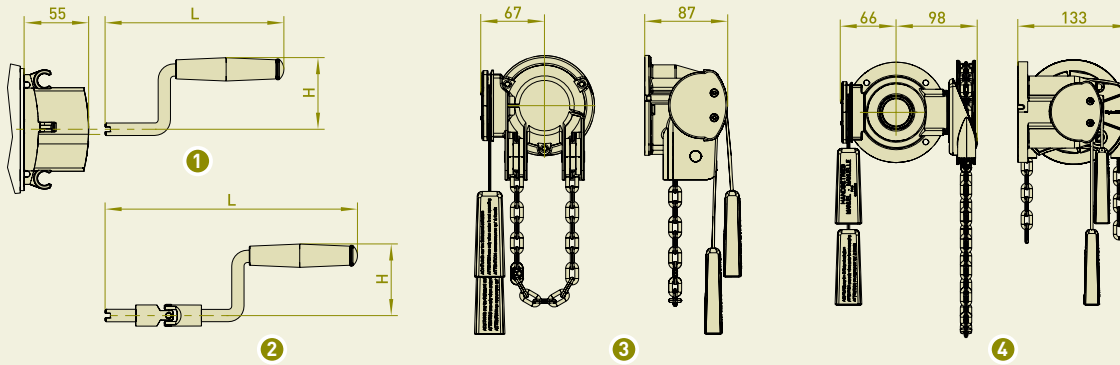


- 1 Worm gear
- 2 Motor with built-on frequency inverter
- 3 Limit switch
- 4 Hand crank NHK
- 5 Output-shaft (interchangeable)
- 6 Foot angle
- 7 Brake
- 8 Intermediate gear
- 9 Option: rotated motor (upon request)

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

ELEKTROMATEN	L1	L2	L3
KE 50.80 FI / KE 60.45 FI / KE 80.40 FI	697	492	363
KE 120.30 FI 8	777	548	419

5. Emergency manual operation • for horizontal or vertical installation



- 1 Manual hand crank operation NHK (Standard)
- 2 Manual hand crank operation with knuckle joint NHKK
- 3 Rapid hand chain operator SK (KE 9.60 FI)
- 4 Hand chain operator KNH (> KE 20.60 FI)

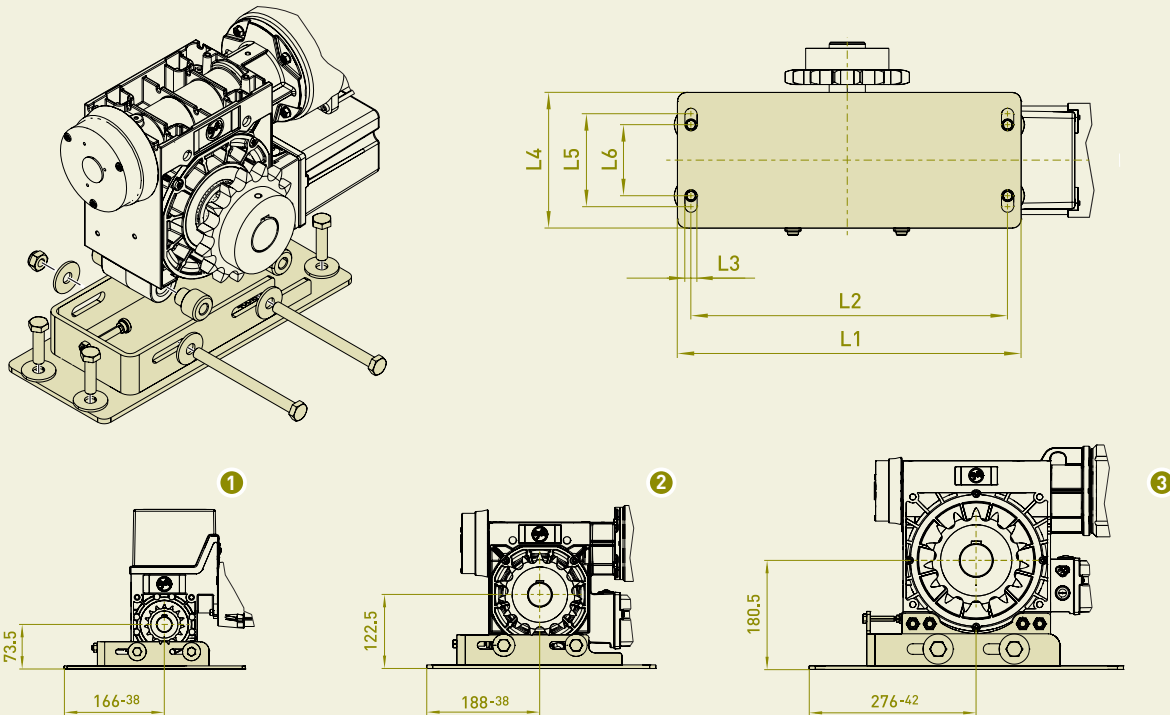
	For Series	Part.-no.	∅	L	H
1	SG50	30002591	10	255	91
1	SG85	30002749	12	235	122
1	SG115	30003112	12	265	192
2	SG50	30002715	10	415	111
2	SG85	30002750	12	425	152

Manual forces, see item 1 of technical data

Read note in 3.4

6. Attachments / Accessories

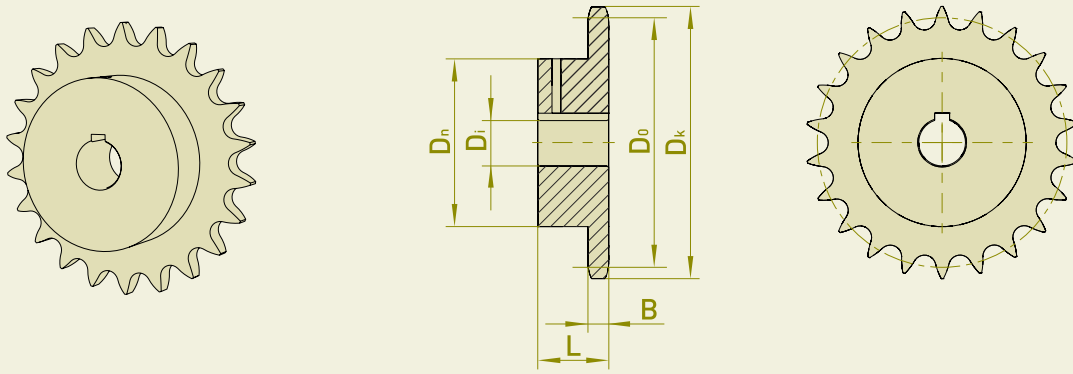
6.1 Bracket (as an additional part or mounted directly on the ELEKTROMATEN)



	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

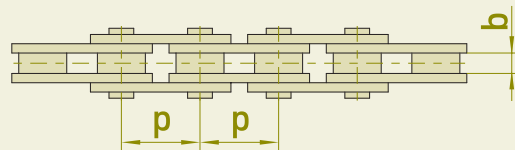
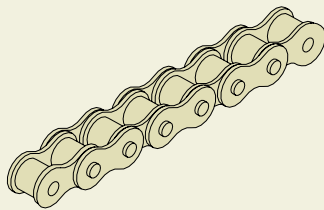
6.2 Sprockets



For ELEKTROMATEN	Designation	Teeth	Part no.	D_k	D_o	D_n	D_i	B	L
KE 9.60 FI	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 20.60 FI / KE 40.40 FI	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 40.40 FI	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 50.80 FI / KE 60.45 FI	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 80.40 FI / KE 120.30 FI	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)