

# ELEKTROMATEN® SI

Safedrive®

Series SG50F

SI 8.20

SI 14.15

SI 14.20

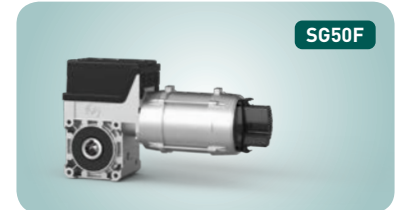
For driving:

Non-balanced sectional doors, roller shutters and rolling grilles which require an anti-fallback device

“Safedrive®” ELEKTROMATEN SI are special drives for industrial doors which require an anti-fallback device. The patented safety brake is built into the gear. The drive unit is fitted directly to the door shaft.

Safedrive® ELEKTROMATEN comprises of:

Worm gear with safety brake and hollow shaft, emergency manual operator, integrated limit switches and electrical motor.



## Patented built-in safety brake

- Safety against failure of worm or wheel
- Independent of speed / direction
- Maintenance free, self-monitoring
- Excellent damping characteristics in operation

## Approvals and certificates

### ELEKTROMATEN

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



### Built-in safety brake

Certificate of conformity according to:  
DIN EN 12604 / 12605  
ift Rosenheim GmbH



1

## Emergency manual operation

- Hand crank NHK 1
- Rapid hand chain operator SK (SI 8.20) 2
- Hand chain operator KNH (SI 14.15/14.20) 3



2

## Limit switches

- Mechanical limit NES 4
  - 2 operating, 2 emergency- and 2 auxiliary limit switches
- Digital limit DES 5
  - Absolute encoder, after a power failure, re-adjustment is not required



3



4

## Mounting

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



5

## Special versions

- Increase of cycles per hour
- Higher protection class
- Other voltages and frequencies
- Explosion-proof according to ATEX (page 6.011)

## 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<br>Series  |     | SI 8.20   | SI 14.15  | SI 14.20  |
|---|-----|---|---|---|
|   |     | S650F   | S650F   | S650F   |
| Output torque   | Nm  | 80  | 140   | 140   |
| Output speed  | rpm | 20  | 15  | 20  |
| Output shaft / hollow shaft (Ø)   | mm  | 25 / 25,4 / 30  | 25 / 25,4 / 30  | 25 / 25,4 / 30  |
| Locking torque <sup>1)</sup>  | Nm  | 310   | 310   | 310   |
| Safety brake (approval number)  |     | 14-003612-PR01  | 14-003612-PR01  | 14-003612-PR01  |
| Max. holding torque <sup>2)</sup>   | Nm  | 80  | 140   | 140   |
| Max. output speed OPEN / CLOSE for frequency inverter operation <sup>3)</sup> | rpm | 35 / 20   | 26 / 20   | 35 / 20   |
| Motor power   | kW  | 0,30  | 0,35  | 0,45  |
| Supply voltage  | V   | 3-230 / 400   | 3-230 / 400   | 3-230 / 400   |
| Operating frequency   | Hz  | 50  | 50  | 50  |
| Operating current <sup>4)</sup>   | A   | 2,6 / 1,5   | 3,3 / 1,9   | 3,4 / 2,0   |
| Max. cycles per hour <sup>5)</sup>  |     | 9 (2,7)   | 10 (5,2)  | 11 (5,6)  |
| Limit switch range <sup>6)</sup>  |     | 20 (14) <sup>7)</sup>                                       | 20 (14) <sup>7)</sup>                                       | 20 (14) <sup>7)</sup>                                       |
| Max. hand force NHK / SK and / or KNH <sup>8)</sup>                           | N   | 72 / 191  | 127 / 102   | 127 / 102   |
| Weight  | kg  | 13  | 17  | 14  |
| Spare parts: Catalogue page   |     | 9.051   | 9.051   | 9.051   |
| Part no. installation drawing [dxf, dwg]                                      |     | 50001216  | 50000674  | 50000674  |
| Part no. ELEKTROMATEN   |     | 10003369 (Ø 25,0)<br>10003252 (Ø 25,4)<br>10003370 (Ø 30,0) | 10002375 (Ø 25,0)<br>10002451 (Ø 25,4)<br>10002464 (Ø 30,0) | 10002226 (Ø 25,0)<br>10002227 (Ø 25,4)<br>10002461 (Ø 30,0) |

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)  
<sup>1)</sup> See 3.5 · <sup>2)</sup> Maximum torque that may act on the output shaft of the drive unit when the door is stationary · <sup>3)</sup> We recommend the selection of GfA ELEKTROMATEN-FI for use with frequency inverter, OPEN drive speed at 87 Hz, see 3.7 · <sup>4)</sup> The operating current in door drives can reach up to 4x the rated current for limited periods, see 3.6 and 3.7 · <sup>5)</sup> 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 · <sup>6)</sup> Maximum revolutions of hollow shaft · <sup>7)</sup> Applies to hollow shaft Ø 30 mm · <sup>8)</sup> See 3.4

## 2. Selection chart

| 2.1 Roller shutters<br>Tube EN 10220 [mm] | SI 8.20 |                       | SI 14.15 |                       | SI 14.20 |                       |
|---|---------|-----------------------|----------|-----------------------|----------|-----------------------|
|   | F [N]   | v <sub>a</sub> [cm/s] | F [N]    | v <sub>a</sub> [cm/s] | F [N]    | v <sub>a</sub> [cm/s] |
| 101,6 x 3,6                               | 1053    | 12,7                  | 1842     | 9,6                   | 1842     | 12,7                  |
| 108,0 x 3,6                               | 1000    | 13,4                  | 1750     | 10,1                  | 1750     | 13,4                  |
| 133,0 x 4,0                               | 837     | 16,0                  | 1464     | 12,0                  | 1464     | 16,0                  |
| 159,0 x 4,5                               | 715     | 18,7                  | 1251     | 14,1                  | 1251     | 18,7                  |

- F = Lift [N]
- Includes 20 % friction for single-wall profiles (profile thickness 20 mm)
- v<sub>a</sub> = Initial speed [cm/s]
- Read note in 3.2

| 2.2 Sectional doors<br>Cable drum [mm] | SI 8.20 |          | SI 14.15 |          | SI 14.20 |          |
|--|---------|----------|----------|----------|----------|----------|
|  | F [N]   | v [cm/s] | F [N]    | v [cm/s] | F [N]    | v [cm/s] |
| Ø 160                                  | 900     | 16,8     | 1575     | 12,6     | 1575     | 16,8     |
| Ø 200                                  | 720     | 20,9     | 1260     | 15,7     | 1260     | 20,9     |

- F = Lift [N]
- Includes 10 % friction
- v = Door speed [cm/s]
- Read notes in 3.2 and 3.8
- Suitable cable drums are available as accessories in Chapter 9

## 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 20mm) 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 Locking torque / Holding torque

The permissible loads on walls, fastenings, mountings and transmission elements must not be exceeded, even for maximum holding torques or locking torques.

### 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 (on request).

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 Cable / Cable drums

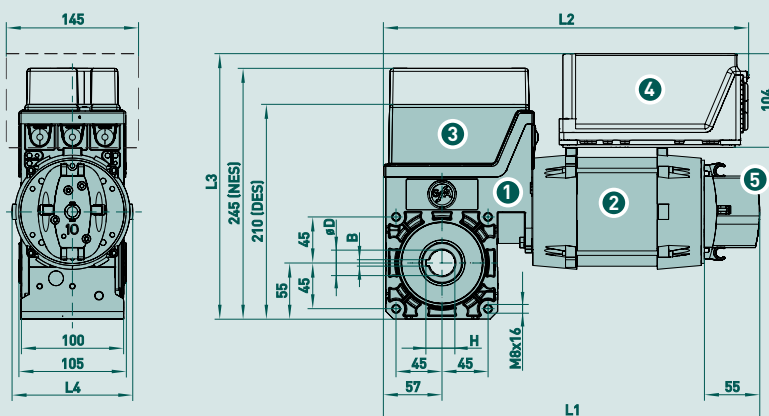
When calculating the cable size the max. permitted door weight is required with a safety of 6x for the cables; requirement of EN 12604.

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.

## 4. Dimensions

SI 8.20 – SI 14.20

SG50F



- 1 Worm gear with safety brake
- 2 Motor
- 3 Limit switch

- 4 Optional: WS 900 control panel, removable, with 0,8 m cable
- 5 Hand crank NHK

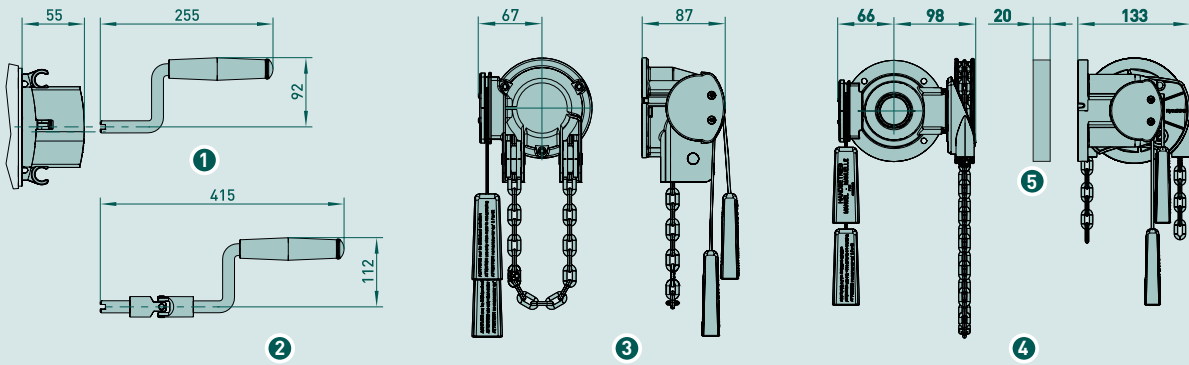
| ØD   | H    | B    |
|------|------|------|
| 25   | 28,3 | 8    |
| 25,4 | 28,4 | 6,35 |
| 30   | 33,3 | 8    |

| ELEKTROMATEN | L1  | L2  | L3  | L4  |
|--------------|-----|-----|-----|-----|
| SI 8.20      | 349 | 385 | 275 | 114 |
| SI 14.15     | 430 | 392 | 280 | 126 |
| SI 14.20     | 375 | 392 | 280 | 126 |

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



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



1 Manual hand crank operation NHK (Standard)  
Part no. 30002591 (Ø 10 mm)

2 Manual hand crank operation with knuckle joint NHKK  
Part no. 30002715 (Ø 10 mm)

3 Rapid hand chain operator SK (SI 8.20)

4 Hand chain operator KNH (SI 14.15/SI 14.20)

5 Flange in-use  
with: SI 14.15

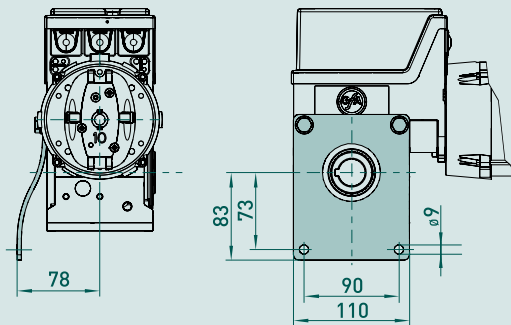
■ Manual forces, see item 1 of technical data

■ Read note in 3.4

## 6. Attachments / Accessories

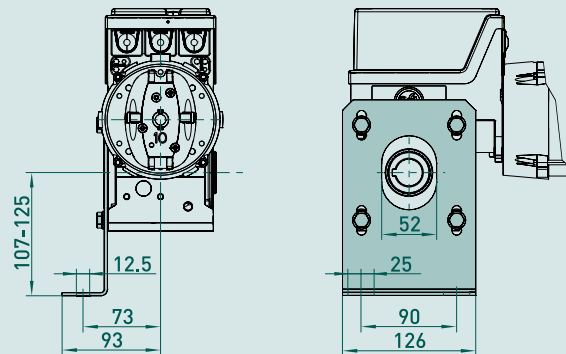
### 6.1 Torque bracket

Part no. 30002636



### 6.2 Flange bracket H 107-125

Part no. 30002685



■ All brackets can be mounted vertically or horizontally