

ELEKTROMATEN® SE

Sectional-door-drive

For driving:
Counterbalanced sectional doors

Series KG50
SE 5.24 / 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 speed¹
- 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

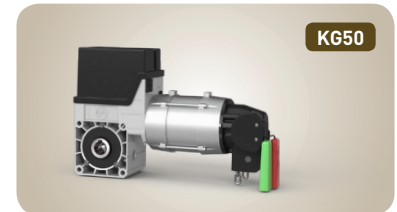
ELEKTROMATEN and FI-motors

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



Holding torque

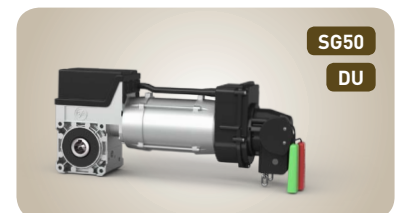
Examination of the static holding torque
Test report 630900
TÜV SÜD Industrieservice GmbH



KG50



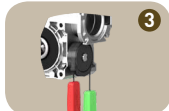
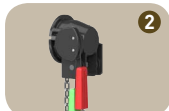
SG50E



SG50
DU



SG50
FI



Emergency manual operation

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

Limit switches

Mechanical limit NES²

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

Digital limit DES

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

Mounting

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

¹ See 2.7
² Not for SE 6.65 DU / SE 6.80 FI / SE 14.80 FI

Special versions

- Increase of movements 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: 24V
- Frequency: 50 / 60 Hz
- Mains supply: 1N~230V, 3~230V, 3N~400V, 3~400V

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

1. Technical data

ELEKTROMATEN Series		SE 5.24 KG50	SE 5.24 WS KG50	SE 9.15 SG50 SG50E	SE 9.15 WS SG50	SE 9.20 SG50 SG50E	SE 9.20 WS SG50	SE 9.24 SG50 SG50E
Output torque	Nm	50	50	90	90	90	90	90
Output speed	rpm	24	24	15	15	20	20	24
Output shaft / hollow shaft (Ø) ¹	mm	25,4	25,4	25,4	25,4	25,4	25,4	25,4
Max. holding torque ²	Nm	200	200	450	450	450	450	450
Max. door weight	N	2500	2500	4000	4000	4000	4000	4000
Max. output speed OPEN / CLOSE for frequency inverter operation ³	rpm	42 / 30	--	26 / 26	26 / 26	36 / 30	36 / 30	42 / 30
Motor power	kW	0,30	0,37	0,30	0,30	0,30	0,30	0,37
Supply voltage	V	3~230/400	1N~230	3~230/400	1N~230	3~230/400	1N~230	3~230/400
Operating frequency	Hz	50	50	50	50	50	50	50
Operating current ⁴	A	1,9 / 1,1	3,5	2,6 / 1,5	3,5	2,6 / 1,5	3,5	2,1 / 1,2
Max. movements per hour ^{5/6}		12	12	20	16	20	16	20
Limit switch range ⁷		20	20	20	20	20	20	20
Weight	kg	11	13	13	17	13	17	13
Spare parts: Catalogue page		9.052	9.052	9.051	9.051	9.051	9.051	9.051
Part no. installation drawing (dxf, dwg)		50001339	50001339	50000563 50000872 (ER)	50000563	50000563 50000872 (ER)	50000563	50000563 50000872 (ER)
Part no. ELEKTROMATEN		10003375	10003424	10003277 10003376 (ER)	10004953	10003152 10003157 (ER)	10004954	10002188 10002748 (ER)

ELEKTROMATEN Series		SE 9.24 WS SG50 SG50E	SE 9.30 SG50 SG50E	SE 14.15 SG50 SG50E	SE 14.21 SG50 SG50E	SE 6.65 DU SG50 SG50E	SE 6.80 FI SG50 SG50E	SE 14.80 FI SG50 SG50E
Output torque	Nm	90	90	140	140	60	60	140
Output speed OPEN CLOSE > 2,5m CLOSE ≤ 2,5m ⁸	min ⁻¹	24	30	15	21	20-65 20-30 20-30	15-80 15-30 15-30	10-80 10-30 10-30
Output shaft / hollow shaft (Ø) ¹	mm	25,4	25,4	25,4/31,75	25,4/31,75	25,4/31,75	25,4/31,75	25,4/31,75
Max. holding torque ²	Nm	450	450	600	600	450	450	600
Max. door weight	N	4000	4000	6000	6000	3000	3000	6000
Max. output speed OPEN / CLOSE for frequency inverter operation ³	min ⁻¹	--	52 / 30	26 / 26	36 / 30	--	--	--
Motor power	kW	0,45	0,37	0,35	0,45	0,45	0,40	0,85
Supply voltage	V	1N~230	3~230/400	3~230/400	3~230/400	3~400	1N~230	1N~230
Operating frequency	Hz	50	50	50	50	50	50 / 60	50 / 60
Operating current ⁴	A	3,9	2,1 / 1,2	3,3 / 1,9	4,5 / 2,6	0,8	8	6,6
Max. movements per hour ^{5/6}		16	20	16	16	20	40	30
Limit switch range ⁷		20	20	20 (14)	20 (14)	20 (14)	20 (14)	20 (14)
Weight	kg	16	14	18	14	16	18	24
Spare parts: Catalogue page		9.051	9.051	9.051	9.051	9.051	9.051	9.051
Part no. installation drawing (dxf, dwg)		50000853 50001092 (ER)	50000563 50000872 (ER)	50000846 50001076 (ER)	50000846 50001076 (ER)	50001313 50001314 (ER)	50001603 50001604 (ER)	50001544 50001545 (ER)
Part no. ELEKTROMATEN		10002237 10002763 (ER)	Ø25,4 10002195 Ø25,4 ER 10002738	Ø25,4 10002516 Ø25,4 ER 10003377 Ø31,75 10002621	Ø25,4 10002204 Ø25,4 ER 10002758 Ø31,75 10002206	Ø25,4 10003393 Ø25,4 ER 10003346 Ø31,75 10003378	Ø25,4 10004106 Ø25,4 ER 10004201 Ø31,75 10004200	Ø25,4 10004010 Ø25,4 ER 10004013 Ø31,75 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 When using a temperature range of +40°C...+60°C use half of maximum movements per hour, see also 2.2 · ⁶ The specified value must be halved when considering cycles per hour according to EN 60335-2-103 · ⁷ Maximum revolutions of hollow shaft: limit switch range 14 turns with a Ø 31,75 mm hollow shaft · ⁸ See 2.7

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 Movements per hour

The specified movements per hour (see Technical data) apply to an even distribution and the limit switch range first mentioned and must not be exceeded. For other limit switch ranges or heavily used doors, the drag forces must be reduced (enquire).

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

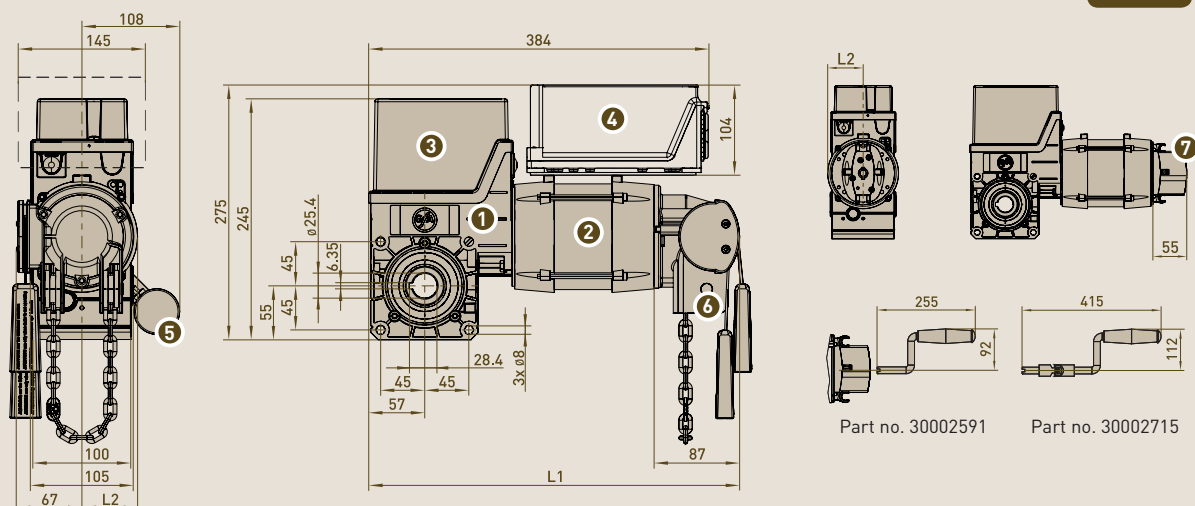
When calculating the cable size the max. permitted door weight is required a calculated ultimate stress of 6x for the cables; requirement of EN 12604.

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 5.24 / SE 5.24 WS

KG50



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

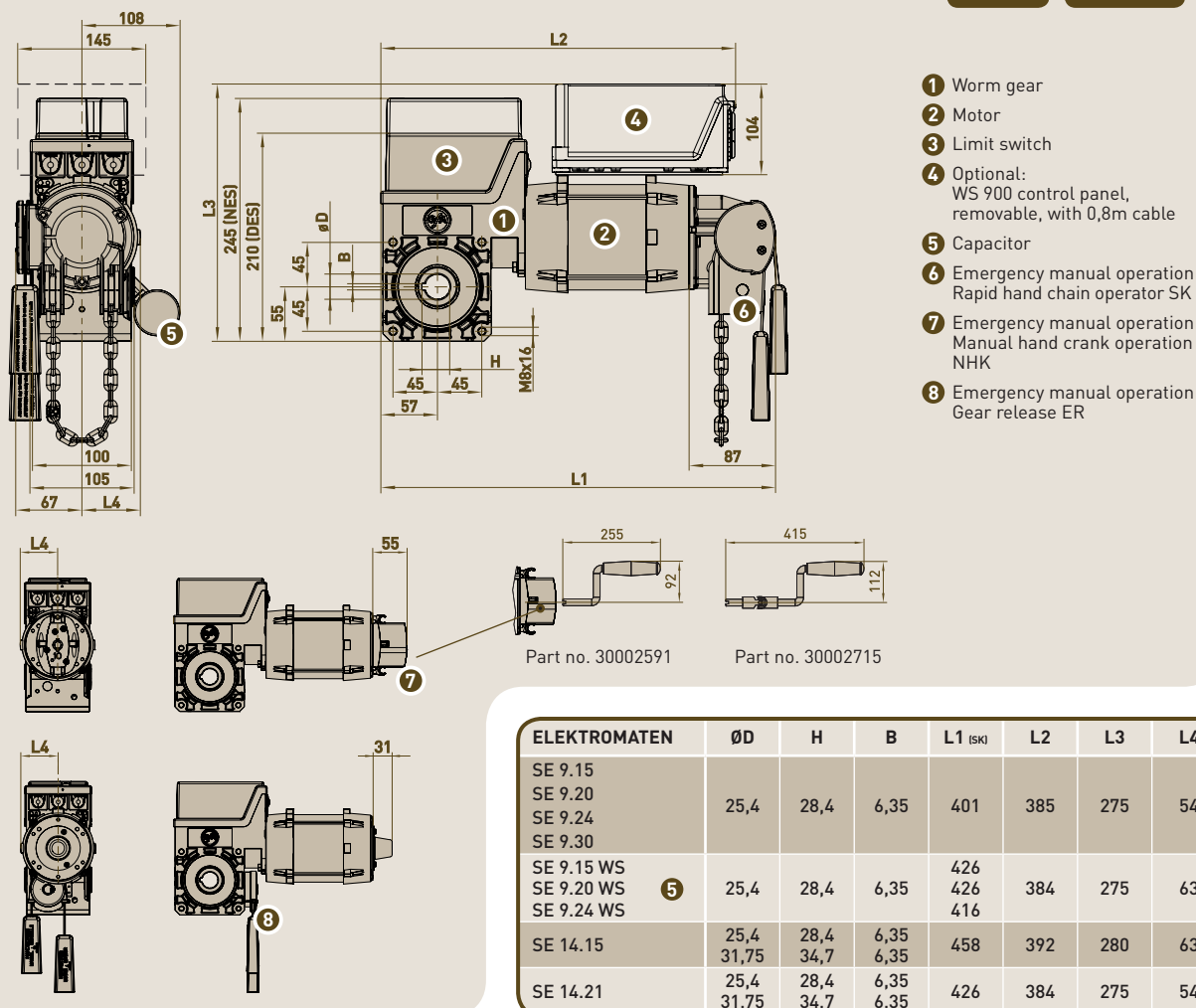
ELEKTROMATEN	L1 [SK]	L2
SE 5.24	381	57
SE 5.24 WS 5	401	54

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

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 0,8m 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

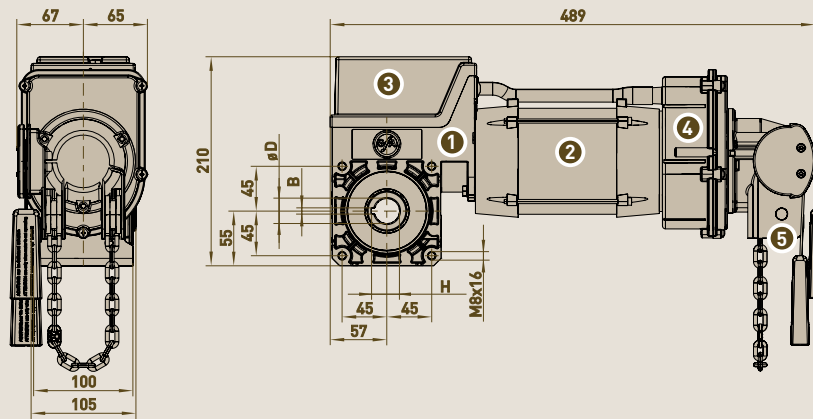
ELEKTROMATEN	ØD	H	B	L1 [SK]	L2	L3	L4
SE 9.15							
SE 9.20	25,4	28,4	6,35	401	385	275	54
SE 9.24							
SE 9.30							
SE 9.15 WS				426			
SE 9.20 WS 5	25,4	28,4	6,35	426	384	275	63
SE 9.24 WS				416			
SE 14.15	25,4 31,75	28,4 34,7	6,35 6,35	458	392	280	63
SE 14.21	25,4 31,75	28,4 34,7	6,35 6,35	426	384	275	54

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

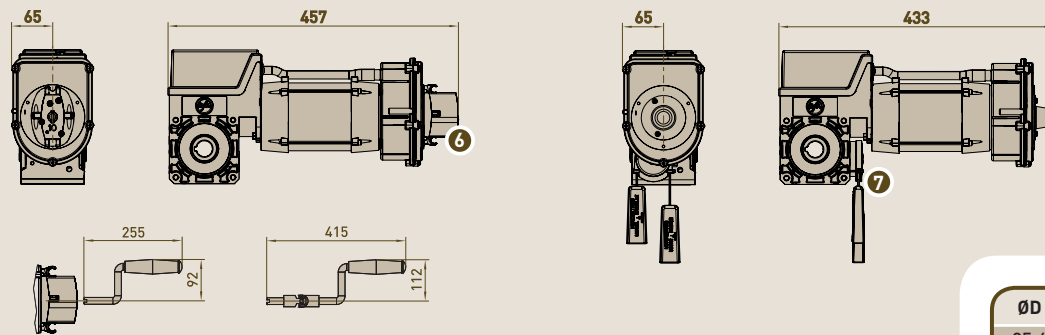
3.3 SE 6.65 DU

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

Part no. 30002715

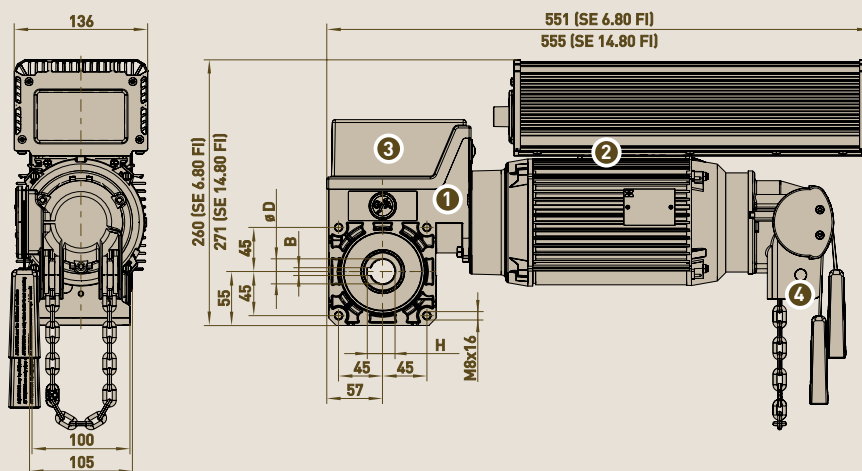
$\varnothing D$	H	B
25,4	28,4	6,35
31,75	34,7	6,35

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

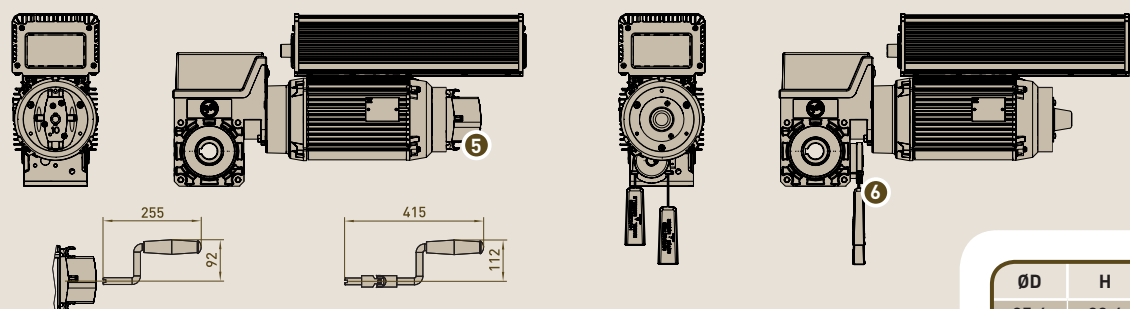
3.4 SE 6.80 FI / SE 14.80 FI

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



Part no. 30002591 (not for SE 6.80 FI)

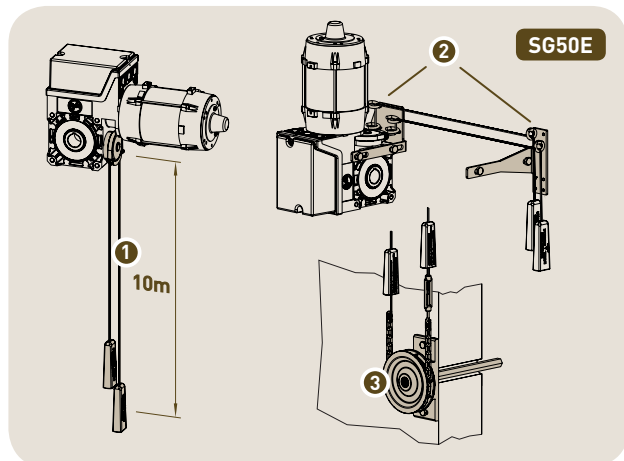
Part no. 30002715

$\varnothing D$	H	B
25,4	28,4	6,35
31,75	34,7	6,35

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



4. Emergency manual operation - release device ER¹ – 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)

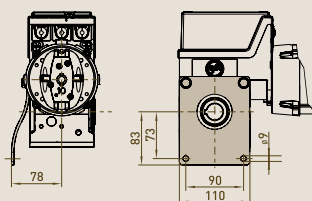
Designation		Part no.
Shifter cable 2x10m ²⁾ mounted directly	1	on request
Shifter cable extension 2x10m ²⁾ for retrofitting	1	30004242
Diverter Pulley system for shifter cable	2	30005351
External release kit	3	30005352

1 Required is a drive unit with release gearbox SG50E
2) compared to standard of 2x0.5m

5. Attachments / Accessories

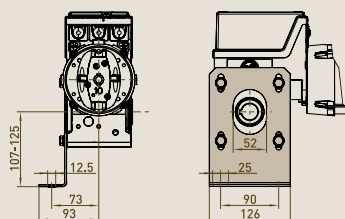
5.1 Torque bracket

Part no. 30002636



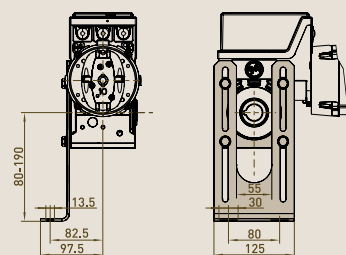
5.2 Flange bracket H 107-125

Part no. 30002685



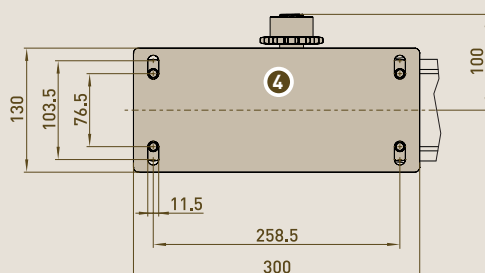
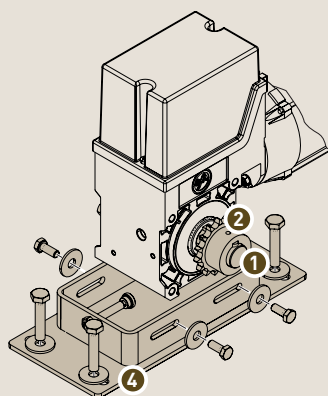
5.3 Flange bracket H 80-190

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	Ø25,4 Ø31,75	1 30002628 30002699
Sprocket	19 Teeth Ø25,4 Ø31,75 25 Teeth Ø25,4 Ø31,75	2 30001086 30002243 30000761 30001990
Chain guard	19 Teeth 25 Teeth	3 30000982 30000983
Bracket		4 30005056
Roller chain (08 B-1)	1,5m 2,0m 2,5m	5 40005050 40009223 40005558 40000613
Link		