

# ELEKTROMATEN® SE

## Sectional-door-drive

For driving:  
Counterbalanced sectional doors

Series KG50  
SE 5.15 - SE 5.24 WS

Series SG50/SG50E  
SE 9.15 - 14.21  
SE 6.65 DU  
SE 6.80 FI/SE 14.80 FI

ELEKTROMATEN SE are special drives for counterbalanced sectional doors. The drive unit is normally directly fitted to the door shaft. ELEKTROMATEN SE comprises of:  
Worm gear with hollow shaft, emergency manual operator, integrated limit switches and electrical motor respectively electrical motor with built-on direct inverter (SE 6.65 DU) or frequency inverter (SE 6.80 FI/SE 14.80 FI).

**Built-on direct inverter (SE 6.65 DU) or frequency inverter (SE 6.80 FI/SE 14.80 FI) to be used with door controls TS 970, TS 971 or TS 981**

- Individual adjustable output speed <sup>1)</sup>
- 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



### Holding torque

Examination of the static holding torque  
Test report 630900  
TÜV SÜD Industrieservice GmbH



KG50



SG50E



SG50

DU



SG50

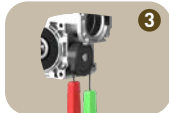
FI



1



2



3



4



5

### Emergency manual operation

- Hand crank NHK
- Rapid hand chain operator SK
- Gear release ER

1

2

3

### Limit switches

- Mechanical limit NES <sup>2)</sup>**
- 2 operating, 2 emergency- and 2 auxiliary limit switches

4

**Digital limit DES**

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

5

### Mounting

- Fitting thread 8xM8 (standard fitting)
- Torque mount
- Flange bracket

<sup>1)</sup> See 2.7  
<sup>2)</sup> Not for SE 6.65 DU / SE 6.80 FI / SE 14.80 FI

### Special versions

- Increase of cycles per hour
- Higher protection class
- Other voltages and frequencies
- Explosion-proof according to ATEX (page 6.031)

### 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 <sup>3)</sup>, 3N~230 V <sup>3)</sup>, 3N~400 V, 3~400 V

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

<sup>3)</sup> For SE 6.80 FI / SE 14.80 FI, use additional adapter part no. 30005855

# 1. Technical data

ELEKTROMATEN Series		SE 5.15 KG50	SE 5.20 KG50	SE 5.24 KG50	SE5.24WS KG50	SE 9.15 SG50 SG50E	SE9.15WS SG50	SE 9.20 SG50 SG50E	SE9.20WS SG50 SG50E
Output torque	Nm	50	50	50	50	90	90	90	90
Output speed	rpm	15	20	24	24	15	15	20	20
Output shaft / hollow shaft (Ø) <sup>1)</sup>	mm	25,4	25,4	25,4	25,4	25,4	25,4	25,4	25,4
Max. holding torque <sup>2)</sup>	Nm	200	200	200	200	450	450	450	450
Max. door weight	N	2500	2500	2500	2500	4000	4000	4000	4000
Max. output speed OPEN / CLOSE for frequency inverter operation <sup>3)</sup>	rpm	26 / 15	36 / 30	42 / 30	--	26 / 26	26 / 26	36 / 30	36 / 30
Motor power	kW	0,30	0,30	0,30	0,37	0,30	0,30	0,30	0,30
Supply voltage	V	3-230/400	3-230/400	3-230/400	1N-230	3-230/400	1N-230	3-230/400	1N-230
Operating frequency	Hz	50	50	50	50	50	50	50	50
Operating current <sup>4)</sup>	A	2,6 / 1,5	2,6 / 1,5	1,9 / 1,1	3,5	2,6 / 1,5	3,5	2,6 / 1,5	3,5
Max. cycles per hour <sup>5)</sup>		8 (2,1)	9 (2,7)	12 (8,3)	9 (2,7)	8 (2,1)	7 (1,6)	9 (2,7)	8 (2,2)
Limit switch range <sup>6)</sup>		20	20	20	20	20	20	20	20
Weight	kg	13	13	12	13	13	17	13	17
Spare parts: Catalogue page		9.052	9.052	9.052	9.052	9.051	9.051	9.051	9.051
Part no. installation drawing (dxf, dwg)		50001339	50001339	50001339	50001339	50000563 50000872 (ER)	50000853	50000563 50000872 (ER)	50000853 50001092 (ER)
Part no. ELEKTROMATEN		Ø 25,4 10004343	Ø 25,4 10004314	Ø 25,4 10003375	Ø 25,4 10003424	Ø 25,4 10003277 Ø 25,4 ER 10003376	Ø 25,4 10004953	Ø 25,4 10003152 Ø 25,4 ER 10003157	Ø 25,4 10004954 Ø 25,4 ER 10005175

ELEKTROMATEN Series		SE 9.24 SG50 SG50E	SE9.24WS SG50	SE 9.30 SG50 SG50E	SE 14.15 SG50 SG50E	SE 14.21 SG50 SG50E	SE14.21WS SG50 SG50E	SE6.65DU SG50 SG50E	SE6.80FI SG50 SG50E	SE14.80FI SG50 SG50E
Output torque	Nm	90	90	90	140	140	140	60	60	140
Output speed OPEN CLOSE > 2,5 m CLOSE ≤ 2,5 m <sup>7)</sup>	min <sup>-1</sup>	24	24	30	15	21	21	20-65 20-30 20-30	15-80 15-30 15-30	10-80 10-30 10-30
Output shaft / hollow shaft (Ø) <sup>1)</sup>	mm	25,4	25,4	25,4	25,4/31,75	25,4/31,75	25,4/31,75	25,4/31,75	25,4/31,75	25,4/31,75
Max. holding torque <sup>2)</sup>	Nm	450	450	450	600	600	600	450	450	600
Max. door weight	N	4000	4000	4000	6000	6000	6000	3000	3000	6000
Max. output speed OPEN / CLOSE for frequency inverter operation <sup>3)</sup>	min <sup>-1</sup>	42 / 30	--	52 / 30	26 / 26	36 / 30	--	--	--	--
Motor power	kW	0,3	0,45	0,37	0,35	0,45	0,30	0,45	0,40	0,85
Supply voltage	V	3-230/400	1N-230	3-230/400	3-230/400	3-230/400	1N-230	3-400	1N-230	1N-230
Operating frequency	Hz	50	50	50	50	50	50	50	50 / 60	50 / 60
Operating current <sup>4)</sup>	A	2,1 / 1,2	3,9	2,1 / 1,2	3,3 / 1,9	3,3 / 1,9	3,5	0,8	8	6,6
Max. cycles per hour <sup>5)</sup>		12 (10,4)	9 (3,5)	14 (13,1)	10 (5,2)	8 (2,1)	8 (2,2)	11 (7,2)	25 (24,0)	18 (17,0)
Limit switch range <sup>6)</sup>		20	20	20	20 (14) <sup>8)</sup>	20 (14) <sup>8)</sup>	20 (14) <sup>8)</sup>	20 (14) <sup>8)</sup>	20 (14) <sup>8)</sup>	20 (14) <sup>8)</sup>
Weight	kg	13	16	14	18	14	17	16	18	24
Spare parts: Catalogue page		9.051	9.051	9.051	9.051	9.051	9.051	9.051	9.051	9.051
Part no. installation drawing (dxf, dwg)		50000563 50000872 (ER)	50000853 50001092 (ER)	50000563 50000872 (ER)	50000846 50001076 (ER)	50000846 50001076 (ER)	50000853 50001092 (ER)	50001313 50001314 (ER)	50001603 50001604 (ER)	50001544 50001545 (ER)
Part no. ELEKTROMATEN		Ø 25,4 10002188 Ø 25,4 ER 10002748	Ø 25,4 10002237 Ø 25,4 ER 10002763	Ø 25,4 10002195 Ø 25,4 ER 10002738	Ø 25,4 10002516 Ø 25,4 ER 10003377 Ø 31,75 10002621	Ø 25,4 10002204 Ø 25,4 ER 10002758 Ø 31,75 10002206	Ø 25,4 10005350 Ø 25,4 ER 10005352 Ø 31,75 10005351	Ø 25,4 10003393 Ø 25,4 ER 10003346 Ø 31,75 10004200	Ø 25,4 10004106 Ø 25,4 ER 10004201 Ø 31,75 10004200	Ø 25,4 10004010 Ø 25,4 ER 10004013 Ø 31,75 10004011

Generally applies: Degree of protection IP65 (combined with WS 900: IP54), permissible temperature range -10 °C...+40 °C (+60 °C) → standard ELEKTROMATEN + DU, +5 °C...+40 °C (+60 °C) → ELEKTROMATEN FI with built-on frequency inverter, operating sound pressure level SPL <70 dB(A)

1) Additional hollow shafts-Ø on request · 2) See 2.5 · 3) We recommend the selection of a special ELEKTROMATEN (enquire) for use with frequency inverter, OPEN drive speed at 87 Hz (not valid for SE 6.80 FI/14.80 FI), see 2.7 and 2.8 · 4) The max. current in door drives can reach up to 4x the rated operating current for limited periods, see 2.6 and 2.7 · 5) 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 2.2 · 6) Maximum revolutions of hollow shaft · 7) See 2.7 · 8) Applies to hollow shaft Ø31,75 mm

## 2. Notes

### 2.1 European directive

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

### 2.2 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.

### 2.3 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.

### 2.4 Manual operation / Counterbalancing

#### NHK hand crank / SK rapid hand chain

Manual operation with NHK/SK operator, the door and self-locking gear construction remain inter-connected. There is no danger of a door crashing down, e.g. if a spring breaks.

#### Gear release ER

Manual operation of ER decoupling mechanism, the door and the self-locking gear construction are disconnected during manual operation. When the decoupling mechanism the gear no longer sustains the door and a separate safety brake is required.

The counter-balancing should be inspected at least once a year.

### 2.5 Holding torque

Counterbalanced door leaves are prevented from falling down if the drive is capable of holding the weight of the leaf when the spring breaks. The holding capability is the admissible load bearing of the gear construction which can occur when the spring breaks.

Static stability  $M_{stat}$  is calculated as follows:

$$M_{stat} [N] = \text{door weight} [N] \times \text{radius of the cable drum} [m]$$

The greatest winding diameter should be taken into account in the case of conical cable drums are in use.

Since it is possible for two counterbalancing springs to fail simultaneously, the German technical committee, Structural equipment (FABE) recommends that the drive be dimensioned such that it can support.

- 100% of the door weight with 1 or 2 counterbalancing springs
- 66% of the door weight with 3 counterbalancing springs
- 50% of the door weight with 4 counterbalancing springs

### 2.6 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.

### 2.7 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.

### 2.8 Use with external frequency inverter

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.

### 2.9 Cable / cable drums

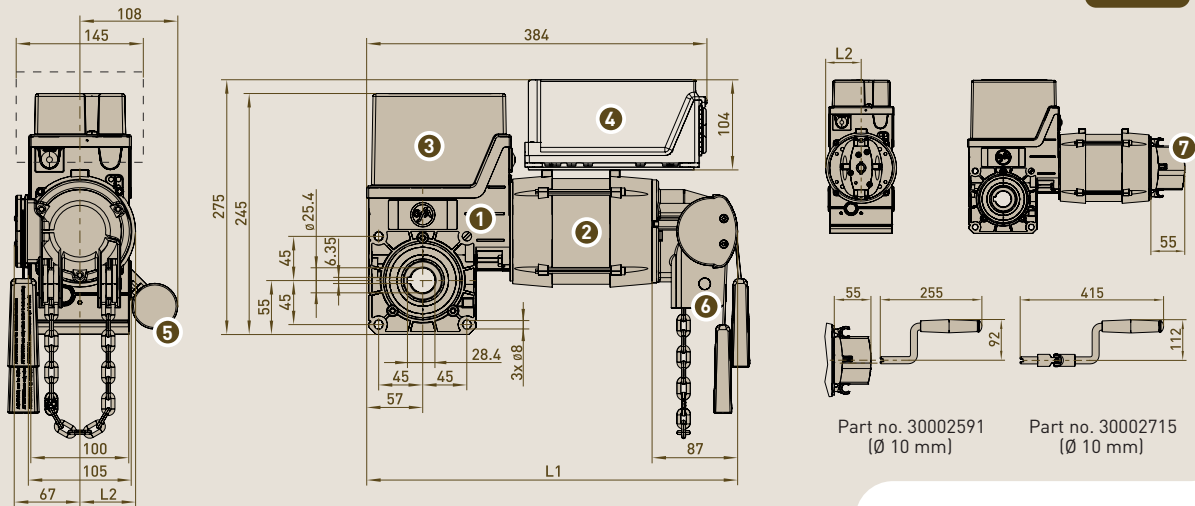
When calculating the cable size the max. permitted door weight is required a calculated ultimate stress of 6x for the cables; requirement of EN 12604.

Cable drum selection – ensure that two turns of the cable remain on the drum at all times. The diameter of the cable drum must be at least 20x the diameter of the cable.

### 3. Dimensions

#### 3.1 SE 5.15 – SE 5.24 WS

**KG50**



- 1** Worm gear
- 2** Motor
- 3** Limit switch
- 4** Optional: WS 900 control panel, removable, with 0,8 m cable
- 5** Capacitor
- 6** Emergency manual operation Rapid hand chain operator SK
- 7** Emergency manual operation Manual hand crank operation NHK

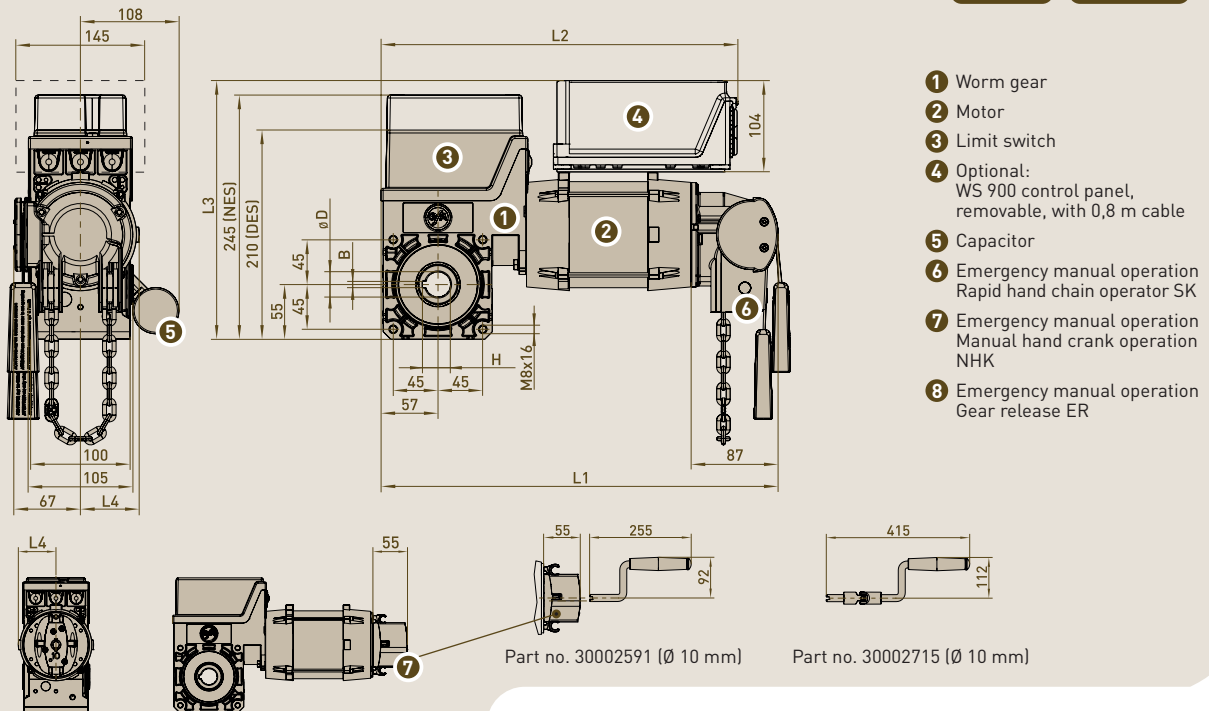
ELEKTROMATEN	L1 (SK)	L2
SE 5.15	381	54
SE 5.20	381	54
SE 5.24	381	57
SE 5.24 WS	<b>5</b> 401	54

■ Permitted installation: Horizontal (as shown) or vertical (motor down or up)

#### 3.2 SE 9.15 – SE 14.21

**SG50**

**SG50E**



- 1** Worm gear
- 2** Motor
- 3** Limit switch
- 4** Optional: WS 900 control panel, removable, with 0,8 m cable
- 5** Capacitor
- 6** Emergency manual operation Rapid hand chain operator SK
- 7** Emergency manual operation Manual hand crank operation NHK
- 8** Emergency manual operation Gear release ER

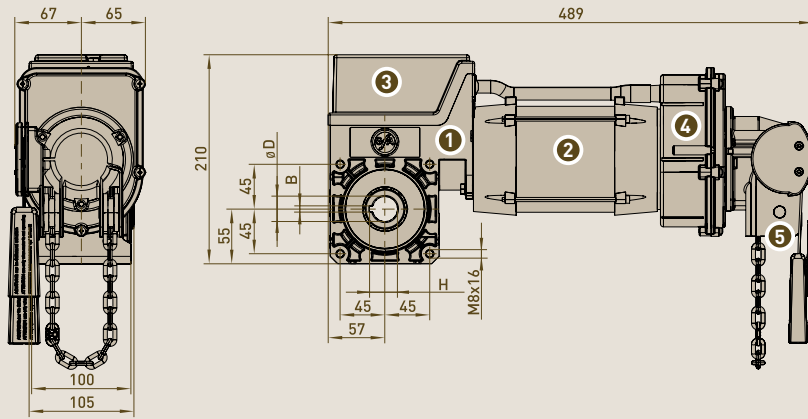
ELEKTROMATEN	Ø D	H	B	L1 (SK)	L2	L3	L4
SE 9.15				381			
SE 9.20	25,4	28,4	6,35	381	385	275	54
SE 9.24				381			
SE 9.30				401			
SE 9.15 WS				434			
SE 9.20 WS	<b>5</b> 25,4	28,4	6,35	434	384	275	63
SE 9.24 WS				419			
SE 14.15	25,4	28,4	6,35	460			
SE 14.21	31,75	34,7	6,35	425	392	280	63
SE 14.21 WS	<b>5</b> 25,4	28,4	6,35	434	392	280	63
	31,75	34,7	6,35				

■ Permitted installation: Horizontal (as shown) or vertical (motor down or up)

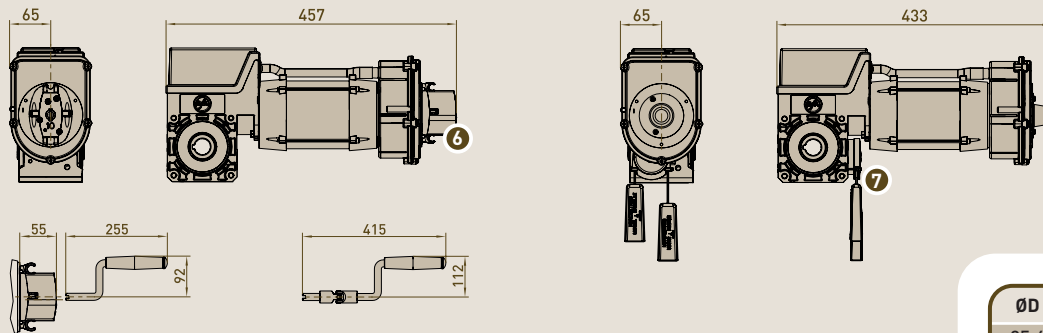
### 3.3 SE 6.65 DU

SG50

SG50E



- 1 Worm gear
- 2 Motor with built-in direct inverter
- 3 Limit switch
- 4 Direct inverter
- 5 Emergency manual operation Rapid hand chain operator SK
- 6 Emergency manual operation Manual hand crank operation NHK
- 7 Emergency manual operation Gear release ER



Part no. 30002591 (Ø 10 mm)

Part no. 30002715 (Ø 10 mm)

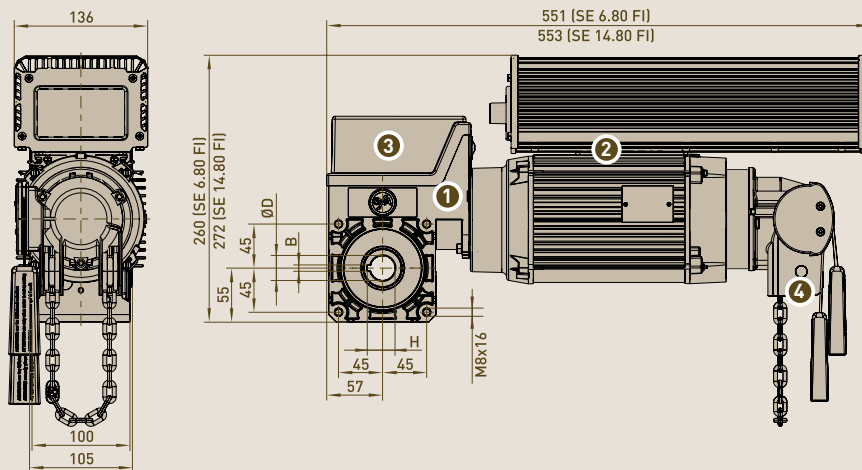
ØD	H	B
25,4	28,4	6,35
31,75	34,7	6,35

■ Permitted installation: Horizontal (as shown) or vertical (motor down or up)

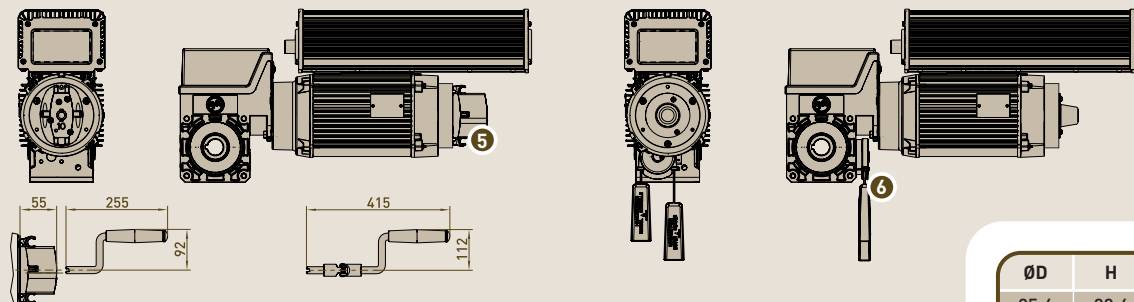
### 3.4 SE 6.80 FI / SE 14.80 FI

SG50

SG50E



- 1 Worm gear
- 2 Motor with built-on frequency inverter
- 3 Limit switch
- 4 Emergency manual operation Rapid hand chain operator SK
- 5 Emergency manual operation Manual hand crank operation NHK
- 6 Emergency manual operation Gear release ER
- 7 Option: rotated motor (upon request)



Part no. 30002591<sup>1)</sup> (Ø 10 mm)

Part no. 30002715 (Ø 10 mm)

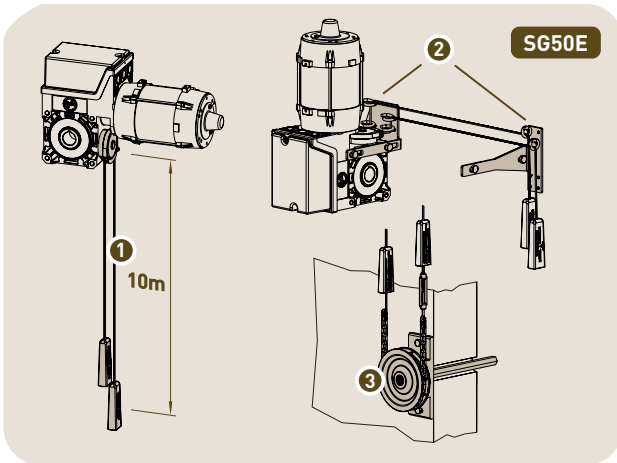
1) Not suitable for SE 6.80 FI

ØD	H	B
25,4	28,4	6,35
31,75	34,7	6,35

■ Permitted installation: Horizontal (as shown) or vertical (motor down or up)



## 4. Emergency manual operation - release device ER<sup>1)</sup> – Accessories



The components allow the release of the gearbox at operator level. Examples:

- Limited space or poor accessibility to the drive unit
- Vertically mounted drive units with motor upwards, for example centre drives
- External release (with 3)

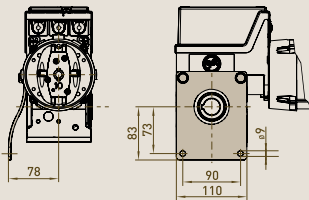
Designation		Part no.
Shifter cable extension 2 x 10 m for retrofitting	1	30004242
Diverter Pulley system for shifter cable	2	30005351
External release kit	3	30005352

1) Required is a drive unit with release gearbox SG50E

## 5. Attachments / Accessories

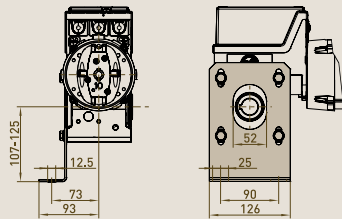
### 5.1 Torque bracket

Part no. 30002636



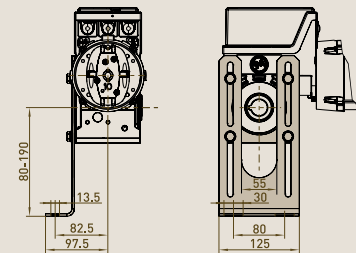
### 5.2 Flange bracket H 107-125

Part no. 30002685



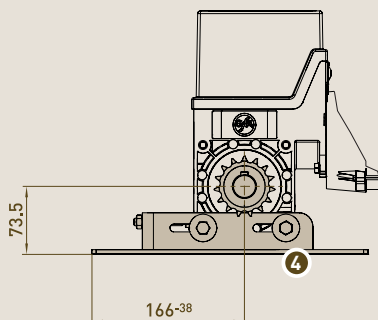
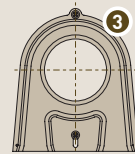
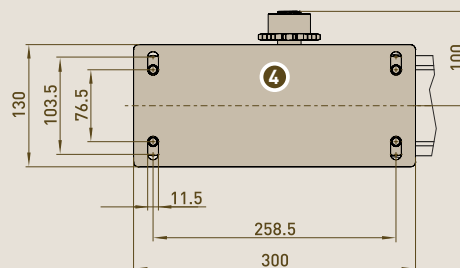
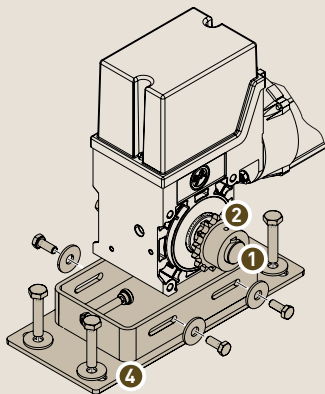
### 5.3 Flange bracket H 80-190

Part no. 30005839



■ All brackets can be mounted vertically or horizontally

### 5.4 Chain drive 08 B-1 (1 1/2" x 5/16")



Designation		Part no.	
Stub shaft	Ø 25,4	1	30002628 30002699
	Ø 31,75		
Sprocket	19 Teeth Ø 25,4	2	30001086 30002243 30000761 30001990
	25 Teeth Ø 25,4		
	Ø 31,75		
	Ø 31,75		
Chain guard	19 Teeth	3	30000982 30000983
	25 Teeth		
Bracket		4	30005056
Roller chain (08 B-1)	1,5 m	5	40005050 40009223 40005558 40000613
	2,0 m		
	2,5 m		
Link			