GfA ELEKTROMATEN®

We open the Doors of the World

Drives

Controls

Accessories

Service

IN 0

General information

- Contacts
- Freight charges, Repair charges
- Load diagram, tubes conforming EN 10220
- Protection classes according to EN 60529
- Overview of the ELEKTROMATEN® type series

SI 1

ELEKTROMATEN® SI
Safedrive®

with integrated safety brake

- For roller shutters, rolling grilles, non-balanced sectional doors, vertically lifted doors, high-speed rolling doors, which require an anti-fallback device

KE 2

ELEKTROMATEN® KE
Chain-drive

- For roller shutters, rolling grilles, and vertically lifted doors

SE 3

ELEKTROMATEN® SE
Sectional-door-drive

- For counterbalanced sectional doors

ST 4

ELEKTROMATEN® ST
Sliding-door-drive

- For sliding doors
- Door controls for ELEKTROMATEN® ST

FT 5

ELEKTROMATEN® FT
Folding-door-drive

- For folding doors

SP 6

ELEKTROMATEN® SP
Special drives

- For doors in potentially explosive atmospheres Ex
- Door controls for ELEKTROMATEN® Ex
- For Fire-door-drive

FG 7

Safety brakes FG

- For doors which require an anti-fallback device

TS 8

Door controls TS

- For ELEKTROMATEN with
  - Mechanical limit switch NES
  - Digital limit switch DES
- For dock-leveller control

ZB 9

Accessories / Spare parts ZB

- Safety devices
- Accessories
- Spare parts

General information

GfA ELEKTROMATEN® The single source for top service and advanced expertise	**0.010**
Your contact person Telephone list and e-mail addresses	**0.020**
GfA-Portal Function Overview	**0.025**
Flat-rate freight charges We help you save money	**0.030**
Flat-rate repair charges Just in case	**0.040**
Load diagram for tubes conforming to EN 10220	**0.050**
Protection classes according to EN 60529	**0.060**
Overview of the ELEKTROMATEN® type series The right gearbox series for every application	**0.070**
Drive technology according to your requirements Solutions for special environmental conditions	**0.080**

IN

The single source for top service and advanced expertise

We have been producing drive and control systems for industrial doors at our plant in Dusseldorf (Germany) since 1954. We now market more than 200,000 units a year under the ELEKTROMATEN® brand name.

With advanced solutions and state-of-the-art production techniques, we set the benchmarks that others aspire to. As a market leader, we fulfil the exact requirements of our worldwide customer base.

Quality and reliability are the two pillars of our commercial approach as a company. A finely-tuned production management system helps to ensure that our customers are supplied both reliably and on time. This involves the careful integration of production processes and logistics, which is why we can guarantee that over 95 % of our deliveries will be on time.

All GfA products are manufactured to the highest standards of precision. We check the results using the very latest in measuring instruments. Each process involved, whether it is distribution, design, production or anything else, is certified to DIN EN ISO 9001:2015 standards. This is why we are able to guarantee such high quality for our products.

Our greatest asset is our team of 260 employees. Permanent advances in the honing of individual skills and an ongoing in-house exchange of information form the basis of our innovative strength, not forgetting the intensive development work designed to secure our long-term future. This means that there are always various innovative and practical solutions ready to try out at any given time. Cost efficiency together with technical perfection to create products for the future.

Contact

GfA ELEKTROMATEN GmbH & Co. KG
Wiesenstraße 81
40549 Düsseldorf
Germany

General Office

	Main fax number:		
Reception	+49 (0) 211 500 90 90	+49 (0) 211 500 90 0	info@gfa-elektromaten.de

International Sales

AT, DK, FI, FL, IS, MT, NO, SE, Middle East North- and South America, Asia	**Baches, Thomas**	+49 (0) 211 500 90 724	t.baches@gfa-elektromaten.de
BE, FR, LU	**Berti, Patricia**	+49 (0) 211 500 90 767	p.berti@gfa-elektromaten.de
CY, GR, IT, NL, TR, Africa	**Gaida, Petra**	+49 (0) 211 500 90 48	p.gaida@gfa-elektromaten.de
ES	**Kosberg, Oliver**	+49 (0) 211 500 90 57	o.kosberg@gfa-elektromaten.de
AL, AM, BA, BG, BY, CZ, EE, GE, HR, HU, KZ, LT, LV, ME, MK, PL, RO, RS, RU, SK, SI, UA	**Reschke, Rafael**	+49 (0) 211 500 90 818	r.reschke@gfa-elektromaten.de
	Order		order@gfa-elektromaten.de

If your contact person is unavailable during normal office hours (Mon - Thu from 7.30 am to 4 pm and Fridays from 7.30 am to 1 pm), your call will be returned to the main switchboard.
All other employees and departments can be reached via the reception.

International representations

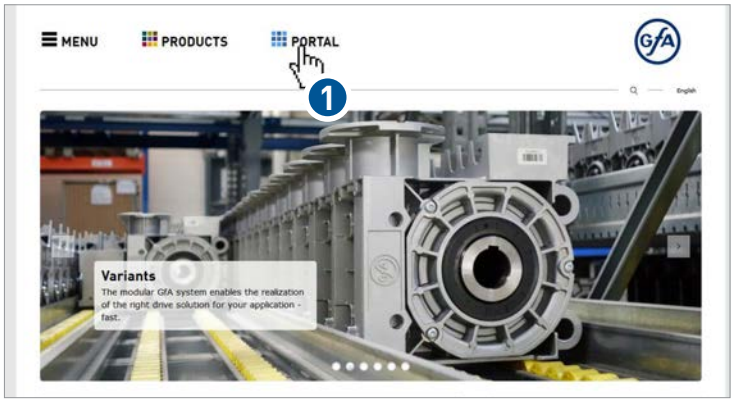
ES / PT	**Díaz Sánchez, Jose** Camino de las Alcubillas S/N ES - 18600 Motril (Granada)	+34 95 882 0918	pedidos@elektromateniberia.com
UK / IE	**GfA ELEKTROMATEN UK Ltd** Tournament Fields Business Park Agincourt Road GB - Warwick CV34 6XZ	+44 1926 45 24 52	sales@gfa-elektromaten.co.uk
FR	**Lamotte, Patrice** 44 Allée de la Magnagnerie FR - 26500 Bourg Les Valence	+33 475 58 84 05	contact@agplamotte.com
CH	**ROWI-TECH AG** Gibelflühstrasse 5 CH - 6275 Ballwill	+41 41 910 50 78	info@rowitech.ch
USA / CAN	**Gontarski, Chris** 1595 Swallow Drive USA - Grafton, WI 53024	+1-262-299-4740 +1-800-GFA-3196	c.gontarski@gfa-elektromaten.com
AU	**GfA ELEKTROMATEN Australia Pty Ltd** 5/22 Beaumont Rd, AUS - Mount Kuring-gai NSW 2080	+61 2 9882 2782	support@gfa.com.au

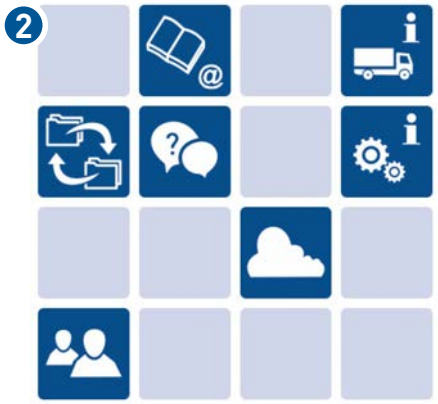
Website/ GfA-Portal

Our website offers further information of our products. The GfA-Portal gives you access to technical and service information as well as installation instructions and other interessting functions.
www.gfa-elektromaten.com

GfA-Portal – Function Overview

The Portal represents the customer area of GfA on the Internet (1).
After registration on the Portal every function can be called up via a tile (2).
Some functions need a special authorisation because of the privacy provisions and are therefore available only after an extended registration process. These functions are marked separately by (E).
English, Czech, Dutch, French, German, Italian, Polish, Russian, and Spanish language are currently available as menu languages. However, you can select documents and functions in many other languages.





Documentation on Request

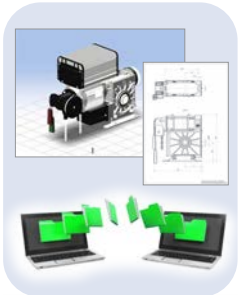
This function allows to select installation instructions in up to 18 different languages. After entering the GfA item and model number, you will receive an e-mail with the instructions on the desired product in the PDF format. Instructions are currently available for ELEKTROMATEN, door controls and safety brakes. We are constantly working on improvements, both of the contents and the available languages.

Delivery Information E

Here you can see the status of your deliveries. You will receive information about the dispatch date and the forwarding agent. You can track your delivery via linking of the dispatch data with the forwarding agent. This way, you can always be up to date on the whereabouts of your delivery and when it will arrive to you.

File Transfer Service E

In this section of the Portal you can access customer-specific files and documents for download. These can be, for instance, drawings, 3D-data records or product illustrations for your catalogue. The service works of course in both directions. This means you can also upload your files and share them with us.



Service Informationen

The Service Information describes functions of GfA products or special product handling and supports you in installation, operation and maintenance. Moreover, you will receive information about the services of GfA, for instance, about the Portal. Standards and directives are further topics which are dealt with in the Service Information. On the Portal you will find all already published Service Information and can view it sorted according to certain criteria. About 5 to 10 new issues of Service Information appear in the English, Czech, Dutch, French, German, Italian, Polish, Russian, and Spanish language.

Technical Information

The Technical Information describes changes and improvements of GfA products. This can be, for instance, a presentation of a new product or the description of a detailed change to an existing product. On the Portal you will find all already published Technical Information and can view it sorted according by certain criteria. About 10 to 15 new issues of Technical Information appear in the English, Czech, Dutch, French, German, Italian, Polish, Russian, and Spanish language.

TS-Data Cloud

Part no.: 20003696

For setting and servicing works on the door equipment the GfA-Stick was developed. The tool allows together with the „GfA+“ app to select and display important data from the GfA door controls (generation TS-B)[1]. Among other things, software status, connected hardware, programmed settings, recent actions and stored error logs can be displayed on a smartphone[2]. Efficient diagnostics of the door operator equipment becomes thus possible. With a registration on the GfA-Portal this data can also be transferred via Internet into the TS Data Cloud. On the TS Data Cloud you can access the structured data at any time, without limitation. An integrated search and filter function allows the comfortable data management. They can be filtered, for instance, by readout date or location of the door. A group function also allows the monitoring of different doors and locations as well as the co-ordinated and personal access to the data. Furthermore, the GfA after-sales service can log by request into the data records which you have recorded. If necessary we can guide you directly by phone when working at the door.

1) These include door controls TS 959, TS 970 and TS 971
2) Requirements: Smartphone with Bluetooth 4.0 and installation of the free app GfA+ (available in the store for Android and iOS)

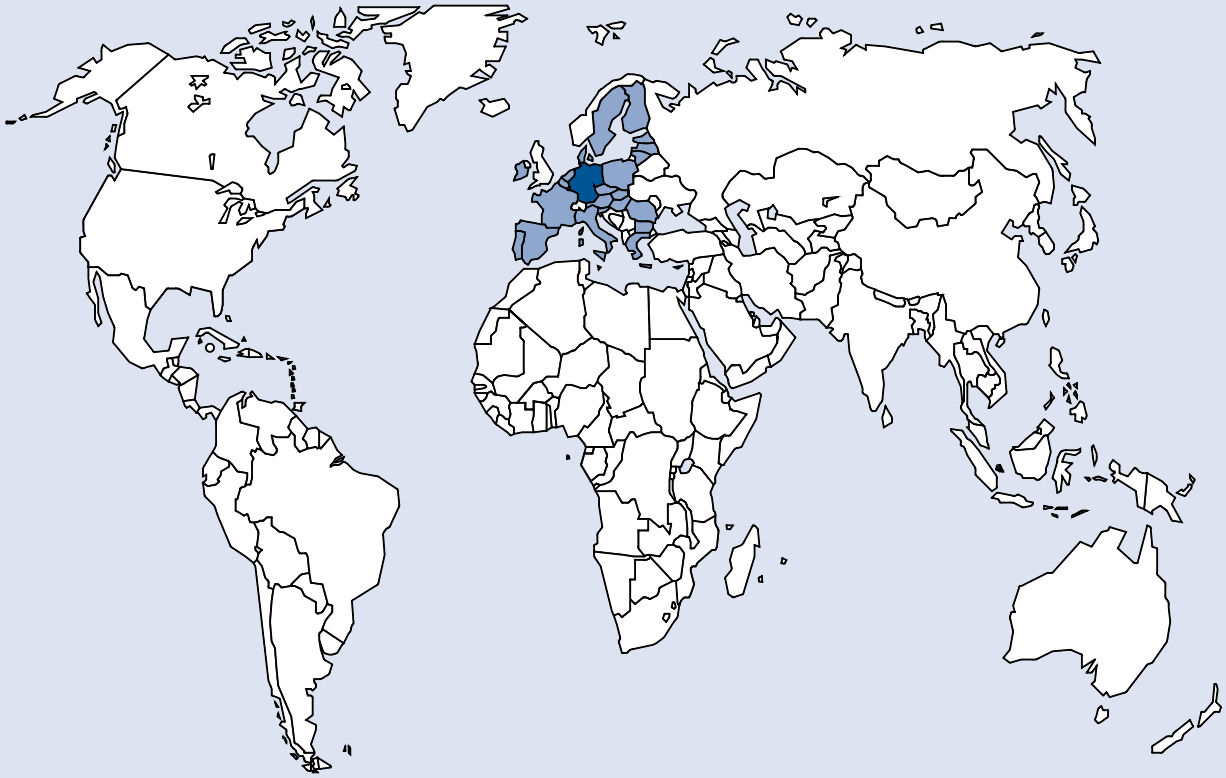
User Profile

In your user profile you can manage your access data and settings. Here you can specify, for instance, whether you wish to be informed automatically of new Technical or Service Information by e-mail.

Notes

The registration on the GfA-Portal is available at: https://portal.gfa-elektromaten.de/en.
You can set up an extended access (E) via your sales representative.
We will gladly advise you: http://gfa-elektromaten.com/en-DE/contact.html

We help you saving money with flat-rate shipping cost



Shipping cost inside the European Community

Freight and packing costs are met by us and billed to you at a flat rate, so that you can pay shipping cost directly to us.

This means:
- There is no separate bill for shipping costs
- Shipping cost are lower thanks to our special rates

And therefore:
- Lower processing costs
- Easy account auditing

Valid freight costs for the EC-countries can be found at:
Please contact our international sales team.

Parcel service:

Transport of goods up to 30 kg incl. packaging can be sent quickly at a low cost for customers by a parcel service. International flate-rate shipping cost could be found:

Please contact our international sales team.

Flat-rate repairs - just in case

GfA ELEKTROMATEN has been proving their reliability for many years. All mechanical parts and all electrical components are subject to strict quality testing. Upon leaving the production line, each ELEKTROMATEN is subject to another exhaustive final inspection. Malfunctions can nevertheless occasionally occur during long-term operation.

Customer satisfaction based on fast response times

A faulty door is bound to be a source of inconvenience and irritation to your customer, which is why a fast and accurate response is required from you. Our flat-rate repairs help you restore the satisfaction levels of the customers that we have in common.

What will it cost to repair?

You have no doubt heard this question many times. In order to help you give an immediate straight answer in the future, we have set up a system of flat-rate repairs. These flat rates apply to ELEKTROMATEN that are capable of being repaired, and which are not excessively old or worn out.
If a repair is no longer possible, we will inform you.
Our flat-rate repairs are very competitively priced. They are designed to let you make fast decisions in your efforts to satisfy the customers that we have in common. We regret that we cannot offer discounts on flat-rate repairs. We therefore ask you to understand that we have to bill all freight and packaging costs separately for these repairs.

ELEKTROMATEN (age)	**Output torque up to 90 Nm** Part no.	**Output torque up to 250 Nm** Part no.	**Output torque up to 650 Nm** Part no.	**Output torque from 750 Nm** Part no.
Up to 1 year	80000800			
Up to 3 years	80000810	80000815	80000825	80000830
Up to 5 years	80000835	80000840	80000850	80000855
Up to 7 years	80000860	80000865	80000875	80000880
From 8 years	**Repair is normally not advisable for units with an age of more than eight years. You should recommend your customer to replace the ELEKTROMATEN**			

- Only valid if the goods where in proper use
- Does not apply to drive units with frequency inverter motor (FI) as well as ELEKTROMATEN ATEX and FS (Please enquire)
- The part numbers are included in the current GfA price list

Do you have any questions?
Just call our service department. We will be pleased to provide immediate assistance.

Service department

	☎	✉
Commercial service	+49 (0) 211-5 00 90 600	info@gfa-elektromaten.de

Load diagram for tubes according to EN 10220

Recommended specifications for roller shutters, rolling grilles, etc.

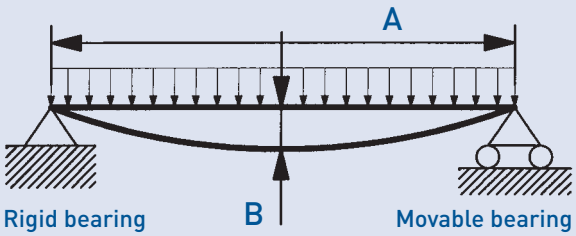
The load specifications detailed below apply to static loads on steel structures.

In roller-shutter construction, these tubes are used as winding shafts for the shutter slats.

Up to a tube length (i.e. door width) of approx. 10 m, between the bearings a maximum deflection of 1/500 can be taken into account.

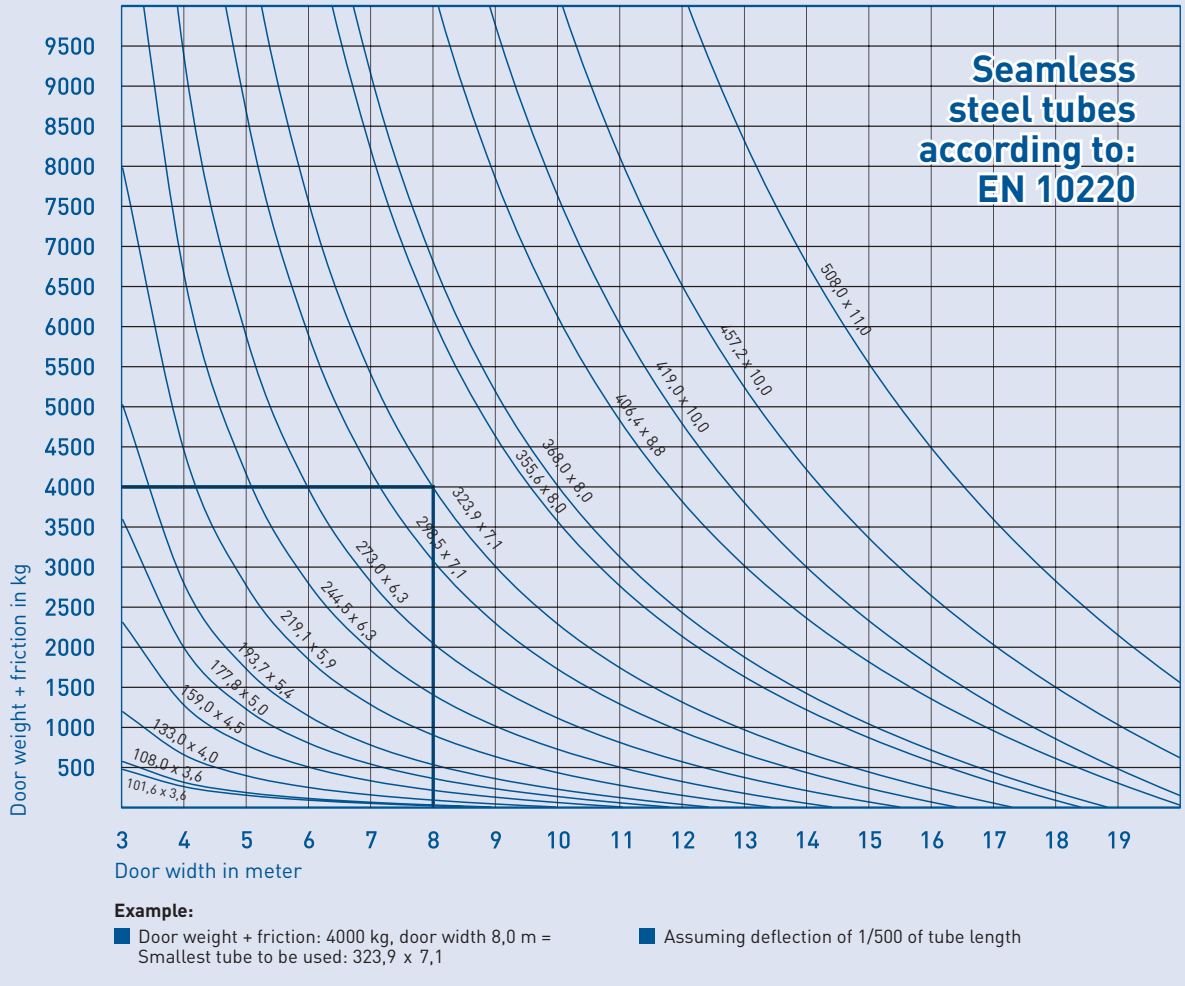
Example

With a door width of 5 m, the deflection should not exceed 10 mm. Please obtain the maximum permitted worth from the supplier of the tube. Please contact us if you intend to install doors of larger width.



B /A ≤ 1/500
A = Door width
B = Deflection of the tube resulting door weight and tube weight

Egde loading resulting from door weight and tube weight



Example:

- Door weight + friction: 4000 kg, door width 8,0 m = Smallest tube to be used: 323,9 x 7,1
- Assuming deflection of 1/500 of tube length

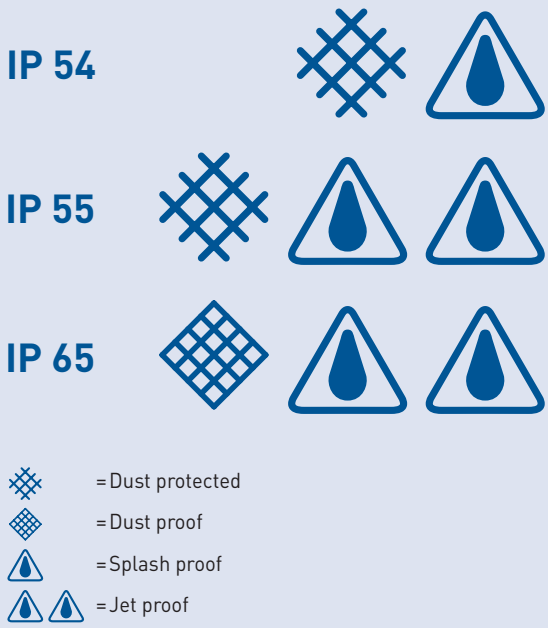
IP Protection

Degrees of protection (IP) against water and contact provided by enclosures according to EN 60529

NormStandard EN 60529 describes the test procedure for degrees of protection. Depending on the degree of protection, the product is sprayed with a predetermined water pressure and a certain amount of water from a distance of about 3 m. This test takes only a few minutes and does not include spraying the product with a high-pressure cleaner. Constant spraying with water or installation outdoors requires provides additional protective measures.

Caution

The degrees of protection describe only the protection against the ingress of dust or water in an environmentally acceptable composition. For aggressive compositions, such as alkaline solutions, solvents, salt water, cement dust, etc. a specified enquiry is required.



IP degrees and their significance

Component	Code numbers or letters	Significance for protection of equipment	Significance for personal protection
Code letters	**IP**		
First digit		**Against ingress of solid foreign objects:**	**Against access to hazardous parts (with):**
	0	No protection	No protection
	1	ø ≥ 50,0 mm	Back of hand
	2	ø ≥ 12,5 mm	Finger
	3	ø ≥ 2,5 mm	Tools and wires ø ≥ 2,5 mm
	4	ø ≥ 1,0 mm	Tools and wires ø ≥ 1,0 mm
	5	Dust protected	Full protection
	6	Dustproof	Full protection
Second digit		**Against ingress of water:**	
	0	No protection	
	1	Vertically dripping	
	2	Dripping water (up to 15° from vertical)	
	3	Spray water (up to 60° from vertical)	
	4	Splash water (from any direction)	
	5	Jet water (from any direction)	
	6	Powerful jet water (from any direction)	
	7	Temporary immersion	
	8	Submersion	

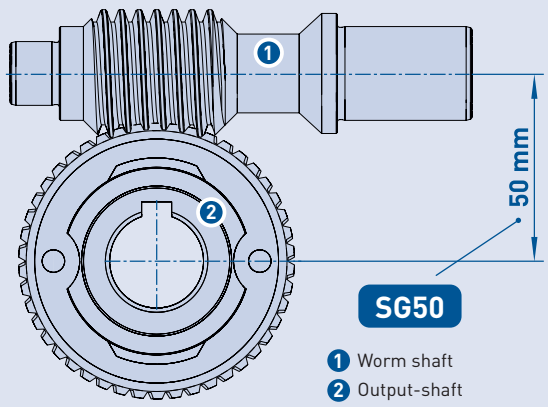
When dealing with quotations, customer specifications, etc., check to verify, if required degrees of protection differ in any way from the details given in the GfA catalogue.

Overview of the ELEKTROMATEN® type series

The right gearbox series for every application

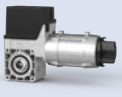
The achievable output torque of the GfA ELEKTROMATEN is largely determined by the centre distance of the worm shaft to the output shaft in the gearbox. There are currently six different centre distances for the worm gearbox series.

Other distinguishing features exist besides the centre distance. These distinguishing features are also included in the designation of the series. The following table gives an overview.



Series	Center distance [mm]	F Integrated Safety Brake	R Friction clutch	E Gear release	ELEKTROMATEN®	Section
SG40	40				Sectional-door-drive SE	3
KG50	50				Sectional-door-drive SE	3
SG50	50				Chain-drive KE / Sectional-door-drive SE / Special drive SP	2 / 3 / 6
SG50F	50	•			Safedrive SI / Special drive SP	1 / 6
SG50R	50		•		Sliding-door-drive ST	4
SG50R-SG85	50, 85		•	•	Folding-door-drive FT	5
SG50E	50			•	Sectional-door-drive SE	3
SG63F	63	•			Safedrive SI	1
SG63F-SIK	63	•			Safedrive Compact SIK	1
SG85	85				Chain-drive KE / Special drive SP	2 / 6
SG85F	85	•			Safedrive SI / Special drive SP	1 / 6
SG85R	85		•		Sliding-door-drive ST	4
SG115	115				Chain-drive KE / Special drive SP	2 / 6
SG115F	115	•			Safedrive SI / Special drive SP	1 / 6
SG115R	115		•		Sliding-door-drive ST	4
SG186F	186	•			Safedrive SI	1
FS	div				Fire-door-drive FS	6


SG40


KG50


SG50 F R


SG50R-SG85


SG50E

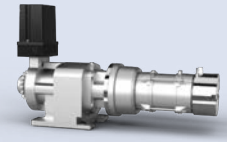

SG63F


SG63F-SIK


SG85 F R

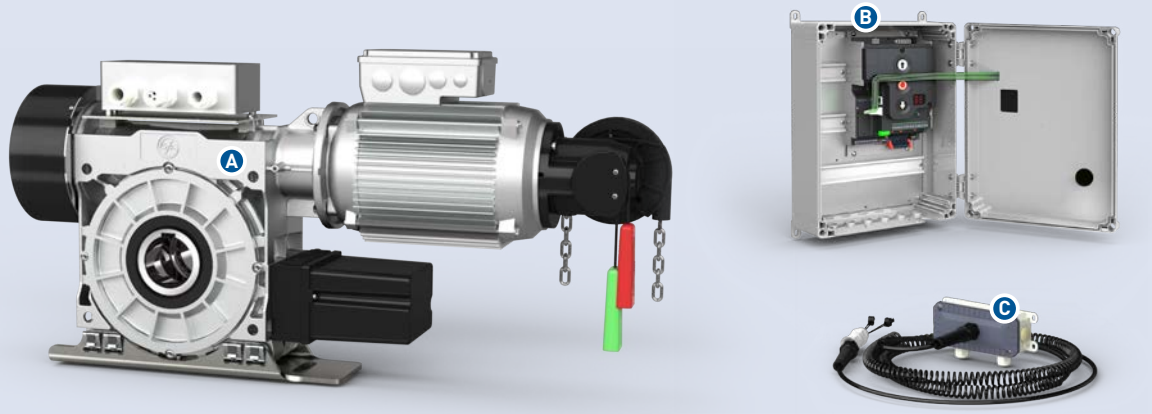

SG115 F R


SG186F


FS

Drive technology according to your requirements

ELEKTROMATEN® (A) open logistic buildings, stadiums, underground car parks and factories. Proved over a million times and with high reliability. Even special environmental and application conditions are no problems. Increased humidity, dust exposure, high and low temperatures, contact with aggressive media or requirements for explosion protection – GfA has the solution. Fully specialized drive units or modular additions to the standard ensure the required function. Options for optimising GfA door controls (B) and in the accessories range (C) are also available for specific environmental condition.

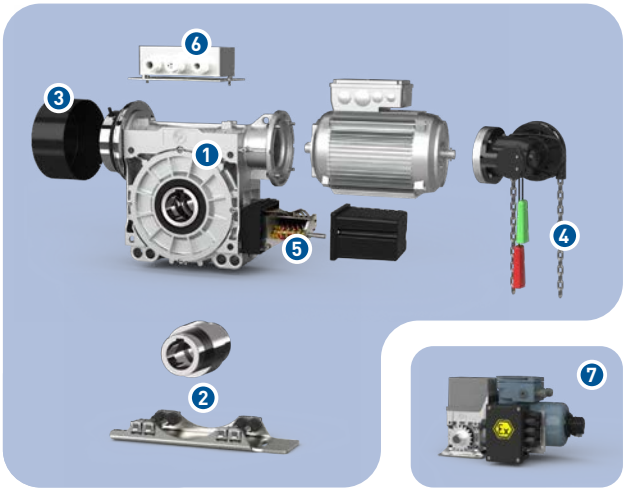


Examples of ELEKTROMATEN:

1. Special gearbox oils for use in the food- or animal feed industry, special paintwork
2. Hollow shafts and fixing elements with special coating or made from stainless steel
3. Encapsulated breaks
4. Emergency manual operations with chains made of stainless steel
5. Encapsulated mechanical microswitches
6. Dust and jet water-proof terminal boxes
7. Fully specialized drive units for explosion protected areas according to ATEX[1] specifcation

Examples of door controls[2] and accessories[3]:

8. Protective covers
9. Special housing
10. Door leaf boxes with increased protection
11. Splash guard for door leaf boxes

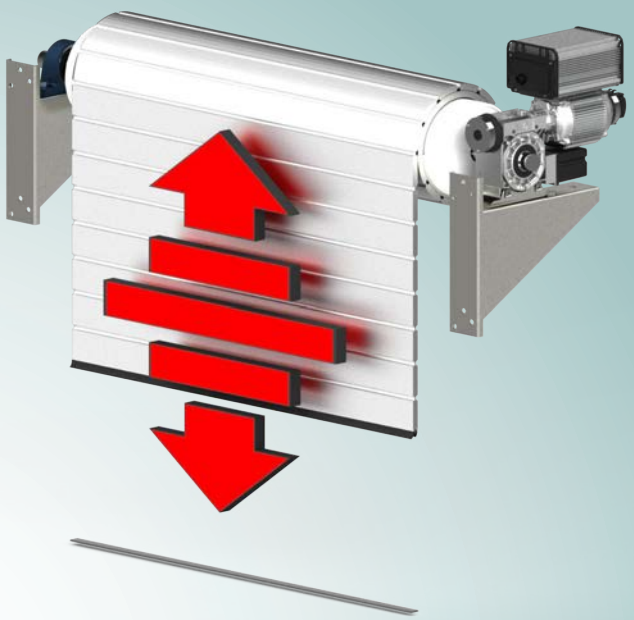


1) See section 6 **2)** See section 8 **3)** See section 9

Your contact person will be happy to advise and offer you the best possible solution.

ELEKTROMATEN® SI
Safedrive®

With integrated safety brake
for doors which require an anti-fallback device



SI 8.20 – SI 14.20 1.011
Output torque: 80 - 140 Nm
Output speed: 15 - 20 rpm

SIK 17.10 WS – SIK 25.10 WS 1.031
Output torque: 170 - 250 Nm
Output speed: 10 rpm

SI 10.15 – SI 180.6 1.051
Output torque: 100 - 1800 Nm
Output speed: 6 - 15 rpm

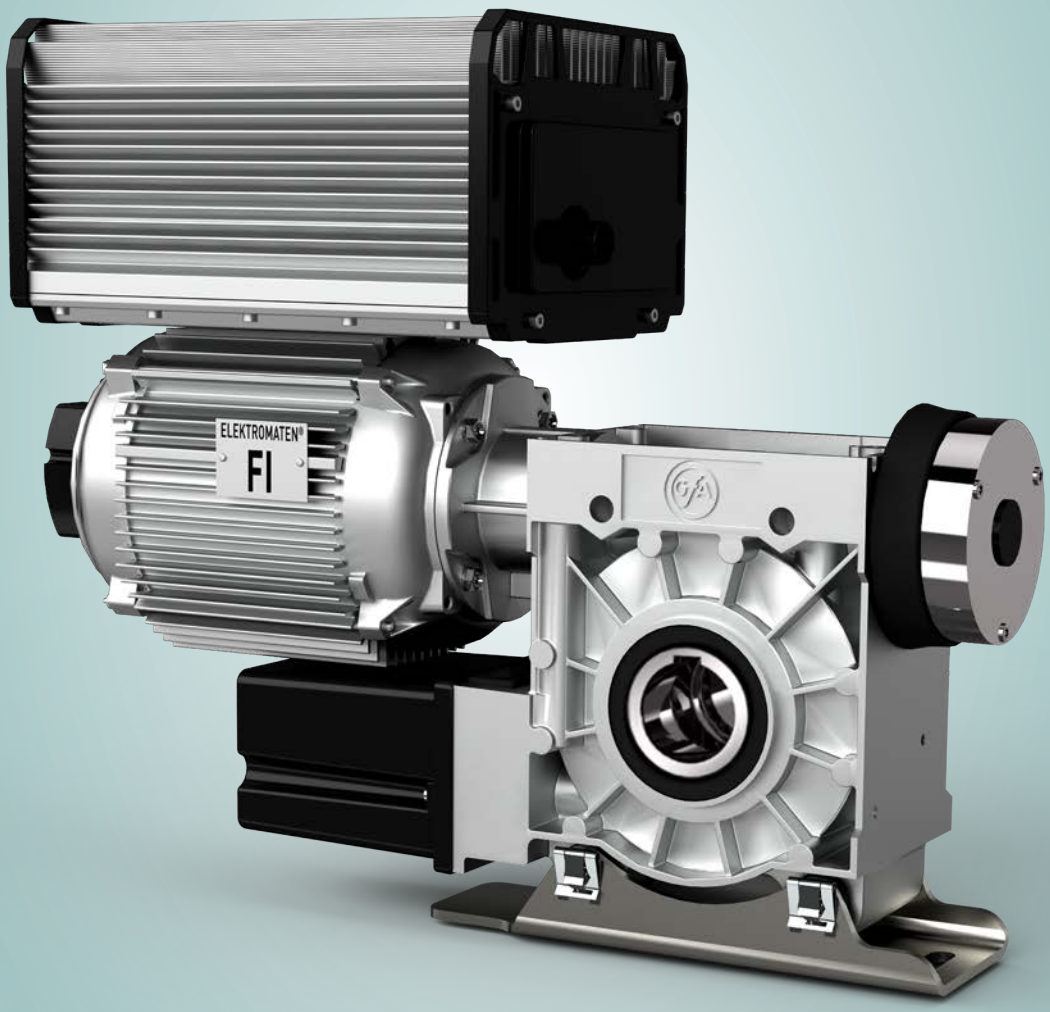
SI 17.24 – SI 100.24 1.071
Output torque: 170 - 1000 Nm
Output speed: 24 - 90 rpm

SI 260.5 – SI 500.5 GH 1.081
Output torque: 2600 - 5000 Nm
Output speed: 5 - 9 rpm

SI63 3,5.350 FI – SI 180.12 FI 1.101
Output torque: 35 - 1800 Nm
Output speed: 5 - 350 rpm

SI 260.12 FI – SI 500.10 FI 1.121
Output torque: 2600 - 5000 Nm
Output speed: 2 - 12 rpm

SI

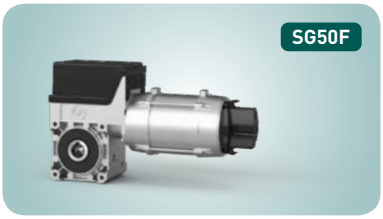


ELEKTROMATEN® SI

Safedrive®

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

Series SG50F
SI 8.20
SI 14.15
SI 14.20



"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

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)

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

Mounting

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

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 Series		SI 8.20 SG50F	SI 14.15 SG50F	SI 14.20 SG50F
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 [1]	Nm	310	310	310
Safety brake (approval number)		14-003612-PR01	14-003612-PR01	14-003612-PR01
Max. holding torque [2]	Nm	80	140	140
Max. output speed OPEN / CLOSE for frequency inverter operation [3]	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 [4]	A	2,6 / 1,5	3,3 / 1,9	3,4 / 2,0
Max. cyles per hour [5]		9 (2,7)	10 (5,2)	11 (5,6)
Limit switch range [6]		20 (14)[7]	20 (14)[7]	20 (14)[7]
Max. hand force NHK / SK and / or KNH [8]	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) 10003252 (Ø 25,4) 10003370 (Ø 30,0)	10002375 (Ø 25,0) 10002451 (Ø 25,4) 10002464 (Ø 30,0)	10002226 (Ø 25,0) 10002227 (Ø 25,4) 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)
1) See 3.5 · **2)** Maximum torque that may act on the output shaft of the drive unit when the door is stationary · **3)** We recommend the selection of GfA ELEKTROMATEN-FI for use with frequency inverter, OPEN drive speed at 87 Hz, see 3.7 · **4)** The operating current in door drives can reach up to 4x the rated current for limited periods, see 3.6 and 3.7 · **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 3.2 · **6)** Maximum revolutions of hollow shaft · **7)** Applies to hollow shaft Ø 30 mm · **8)** See 3.4

2. Selection chart

2.1 Roller shutters Tube EN 10220 [mm]	SI 8.20 F [N]	 v_a [cm/s]	SI 14.15 F [N]	 v_a [cm/s]	SI 14.20 F [N]	 v_a [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]
- v_a = Initial speed [cm/s]
- Includes 20 % friction for single-wall profiles (profile thickness 20 mm)
- Read note in 3.2

2.2 Sectional doors Cable drum [mm]	SI 8.20 F [N]	 v [cm/s]	SI 14.15 F [N]	 v [cm/s]	SI 14.20 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]
- v = Door speed [cm/s]
- Includes 10 % friction
- 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

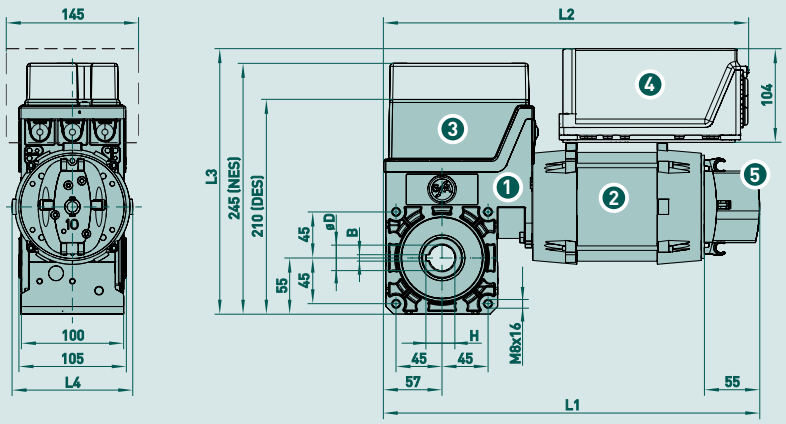
When calculating the cable size the max. permitted door weight is required with a safety of 6x for the cables; requirement of EN 12604.

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



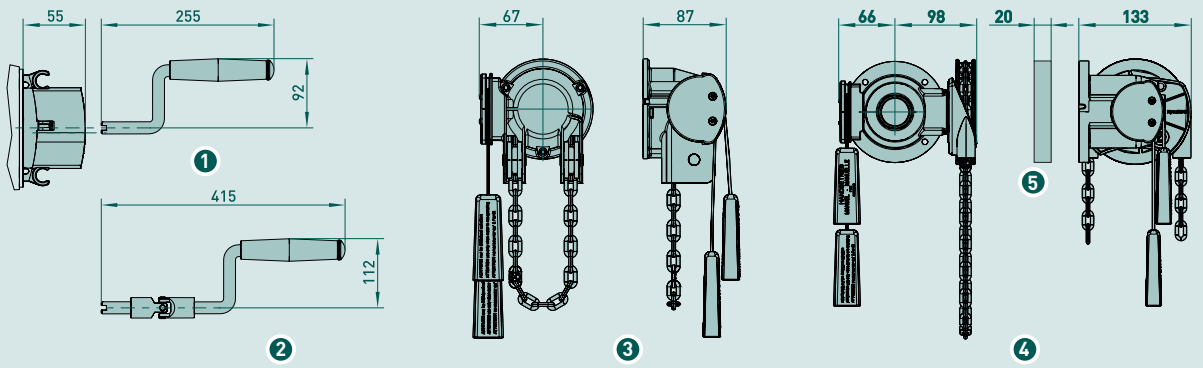
ØD	H	B
25	28,3	8
25,4	28,4	6,35
30	33,3	8

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

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

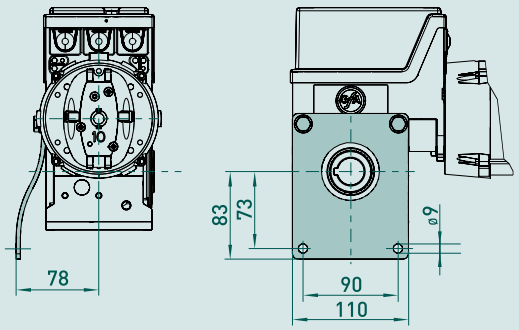
■ Manual forces, see item 1 of technical data

■ Read note in 3.4

6. Attachments / Accessories

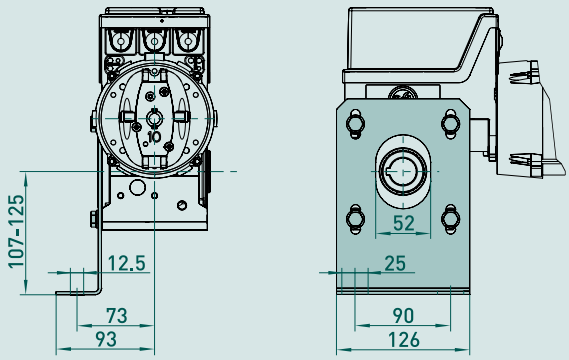
6.1 Torque bracket

Part no. 30002636



6.2 Flange bracket H 107-125

Part no. 30002685



■ All brackets can be mounted vertically or horizontally

ELEKTROMATEN® SIK

Safedrive® Compact

For driving: Roller shutters and rolling grilles
which require an anti-fallback device,
suitable for installation in tight spaces

Series SG63F-SIK
SIK 17.10 WS
SIK 25.10
SIK 25.10 WS

"Safedrive® Compact" ELEKTROMATEN SIK 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 SIK comprises of:
Worm gear with safety brake and hollow shaft, emergency manual operator, integrated limit switches and electrical motor.
The centrally-aligned hollow shaft of the ELEKTROMATEN SIK makes it suitable particularly for installation in tight spaces.

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
- Compact dimensions

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

Emergency manual operation

- Hand crank NHK (1)
- Rapid hand chain operator SK (2)

Limit switches

Mechanical limit NES (3)

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

Digital limit DES (4)

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

Mounting

- Floating foot (standard fitting)
- Torque bracket
- Moving-torque bracket

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 Series		SIK 17.10 WS SG63F-SIK	SIK 25.10 SG63F-SIK	SIK 25.10 WS SG63F-SIK
Output torque	Nm	170	250	250
Output speed	rpm	10	10	10
Output shaft / hollow shaft (Ø)	mm	30	30	30
Locking torque [1]	Nm	420	510	510
Safety brake (approval number)		14-003612-PR02	14-003612-PR02	14-003612-PR02
Max. holding torque [2]	Nm	170	250	250
Max. output speed OPEN / CLOSE for frequency inverter operation [3]	rpm	--	18 / 10	--
Motor power	kW	0,40	0,40	0,40
Supply voltage	V	1N~230	3~230 / 400	1N~230
Operating frequency	Hz	50	50	50
Operating current [4]	A	4,5	2,6 / 1,5	4,5
Max. cycles per hour [5]		8 (2,2)	12 (8,3)	8 (2,2)
Limit switch range [6]		10	10 (20)	10
Max. hand force NHK / SK [7]	N	75 / 198	75 / 198	75 / 198
Weight	kg	18	16	18
Spare parts: Catalogue page		9.053	9.053	9.053
Part no. installation drawing (dxf, dwg)		50000589	50000589	50000589
Part no. ELEKTROMATEN		10004146	10003999	10004000

Generally applies: Degree of protection IP54, permissible temperature range -10 °C...+40 °C (+60 °C), operating sound pressure level SPL ‹70 dB(A)
1) See 3.5 · **2)** Maximum torque that may act on the output shaft of the drive unit when the door is stationary · **3)** We recommend the selection of GfA ELEKTROMATEN-FI for use with frequency inverter, OPEN drive speed at 87 Hz, see 3.7 · **4)** The operating current in door drives can reach up to 4x the rated current for limited periods, see 3.6 and 3.7 · **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 3.2 · **6)** Maximum revolutions of hollow shaft · **7)** See 3.4

2. Selection chart

Roller shutters Tube EN 10220 [mm]	SIK 17.10 WS F [N]	 v_a [cm/s]	SIK 25.10 / SIK 25.10 WS F [N]	 v_a [cm/s]
101,6 x 3,6	2237	6,4	3289	6,4
108,0 x 3,6	2125	6,7	3125	6,7
133,0 x 4,0	1778	8,0	2614	8,0
159,0 x 4,5	1520	9,3	2235	9,4
177,8 x 5,0	1375	10,4	2022	10,4
193,7 x 5,4	--	--	1872	11,2

- F = Lift [N]
- v_a = 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 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

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).

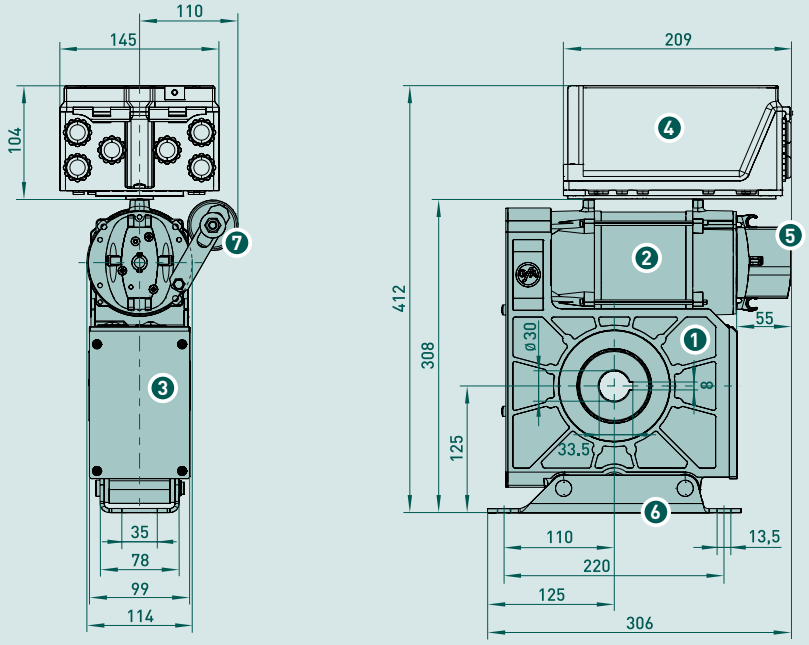
The admissible drive speeds may not be exceeded (see Technical data). The operating forces must comply with EN 12453, and the corresponding EMC directives must likewise be observed.

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

4. Dimensions

SIK 17.10 WS – SIK 25.10 WS

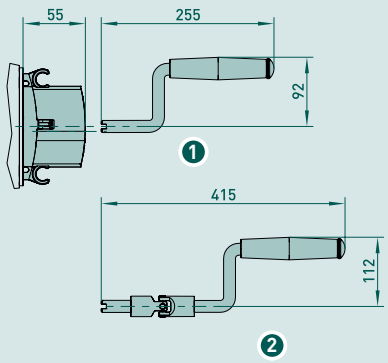
SG63F-SIK

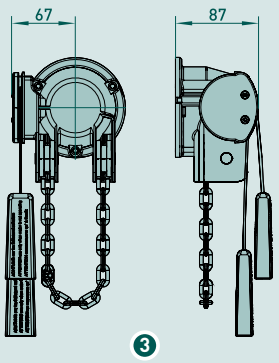


1. Worm gear with safety brake
2. Motor
3. Limit switch
4. Optional: WS 900 control panel, removable, with 0,8 m cable
5. Emergency manual operation NHK
6. Floating foot
7. Capasitor (SIK 17.10 WS / 25.10 WS)

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

5. Emergency manual operation • for horizontal or vertical installation



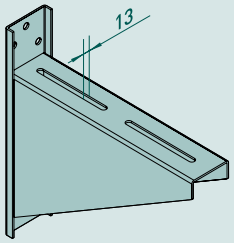


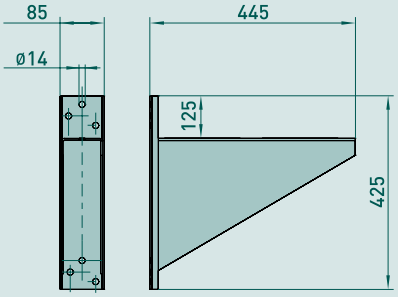
1. Manual hand crank operation NHK (Standard) Part no. 30002591 (Ø 10 mm)
2. Manual hand crank operation with knuckle joint NHKK Part no. 30002715 (Ø 10 mm)
3. Rapid hand chain operator SK

- Manual forces, see item 1 of technical data
- Read note in 3.4

6. Attachments / Accessories

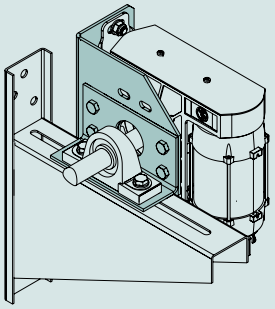
6.1 Bracket Part no. 40006488

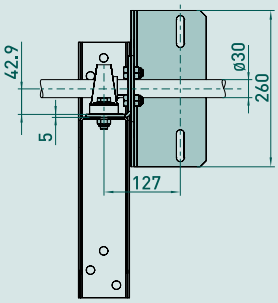


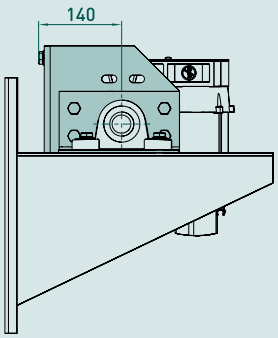


- Max. load 5 kN

6.2 Torque bracket Part no. 30002930

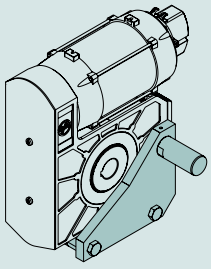


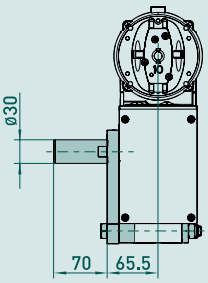


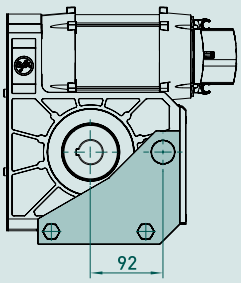


- Right- or left-hand use
- ELEKTROMATEN vertical (as shown) or horizontal
- For mounting with floating foot additional requirements: Bracket 6.1 and bearing

6.3 Moving-torque bracket Part no. 20002773.00005







- Right- or left-hand use
- ELEKTROMATEN horizontal only

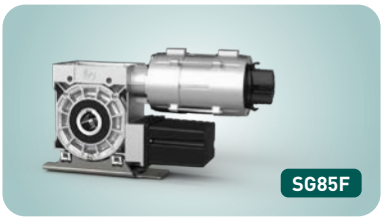
ELEKTROMATEN® SI

Safedrive®

For driving:
Roller shutters and rolling grilles
which require an anti-fallback device

Series SG63F
SI 10.15 - SI 25.15
Series SG85F
SI 25.10 - SI 65.15
Series SG115F
SI 75.10 - SI 180.6

"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

Emergency manual operation

- Hand crank NHK ①
- Hand chain operator KNH ②

Limit switches

Mechanical limit NES ③
- 2 operating, 2 emergency- and 2 auxiliary limit switches

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

Mounting

- Floating foot (standard fitting)
- Torque bracket
- Moving-torque bracket

Special versions

- Increase of cycles per hour
- Higher protection class
- Other voltages and frequencies
- Explosion-proof according to ATEX (page 6.011)
- ELEKTROMATEN SI with built-on frequency inverter (page 1.101)

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 Series		SI 10.15 SG63F	SI 17.15 SG63F	SI63 25.15 SG63F [1]	SI 25.10 SG85F	SI25.15WS SG85F	SI 40.10 SG85F	SI 40.15 SG85F	SI45.7WS SG85F
Output torque	Nm	100	170	250	250	250	400	400	450
Output speed	rpm	15	15	15	10	15	10	15	7
Output shaft / hollow shaft (Ø)	mm	30	30 / 40	30 / 40	30 / 40	30 / 40	40	40	40
Locking torque [2]	Nm	420	420	510	635	635	760	760	1100
Safety brake (approval number)		14-003612-PR02	14-003612-PR02	14-003612-PR02	14-003612-PR03	14-003612-PR03	14-003612-PR03	14-003612-PR03	14-003612-PR03
Max. holding torque [3]	Nm	170	170	250	250	250	400	400	450
Max. output speed OPEN / CLOSE for frequency inverter operation [4]	rpm	26 / 15	26 / 15	26 / 15	18 / 15	--	18 / 15	26 / 15	--
Motor power	kW	0,30	0,40	0,55	0,55	0,75	0,75	0,85	0,75
Supply voltage	V	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400	1N~230	3~230 / 400	3~230 / 400	1N~230
Operating frequency	Hz	50	50	50	50	50	50	50	50
Operating current [5]	A	2,6 / 1,5	3,7 / 2,2	4,0 / 2,3	3,1 / 1,8	8,0	5,1 / 3,0	4,4 / 2,6	8,0
Max. cycles per hour [6]		8 (2,1)	8 (1,7)	10 (4,2)	10 (4,2)	7 (1,6)	9 (2,7)	9 (3,5)	5 (0,7)
Limit switch range [7]		20 (10, 40)	20 (10, 40)	20 (10, 40)	20 (10)	20 (10, 60)	20 (10)	20 (10, 60)	20
Max. hand force NHK / SK and / or KNH [8]	N	65 / 172	80 / 89	118 / 132	85 / 95	85 / 95	136 / 151	136 / 151	78 / 87
Weight	kg	15	16	19	24	27	26	23	33
Spare parts: Catalogue page		9.054	9.054	9.054	9.055	9.055	9.055	9.055	9.055
Part no. installation drawing (dxf, dwg)		50001039	50001039	50001039	50000580	50000751	50000580	50000580	50001571
Part no. ELEKTROMATEN		Ø 30 10003490	Ø 30 10003055 Ø 40 10003830	Ø 30 10003166 Ø 40 10003950	Ø 30 10002363 Ø 40 10004532	Ø 30 10002514 Ø 40 10002559	Ø 40 10002367	Ø 40 10002368	Ø 40 10003600

ELEKTROMATEN Series		SI 55.10 SG85F	SI 55.15 SG85F	SI 65.10 SG85F	SI 65.15 SG85F	SI 75.10 SG115F	SI 75.15 SG115F	SI 100.10 SG115F	SI 140.7 SG115F	SI 180.6 SG115F
Output torque	Nm	550	550	650	650	750	750	1000	1400	1800
Output speed	rpm	10	15	10	15	10	15	10	7	6
Output shaft / hollow shaft (Ø)	mm	40	40	40	40	55	55	55	55	60
Locking torque [2]	Nm	1100	1100	1100	1100	2800	2800	2800	2800	3125
Safety brake (approval number)		14-003612-PR03	14-003612-PR03	14-003612-PR03	14-003612-PR03	14-003305-PR01	14-003305-PR01	14-003305-PR01	14-003305-PR01	14-003305-PR01
Max. holding torque [3]	Nm	550	550	650	650	750	750	1000	1400	1800
Max. output speed OPEN / CLOSE for frequency inverter operation [4]	rpm	18 / 18	26 / 26	15 / 15	15 / 15	18 / 18	26 / 26	18 / 18	12 / 12	10 / 10
Motor power	kW	0,75	1,10	0,75	1,10	1,10	1,10	1,30	1,10	1,30
Supply voltage	V	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400
Operating frequency	Hz	50	50	50	50	50	50	50	50	50
Operating current [5]	A	7,2 / 4,2	7,2 / 4,2	7,2 / 4,2	7,2 / 4,2	7,0 / 4,1	8,1 / 4,7	11,2 / 6,5	7,0 / 4,1	11,2 / 6,5
Max. cycles per hour [6]		8 (1,8)	9 (3,0)	8 (1,8)	9 (3,0)	7 (1,4)	9 (3,0)	7 (1,2)	7 (1,4)	7 (1,4)
Limit switch range [7]		20 (10, 60)	20 (10, 60)	20 (10)	20 (10)	20 (10, 60)	20 (10, 60)	20 (10, 60)	20 (10, 60)	10 (30, 55)
Max. hand force NHK / SK and / or KNH [8]	N	320 / 158	320 / 158	233 / 188	233 / 188	290 / 234	290 / 234	349 / 282	263 / 212	348 / 281
Weight	kg	30	30	33	33	44	42	46	51	54
Spare parts: Catalogue page		9.055	9.055	9.055	9.055	9.056	9.056	9.056	9.056	9.056
Part no. installation drawing (dxf, dwg)		50000734	50000734	50000734	50000734	50000794	50000794	50000794	50000795	50001524
Part no. ELEKTROMATEN		10002479	10002480	10005061	10005062	10002402	10002535	10002536	10002537	10003765

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) Customised designs of the SI 25.15 (e.g. for other voltages) are realised, in part, with the SG85F gearbox series (please contact us, in case of queries) · **2)** See 3.5 · **3)** Maximum torque that may act on the output shaft of the drive unit when the door is stationary · **4)** We recommend the selection of GfA ELEKTROMATEN-FI for use with frequency inverter, OPEN drive speed at 87 Hz, see 3.7 · **5)** The operating current in door drives can reach up to 4x the rated current for limited periods, see 3.6 and 3.7 · **6)** 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 · **7)** Maximum revolutions of hollow shaft · **7)** Applies to hollow shaft Ø 30 mm · **8)** See 3.4

2. Selection chart

Roller shutters Tube EN 10220 [mm]	SI 10.15		SI 17.15		SI63 25.15		SI 25.10		SI 25.15 WS		SI 40.10		SI 40.15		SI 45.7 WS	
	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]
101,6 x 3,6	1316	9,6	2237	9,6	3289	9,6	3289	6,4	3289	9,6	--	--	--	--	--	--
108,0 x 3,6	1250	10,1	2125	10,1	3125	10,1	3125	6,7	3125	10,1	5000	6,7	5000	10,1	5625	4,7
133,0 x 4,0	1046	12,0	1778	12,0	2614	12,0	2614	8,0	2614	12,0	4183	8,0	4183	12,0	4706	5,6
159,0 x 4,5	894	14,1	1520	14,1	2235	14,1	2235	9,4	2235	14,1	3575	9,4	3575	14,1	4022	6,6
177,8 x 5,0	--	--	1375	15,5	2022	15,5	2022	10,4	2022	15,5	3236	10,4	3236	15,5	3640	7,2
193,7 x 5,4	--	--	--	--	1872	16,8	1872	11,2	1872	16,8	2995	11,2	2995	16,8	3336	7,8
219,1 x 5,9	--	--	--	--	--	--	--	--	--	--	2677	12,5	2677	18,8	3011	8,8

Roller shutters Tube EN 10220 [mm]	SI 55.10		SI 55.15		SI 65.10		SI 65.15		SI 75.10		SI 75.15		SI 100.10		SI 140.7		SI 180.6	
	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]
159,0 x 4,5	4916	9,4	4916	14,1	5810	14,1	5810	14,1	6704	9,4	6704	14,1	--	--	--	--	--	--
177,8 x 5,0	4449	10,4	4449	15,5	5258	15,5	5258	15,5	6067	10,4	6067	15,5	8089	10,4	11325	7,2	--	--
193,7 x 5,4	4118	11,2	4118	16,8	4867	16,8	4867	16,8	5615	11,2	5615	16,8	7487	11,2	10482	7,8	13477	6,7
219,1 x 5,9	3680	12,5	3680	18,8	4350	18,8	4350	18,8	5019	12,5	5019	18,8	6692	12,5	9368	8,8	12045	7,5
244,5 x 6,3	3327	13,8	3327	20,8	3932	20,8	3932	20,8	4537	13,8	4537	20,8	6049	13,8	8469	9,7	10888	8,3
273,0 x 6,3	--	--	--	--	3549	23,0	3549	23,0s	4096	15,3	4096	23,0	5461	15,3	7645	10,7	9829	9,2
298,5 x 7,1	--	--	--	--	--	--	--	--	3768	16,7	3768	25,0	5024	16,7	7033	11,7	9042	10,0
323,9 x 7,1	--	--	--	--	--	--	--	--	--	--	--	--	4653	18,0	6514	12,6	8375	10,8

- F = Lift [N]
- v_a = 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 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 (page 1.101).

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).

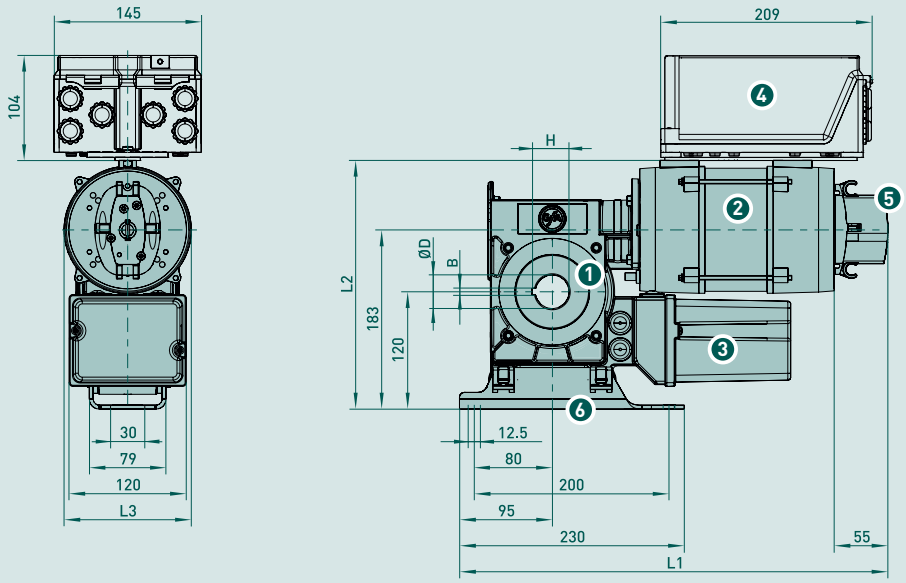
The admissible drive speeds may not be exceeded (see Technical data). The operating forces must comply with EN 12453, and the corresponding EMC directives must likewise be observed.

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

4. Dimensions

4.1 SI 10.15 – SI63 25.15

SG63F



Ø D	H	B
30	33,3	8
40	43,3	12

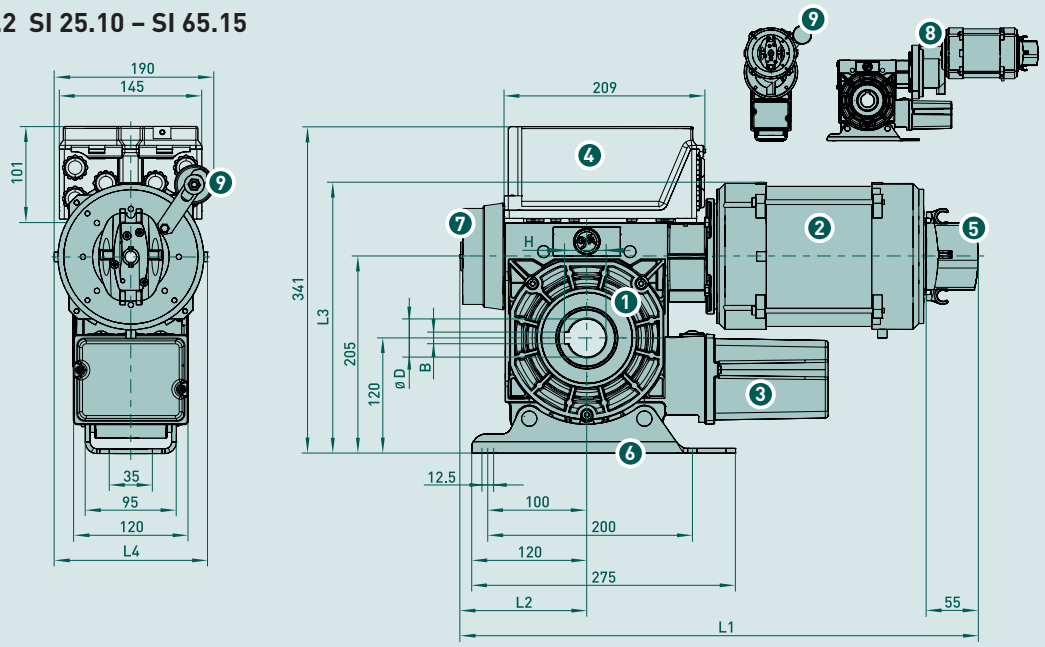
1. Worm gear with safety brake
2. Motor
3. Limit switch
4. Optional: WS 900 control panel, removable, with 0,8 m cable
5. Hand crank NHK
6. Floating foot

ELEKTROMATEN	L1	L2	L3
SI 10.15	387	245	115
SI 17.15	427	245	115
SI63 25.15	445	254	131

- Permitted installation: Horizontal (as shown) or vertical (motor at the bottom)
- Customised designs of the SI 25.15 are realised, in part, with the SG85F gearbox series (see 4.2, please contact us, in case of queries)

4.2 SI 25.10 – SI 65.15

SG85F



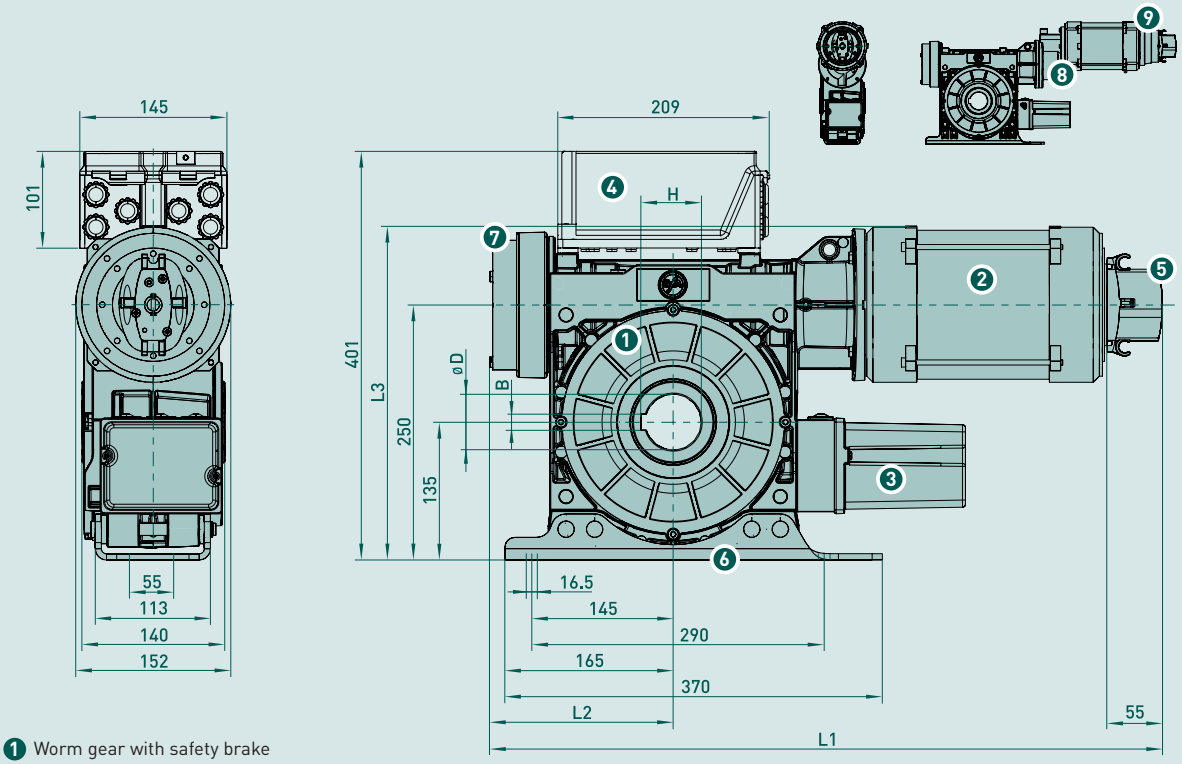
1. Worm gear with safety brake
2. Motor
3. Limit switch
4. Optional: WS 900 control panel, removable, with 0,8 m cable
5. Hand crank NHK
6. Floating foot
7. Brake
8. Intermediate gear
9. Capacitor

ELEKTROMATEN	ØD	H	B	L1	L2	L3	L4
SI 25.10	30	33,3	8	505	120	278	130
SI 25.15 WS 9	30	33,3	8	523	120	281	152
SI 40.10	40	43,3	12	533	120	278	130
SI 40.15	40	43,3	12	505	120	278	130
SI 45.7 WS 8 9	40	43,3	12	622	120	337	152
SI 55.10 7	40	43,3	12	535	131	281	152
SI 55.15 7	40	43,3	12	535	131	281	152
SI 65.10 7	40	43,3	12	535	131	281	152
SI 65.15 7	40	43,3	12	535	131	281	152

- Permitted installation: Horizontal (as shown) or vertical (motor at the bottom; SI 65.10/65.15 only with torque bracket (page 1.056 Section 6.3))

4.3 SI 75.10 – SI 180.6

SG115F

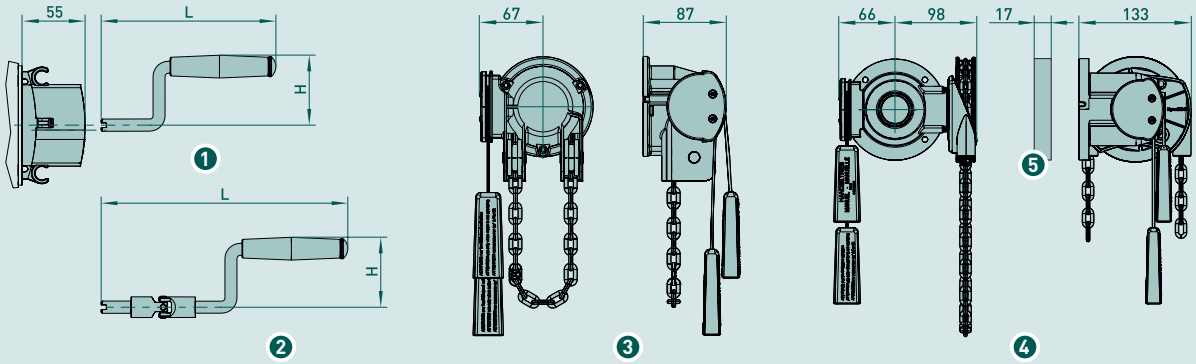


1. Worm gear with safety brake
2. Motor
3. Limit switch
4. Optional: WS 900 control panel, removable, with 0,8 m cable
5. Hand crank NHK
6. Floating foot
7. Brake
8. Intermediate gear
9. 2nd brake

ELEKTROMATEN	ØD	H	B	L1	L2	L3
SI 75.10	55	59,3	16	659	179	326
SI 75.15	55	59,3	16	659	179	326
SI 100.10	55	59,3	16	669	179	326
SI 140.7 8	55	59,3	16	738	180	382
SI 180.6 8 9	60	64,4	18	805	180	382

■ Permitted installation: Horizontal (as shown), vertical (motor at the bottom) only with torque bracket (page 1.056 Section 6.3)

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 (SI 10.15)
4. Hand chain operator KNH (from SI 17.15)
5. Flange in-use with: SI 180.6

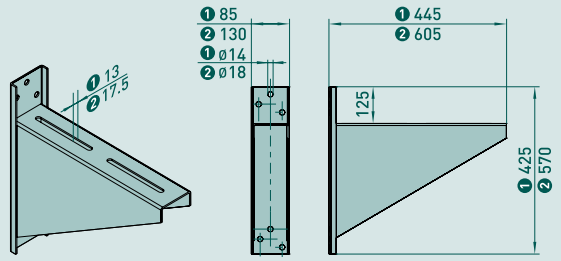
	For Series	Part.-no.	Ø	L	H
1	SG63F (only for SI 10.15)	30002591	10	255	92
1	SG63F / SG85F	30002749	12	235	122
1	SG115F	30003112	12	265	192
2	SG63F (only for SI 10.15)	30002715	10	415	111
2	SG63F / SG85F	30002750	12	425	152

■ Manual forces, see item 1 of technical data

■ Read note in 3.4

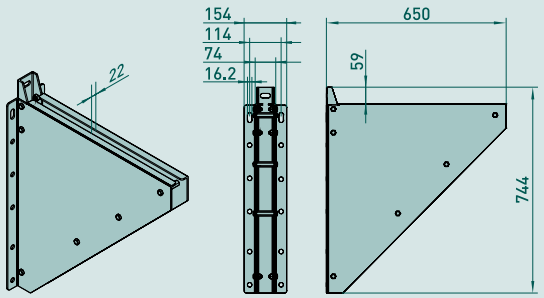
6. Attachments / Accessories

6.1 Bracket



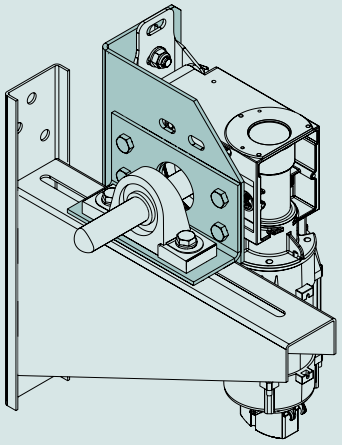
Series	Part no.	Max. load
SG63F / SG85F 1	40006488	5 kN
SG115F (≤ SI 140.7) 2	40012396	12 kN

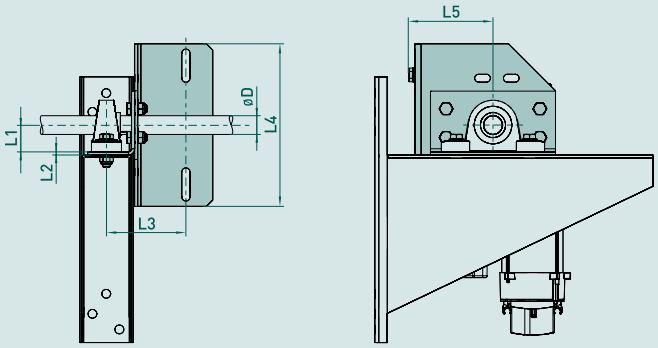
6.2 Bracket (SI 180.6)



Series	Part no.	Max. load
SG115F (SI 180.6)	40016189	29 kN

6.3 Torque bracket



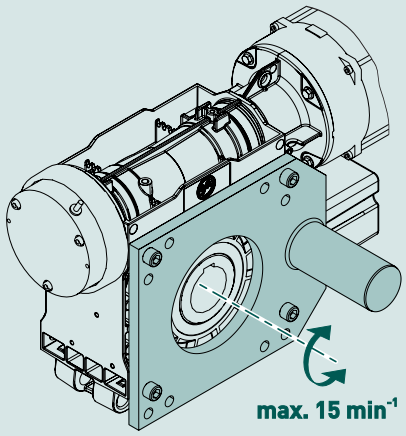


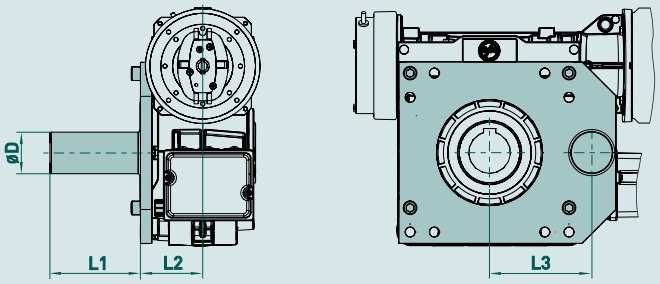
Series	Ø D	Part no.	L1	L2	L3	L4	L5
SG63F / SG85F	30	30002930	42,9	5	127	260	135
SG85F	40	30002930	49,2	5	127	260	135
SG115F	55	30003162	63,5	6	174	350	148
SG115F	60	30003162	69,8	6	174	350	148

- Right- or left-hand use
- ELEKTROMATEN vertical (as shown) or horizontal

- For mounting with floating foot additional requirements: Bracket 6.1 or 6.2 and bearing

6.4 Moving-torque bracket





Series	Ø D	Part no.	L1	L2	L3
SG63F [1]	30	20002641.00004	70	72,5	95
SG85F	30	20002494.00024	80	70	105
SG85F	40	20002494.00025	80	70	105
SG115F [2]	55	20002495.00004	120	83	135

- Right- or left-hand use
- ELEKTROMATEN horizontal (as shown) or vertikal

1) Special version of ELEKTROMATEN with side thread is required
2) No use with SI 180.6

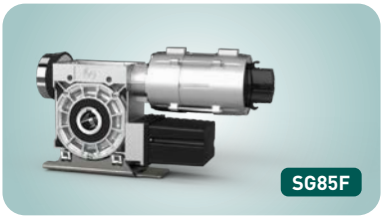
ELEKTROMATEN® SI

Rapid Safedrive®

For driving: High-speed sectional doors
and high-speed rolling doors
which require an anti-fallback device

Series SG63F
SI 17.24
Series SG85F
SI 25.24 - SI 40.24
SI 10.70 - SI 28.46
Series SG115F
SI 60.24 - SI 100.24

"Rapid Safedrive® FI" 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

Emergency manual operation

- Hand crank NHK (1)
- Hand chain operator KNH (2)

Limit switches

Mechanical limit NES (3)
- 2 operating, 2 emergency- and 2 auxiliary limit switches

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

Mounting

- Floating foot (standard fitting)
- Torque bracket

Special versions

- Increase of cycles per hour
- Higher protection class
- Other voltages and frequencies
- Explosion-proof according to ATEX (page 6.011)
- ELEKTROMATEN SI with built-on frequency inverter (page 1.101)

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

1.1 "Rapid Safedrive®" Output speed up to 35 rpm

ELEKTROMATEN Series		SI 17.24 SG63F	SI 25.24 SG85F	SI 25.35 SG85F	SI 35.30 SG85F
Output torque	Nm	170	250	250	350
Output speed	rpm	24	24	35	30
Output shaft / hollow shaft (Ø)	mm	25 / 25,4 / 30 / 31,75 / 35 / 40	30 / 31,75	30 / 31,75	40
Locking torque [1]	Nm	420	635	635	760
Safety brake (approval number)		14-003612-PR02	14-003612-PR03	14-003612-PR03	14-003612-PR03
Max. holding torque [2]	Nm	170	250	250	350
Max. output speed OPEN / CLOSE for frequency inverter operation [3]	rpm	42 / 24	42 / 30	60 / 35	52 / 52
Motor power	kW	0,40	0,85	0,85	1,10
Supply voltage	V	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400
Operating frequency	Hz	50	50	50	50
Operating current [4]	A	3,3 / 1,9	4,4 / 2,6	4,4 / 2,6	5,2 / 3,0
Max. cycles per hour [5]/6		11 (5,6)	11 (5,6)	12 (8,2)	11 (6,9)
Limit switch range [6]		20 (40)	20 (10, 60)	20 (10, 60)	20 (10)
Max. hand force NHK / KNH [7]	N	99 / 110	190 / 94	208 / 103	248 / 122
Weight	kg	17	25	25	26
Spare parts: Catalogue page		9.054	9.055	9.055	9.055
Part no. installation drawing (dxf, dwg)		50002081	50000733	50000733	50000733
Part no. ELEKTROMATEN		10005321 (Ø 25) 10005322 (Ø 25,4) 10005323 (Ø 30) 10005324 (Ø 31,75) 10005325 (Ø 35) 10005326 (Ø 40)	10002564 (Ø 30) 10002678 (Ø 31,75)	10002565 (Ø 30) 10002679 (Ø 31,75)	10002566

ELEKTROMATEN Series		SI 40.24 SG85F	SI 60.24 SG115F	SI 75.24 SG115F	SI 100.24 SG115F
Output torque	Nm	400	600	750	1000
Output speed	rpm	24	24	24	24
Output shaft / hollow shaft (Ø)	mm	40	55	55	55
Locking torque [1]	Nm	760	2800	2800	2800
Safety brake (approval number)		14-003612-PR03	14-003305-PR01	14-003305-PR01	14-003305-PR01
Max. holding torque [2]	Nm	400	600	750	1000
Max. output speed OPEN / CLOSE for frequency inverter operation [3]	rpm	42 / 30	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 [4]	A	5,2 / 3,0	6,7 / 3,9	8,1 / 4,7	11,9 / 6,9
Max. cycles per hour [5]/6		11 (5,6)	11 (6,9)	12 (8,3)	11 (6,9)
Limit switch range [6]		20 (10, 60)	20 (60)	20 (60)	20 (60)
Max. hand force NHK / KNH [7]	N	255 / 126	193 / 156	290 / 234	206 / 166
Weight	kg	26	38	45	53
Spare parts: Catalogue page		9.055	9.056	9.056	9.056
Part no. installation drawing (dxf, dwg)		50000733	50000830	50000794	50000795
Part no. ELEKTROMATEN		10002567	10002623	10002624	10003286

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) See 3.5 · **2)** Maximum torque that may act on the output shaft of the drive unit when the door is stationary · **3)** We recommend the selection of GfA ELEKTROMATEN-FI for use with frequency inverter, OPEN drive speed at 87 Hz, see 3.7 · **4)** The operating current in door drives can reach up to 4x the rated current for limited periods, see 3.6 and 3.7 · **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 3.2 · **6)** Maximum revolutions of hollow shaft · **7)** See 3.4

1.2 "Rapid Safedrive®" Output speed from 46 rpm

ELEKTROMATEN Series		SI 10.70 SG85F	SI 13.70 SG85F	SI 20.90 SG85F	SI 25.60 SG85F	SI 28.46 SG85F
Output torque	Nm	100	130	200	250	280
Output speed	rpm	70	70	90	60	46
Output shaft / hollow shaft (Ø)	mm	30 / 40	30 / 40	30 / 40	40	40
Locking torque [1]	Nm	480	480	635	990	990
Safety brake (approval number)		14-003612-PR03	14-003612-PR03	14-003612-PR03	14-003612-PR03	14-003612-PR03
Max. holding torque [2]	Nm	160	250	250	250	300
Max. output speed OPEN / CLOSE for frequency inverter operation [3]	rpm	122 / 90	122 / 90	156 / 90	104 / 90	80 / 80
Motor power	kW	0,40	1,30	1,80	1,80	1,10
Supply voltage	V	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400
Operating frequency	Hz	50	50	50	50	50
Operating current [4]	A	3,1 / 1,8	5,0 / 2,9	6,4 / 3,8	6,4 / 3,8	5,2 / 3,0
Max. cycles per hour [5]		17 (16,3)	22 (22)	26 (25,6)	17 (16,7)	12 (10,7)
Limit switch range [6]		20 (10)	20 (10)	20 (10)	20 (10)	20 (10)
Max. hand force NHK / KNH [7]	N	158 / 175	147 / 73	203 / 100	200 / 99	215 / 125
Weight	kg	25	28	29	29	26
Spare parts: Catalogue page		9.055	9.055	9.055	9.055	9.055
Part no. installation drawing (dxf, dwg)		50000847	50000847	50000847	50000847	50000847
Part no. ELEKTROMATEN		10002692 (Ø 30) 10002693 (Ø 40)	10002670 (Ø 30) 10002694 (Ø 40)	10002698 (Ø 30) 10002699 (Ø 40)	10002657	10002665

Generally applies: IP54, permissible temperature range -10 °C...+40 °C (+60 °C), operating sound pressure level SPL <70 dB(A)
1) See 3.5 · **2)** Maximum torque that may act on the output shaft of the drive unit when the door is stationary · **3)** We recommend the selection of GfA ELEKTROMATEN-FI for use with frequency inverter, OPEN drive speed at 87 Hz, see 3.7 · **4)** The operating current in door drives can reach up to 4x the rated current for limited periods, see 3.6 and 3.7 · **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 3.2 · **6)** Maximum revolutions of hollow shaft · **7)** See 3.4

2. Selection chart

2.1 Roller shutters Tube EN 10220 [mm]	SI 17.24 F [N]	v_a [cm/s]	SI 20.90 F [N]	v_a [cm/s]	SI 25.24 F [N]	v_a [cm/s]	SI 25.35 F [N]	v_a [cm/s]	SI 25.60 F [N]	v_a [cm/s]	SI 28.46 F [N]	v_a [cm/s]
101,6 x 3,6	2237	15,3	2632	57,3	3289	9,6	3289	22,3	3289	38,2	3684	29,3
108,0 x 3,6	2125	16,1	2500	60,3	3125	10,1	3125	23,5	3125	40,2	3500	30,8
133,0 x 4,0	1778	19,2	2092	72,1	2614	12,0	2614	28,0	2614	48,1	2928	36,9
159,0 x 4,5	1520	22,5	1788	84,4	2235	14,1	2235	32,8	2235	56,2	2503	43,1
177,8 x 5,0	1375	24,9	1618	93,2	2022	15,5	2022	36,2	2022	62,1	2265	47,6
193,7 x 5,4	--	--	--	--	1872	16,8	1872	39,2	1872	67,1	2096	51,5

2.1 Roller shutters Tube EN 10220 [mm]	SI 35.30 F [N]	v_a [cm/s]	SI 40.24 F [N]	v_a [cm/s]	SI 60.24 F [N]	v_a [cm/s]	SI 75.24 F [N]	v_a [cm/s]	SI 100.24 F [N]	v_a [cm/s]
108,0 x 3,6	4375	20,1	5000	16,1	--	--	--	--	--	--
133,0 x 4,0	3660	24,0	4183	19,2	--	--	--	--	--	--
159,0 x 4,5	3128	28,1	3575	22,5	5363	22,5	6704	22,5	--	--
177,8 x 5,0	2831	31,1	3236	24,9	4853	24,9	6067	24,9	8089	24,9
193,7 x 5,4	2620	33,6	2995	26,9	4492	26,9	5615	26,9	7487	26,9
219,1 x 5,9	--	--	2677	30,0	4015	30,0	5019	30,0	6692	30,0
244,5 x 6,3	--	--	--	--	3629	33,2	4537	33,2	6049	33,2
273,0 x 6,3	--	--	--	--	3276	36,8	4096	36,8	5461	36,8
298,5 x 7,1	--	--	--	--	--	--	3768	40,0	5024	40,0
323,9 x 7,1	--	--	--	--	--	--	--	--	4653	43,2

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

2.2 Sectional doors Cable drum [mm]	SI 17.24 F [N]	 v [cm/s]	SI 20.90 F [N]	 v [cm/s]	SI 25.24 F [N]	 v [cm/s]	SI 25.35 F [N]	 v [cm/s]	SI 25.60 F [N]	 v [cm/s]	SI 28.46 F [N]	 v [cm/s]
Ø 160	1913	20,1	2250	75,4	2813	20,1	2813	29,3	2813	29,3	3150	38,5
Ø 200	1530	25,1	1800	25,1	2250	25,1	2250	36,7	2250	36,7	2520	48,2

2.2 Sectional doors Cable drum [mm]]	SI 35.30 F [N]	 v [cm/s]	SI 40.24 F [N]	 v [cm/s]	SI 60.24 F [N]	 v [cm/s]	SI 75.24 F [N]	 v [cm/s]	SI 100.24 F [N]	 v [cm/s]
Ø 160	3938	25,1	4500	20,1	--	--	--	--	--	--
Ø 200	3150	31,4	3600	25,1	5400	25,1	6750	25,1	9000	25,1

- F = Lift [N]
- v = Door speed [cm/s]
- Includes 10 % friction
- 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 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 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 (page 1.101).

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

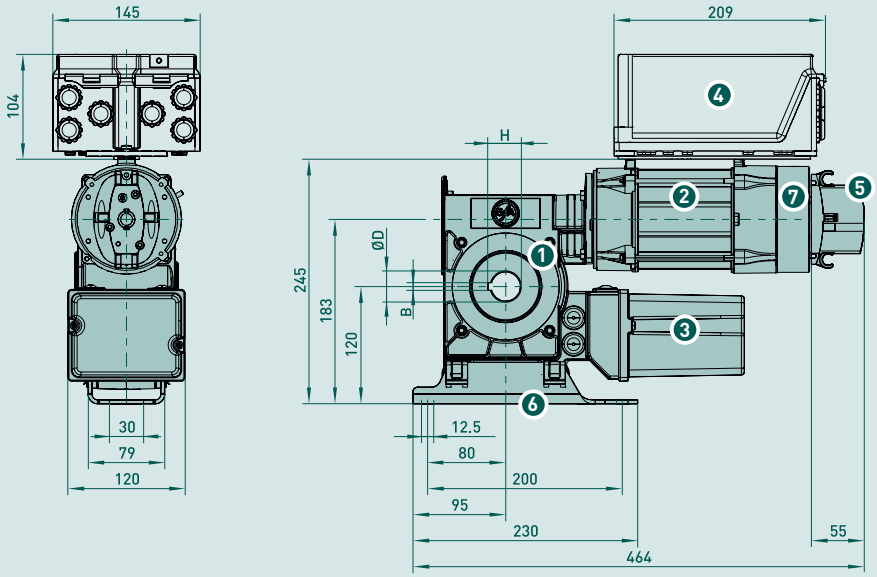
When calculating the cable size the max. permitted door weight is required with a safety of 6x for the cables requirement of EN 12604.

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

4.1 SI 17.24

SG63F



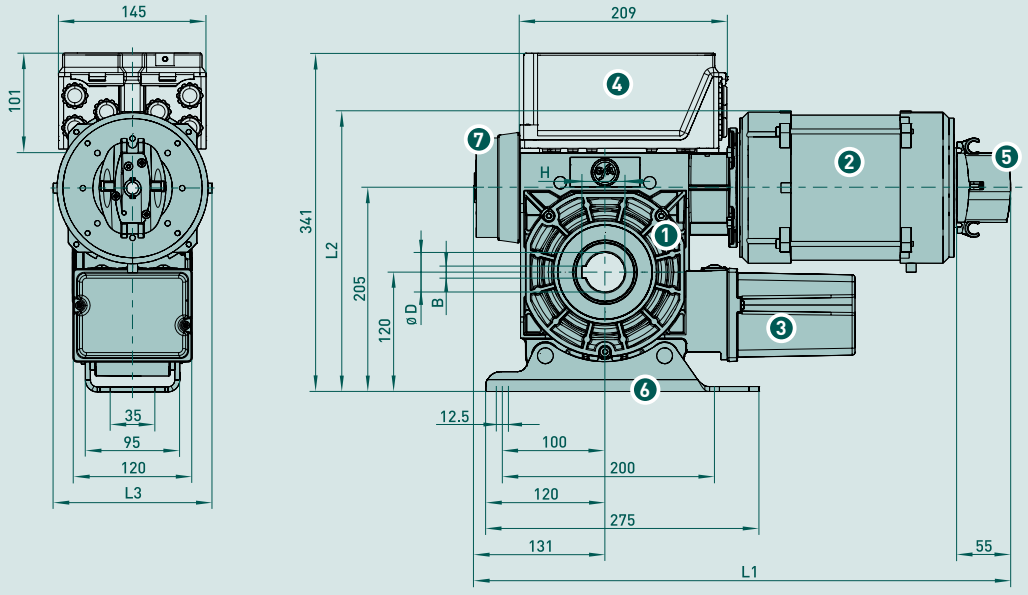
1. Worm gear with safety brake
2. Motor
3. Limit switch
4. Optional: WS 900 control panel, removable, with 0,8 m cable
5. Hand crank NHK
6. Floating foot
7. Brake

Ø D	H	B
25	28,3	8
25,4	28,4	6,35
30	33,3	8
31,75	34,7	6,35
35	38,3	10
40	43,3	12

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

4.2 SI 25.24 – SI 40.24 / SI 10.70 – SI 28.46

SG85F



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
6. Floating foot
7. Brake

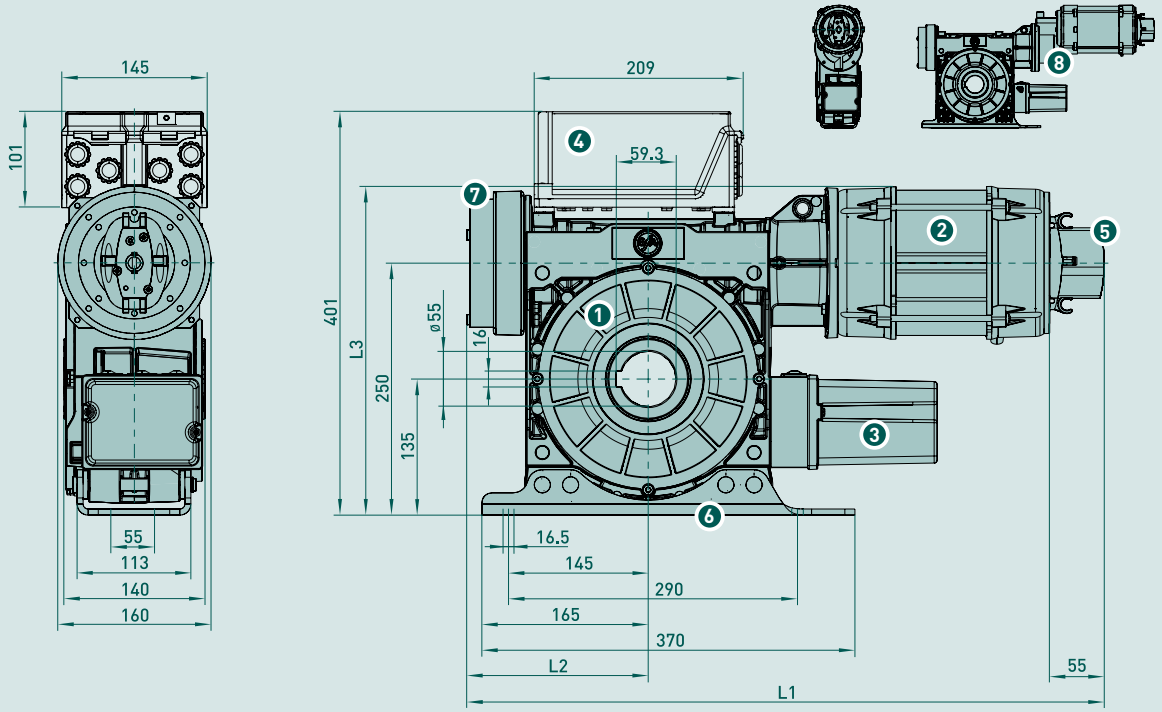
Ø D	H	B
30	33,3	8
31,75	34,7	6,35
40	43,3	12

ELEKTROMATEN	L1	L2	L3
SI 25.24	515	279	130
SI 25.35	515	279	130
SI 35.30	543	279	130
SI 40.24	543	279	130
SI 10.70	483	269	126
SI 13.70	543	279	130
SI 20.90	560	279	130
SI 25.60	560	279	130
SI 28.46	543	279	130

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

4.3 SI 60.24 – SI 100.24

SG115F

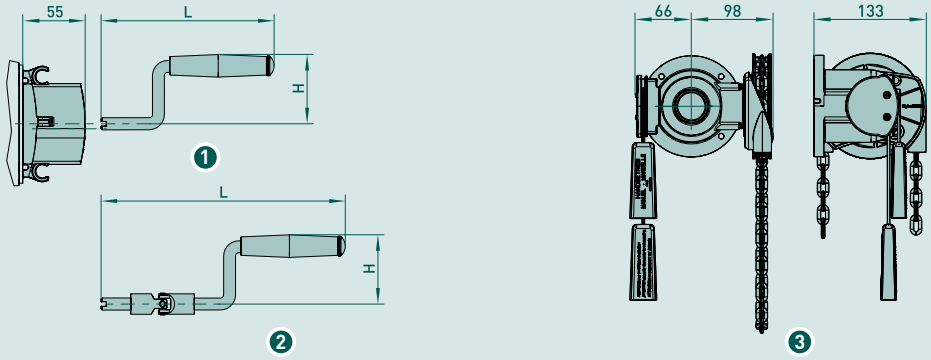


1. Worm gear with safety brake
2. Motor
3. Limit switch
4. Optional: WS 900 control panel, removable, with 0,8 m cable
5. Hand crank NHK
6. Floating foot
7. Brake
8. Intermediate gear

ELEKTROMATEN	L1	L2	L3
SI 60.24	608	169	326
SI 75.24	639	179	326
SI 100.24 8	737	179	382

■ Permitted installation: Horizontal (as shown), vertical (motor at the bottom) only with torque bracket (page 1.077 item 6.2)

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. Hand chain operator KNH

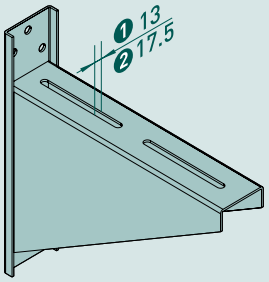
	For series	Part no.	Ø	L	H
1	SG63F / SG85F	30002749	12	235	122
1	SG115F	30003112	12	265	192
2	SG63F / SG85F	30002750	12	425	152

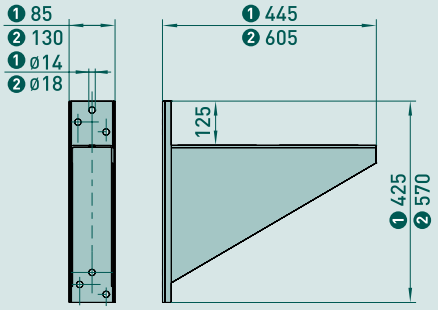
■ Manual forces, see item 1 of technical data

■ Read note in 3.4

6. Attachments / Accessories

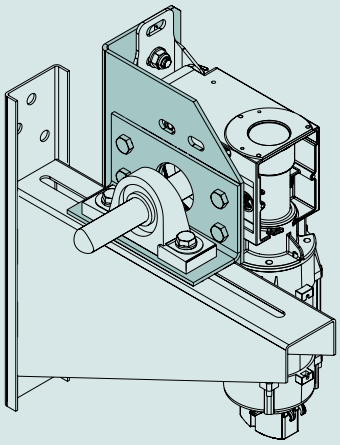
6.1 Bracket

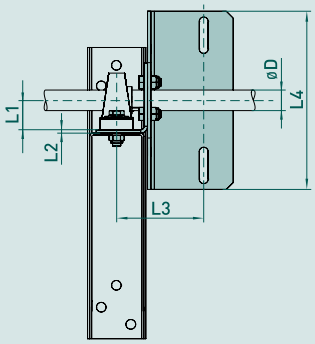


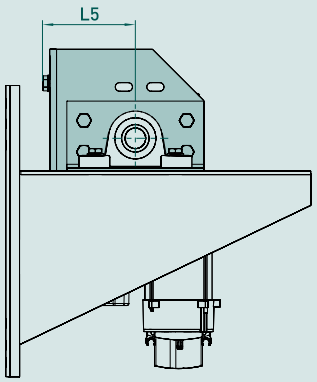


For series	SG63F / SG85F 1	SG115F 2
Part no.	40006488	40012396
Max. load	5 kN	12 kN

6.2 Torque bracket







For series	Ø D	Part no.	L1	L2	L3	L4	L5
SG63F	25	30002930	36,5	5	127	260	135
SG63F / SG85F	30	30002930	42,9	5	127	260	135
SG85F	40	30002930	49,2	5	127	260	135
SG115F	55	30003162	63,5	6	174	350	148

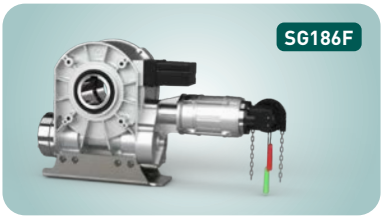
- Right- or left-hand use
- ELEKTROMATEN vertical (as shown) or horizontal
- For mounting with floating foot (additional requirements: bracket 6.1 and bearing)

ELEKTROMATEN® SI

Safedrive®

For driving:
Roller shutters and rolling grilles
which require an anti-fallback device

Series SG186F
SI 260.5 - SI 500.5 GH



"Safedrive® FI" 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

Emergency manual operation

- Hand chain operator KNH ①

Limit switches

Mechanical limit NES ②

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

Digital limit DES ③

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

Mounting

- Floating foot (standard fitting)

Special versions

- Increase of cycles per hour
- Higher protection class
- Other voltages and frequencies
- ELEKTROMATEN SI with built-on frequency inverter (page 1.121)

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:
  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 Series		SI 260.5 SG186F	SI 260.9 SG186F	SI 360.5 SG186F	SI 360.9 SG186F	SI 480.9 SG186F	SI 500.5 GH SG186F
Output torque	Nm	2600	2600	3600	3600	4800	5000
Output speed	rpm	5	9	5	9	9	5
Output shaft / hollow shaft (Ø)	mm	80	80	80	80 / 100	100	100
Locking torque [1]	Nm	8255	8255	8255	8255	8255	8255
Safety brake (approval number)		16-000574-PR03	16-000574-PR03	16-000574-PR03	16-000574-PR03/PR01	16-000574-PR01	16-000574-PR01
Max. holding torque [2]	Nm	2600	2600	3600	3600	4800	5000
Max. output speed OPEN / CLOSE for frequency inverter operation [3]	rpm	5 / 5	9 / 9	5 / 5	9 / 9	9 / 9	5 / 5
Motor power	kW	1,5	3,0	2,0	3,0	3,0	2,5
Supply voltage	V	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400
Operating frequency	Hz	50	50	50	50	50	50
Operating current [4]	A	6,7 / 3,9	11,9 / 6,9	8,6 / 4,7	11,9 / 6,9	11,4 / 6,6	10,0 / 5,8
Max. cycles per hour [5]		9 (2,9)	10 (5,2)	9 (3,5)	10 (5,2)	10 (5,2)	9 (3,5)
Limit switch range [6]		10	10	10	10 (30)	10 (30)	10 (30)
Max. hand force KNH [7]	N	182	182	215	215	255	261
Weight	kg	123	128	125	127	130	129
Part no. installation drawing (dxf, dwg)		50001996	50001996	50001996	50001996	50001996	50001997
Part no. ELEKTROMATEN		Ø 80 10005218	Ø 80 10005217	Ø 80 10005216	Ø 80 10005215 Ø 100 10004323	Ø 100 10004324	Ø 100 10004344

Generally applies: IP65, permissible temperature range -10 °C...+40 °C (+60 °C), operating sound pressure level SPL <70 dB(A)
1) See 3.5 · **2)** Maximum torque that may act on the output shaft of the drive unit when the door is stationary · **3)** We recommend the selection of GfA ELEKTROMATEN-FI for use with frequency inverter, OPEN drive speed at 87 Hz, see 3.7 · **4)** The operating current in door drives can reach up to 4x the rated current for limited periods, see 3.6 and 3.7 · **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 3.2 · **6)** Maximum revolutions of hollow shaft · **7)** See 3.4

2. Selection chart

Roller shutters Tube EN 10220 [mm]	SI 260 F [N]	.5 v_a [cm/s]	.9 v_a [cm/s]	SI 360 F [N]	.5 v_a [cm/s]	.9 v_a [cm/s]	SI 480.9 F [N]	 v_a [cm/s]	SI 500.5 GH F [N]	 v_a [cm/s]
298,5 x 7,1	11429	8,3	15,0	15824	8,3	15,0	--	--	--	--
323,9 x 7,1	10584	9,0	16,2	14655	9,0	16,2	19541	16,2	20355	9,0
368,0 x 8,0	9381	10,2	18,3	12990	10,2	18,3	17320	18,3	18041	10,2
406,4 x 8,8	8537	11,2	20,1	11820	11,2	20,1	15760	20,1	16417	11,2
419,0 x 10,0	8292	11,5	20,7	11481	11,5	20,7	15308	20,7	15945	11,5
457,2 x 10,0	--	--	--	--	--	--	14082	22,5	14669	12,5
508,0 x 11,0	--	--	--	--	--	--	12727	24,9	13258	13,8

- F = Lift [N]
- v_a = Initial speed [cm/s]
- Includes 30 % 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 30 % 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 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 (page 1.121).

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

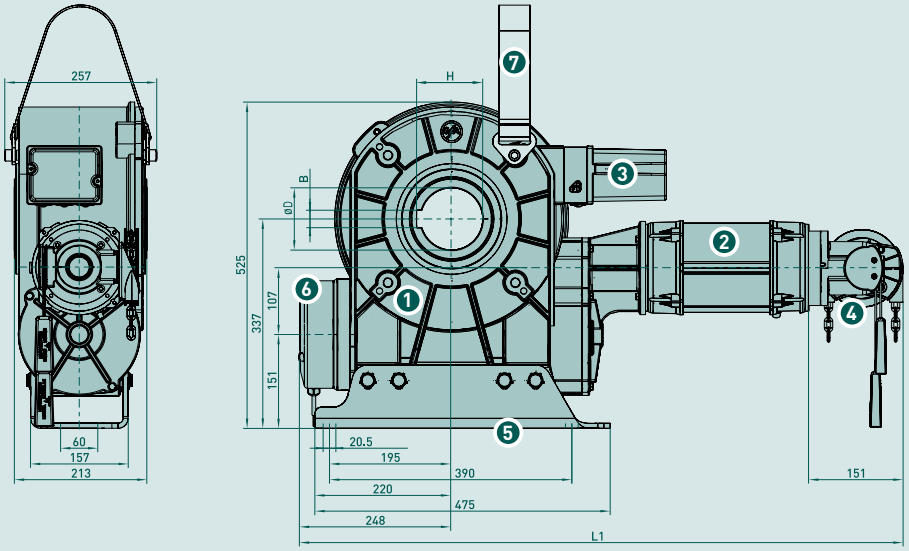
When calculating the cable size the max. permitted door weight is required with a safety of 6x for the cables requirement of EN 12604.

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

4.1 SI 260.5 – SI 480.9

SG186F



1. Worm gear with safety brake
2. Motor
3. Limit switch
4. Emergency manual operation KNH
5. Floating foot
6. Brake
7. Assembling aid

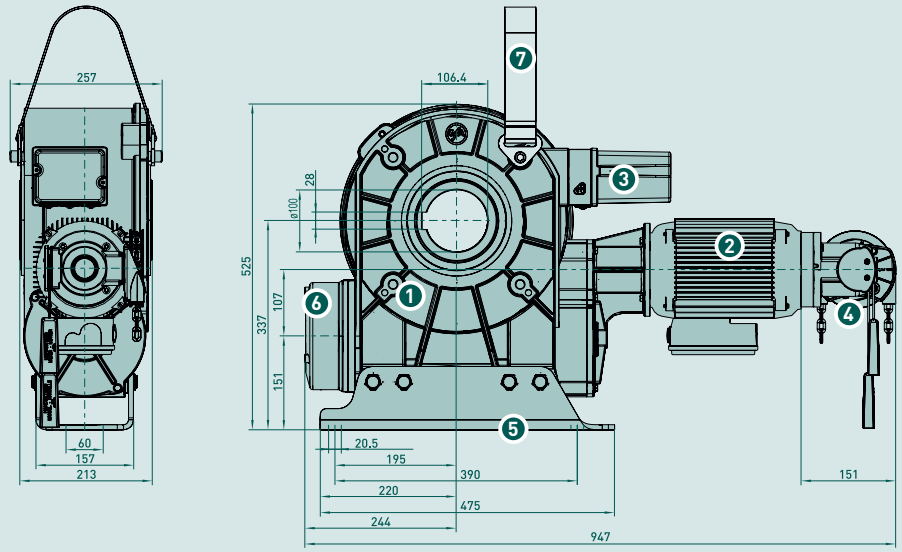
Ø D	H	B
80	85,4	22
100	106,4	28

ELEKTROMATEN	L1
SI 260.5	897
SI 260.9	942
SI 360.5	922
SI 360.9	942
SI 480.9	972

■ Permitted installation: Horizontal with an additional torque mount system, see 6

4.2 SI 500.5 GH

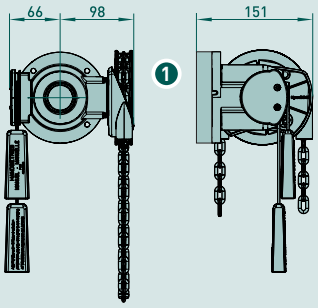
SG186F



1. Worm gear with safety brake
2. Motor
3. Limit switch
4. Emergency manual operation KNH
5. Floating foot
6. Brake
7. Assembling aid

■ Permitted installation: Horizontal with an additional torque mount system, see 6

5. Emergency manual operation • for horizontal installation



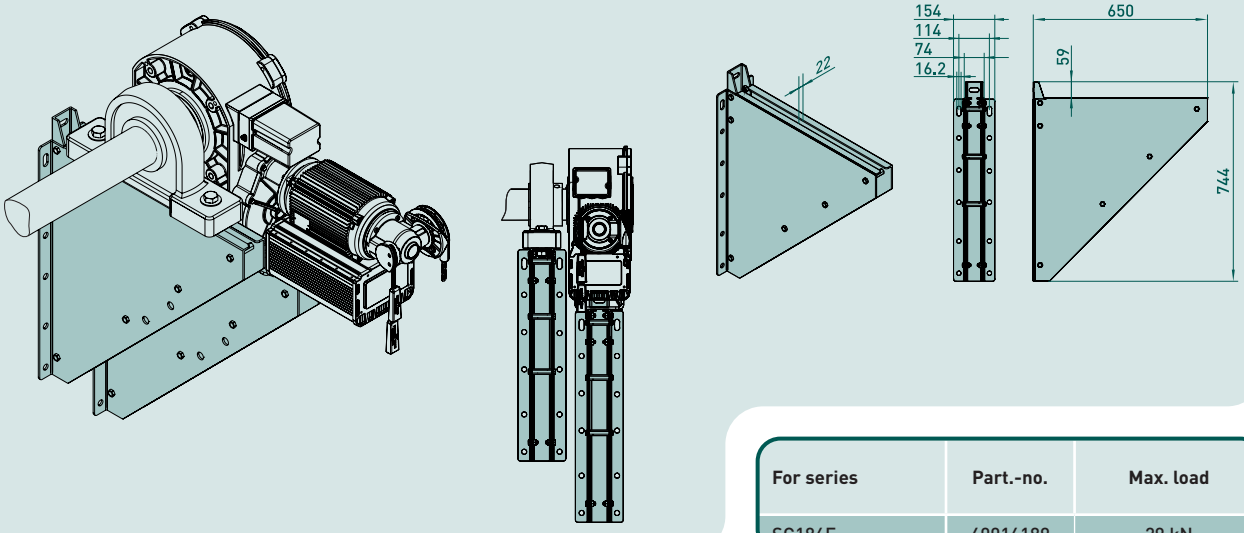
1. Hand chain operator KNH

■ Manual forces, see item 1 of technical data

■ Read note in 3.4

6. Attachments / Accessories

Bracket



For series	Part.-no.	Max. load
SG186F	40016189	29 kN

■ Mounting of the door shaft via separate bearing

■ 2nd bracket as a torque mount is required

■ Permitted installation: Horizontal

ELEKTROMATEN® SI FI

"Safedrive®" with built-on frequency inverter

For driving:
High-speed sectional doors and high-speed rolling doors which require an anti-fallback device

Series SG63F
SI63 3,5.350 FI - SI 17.60 FI
Series SG85F
SI 8.300 FI - SI 55.40 FI
Series SG115F
SI 50.80 FI - SI 180.12 FI

"Safedrive FI®" 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 SI 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.

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

Built-on frequency inverter to be used with door controls 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 FInctions 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

Built-in safety brake

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

Emergency manual operation

- Hand crank NHK (1)
- Hand chain operator KNH (2)

Limit switches

Digital limit DES (3)

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

Mounting

- Floating foot (standard fitting)
- Torque bracket

Special versions

- Other drive speeds and other drive torques on request

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

1. Technical data

1.1 SG63F Output torque 35 Nm - 170 Nm / 0,85 kW

ELEKTROMATEN Series		SI63 3,5.350 FI SG63F	SI63 5.250 FI SG63F	SI63 8.180 FI SG63F	SI 13.100 FI SG63F	SI 17.30 FI SG63F	SI 17.60 FI SG63F
Output torque	Nm	35	50	80	130	170	170
Output speed OPEN CLOSE > 2,5 m CLOSE ⩽ 2,5 m [1]	rpm	30-350 30-150 30-100	30-250 30-150 30-100	30-180 30-90 30-90	18-100 18-80 18-60	8-30 8-20 8-20	8-60 8-35 8-35
Output shaft / hollow shaft (Ø)	mm	25/25,4/30/31,75/40	25/25,4/30/31,75/40	25/25,4/30/31,75/40	25/25,4/30/31,75/40	30/40	25/25,4/30/31,75/40
Locking torque [2]	Nm	510	510	510	510	420	420
Safety brake (approval number)		14-003612-PR02	14-003612-PR02	14-003612-PR02	14-003612-PR02	14-003612-PR02	14-003612-PR02
Max. holding torque [3]	Nm	90	90	140	150	170	170
Motor power	kW	0,85	0,85	0,85	0,85	0,85	0,85
Supply voltage	V	1N~230	1N~230	1N~230	1N~230	1N~230	1N~230
Operating frequency	Hz	50 / 60	50 /60	50 /60	50 /60	50 /60	50 /60
Operating current	A	6,6	6,6	6,6	6,6	6,6	6,6
Max. cycles per hour [4]		34 (33)	34 (33)	30 (29,5)	25 (24,5)	17 (16,6)	16 (15)
Limit switch range [5]		20	20	20	20	10	20
Max. hand force NHK / KNH [6]	N	173 / 140	199 / 161	217 / 175	225 / 182	95 / 77	157 / 127
Weight	kg	28	28	28	29	29	28
Spare parts: Catalogue page		9.054	9.054	9.054	9.054	9.054	9.054
Part no. installation drawing (dxf, dwg)		50001458	50001458	50001458	50001458	50001458	50001458
Part no. ELEKTROMATEN		10003987 (Ø 25) 10004778 (Ø 25,4) 10003928 (Ø 30) 10005262 (Ø 31,75) 10004037 (Ø 40)	10003888 (Ø 25) 10003889 (Ø 25,4) 10003745 (Ø 30) 10005263 (Ø 31,75) 10003881 (Ø 40)	10003896 (Ø 25) 10003897 (Ø 25,4) 10003843 (Ø 30) 10004505 (Ø 31,75) 10003898 (Ø 40)	10005195 (Ø 25) 10005196 (Ø 25,4) 10005198 (Ø 30) 10005199 (Ø 31,75) 10005200 (Ø 40)	— — 10005346 (Ø 30) — 10005200 (Ø 40)	10004186 (Ø 25) 10003900 (Ø 25,4) 10003844 (Ø 30) 10003901 (Ø 31,75) 10003902 (Ø 40)

1.2 SG85F Output torque 80 Nm - 200 Nm / 1,5 kW

ELEKTROMATEN Series		SI 8.300 FI SG85F	SI 10.200 FI SG85F	SI 15.140 FI SG85F	SI 20.100 FI SG85F
Output torque	Nm	80	100	150	200
Output speed OPEN CLOSE > 2,5 m CLOSE ⩽ 2,5 m [1]	rpm	30-300 30-300 30-120	25-200 25-110 25-90	19-140 19-80 19-75	18-100 18-55 18-55
Output shaft / hollow shaft (Ø)	mm	30 / 40	30 / 40	30 / 40	30 / 40
Locking torque [2]	Nm	635	635	480	635
Safety brake (approval number)		14-003612-PR03	14-003612-PR03	14-003612-PR03	14-003612-PR03
Max. holding torque [3]	Nm	90	140	160	200
Motor power	kW	1,50	1,50	1,50	1,50
Supply voltage	V	1N~230	1N~230	1N~230	1N~230
Operating frequency	Hz	50 / 60	50 / 60	50 / 60	50 / 60
Operating current	A	7,3	7,3	7,3	7,3
Max. cycles per hour [4]		36 (36)	34 (34)	30 (29)	26 (26)
Limit switch range [5]		20	20	20	20
Max. hand force NHK / KNH [6]	N	168 / 187	175 / 195	195 / 217	203 / 226
Weight	kg	39	39	39	39
Spare parts: Catalogue page		9.055	9.055	9.055	9.055
Part no. installation drawing (dxf, dwg)		50001422	50001422	50001422	50001422
Part no. ELEKTROMATEN		10003923 (Ø 30) 10004108 (Ø 40)	10004460 (Ø 30) 10004462 (Ø 40)	10004456 (Ø 30) 10004459 (Ø 40)	10004224 (Ø 30) 10004227 (Ø 40)

Footnotes under 1.5

1.3 SG85F Output torque 250 Nm - 550 Nm / 1,5 kW

ELEKTROMATEN Series		SI 25.60 FI SG85F	SI 25.80 FI SG85F	SI 40.40 FI SG85F	SI 45.15 FI SG85F	SI 55.20 FI SG85F
Output torque	Nm	250	250	400	450	550
Output speed OPEN CLOSE > 2,5 m CLOSE ≤ 2,5 m [1]	rpm	10-60 10-35 10-35	18-80 18-50 18-50	9-40 9-35 9-24	7-15 7-15 7-15	4-20 4-20 4-15
Output shaft / hollow shaft (Ø)	mm	30 / 31,75 / 40	30 / 31,75 / 40	40	40	40
Locking torque [2]	Nm	635	990	760	1100	1100
Safety brake (approval number)		14-003612-PR03	14-003612-PR03	14-003612-PR03	14-003612-PR03	14-003612-PR03
Max. holding torque [3]	Nm	250	250	400	450	550
Motor power	kW	1,50	1,50	1,50	1,50	1,50
Supply voltage	V	1N~230	1N~230	1N~230	1N~230	1N~230
Operating frequency	Hz	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60
Operating current	A	7,3	7,3	7,3	7,3	7,3
Max. cycles per hour [4]		20 (20)	26 (26)	17 (16,4)	11 (6,4)	12 (8,4)
Limit switch range [5]		20	20	20	20	20
Max. hand force NHK / KNH [6]	N	200 / 99	233 / 115	255 / 126	153 / 170	189 / 93
Weight	kg	39	39	39	37	47
Spare parts: Catalogue page		9.055	9.055	9.055	9.055	9.055
Part no. installation drawing (dxf, dwg)		50001422	50001422	50001422	50001554	50002090
Part no. ELEKTROMATEN		10003845 (Ø 30) 10004054 (Ø 31,75) 10003871 (Ø 40)	10003827 (Ø 30) 10003828 (Ø 31,75) 10003826 (Ø 40)	10003672	10004022	10005164

1.4 SG85F Output torque 250 Nm - 550 Nm / 4,5 kW

ELEKTROMATEN Series		SI 25.150 FI SG85F	SI 35.100 FI SG85F	SI 45.60 FI SG85F	SI 55.40 FI SG85F
Output torque	Nm	250	350	450	550
Output speed OPEN CLOSE > 2,5 m CLOSE ≤ 2,5 m [1]	rpm	17-150 17-70 17-70	15-100 15-55 15-55	7-60 7-35 7-35	8-40 8-30 8-30
Output shaft / hollow shaft (Ø)	mm	40	40	40	40
Locking torque [2]	Nm	990	990	1100	1100
Safety brake (approval number)		14-003612-PR03	14-003612-PR03	14-003612-PR03	14-003612-PR03
Max. holding torque [3]	Nm	300	350	450	550
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 [4]		30 (29)	24 (23,1)	15 (14,5)	12 (9,9)
Limit switch range [5]		20	20	20	20
Max. hand force NHK / KNH [6]	N	353 / 174	376 / 186	252 / 125	320 / 158
Weight	kg	48	48	46	46
Spare parts: Catalogue page		9.055	9.055	9.055	9.055
Part no. installation drawing (dxf, dwg)		50001456	50001456	50001435	50001435
Part no. ELEKTROMATEN		10003834	10003833	10003903	10003738

Footnotes under 1.5

1.5 SG115F Output torque 500 Nm - 1800 Nm / 1,5 kW - 4,5 kW

ELEKTROMATEN Series		SI 50.80 FI SG115F	SI 60.55 FI SG115F	SI 75.20 FI SG115F	SI 75.45 FI SG115F	SI 100.30 FI SG115F	SI 140.20 FI SG115F	SI 180.12 FI SG115F
Output torque	Nm	500	600	750	750	1000	1400	1800
Output speed OPEN	rpm	22-80	8-55	5-20	8-45	5-30	5-20	5-12
CLOSE > 2,5 m	rpm	22-45	8-55	5-20	8-28	5-18	5-14	5-12
CLOSE ⩽ 2,5 m [1]	rpm	22-30	5-30	5-14	8-28	5-18	5-14	5-12
Output shaft / hollow shaft (Ø)	mm	55	55	55	55	55	55	60
Locking torque [2]	Nm	2800	2800	1980	2800	2800	2800	3125
Safety brake (approval number)		14-003305-PR01	14-003305-PR01	14-003305-PR01	14-003305-PR01	14-003305-PR01	14-003305-PR01	14-003305-PR01
Max. holding torque [3]	Nm	500	600	750	750	1000	1400	1800
Motor power	kW	4,50	4,50	1,50	4,50	4,50	4,50	4,50
Supply voltage	V	3~400	3~400	1N~230	3~400	3~400	3~400	3~400
Operating frequency	Hz	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60
Operating current	A	12,4	12,4	7,3	12,4	12,4	12,4	12,4
Max. cycles per hour [4]		19 (18,9)	14 (13,2)	17 (16,4)	12 (11)	11 (7,5)	10 (5,1)	10 (4,7)
Limit switch range [5]		20	20	10	20	20	20	10
Max. hand force NHK / KNH [6]	N	287 / 232	254 / 205	142 / 115	290 / 234	206 / 166	263 / 212	348 / 281
Weight	kg	59	59	59	58	64	64	66
Spare parts: Catalogue page		9.056	9.056	9.056	9.056	9.056	9.056	9.056
Part no. installation drawing (dxf, dwg)		50001439	50001439	50002091	50001439	50001424	50001424	50001591
Part no. ELEKTROMATEN		10003743	10004299	10005349	10003831	10003917	10003697	10004055

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)** See 3.5 · **3)** Maximum torque that may act on the output shaft of the drive unit when the door is stationary · **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, E20 standard with DES · **6)** See 3.4

2. Selection chart

2.1 Roller shutters Tube EN 10220 [mm]	SI 25.60 FI SI 25.80 FI F [N]	SI 40.40 FI F [N]	SI 45.15 FI SI 45.60 FI F [N]	SI 55.20 FI SI 55.40 FI F [N]	SI 50.80 FI F [N]	SI 75.20 FI SI 75.45 FI F [N]	SI 100.30 FI F [N]	SI 140.20 FI F [N]	SI 180.12 FI F [N]
101,6 x 3,6	3289	--	--	--	--	--	--	--	--
108,0 x 3,6	3125	5050	5625	--	--	--	--	--	--
133,0 x 4,0	2614	4183	4706	--	--	--	--	--	--
159,0 x 4,5	2235	3575	4022	4915	4469	6704	--	--	--
177,8 x 5,0	2022	3236	3640	4449	4044	6067	8089	11325	--
193,7 x 5,4	1872	2995	3369	4118	3744	5615	7487	10482	13477
219,1 x 5,9	--	2677	3011	3680	3346	5019	6692	9368	12045
244,5 x 6,3	--	--	--	3327	3025	4537	6049	8469	10888
273,0 x 6,3	--	--	--	--	--	4096	5461	7645	9829
298,5 x 7,1	--	--	--	--	--	3768	5024	7033	9042
323,9 x 7,1	--	--	--	--	--	--	4653	6514	8375

- F = Lift [N]
- Read note in 3.2
- Includes 20 % friction for single-wall profiles (profile thickness 20 mm)
- Select not mentioned drives as required by the door construction

2.2 Sectional doors Cable drum [mm]	SI 17.30 FI SI 17.60 FI F [N]	SI 25.60 FI SI 25.80 FI F [N]	SI 40.40 FI F [N]	SI 45.15 FI SI 45.60 Fi F [N]	SI 55.20 FI SI 55.40 FI F [N]	SI 50.80 FI F [N]	SI 75.20 FI SI 75.45 FI F [N]	SI 100.30 FI F [N]	SI 140.20 FI F [N]
Ø 160	1913	2813	4500	5063	6188	5625	--	--	--
Ø 200	1530	2250	3600	4050	4950	4500	6750	9000	12600

- F = Lift [N]
- Read notes in 3.2 and 3.7
- Includes 10 % friction
- Select not mentioned drives as required by the door construction
- 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 20 mm) and 10 % friction for sectional doors.

Reduce the weight by a FIrther 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 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 Cable / Cable drums

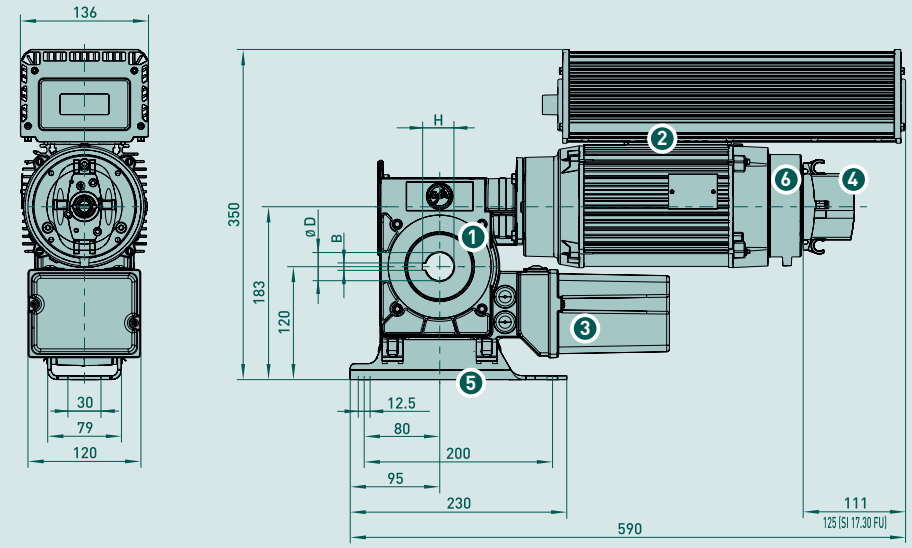
When calculating the cable size the max. permitted door weight is required with a safety of 6x for the cables requirement of EN 12604.

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

4.1 SI63 3,5.350 FI – SI 17.60 FI

SG63F



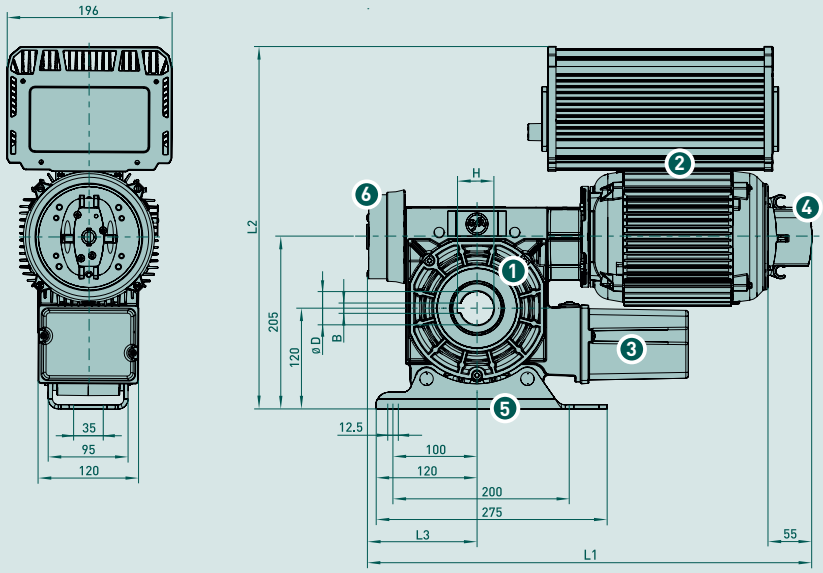
1. Worm gear with safety brake
2. Motor with built-on frequency inverter
3. Limit switch
4. Hand crank NHK
5. Floating foot
6. Brake (not with SI 17.30 FI)
7. Option: rotated motor (upon request)

Ø D	H	B
25	28,3	8
25,4	28,4	6,35
30	33,3	8
31,75	34,7	6,35
40	43,3	12

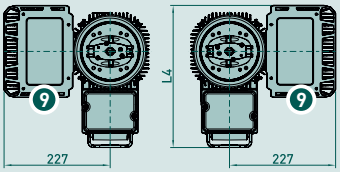
■ Permitted installation: Horizontal (as shown) or vertical (motor at the bottom)

4.2 SI 8.300 FI – SI 55.40 FI

SG85F

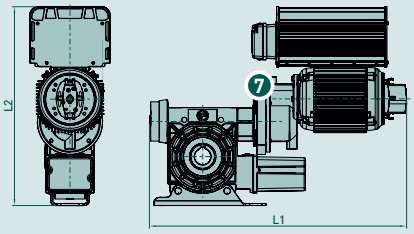


1. Worm gear with safety brake
2. Motor with built-on frequency inverter
3. Limit switch
4. Hand crank NHK
5. Floating foot
6. Brake
7. Intermediate gear
8. 2nd brake (not shown)
9. Option: rotated motor (upon request)



ELEKTROMATEN	L1	L2	L3	L4
SI 8.300 FI, SI 10.200 FI SI 15.140 FI, SI 20.100 FI SI 25.60 FI, SI 25.80 FI SI 40.40 FI 6	531	431	131	303
SI 45.15 FI	519	431	120	303
SI 55.20 FI 6 7	629	488	131	360
SI 25.150 FI 6 8	637	431	131	303
SI 35.100 FI 6 8	637	431	131	303
SI 45.60 FI 6	594	431	131	303
SI 55.40 FI 6	594	431	131	303

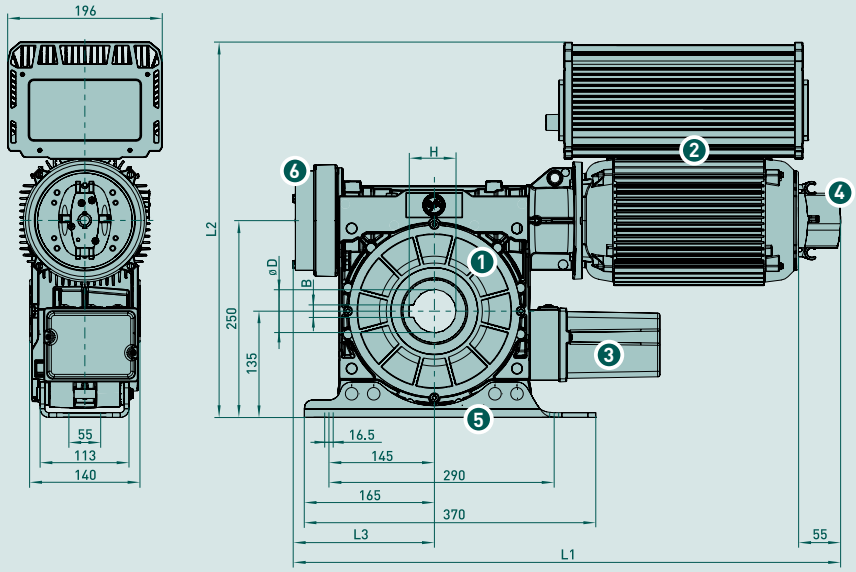
Ø D	H	B
30	33,3	8
31,75	34,7	6,35
40	43,3	12



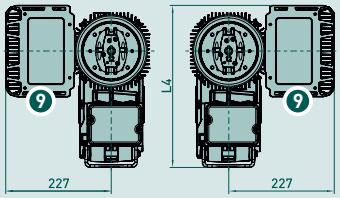
■ Permitted installation: Horizontal (as shown) or vertical (motor at the bottom)

4.3 SI 50.80 FI – SI 180.12 FI

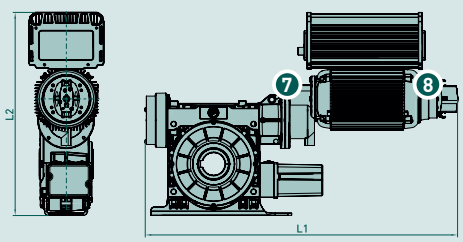
SG115F



1. Worm gear with safety brake
2. Motor with built-on frequency inverter
3. Limit switch
4. Hand crank NHK
5. Floating foot
6. Brake
7. Intermediate gear
8. 2nd brake
9. Option: rotated motor (upon request)

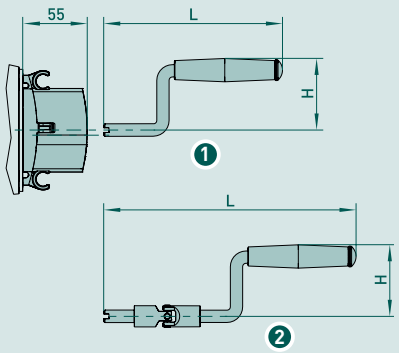


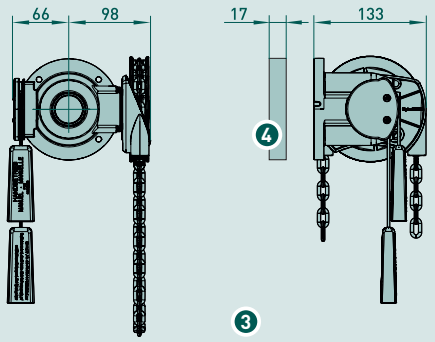
ELEKTROMATEN	D	H	B	L1	L2	L3	L4
SI 50.80 FI	55	59,3	16	697	477	180	348
SI 60.55 FI	55	59,3	16	697	477	180	348
SI 75.20 FI 7	55	59,3	16	700	533	169	404
SI 75.45 FI	55	59,3	16	697	477	180	348
SI 100.30 FI 7	55	59,3	16	775	533	180	404
SI 140.20 FI 7	55	59,3	16	775	533	180	404
SI 180.12 FI 7 8	60	64,4	18	820	533	180	404



■ Permitted installation: Horizontal (as shown), vertical (motor at the bottom) only with torque mount (page 1.107 item 6.2)

5. Emergency manual operation • for horizontal or vertical installation





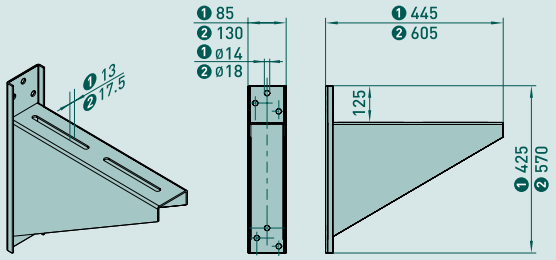
1. Manual hand crank operation NHK (Standard)
2. Manual hand crank with knuckle joint NHKK
3. Hand chain operator KNH
4. Flange in use with: SI 25.150 FI, SI 35.100 FI, SI 180.12 FI

	For Series	Part.-no.	Ø	L	H
1	SG63F	30002591	10	255	92
1	SG85F	30002749	12	235	122
1	SG115F	30003112	12	265	192
2	SG63F	30002715	10	415	111
2	SG85F	30002750	12	425	152

- Manual forces, see item 1 of technical data
- Read note in 3.4

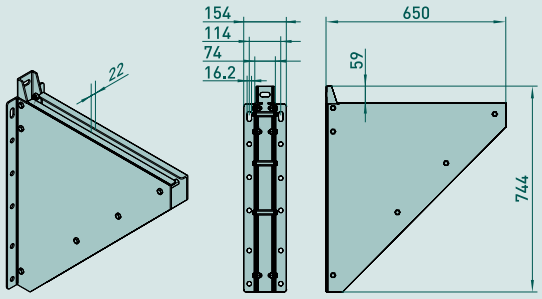
6. Attachments / Accessories

6.1 Bracket



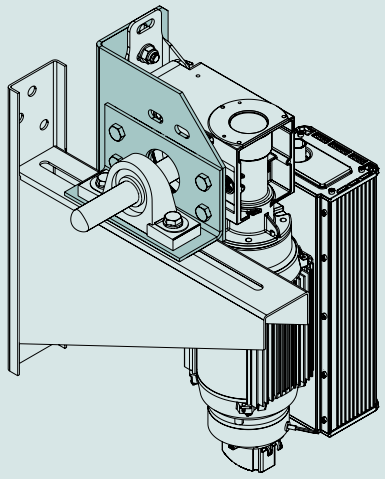
For Series		Part.-no.	Max. load
SG63F / SG85F	1	40006488	5 kN
SG115F (≤ SI 140.20 FI)	2	40012396	12 kN

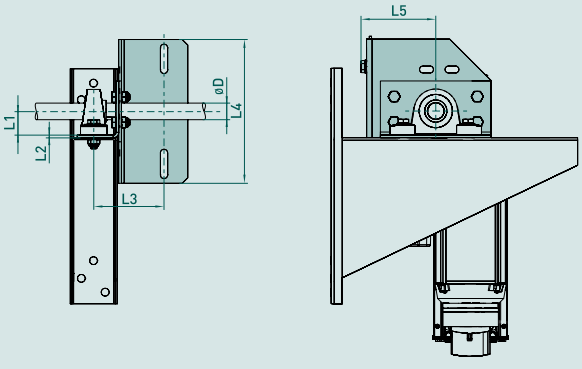
6.2 Bracket (SI 180.12 FI)



For Series	Part.-no.	Max. load
SG115F (SI 180.12 FI)	40016189	29 kN

6.3 Torque bracket





For Series	Ø D	Part.-no.	L1	L2	L3	L4	L5
SG63F	25	30002930	36,5	5	127	260	135
SG63F / SG85F	30	30002930	42,9	5	127	260	135
SG85F	40	30002930	49,2	5	127	260	135
SG115F	55	30003162	63,5	6	174	350	148
SG115F	60	30003162	69,8	6	174	350	148

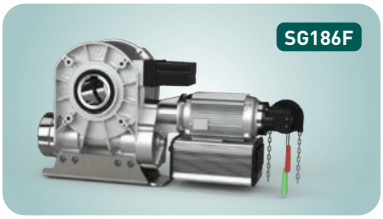
- Right- or left-hand use
- ELEKTROMATEN vertical (as shown) or horizontal (for vertikal mounting, the FI-motor has to be turned by 90°)
- For mounting with floating foot additional requirements: Bracket 6.1 or 6.2 and bearing

ELEKTROMATEN® SI FI

Safedrive® with built-on frequency inverter

For driving:
Roller shutters and rolling grilles
which require an anti-fallback device

Series SG186F
SI 260.12 FI - SI 500.10 FI



"Safedrive® FI" 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 SI 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.

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

Built-on frequency inverter to be used with door controls 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

Built-in safety brake

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

Emergency manual operation

- Hand chain operator KNH (1)

Limit switches

Digital limit DES (2)

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

Mounting

- Floating foot
  (Fitting requires a torque mount system)

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: 3N~400 V, 3~400 V

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

1) See 3.6

1. Technical data

ELEKTROMATEN Series		SI 260.12 FI SG186F	SI 360.12 FI SG186F	SI 500.10 FI SG186F
Output torque	Nm	2600	3600	5000
Output speed OPEN	rpm	2-12	2-12	6-10
CLOSE > 2,5 m	rpm	2-5	2-5	2-5
CLOSE ⩽ 2,5 m [1]	rpm	2-5	2-5	2-5
Output shaft / hollow shaft (Ø)	mm	80	80	100
Locking torque [2]	Nm	8255	8255	8255
Safety brake (approval number)		16-000574-PR03	16-000574-PR03	16-000574-PR01
Max. holding torque [3]	Nm	2600	3600	5000
Motor power	kW	4,50	4,50	4,50
Supply voltage	V	3~400	3~400	3~400
Operating frequency	Hz	50 / 60	50 / 60	50 / 60
Operating current	A	12,4	12,4	12,4
Max. cycles per hour [4]		11 (6,0)	11 (6,0)	10 (3,9)
Limit switch range [5]		10	10	10
Max. hand force KNH [6]	N	182	215	261
Weight	kg	143	143	143
Part no. installation drawing (dxf, dwg)		50001578	50001578	50001578
Part no. ELEKTROMATEN		10005230	10005231	10004095

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)** See 3.5 · **3)** Maximum torque that may act on the output shaft of the drive unit when the door is stationary · **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, other limit switch ranges on request · **6)** See 3.4

2. Selection chart

Roller shutters Tube EN 10220 [mm]	SI 260.12 FI F [N]	 v [cm/s]	SI 360.12 FI F [N]	 v_b [cm/s]	SI 500.10 FI F [N]	 v_b [cm/s]
298,5 x 7,1	11429	3,3 - 20,0	15824	3,3 - 20,0	--	--
323,9 x 7,1	10584	3,6 - 21,6	14655	3,6 - 21,6	20355	3,6 - 18,0
368,0 x 8,0	9381	4,1 - 24,4	12990	4,1 - 24,4	18041	4,1 - 20,3
406,4 x 8,8	8537	4,5 - 26,8	11820	4,5 - 26,8	16417	4,5 - 22,3
419,0 x 10,0	8292	4,6 - 27,6	11481	4,6 - 27,6	15945	4,6 - 23,0
457,2 x 10,0	--	--	--	--	14669	5,0 - 25,0
508,0 x 11,0	--	--	--	--	13258	5,5 - 27,6

- F = Lift [N]
- v_b = Range of speed
- Includes 30 % 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 30 % 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 EN 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.

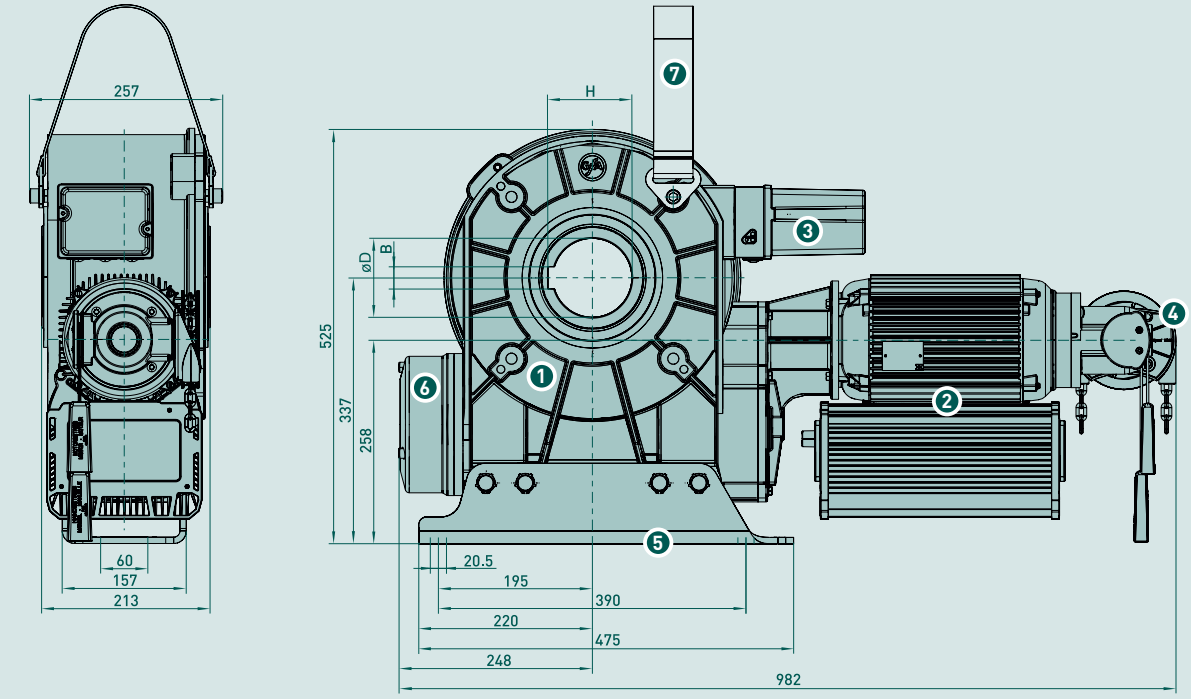
3.6 Output speed

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

4. Dimensions

SI 260.12 FI – SI 500.10 FI

SG186F

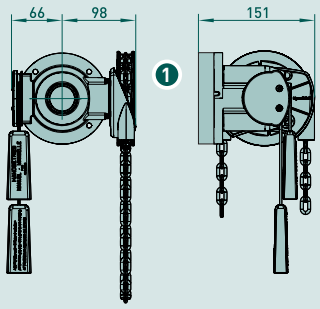


1. Worm gear with safety brake
2. Motor with built-on frequency inverter
3. Limit switch
4. Emergency manual operation KNH
5. Floating foot
6. Brake
7. Assembling aid

Ø D	H	B
80	85,4	22
100	106,4	28

■ Permitted installation: Horizontal with an additional torque mount system, see 6

5. Emergency manual operation • for horizontal installation

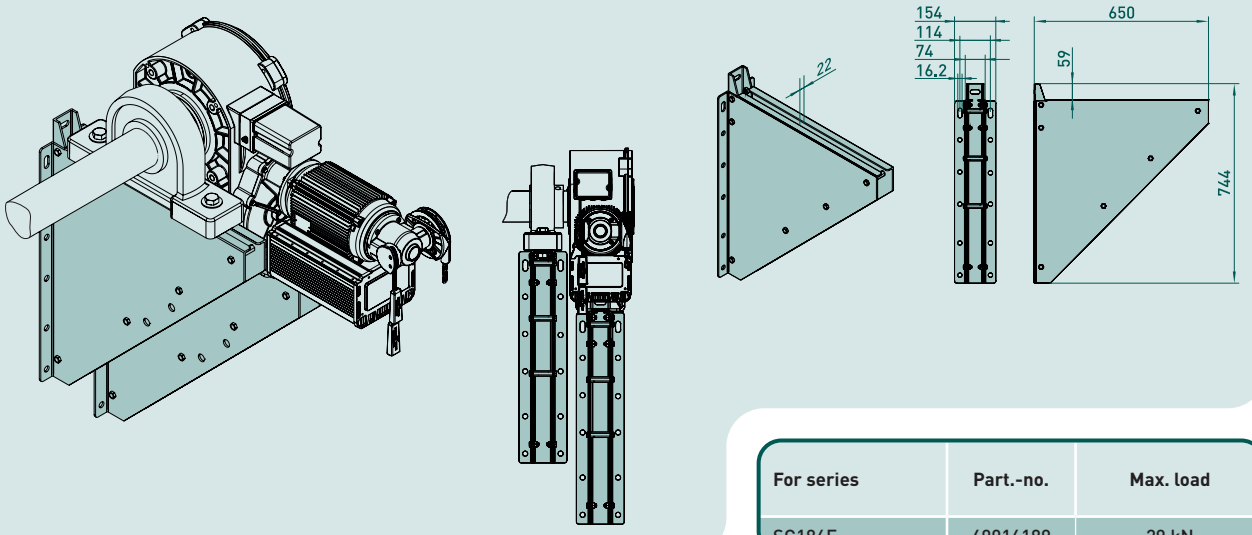


1 Hand chain operator KNH

- Manual forces, see item 1 of technical data
- Read note in 3.4

6. Attachments / Accessories

Bracket

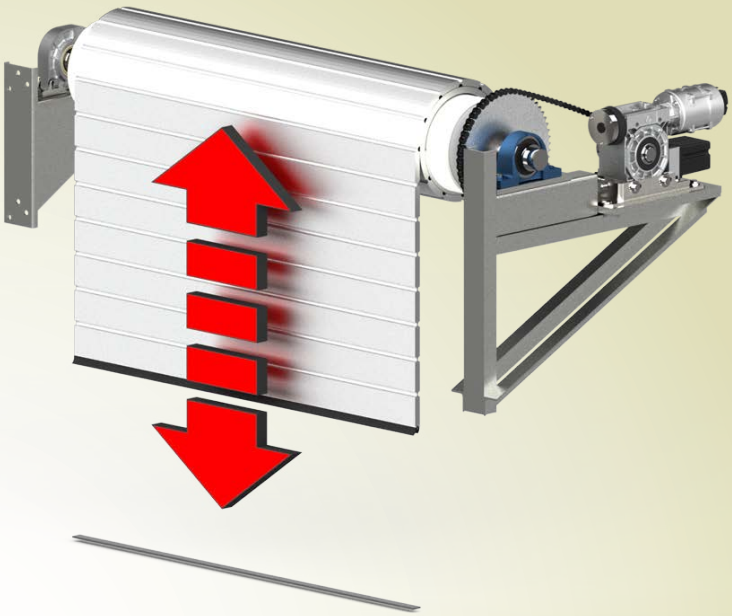


For series	Part.-no.	Max. load
SG186F	40016189	29 kN

- Mounting of the door shaft via separate bearing
- 2nd bracket as a torque mount is required
- Permitted installation: Horizontal

ELEKTROMATEN® KE
Chain-drive

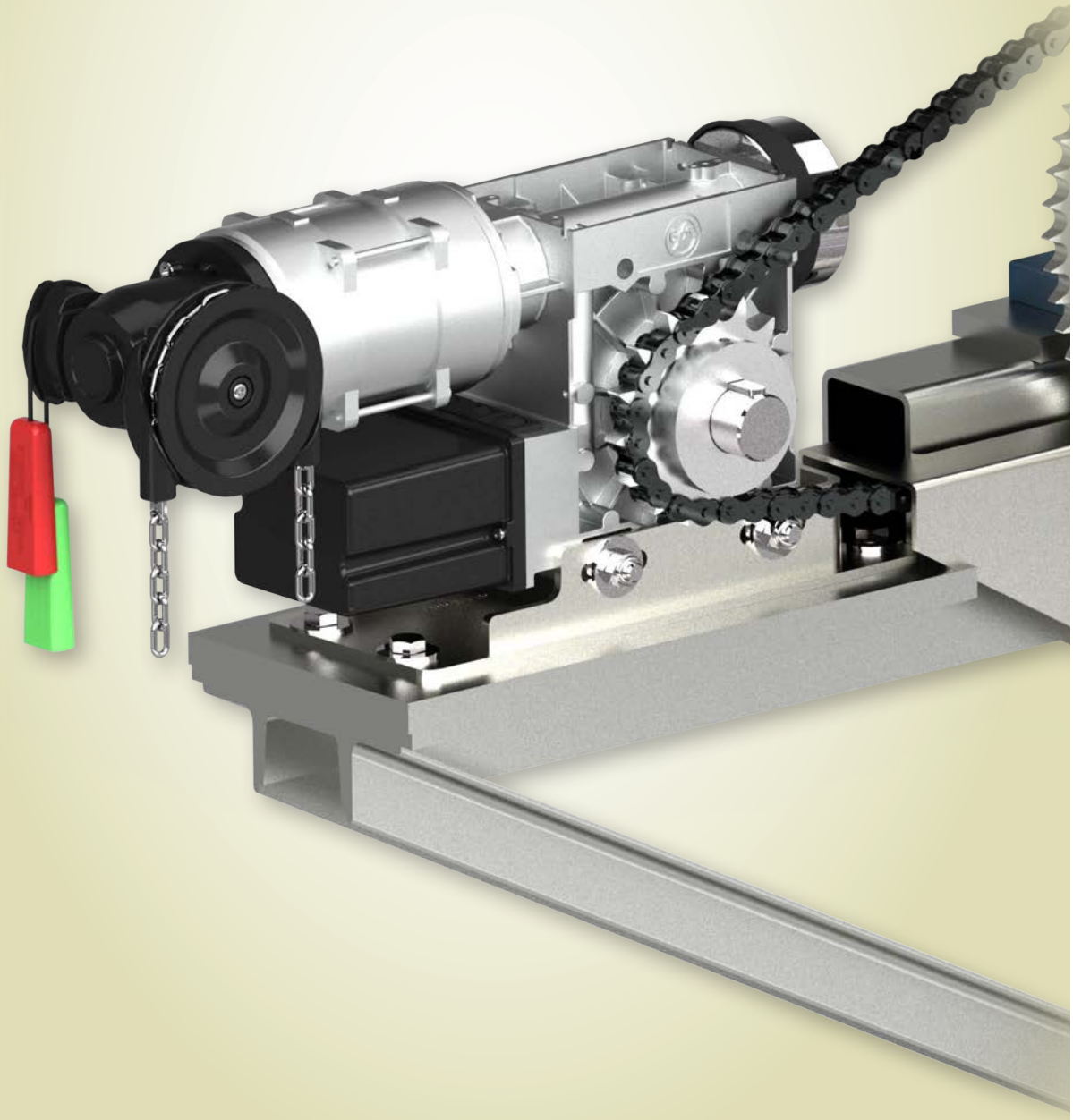
for roller shutters, rolling grilles and vertical lifted doors. Protection of doors against falling back require a safety brake of the appropriate size



KE 9.24 – KE 120.24 2.011
Output torque: 90 - 1200 Nm
Output speed: 24 rpm

KE 9.60 FI – KE 120.30 FI 2.031
Output torque: 90 - 1200 Nm
Output speed: 5 - 80 rpm

KE



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.

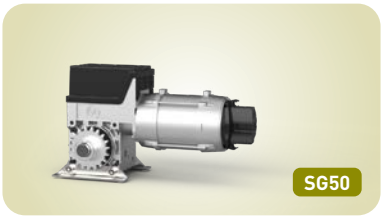
Output side

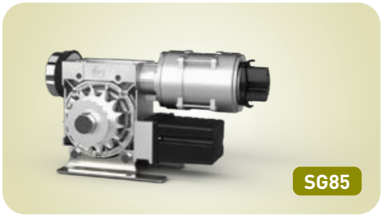
The interchangeable output-shaft allows easy modification from left- to right-hand use.

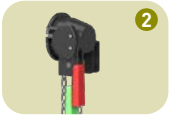
Approvals and certificates

ELEKTROMATEN

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







Emergency manual operation

- Hand crank NHK (1)
- Rapid hand chain operator SK (KE 9.24) (2)
- Hand chain operator KNH (≥KE 20.24) (3)

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

Mounting

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

Separate Safety Brake FG

- Prevention of doors falling back (6)
- Suitable Safety Brakes for all types of ELEKTROMATEN KE can be found in Section 7.

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 Series		KE 9.24 SG50	KE 9.24 WS SG50	KE 20.24 SG85	KE 30.24 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 [1]	Nm	90	90	200	300
Max. output speed OPEN / CLOSE for frequency inverter operation [2]	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 [3]	A	2,1 / 1,2	3,9	3,1 / 1,8	4,4 / 2,6
Max. cycles per hour [4]		12 (10,4)	9 (3,5)	11 (5,6)	11 (5,6)
Limit switch range [5]		20 (40)	20 (40)	20 (40, 60, 110)	20 (40, 60, 110)
Max. hand force NHK / SK or KNH [6]	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 Series		KE 40.24 SG85	KE 60.24 SG115	KE 80.24 SG115	KE 120.24 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 [1]	Nm	400	600	800	1200
Max. output speed OPEN / CLOSE for frequency inverter operation [2]	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 [3]	A	5,2 / 3,0	6,7 / 3,9	8,1 / 4,7	11,9 / 6,9
Max. cycles per hour [4]		11 (5,6)	11 (6,9)	12 (8,3)	11 (6,9)
Limit switch range [5]		20 (40, 60, 110)	20 (60, 110)	20 (60, 110)	20 (60, 110)
Max. hand force NHK / SK or KNH [6]	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 EN 10220	Transmission 1:2		Transmission 1:3		Transmission 1:3,8		Transmission 1:4,5	
	[mm]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [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
	219,1 x 5,9	2677	15,0	4015	10,0	5086	7,9	6023	6,7
KE 30.24	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
	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
KE 40.24	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
	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
	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
KE 60.24	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
	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
	323,9 x 7,1	5583	21,6	8375	14,4	10608	11,4	12562	9,6
KE 80.24	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
	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
	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]
- va = 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.

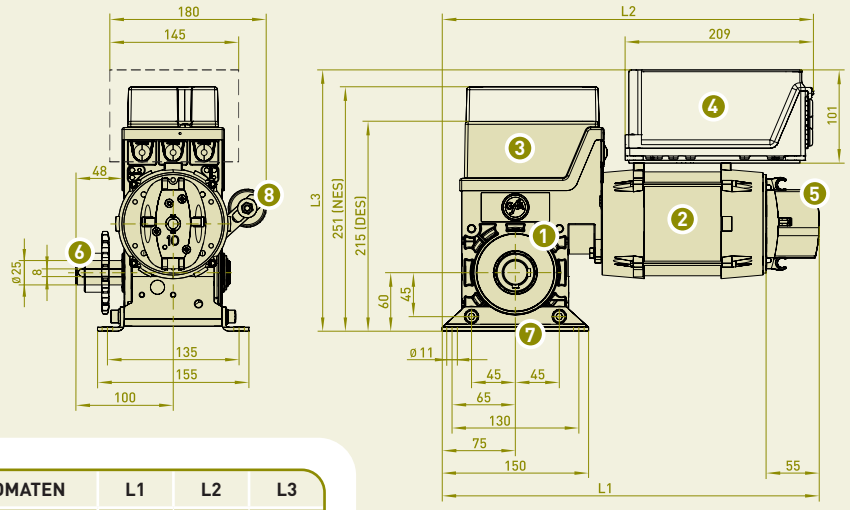
We recommend the use of drive sprockets with at least 15 teeth. The drive sprocket must not protrude beyond the end of the output-shaft.

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



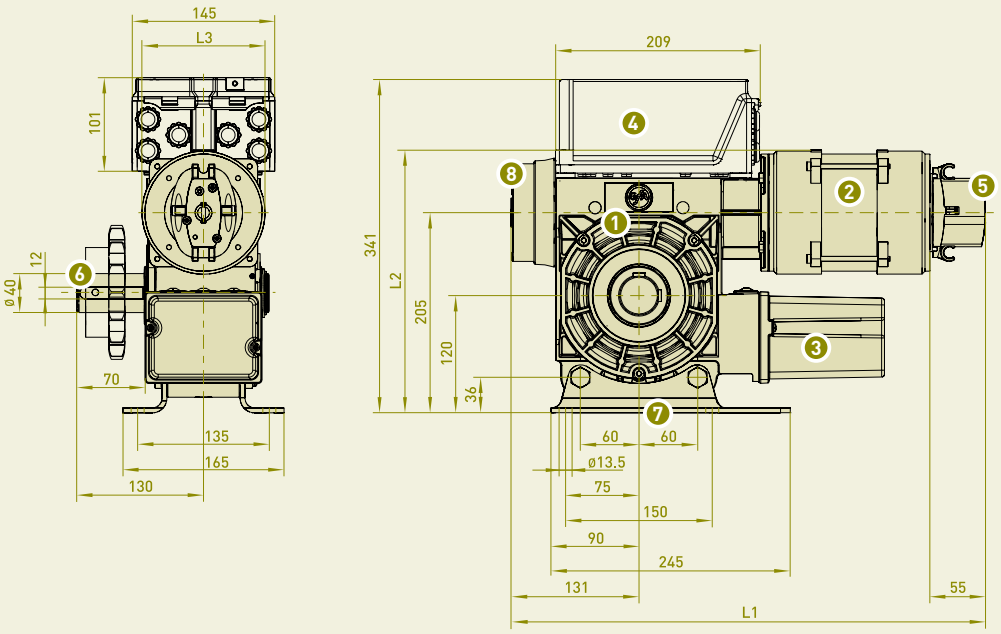
1. Worm gear
2. Motor
3. Limit switch
4. Optional: WS 900 control panel, removable, with 0,8 m cable
5. Hand crank NHK
6. Output-shaft (interchangeable)
7. Foot angle
8. Capasitor

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



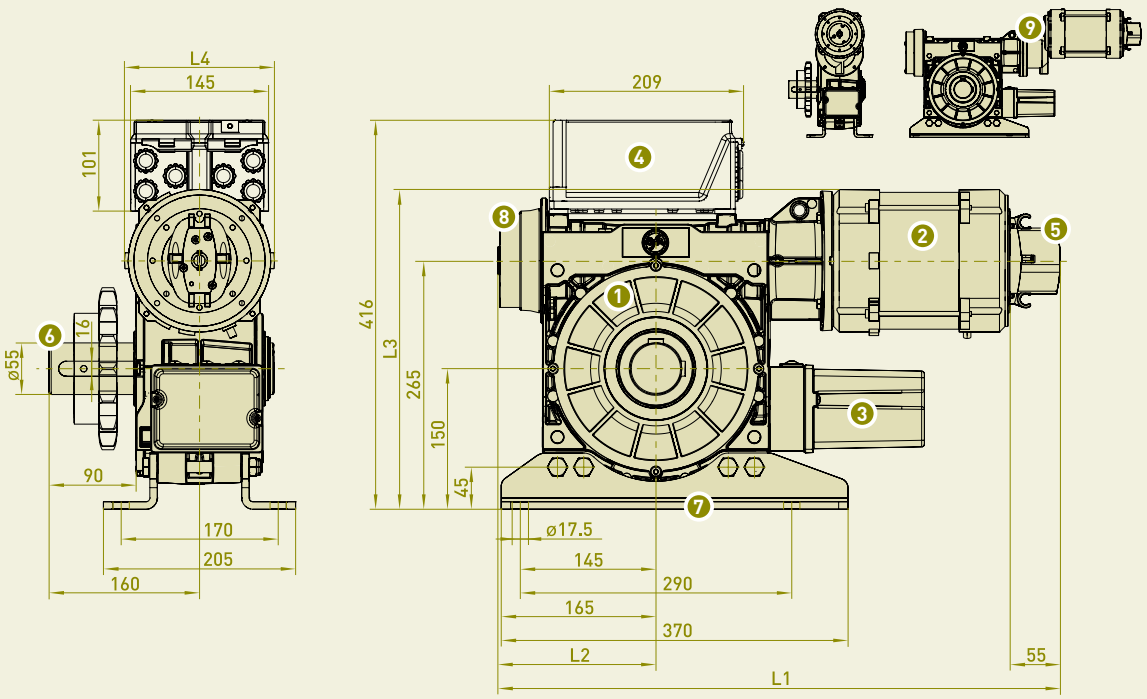
1. Worm gear
2. Motor
3. Limit switch
4. Optional: WS 900 control panel, removable, with 0,8 m cable
5. Hand crank NHK
6. Output-shaft (interchangeable)
7. Foot angle
8. Brake

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

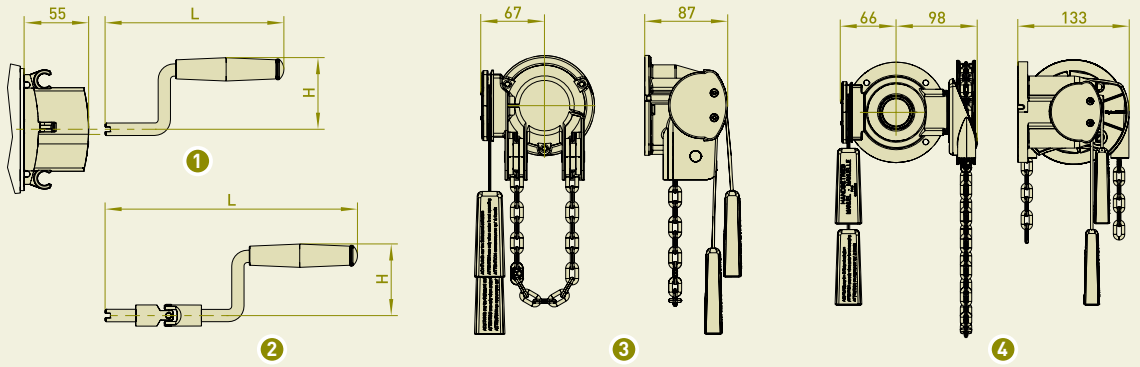


1. Worm gear
2. Motor
3. Limit switch
4. Optional: WS 900 control panel, removable, with 0,8 m cable
5. Hand crank NHK
6. Output-shaft (interchangeable)
7. Fooot angle
8. Brake
9. Intermediate gear

ELEKTROMATEN	L1	L2	L3	L4
KE 60.24	600	169	341	152
KE 80.24	636	180	341	152
KE 120.24 9	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 NHKK
3. Rapid hand chain operator SK (KE 9.24)
4. Hand chain operator KNH (≥ KE 20.24)

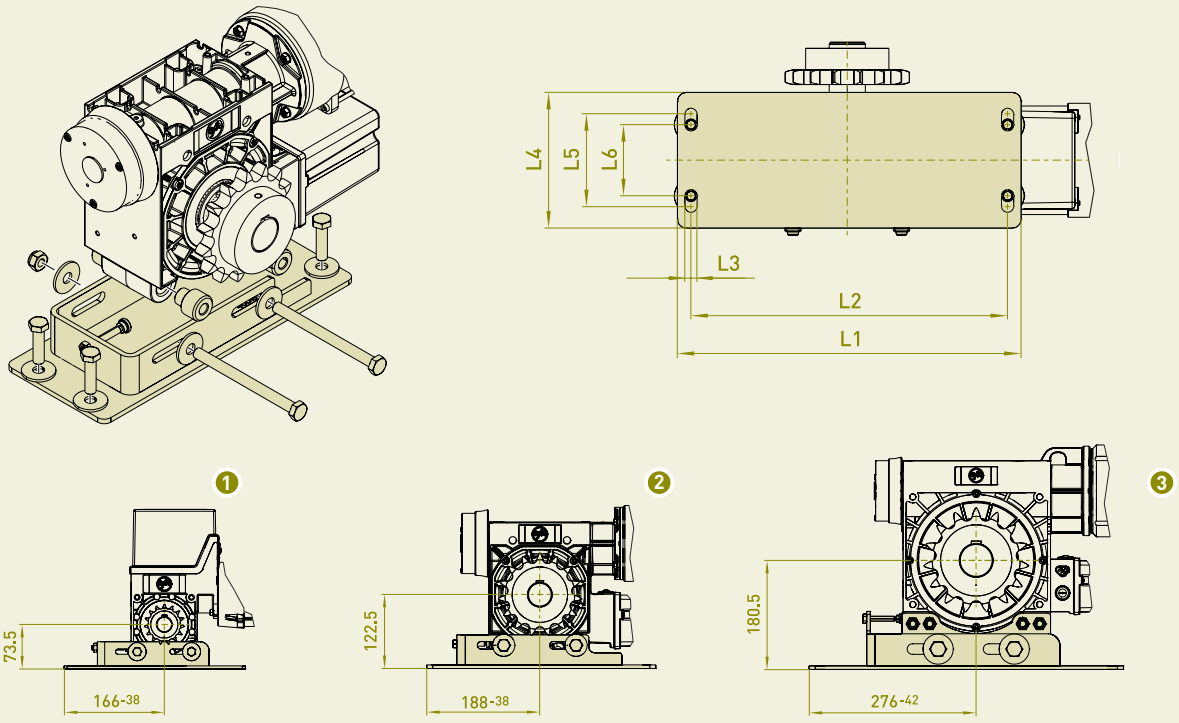
	For Series	Part.-no.	Ø	L	H
1	SG50	30002591	10	255	91
1	SG85	30002749	12	235	122
1	SG115	30003112	12	265	192
2	SG50	30002715	10	415	111
2	SG85	30002750	12	425	152

■ Manual forces, see item 1 of technical data

■ Read note in 3.4

6. Attachments / Accessories

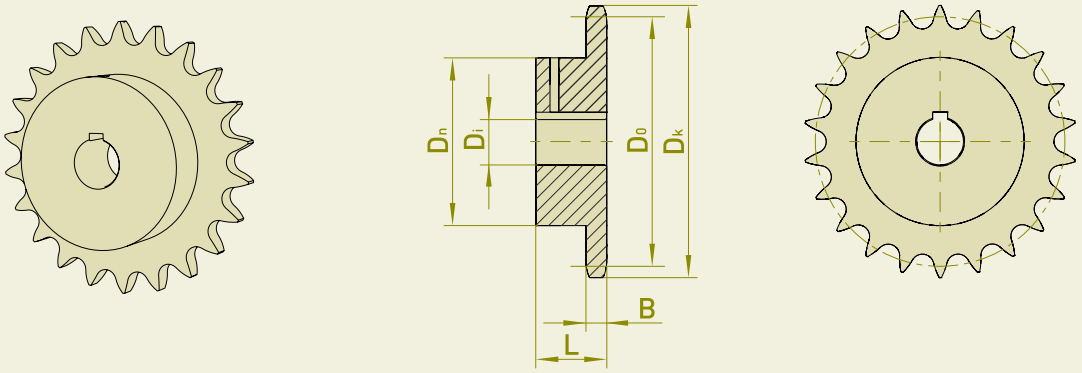
6.1 Bracket (as an additional part or mounted directly on the ELEKTROMATEN)



	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

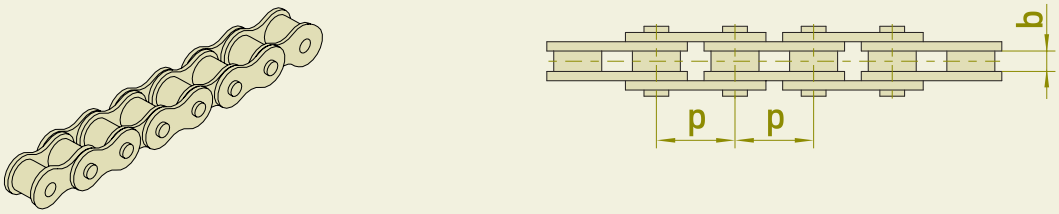
6.2 Sprockets



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 19	30000237 30000238	65,5 81,7	61,1 77,2	45 60	25 25	7,2 7,2	28 28
KE 20.24 / KE 30.24	12 B-1 (3/4" x 7/16")	15 19	30000219 30000220	99,8 124,2	91,6 115,8	70 80	40 40	11,1 11,1	35 35
KE 30.24 / KE 40.24	16 B-1 (1" x 17,02 mm)	15 19	30000171 30000321	133,0 165,2	122,2 154,3	92 100	40 40	16,2 16,2	40 45
KE 60.24	16 B-1 (1" x 17,02 mm)	15 19	30000173 30000688	133,0 165,2	122,2 154,3	92 100	55 55	16,2 16,2	40 45
KE 80.24 / KE 120.24	20 B-1 (1 1/4" x 3/4")	15 19	30000920 30003163	167,9 208,1	152,7 192,9	118 120	55 55	18,5 18,5	45 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 19	90 115	1,5 m 5,0 m Link	40005050 40017783 40000613
12 B-1	3/4" x 7/16"	19,05 x 11,68	29.000	15 19	220 280	2,0 m 5,0 m Link	40003030 40013909 40000615
16 B-1	1" x 17,02 mm	25,4 x 17,02	60.000	15 19	610 770	2,5 m 5,0 m Link	40005049 40013910 40000617
20 B-1	1 1/4" x 3/4"	31,75 x 19,56	95.000	15 19	1200 1520	3,0 m 5,0 m Link	40014878 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)

ELEKTROMATEN® KE FI

Chain-drive with built-on frequency inverter

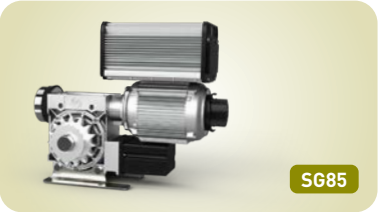
For driving:
Roller shutters and rolling grilles

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)

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

1. Technical data

ELEKTROMATEN Series		KE 9.60 FI SG50	KE 20.60 FI SG85	KE 40.40 FI SG85
Output torque	Nm	90	200	400
Output speed OPEN CLOSE > 2,5 m CLOSE ⩽ 2,5 m [1]	rpm	10-60 10-30 10-30	10-60 10-35 10-35	9-40 9-35 9-24
Output shaft / hollow shaft (Ø)	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 Series		KE 50.80 FI SG115	KE 60.45 FI SG115	KE 80.40 FI SG115	KE 120.30 FI SG115
Output torque	Nm	500	600	800	1200
Output speed OPEN CLOSE > 2,5 m CLOSE ⩽ 2,5 m [1]	rpm	22-80 22-45 22-30	7-45 7-28 7-28	10-40 10-28 10-28	5-30 5-18 5-18
Output shaft / hollow shaft (Ø)	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
	219,1 x 5,9	2677	4015	5086	6023
KE 40.40 FI	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
	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
	323,9 x 7,1	3722	5583	7072	8375
KE 50.80 FI	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
	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 60.45 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
	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
KE 80.40 FI	177,8 x 5,0	12942	19414	24590	29120
	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
	298,5 x 7,1	8038	12057	15272	18085
	323,9 x 7,1	7444	11166	14144	16749
KE 120.30 FI	177,8 x 5,0	19414	29120	36886	43680
	193,7 x 5,4	17969	26954	34141	40431
	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
	323,9 x 7,1	11166	16749	21215	25124
	368,0 x 8,0	9897	14845	18804	22268

- F = Lift [N]
- 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 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.

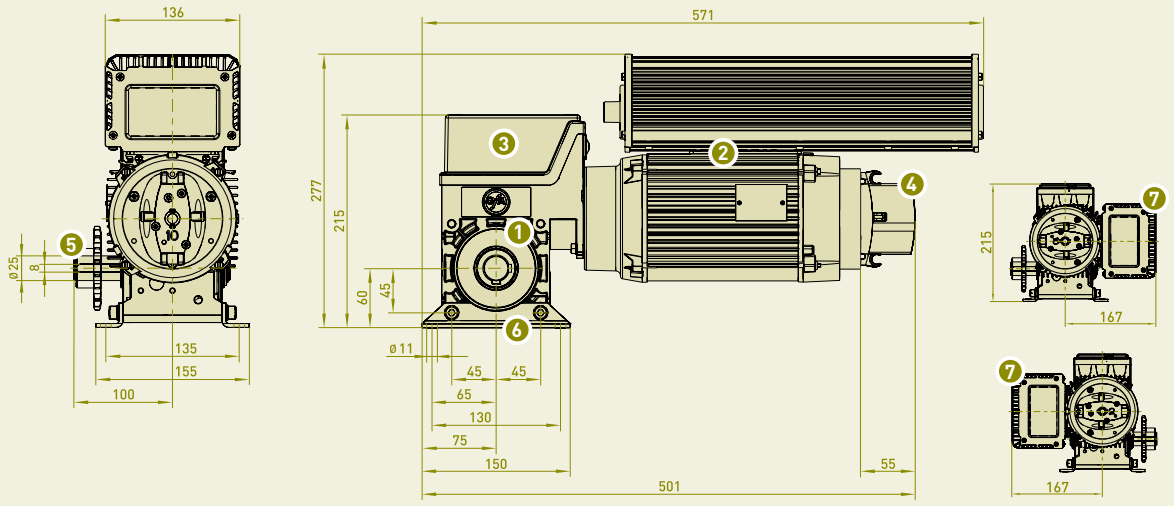
We recommend the use of drive sprockets with at least 15 teeth. The drive sprocket must not protrude beyond the end of the output-shaft.

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

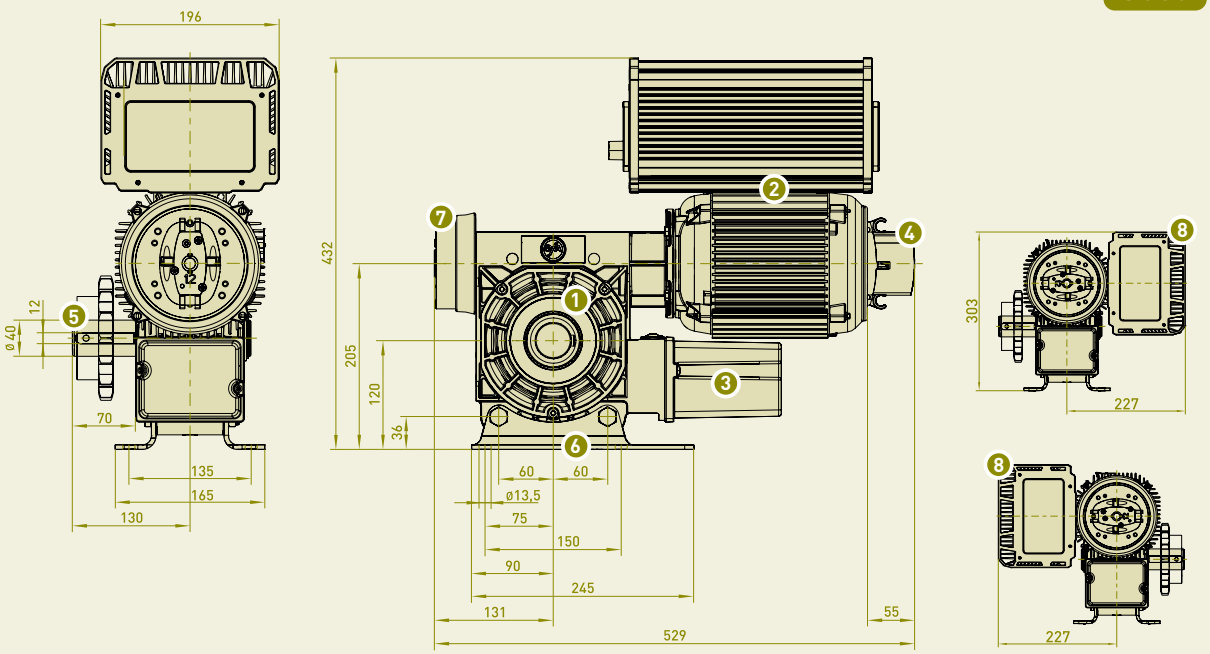


1. Worm gear
2. Motor with built-on frequency inverter
3. Limit switch
4. Hand crank NHK
5. Output-shaft (interchangeable)
6. Foot angle
7. Option: rotated motor (upon request)

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

4.2 KE 20.60 FI / KE 40.40 FI

SG85

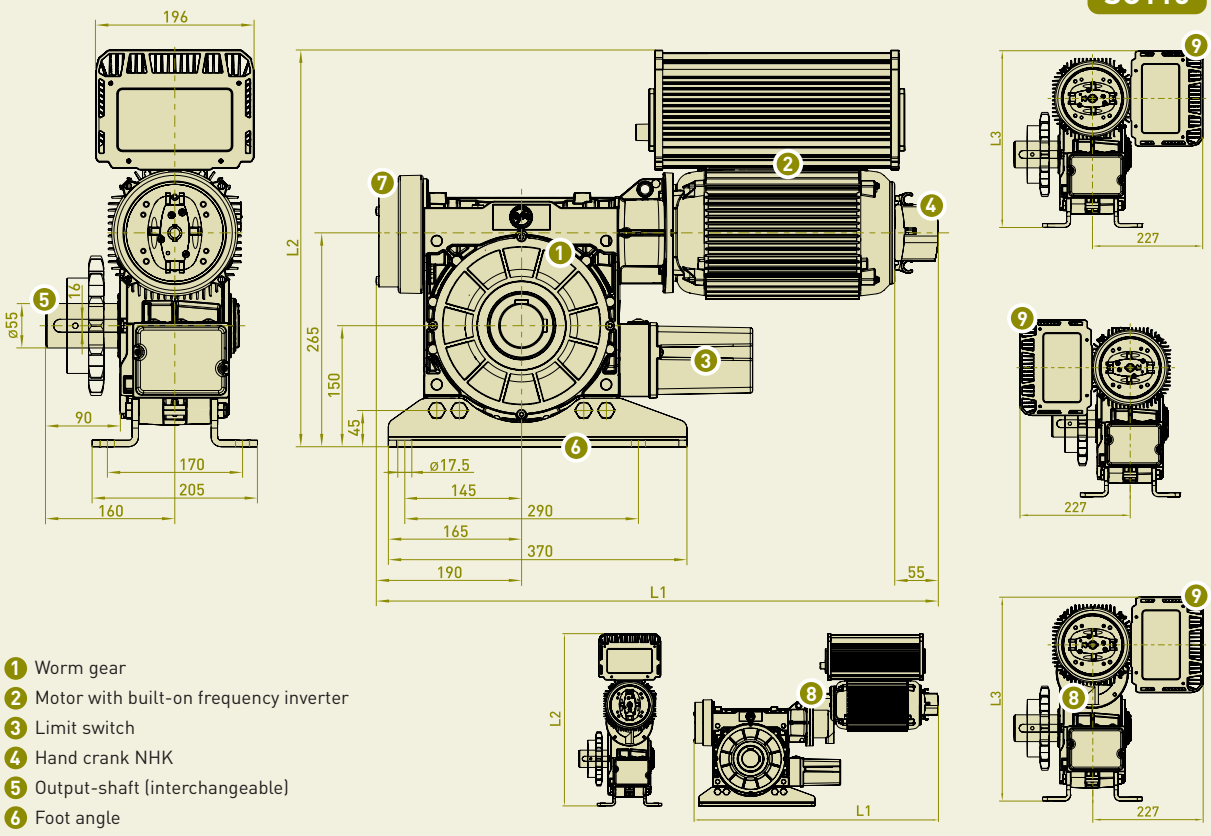


1. Worm gear
2. Motor with built-on frequency inverter
3. Limit switch
4. Hand crank NHK
5. Output-shaft (interchangeable)
6. Foot angle
7. Brake
8. Option: rotated motor (upon request)

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

4.3 KE 50.80 FI – KE 120.30 FI

SG115

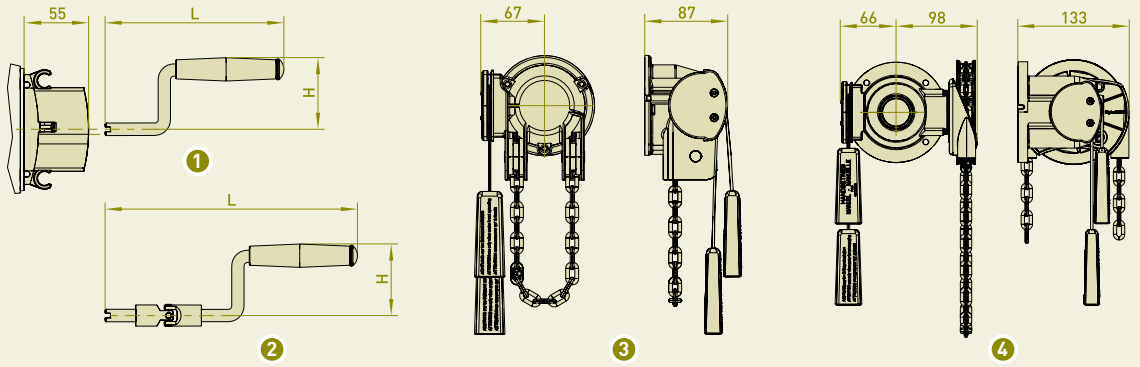


1. Worm gear
2. Motor with built-on frequency inverter
3. Limit switch
4. Hand crank NHK
5. Output-shaft (interchangeable)
6. Foot angle
7. Brake
8. Intermediate gear
9. Option: rotated motor (upon request)

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

■ 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 NHKK
3. Rapid hand chain operator SK (KE 9.60 FI)
4. Hand chain operator KNH (≥ KE 20.60 FI)

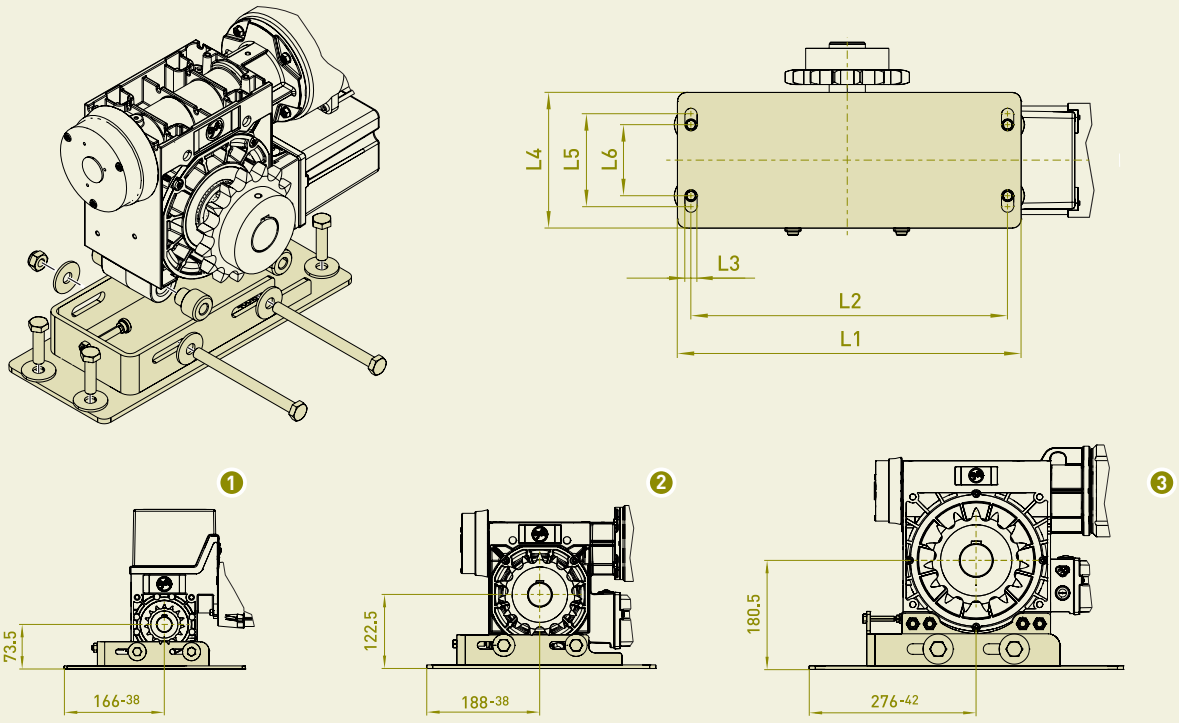
	For Series	Part.-no.	Ø	L	H
1	SG50	30002591	10	255	91
1	SG85	30002749	12	235	122
1	SG115	30003112	12	265	192
2	SG50	30002715	10	415	111
2	SG85	30002750	12	425	152

■ Manual forces, see item 1 of technical data

■ Read note in 3.4

6. Attachments / Accessories

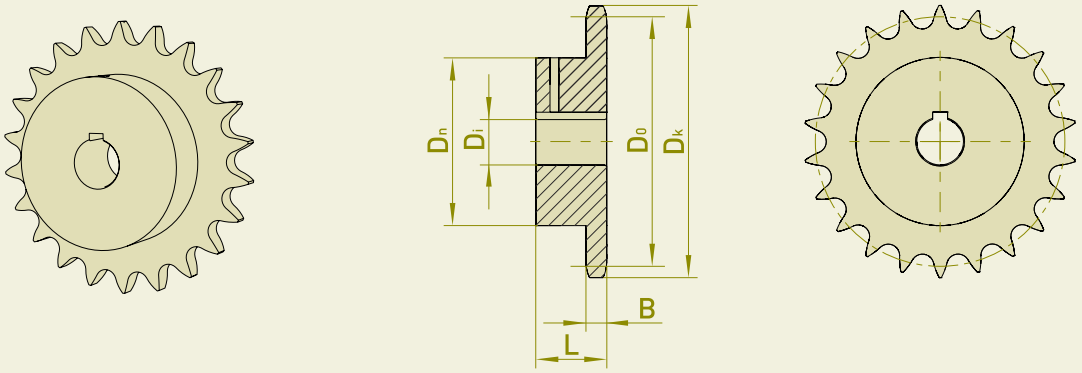
6.1 Bracket (as an additional part or mounted directly on the ELEKTROMATEN)



	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

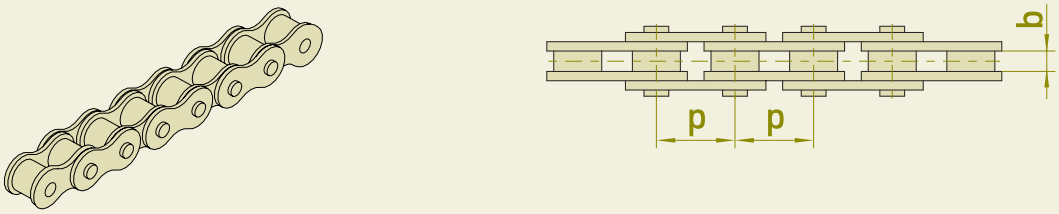
6.2 Sprockets



For ELEKTROMATEN	Designation	Teeth	Part no.	D_k	D_0	D_n	D_i	B	L
KE 9.60 FI	08 B-1 (1/2" x 5/16")	15 19	30000237 30000238	65,5 81,7	61,1 77,2	45 60	25 25	7,2 7,2	28 28
KE 20.60 FI / KE 40.40 FI	12 B-1 (3/4" x 7/16")	15 19	30000219 30000220	99,8 124,2	91,6 115,8	70 80	40 40	11,1 11,1	35 35
KE 40.40 FI	16 B-1 (1" x 17,02 mm)	15 19	30000171 30000321	133,0 165,2	122,2 154,3	92 100	40 40	16,2 16,2	40 45
KE 50.80 FI / KE 60.45 FI	16 B-1 (1" x 17,02 mm)	15 19	30000173 30000688	133,0 165,2	122,2 154,3	92 100	55 55	16,2 16,2	40 45
KE 80.40 FI / KE 120.30 FI	20 B-1 (1 1/4" x 3/4")	15 19	30000920 30003163	167,9 208,1	152,7 192,9	118 120	55 55	18,5 18,5	45 50

■ Additional sprockets in Section 9

6.3 Roller chains

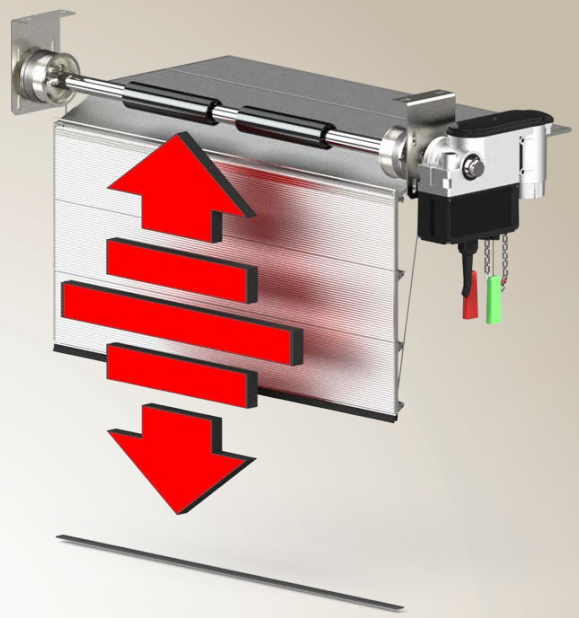


Designation	p x b [inch]	p x b [mm]	Ultimate load of chain DIN 8187 [N]	Number of teeth's	Max. M_{ab} [Nm]	Description	Part no.
08 B-1	1/2" x 5/16"	12,7 x 7,75	18.000	15 19	90 115	1,5 m 5,0 m Link	40005050 40017783 40000613
12 B-1	3/4" x 7/16"	19,05 x 11,68	29.000	15 19	220 280	2,0 m 5,0 m Link	40003030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

ELEKTROMATEN® SE
Sectional-door-drive

for counterbalanced sectional doors



SE 8.60 FI — 3.005

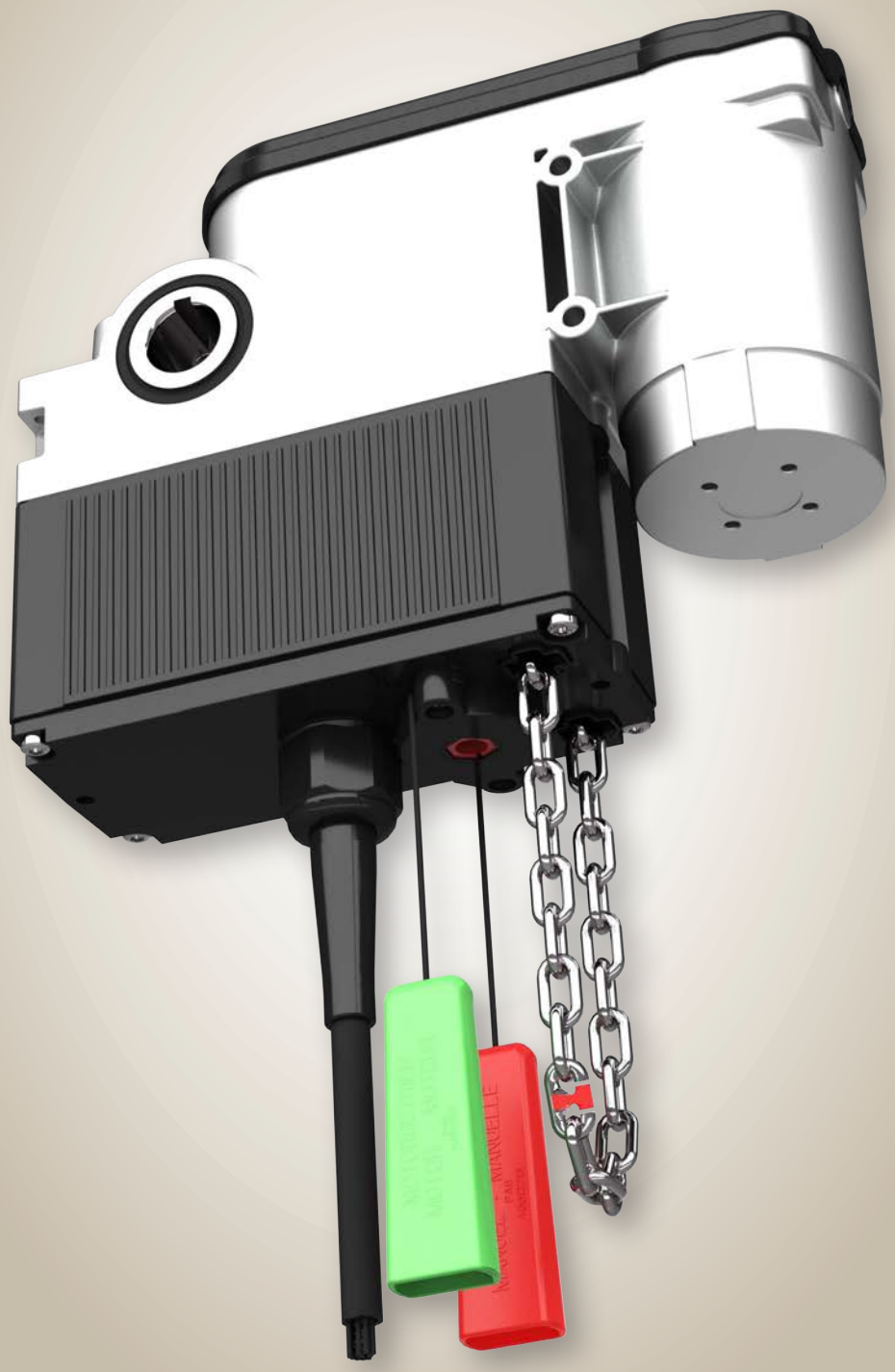
Output torque: 80 Nm
Output speed: 12 - 60 min^{-1}

SE 5.15 – SE 5.24 WS
SE 9.15 – SE 14.21
SE 6.65 DU
SE 6.80 FI / SE 14.80 FI — 3.011

Output torque: 50 - 140 Nm
Output speed: 10 - 80 rpm

For non-counterbalanced sectional doors,
we refer to chapter 1: ELEKTROMATEN SI Safedrive®.

SE



ELEKTROMATEN® SE

Sectional-door-drive

For driving:
Counterbalanced sectional doors

Series SG40
SE 8.60 FI

ELEKTROMATEN SE are special drives for counterbalanced sectional doors. The drive unit is normally directly fitted to the door shaft.
The SG40 series features an extremely compact one-box design (gearbox and motor in one housing). The weight of the drives is less than 10 kilograms.
ELEKTROMATEN SE comprises of:
Worm gear with hollow shaft, emergency manual operator, integrated limit switch and electrical motor respectively electrical motor with built-on frequency inverter.

Built-on frequency inverter
to be used with door controls 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
Type test according to:
DIN EN 12453
DIN EN 60335-1
DIN EN 60335-2-103
TÜV NORD CERT GmbH

Emergency manual operation

- Rapid hand chain operator SK with mounted shifter cable with standard (1) (2)

Limit switches

Digital limit DES 5
- Absolute encoder, after a power failure, re-adjustment is not required (3)

Mounting

- Fitting threads 4xM8
- Two different torque brackets available (4)

Door controls

- Single-plug connection system (XES) for fast commissioning without wiring effort on the drive side (5)
- Control voltage: 24 V
- Frequency: 50 Hz / 60 Hz
- Mains supply:
  1N~230 V, 3~230 V [2], 3N~400 V

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

1) See 2.7
2) Use additional adapter part no. 30005855

1. Technical data

ELEKTROMATEN Series		SE 8.60 FI SG40
Output torque	Nm	80
Output speed OPEN CLOSE > 2,5 m CLOSE ⩽ 2,5 m [1]	rpm	12-60 12-30 12-24
Output shaft / hollow shaft (Ø)	mm	25,4
Max. holding torque [2]	Nm	390
Max. door weight	N	3200
Motor power	kW	0,5
Supply voltage	V	1N~230
Operating frequency	Hz	50 / 60
Operating current	A	2,1
Max. cyles per hour [3]		19 (18,0)
Limit switch range [4]		14
Weight	kg	10
Spare parts: Catalogue page		—
Part no. installation drawing (dxf, dwg)		50002000
Part no. ELEKTROMATEN		10004398

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 2.7 · **2)** See 2.5 · **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 2.2 · **4)** Maximum revolutions of hollow shaft

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 Cyles 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

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.

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] = door weight [N] x 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 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.

2.7 Cable / cable drums

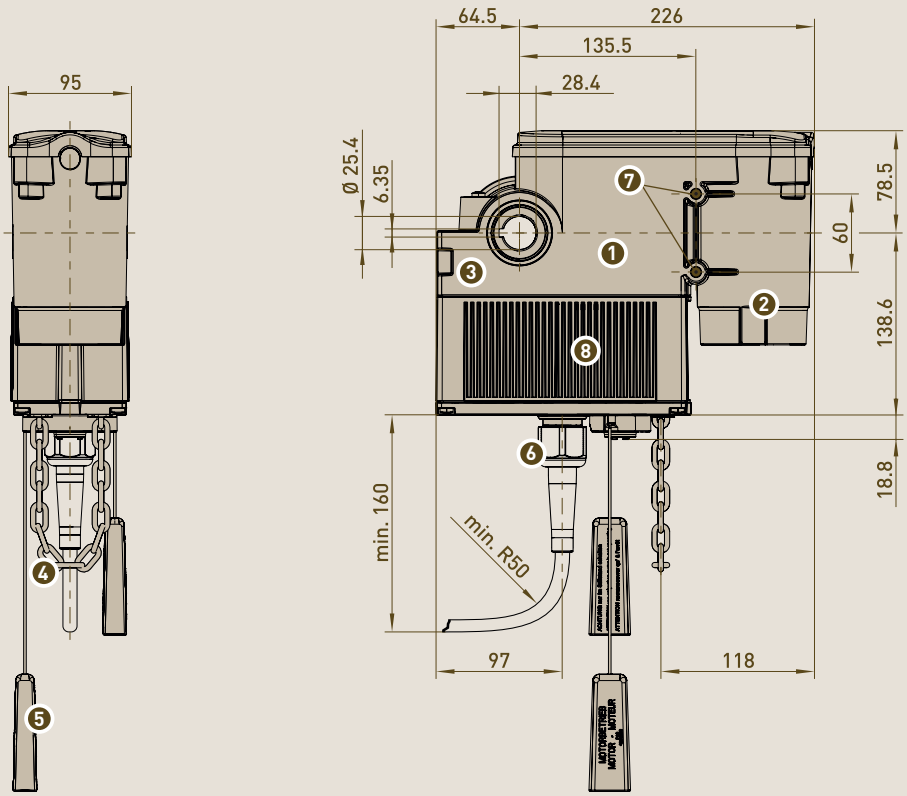
When calculating the cable size the max. permitted door weight is required a calculated ultimate stress of 6x for the cables; requirement of EN 12604.

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

SE 8.60 FI

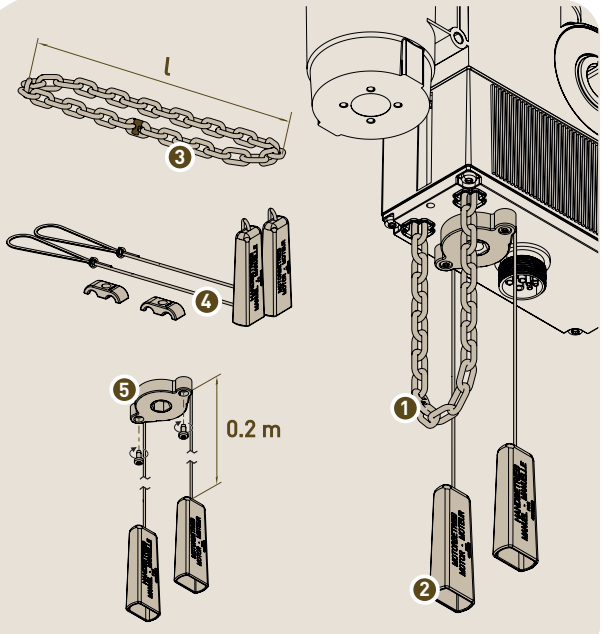
SG40



1. Worm gear
2. Motor
3. Integrated limit switch
4. Emergency manual operation Rapid hand chain operator SK (4 m long circulating chain)
5. Shifter cable for changing over to emergency mode
6. Single-plug connection system (XES)
7. Mounting points
8. Integrated frequency inverter

■ Permitted installation: Horizontal (as shown)

4. Emergency manual operation



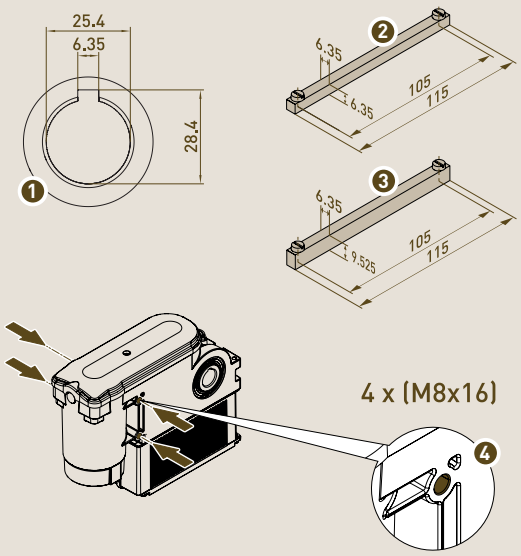
As standard, the drive units have a "rapid hand chain operator SK" with a 4 m long circulating chain (1). Activation takes place using a 0.2 m long shifter cable (2). The following options are possible:

- Extension of the emergency hand chain (3)
- Extension of the shifter cable (4)

Designation		Part. no.
Emergency hand chain set, 2 m	3	30004555.00002
Emergency hand chain set, 4 m	3	30004555.00004
Emergency hand chain set, 6 m	3	30004555.00006
Emergency hand chain set, 8 m	3	30004555.00008
Emergency hand chain set, 10 m	3	30004555.00010
Shifter cable extension 2 x 4 m	4	30003965
Shifter cable extension 2 x 7 m	4	30004789
Shifter cable extension 2 x 10 m	4	30004242
Shifter cable as a spare part	5	30005741.00020

■ Read note in 2.4

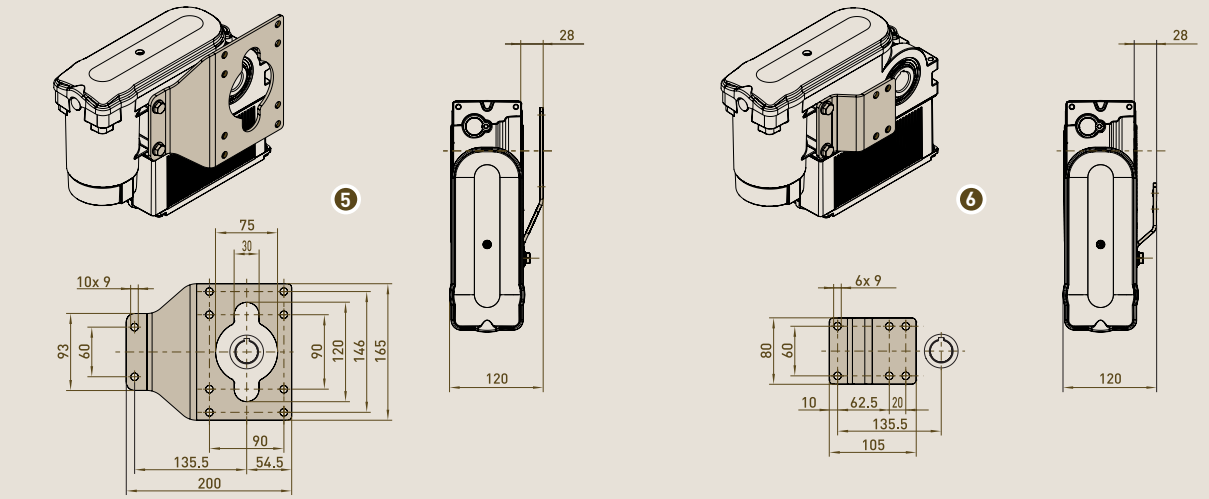
5. Attachments / Accessories



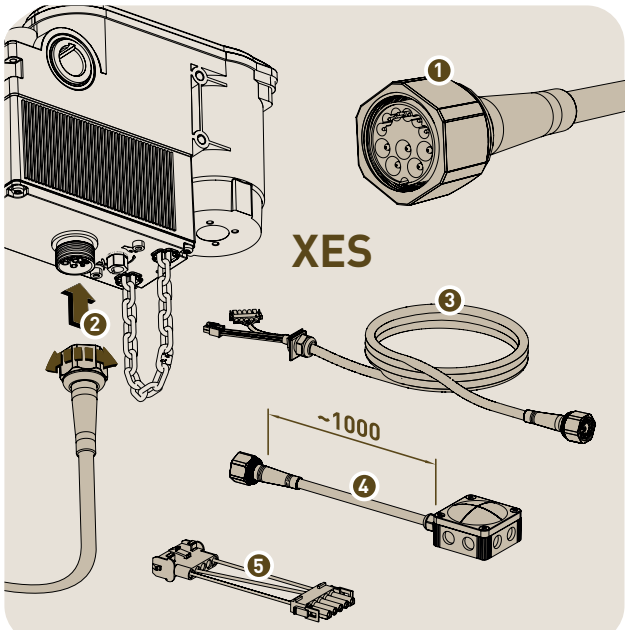
The drive unit has a 25.4 mm hollow shaft (❶). The positive-locking connection to the door shaft can be done via two separately available feather key versions (❷+❸).

Four M8 threaded holes (❹) are available on the housing for mounting the drive unit. Two varying torque brackets (❺+❻) can be used for adaptation to the door design.

Designation		Part no.
Key 6.35 x 6.35 x 115	❷	30005835
Key 6.35 x 9.525 x 115	❸	30005836
Torque bracket SG40 Type A	❺	30005807
Torque bracket SG40 Type B	❻	30005808



6. Connection cables and electrical accessories



Advantages of the single-plug connection system (XES):

- Only a single plug on the drive unit side (❶)
- Plug-and-Play installation with no disassembly (❷)
- Various lengths available (❸)
- Possibility of adaptation to DES connection cables (❹)

Designation		Part no.
XES connection cable; 3,0 m	❸	20003673.00300
XES connection cable; 5,0 m	❸	20003673.00500
XES connection cable; 7,0 m	❸	20003673.00700
XES connection cable; 9,0 m	❸	20003673.00900
XES connection cable; 11,0 m	❸	20003673.01100
XES connection cable; 13,0 m	❸	20003673.01300
XES connection cable; 15,0 m	❸	20003673.01500
XES connection cable; 25,0 m	❸	20003673.02500
XES connection cable; 35,0 m	❸	20003673.03500
Connection set XES	❹	30006029
Adapter for single phase FI drives for 3x230 V power grids	❺	30005855

■ Details of all GfA door controls and further electrical accessories can be found in Section 8

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

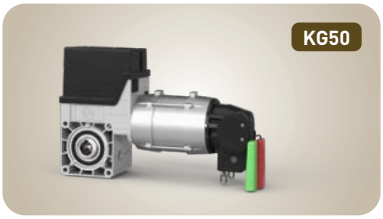
- Individual adjustable output speed [1]
- The speed appears directly into the display – extra work to evaluate frequency and speed is not required
- Soft start and soft stop
- Automatic optimising of acceleration and deceleration speed
- Adjustable distance for acceleration and deceleration speed
-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

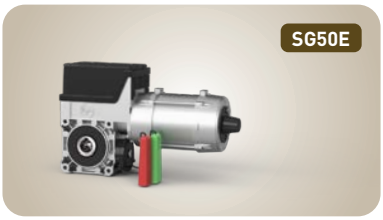
Approvals and certificates

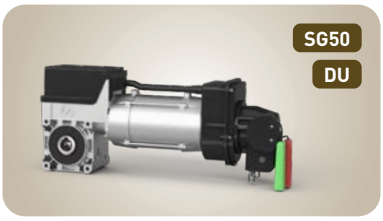
ELEKTROMATEN and FI-motors

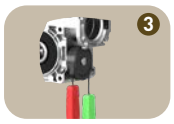
Type test according to:
DIN EN 12453
DIN EN 60335-1
DIN EN 60335-2-103
TÜV NORD CERT GmbH

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









Emergency manual operation

- Hand crank NHK (1)
- Rapid hand chain operator SK (2)
- Gear release ER (3)

Limit switches

Mechanical limit NES [2] (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

Mounting

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

Special versions

- Increase of cyles 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, 3~230 V [3], 3N~400 V, 3~400 V

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

1) See 2.7
2) Not for SE 6.65 DU / SE 6.80 FI / SE 14.80 FI
3) 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) [1]	mm	25,4	25,4	25,4	25,4	25,4	25,4	25,4	25,4
Max. holding torque [2]	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 [3]	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 [4]	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. cyles per hour [5]		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 [6]		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 [7]	min^{-1}	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) [1]	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 [2]	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 [3]	min^{-1}	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 [4]	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. cyles per hour [5]		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 [6]		20	20	20	20 (14)[8]	20 (14)[8]	20 (14)[8]	20 (14)[8]	20 (14)[8]	20 (14)[8]
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 10003378	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 Ø 31,75 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 Cyles 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] = door weight [N] x 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

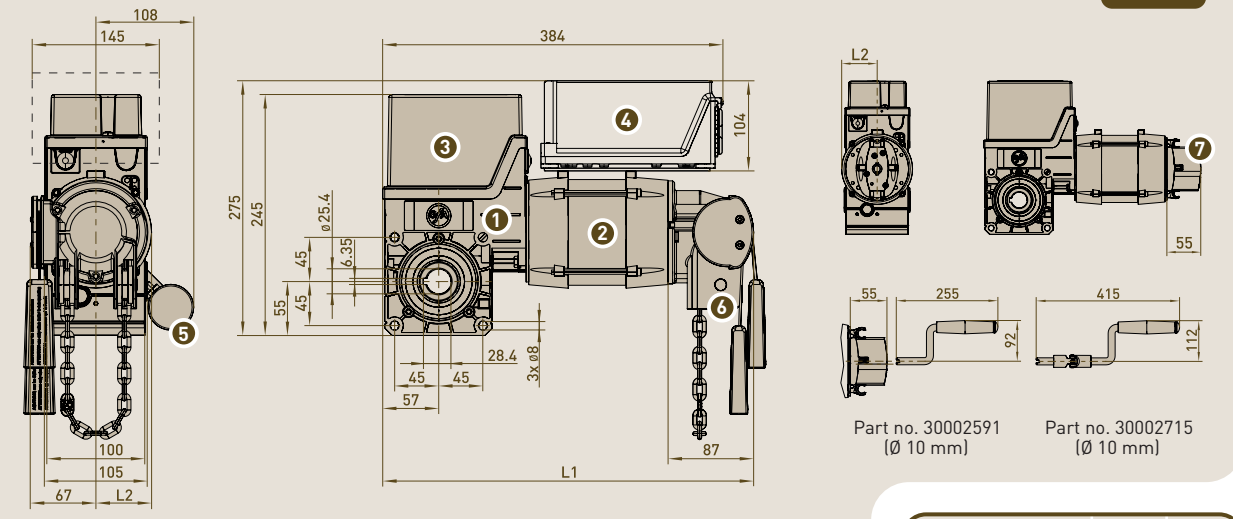
When calculating the cable size the max. permitted door weight is required a calculated ultimate stress of 6x for the cables; requirement of EN 12604.

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



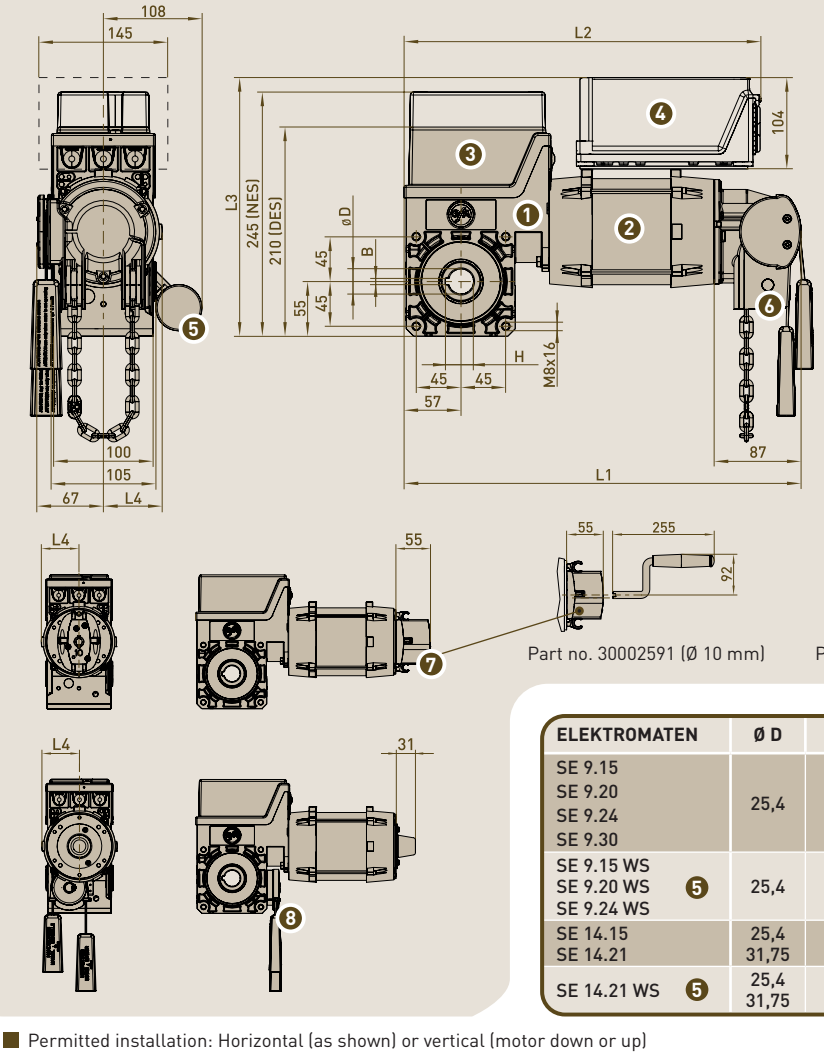
1. Worm gear
2. Motor
3. Limit switch
4. Optional: WS 900 control panel, removable, with 0,8 m cable
5. Capacitor
6. Emergency manual operation Rapid hand chain operator SK
7. Emergency manual operation Manual hand crank operation NHK

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

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

3.2 SE 9.15 – SE 14.21

SG50 **SG50E**



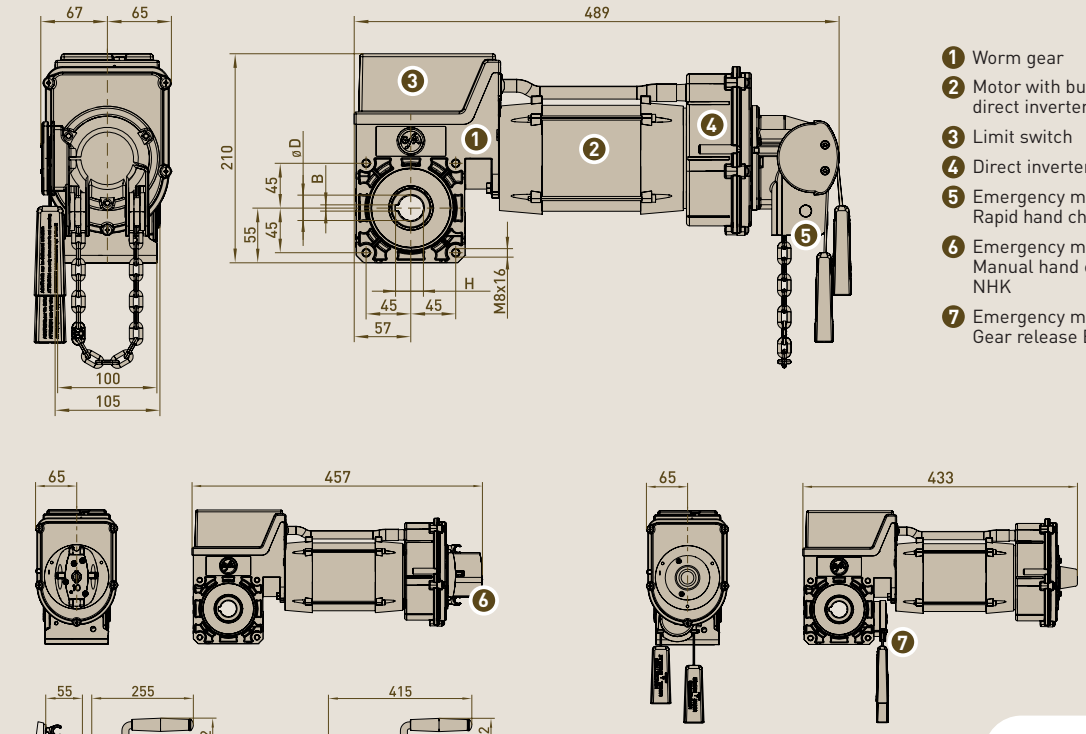
1. Worm gear
2. Motor
3. Limit switch
4. Optional: WS 900 control panel, removable, with 0,8 m cable
5. Capacitor
6. Emergency manual operation Rapid hand chain operator SK
7. Emergency manual operation Manual hand crank operation NHK
8. Emergency manual operation Gear release ER

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

■ 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)

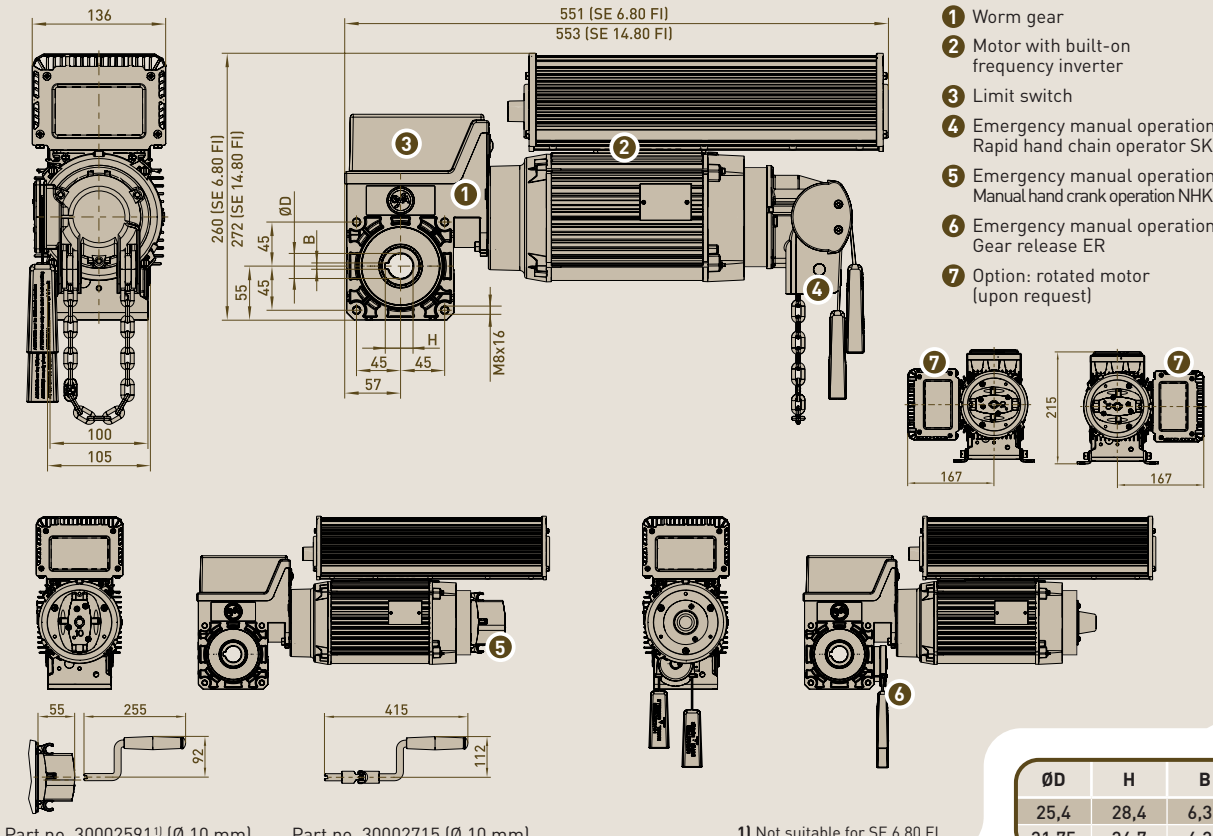
Part no. 30002715 (Ø 10 mm)

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 [1] (Ø 10 mm)

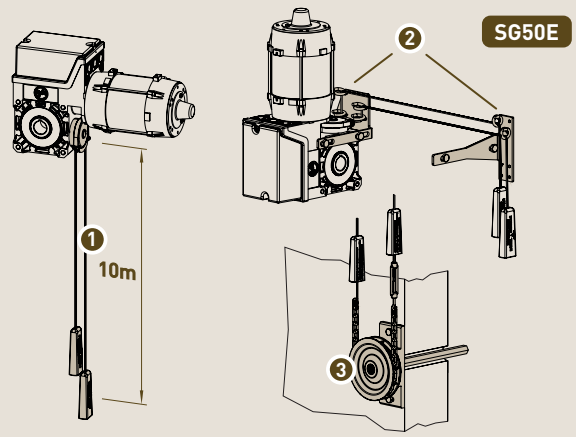
Part no. 30002715 (Ø 10 mm)

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 [1] – 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 ❸)

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

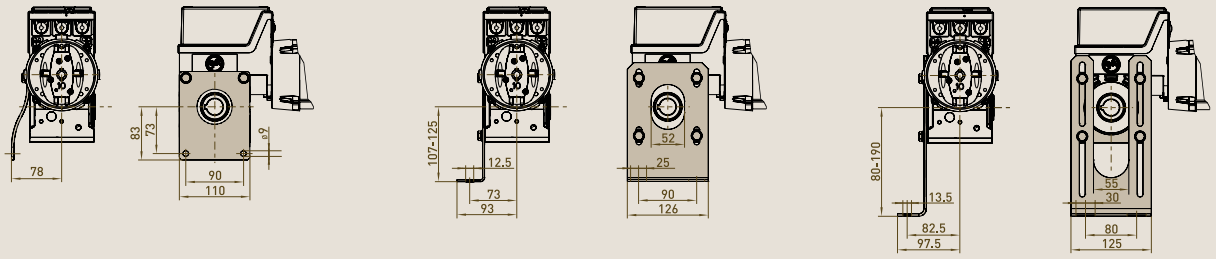
1) Required is a drive unit with release gearbox SG50E

5. Attachments / Accessories

5.1 Torque bracket
Part no. 30002636

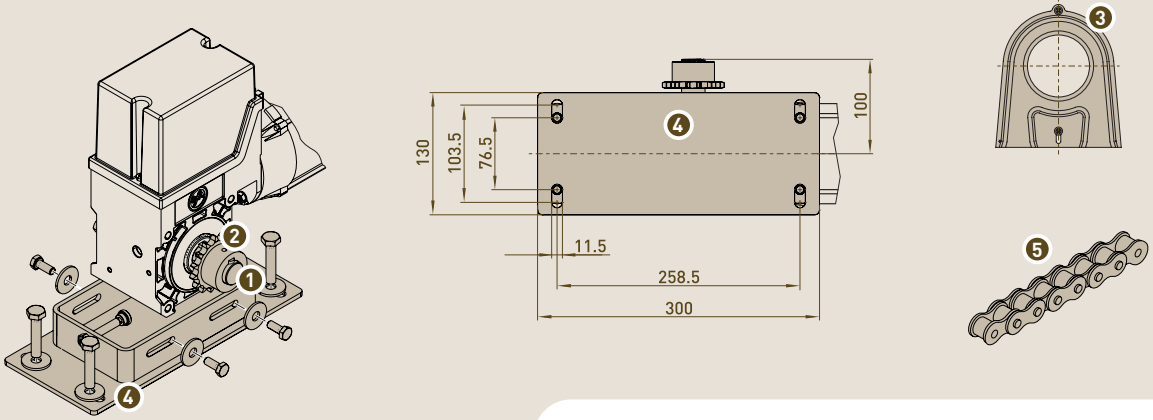
5.2 Flange bracket H 107-125
Part no. 30002685

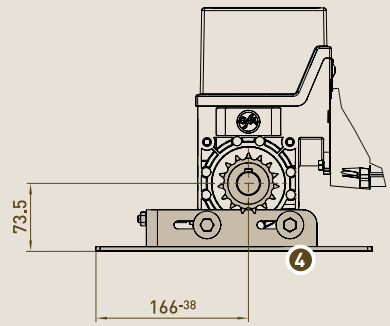
5.3 Flange bracket H 80-190
Part no. 30005839



- All brackets can be mounted vertically or horizontally

5.4 Chain drive 08 B-1 (1/2“ x 5/16“)

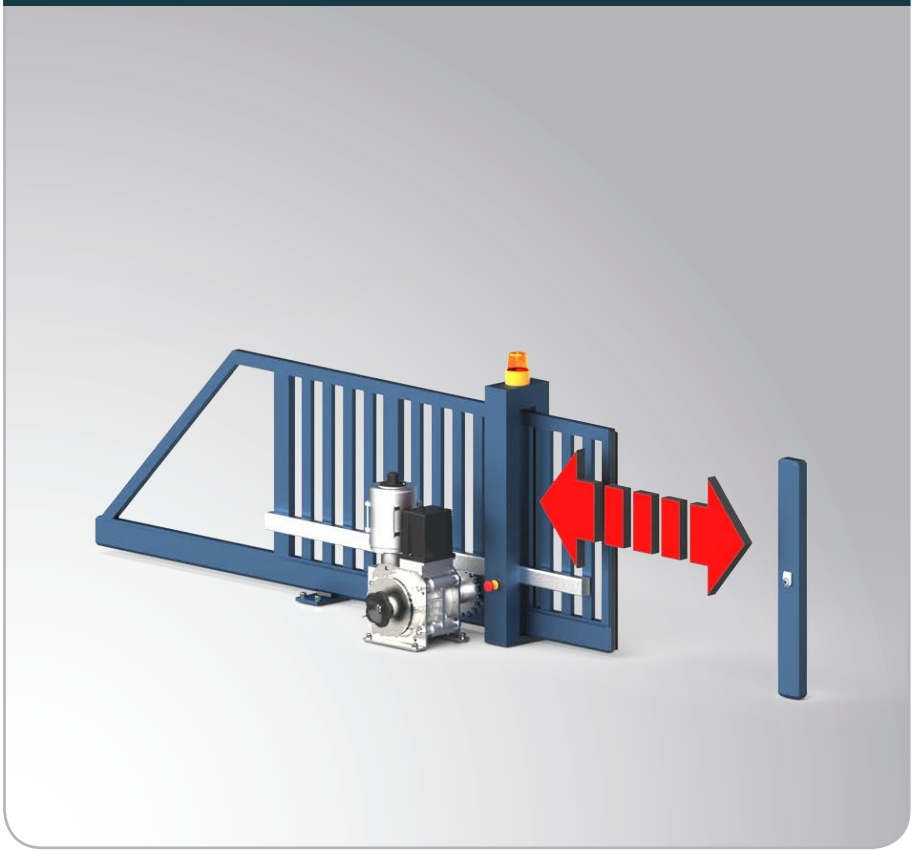




Designation				Part no.
Stub shaft		Ø 25,4 Ø 31,75	❶	30002628 30002699
Sprocket	19 Teeth 25 Teeth	Ø 25,4 Ø 31,75 Ø 25,4 Ø 31,75	❷	30001086 30002243 30000761 30001990
Chain guard	19 Teeth 25 Teeth		❸	30000982 30000983
Bracket			❹	30005056
Roller chain (08 B-1) Link		1,5 m 2,0 m 2,5 m	❺	40005050 40009223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

ELEKTROMATEN® ST
Sliding-door-drive

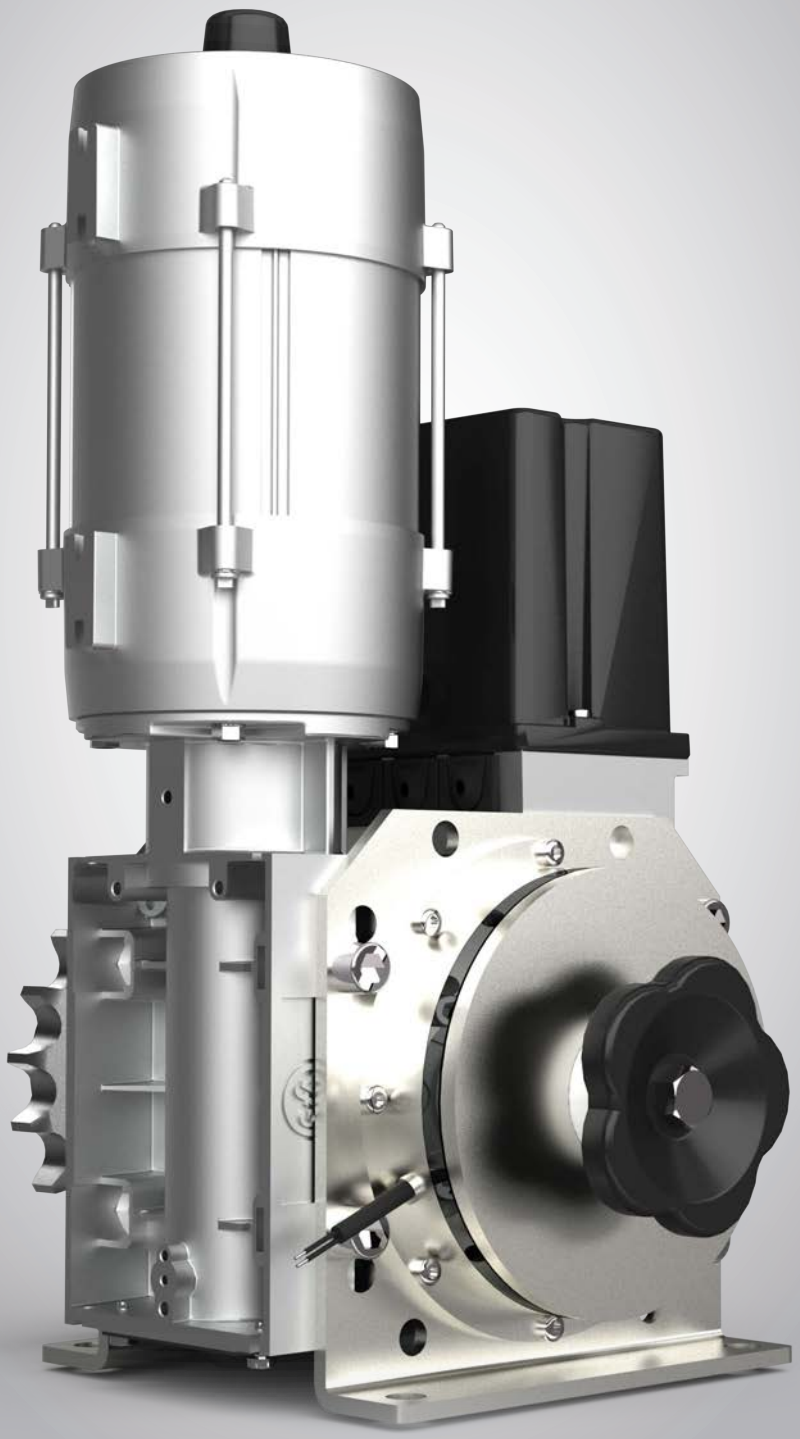
for sliding doors



ST 9.15 – ST 80.24 4.011
Output torque: 90 - 800 Nm
Output speed: 15 - 24 rpm

Control panels for ELEKTROMATEN ST 4.021
WS 905/TS 400

ST



ELEKTROMATEN® ST

Sliding-door-drive

For driving Sliding-doors

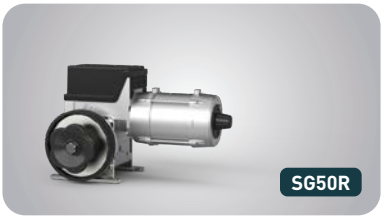
Series SG50R
ST 9.15 – ST 9.24
Series SG85R
ST 16.15 – ST 30.24
Series SG115R
ST 60.15 – ST 80.24

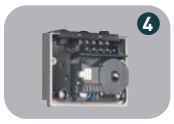
ELEKTROMATEN ST are special drives for sliding-doors designed for industrial use.
ELEKTROMATEN ST comprises of:
Worm gear with integrated friction clutch, interchangeable output-shaft, magnetic brake (optional), emergency manual operation (optional), integrated limit switch (optional), mounting accessories and electrical motor.

- Output side:
  Available with left- or rightside outputshaft
- Friction clutch:
  The integrated friction clutch guarantees impact-damped, low-wear operation.
- Magnetic brake (optional):
  Ensures precise positioning of the door limit position, slightly heating ensures trouble-free operation at low outside temperatures.
- Integrated limit switch (optional): No need of separate limit switches

Approvals and certificates

ELEKTROMATEN
Type test according to:
DIN EN 12453
DIN EN 60335-1
DIN EN 60335-2-103





Emergency manual operation (optional)

- E.g.: for top-hung sliding doors
  Hand crank NHK ①
  Hand chain operator KNH ②

Limit switch integrated (optional)

Mechanical limit NES ③
- 2 operating, 2 emergency- and 2 auxiliary limit switches

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

Separate limit switch (optional)

- Roller-arm limit switch
- Inductive limit switch

Mounting

- Foot angle (standard fitting)
- Mounting base

Special versions

- Increase of cycles per hour
- Other voltages and frequencies
- ST-TRK: Sliding-door ELEKTROMATEN with magnetic brake
- ST-SI: Sliding-door ELEKTROMATEN with integrated safety brake, e.g. for sliding doors operating on an incline

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
- Supply voltage:
  1N~230 V, 3~230 V, 3N~400 V, 3~400 V

Details of all GfA door controls for sliding doors can be found from page 4.021.

1. Technical data

ELEKTROMATEN Series		ST 9.15 SG50R	ST 9.24 SG50R	ST 16.15 SG85R	ST 16.24 SG85R	ST 30.15 SG85R
Output torque [1]	Nm	90	90	160	160	300
Output speed	rpm	15	24	15	24	15
Max. door weight [1]	N	9.000	9.000	16.000	16.000	30.000
Door speed [2]	cm/ sec	11	17	12	19	12
Output shaft / hollow shaft (Ø)	mm	25	25	40	40	40
Permitted OPEN / CLOSE output speed in frequency-inverter operating mode [3]	rpm	26 / 26	42 / 42	26 / 26	42 / 42	26 / 26
Motor power	kW	0,30	0,37	0,55	0,40	0,75
Supply voltage	V	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400
Operating frequency	Hz	50	50	50	50	50
Operating current [4]	A	2,6 / 1,5	2,1 / 1,2	3,1 / 1,8	3,1 / 1,8	5,1 / 3,0
Max. cycles per hour [5]		8 (2,1)	12 (10,4)	11 (6,2)	11 (5,6)	10 (4,2)
Limit switch range [6]		20 (40)	20 (40)	20 (40)	20 (40)	20 (40)
Weight	kg	16	16	32	31	34
Spare parts: Catalogue page		9.051	9.051	9.055	9.055	9.055
Part no. installation drawing (dxf, dwg)		50000976	50000976	50000929	50000929	50000929
Part no. ELEKTROMATEN		10003371	10002917	10003372	10002992	10003373

ELEKTROMATEN Series		ST 30.24 SG85R	ST 60.15 SG115R	ST 60.24 SG115R	ST 80.15 SG115R	ST 80.24 SG115R
Output torque [1]	Nm	300	600	600	800	800
Output speed	rpm	24	15	24	15	24
Max. door weight [1]	N	30.000	60.000	60.000	80.000	80.000
Door speed [2]	cm/ sec	19	12	19	12	19
Output shaft / hollow shaft (Ø)	mm	40	50	50	50	50
Permitted OPEN / CLOSE output speed in frequency-inverter operating mode [3]	rpm	42 / 42	26 / 26	42 / 42	26 / 26	42 / 42
Motor power	kW	0,85	1,10	1,50	1,10	2,00
Supply voltage	V	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400
Operating frequency	Hz	50	50	50	50	50
Operating current [4]	A	4,4 / 2,6	7,2 / 4,2	6,7 / 3,9	7,0 / 4,1	8,1 / 4,7
Max. cycles per hour [5]		11 (5,6)	9 (3,0)	11 (6,9)	6 (1,0)	12 (8,3)
Limit switch range [6]		20 (40)	20 (60)	20 (60)	20 (60)	20 (60)
Weight	kg	32	53	49	56	56
Spare parts: Catalogue page		9.055	9.056	9.056	9.056	9.056
Part no. installation drawing (dxf, dwg)		50000929	50001311	50001311	50001311	50001311
Part no. ELEKTROMATEN		10002993	10003340	10003259	10003374	10003195

Generally applies: Degree of protection IP54, permissible temperature range -10 °C...+40 °C (+60 °C), from -20 °C in combination with a permanently used magnetic brake, operating sound pressure level SPL <70 dB(A)
1) See 2.6 · **2)** Door speed when operated with standard chain wheel, see 5.3 · **3)** We recommend the selection of a special ELEKTROMATEN (enquire) for use with frequency inverter, OPEN drive speed at 87 Hz, see 2.6 and 2.7 · **4)** The operating current in door drives can reach up to 4x the rated current for limited periods, see 2.7 and 2.8 · **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 possible revolutions of output-shaft with integrated limit switch, see 2.9

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 Magnetic brake

The optional magnetic brake locks the output-shaft when the motor is switched off. The magnetic brake ensures precise positioning of the door in the limit position and avoids overrunning the limit position of the door. Slight heating ensures trouble-free operation at low outside temperatures.

2.4 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.

2.5 Manual operation

In the event of power failure, the door can be opened by hand after releasing the friction clutch. Emergency manual operation by crank handle or chain is also available as an option (e.g. for top-hung sliding doors).

2.6 Output torque / Door weight / Friction clutch

The integrated slipping clutch guarantees impact-damped, low-wear operation. The admissible output torque is pre-adjusted. If the clutch is subject to higher forces than the admissible (e.g. the possibility of attempted forced entry) additional improvements of the door design may be required to prevent undesired opening of the door. The weights indicated apply to horizontal, rail-mounted sliding doors.

2.7 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.

2.8 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..

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 of the operating motor current.

2.9 Integrated limit switch

The door construction should be designed to prevent the disengaging of drive elements (sprocket, chain, rack etc.).

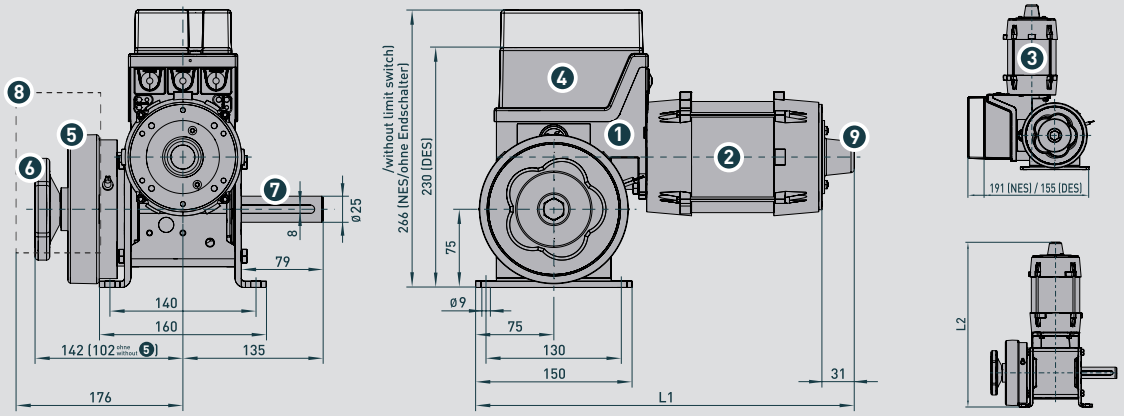
The stopping accuracy of the ELEKTROMATEN ST with magnetic brake and a limit switch range of E20 is approximately +/- 15 mm (for E40, approx. +/- 25 mm). The door construction must be designed to compensate onsite these differences (e.g. height- of the rubber profile of the safety edge).

For higher requirements regarding stopping accuracy, we recommend the use of separate limit switches (roller-arm limit switches, inductive limit switches, etc.).

3. Dimensions

3.1 ST 9.15 – ST 9.24

SG50R



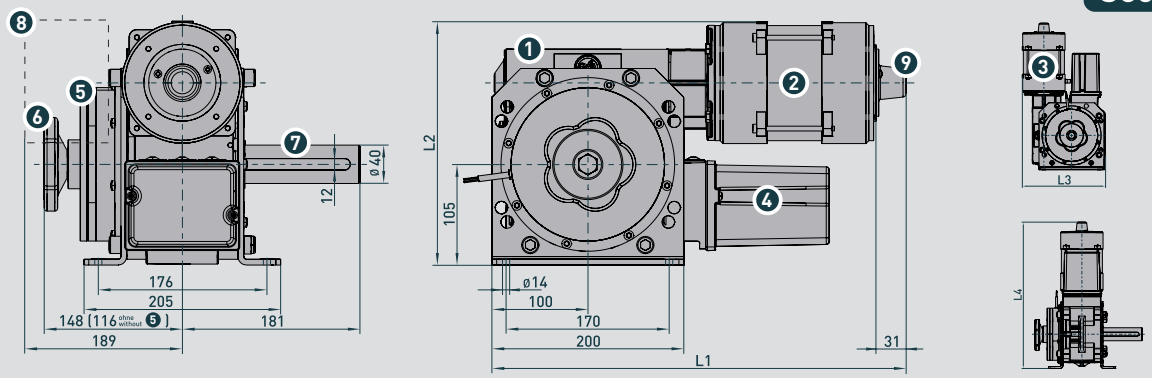
1. Worm gear with friction clutch
2. Motor horizontal / 3. Motor vertical
4. Terminal box / optional: Integrated limit switch
5. Magnetic brake
6. Hand wheel for friction clutch adjustment
7. Output-shaft right (optional: Left)
8. Optional: WS 905 control panel
9. Cover

ELEKTROMATEN	L1	L2
ST 9.15	344	344
ST 9.24	364	364

■ Permitted installation: Horizontal (as shown) or vertical (motor to the top)

3.2 ST 16.15 – ST 30.24

SG85R



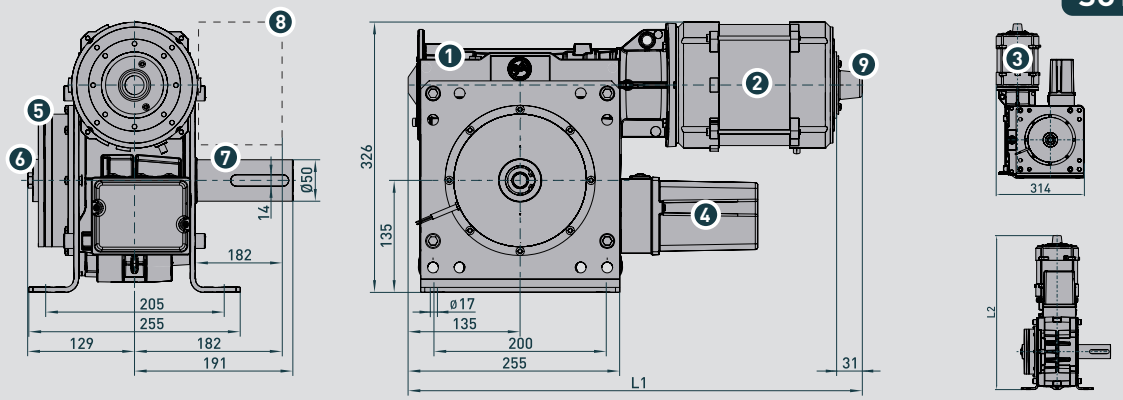
1. Worm gear with friction clutch
2. Motor horizontal / 3. Motor vertical
4. Terminal box / optional: Integrated limit switch
5. Magnetic brake
6. Hand wheel for friction clutch adjustment
7. Output-shaft right (optional: Left)
8. Optional: WS 905 control panel
9. Cover

ELEKTROMATEN	L1	L2	L3	L4
ST 16.15	461	263	262	466
ST 16.24	431	254	253	436
ST 30.15	489	263	262	494
ST 30.24	461	263	262	466

■ Permitted installation: Horizontal (as shown) or vertical (motor to the top)

3.3 ST 60.15 – ST 80.24

SG115R

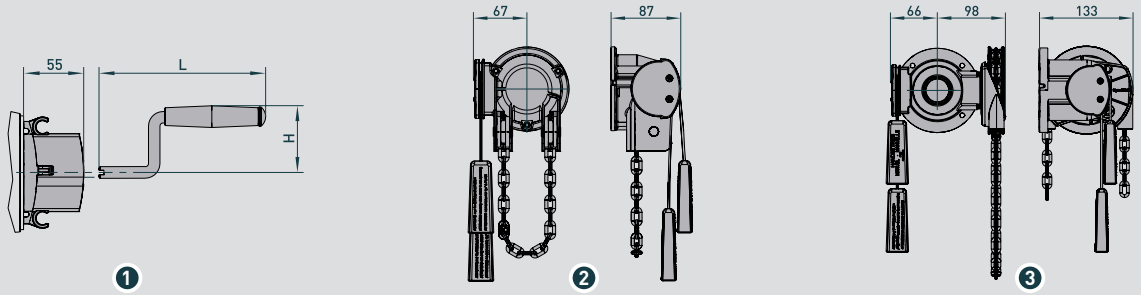


1. Worm gear with friction clutch
2. Motor horizontal / 3. Motor vertical
4. Terminal box / optional: Integrated limit switch
5. Magnetic brake
6. Friction clutch adjustment (SW 17)
7. Output-shaft right (optional: Left)
8. Optional: WS 905 control panel
9. Cover

ELEKTROMATEN	L1	L2
ST 60.15	567	567
ST 60.24	542	542
ST 80.15	587	587
ST 80.24	567	567

■ Permitted installation: Horizontal (as shown) or vertical (motor to the top)

4. Emergency manual operation • optional



1. Hand crank operation NHK
2. Rapid hand chain operator SK (→ SG50)
3. Hand chain operator KNH (→ SG85 / SG115)

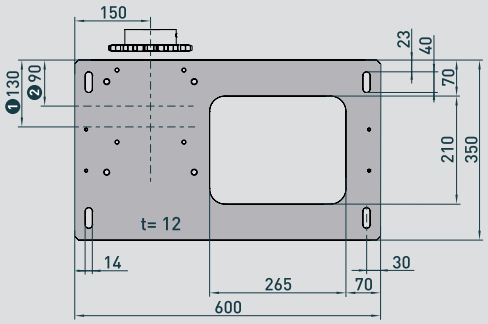
	For Series	Part no.	Ø	L	H
1	SG50	30002591	10	255	92
1	SG85	30002749	12	235	122
1	SG115	30003112	12	265	192

■ Read note in 2.5

5. Attachments / Accessories

5.1 Mounting base

→ ST 9.15 – ST 30.24

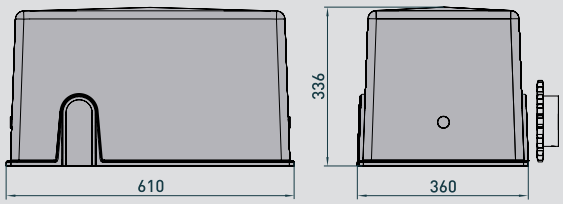


❶ ST 16.15 – 30.24 ❷ ST 9.15 / 9.24

- Part no. 30004214
- Right- or left-hand use

5.2 Housing

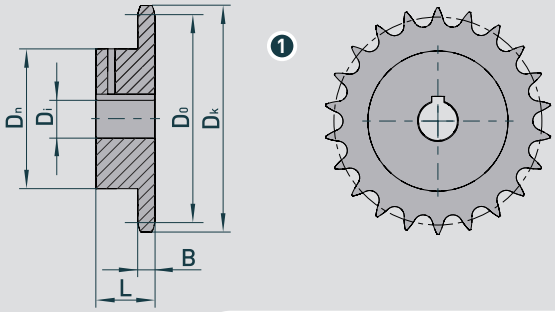
→ ST 9.15 – ST 30.24

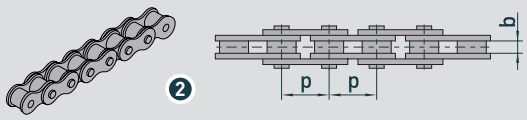


Housing
- Part no. 30004215
- Right- or left-hand use

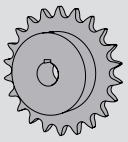
Locking cpl. for housing
- Part no. 30004266
- 2 units

5.3 Sprockets / roller chains



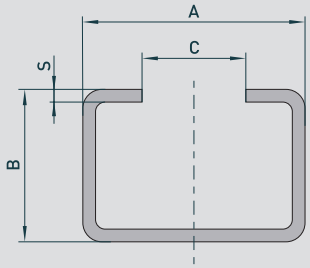


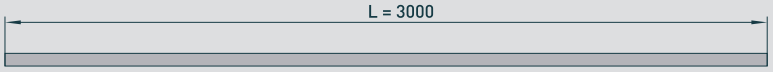
Chain (p x b) ❷	Description	Part no.
12 B-1 (3/4" x 7/16") (19,05 mm x 11,68 mm)	2,0 m	40003030
	5,0 m	40013909
	Link	40000615
16 B-1 (1" x 17,02 mm) (25,4 mm x 17,02 mm)	2,5 m	40005049
	5,0 m	40013910
	Link	40000617



Sprockets for ELEKTROMATEN ❶	Designation	Teeth's	Part no.	D_k	D_0	D_n	D_i	B	L
ST 9.15 / ST 9.24	12 B-1 (3/4" x 7/16")	22	30000213	141,8	133,9	90	25	11,1	40
ST 16.15 – ST 30.24	16 B-1 (1" x 17,02 mm)	19	30000321	165,2	154,3	100	40	16,2	45
ST 60.15 – ST 80.24	16 B-1 (1" x 17,02 mm)	19	30000322	165,2	154,3	100	50	16,2	45

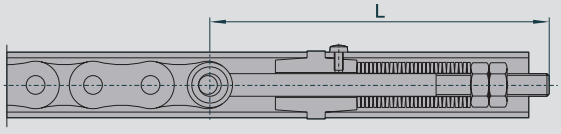
5.4 C-profile





For ELEKTROMATEN	For Chain	Part no.	A	B	C	S
ST 9.15 / ST 9.24	12 B-1 (3/4" x 7/16")	40014217	29	24	13	1,5
ST 16.15 – ST 80.24	16 B-1 (1" x 17,02 mm)	40014218	48	29	20	2,5

5.5 Chain-tensioner



For ELEKTROMATEN	For Chain	Part no.	L
ST 9.15 / ST 9.24	12 B-1 (3/4" x 7/16")	30000143	100
ST 16.15 – ST 80.24	16 B-1 (1" x 17,02 mm)	30004265	150

Door controls for ELEKTROMATEN® ST

WS 905
TS 400

WS 905 – Reversing contactor control

Technical data
- Suitable for ELEKTROMATEN ST with NES mechanical limit switch
- Supply voltage:
  1N~230 V, PE
  3~230 V, PE
  3N~400 V, PE
- Control voltage: 24 V AC
- 2 reversing contactors
- Permissible temperature range: -10 °C...+50 °C

Design
- Mechanically locked reversing contactors
- Positioning button CLOSE/OPEN
- Plug-in connection cable to ELEKTROMATEN for configuration with integrated mechanical limit switch NES
- Available with optional ready-wired CEE plug, regarded as mains circuit breaker under the terms of EN 12453

Housing
- Dimensions W x H x D [mm]: 145 x 101 x 209
- Protection class: IP54

Functions
- Operating mode:
  Hold to run CLOSE/OPEN via an external control device

TS 400 – Automatic door control

Technical data
- Suitable for ELEKTROMATEN ST with DES digital limit switch or NES mechanical limit switch
- Supply voltage:
  1N~230 V, PE / 3~230 V, PE / 3N~400 V, PE
- Control voltage: 24 V DC
- Mains supply ratings for external devices:
  24 V DC (0.5 A) / 230 V AC (1 A)
- 2 integrated reversing contactors (up to 3 kW motor power)
- Display for programming (2 lines with 20 signs)
- Permissible temperature range: -10 °C...+50 °C

Housing
- Synthetic housing with transparent cover, Dimensions W x H x D [mm]: 230 x 300 x 85
- Protection class: IP55

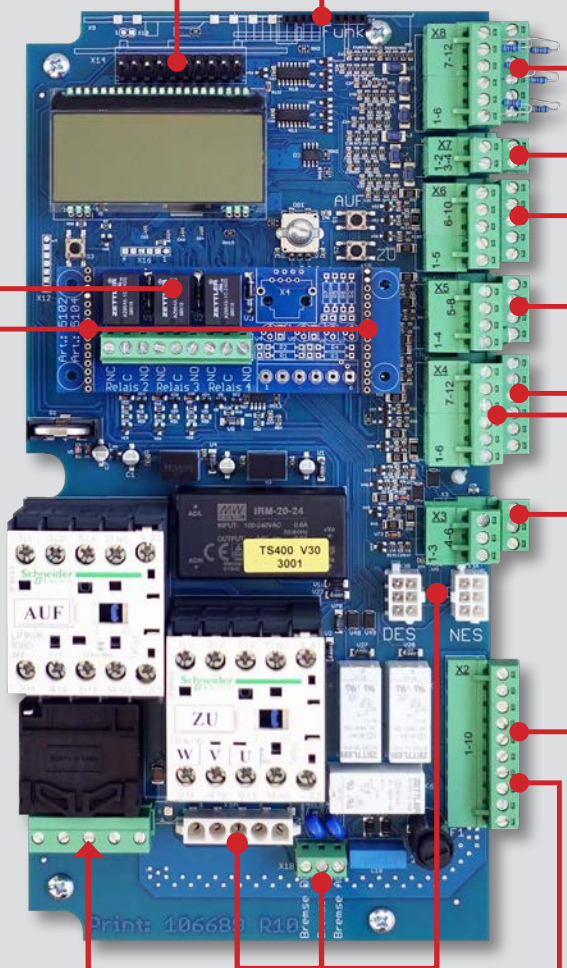
Design
- Plugged terminals with screw connections
- Pluggable cable sets to the ELEKTROMATEN with DES or NES
- Integrated push buttons for the adjustment of the door positions in use with DES
- Connectors for 3 control devices (2 for the door area, 1 for gatekeeper operation)

Functions
- Automatic detection of DES or NES limit switches
- Intermediate open position for passengers (for use with NES is an additional limit switch required)
- Settings via selector switch with digital display
- Adjustment of the door final positions and intermediate positions from the operator level (DES)
- Self-hold in both directions, in case of failure - automatic switching to Hold to run mode
- Safety edge system 8k2, evaluation for 6 safety edges
- Connection plugs for control devices with next function (pull switch or external radio receiver)
- Integrated timer with week program, OFF via external switch
- Automatical run time monitoring (real runtime + 8 %)
- Automatic closing feature adjustable (2-999 s), adjustable in steps of 2 seconds
- Possibility of adjustable clearance time (1-99 s)
- Separated adjustment of the automatic closing function for complete- or partially opening
- Adjustable function of the traffic lights in the final door positions or the clearance time
- Adjustable reaction of the photo cell in the final limit position OPEN
- Fault memory
- Cycle counter (non-resettable) and maintenance cycle counter
- Modul with 3 Relays for the final door positions and faults, etc. (potential free)

Connection options

TS 400

Part no.
installation drawing:
50001906



Slot for inductive signal transmission (ASO)

Slot for 2-channel radio

6 safety edges 8k2

24 V / 0.5 A
External

Potential-free signal contacts

Slot for loop detector

1N~230 V, PE
3~230 V, PE
3N~400 V, PE

230 V / 1.0 A
External

Door controls and accessories

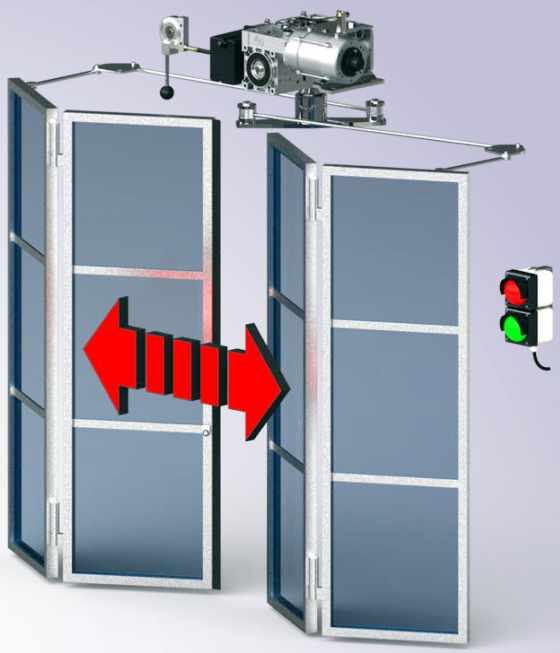
Part no.
installation drawing:
50001883

Designation		Description	Part no.
WS 905 2- Reversing contactors 24 V	1	For drives without limit switch; with 0.8 m cable and connection plugs for ELEKTROMATEN, without CEE-plug	20090500.00001[1]
WS 905 2- Reversing contactors 24 V	1	For drives with limit switch; with 0.8 m cable and connection plugs for ELEKTROMATEN, without CEE-plug	20090500.10001[1]
TS 400	2	ST-door control for DES/NES	20040000.00001
DES connection cable with separate brake control	3	Connection to ELEKTROMATEN drives with digital limit switch, pluggable on both sides; length of cable: 3 m	20003024.00300
NES connection cable fwith separate brake control	4	Connection to ELEKTROMATEN drives with mechanical limit switch, pluggable on both sides; length of cable: 3 m	20003387.00300
Inductive signal transmission (ASO)	5	Modul for TS 400 for monitoring of inductive signals from safety edges (brand ASO)	40014240
Radio receiver 2-channel	6	Modul for TS 400 (for Opening and Intermediate opening)	40014833
Loop detector 2-channel	7	Modul for TS 400 (for OPEN- and CLOSE signal)	40016544
Separate limit switch	8	Inductive limit switch (2 pc.) with 1,5 m cable; M30x1,5	30004270

1) Discontinued part

ELEKTROMATEN® FT
Folding-door-drive

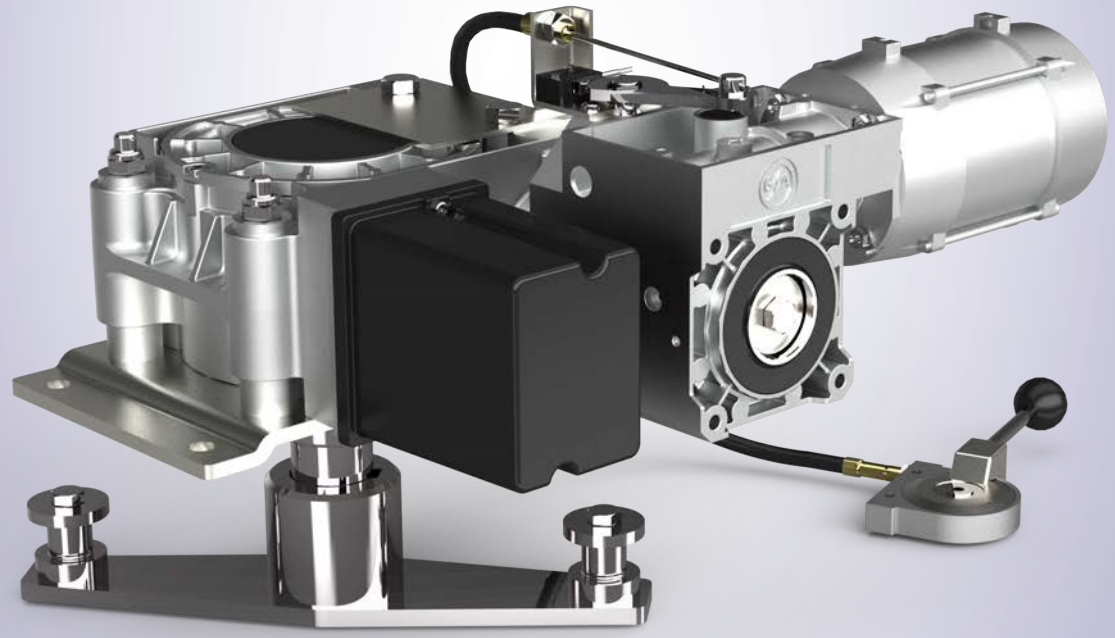
for foldings doors



FT 60.4 – FT 80.5 FI
Output torque: 600 - 800 Nm
Output speed: 0,5 - 5 rpm

5.011

FT



Folding-door-drive-ELEKTROMATEN® FT

Series SG50R-SG85
FT 60.4
FT 80.2
FT 80.5 FI

For driving:
Folding doors

ELEKTROMATEN FT are special drives for industrial folding doors. The door is driven by a torque arm.

ELEKTROMATEN FT comprises of:
Two-step reduction worm gear, emergency manual operation with gear release, integrated limit switches and electrical motor respectively electrical motor with built-on frequency inverter (FT 80.5 FI).

Built-on frequency inverter (FT 80.5 FI) to be used with door control TS 981-FT:

- 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

- Gear release ER (1)
- Gear release lever with cable FB (optional) (2)

Limit switch

Mechanical limit NES [2] (3)
- 2 operating, 2 emergency- and 2 auxiliary limit switches

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

Mounting / Output drive

- Mounting base (standard fitting)
- Galvanized torque arm

Special versions

- Increase of cycles per hour
- Higher protection class
- Other voltages and frequencies

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 / 60 Hz
- Supply voltage: 1N~230 V, 3~230 V [3], 3N~400 V, 3~400 V

Details of all GfA door controls can be found in section 8. Further door controls on request.

1) See 2.7
2) Not for FT 80.5 FI
3) For FT 80.5 FI, use additional adaptor part no. 30005855

1. Technical data

ELEKTROMATEN Series		FT 60.4 SG50R-SG85	FT 80.2 SG50R-SG85	FT 80.5 FI SG50R-SG85
Output torque	Nm	600	800	800
Output speed	rpm	4	2	0,5-5
Opening / closing time (150° at torque arm)	s	6	13	5
Holding torque [1]	Nm	2900	2900	2900
Restoring torque [2]	Nm	‹30	‹30	‹30
Permitted OPEN / CLOSE output speed in frequency-inverter operating mode [3]	rpm	7	3,5	5
Motor power	kW	0,45	0,37	0,85
Supply voltage	V	3~230 / 400	3~230 / 400	1N~230
Operating frequency	Hz	50	50	50 / 60
Operating current [4]	A	1,9 / 1,1	2,1 / 1,2	6,6
Max. cycles per hour [5]		17 (17)	17 (17)	17 (17)
Limit switch range [6]		1 (360°)	1 (360°)	1 (360°)
Weight	kg	35	34	46
Part no. installation drawing (dxf, dwg)		50001146	50001146	50001596
Part no. ELEKTROMATEN		10003292	10003232	10003958

Generally applies: Degree of protection IP65 (combined with WS 900: IP54), permissible temperature range -10 °C...+40 °C (+60 °C) → FT 60.4 / FT 80.2, +5 °C...+40 °C (+60 °C) → FT 80.5 FI, operating sound pressure level SPL ‹70 dB(A)
1) See 2.5 · **2)** See 2.4 · **3)** We recommend the selection of a special GfA ELEKTROMATEN-FI for use with frequency inverter, OPEN drive speed at 87 Hz (not applicable for FT 80.5 FI), see 2.7 · **4)** The operating current in door drives can reach up to 4x the rated current for limited periods, see 2.6 and 2.8 · **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 the torque arm

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 / restoring torque

When moving the lever the door is unlocked, and the control-power supply is interrupted. The door can be opened by hand. The restoring torque values indicated here (see Technical data) must be exceeded in this case.

2.5 Holding torque / Slipping clutch

The factory-adjusted slipping clutch produces the indicated holding torque. If the clutch is subject to higher forces than the admissible (e.g. from wind) additional improvements of the door design may be required to prevent undesired opening of the door.

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.

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).

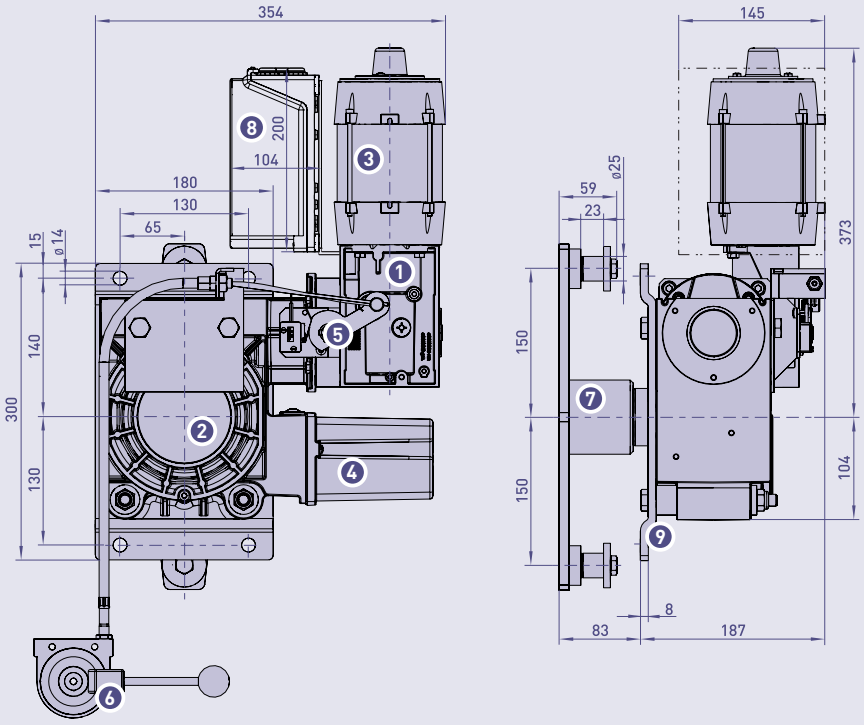
The admissible drive speeds may not be exceeded (see Technical data). The operating forces must comply with EN 12453, and the corresponding EMC directives must likewise be observed.

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

3. Dimensions

3.1 FT 60.4 / FT 80.2

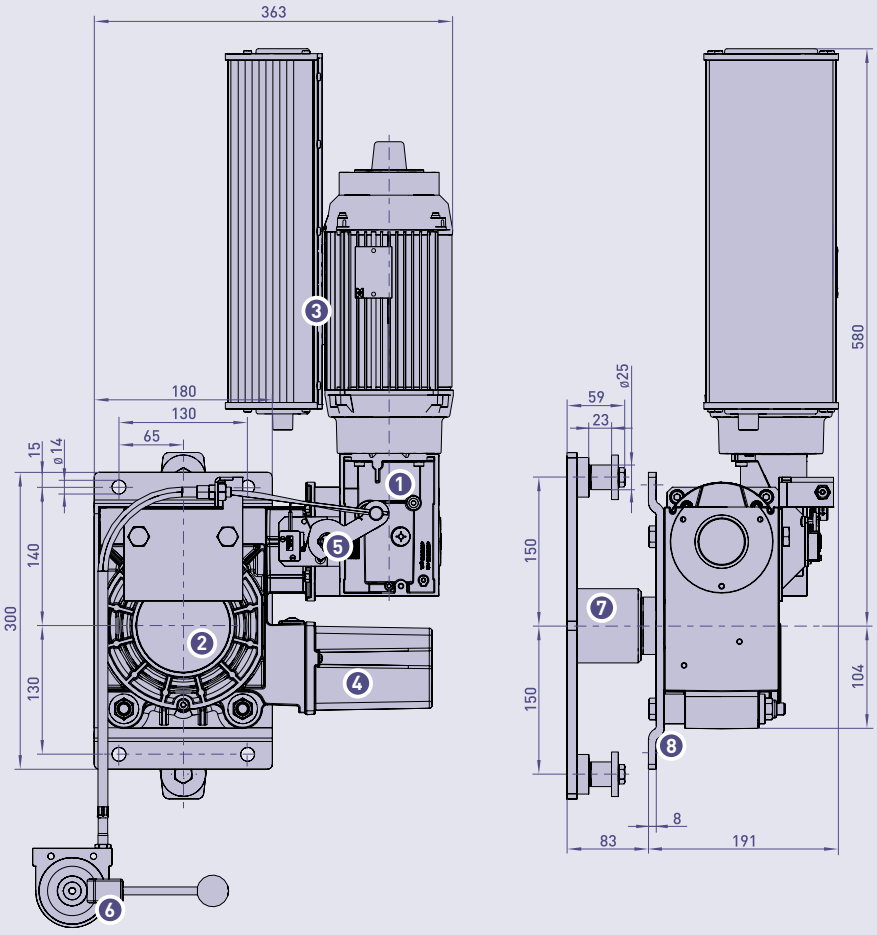
SG50R-SG85



1. Worm gear 1 reduction with integrated slipping clutch
2. Worm gear 2 reduction
3. Motor
4. Limit switch
5. Gear release ER
6. Gear release lever with cable FB (optional)
7. Torque arm
8. Optional: WS 900 door control, removable, with 0,8 m cable
9. Mounting base

3.2 FT 80.5 FI

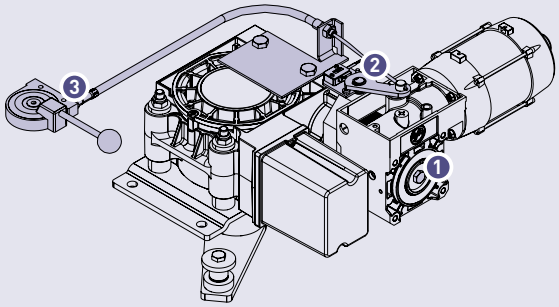
SG50R-SG85



1. Worm gear 1 reduction with integrated slipping clutch
2. Worm gear 2 reduction
3. Motor with built-on frequency inverter
4. Limit switch
5. Gear release ER
6. FB gear release lever with cable (optional)
7. Torque arm
8. Mounting base

4. Slipping clutch and emergency manual operation

SG50R-SG85

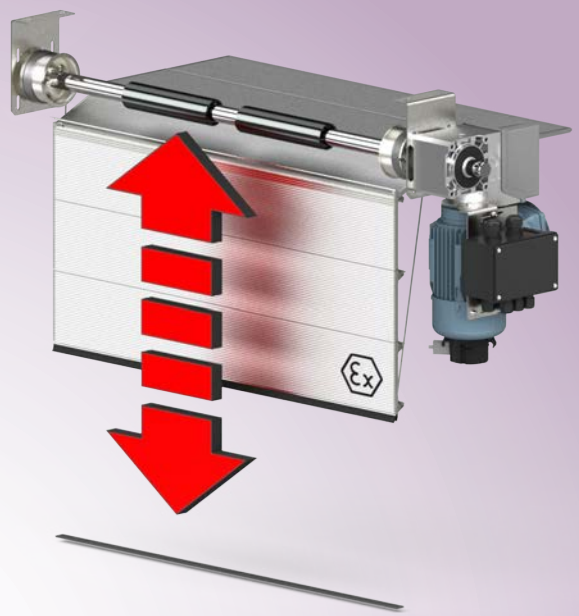


The drives have a slipping clutch (❶) as standard for overload protection. The slipping clutch is set to the output torque at the factory. The gear release ER (❷) that is also standard is intended for opening or closing the gate without electrical energy supply.
The gearbox can be unlocked from the operating height with the additionally available gear release lever with cable (❸).

Designation		Part no.
Slipping clutch	1	Standard
Gear release ER	2	Standard
Gear release lever with cable FB (8m)	3	20001925

Special ELEKTROMATEN® SP

for ATEX
for fire shutters



ELEKTROMATEN comply to ATEX
SI 25.15 Ex – SI 80.12 Ex 6.011
Output torque: 250 - 800 Nm
Output speed: 12 - 15 rpm

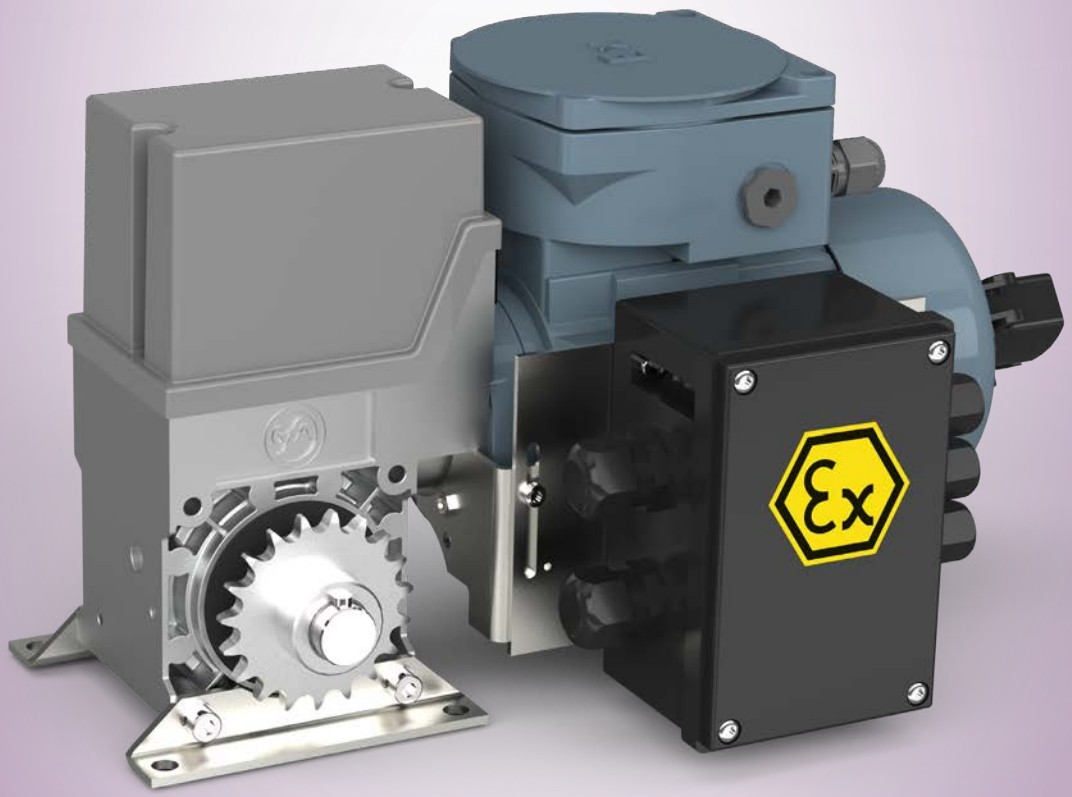
KE 9.24 Ex – KE 80.12 Ex 6.021
Output torque: 90 - 800 Nm
Output speed: 12 - 24 rpm

SE 9.24 Ex-e T3 / SE 9.24 Ex-de T4 6.031
Output torque: 90 Nm
Output speed: 24 rpm

Control panels / Electrical accessories 6.051
for ELEKTROMATEN in potentially explosive atmospheres Ex;
Ex door controls, push buttons, accessories

ELEKTROMATEN FS Fire door-drive
FS 15.20 – FS 110.18 6.061
Output torque: 150 - 1100 Nm
Output speed: 18 - 20 rpm
for fire shutters that must close
under their own weight in the case of fire

SP



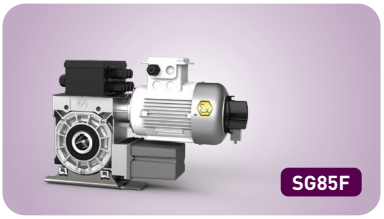
ELEKTROMATEN® SI

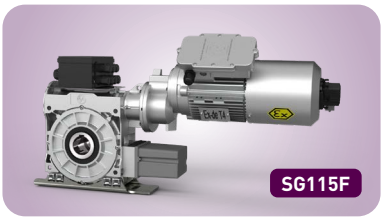
Safedrive®

comply to ATEX

Series SG85F
SI 25.15 Ex
SI 40.15 Ex
SI 55.12 Ex
Series SG115F
SI 80.12 Ex

"Safedrive®" ELEKTROMATEN SI are special drives for industrial doors to be used in potentially explosive atmospheres - 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 comply to ATEX 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

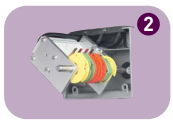
Type test according to:
DIN EN 12453
DIN EN 60335-1
DIN EN 60335-2-103
TÜV NORD CERT GmbH

Built-in safety brake

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

ATEX - registration number

Registration number:
8000306986
TÜV NORD CERT GmbH



Emergency manual operation

- Hand crank NHK 1

Limit switch

Mechanical limit NES 2

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

Terminal box

- Terminal box 3

Mounting

- Floating foot (standard fitting)

Electrical accessories

For ELEKTROMATEN in potentially explosive atmospheres:

- Door control
- Evaluators
- Push buttons etc.

Details of all GfA door controls to be used in in potentially explosive atmospheres can be found from page 6.051.

1. Technical data

ELEKTROMATEN Series				SI 25.15 Ex SG85F	SI 40.15 Ex SG85F	SI 55.12 Ex SG85F	SI 80.12 Ex SG115F
Type of protection	Motor Ex-e Increased Safety	T3	⟨Ex⟩	**Assemblies fitted:** Gas: II 2G Ex db eb h IIC T3 Gb Dust: II 2D Ex tb h IIIC 190°C Db	**Assemblies fitted:** Gas: II 2G Ex db eb h IIC T3 Gb Dust: II 2D Ex tb h IIIC 190°C Db	– –	– –
	Motor Ex-de Flameproof Enclosures	T4		**Assemblies fitted:** Gas: II 2G Ex db eb h IIC T4 Gb Dust: II 2D Ex tb h IIIC 130°C Db	**Assemblies fitted:** Gas: II 2G Ex db eb h IIC T4 Gb Dust: II 2D Ex tb h IIIC 130°C Db	**Assemblies fitted:** Gas: II 2G Ex db eb h IIC T4 Gb Dust: II 2D Ex tb h IIIC 130°C Db	**Assemblies fitted:** Gas: II 2G Ex db eb h IIC T4 Gb Dust: II 2D Ex tb h IIIC 130°C Db
Output torque			Nm	250	400	550	800
Output speed			rpm	15	15	12	12
Output shaft / hollow shaft (Ø)			mm	30 / 40	40	40	55
Locking torque [1]			Nm	635	760	1100	2800
Safety brake (approval number)				14-003612-PR03	14-003612-PR03	14-003612-PR03	14-003305-PR01
Max. holding torque [2]			Nm	250	400	550	800
Motor power	Ex-e T3 Ex-de T4		kW	1,10 0,75	1,10 0,75	-- 0,75	-- 1,10
Supply voltage			V	3~230 / 400	3~230 / 400	3~230 / 400	3~230 / 400
Operating frequency			Hz	50	50	50	50
Operating current [3]	Ex-e T3 Ex-de T4		A	4,70 / 2,70 3,64 / 2,00	4,70 / 2,70 3,64 / 2,00	– – 3,64 / 2,00	– – 4,67 / 2,70
Max. cyles per hour [4]	Ex-e T3 Ex-de T4			29 (28,0) 12 (10,2)	15 (14,0) 10 (5,2)	-- 10 (5,2)	-- 12 (10,2)
Limit switch range [5]				20 (10)	20 (30)	20	20 (10)
Max. hand force NHK [6]	Ex-e T3 Ex-de T4		N	85 176	136 227	-- 220	-- 159
Permissible temperature range	Ex-e T3 Ex-de T4		°C	-10...+40 -20...+40	-10...+40 -20...+40	– – -20...+40	– – -20...+40
Weight	Ex-e T3 Ex-de T4		kg	30 31	30 30	-- 36	-- 47
Part no. installation drawing (dxf, dwg)	Ex-e T3 Ex-de T4			50000782 50002191	50000782 50002191	-- 50002210	-- 50002189
Part no. ELEKTROMATEN	Ex-e T3 Ex-de T4			10002589 (Ø30)/10005127 (Ø40) 10005483 (Ø30)/10005485 (Ø40)	10002591 10005484	-- 10005525	-- 10005486

Generally applies: Degree of protection IP65, operating sound pressure level SPL <70 dB(A)
1) See 2.5 · **2)** Maximum torque that may act on the output shaft of the drive unit when the door is stationary · **3)** See 2.6 · **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 2.2 · **5)** Maximum revolutions of the output shaft / hollow shaft; optional limit switch ranges are listed in brackets (→ change in cycles per hour) · **6)** See 2.4

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 Cyles 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

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 2.3).

2.5 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.

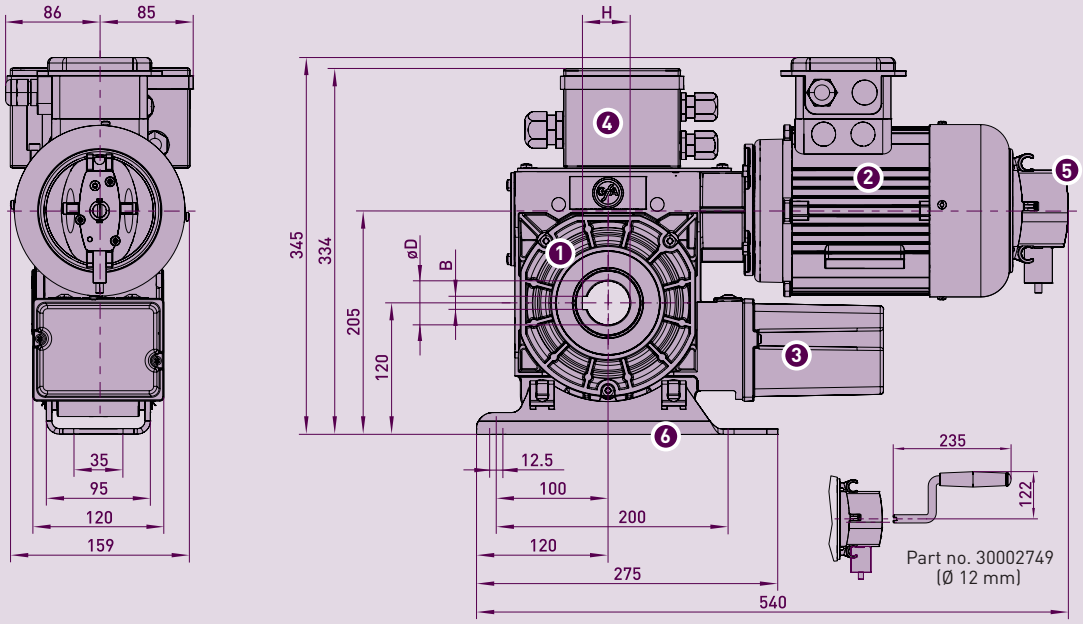
2.6 Motor overload protection

Drives for use in explosion protected zones have to be protected against overload, short circuits and phase failures (in three-phase systems). The motor protection switch has to be integrated in an external motor door control. The motor protection switch has to be adjusted in match to the operating current of the motor.

3. Dimensions

3.1 SI 25.15 / SI 40.15 — Ex-e T3

SG85F



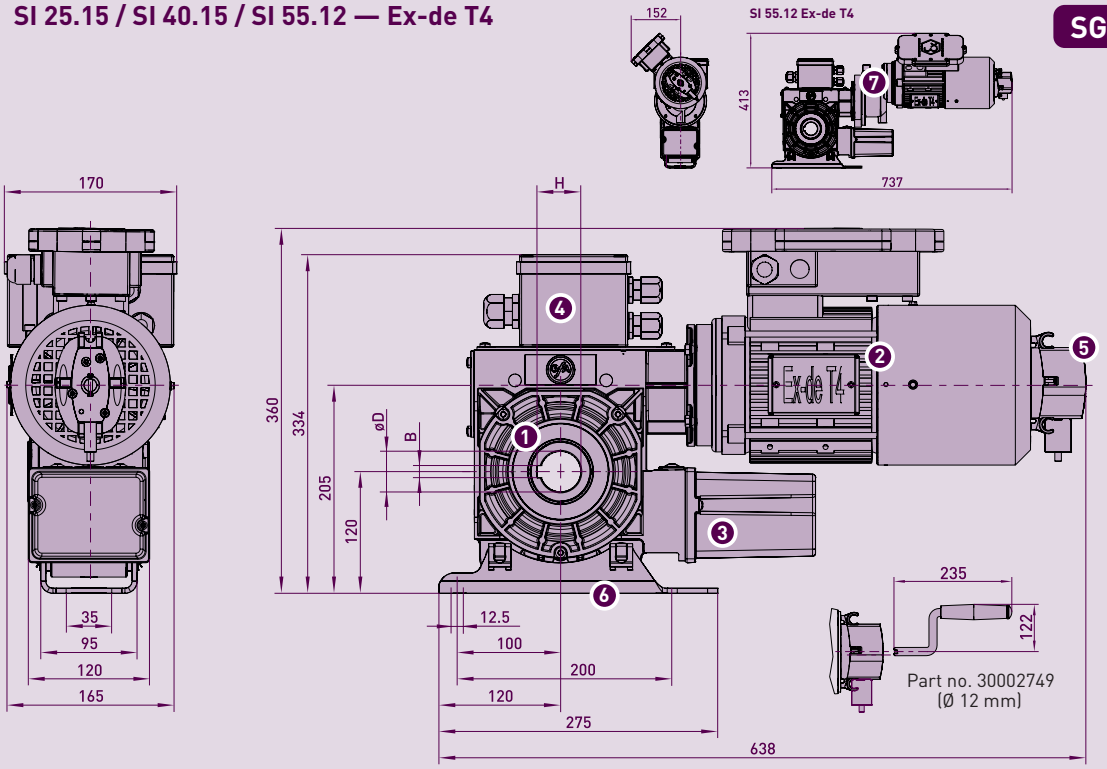
1. Worm gear with safety brake
2. Motor Ex-e
3. Limit switch
4. Terminal box
5. Hand crank NHK
6. Floating foot

Ø D	H	B
30	33,3	8
40	43,3	12

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

3.2 SI 25.15 / SI 40.15 / SI 55.12 — Ex-de T4

SG85F



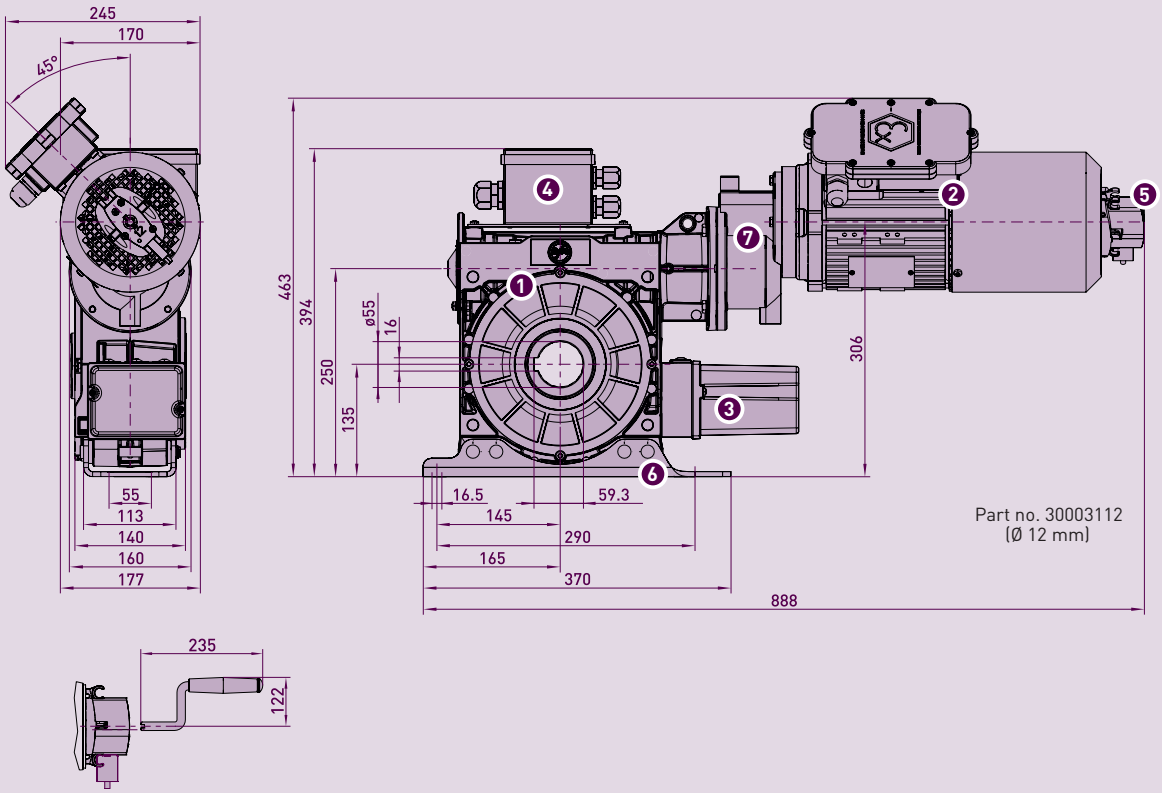
1. Worm gear with safety brake
2. Motor Ex-de with integrated brake
3. Limit switch
4. Terminal box
5. Hand crank NHK
6. Floating foot
7. Intemediate gear (SI 55.12 Ex-de T4)

Ø D	H	B
30	33,3	8
40	43,3	12

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

3.3 SI 80.12 Ex-de T4

SG115F



1. Worm gear with safety brake
2. Motor Ex-de with integrated brake
3. Limit switch
4. Terminal box
5. Hand crank NHK
6. Floating foot
7. Intemediate gear

■ Permitted installation: Horizontal (as shown), vertical (motor at the bottom) only with torque mount (page 1.056 section 6.3)

4. Attachments / Accessories for ELEKTROMATEN SI

See section 1 - ELEKTROMATEN SI

ELEKTROMATEN® KE

Chain-drive

comply to ATEX

Series SG50
KE 9.24 Ex
Series SG85
KE 40.24 Ex
Series SG115
KE 80.12 Ex

ELEKTROMATEN KE are special drives for industrial doors to be used in potentially explosive atmospheres. The door shaft is driven by a chain-transmission. Prevention of doors falling back requires a safety brake of the appropriate size.
ELEKTROMATEN KE comply to ATEX 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.

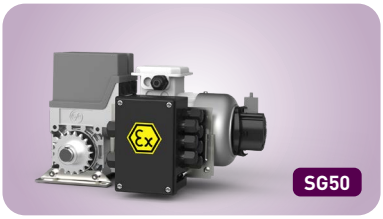
Approvals and certificates

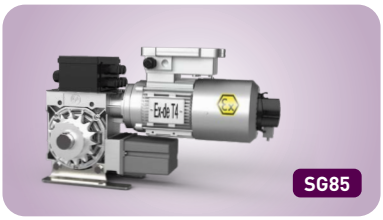
ELEKTROMATEN

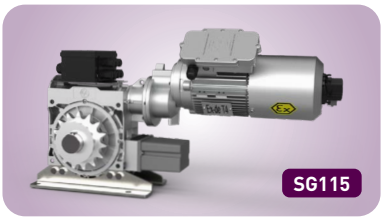
Type test according to:
DIN EN 12453
DIN EN 60335-1
DIN EN 60335-2-103
TÜV NORD CERT GmbH

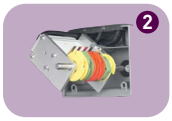
ATEX - registration number

Registration number:
8000306986
TÜV NORD CERT GmbH









Emergency manual operation

- Hand crank NHK ❶

Limit switch

Mechanical limit NES ❷

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

Terminal box

- Terminal box ❸

Mounting

- Foot angle (standard fitting)
- Bracket (as an accessory or fitted directly on the ELEKTROMATEN)

Separate Safety Brake FG

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

Electrical accessories

For ELEKTROMATEN in potentially explosive atmospheres:

- Door control
- Evaluators
- Push buttons etc.

Details of all GfA door controls to be used in in potentially explosive atmospheres can be found from page 6.051.

1. Technical data

ELEKTROMATEN Series				KE 9.24 Ex SG50	KE 35.24 Ex SG85	KE 80.12 Ex SG115
Type of protection	Motor Ex-e Increased Safety	T3	Ex	Assemblies fitted: Gas: II 2G Ex db eb h IIC T3 Gb Dust: II 2D Ex tb h IIIC 190°C Db	– –	– –
	Motor Ex-de Flameproof Enclosures	T4		Assemblies fitted: Gas: II 2G Ex db eb h IIC T4 Gb Dust: II 2D Ex tb h IIIC 130°C Db	Assemblies fitted: Gas: II 2G Ex db eb h IIC T4 Gb Dust: II 2D Ex tb h IIIC 130°C Db	Assemblies fitted: Gas: II 2G Ex db eb h IIC T4 Gb Dust: II 2D Ex tb h IIIC 130°C Db
Output torque			Nm	90	350	800
Output speed			rpm	24	24	12
Output shaft / hollow shaft (Ø)			mm	25	40	55
Max. holding torque [1]			Nm	90	350	800
Motor power			kW	0,37	0,75	1,10
Supply voltage			V	3~230 / 400	3~230 / 400	3~230 / 400
Operating frequency			Hz	50	50	50
Operating current [2]	Ex-e T3 Ex-de T4		A	2,10 / 1,20 1,65 / 0,95	– – 3,64 / 2,00	– – 4,67 / 2,70
Max. cyles per hour [3]				15 (14,5)	12 (9,4)	12 (10,2)
Limit switch range [4]				20 [5]	20 (40, 60)	20 (60)
Max. hand force NHK [6]			N	62	242	159
Permissible temperature range			°C	-10...+40	-20...+40	-20...+40
Weight	Ex-e T3 Ex-de T4		kg	20 30	-- 32	-- 53
Part no. installation drawing (dxf, dwg)	Ex-e T3 Ex-de T4			50000710 50002193	-- 50002192	-- 50002190
Part no. ELEKTROMATEN	Ex-e T3 Ex-de T4			10002617 10005489	-- 10005479	-- 10005490

Generally applies: Degree of protection IP65 (KE 9.24 Ex-de T4: IP55), 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)** See 2.6 · **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 2.2 · **4)** Maximum revolutions of the output shaft / hollow shaftt; optional limit switch ranges are listed in brackets (→ change in cycles per hour) · **5)** Other limit switch ranges on request · **6)** See 2.4

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 Cyles 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

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 2.3).

2.5 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.

2.6 Motor overload protection

Drives for use in explosion protected zones have to be protected against overload, short circuits and phase failures (in three-phase systems). The motor protection switch has to be integrated in an external motor door control. The motor protection switch has to be adjusted in match to the operating current of the motor.

2.7 Chain drive

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

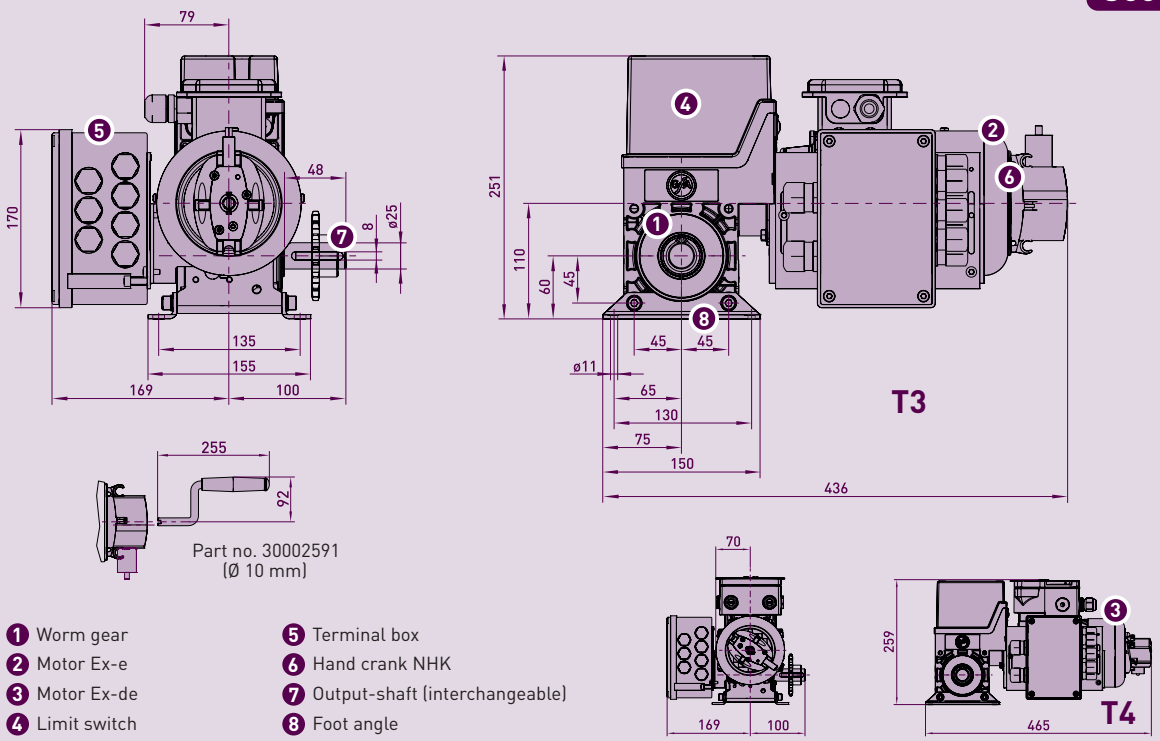
We recommend the use of drive sprockets with at least 15 teeth. The drive sprocket must not protrude beyond the end of the output-shaft.

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

3. Dimensions

3.1 KE 9.24 Ex-e / Ex-de

SG50

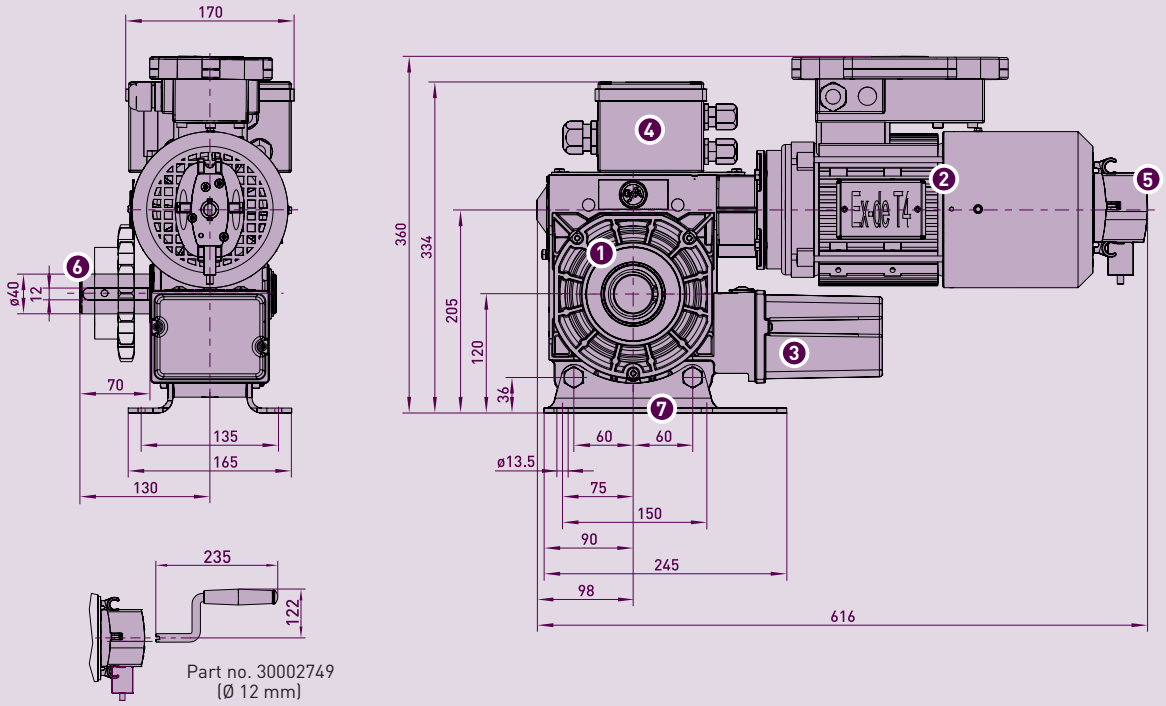


1. Worm gear
2. Motor Ex-e
3. Motor Ex-de
4. Limit switch
5. Terminal box
6. Hand crank NHK
7. Output-shaft (interchangeable)
8. Foot angle

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

3.2 KE 35.24 Ex-de T4

SG85

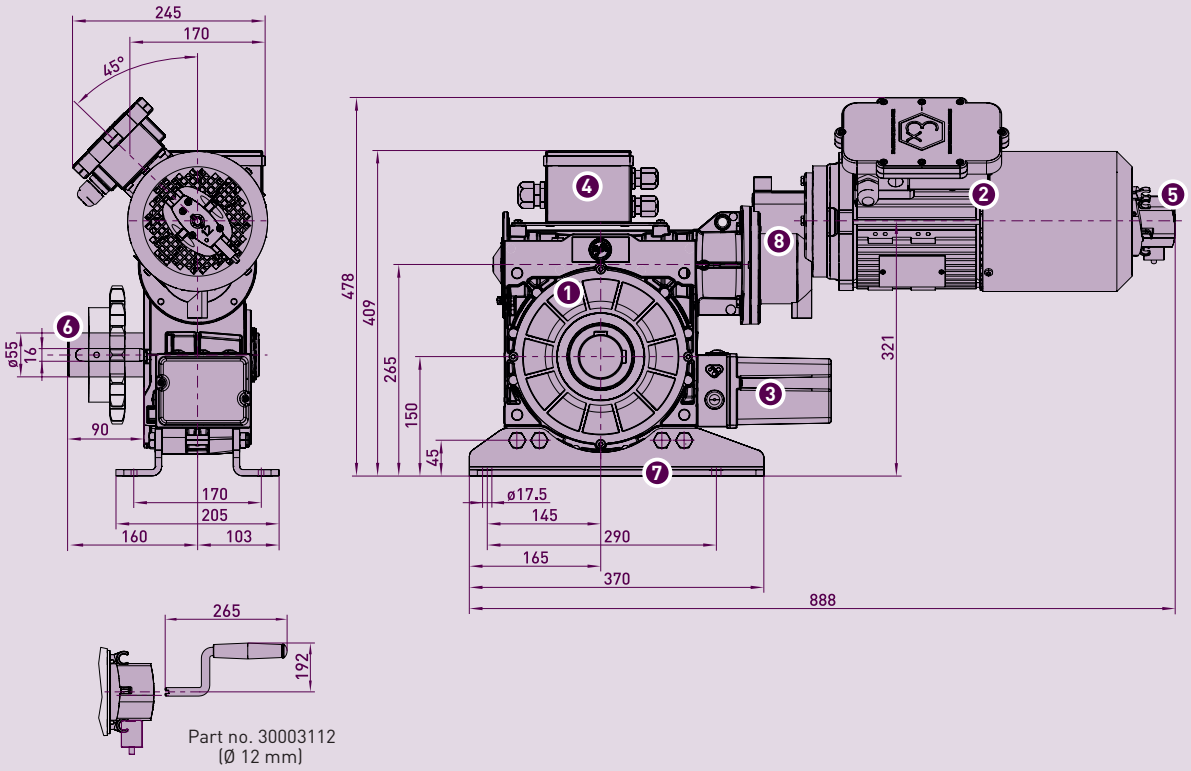


1. Worm gear
2. Motor Ex-de with integrated brake
3. Limit switch
4. Terminal box
5. Hand crank NHK
6. Output-shaft (interchangeable)
7. Foot angle

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

3.3 KE 80.12 Ex-de T4

SG115



1. Worm gear
2. Motor Ex-de with integrated brake
3. Limit switch
4. Terminal box
5. Hand crank NHK
6. Output-shaft (interchangeable)
7. Foot angle
8. Intermediate gear

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

4. Attachments / Accessories for ELEKTROMATEN KE

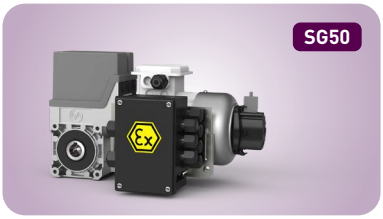
See section 2 - ELEKTROMATEN KE

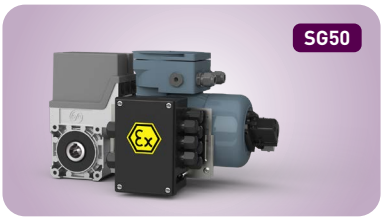
ELEKTROMATEN® SE

Sectional-door-drive
comply to ATEX

Series SG50
SE 9.24 Ex-e T3
SE 9.24 Ex-de T4

ELEKTROMATEN SE are special drives for counterbalanced sectional doors to be used in potentially explosive atmospheres. The drive unit is normally directly fitted to the door shaft.
ELEKTROMATEN SE comply to ATEX comprises of:
Worm gear with hollow shaft, emergency manual operator, integrated limit switches and electrical motor.





Approvals and certificates

ELEKTROMATEN

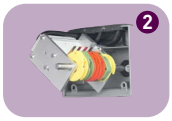
Type test according to:
DIN EN 12453
DIN EN 60335-1
DIN EN 60335-2-103
TÜV NORD CERT GmbH

Holding torque

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

ATEX - Registration number

Registration number:
8000306986
TÜV NORD CERT GmbH



Emergency manual operation

- Hand crank NHK 1

Limit switch

Mechanical limit NES 2

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

Terminal box

- **Terminal box** 3

Mounting

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

Electrical accessories

For ELEKTROMATEN in potentially explosive atmospheres:
- Door control
- Evaluators
- Push buttons etc.

Details of all GfA door controls to be used in in potentially explosive atmospheres can be found from page 6.051.

1. Technical data

ELEKTROMATEN Series				SE 9.24 Ex SG50
Type of protection	Motor Ex-e Increased Safety	T3	Ex	**Assemblies fitted:** Gas: II 2G Ex db eb h IIC T3 Gb Dust: II 2D Ex tb h IIIC 190°C Db
	Motor Ex-de Flameproof Enclosures	T4		**Assemblies fitted:** Gas: II 2G Ex db eb h IIC T4 Gb Dust: II 2D Ex tb h IIIC 130°C Db
Output torque			Nm	90
Output speed			rpm	24
Output shaft / hollow shaft (Ø) [1]			mm	25,4
Max. holding torque [2]			Nm	450
Max. door weight			kg	4000
Motor power			kW	0,37
Supply voltage			V	3~230 / 400
Operating frequency			Hz	50
Operating current [3]	Ex-e T3 Ex-de T4		A	2,10 / 1,20 1,65 / 0,95
Max. cyles per hour [4]				15 (14,5)
Limit switch range [5]				20 (40)
Permissible temperature range			°C	-10...+40
Weight	Ex-e T3 Ex-de T4		kg	18 29
Part no. installation drawing (dxf, dwg)	Ex-e T3 Ex-de T4			50000711 50002194
Part no. ELEKTROMATEN	Ex-e T3 Ex-de T4			10002595 10005491

Generally applies: Degree of protection IP65 (SE 9.24 Ex-de T4: IP55), operating sound pressure level SPL <70 dB(A)
1) Additional outputshafts / hollow shafts (Ø) on request · **2)** See 2.5 · **3)** See 2.6 · **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 2.2 · **5)** Maximum revolutions of the output shaft / hollow shaftt; optional limit switch ranges are listed in brackets (→ change in cycles per hour)

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 Cyles 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

Manual operation with NHK hand crank, 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.

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 [N] = door weight [N] x 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

Drives for use in explosion protected zones have to be protected against overload, short circuits and phase failures (in three-phase systems). The motor protection switch has to be integrated in an external motor door control. The motor protection switch has to be adjusted in match to the operating current of the motor.

2.7 Cable / Cable drums

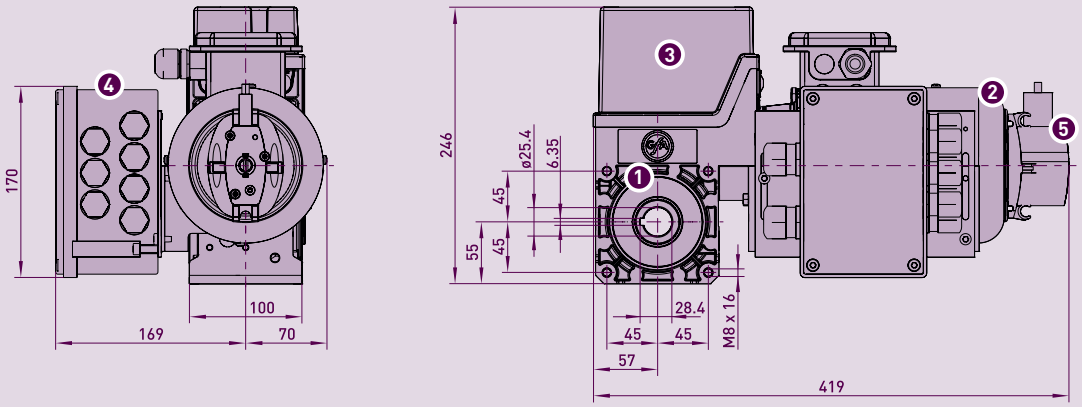
When calculating the cable size the max. permitted door weight is required with a safety of 6x for the cables; requirement of EN 12604.

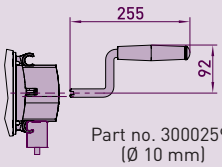
Cable drum selection – ensure that two turns of the cable remain on the drum at all times. The diameter of the cable drum must be at least 20x the diameter of the cable.

3. Dimensions

3.1 SE 9.24 Ex-e T3

SG50





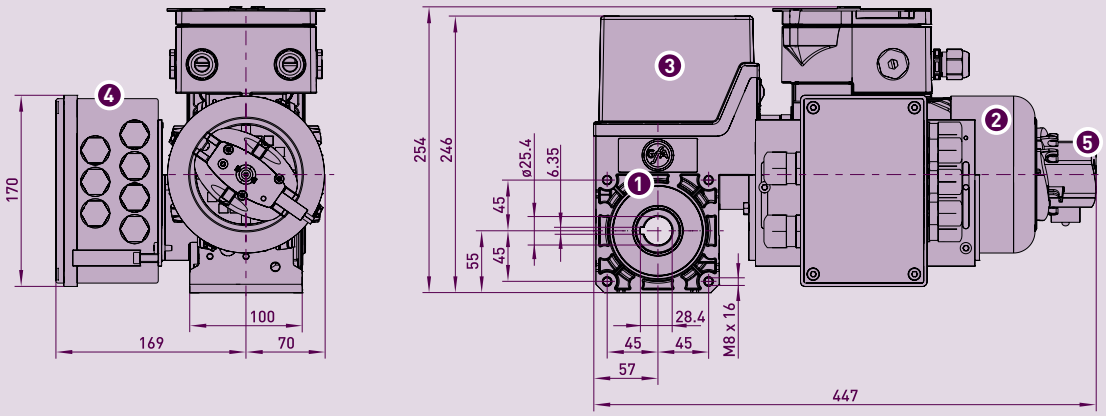
Part no. 30002591
(Ø 10 mm)

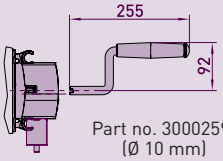
1. Worm gear
2. Motor Ex-e T3
3. Limit switch
4. Terminal box (mountable on both sides)
5. Hand crank NHK

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

3.2 SE 9.24 Ex-de T4

SG50





Part no. 30002591
(Ø 10 mm)

1. Worm gear
2. Motor Ex-de T4
3. Limit switch
4. Terminal box (mountable on both sides)
5. Hand crank NHK

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

4. Attachments / Accessories for ELEKTROMATEN SE

See section 3 - ELEKTROMATEN SE

Door controls / electrical accessories

for ELEKTROMATEN comply to ATEX

ATEX door controls by GfA are designed for the special requirements of potentially explosive atmospheres. Depending on the version, they may be used inside (❶) or outside (❷/❸) the Ex area.

All door controls supplied with:

- Mains switch / isolator
- Motor overload protection
- Settings via selector switch with digital display
- Change of rotating direction from control panel push buttons
- Status and information display
- Cycle counter
- Maintenance cycle counter: 1.000 - 99.000 cycles
- Supply voltage:
  3~230 V, PE / 3N~400 V, PE / 3~400 V, PE
- Operating frequency: 50 Hz / 60 Hz
- Control voltage: 24 V DC
- Mains supply ratings for external devices:
  24 V DC (0,35 A) / 230 V AC (1,6 A)
- Without connection cable

To be used inside the Ex area

❶ Door control TS 971-ATEX II 2 G/D

- Ⓔx II 2(1)G Ex db eb [ia Ga] IIC T6 Gb / II 2(1)D Ex tb [ia Ga] IIIC T85°C Db
- Selectable operating mode: Hold-to-run / Self-hold
- Explosion proof housing with a window
- Integrated OPEN-STOP-CLOSE push-button
- Evaluator for a safety edge system with 8k2 resistor and zener barrier integrated
- Slack rope / pass door switch contact available by integrated zener barrier
- Integrated switch device for photo cell detection
- Permissible temperature range: -5 °C...+40 °C

To be used outside the Ex area

Applicable to both door controls:

- Slack rope / pass door switch contact available by integrated zener barrier
  Ⓔx II 3 (1) G Ex nA [ia Ga] IIC/IIB T4 Gc / II (1) D [Ex ia Da] IIIC
- Permissible temperature range: -10 °C...+50 °C

❷ Door control TS 971-Hold-to-run ATEX

- Selectable operating mode: Hold-to-run CLOSE / OPEN; Hold-to-run CLOSE / Self-hold OPEN

❸ Door control TS 971-Automatic ATEX

- Selectable operating mode: Hold-to-run / Self-hold
- Evaluator for a safety edge system with 8k2 resistor and zener barrier integrated Ⓔx II 3 (1) G Ex nA [ia Ga] IIC/IIB T4 Gc / II (1) D [Ex ia Da] IIIC
- Integrated switch device for photo cell detection Ⓔx II (1)G [Ex ia Ga] IIC / II (1)D [Ex iaDa] IIIC

Door controls / electrical accessories
for ELEKTROMATEN comply to ATEX

Door controls: To be used inside the Ex area

	Version	Part no.
❶	**Door control TS 971-Automatic ATEX II 2 G/D** W x H x D: 338 mm x 540 mm x 228 mm; 27,9 kg; Part no. installation drawing: 50001985 Door control for KE 9.24 Ex-de T4 / SE 9.24 Ex-de T4 (motor protection switch: 0,9-1,25 A) Door control for all other ELEKTROMATEN Ex-e and Ex-de (motor protection switch: 1,0-4,0 A)	 20003679.00002 20003679.00003

Door controls: To be used outside the Ex area

	Version	Part no.
❷	**Door control TS 971-Hold-to-run ATEX, outside the Ex area** W x H x D: 250 mm x 375 mm x 188 mm; 5,9 kg; Part no. installation drawing: 50001979 Door control for KE 9.24 Ex-de T4 / SE 9.24 Ex-de T4 (motor protection switch: 0,9-1,25 A) Door control for all other ELEKTROMATEN Ex-e and Ex-de (motor protection switch: 1,0-4,0 A)	 20003694.00002 20003694.00003
❸	**Door control TS 971-Automatic ATEX, outside the Ex area** W x H x D: 375 mm x 375 mm x 188 mm; 8,4 kg; Part no. installation drawing: 50001978 Door control for KE 9.24 Ex-de T4 / SE 9.24 Ex-de T4 (motor protection switch: 0,9-1,25 A) Door control for all other ELEKTROMATEN Ex-e and Ex-de (motor protection switch: 1,0-4,0 A)	 20003693.00002 20003693.00003

Photo cell

Version	Part no.
Reflex photo cell Ex II 2G Ex ia op is IIC T4 Gb, 10 m range, incl. reflector and bracket, To be used with door control TS 971-Automatic ATEX (❶/❸) (detector integrated)	30005772

Push-button

Version	Part no.
Three push button OPEN/STOP/CLOSE No. 51 aP (wall mounting) II 2 G Ex db eb IIC T6 Gb II 2 D Ex tb IIIC T80 °C Db W x H x D: 80 mm x 185 mm x 85 mm	40009665

Mains switch

Version	Part no.
Mains switch 16 A, up to 690 V II 2 G Ex db eb IIC T6 Gb II 2 D Ex tb IIIC T80 °C Db W x H x D: 112 mm x 205 mm x 130 mm	40014087

Accessories

Version	Part no.
Junction box II 2 G Ex ia ib IIC T6 Gb II 2 D Ex tb IIIC T80 °C Db Degree of protection IP66, Cable gland 3 x M20 x 1,5 W x H x D: 71 mm x 116 mm x 45 mm	40014675
Cable gland II 2 G Ex eb IIC Gb II 2 D Ex tb IIIC Db Degree of protection IP66, M16 x 1,5 M20 x 1,5	 40013344 40013332

ELEKTROMATEN® FS

Fire-door-drive

FS 15.20
FS 25.20
FS 50.20
FS 110.18

For driving: fire shutters which must close under their own weight in the case of fire

ELEKTROMATEN FS are special drives for fire shutters. The door shaft is driven by a chain-transmission. For rising loads a safety brake of the appropriate size must be fitted.
ELEKTROMATEN FS comprises of:
Spur gear, centrifugal brake, reversible universal brake[1], integrated limit switches and electrical motor.

Spur gear
The spur gear allows the doors to close under their own weight in the case of a fire, even if there is a power failure.

Centrifugal brake ❶
The centrifugal brake limits output speed in the case of a fire with power failure; the output speed in this case exceeds the normal operation output speed.

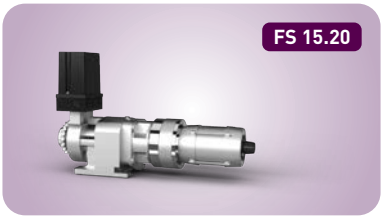
Patented universal brake[1] with two switchable operation modes:

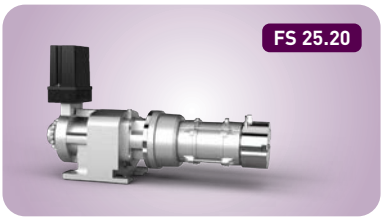
Installation mode ❷
- The operation corresponds to that of a spring-loaded brake[2]
- The door can be operated with a suitable door control like a standard roller shutter

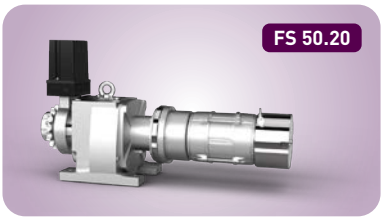
Fire-protection mode ❸
- The operation corresponds to that of a magnetic brake[3]
- Operation as fire-door with VdS approval
- In the case of fire the universal brake opens and the door closes under the own weight.

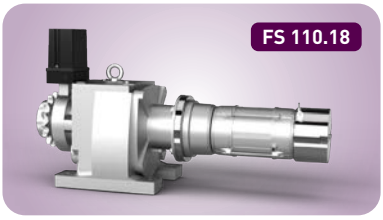
Approvals and certificates

ELEKTROMATEN
MPA Materials Testing Institute of North-Rhine Westphalia (Germany)
Test report no. 120001461.60-01 (FS 15.20)
Test report no. 120001461.10-01 (FS 25.20, FS 50.20, FS 110.18)









Centrifugal brake

- The centrifugal brake limits output speed in the case of a fire with power failure ❶

Universal brake, reversible

- Installation mode ❷
- Fire-protection mode ❸

Switch sensor

- Optional electronic switch sensor ❹
- Possibility of evaluating the operating status of the universal brake using a suitable control

Separate Safety Brake FG

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

Limit switches

Mechanical limit NES ❻
- 2 operating, 2 emergency- and 2 auxiliary limit switches

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

Connection cables

- Connection cables (for NES or DES) in different lengths for connection to a suitable door control[4]
- NES connection cable: 7 m / 10 m / 15 m
- DES connection cable: 3 m / 5 m / 7 m / 13 m

1) Universal brake is not available for FS 15.20: ELEKTROMATEN FS 15.20 only has a magnetic brake for fire-protection mode

2) Braking action when no voltage is applied
3) Braking action when voltage is applied
4) Door controls on request (not VdS-compliant)

1. Technical data

ELEKTROMATEN		FS 15.20		FS 25.20		FS 50.20		FS 110.18
Output torque	Nm	150		250		500		1100
Output speed	rpm	20		20		20		18
Output speed when triggered [1]	rpm	23	36	23	30	23	30	23
Output shaft / hollow shaft (Ø)	mm	25		30		40		50
Restoring torque [2]	Nm	15		15		22		30
Max. holding torque [3]	Nm	150		250		500		1100
Motor power	kW	0,3		0,45		0,90		1,10
Supply voltage	V	3x400		3x400		3x400		3x400
Operating frequency	Hz	50		50		50		50
Operating current [4]	A	1,5		2,0		2,7		4,1
Max. cycles per hour [5]		14 (13,9)		12 (8,3)		11 (6,9)		10 (4,2)
Limit switch range [6]		20 (60)		20 (60)		20 (30, 60)		20 (30, 60)
Weight	kg	23		43		65		112
Part no. installation drawing (dxf, dwg)		50002118		50002119		50002120		50002121
Part no. ELEKTROMATEN		10005391	10005418	10005392	10005421	10005393	10005423	10005394

Generally applies: Degree of protection IP54, permissible temperature range -10 °C...+40 °C (+60 °C), operating sound pressure level SPL ‹70 dB(A)
1) See 2.4 · **2)** See 2.7 · **3)** Maximum torque that may act on the output shaft of the drive unit when the door is stationary · **4)** The max. current in door drives can reach up to 4x the rated operating current for limited periods, see 2.5 · **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 the output shaft; optional limit switch ranges are listed in brackets (→ change in cycles per hour)

2. Notes

2.1 European directive

In accordance with the product standard EN 16034 Doors- and EN 12453 Safety in use of power operated doors-Requirements.

Relevant local and national regulations also apply to doors used for fire-protection purposes.

2.2 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.

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 Safety brake

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.

2.5 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.

2.6 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.

2.7 Restoring torque

The restoring torque values indicated (See item - 1. Technical data) must be applied to the door assemply in its open position in order to ensure that the door can be closed in the case of fire with power failure.

3. Selection chart

ELEKTROMATEN	Tube EN 10220	Transmission 1:2		Transmission 1:3		Transmission 1:3,8		Transmission 1:4,5	
	[mm]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]
FS 15.20	133,0 x 4,0	3137	8,0	4705	5,3	5961	4,2	7059	3,6
	159,0 x 4,5	2681	9,4	4022	6,2	5095	4,9	6033	4,2
	177,8 x 5,0	2426	10,4	3640	6,9	4611	5,5	5460	4,6
FS 25.20	133,0 x 4,0	5229	8,0	7843	5,3	9935	4,2	11765	3,6
	159,0 x 4,5	4469	9,4	6704	6,2	8492	4,9	10056	4,2
	177,8 x 5,0	4044	10,4	6067	6,9	7685	5,5	9100	4,6
	193,7 x 5,4	3744	11,2	5615	7,5	7113	5,9	8423	5,0
	219,1 x 5,9	3346	12,5	5019	8,3	6357	6,6	7528	5,6
FS 50.20	159,0 x 4,5	8939	9,4	13408	6,2	16983	4,9	20112	4,2
	177,8 x 5,0	8089	10,4	12133	6,9	15369	5,5	18200	4,6
	193,7 x 5,4	7487	11,2	11231	7,5	14226	5,9	16846	5,0
	219,1 x 5,9	6692	12,5	10038	8,3	12714	6,6	15056	5,6
	244,5 x 6,3	6049	13,8	9074	9,2	11493	7,3	13611	6,2
	273,0 x 6,3	5461	15,3	8191	10,2	10375	8,1	12287	6,8
	298,5 x 7,1	5024	16,7	7535	11,1	9545	8,8	11303	7,4
	323,9 x 7,1	4653	18,0	6979	12,0	8840	9,5	10468	8,0
FS 110.18	177,8 x 5,0	17796	9,3	26694	6,2	33812	4,9	40040	4,1
	193,7 x 5,4	16472	10,1	24708	6,7	31296	5,3	37061	4,5
	219,1 x 5,9	14722	11,3	22083	7,5	27972	5,9	33124	5,0
	244,5 x 6,3	13308	12,5	19962	8,3	25285	6,6	29943	5,5
	273,0 x 6,3	12014	13,8	18020	9,2	22826	7,3	27031	6,1
	298,5 x 7,1	11052	15,0	16578	10,0	20998	7,9	24867	6,7
	323,9 x 7,1	10236	16,2	15353	10,8	19448	8,5	23030	7,2

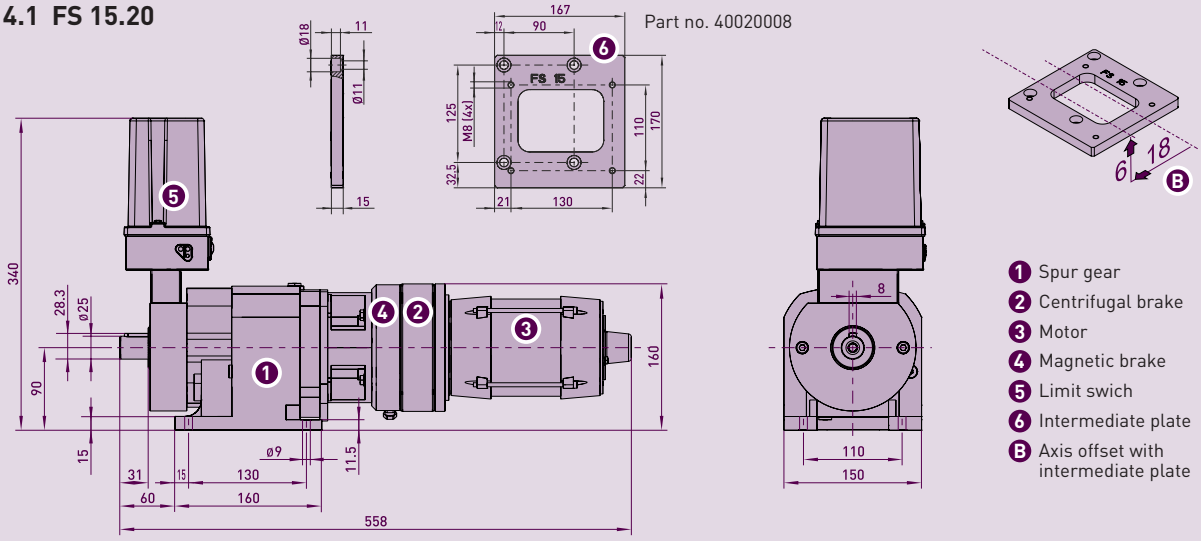
- F = Lift [N]
- v_a = Initial speed [cm/s]
- Includes 20 % friction (profile thickness 20 mm)

4. Dimensions

From 2022, ELEKTROMATEN FS will have new connecting dimensions. Intermediate plates (6) available as an option allow the installation of the new drive units on doors with the old connecting dimensions. When using the intermediate plates, the centre distance (B) between the output shaft and the door shaft increases slightly.

4.1 FS 15.20

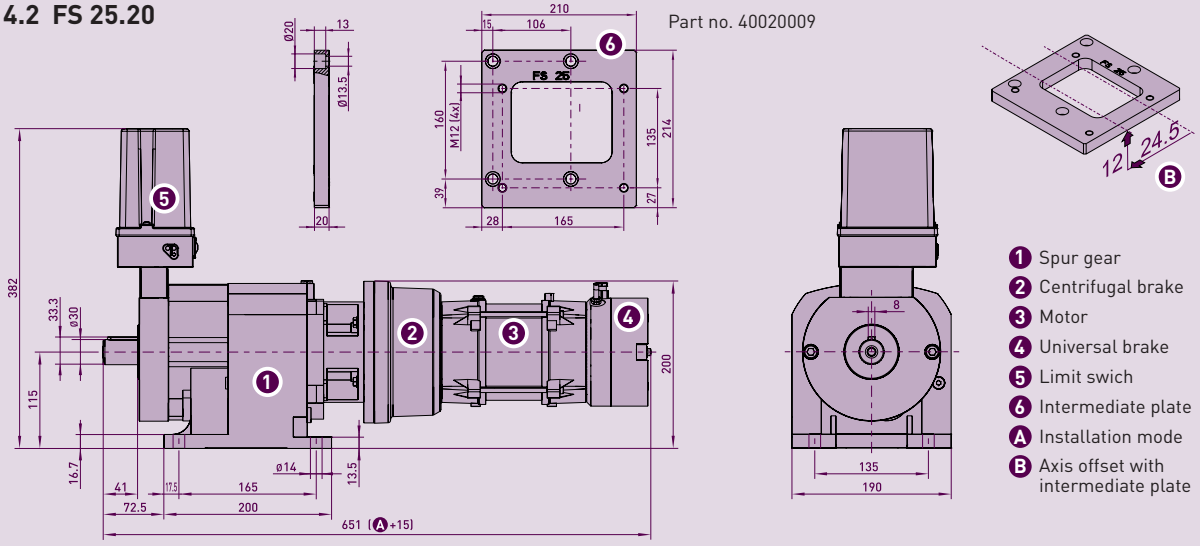
Part no. 40020008



- Permitted installation: Horizontal (as shown)

4.2 FS 25.20

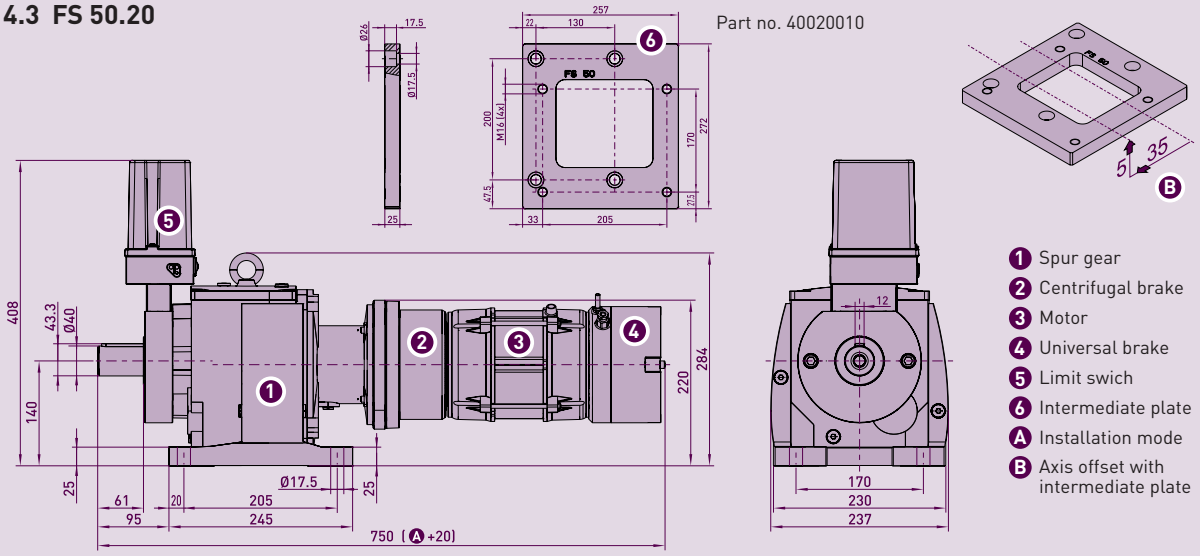
Part no. 40020009



■ Permitted installation: Horizontal (as shown)

4.3 FS 50.20

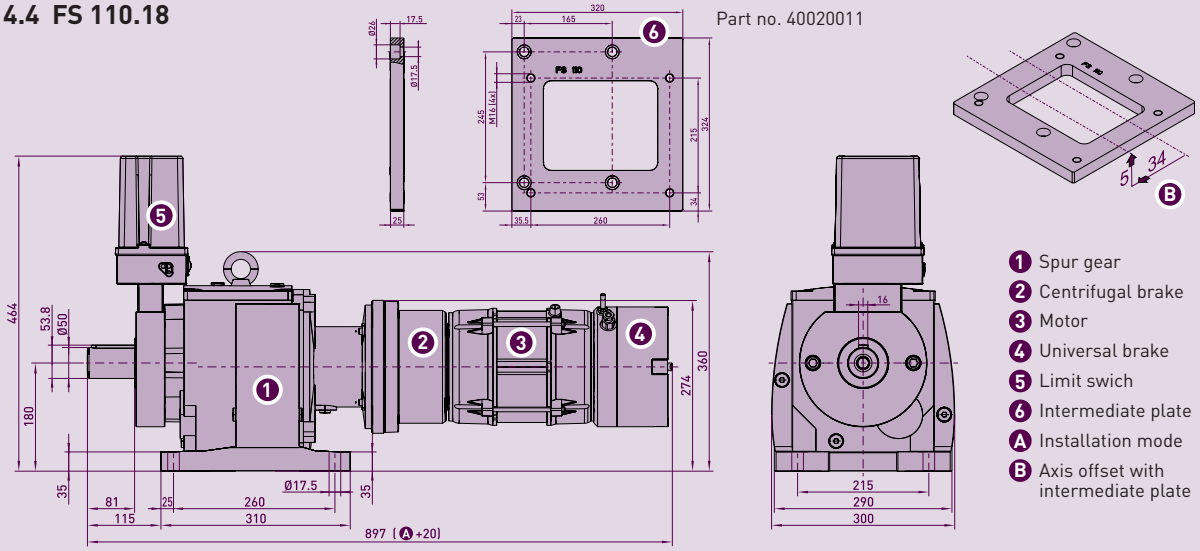
Part no. 40020010



■ Permitted installation: Horizontal (as shown)

4.4 FS 110.18

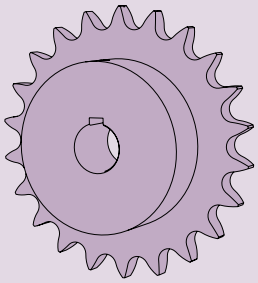
Part no. 40020011

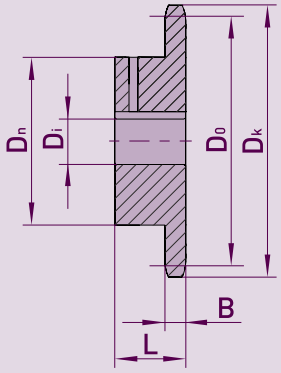


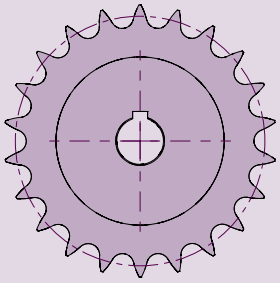
■ Permitted installation: Horizontal (as shown)

Accessories

5.1 Sprockets



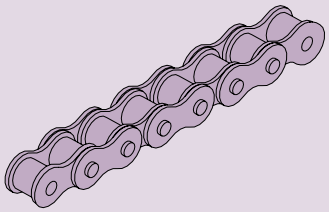


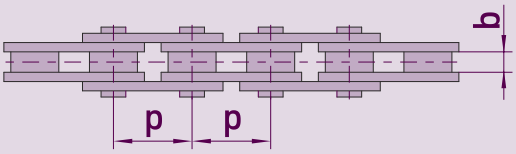


For ELEKTROMATEN	Designation	Teeth	Part no.	D_k	D_0	D_n	D_i	B	L
FS 15	12 B-1 (3/4" x 7/16")	15 19	30000211 30000212	99,8 124,2	91,6 115,8	70 80	25 25	11,1 11,1	35 35
FS 25	12 B-1 (3/4" x 7/16")	15 19	30000538 30000310	99,8 124,2	91,6 115,8	70 80	30 30	11,1 11,1	35 35
FS 50	16 B-1 (1" x 17,02 mm)	15 19	30000171 30000321	133,0 165,2	122,2 154,3	92 100	40 40	16,2 16,2	40 45
FS 110	20 B-1 (1 1/4" x 3/4")	15	30002900	167,9	152,7	118	50	18,5	45

■ Additional sprockets in Section 9

5.2 Roller chains



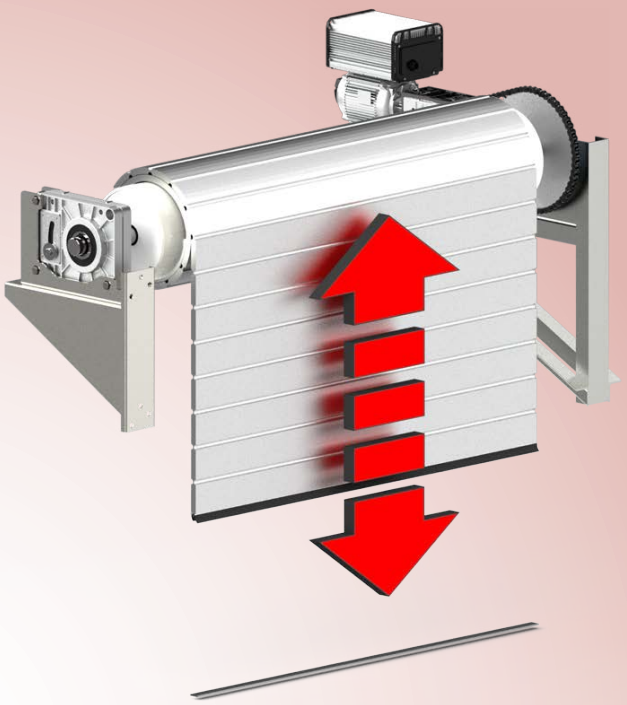


Designation	p x b [inch]	p x b [mm]	Ultimate load of chain DIN 8187 [N]	Number of teeth's	Max. M_{ab} [Nm]	Description	Part no.
12 B-1	3/4" x 7/16"	19,05 x 11,68	29.000	15 19	220 280	2,0 m 5,0 m Link	40003030 40013909 40000615
16 B-1	1" x 17,02 mm	25,4 x 17,02	60.000	15 19	610 770	2,5 m 5,0 m Link	40005049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

Safety brakes FG

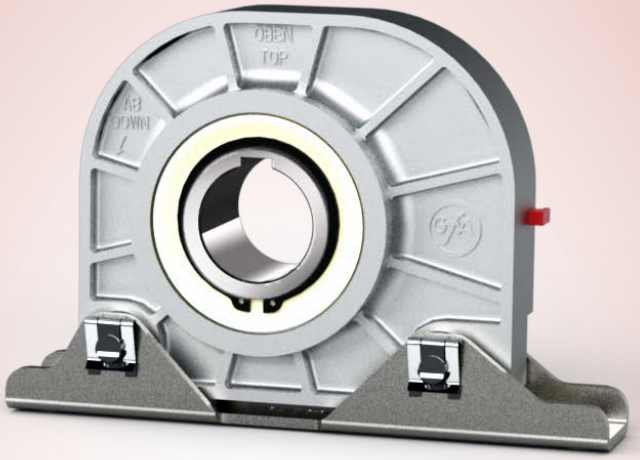
For doors which require an anti-fallback device
in combination with ELEKTROMATEN® KE

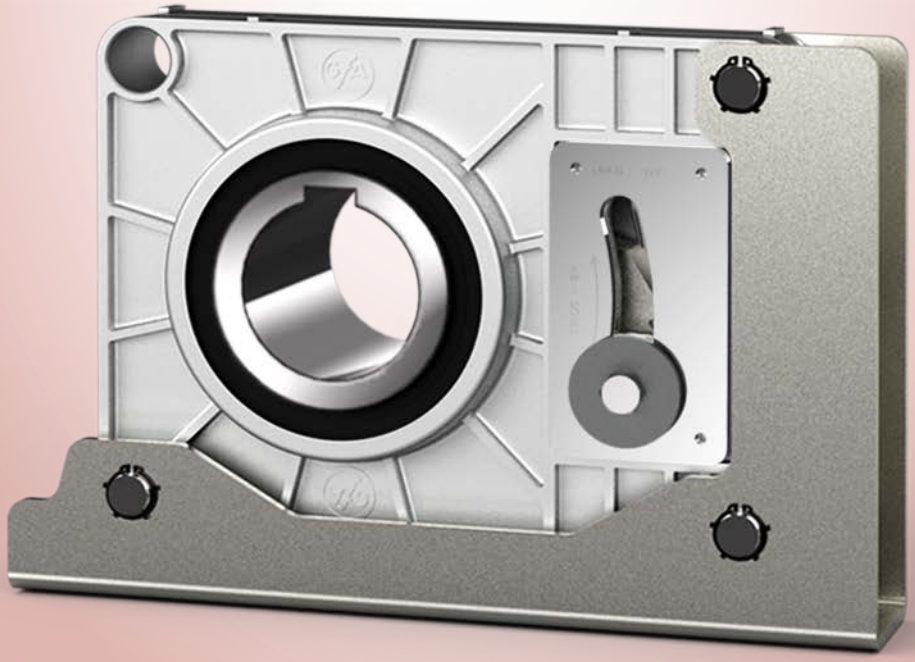


FG 40-30 – FG 120-50 7.011
Max. torque: 400 - 1200 Nm

FG 220-60 – FG 360-80 7.021
Max. torque: 2200 - 3600 Nm

FG





Safety brakes FG

FG 40-30
FG 40-31,75
FG 40-35
FG 80-40
FG 120-50

Anti-fallback device for all rising loads to be prevented from falling back

General description

- Compact design with the same outer dimensions for all sizes
- Visual indication of the triggering mechanism provided by a plunger:
  - A = Operating position
  - B = Braking position
- Max. operating speed OPEN up to 45 rpm
- Switch for safety circuit in protection class IP65
- Floating foot for horizontal installation
- Dependent on the direction of rotation
- Maintenance-free and self-controlling

Description of functions

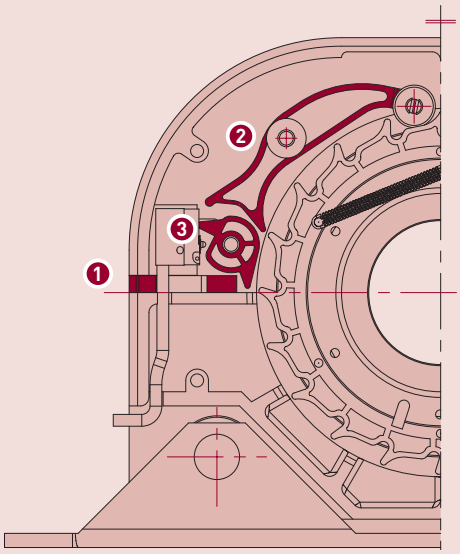
- Locking catch and locking wheel (triggering mechanism) trigger the braking action if the max. operation speed is exceeded.
- The special tooth geometry of the ratchet wheel reduces reaction time and thus the braking distance.
- The structure is only subject to extremely low braking moments.

Approvals and certificates

Certificate of conformity to DIN EN 12604/12605
Certificate no.: TorFV 3/009
Test report: 24034382

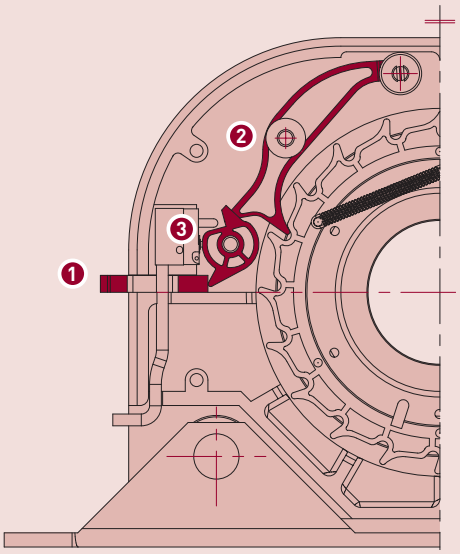
TÜV SÜD
Industrieservice GmbH

A = Operating position



1. Plunger close to the housing
2. Locking catch free
3. Safety switch free

B = Braking position



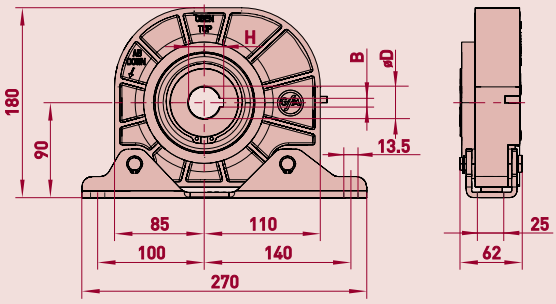
1. Plunger away from the housing
2. Locking catch actuated
3. Safety switch actuated

1. Technical data

Safety brakes		FG 40-30	FG 40-31,75	FG 40-35	FG 80-40	FG 120-50
Max. torque	Nm	400	400	400	800	1200
Max. operating speed OPEN / CLOSE	rpm	45 / 24 (24 / 24)[1]	45 / 24 (24 / 24)[1]	45 / 24	45 / 24 (24 / 24)[1]	45 / 24 (24 / 24)[1]
Hollow-shaft Ø	mm	30	31,75	35	40	50
Locking torque [2]	Nm	1150	1150	1150	2260	3530
Safety brake (approval number)		TorFV 3 / 009	TorFV 3 / 009	TorFV 3 / 009	TorFV 3 / 009	TorFV 3 / 009
Admissible bearing load F_{max} [3]	N	3000	3000	3000	4500	6000
Temperature range	°C	-20..+60 (-20..+40)[1]	-20..+60 (-20..+40)[1]	-20..+60	-20..+60 (-20..+40)[1]	-20..+60 (-20..+40)[1]
Degree of protection	IP	65	65	65	65	65
Weight	kg	4,1	3,8	3,9	3,9	3,9
Part no. installation drawing (dxf, dwg)		50000724	50000724	50000724	50000724	50000724
Part no. safety brakes Part no. safety brakes (ATEX-T3)[1]		10002270.00001 10002532.00001	10004064.00001 10005266.00001	10002526.00001 --	10002271.00001 10002533.00001	10002272.00001 10002534.00001

1 ATEX → II 2G Ex h IIC T3 Gb · **2** See 4.2 · **3** See 2.

2. Dimensions



Safety brakes	Ø D	H	B
FG 40-30	30	33,3	8
FG 40-31,75	31,75	34,7	6,35
FG 40-35	35	38,3	10
FG 80-40	40	43,3	12
FG 120-50	50	53,8	14

■ Permitted position of installation: Horizontal (as shown), observe direction of rotation

3. Selection chart

Safety brakes	Tube-Ø [mm]	Door width / Door height	3000 [mm]		5000 [mm]			7000 [mm]		
			3000	5000	3000	5000	7000	3000	5000	7000
FG 40-30	133,0		4728	3875	4701	3853	3853	4446	3831	--
FG 40-31,75	159,0		4244	3584	4202	3549	3549	4161	3514	--
FG 40-35	177,8		3884	3352	3818	3294	3294	3751	3236	--
FG 80-40	159,0		7208	6060	7167	6026	5199	--	--	--
	177,8		6637	5703	6571	5646	4928	6505	5590	--
	193,7		6173	5401	6087	5326	4694	6001	5250	--
	219,0		5470	4921	5348	4811	4308	5226	4701	--
	244,5		4821	4452	4658	4302	3911	4495	4151	--
FG 120-50	159,0		11730	9912	--	--	--	--	--	--
	177,8		10816	9339	10751	9283	8135	--	--	--
	193,7		10077	8859	9992	8784	7773	9906	8709	7707
	219,0		8965	8101	8844	7991	7183	8723	7882	7085
	244,5		7947	7369	7786	7219	6588	7624	7069	6451
	273,0		6937	6606	6737	6415	5949	6536	6225	5772

■ Door weights in N ■ Extract from TÜV-reports

4. Notes

4.1 European directive

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

4.2 Locking torque

The locking torque must not exceed the admissible loads on mechanical components such as fixing elements, shafts, keys etc.

Safety brakes FG

Anti-fallback device for all rising loads to be prevented from falling back

FG 220-60
FG 220-65
FG 360-80

General description

- Compact design with the same outer dimensions for all sizes
- Visual indication of the triggering mechanism provided by a plunger:
  - Ⓐ = Operating position
  - Ⓑ = Braking position
- Max. operating speed OPEN up to 27 rpm
- Switch for safety circuit in protection class IP65
- Floating foot for horizontal installation
- Dependent on the direction of rotation
- Multiple use because of the replaceable damping plates possible
- Maintenance-free and self-controlling

Description of functions

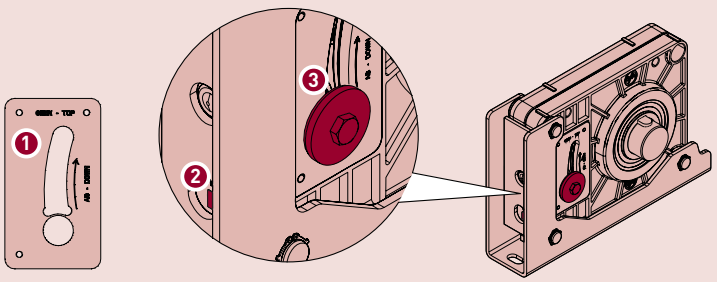
- The release apparatus consist of the pawl and ratchet wheel. If the operation speed is exceeded, the pawl grips into the teeth of the ratchet wheel and releases the catching act. The control voltage will then be interrupted.
- The special tooth geometry of the ratchet wheel reduces reaction time, and thus the braking distance.
- The released energy is absorbed by the damping plates. Because of the excellent damping characteristics while catching, the structure is only subject to extremely low braking moments.

Approvals and certificates

Certificate of conformity to DIN EN 12604/12605
Test report: 240 43 819
ift Rosenheim GmbH

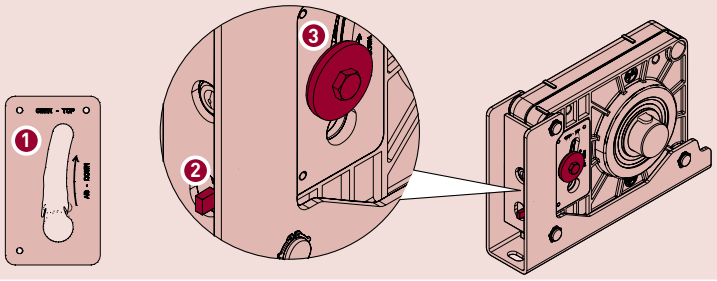
Ⓐ = Operating position

1. Undamaged damping plate
2. Plunger close to the housing / Safety switch free
3. Locking catch in operating position



Ⓑ = Braking position

1. Damping plate after the case of catching (replacing neccessary)
2. Plunger away from the housing / Safety switch actuated
3. Locking catch actuated

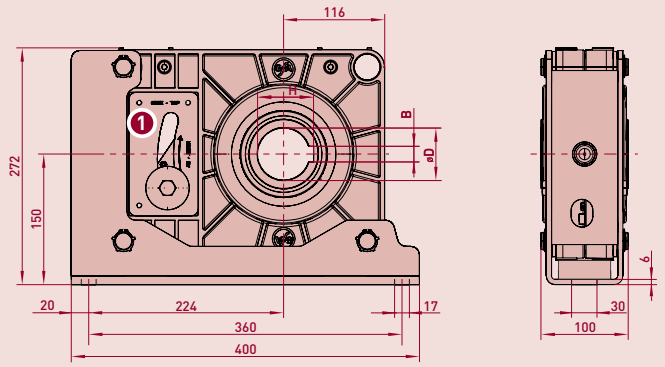


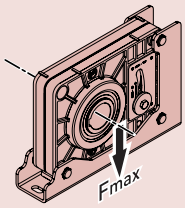
1. Technical data

Safety brakes		FG 220-60	FG 220-65	FG 360-80
Max. torque	Nm	2200	2200	3600
Max. operating speed OPEN / CLOSE	rpm	27 / 15	27 / 15	27 / 15
Hollow shaft Ø	mm	60	65	80
Locking torque [1]	Nm	6691	6691	10260
Safety brake (approval number)		240 43819	240 43819	240 43819
Admissible bearing load F_{max} [2]	N	10000	15000	15000
Temperature range	°C	-20 / +60	-20 / +60	-20 / +60
Degree of protection	IP	65	65	65
Weight	kg	19,5	16,5	20,3
Part no. installation drawing (dxf, dwg)		50001517	50001518	50001518
Part no. safety brakes		10003911.00001	10003913.00001	10003912.00001

1 See 4.2 · **2** See 2.

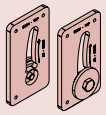
2. Dimensions





1 Replacement damping plates for safety brakes

Part no. 30004810



Safety brakes	Ø D	H	B
FG 220-60	60	64,5	18,1
FG 220-65	65	69,4	18,1
FG 360-80	80	85,4	22,1

■ Permitted position of installation: Horizontal (as shown), observe direction of rotation

3. Selection chart

Safety brakes	Tube-Ø [mm]	Door width [mm]								
		6000	7000	8000	9000	10000	11000	12000	14000	16000
FG 220-60 FG 220-65	244,5 x 6,3	15000	15000	12600	-	-	-	-	-	-
	273,0 x 6,3	13600	13600	13600	13600	13300	-	-	-	-
	298,5 x 7,1	12500	12500	12500	12500	12500	11400	-	-	-
	323,9 x 7,1	11600	11600	11600	11600	11600	11600	11600	-	-
	368,0 x 8,0	10200	10200	10200	10200	10200	10200	10200	10200	-
FG 360-80	244,5 x 6,3	24700	17300	-	-	-	-	-	-	-
	273,0 x 6,3	22200	22200	18300	-	-	-	-	-	-
	298,5 x 7,1	20000	20000	20000	20000	15500	-	-	-	-
	323,9 x 7,1	18900	18900	18900	18900	18900	15800	11900	-	-
	368,0 x 8,0	16800	16800	16800	16800	16800	16800	16800	12800	-
	406,4 x 8,8	15300	15300	15300	15300	15300	15300	15300	15300	12200
	419,0 x 10,0	14900	14900	14900	14900	14900	14900	14900	14900	14900

■ Door weights in N

4. Notes

4.1 European directive

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

4.2 Locking torque

The locking torque must not exceed the admissible loads on mechanical components such as fixing elements, shafts, keys etc.

Door controls TS

Overview GfA door controls 8.005

Door controls to be used with mechanical limit switch NES
Reversing contactor control WS 900 8.006

Door controls to be used with digital limit switch DES
or mechanical limit switch NES
Hold to run control TS 959 8.035
Automatic control TS 970 8.065
Automatic control TS 971 8.071
"with integrated radio"

Door controls to be used with digital limit switch DES
Control with traffic management TS 981 8.081

UBS Universal Command System 8.091
System components

Dock-leveller control LB 700 8.111
with auto-return function

Door controls for sliding door ELEKTROMATEN ST,
for ELEKTROMATEN comply to ATEX and
ELEKTROMATEN FS for fire doors are shown in chapters 4/6.

TS

Overview
GfA door controls

for GfA ELEKTROMATEN® drives
with DES digital limit switch or NES mechanical limit switch

Designation	WS 900	TS 959	TS 970	TS 971	TS 981
					
For ELEKTROMATEN with limit switch	NES	DES / NES	DES / NES	DES / NES	DES
Suitability for Frequency- / direct inverter ELEKTROMATEN (FI/DU)	-	-	●	●	●
CLOSE / OPEN in hold-to-run mode	●	●	●	●	●
CLOSE in hold-to-run mode / OPEN in self-hold mode	●	●	●	●	●
CLOSE / OPEN in self-hold mode	-	-	●	●	●
Integrated three push button	-	●	●	● [1]	●
CP (connection point) for external three push button [number]	● [1]	● [1]	● [1]	● [1]	● [2]
Digital display	-	●	●	●	●
CP for Emergency STOP switch	●	●	●	●	●
CP for photo cells	-	-	●	●	●
CP for Optical safety edge system	-	-	●	●	●
CP for Safety edge with NO-contact principle 8k2	-	-	●	●	●
CP for Safety edge with NC-contact principle 1k2	-	-	●	●	●
CP for an external radio receiver / cable pull-switch	●	-	●	●	●
Independent, programmable relay contact [number]	-	● [1] [2]	● [1] [2]	● [2] [2]	● [2] [3]
CP for red or green traffic-lights	-	● [2]	● [2]	● [2]	●
CP for red and green traffic-lights [number]	-	-	-	● [2] [2]	● [2] [4]
UBS [5] module with plug-in-points [number]	-	-	● [1]	● [1]	● [5]
24 V mains supply ratings for external devices	● / 1 A [6]	-	● / 0,18 A	● / 0,35 - 1 A [7]	● / 1 A
230 V mains supply ratings for external devices	-	● / 1,6 A	● / 1,6 A	● / 1,6 A	● / 1,6 A
Integrated radio receiver for 434 MHz systems	-	-	-	●	-
Integrated radio transmission system for WSD [8]	-	-	-	●	-
Intermediate open function	-	-	●	●	●
Automatic closing	-	-	●	●	●
One-way and two-way traffic control	-	-	-	-	●
Air-lock management	-	-	-	-	● [9]
RWA [10] function	-	-	-	-	●
Entrapment evaluation	-	-	-	-	●
Suitability for the GfA-Stick 	-	●	●	●	-

1) With lighting system that prompts operator
2) Relay contact can be used as a traffic-light or as a potential-free contact
3) Additional five contacts available (via auxiliary SMF module)
4) Traffic-lights -Inside/Outside- for traffic control
5) **UBS** universal command sensor system (see S. 8.091)
6) Only for versions with a control voltage of 24 V
7) Variants with 0,35 A or 1 A available
8) **W**ireless **S**afety **D**evice - replaces the spiral cable
9) Function only via optional module available
10) **RWA** (smoke and heat extraction function)

WS 900 door control

Reversing contactor control for GfA ELEKTROMATEN® drives
with NES mechanical limit switch

Approvals and certificates

WS 900

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

WS 900

Technical data

- For GfA ELEKTROMATEN with mechanical limit switch NES
- Supply voltage:
  1N~230 V, PE / 3~230 V, PE
  3N~400 V, PE / 3~400 V, PE
- Operating frequency: 50 Hz / 60 Hz
- Control voltage: 24 V AC
- 2 or 3 contactors
- Mains supply ratings for external devices: 24 V AC (1 A)
- Permissible temperature range: -10 °C...+50 °C

Housing

- Dimensions W x H x D [mm]:
  145 x 101 x 209
- Protection class IP54, IP65 (optional)

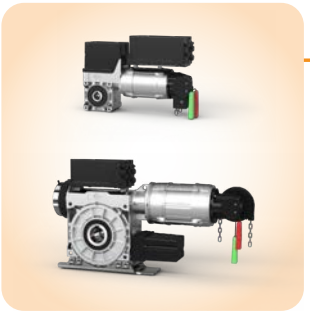
Description

- Mechanically inter-locked reversing contactors, optional with additional safety contactor
- Integrated push-button OPEN-STOP-CLOSE onthe board
  - For quick adjustment of the final limit positions directly on the drive unit
- Plug-in connection cable to ELEKTROMATEN
- Available with optional ready-wired CEE plug, replaces mains switch according to EN 12453

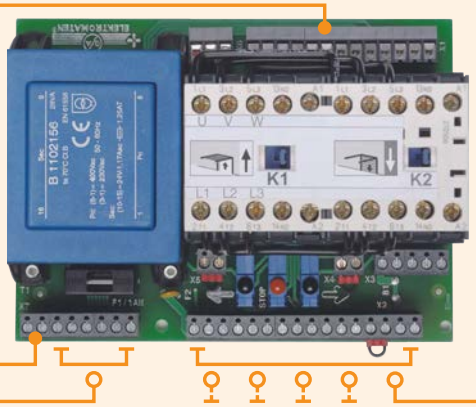
Part no. installation drawing: 50001883

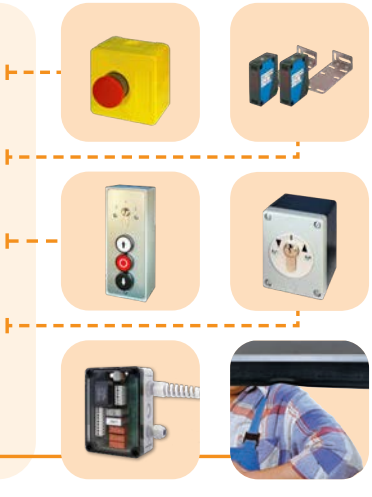
Functions

- Selectable operating mode:
  - CLOSE/OPEN in hold-to-run mode
  - CLOSE in hold-to-run mode/OPEN in self-hold mode
  - Self-hold CLOSE/OPEN in conjunction with: Control unit 647 for optical safety edge (see 9.005)
- Slack-rope and pass-door switch input available
- Possible connections for: push-button, emergency stop-switch, radio control, etc.



Connection options





24 V / 1.0 A
External

Additional limit switch

Designation			Description	Part no.
WS 900	2 reversing contactors 24 V	1	With 0.8 m cable and connection plugs for ELEKTROMATEN, without CEE-plug	20090000.10003[1]
WS 900	3 reversing contactors 24 V	2	With 0.8 m cable and connection plugs for ELEKTROMATEN, without CEE-plug	20090000.10004
Mounting bracket WS 900		3	For series SG50, SG63, SG63-SIK (with standard motors only)	30002937

1) Discontinued part

Spare parts can be found in Section 9

TS 959 door control

Hold-to-run control panel for GfA-ELEKTROMATEN® drives
with DES digital limit switch or NES mechanical limit switch

Approvals and certificates

TS 959

Type test according to:

DIN EN 12453	DIN EN 12978
DIN EN 60335-1	DIN EN 60335-2-103
DIN EN ISO 13849-1	TÜV NORD CERT GmbH

TS 959 – Hold-to-run control panel for DES / NES limit switches

Technical data

- For GfA ELEKTROMATEN[1] drives with DES or NES
- Supply voltage:
  1N~230 V, PE / 3~230 V, PE / 3N~400 V, PE / 3~400 V, PE
- Operating frequency: 50 Hz / 60 Hz
- Mains supply ratings for external devices: 230 V AC (1.6A)
- Permissible temperature range: -10 °C...+50 °C

Housing

- Dimensions W x H x D [mm]: 155 x 386 x 90 (118[2])
- IP65 rated when hard wired or IP54 if CEE plug used
- Protection against contact provided by covers for live parts
- Connection cable that plugs into the ELEKTROMATEN unit, insertable from below or above

Design

- Integrated OPEN-STOP-CLOSE control device
- Safety reversing contactor (with 2 independent shutdown options)
- Settings via selector switch with digital display
- Pluggable connection technology
- Connection cable running to ELEKTROMATEN available in various lengths
- Independent, programmable relay contact, e.g. usable for green traffic-lights or ramp enabling
- Slack-rope and pass-door plug-in connection points

Accessories

- Mains switch / isolator
- Emergency STOP switch
- Key switch
- For description and details on further accessories, see 8.039

Functions

- Automatic detection of DES or NES limit switches
- Change of rotating direction from control panel push buttons
- Adjustment of limit positions (only DES) and all functions from the operator level
- Selectable operating mode:
  - CLOSE / OPEN in hold-to-run mode
  - CLOSE in hold-to-run mode / OPEN in self-hold mode
  - Hold to run FULLY CLOSE FUNCTION / self-hold OPEN
    Keep the CLOSE button pressed until the door is completely CLOSED. If the CLOSE button is released early, the door will reverse automatically to its OPEN position.
- Status and information display (including display of 6 most-recent faults); extended evaluation by using optionally available GfA-Stick (see 8.039)
- Cycle counter (non-resettable)
- Maintenance-cycle counter:
  - Setting range: 1,000 - 99,000 cycles
  - Display indication or switch to hold-to-run operation once the maintenance-cycle limit is reached
- Detects door / drive blockage (only DES); in this event the control deactivates the drive unit
- Dynamic run time monitoring (only NES):
  - With every door movement, the time taken to run between the end positions is measured and compared with the most-recently set reference duration
  - If the run duration is increased (pre-settable deviation), the control panel is deactivated
- Settable force monitoring in OPEN direction (only DES):
  - For counterbalanced doors, sudden changes to the counter-balancing are detected
  - Self-learning feature and consequently no activation of force monitoring function due to, e.g., a change in spring tension

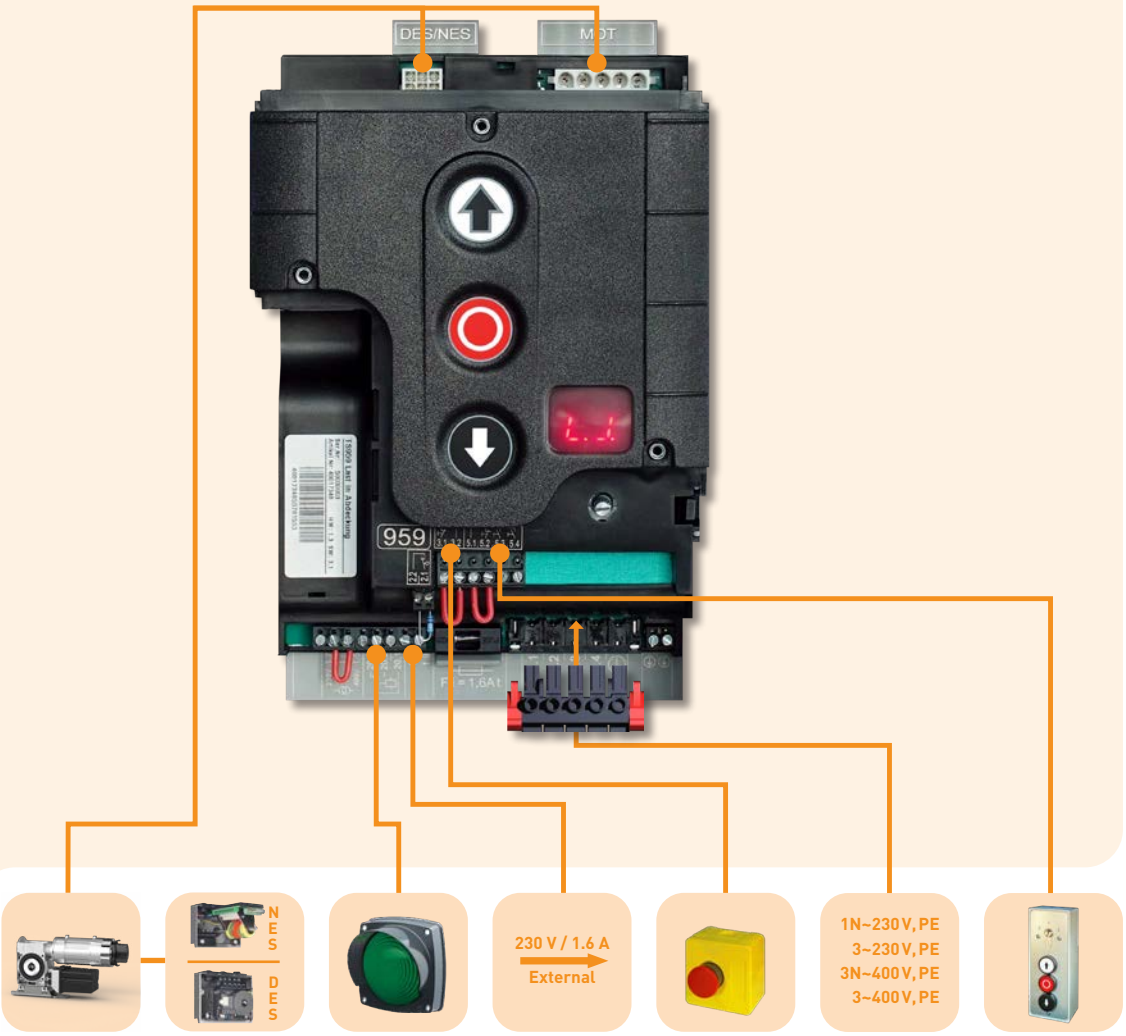
1) The door control TS 959 is not suitable for drive units with frequency inverters (ELEKTROMATEN FI).

2) Version with mains switch

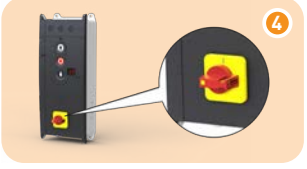
Connection options

Part no. installation drawing: 50001664

TS 959

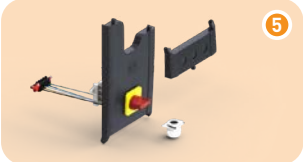


Complete door control with connection kit



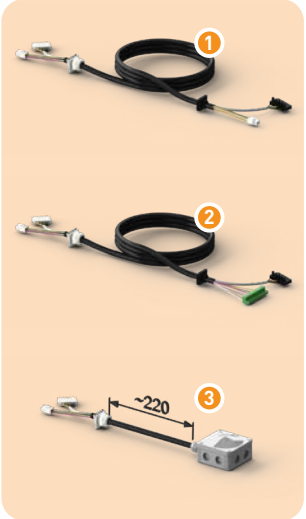
Designation		Description	Part no.
TS 959 with connection kit, when hardwired	1	With mains supply terminal and slide gland	20095900.00001
TS 959 with CEE 3N~400 V (5-pole)	2	With pluggable mains supply cable of length 0.7 m	20095900.00002
TS 959 with CEE 1N~230 V (3-pole)	3	With pluggable mains supply cable of length 0.7 m	20095900.00006
TS 959 with CEE 1N~230 V asym. (3-pole)	3	For SI 25.15 WS / SI 45.7 WS / ST 16.24 WS; with pluggable mains supply cable of length 0.7 m	20095900.00014
TS 959 with mains switch/isolator 3N~400 V	4	With mains switch/isolator in large cover	20095900.00021
TS 959 with mains switch/isolator 1N~230 V	4	With mains switch/isolator in large cover	20095900.00026

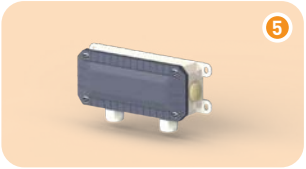
Separate connection kits

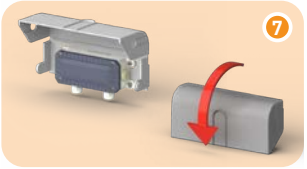


Designation		Description	Part no.
Connection kit, when hardwired	1	Mains supply terminal and slide gland	30005132.00001
Connection kit CEE 3N~400 V (5-pole.)	2	With pluggable mains supply cable of length 0.7m	30005132.00002
Connection kit CEE 3N~400 V, IP65 (5-pole)	3	With pluggable mains supply cable of length 0.7m	30005132.00004
Connection kit CEE 1N~230 V (3-pole)	4	With pluggable mains supply cable of length 0.7m;	30005132.00006
Connection kit CEE 1N~230 V asym. (3-pole)	4	For SI 25.15 WS / SI 45.7 WS / ST 16.24 WS; with pluggable mains supply cable of length 0.7m	30005132.00014
Connection kit CEE 3~230 V (4-pole)	4	With pluggable mains supply cable of length 0.7m	30005132.00017
Mains switch/isolator with connection kit 3N~400 V	5	Assembly kit for mains switch/isolator (complete)	30005132.00021
Mains switch/isolator with connection kit 1N~230 V	5	Assembly kit for mains switch/isolator (complete)	30005132.00026

Accessories



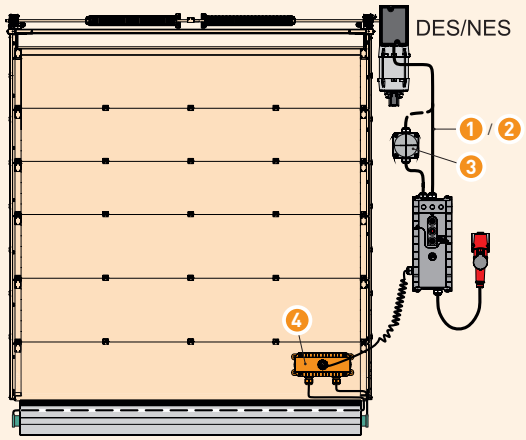




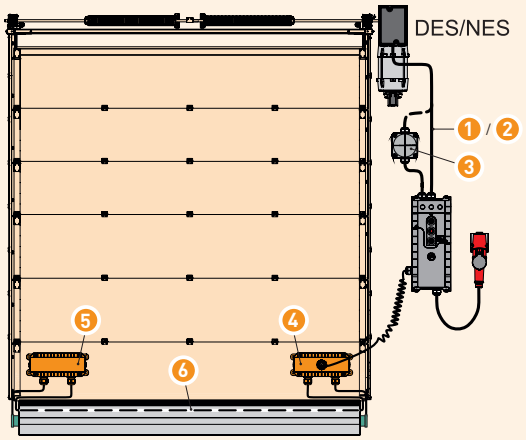
Designation		Description	Part no.
DES connection cable	1	Connection to ELEKTROMATEN drives with digital limit switch, pluggable on both sides; length of cable[1]:	
		3 m	20002420.00300
		5 m	20002420.00500
		7 m	20002420.00700
		9 m	20002420.00900
		11 m	20002420.01100
		13 m	20002420.01300
		15 m	20002420.01500
NES connection cable	2	Connection to ELEKTROMATEN drives with mechanical limit switch, pluggable on both sides; length of cable[1]:	
		3 m	20002320.00300
		5 m	20002320.00500
		7 m	20002320.00700
		9 m	20002320.00900
		11 m	20002320.01100
		13 m	20002320.01300
		15 m	20002320.01500
Connection set TS / clamp	3	Connection of the ELEKTROMATEN using the terminals in the box; use, for example, for routing the connection cable through the wall; Length of cable: 0.22 m	30005728
Spiral cable with junction box (IP65)	4	Straight cable ends (2 m / 0.35 m); length of coiled cable: 0.9 m; max. stretched length: 4 m - Suitable for System 1 and System 2 - System 1 = one junction box - System 2 = junction box + junction end box; Are also required for system 2: 5 + 6	20002620.00020
Junction end box (IP65) for system 2	5	With plug-in connection points for transmitter / receiver, as well as for pass-door and slack-rope switches	30004834
Connection cable for system 2	6	Pluggable on both sides, 5-wire, cable length:	
		4.5 m	20002630.00450
		6.5 m	20002630.00650
		8.5 m	20002630.00850
		10.5 m	20002630.01050
Splash guard	7	Mechanical protection against water; For spiral cable with junction box 4 and junction end box 5	40017478.00001

■ Further accessories are described in Section 9 ■ **1)** Further lengths available, upon request

Example with system 1



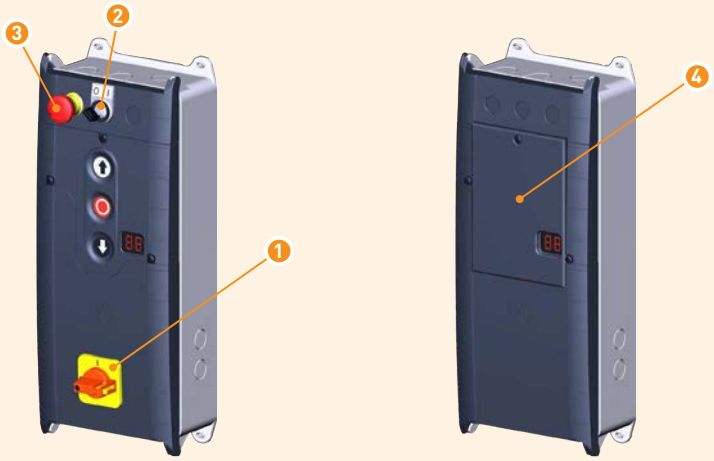
Example with system 2



Accessories

Designation		Description	Part no.
Mains switch/isolator with connection kit	1	See "Separate connection kits" on page 8.037	
Key switch	2	Assembly kit for installation in small cover, supplied with 2 keys	30004616
Emergency STOP switch	3	Assembly kit for installation in small cover	30004615
Keypad cover	4	For preventing unintentional pressing of keypad buttons (e.g. for use in underground car parks), increased protection against direct contact with water	40017317.00001
GfA-Stick	5	For use with smartphone or tablet PC together with the "GfA+" App; for reading out and displaying of important data from the door control (e.g. programming, stored error logs, etc.)	20003696

Arrangement



Spare parts TS 959

Designation		Description	Part no.
TS 959 board	1	Within cover incl. keyboard	30005241.00001
Bottom section of housing TS-B	2	For installation of the TS-board	40019859
Cover kit TS-B1	3+4+6	Consists of: small cover, large cover	30005192.00001
Cover kit TS-B1 for mains switch	3+5+6	Consists of: small cover, large cover, prepared for mains switch	30005192.00006
Spacer foot TS-B	6	4 pc	40016530

TS 970 door control

Automatic control panel for GfA ELEKTROMATEN® drives
with DES digital limit switch or NES mechanical limit switch

Approvals and certificates

TS 970

Type test according to:

DIN EN 12453	DIN EN 12978
DIN EN 60335-1	DIN EN 60335-2-103
DIN EN ISO 13849-1	TÜV NORD CERT GmbH

TS 970 – Automatic control panel for DES / NES limit switches

Technical data

- For GfA ELEKTROMATEN drives with DES or NES
- Supply voltage:
  1N~230 V, PE / 3~230 V, PE / 3N~400 V, PE / 3~400 V, PE
- Operating frequency: 50 Hz / 60 Hz
- Control voltage: 24 V DC
- Mains supply ratings for external devices: 24 V DC (0.18 A) / 230 V AC (1.6 A)
- Permissible temperature range: -10 °C...+50 °C

Housing

- Dimensions W x H x D [mm]: 155 x 386 x 90 (118[1)])
- IP65 rated when hard wired or IP54 if CEE plug used
- Protection against contact provided by covers for live parts
- Top and botton entry for ELEKTROMATEN connection cables

Design

- Integrated OPEN-STOP-CLOSE control device
- Safety reversing contactor (with 2 independent shutdown options)
- Settings via selector switch with digital display
- Pluggable connection technology
- Connection cable running to ELEKTROMATEN available in various lengths
- Independent, programmable relay contact, e.g. usable for red or green traffic-lights or dock leveller enabling
- UBS [2)] module for the simple connection of control devices, photo cells, etc. (for details on UBS accessories, see 8.091)
- Slack-rope and pass-door plug-in connection points

Accessories

- Mains switch/isolator
- Emergency STOP switch
- Key switch
- For description and details on further accessories, see 8.069

Functions

- Automatic detection of DES or NES limit switches
- Change of rotating direction from control panel push buttons
- Adjustment of limit positions (only DES) and all functions from the operator level
- Selectable operating mode:
  - CLOSE/OPEN in hold-to-run mode
  - CLOSE in hold-to-run mode/OPEN in self-hold mode
  - Hold-to-run operation with active safety edge system
  - CLOSE/OPEN in self-hold mode
- Automatic safety edge detection and evaluation:
  - Optical safety edge system (e.g. Vitector system)
  - NO-contact principle, 8k2
  - NC-contact principle, 1k2, with testing
- Automatic closing with adjustable time setting (1-240 seconds) (function can also be activated/deactivated):
  - Once the top limit position or intermediate open position has been reached, the door closes automatically after the set duration
  - Interruption to timer possible via photo cell activation
- Adjustable intermediate open position with individual programming options
- Setting of the permissible number of safety-edge actuations for automatic closure (0-10)
- Adjustable reversing duration for safety-edge actuation

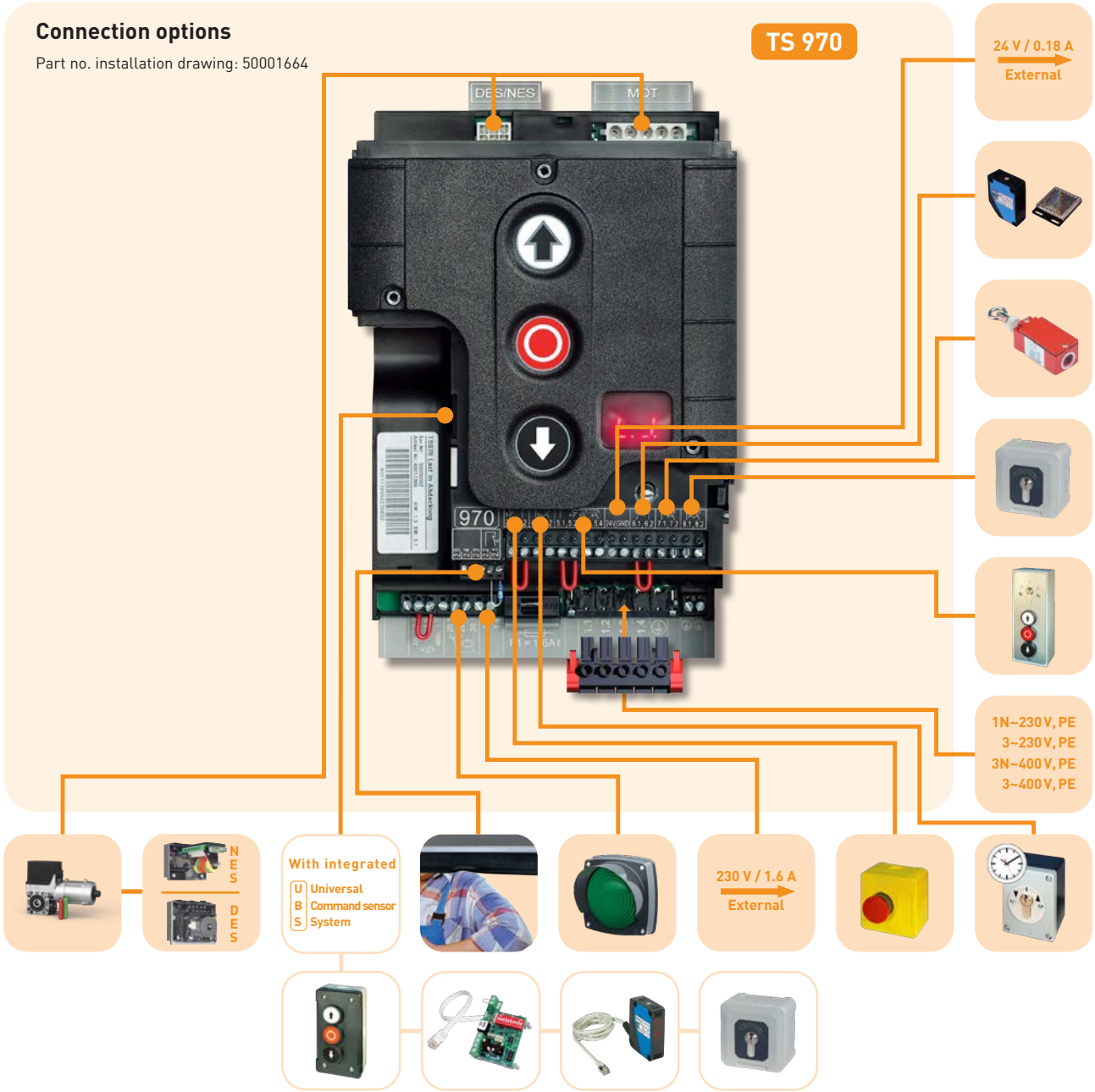
1) Version with mains switch
2) **UBS** universal command sensor system (see 8.091)

Further functions

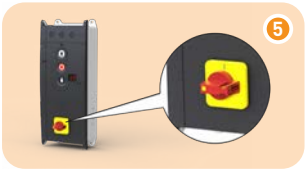
- Automatic ground adjustment (only DES) to compensate for rope stretch or subsequent change in ground height (not for pressure-wave switches)
- Overrun correction (only DES) to compensate for changes to overrun, e.g. due to influence of temperature
- Status and information display (including display of 6 most-recent faults); extended evaluation by using optionally available GfA-Stick (see 8.069)
- Cycle counter (non-resettable)
- Maintenance-cycle counter:
  - Setting range: 1,000 - 99,000 cycles
  - Display indication or switch to hold-to-run operation once the maint nance-cycle limit is reached
- Detects door/drive blockage (only DES); in this event the control deactivates the drive unit
- Dynamic run time monitoring (only NES):
  - With every door movement, the time taken to run between the end positions is measured and compared with the most-recently set reference duration
  - If the run duration is increased (pre-settable deviation), the control panel is deactivated
- Adjustable force monitoring in OPEN direction (only DES):
  - For counterbalanced doors, sudden changes to the counter-balancing are detected
  - Self-learning feature and consequently no activation of force monitoring function due to, e.g., a change in spring tension
- Automatic detection of ELEKTROMATEN unit with direct inverter (DI) or frequency inverter (FI):
  - Setting of output speed
  - Soft start and soft stop through automatic adjustment of acceleration and braking ramps
  - Possible to modify acceleration and braking ramps

Connection options

Part no. installation drawing: 50001664



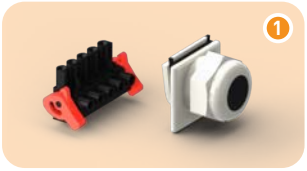
Complete door control with connection kit

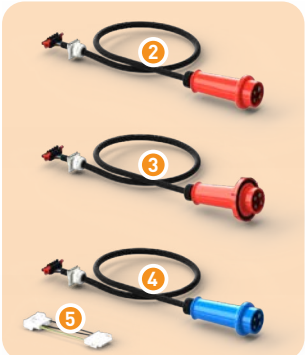


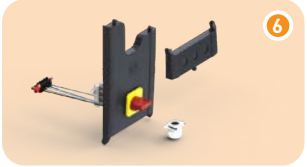
Designation		Description	Part no.
TS 970 with connection kit, when hardwired	1	With mains supply terminal and slide gland	20197000.00001
TS 970 with CEE 3N~400 V (5-pole)	2	With pluggable mains supply cable of length 0.7 m	20197000.00002
TS 970 with CEE 1N~230 V (3-pole)	3	With pluggable mains supply cable of length 0.7 m	20197000.00006
TS 970 with CEE 1N~230 V asym. (3-pole)	3	For SI 25.15 WS / SI 45.7 WS / ST 16.24 WS; with pluggable mains supply cable of length 0.7 m	20197000.00014
TS 970 with CEE 3~230 V (4-pole)	3	With pluggable mains supply cable of length 0.7 m	20197000.00017
Adapter for 3~230 V power grids	4	For the connection of single-phase ELEKTROMATEN FI at 3~230 V power grids	30005855
TS 970 with mains switch / isolator 3N~400 V	5	With mains switch / isolator in large cover	20197000.00021
TS 970 with mains switch / isolator 1N~230 V	5	With mains switch / isolator in large cover	20197000.00026

Designation		Description	Part no.
TS 970-XL in plastic housing		W x H x D [mm]: 300 x 400 x 132 (165); Protection class: IP65 - Slide gland for pluggable connection cable running to ELEKTROMATEN drives - 3 DIN mounting rails - 6 x M20 cable glands	
Part no. installation drawing: 50001908	6	Version with mains switch 3N~400 V	20197000.20021
	7	Version when hardwired 230 V-400 V	20197000.20001
	8	Lock for padlock (2 pc)	40019408

Separate connection kits

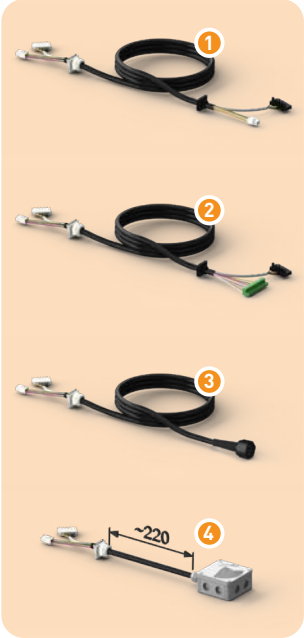


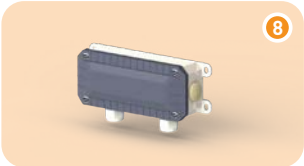


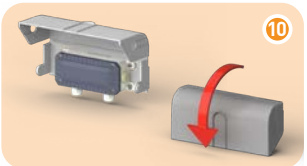


Designation		Description	Part no.
Connection kit, when hardwired	1	Mains supply terminal and slide gland	30005132.00001
Connection kit CEE 3N~400 V (5-pole.)	2	With pluggable mains supply cable of length 0.7 m	30005132.00002
Connection kit CEE 3N~400 V, IP65 (5-pole)	3	With pluggable mains supply cable of length 0.7 m	30005132.00004
Connection kit CEE 1N~230 V (3-pole)	4	With pluggable mains supply cable of length 0.7 m;	30005132.00006
Connection kit CEE 1N~230 V asym. (3-pole)	4	For SI 25.15 WS / SI 45.7 WS / ST 16.24 WS; with pluggable mains supply cable of length 0.7 m	30005132.00014
Connection kit CEE 3~230 V (4-pole)	4	With pluggable mains supply cable of length 0.7 m	30005132.00017
Adapter for 3~230 V power grids	5	For the connection of single-phase ELEKTROMATEN FI at 3~230 V power grids	30005855
Mains switch / isolator with connection kit 3N~400 V	6	Assembly kit for mains switch / isolator (complete)	30005132.00021
Mains switch / isolator with connection kit 1N~230 V	6	Assembly kit for mains switch / isolator (complete)	30005132.00026

Accessories







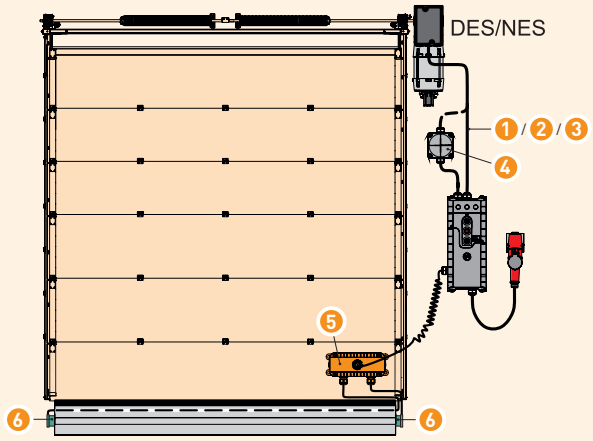
Designation		Description	Part no.
DES connection cable	1	Connection to ELEKTROMATEN drives with digital limit switch, pluggable on both sides; length of cable[1]:	
		3 m	20002420.00300
		5 m	20002420.00500
		7 m	20002420.00700
		9 m	20002420.00900
		11 m	20002420.01100
		13 m	20002420.01300
		15 m	20002420.01500
NES connection cable	2	Connection to ELEKTROMATEN drives with mechanical limit switch, pluggable on both sides; length of cable[1]:	
		3 m	20002320.00300
		5 m	20002320.00500
		7 m	20002320.00700
		9 m	20002320.00900
		11 m	20002320.01100
		13 m	20002320.01300
		15 m	20002320.01500
XES connection cable	3	Connection to ELEKTROMATEN SE 8.60 FI, pluggable on both sides; length of cable[1]:	
		3 m	20003673.00300
		5 m	20003673.00500
		7 m	20003673.00700
		9 m	20003673.00900
		11 m	20003673.01100
		13 m	20003673.01300
		15 m	20003673.01500
Connection set TS / clamp	4	Connection of the ELEKTROMATEN using the terminals in the box; use, for example, for routing the connection cable through the wall; Length of cable: 0.22 m	30005728
Spiral cable with junction box (IP65)	5	Straight cable ends (2 m / 0.35 m); length of coiled cable: 0.9 m; max. stretched length: 4 m - For OSE (optical safety edge system, e.g. Vitector system) - Can be combined with OSE system 1 or 2	20002620.00001
Universal OSE set, for system 1	6	System 1 = one junction box; transmitter + receiver, pluggable design with receiver (0.5 m long cable) and transmitter with	
		6.5 m cable	30005185.00650
		10.5 m cable	30005185.01050
		Are also required for system 1: 5	
Universal OSE set, for system 2	7	System 2 = junction box + junction end box; transmitter + receiver, pluggable designs with 0.5 m long cables for each	30005185.00060
		Are also required for system 2: 5+8+9	
Junction end box (IP65) for system 2	8	With plug-in connection points for transmitter / receiver, as well as for pass-door and slack-rope switches	30004834
Connection cable for system 2	9	Pluggable on both sides, 5-wire, cable length:	
		4.5 m	20002630.00450
		6.5 m	20002630.00650
		8.5 m	20002630.00850
		10.5 m	20002630.01050
Splash guard	10	Mechanical protection against water; For spiral cable with junction box 5 and junction end box 8	40017478.00001

Visual overview on page 8.075

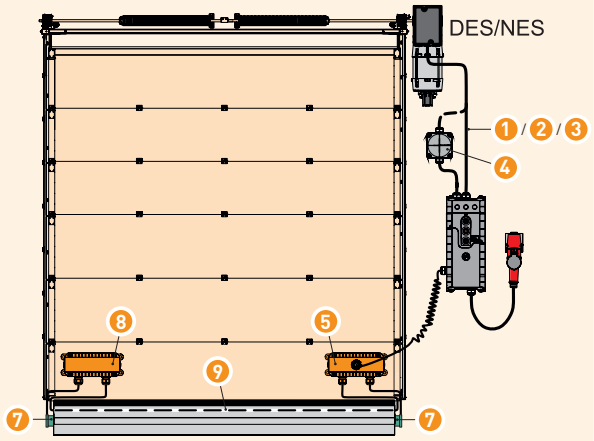
Further accessories are described in Section 9, e.g. radio from page 9.023

1) Further lengths available, upon request

Example with system 1



Example with system 2



Accessories


1


2


3


4

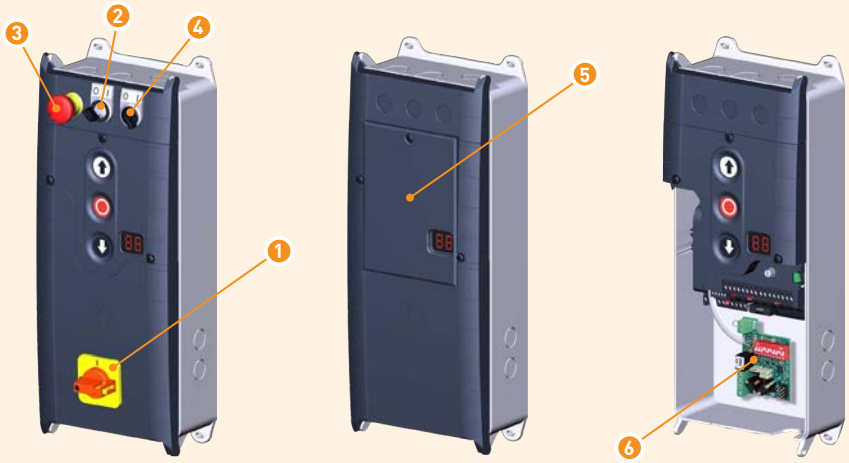

5


6


7

Designation		Description	Part no.
Mains switch/isolator with connection kit	1	See "Separate connection kits" on page 8.067	
Key switch	2	Assembly kit for installation in small cover, supplied with 2 keys	30004616
Emergency STOP switch	3	Assembly kit for installation in small cover	30004615
Toggle switch for intermediate open position	4	Assembly kit for installation in small cover	30004679
Keypad cover	5	For preventing unintentional pressing of keypad buttons (e.g. for use in underground car parks), increased protection against direct contact with water	40017317.00001
Loop detector, two-channel	6	Snap-in system (with UBS module)	40017122
GfA-Stick	7	For use with smartphone or tablet PC together with the "GfA+" App; for reading out and displaying of important data from the door control (e.g. programming, stored error logs, etc.)	20003696

Arrangement



Spare parts TS 970

Designation		Description	Part no.
TS 970 board	1	Within cover incl. keyboard	30005273.00001
Bottom section of housing TS-B	2	For installation of the TS-board	40019859
Cover kit TS-B1	3+4+6	Consists of: small cover, large cover	30005192.00001
Cover kit TS-B1 for mains switch	3+5+6	Consists of: small cover, large cover, prepared for mains switch	30005192.00006
Spacer foot TS-B	6	4 pc	40016530

Spare parts TS 970-XL

Designation		Description	Part no.
Mounting kit for housing XL	1	4 pc	40017128
Membran push button for TS-B	2	With viewing window	30005408
Hinge	3	2 pc	30005828
Top section of housing XL for TS-B	2+3+4	Consists of: Membrane push button for TS-B, hinges, cover	30005827.00001
Housing XL for TS-B	3+4+5	Consits of: Hinges, cover, bottom section with mounting plate and 3 DIN mounting rails	30005126
TS 970 board	6	Within cover incl. keyboard	30005273.00001
Mounting adapter TS-B	7	For installation of the TS-board	40019862
Connection kit, when hardwired	8+9	Consists of: Mains supply terminal and slide gland	30005132.00001
TS 970 for control enclosure installation	6+7+8	Consists of: TS 970 board, mounting adapter TS-B, mains supply terminal	30005405
Mains switch for housing XL	10	4-pole	40015183
Housing XL for TS-B with mains switch, complete	1+2+3+4+5+7+10	Consits of: Mounting kit for housing XL, Membrane push button for TS-B, Housing XL for TS-B, Mounting adapter TS-B, mains switch for housing XL	20002984.20005
Lock for padlock	11	2 pc (without padlock)	40019408

TS 971 door control

“Integrated radio“

Automatic control panel for GfA ELEKTROMATEN® drives
with DES digital limit switch or NES mechanical limit switch

Approvals and certificates

TS 971

Type test according to:

DIN EN 12453	DIN EN 12978
DIN EN 60335-1	DIN EN 60335-2-103
DIN EN ISO 13849-1	TÜV NORD CERT GmbH

TS 971 – Automatic control panel for DES / NES limit switches

Technical data

- For GfA ELEKTROMATEN drives with DES or NES
- Supply voltage:
  1N~230 V, PE / 3~230 V, PE / 3N~400 V, PE / 3~400 V, PE
- Operating frequency: 50 Hz / 60 Hz
- Control voltage: 24 V DC
- Mains supply ratings for external devices: 24 V DC (0.35 A or 1.0 A) / 230 V AC (1.6 A)
- Permissible temperature range: -10 °C...+50 °C

Housing

- Dimensions W x H x D [mm]: 155 x 386 x 90 (118 [1]))
- IP65 rated when hard wired or IP54 if CEE plug used
- Protection against contact provided by covers for live parts
- Top and botton entry for ELEKTROMATEN connection cables

Design

- Integrated OPEN-STOP-CLOSE control device with lighting system that prompts operator
- Safety reversing contactor (with 2 independent shutdown options)
- Settings via selector switch with digital display
- Pluggable connection technology
- Connection cable running to ELEKTROMATEN available in various lengths
- Integrated radio transmission system for safety devices (WSD [2]) or pluggable connection technology for spiral cables
- Integrated radio receiver for 434 MHz systems of various manufacturers
- Two independent, programmable relay contacts, e.g. usable for red/green traffic-lights or dock leveller enabling
- UBS [3] module for the simple connection of control devices, photo cells, etc. (for details on UBS accessories, see 8.091)
- Slack-rope and pass-door plug-in connection points (also via WSD)

1) Version with mains switch
2) **W**ireless **S**afety **D**evice
3) **UBS** universal command sensor system (see 8.091)

Accessories

- Mains switch / isolator
- Emergency STOP switch
- Key switch
- For description and details on further accessories, see 8.075

Functions

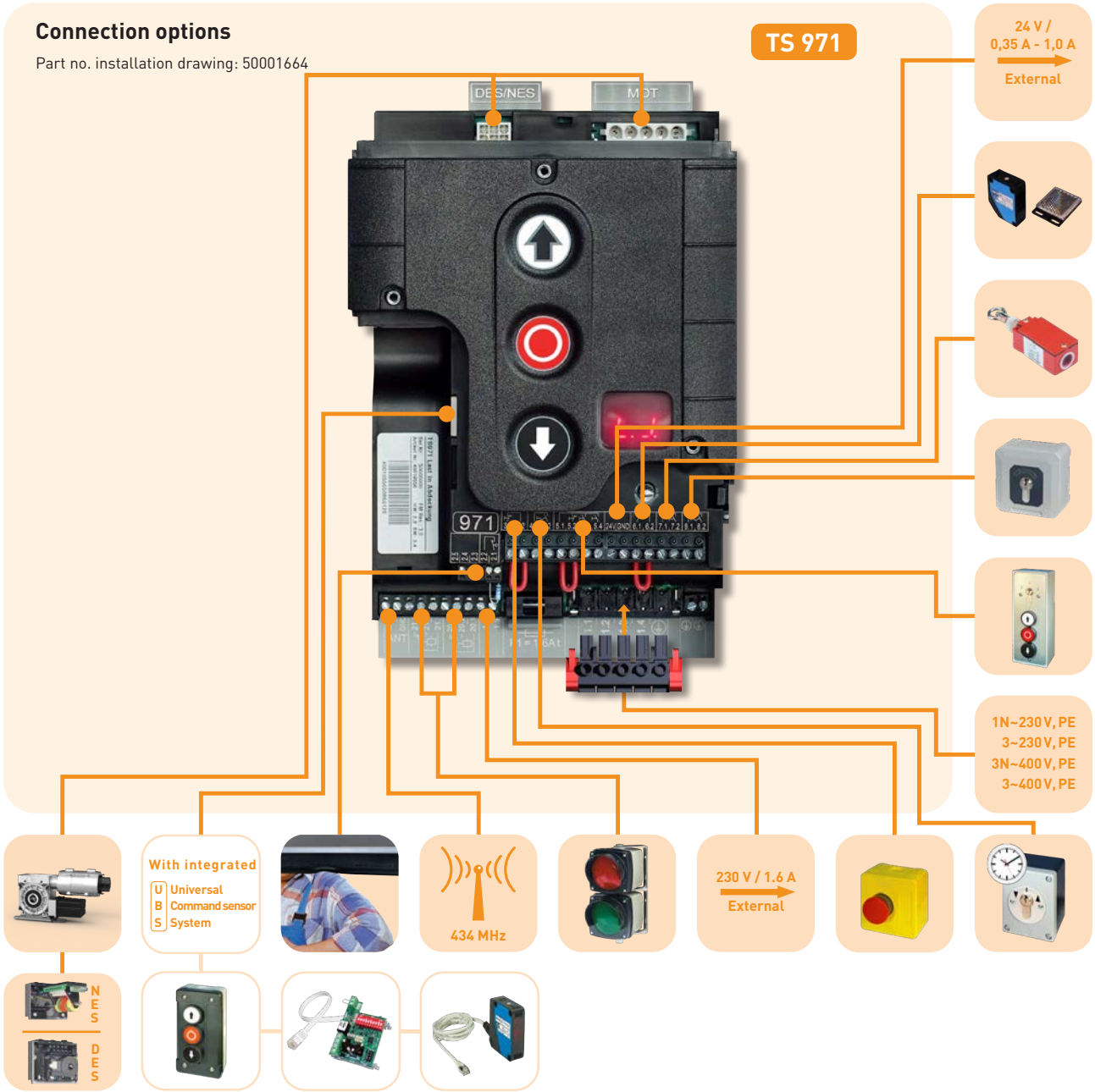
- Automatic detection of DES or NES limit switches
- Change of rotating direction from control panel push buttons
- Adjustment of limit positions (only DES) and all functions from the operator level
- Selectable operating mode:
  - CLOSE / OPEN in hold-to-run mode
  - CLOSE in hold-to-run mode / OPEN in self-hold mode
  - Hold-to-run operation with active safety edge system
  - CLOSE / OPEN in self-hold mode
- Automatic safety edge detection and evaluation:
  - Optical safety edge system (e.g. Vitector system)
  - NO-contact principle, 8k2
  - NC-contact principle, 1k2, with testing
- Automatic closing with adjustable time setting (1-240 seconds) (function can also be activated/deactivated):
  - Once the top limit position or intermediate open position has been reached, the door closes automatically after the set duration
  - Interruption to timer possible via photo cell activation
- Adjustable intermediate open position with individual programming options
- Setting of the permissible number of safety-edge actuations for automatic closure (0-10)
- Adjustable reversing duration for safety-edge actuation

Further functions

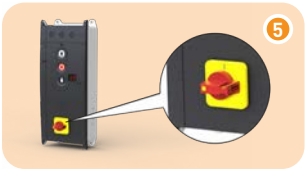
- Automatic ground adjustment (only DES) to compensate for rope stretch or subsequent change in ground height (not for pressure-wave switches)
- Overrun correction (only DES) to compensate for changes to overrun, e.g. due to influence of temperature
- Status and information display (including display of 6 most-recent faults); extended evaluation by using optionally available GfA-Stick (see 8.075)
- Cycle counter (non-resettable)
- Maintenance-cycle counter:
  - Setting range: 1,000 - 99,000 cycles
  - Display indication or switch to hold-to-run operation once the maintenance-cycle limit is reached
- Detects door / drive blockage (only DES); in this event the control deactivates the drive unit
- Dynamic run time monitoring (only NES):
  - With every door movement, the time taken to run between the end positions is measured and compared with the most-recently set reference duration
  - If the run duration is increased (pre-settable deviation), the control panel is deactivated
- Adjustable force monitoring in OPEN direction (only DES):
  - For counterbalanced doors, sudden changes to the counter-balancing are detected
  - Self-learning feature and consequently no activation of force monitoring function due to, e.g., a change in spring tension
- Automatic detection of ELEKTROMATEN unit with direct inverter (DI) or frequency inverter (FI):
  - Setting of output speed
  - Soft start and soft stop through automatic adjustment of acceleration and braking ramps
  - Possible to modify acceleration and braking ramps

Connection options

Part no. installation drawing: 50001664



Complete door control with connection kit

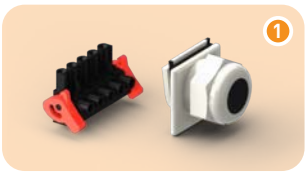


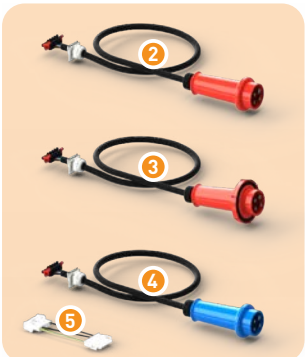
Designation		Description	External 24 V 350 mA DC Part no.	External 24 V 1000 mA DC Part no.
TS 971 with connection kit, when hardwired	1	With mains supply terminal and slide gland	20097100.00001	20197100.30001
TS 971 with CEE 3N~400 V (5-pole)	2	With pluggable mains supply cable of length 0.7 m	20097100.00002	20197100.30002
TS 971 with CEE 1N~230 V (3-pole)	3	With pluggable mains supply cable of length 0.7 m	20097100.00006	20197100.30006
TS 971 with CEE 1N~230 V asym. (3-pole)	3	For SI 25.15 WS / SI 45.7 WS / ST 16.24 WS; with pluggable mains supply cable of length 0.7 m	20097100.00014	20197100.30014
TS 971 with CEE 3~230 V (4-pole)	3	With pluggable mains supply cable of length 0.7 m	20097100.00017	20197100.30017
Adapter for 3~230 V power grids	4	For the connection of single-phase ELEKTROMATEN FI at 3~230 V power grids	30005855	30005855
TS 971 with mains switch/isolator 3N~400 V	5	With mains switch/isolator in large cover	20097100.00021	20197100.30021
TS 971 with mains switch/isolator 1N~230 V	5	With mains switch/isolator in large cover	20097100.00026	20197100.30026

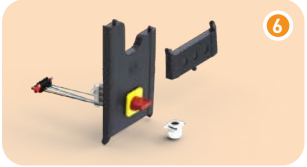
Designation		Description	Part no.
TS 971-XL in plastic housing		WxHxD [mm]: 300x400x132 (165); Protection class: IP65 - Slide gland for pluggable connection cable running to ELEKTROMATEN drives - 3 DIN mounting rails - 6 x M20 cable glands	
Part no. installation drawing: 50001908	6	Version with mains switch 3N~400 V (24 V 350 m DC)	20097100.20021
	6	Version with mains switch 3N~400 V (24 V 1000 mA DC)	20197100.40021
	7	Version when hardwired 230 V-400 V (24 V 350 mA DC)	20097100.20001
	8	Lock for padlock (2 pc)	40019408
TS 971 in stainless steel control enclosure[1]	9	WxHxD [mm]: 400x400x200; Protection class: IP66 - 4-pole mains switch - 3 DIN mounting rails - 8 cable glands	
(For areas with high demands on hygiene or corrosion protection)		Version AISI 304L (V2A)	20097199.00001
		Version AISI 316L (V4A)	20097199.00002
	10	Rod aerial ANT3[2] with 3m coax cable	40000351

1) Using the WSD system of TS 971 is not possible
2) Required when using the integrated 434 MHz radio system

Separate connection kits

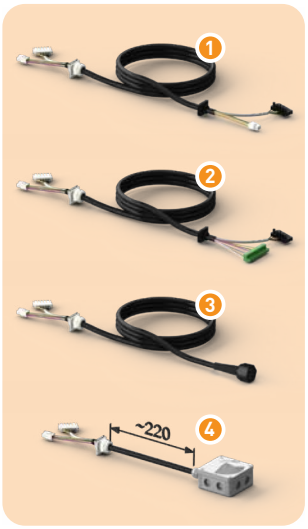


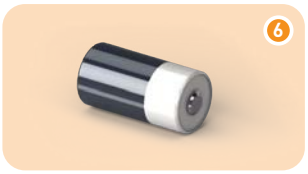


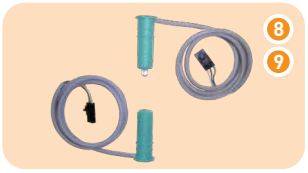


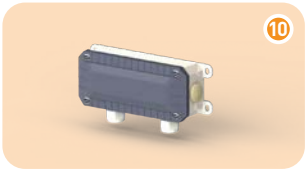
Designation		Description	Part no.
Connection kit, when hardwired	1	Mains supply terminal and slide gland	30005132.00001
Connection kit CEE 3N~400 V (5-pole.)	2	With pluggable mains supply cable of length 0.7 m	30005132.00002
Connection kit CEE 3N~400 V, IP65 (5-pole)	3	With pluggable mains supply cable of length 0.7 m	30005132.00004
Connection kit CEE 1N~230 V (3-pole)	4	With pluggable mains supply cable of length 0.7 m;	30005132.00006
Connection kit CEE 1N~230 V asym. (3-pole)	4	For SI 25.15 WS / SI 45.7 WS / ST 16.24 WS; with pluggable mains supply cable of length 0.7 m	30005132.00014
Connection kit CEE 3~230 V (4-pole)	4	With pluggable mains supply cable of length 0.7 m	30005132.00017
Adapter for 3~230 V power grids	5	For the connection of single-phase ELEKTROMATEN FI at 3~230 V power grids	30005855
Mains switch/isolator with connection kit 3N~400 V	6	Assembly kit for mains switch/isolator (complete)	30005132.00021
Mains switch/isolator with connection kit 1N~230 V	6	Assembly kit for mains switch/isolator (complete)	30005132.00026

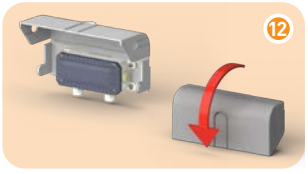
Accessories











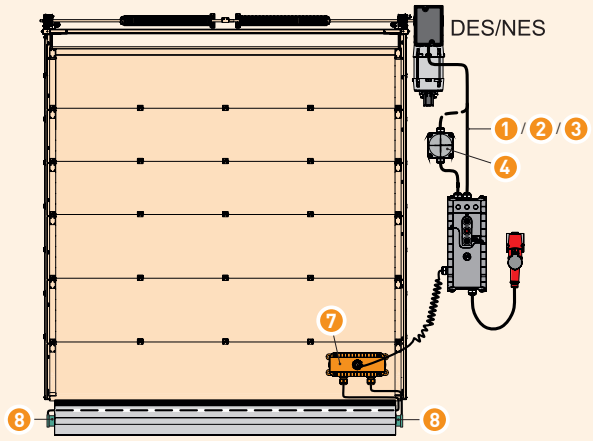
Designation		Description	Part no.
DES connection cable	1	Connection to ELEKTROMATEN drives with digital limit switch, pluggable on both sides; length of cable[1]:	
		3 m	20002420.00300
		5 m	20002420.00500
		7 m	20002420.00700
		9 m	20002420.00900
		11 m	20002420.01100
		13 m	20002420.01300
		15 m	20002420.01500
NES connection cable	2	Connection to ELEKTROMATEN drives with mechanical limit switch, pluggable on both sides; length of cable[1]:	
		3 m	20002320.00300
		5 m	20002320.00500
		7 m	20002320.00700
		9 m	20002320.00900
		11 m	20002320.01100
		13 m	20002320.01300
		15 m	20002320.01500
XES connection cable	3	Connection to ELEKTROMATEN SE 8.60 FI, pluggable on both sides; length of cable[1]:	
		3 m	20003673.00300
		5 m	20003673.00500
		7 m	20003673.00700
		9 m	20003673.00900
		11 m	20003673.01100
		13 m	20003673.01300
		15 m	20003673.01500
Connection set TS / clamp	4	Connection of the ELEKTROMATEN using the terminals in the box; use, for example, for routing the connection cable through the wall; Length of cable: 0.22 m	30005728
WSD (with battery[2])	5	Wireless safety device (2,4 GHz), IP65 (receiver integrated in TS 971) - Evaluation for common safety-edge systems and for for pass-door and slack-rope switches - Pluggable connection technology - Wide operating range - Can be combined with OSE system 1 or 2	30005154
Battery[2] for WSD	6	Replacement, suitable for WSD (3.6 V)	
		1 pc	40017039
		10 pc	40017079
		40 pc	40017040
Spiral cable with junction box (IP65)	7	Straight cable ends (2 m / 0.35 m); length of coiled cable: 0.9 m; max. stretched length: 4 m - For OSE (optical safety edge system, e.g. Vitector system) - Can be combined with OSE system 1 or 2	20002620.00001
Universal OSE set, for system 1	8	System 1 = one junction box (with WSD or spiral cable); transmitter + receiver, pluggable design with receiver (0.5 m long cable) and transmitter with	
		6.5 m cable	30005185.00650
		10.5 m cable	30005185.01050
		Are also required for system 1: 5 or 7	
Universal OSE set, for system 2	9	System 2 = junction box (with WSD or spiral cable) + junction end box; transmitter + receiver, pluggable designs with 0.5 m long cables for each	30005185.00060
		Are also required for system 2: 5 or 7 as well as 10+11	
Junction end box (IP65) for system 2	10	With plug-in connection points for transmitter / receiver, as well as for pass-door and slack-rope switches	30004834
Connection cable for system 2	11	Pluggable on both sides, 5-wire, cable length:	
		4.5 m	20002630.00450
		6.5 m	20002630.00650
		8.5 m	20002630.00850
		10.5 m	20002630.01050
Splash guard	12	Mechanical protection against water; For WSD 5, spiral cable with junction box 7 and junction end box 10	40017478.00001

Visual overview on page 8.075
Further accessories are described in Section 9, e.g. radio from page 9.023

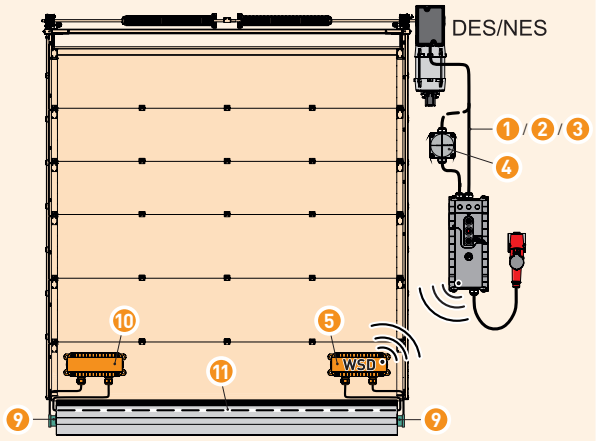
1) Further lengths available, upon request

2) Average service life of 1.5 years, approx.

Example with spiral cable and system 1



Example with WSD and system 2



Accessories


1


2


3


4

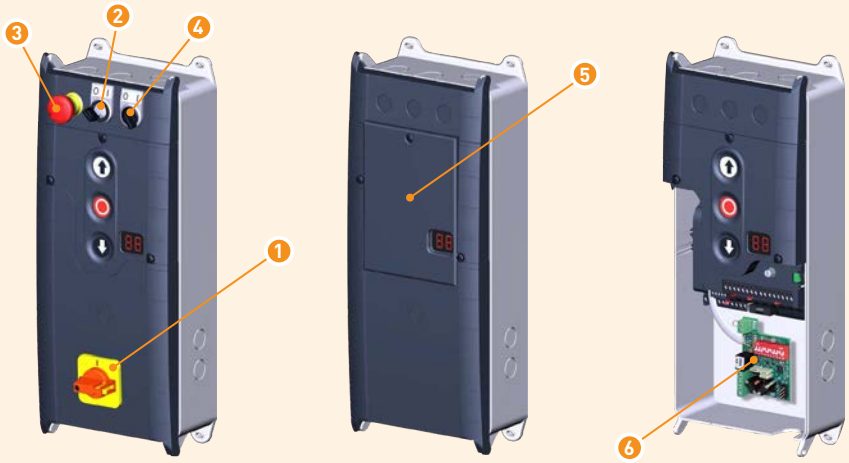

5


6


7

Designation		Description	Part no.
Mains switch/isolator with connection kit	1	See "Separate connection kits" on page 8.073	
Key switch	2	Assembly kit for installation in small cover, supplied with 2 keys	30004616
Emergency STOP switch	3	Assembly kit for installation in small cover	30004615
Toggle switch for intermediate open position	4	Assembly kit for installation in small cover	30004679
Keypad cover	5	For preventing unintentional pressing of keypad buttons (e.g. for use in underground car parks), increased protection against direct contact with water	40017317.00001
Loop detector, two-channel	6	Snap-in system (with UBS module)	40017122
GfA-Stick	7	For use with smartphone or tablet PC together with the "GfA+" App; for reading out and displaying of important data from the door control (e.g. programming, stored error logs, etc.)	20003696

Arrangement



Spare parts TS 971

Designation		Description	Part no.
TS 971 board (24 V 350 mA DC) TS 971 board (24 V 1000 mA DC)	1	Within cover incl. keyboard	30005070.00001 30005070.00012
Bottom section of housing TS-B	2	For installation of the TS-board	40019858
Cover kit TS-B1	3+4+6	Consists of: small cover, large cover	30005192.00001
Cover kit TS-B1 for mains switch	3+5+6	Consists of: small cover, large cover, prepared for mains switch	30005192.00006
Spacer foot TS-B	6	4 pc	40016530

Spare parts TS 971-XL

Designation		Description	Part no.
Mounting kit for housing XL	1	4 pc	40017128
Membrane push button for TS-B	2	With viewing window	30005408
Hinge	3	2 pc	30005828
Top section of housing XL for TS-B	2+3+4	Consists of: Membrane push button for TS-B, hinges, cover	30005827.00001
Housing XL for TS-B	3+4+5	Consits of: Hinges, cover, bottom section with mounting plate and 3 DIN mounting rails	30005126
TS 971 board	6	Within cover incl. keyboard	30005070.00001
Mounting adapter TS-B	7	For installation of the TS-board	40019861
Connection kit, when hardwired	8+9	Consists of: Mains supply terminal and slide gland	30005132.00001
TS 971 for control enclosure installation	6+7+8	Consists of: TS 971 board, mounting adapter TS-B, mains supply terminal	30005406
Mains switch for housing XL	10	4-pole	40015183
Housing XL for TS-B with mains switch, complete	1+2+3+4+5+7+10	Consits of: Mounting kit for housing XL, Membrane push button for TS-B, Housing XL for TS-B, Mounting adapter TS-B, mains switch for housing XL	20002984.20005
Lock for padlock	11	2 pc (without padlock)	40019408

TS 981 door control

Control panel with traffic management for GfA ELEKTROMATEN® drives
with DES digital limit switch

Approvals and certificates

TS 981 / TS 981 FT

Type test according to:

DIN EN 12453	DIN EN 12978
DIN EN 60335-1	DIN EN 60335-2-103
DIN EN ISO 13849-1	TÜV NORD CERT GmbH

TS 981 – Control panel with traffic management for DES

Technical data

- For GfA ELEKTROMATEN drives with digital limit switch DES
- Supply voltage:
  1N~230 V, PE / 3~230 V, PE / 3N~400 V, PE / 3~400 V, PE
- Operating frequency: 50 Hz / 60 Hz
- Control voltage: 24 V DC
- Mains supply ratings for external devices: 24 V DC (1 A) / 230 V AC (1,6 A)
- Permissible temperature range: -10 °C...+50 °C

Housing

- Dimensions W x H x D [mm]: 190 x 300 x 115 mm
- IP65 rated when hard wired or IP54 with CEE plug
- Live electrical parts covered
- Incl. drilling template and fixing elements

Description

- Integrated OPEN-STOP-CLOSE control device
- Connection points for two external three push buttons
- For hard wiring or with ready wired CEE plug and mains supply cable of length 0.7m
- Settings via selector switch with digital display
- Pluggable connection technology
- Connection cable running to ELEKTROMATEN available in various lengths
- Two independent, programmable relay contacts [1], e.g. for use as status contacts
- UBS [2] module with 5 plug-in points for the simple connection of control devices, photo cells, radio receivers etc. (for details on UBS accessories, see 8.091)
- Slack-rope and pass-door plug-in connection points
- Terminals for two pull-switches or radio control 1- or 2-channel available, functions programmable

Accessories

- Emergency STOP switch
- Key switch
- For description and details on further accessories, see 8.085

Functions

- Adjustment of limit positions and all functions from the operator level
- Selectable operating mode:
  - CLOSE/OPEN in hold-to-run mode
  - CLOSE in hold-to-run mode/OPEN in self-hold mode
  - CLOSE/OPEN in self-hold mode
- Automatic safety edge detection and evaluation:
  - Optical safety edge system (e.g. Vitector system)
  - NO-contact principle, 8k2
  - NC-contact principle, 1k2, with testing
- Automatic closing with adjustable time setting (1-240 seconds) (function can also be activated/deactivated):
  - Once the top limit position or intermediate open position has been reached, the door closes automatically after the set duration
  - Interruption to timer possible via photo cell activation
- Adjustable intermediate open position with individual programming options
- Entrapment evaluation, selectable:
  - Optical systems
  - NC/NO contact with resistor
  - Safety photo cells
- Automatic ground adjustment to compensate for rope stretch or subsequent change in ground height (not for pressure-wave switches)
- Overrun correction to compensate for changes to overrun, e.g. due to influence of temperature
- Status and information display (including display of the two recent faults)
- Cycle counter (non-resettable)

1) Additional five contacts available (via optional SMF module)
2) **UBS** universal command sensor system (see S. 8.091)

Further functions

- Maintenance-cycle counter:
  - Setting range: 1,000 - 99,000 cycles
  - Display indication or switch to hold-to-run operation once the maintenance-cycle limit is reached
- Detects door/drive blockage; in this event the control deactivates the drive unit
- Adjustable force monitoring in OPEN direction:
  - For counterbalanced doors, sudden changes to the counter-balancing are detected
  - Self-learning feature and consequently no activation of force monitoring function due to, e.g., a change in spring tension
- Automatic detection of ELEKTROMATEN unit with direct inverter (DI) or frequency inverter (FI):
  - Setting of output speed
  - Soft start and soft stop through automatic adjustment of acceleration and braking ramps
  - Possible to modify acceleration and braking ramps
- RWA function (smoke and heat extraction) actuates a compulsory door opening, to be used with external smoke alarm systems
- One-way and two-way traffic control with adjustable functions such as: fore-warning time, extension of greenlight period, clearance time as well as priority to entry or exit
- Slot for memory cards [2], for installing or upgrading software with SD or MMC cards

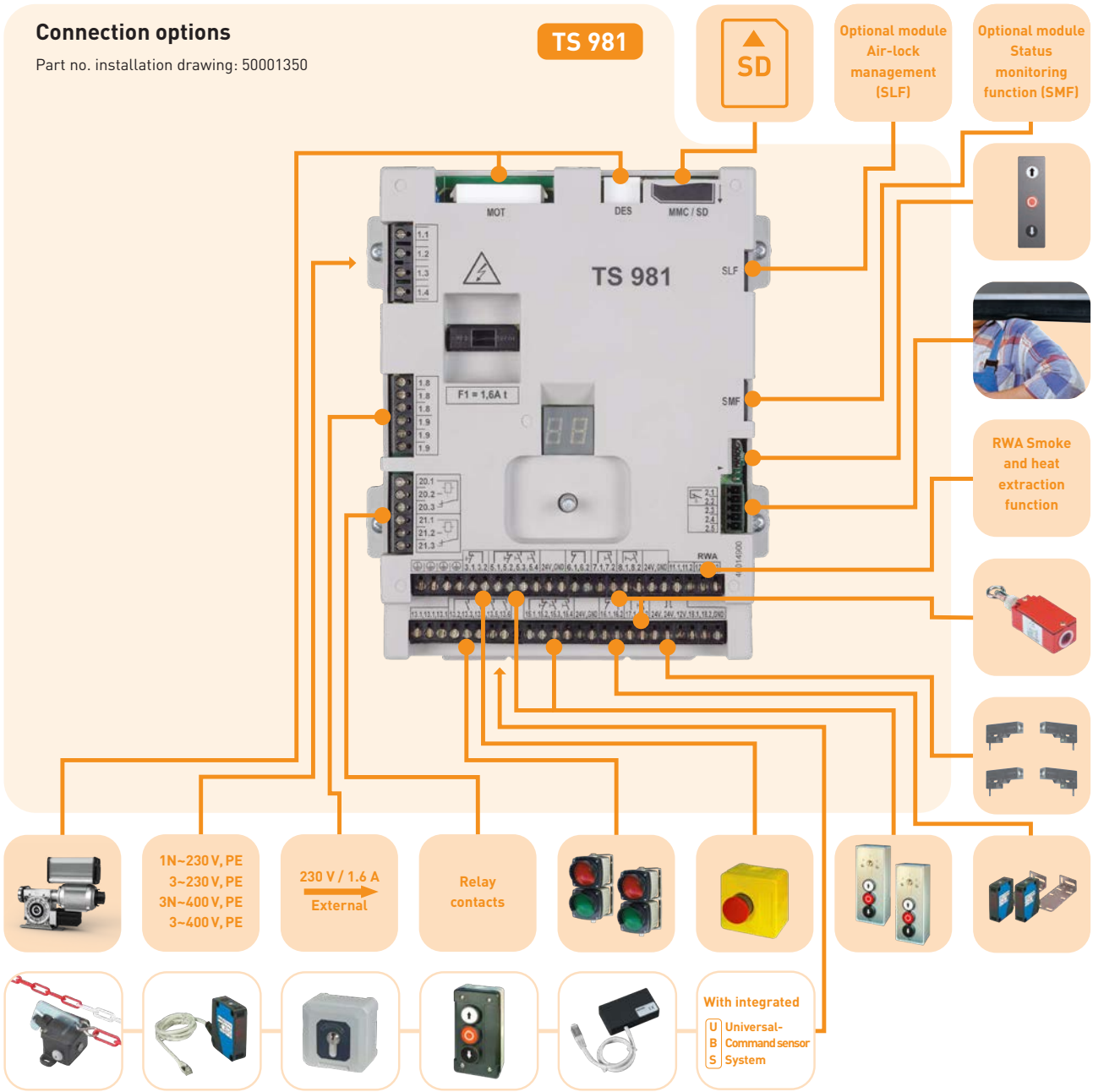
Special functions via optional modules

- Status monitoring module (SMF): Additional five contacts available for positioning and fault information
- Air-lock module (SLF): For operating two TS 981 as an air-lock
- Panic module (extension to the SLF module): Interrupting the air-look function if an additional control device is actuated

1) Only for memory cards up to 1 GB

Connection options

Part no. installation drawing: 50001350



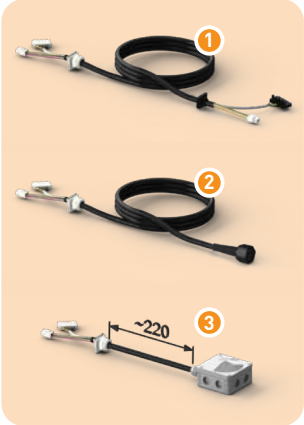
Door control

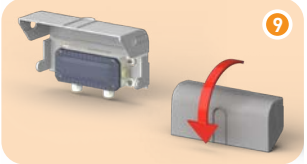
Designation		Description	Part no.
TS 981 for hardwiring	1	Without mains supply cable	20098100.00001
TS 981 with CEE 3N~400 V (5-pole)	2	With mains supply cable of length 0.7 m	20098100.00002
TS 981-FT with CEE 3N~400 V (5-pole)	3	For Folding-door-ELEKTROMATEN FT; with mains supply cable of length 0.7 m	20098151.00002
TS 981 with CEE 1N~230 V (3-pole)	4	With mains supply cable of length 0.7 m	20098100.00006
TS 981 with CEE 1N~230 V asym. (3-pole)	4	For SI 25.15 WS / SI 45.7 WS / ST 16.24 WS; with mains supply cable of length 0.7 m	20098100.00014

Designation		Description	Part no.
TS 981-XL in plastic housing		W x H x D [mm]: 300 x 400 x 132 (165); Protection class: IP65 - Slide gland for pluggable connection cable running to ELEKTROMATEN drives - 3 DIN mounting rails - 6 x M20 cable glands	
Part no. installation drawing: 50001908	5	Version with mains switch 3N~400 V	20098100.20021
	6	Version when hardwired 230 V-400 V	20098100.20001
	7	Lock for padlock (2 pc)	40019408

Designation		Description	Part no.
TS 981 in stainless steel control enclosure	8	W x H x D [mm]: 400x400x200; Protection class: IP66 - 4-pole mains switch - 3 DIN mounting rails - 8 cable glands	
(For areas with high demands on hygiene or corrosion protection)		Version AISI 304L (V2A) Version AISI 316L (V4A)	20098199.00001 20098199.00002

Accessories



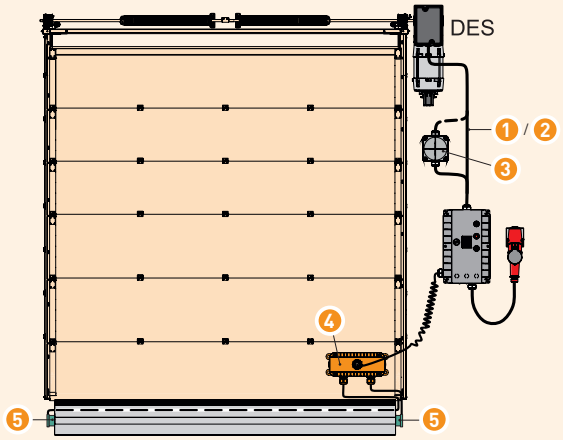


Designation		Description	Part no.
DES connection cable	1	Connection to ELEKTROMATEN drives with digital limit switch, pluggable on both sides; length of cable[1]:	
		3 m	20002420.00300
		5 m	20002420.00500
		7 m	20002420.00700
		9 m	20002420.00900
		11 m	20002420.01100
		13 m	20002420.01300
		15 m	20002420.01500
XES connection cable	2	Connection to ELEKTROMATEN SE 8.60 FI, pluggable on both sides; length of cable[1]:	
		3 m	20003673.00300
		5 m	20003673.00500
		7 m	20003673.00700
		9 m	20003673.00900
		11 m	20003673.01100
		13 m	20003673.01300
		15 m	20003673.01500
Connection set TS / clamp	3	Connection of the ELEKTROMATEN using the terminals in the box; use, for example, for routing the connection cable through the wall; Length of cable: 0.22 m	30005728
Spiral cable with junction box (IP65)	4	Straight cable ends (2 m / 0.35 m); length of coiled cable: 0.9 m; max. stretched length: 4 m - For OSE (optical safety edge system, e.g. Vitector system) - Can be combined with OSE system 1 or 2	20002620.00001
Universal OSE set, for system 1	5	System 1 = one junction box; transmitter + receiver, pluggable design with receiver (0.5 m long cable) and transmitter with	
		6.5 m cable	30005185.00650
		10.5 m cable	30005185.01050
		Are also required for system 1: 5	
Universal OSE set, for system 2	6	System 2 = junction box + junction end box; transmitter + receiver, pluggable designs with 0.5 m long cables for each	30005185.00060
		Are also required for system 2: 5+8+9	
Junction end box (IP65) for system 2	7	With plug-in connection points for transmitter / receiver, as well as for pass-door and slack-rope switches	30004834
Connection cable for system 2	8	Pluggable on both sides, 5-wire, cable length:	
		4.5 m	20002630.00450
		6.5 m	20002630.00650
		8.5 m	20002630.00850
		10.5 m	20002630.01050
Splash guard	9	Mechanical protection against water; For spiral cable with junction box 5 and junction end box 8	40017478.00001

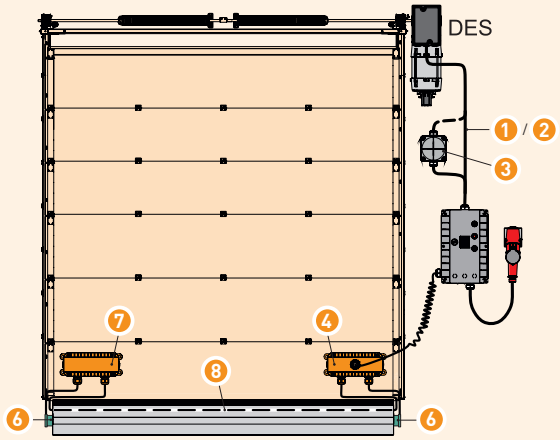
Visual overview on page 8.085
Further accessories are described in Section 9, e.g. radio from page 9.023

1) Further lengths available, upon request

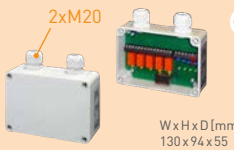
Example with system 1

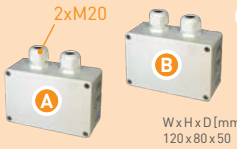


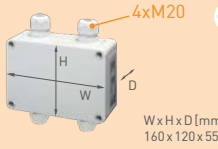
Example with system 2



Accessories







Designation		Description	Part no.
Key switch	1	Assembly kit for installation in top section of the housing, supplied with 2 keys	30004616
Emergency STOP switch	2	Assembly kit for installation in top section of the housing	30004615
Toggle switch for intermediate open position	3	Assembly kit for installation in top section of the housing	30004679
Water protection shield stainless steel made	4	Recommended to guard the door control	40015005
Status monitoring module SMF	5	Additional five potential-free relay contacts Activation at: 1. Safety edge activated 2. STOP 3. Photo cell activated 4. Final limit position CLOSE 5. Final limit position OPEN incl. connection cable to the door control	30004743
Air-lock module SLF	6	For operating two TS 981 as an air-lock; consisting of module A + B; incl. connection cable to the door control the connection between the modules should be established on site	30004742
Panic module	7	Extension to the SLF module 6 ; for fast Activating / Deactivating of the air-lock-function or opening of both doors in an emergency situation (an additional control device is needed)	30004824

Arrangement

Spare parts TS 981

Designation		Description	Part no.
TS 981 board	1	Within cover	30004613
Housing TS-A1 cpl.	2+3+4+5	Top section with screws, keyboard, hinges, bottom section	20002984.00001
Top section of housing TS-A1 cpl.	2+3+4	Top section with screws, keyboard, hinges	20002985.00001
Keyboard for TS-A1	3	With mounting material	30004638
Hinge TS-A	4	2 pc	30004632
Bottom section of housing TS-A	5		40014770

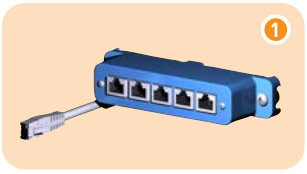
Spare parts TS 981-XL

Designation		Description	Part no.
Mounting kit for housing XL	1	4 pc	40017128
Membrane push button for TS-A	2	With viewing window	40016547
Hinge	3	2 pc	30005828
Top section of housing XL for TS-A	2+3+4	Consists of: Membrane push button for TS-A, hinges, cover	30005827.00004
Housing XL for TS-A	3+4+5	Consits of: Hinges, cover, bottom section with mounting plate and 3 DIN mounting rails	30005246
TS 981 board	6	Within cover	30004613
Mains switch for housing XL	7	4-pole	40015183
Housing XL for TS-A with mains switch, complete	1+2+3+4+5+7	Consits of: Mounting kit for housing XL, Membrane push button for TS-A, Housing XL for TS-A, mains switch for housing XL	20002984.20006
Lock for padlock	8	2 pc (without padlock)	40019408

UBS

Universal Command System
for the GfA door controls TS 970, TS 971 and TS 981

- Non-interchangeable plug-in connections for accessories, such as push button, photo cell, pull-switches, etc.
- Easy, fast, fail-safe connection
- Flexible installation by several cable lengths of 3 to 20 metres
- Freely-selectable ports
- Connection can also be carried out by non-professionals



Designation		Description	Part no.
UBS junction module	1	5 ports for fitting UBS accessories	30004648
Receiver with UBS plug-in connection	2	434 MHz, dip-switch coding Supply voltage 24 V DC	
		1-channel EKX 1M (for TS 970)	40014953
		2-channel EKX 2M[1] (for TS 981)	40014856
Three push button with UBS plug-in connection No. 31 UBS aP (wall-mounting)	3	Plastic housing, protection class IP65 Dimensions W x H x D [mm]: 72 x 138 x 48 To be used with TS 981 Selectable OPEN command for inside / outside	40014992
Key switch with UBS plug-in connection No. 420 UBS aP (wall-mounting)	4	Metal housing, protection class IP54 Dimensions W x H x D [mm]: 70 x 130 x 65 To be used with TS 981 selectable OPEN commands for inside / outside	40014994
Polarised reflex photo cell with UBS plug-in connection	5	With reflector and mounting bracket; Range 7,5 m; Protection class IP65; Voltage 24 V DC; with UBS cable: 1,5 m	30004653
UBS system cable with fitted plug on either side, and 2 cable glands	6	Length 3 m 5 m 7 m 10 m 15 m 20 m Cable glands for UBS, 10 pc	20003031.00300 20003031.00500 20003031.00700 20003031.01000 20003031.01500 20003031.02000 30004652

1) The two channels can only be used for OPEN commands (TS 981 with two-way traffic control)

Dock leveller control LB 700

with auto-return function

Control for dock levellers
with hinged wedge lip or extendible lip

Approvals and certificates

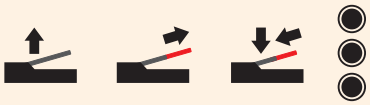
LB 700

Type test according to:
DIN EN 1398:2009-07 § 5.4.2
DIN EN ISO 13849-1: 2008-12
TÜV NORD CERT GmbH

LB 700 – **Control for dock levellers**

with hinged wedge lip (1 valve)

with extendible lip (2 valves)



Technical data

- Supply voltage: 3~230 V, PE / 3N~400 V, PE
- Operating frequency: 50 Hz
- Max. power of the hydraulic unit: 1,5 kW
- Valve voltage: 24 V DC
- Max. valve current: 1 A
- Max. power consumption of the control: 30 VA
- Max. power of traffic lights: 40 W
- Max. power of loading zone lighting: 150 W
- Permissible temperature range: +5 °C...+40 °C

Housing

- Dimensions B x H x T [mm]: 189 x 254 x 143
- Degree of protection: IP65
- Fitted with CEE-plug and 0.5 m cable ready for connection
- Integrated mains switch
- Connection cable to dock leveller, insertion from bottom or top

Description

- Integrated control device
  OPEN-AUTORETURN (hinged wedge lip);
  OPEN-EXTEND-AUTORETURN (extendible lip)
- Settings via selector switch with digital display
- Nine programmable relay contacts for implementing various functions of the dock leveller

Functions

- Extending and retracting the dock leveller
- Adjustable extending and retraction times
- Various safety functions for releasing and locking the dock leveller, for example through:
  - Door contact
  - Vehicle detector
  - Wheel-block sensor
  - Position sensor
- Control of two traffic lights and one loading zone light with additional activatable timer:
  - Red-green traffic light outside
  - Red-green traffic light inside
  - Spotlight to illuminate the loading zone
- Status and information display
  (including display of two most-recent faults)
- Cycle counter (non-resettable)
- Maintenance-cycle counter:
  - Setting range: 1,000 - 99,000 cycles
  - Display indication or switch to hold-to-run operation once the maintenance-cycle limit is reached
- Energy-saving mode:
  Optional switching off of the valve voltage after reaching the final limit positions

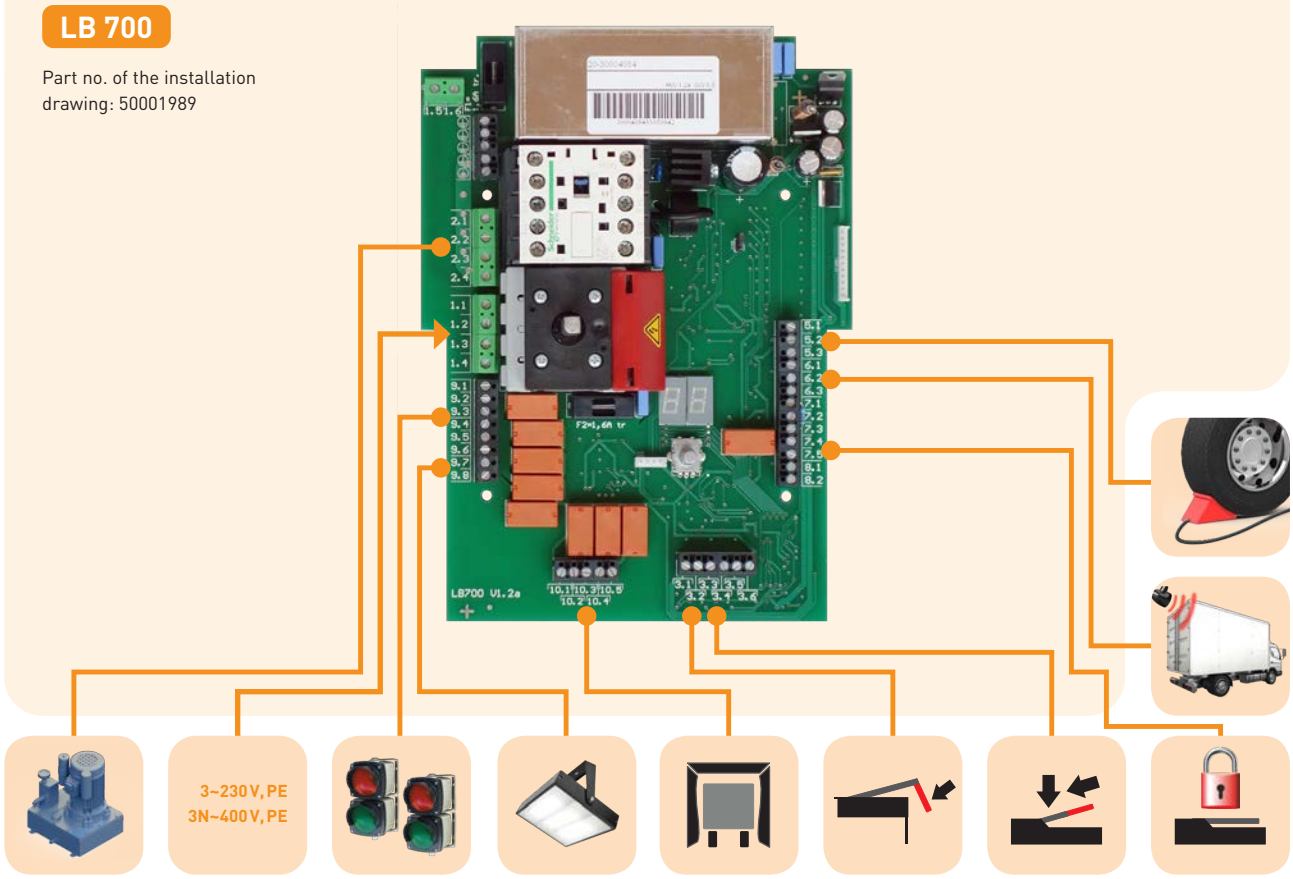
Additional functions

- Shelter function:
  For controlling a door seal; the door seal provides an energy-efficient contact between door and vehicle; Two tubular motors and one compressor can control a door seal using the LB 700; this function can be started automatically or manually

Connection options

LB 700

Part no. of the installation drawing: 50001989



Dock leveller control

Dock leveller control

Designation		Description	Part no.
LB 700 hinged wedge lip	1	For dock levellers with hinged wedge lip (1 valve)	20070000.00001
LB 700 extendible lip	2	For dock levellers with extendible lip (2 valves)	20070000.00002

Additional functions

Designation		Description
Shelter function	3	For controlling a door seal with three potential-free relay contacts

Dock leveller control with additional functions

Designation		Description	Part no.
LB 700 hinged wedge lip + Shelter	4	For dock levellers with hinged wedge lip (1 valve) + shelter fuction	20070000.00005
LB 700 extendible lip + Shelter	5	For dock levellers with extendible lip (2 valve) + shelter fuction	20070000.00006

Safety devices
Accessories
Spare parts

Safety devices 9.001
Safety edge systems-functional principles
Optical safety edge (e.g. brand Vitector)
Electrical safety edge (Gelbau system)
Pneumatic safety edge (Testing)
Safety devices against entrapment

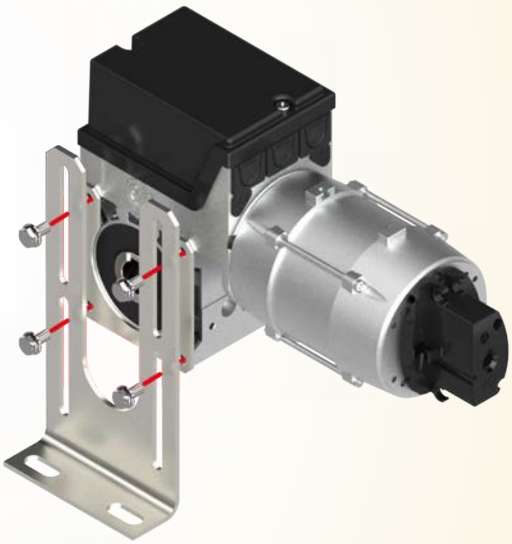
Electrical accessories 9.021
Push buttons, radio controls, switches (slack rope-/ coil spring actuator / roller arm switch, etc.), traffic light indicators, beacon, loop detectors, radar detectors, weekly timer, photo cells, Uninterrupted Power Supply (UPS) and gear box heater

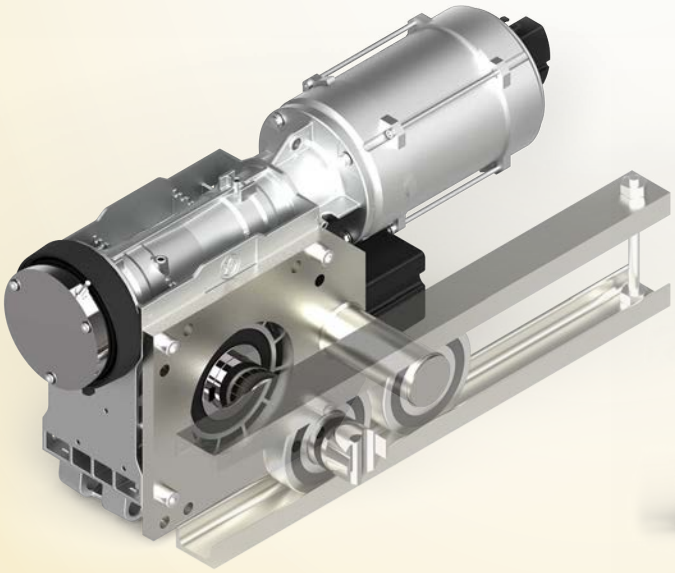
Mechanical accessories 9.029
Brackets, torque mounts, cable drums, shafts, discs, bearings, chains, sprockets, plate wheels and stub shafts

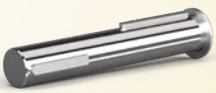
Spare parts
for ELEKTROMATEN
ELEKTROMATEN SI, ELEKTROMATEN KE, ELEKTROMATEN SE, ELEKTROMATEN ST, 9.051
ELEKTROMATEN years 1995 – 2002 9.061

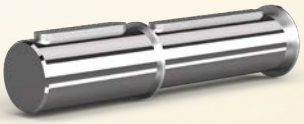
for door controls 9.062
WS 900, TS 955, TS 959, TS 960, TS 961, TS 970, TS 971, TS 981
Service case

ZB









Safety devices
Safety edge systems

Principle

Safety edge systems are protective devices designed for use with power-operated doors and gates in accordance with DIN EN 12978. They provide personal protection at main closing edge and secondary closing edges.
The use of safety edge systems is subject to the European Standard EN 12453 "Safety in use of power-operated doors" requirements, along with the corresponding specifications.

The requirements of EN 12978 regarding signal processing and Output Signal Switching Device OSSD [1] are fulfilled by GfA control units and door controls TS 970/TS 971/TS 981. The operating forces must comply with EN 12453. We offer a range of TÜV Nord-tested combinations of components in this respect.

The above-mentioned edge safety devices belong to the category of Pressure-Sensitive Protective Equipment PSPE [2].

They consist of:
- Signal transmitter (safety edge or wireless radio systems)
- Signal transfer (e.g. spiral cable)
- Signal processing and output signal switching device OSSD [1] (e.g. door controls TS 970/TS 971/TS 981 or separate evaluators)

The following operating principles apply to the signal transmitters:

Optical safety edge (e.g. Vitector OSE system) 9.002
- The optical-safety edge operates with a signal transmitter consisting of two self-controlling IR beams they are fitted into a rubber profile of the safety edge. When pressing the rubber profile the IR beam is interrupted and the evaluator recognizes a signal change.

Electrical safety edge (Gelbau system) 9.006
- The electrical safety edge operates with a signal transmitter consisting of two electrical conductors, which are kept at a certain clearance with respect to each other by the configuration of the signal transmitter. When pressing the rubber of the signal transmitter, the two conductors touch each other and the evaluator recognizes a signal change.

Pneumatic safety edge (testing) 9.009
- When the signal transmitter is triggered, a pressure impulse is generated, which actuates a membrane in the pressure-wave switch. This membrane converts the pressure impulse into an electrical signal, which can then be processed by the evaluating system.

1) Output signal switching device
2) Pressure sensitive protective equipment

Optical safety edge system

Vitector OSE system

Principle

Principle of OSE safety edge operation is that of a guided IR (Infrared) beam in a rubber profile.
When pressing the rubber profile the IR beam is interrupted and the evaluator recognizes a signal change. A re-open command is generated and the door moves to final open position.

The transmitter

The transmitter generates a pulsed infrared signal, whose strength is automatically adapted to the length of the rubber profile, in order to ensure optimum sensitivity at all times, along with a high degree of operating safety.
The transmitter is self-learning, and can thus compensate for wear on electronic components or the rubber profile, along with slight deformations caused by damage to the door panel.

The receiver

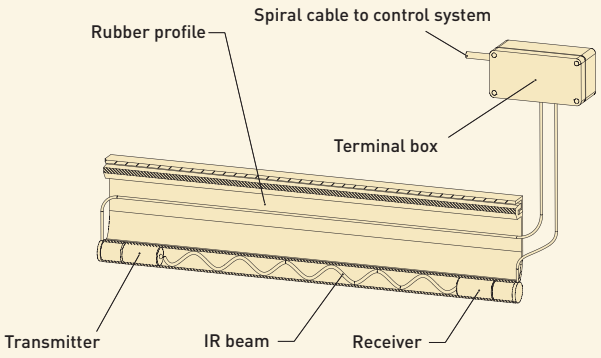
The receiver reacts to the continued presence of the dynamic infrared light beam by generating an error message.This is recognised by the signal evaluating system and triggers an interruption of the movement causing the hazard.

The signal will be recognised directly in door controls TS 970/TS 971/TS 981.
For other applications, such as use of door control WS 900, the external control unit 647 is available.

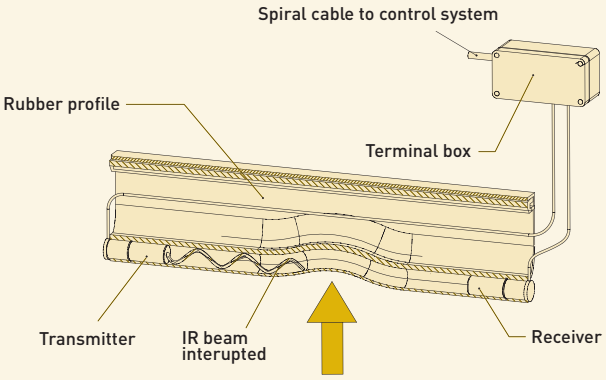
The design of the Vitector OSE optical safety edge system makes it especially suitable for DIY assembling.

Principle

Safety edge not activated



Safety edge activated



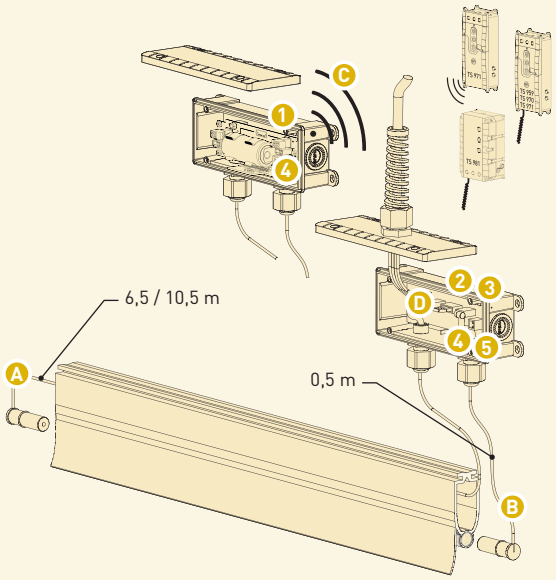
Optical safety edge system

Vitector OSE system

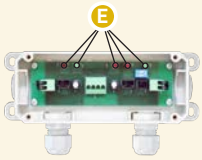
System 1 – with one junction box (1, 2 or 3)

The transmitter cable A is routed through the hollow space of the rubber profile to the junction box. The cable of the receiver B is routed directly to the junction box.

- For the WSD[1] 1 the connection to the door control is made by radio C.
- When connecting with a spiral cable 2/3, the connection to the door control is always pluggable D.
- The connections for the transmitter and receiver are pluggable 4 or screwable 5.

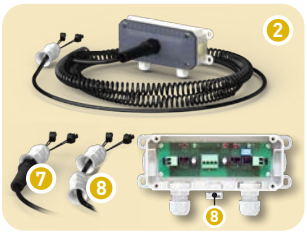


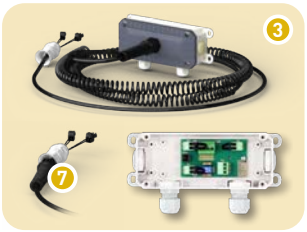
Only for 2:
Independent the displayed functions of the door control the receiver and transmitter can be checked (function and voltage) by integrated LED E.

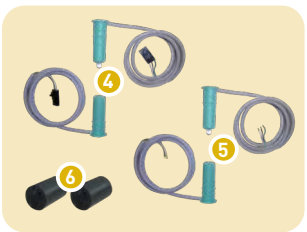


1) Wireless Safety Device - can only be used with door control TS 971

Parts







Designation		Description	Part no.
WSD (with battery[2]); IP65	1	Wireless safety device (2,4 GHz) (can only be used with door control TS 971) - Evaluation for common safety-edge systems and for for pass-door and slack-rope switches - Pluggable connection technology - Wide operating range	30005154
Spiral cable with junction box; optical safety edge; pluggable; IP65	2	For transmitter / receiver also for pass-door and slack-rope switch, spiral length 0,9 m; stretches to max. 4 m; straight cable length 2,0 m/0,35 m straight cable length 2,0 m/0,35 m + kink protection 7 straight cable length 2,0 m/0,35 m + increased protection 8 [3]	 20002620.00001 20002620.00019 20003156.00001
Spiral cable with junction box; optical safety edge; screwable; IP65	3	For transmitter / receiver also for pass-door and slack-rope switch, spiral length 0,9 m; stretches to max. 4 m; straight cable length 0,4 m/0,35 m straight cable length 2,0 m/0,35 m straight cable length 2,0 m/0,35 m + kink protection 7	 20002340.00002 20002340.00008 20002340.00018
Universal OSE set; pluggable; IP68	4	Transmitter + receiver; version with pluggable terminals; receiver (0,5 m cable) and transmitter with 6,5 m cable 10,5 m cable	 30005185.00650 30005185.01050
Universal OSE set; screwable; IP68	5	Transmitter + receiver; version with screwable terminals; receiver (0,5 m cable) and transmitter with 6,5 m cable 10,5 m cable	 30005186.00650 30005186.01050
Complete systems			
Version 1	3+5	Consisting of: 20002340.00002+30005186.00650	30005004
Version 2	3+5+6	Consisting of: 20002340.00002+30005186.00650+2x40013321[4]	30005225
Version 3	3+5+6	Consisting of: 20002340.00002+30005186.01050+2x40013321[4]	30006069

2) Average service life of 1.5 years, approx.
3) Acid resistant cable+air vent+additional attachment
4) Adapter for OSE, see page 9.005
Further accessories on page 9.005

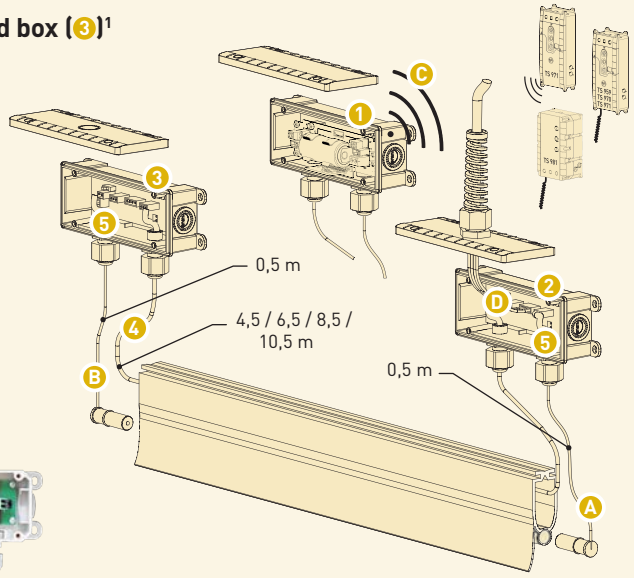
Optical safety edge system

Vitector OSE system

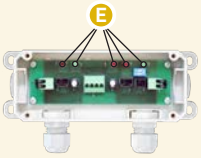
System 2 – with junction box (1 or 2) junction end box (3)[1]

The cable of the transmitter A is routed to the junction box and the cable of the receiver B is routed to the junction end box (or vice versa). The connection line 4 is routed through the hollow space of the rubber profile to the junction box 1/2 and the junction end box 3.

- For the WSD 1 the connection to the door control is made by radio C.
- When using a spiral cable 2), the connection to the door control is always pluggable. D.
- The connections for the transmitter and receiver are also pluggable 5.

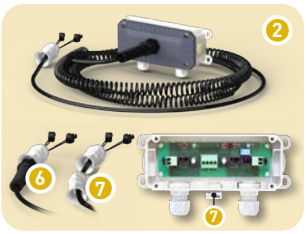


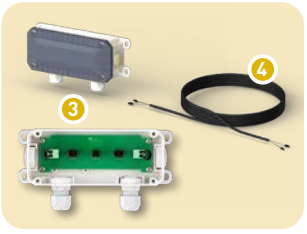
Only for 2:
Independent the displayed functions of the door control the receiver and transmitter can be checked (function and voltage) by integrated LED E.



1) For example, suited for connecting two slack-rope switches

Parts





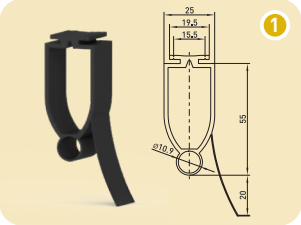
Designation		Description	Part no.
WSD (with battery[2]); IP65	1	Wireless safety device (2,4 GHz) (can only be used with door control TS 971) - Evaluation for common safety-edge systems and for for pass-door and slack-rope switches - Pluggable connection technology - Wide operating range	30005154
Spiral cable with junction box; optical safety edge; pluggable; IP65	2	For transmitter / receiver also for pass-door and slack-rope switch, spiral length 0,9 m; stretches to max. 4 m; straight cable length 2,0 m/0,35 m straight cable length 2,0 m/0,35 m + kink protection 6 straight cable length 2,0 m/0,35 m + increased protection 7 [3]	 20002620.00001 20002620.00019 20003156.00001
Junction end box; IP65	3	With plug-in connection for transmitter / receiver also for pass-door and slack-rope switch	30004834
Connection cable; pluggable	4	Plugs fitted on either side, 5-core 4,5 m 6,5 m 8,5 m 10,5 m	 20002630.00450 20002630.00650 20002630.00850 20002630.01050
Universal OSE set; pluggable; IP68	5	Transmitter + receiver; Version with pluggable terminals; each with 0,5 m cable	30005185.00060

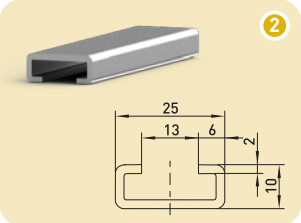
2) Average service life of 1.5 years, approx.
3) Acid resistant cable+air vent+additional attachment
4) Further accessories on page 9.005

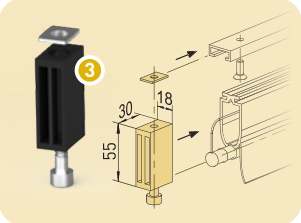
Optical safety edge system

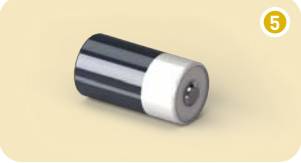
Vitector OSE system

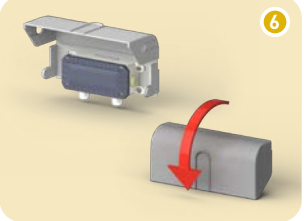
Accessories

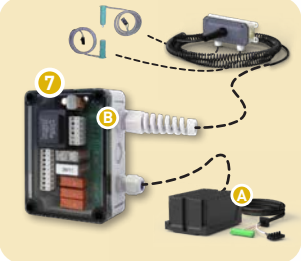












Designation		Description	Part no.
Rubber profile OSE-D-P-11-25/75	1	3 m 5 m 7 m 10 m 22 m in individual carton	30005119.00300 30005119.00500 30005119.00700 30005119.01000 30004024
C-profile for rubber made of aluminium	2	1 m 2 m	40014487 40014219
Stop buffer OSE-D-B5518	3	Incl. fixing screw	40012274
Adapter for OSE	4	Transmitter / receiver Ø 11 mm to Ø 22 mm	40013321
Battery for WSD	5	Replacement, suitable for WSD (3.6 V) 1 pc 10 pc 40 pc Average service life of 1.5 years, approx.	 40017039 40017079 40017040
Splash guard	6	Mechanical protection against water; For WSD, spiral cable with junction box and junction end box	40017478.00001
Evaluator 647	7	For use with the WS 900 reversing contactor control (A) or another door control without connection option for OSE sensors. Allows the door movement to self-hold close; option to connect 2 OSE safety edges, as main closing edge, supply voltage 230 V, IP65	40013516

(B) The spiral cable plugged into the evaluator must be changed on-site from a plug-in to a screw connection.

Electrical safety edge system

Gelbau system

Principle

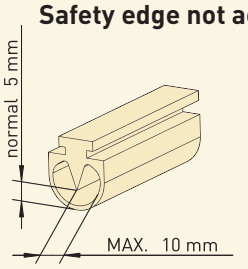
The Contact-Duo profile (signal transmitter) is fitted with two parallel-running, electrical conductors, which are isolated from each other by rubber insulators. A copper strip is also incorporated lengthways into each extruded moulding.
These electrically conductive zones carry the zero signal current, which is monitored by the signal evaluating system. Whenever the rubber profile is activated during access, a re-open command is generated and the door moves to final open position.

The signal will be recognised directly in door controls TS 970/TS 971/TS 981.

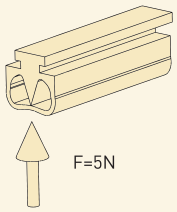
We supply assembled electrical safety edges ready to be installed on site.

Principle

Safety edge not activated



Safety edge activated

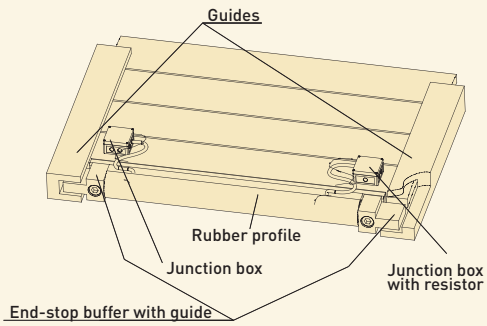


For roller shutters and sectional doors
supplied ready to be installed, for use with door controls TS 970/TS 971/TS 981

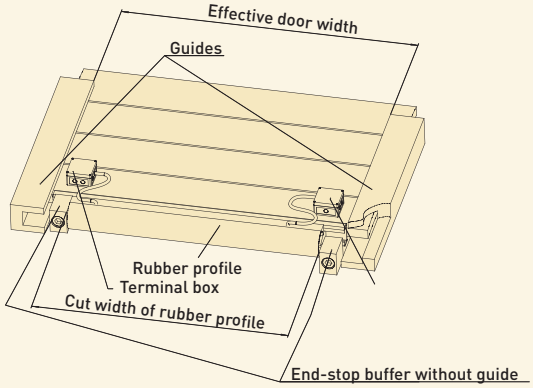
With guide (for roller shutters)
Rubber profile no. 001/002/009
Stop buffer with guide

Without guide (for roller shutters or sectional doors)
Rubber profile no. 001/002/009 Stop buffer without guide
Rubber profile no. 003/006 with Stop buffer without guide

Roller door end-piece with guide profile



Roller and sectional door without guides

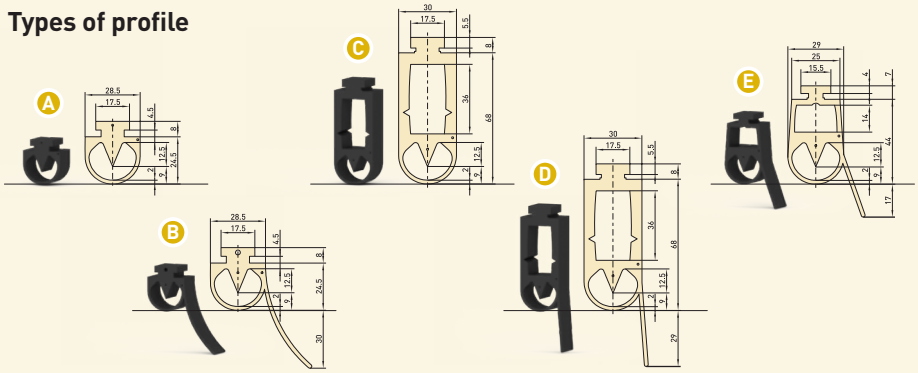


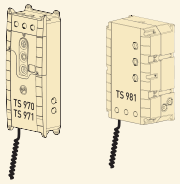
Electrical safety edge system

Gelbau system

Electrical safety edge for roller shutters and sectional doors[1)]

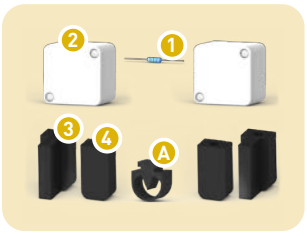
Types of profile



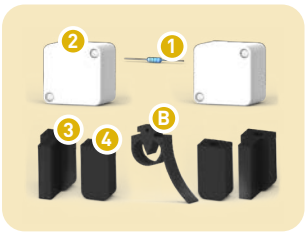


1) Supplied ready to be installed, for use with GfA door controls TS 970, TS 971 or TS 981

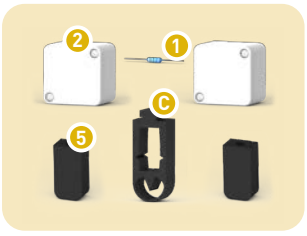
Additionally required:
Spiral cable, see 3 under accessories on page 9.008



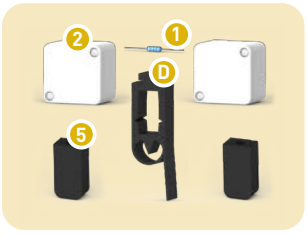
Designation	Description	Part no.
Safatey edge Rubber profile no. 001 A	With resistor 1 and 2 junction boxes 2 With stop buffer with guide 3 Stop buffer without guide 4 Running meters up to 8 m [2)]	 30001420 30001428 18051153



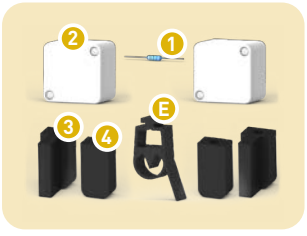
Designation	Description	Part no.
Safatey edge Rubber profile no. 002 B	With resistor 1 and 2 junction boxes 2 With stop buffer with guide 3 Stop buffer without guide 4 Running meters up to 8 m [2)]	 30001426 30001429 18051346



Designation	Description	Part no.
Safatey edge Rubber profile no. 003 C	With resistor 1 and 2 junction boxes 2 With stop buffer with guide 5 Running meters up to 8 m [2)]	 30001424 18051155



Designation	Description	Part no.
Safatey edge GuRubber profile no. 006 D	With resistor 1 and 2 junction boxes 2 With stop buffer with guide 5 Running meters up to 8 m [2)]	 30001427 18051348



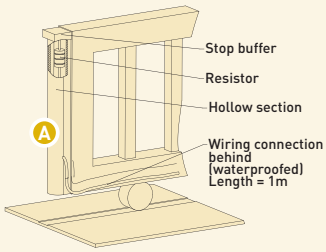
Designation	Description	Part no.
Safatey edge Rubber profile no. 009 E	With resistor 1 and 2 junction boxes 2 With stop buffer with guide 3 Stop buffer without guide 4 Running meters up to 8 m [2)]	 30001422 30001430 18051157

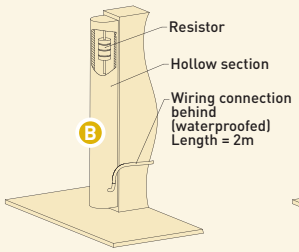
2) Part no applies to profile lengths of up to 8 m, for lengths of over 8 m, a supplement per metre is applied over the entire length

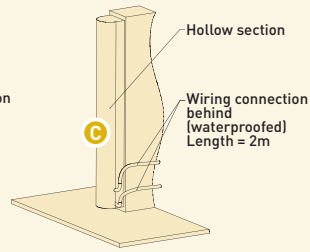
Electrical safety edge system
Gelbau system

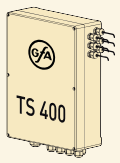
Electrical safety edge for sliding doors[1)]

Use cases





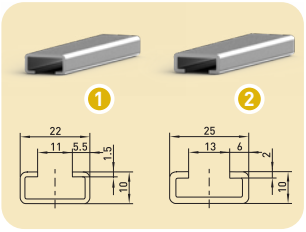


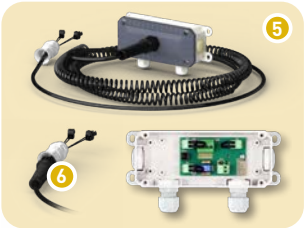


1) Ready assembled, to be used with GfA door control TS 400

Designation		Description	Part no.
Rubber profile for main closing edge	A	Rubber profile no. 003 1 with resistor 2; with stop buffer 3, 1 m connection cable 4 Running meters	30001421 18051155
Rubber profile for secondary closing edge	B	Rubber profile no. 003 1 with resistor 2; without stop buffer, 2 m connection cable 5 Running meters	30003352 18051155
Rubber profile for existing onsite evaluation system 8k2	C	Rubber profile no. 003 1 without resistor; without stop buffer, 2x 2 m connection cable 5 Running meters	30001185 18051155

Accessories





Designation		Description	Part no.
C-profile for rubber 001, 002, 003, 006, 009	1	Galvanized steel 1 m 2 m 3 m	 40014486 40014485 40014216
C-profile for rubber 001, 002, 003, 006, 009	2	Aluminium 1 m 2 m	 40014487 40014219
Spiral cable 4-core for the Gelbau system	3	Spiral length 0,9 m stretches to max. 4 m straight cable length 0,4 m/0,35 m straight cable length 2,0 m/0,35 m	 40015736 40015735
WSD (with battery) for other electrical safety edges 8k2; IP65	4	Wireless safety device (2,4 GHz) (can only be used with door control TS 971) - Evaluation for common safety-edge systems and for for pass-door and slack-rope switches - Pluggable connection technology - Wide operating range - Battery: average service life of 1.5 years, approx.	30005154
Spiral cable for other electrical safety edges 8k2; screwable; IP65	5	For transmitter / receiver also for pass-door and slack-rope switch, spiral length 0,9 m; stretches to max. 4 m; straight cable length 0,4 m/0,35 m straight cable length 2,0 m/0,35 m straight cable length 2,0 m/0,35 m + kink protection 6	 20002340.00001 20002340.00007 20002340.00019

Pneumatic safety edge system

Testing

Principle

The pushing together of the rubber profile generates a pressure impulse, which is directed via an air hose to the dynamic pressure-wave switch (DW). This one-sided increase in pressure acts on the membrane. This opens the contact between the contact screw and the membrane (opening principle). Whenever the rubber profile is activated during access, a re-open command is generated and the door moves to final open position.

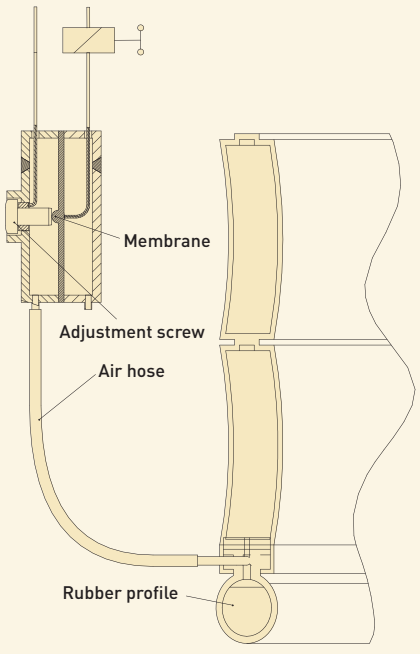
A potential-free limit switch actuates just before the bottom end-point is reached (approx. 5 cm) to activate the test phase. The safety device is disabled during the test phase.

When the door sets on the ground, a pneumatic test impulse must be generated. If the test result is positive, the door can then move to its self-hold OPEN or CLOSE position. If a malfunction occurs, the door can only be operated in hold-to-run mode. Opening can take place in self-hold mode again once any possibility of hazardous door movements has been eliminated.

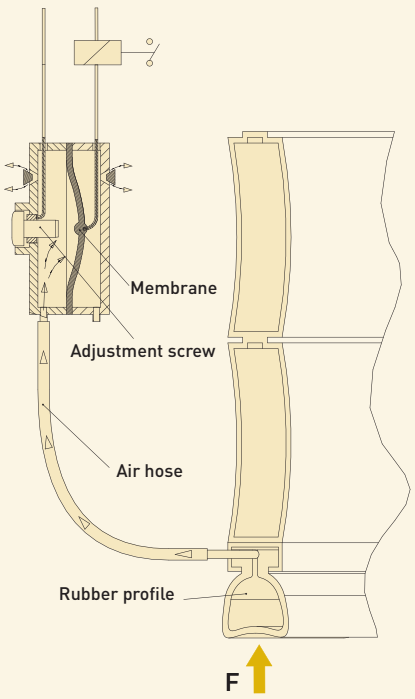
The signal will be recognised directly in door controls TS 970/TS 971/TS 981.
The design of this pneumatic safety edge system makes it especially suitable for DIY assembling

Principle

Safety edge not activated



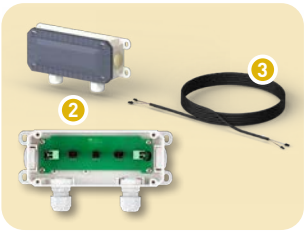
Safety edge activated

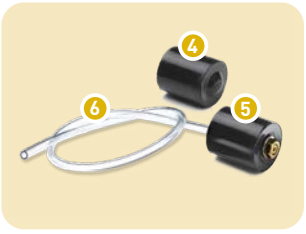


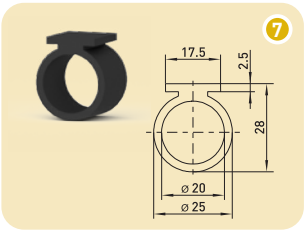
Pneumatic safety edge system

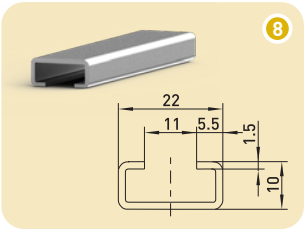
Testing

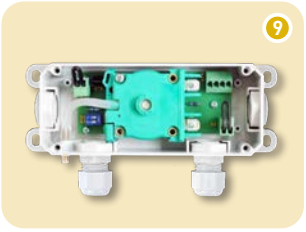
Parts for TS 970, 971 and TS 981











Bezeichnung		Beschreibung	Art.-Nr.
Spiral cable with junction box (IP65) and built-in pressure-wave switch 1k2	1	For pneumatic pressure safety edge, also for pass-door and slack-rope switch, Spiral length 0,9 m, stretches to max. 4 m; straight cable length 0,4 m / 0,35 m straight cable length 2,0 m / 0,35 m	 20002340.00003 20002340.00009
Junction end box	2	With connections for pass-door and slack-rope switches	30004834
Connection cable pluggable	3	Plugs fitted on either side, 5-core 4,5 m 6,5 m 8,5 m 10,5 m	 20002630.00450 20002630.00650 20002630.00850 20002630.01050
End stop no. 1 / 650	4	Without brass fitting connection, Ø 22 mm	30000474
End stop no. 2 / 651	5	With brass fitting connection and air hose, Ø 22 mm	30002814
Air hose	6	(4 mm x 2,5 mm x 0,75 mm), length 5 m	40014949
Rubber profile no. 640	7	7,5 m 10 m 40 m	30005791.00750 30005791.01000 30005791.04000
C-profile	8	Galvanized steel 1 m 2 m 3 m	 40014486 40014485 40014216
Pressure-wave switch 641 in the housing	9	NC contact; spare part for 1	30004841

Safety devices
Safety against entrapment

Power-operated doors and grilles which can lift persons have to be safeguarded according to EN 12453, section 5.1.2 to avoid crushing, shearing and drawing-in-points.
The "Raytector" safety device against entrapment belongs to this category of AOPD [1] with following functions:

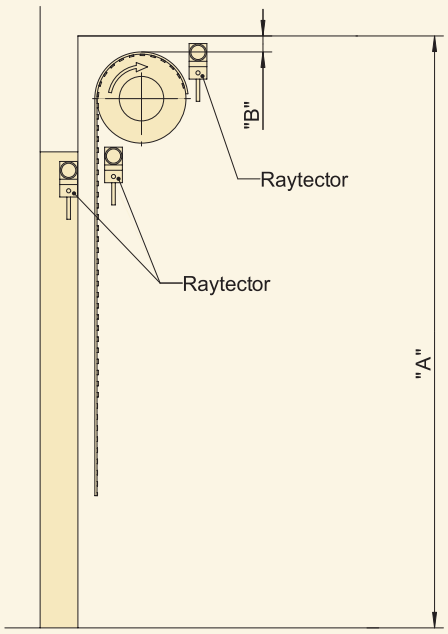
- Detection of presence
  (Safety photo cells according to IEC 61496-2)
- Evaluation and monitoring
  (Evaluator)
- Output Switching Signal Device OSSD [2]
  (Evaluator)

The system full fills the requirements of safety category 3 according to EN ISO 13849-1

Description of functions:
The photo cell transmitted pulsed infrared light, which is detected by the corresponding receiver. This generates a dynamic signal, which is identified and evaluated by the control unit. If the signal remains off, e.g. due to interruption of the light cell, a stop command is immediately generated. The transmitter/receiver system adjusts itself automatically over a range of up to ten metres.

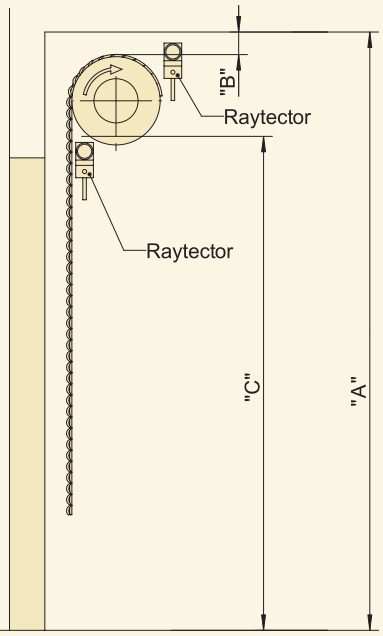
Examples

Rolling grilles



- Additional photo cell required if A ‹ 2,500mm and B ‹ 80 mm (by open shutter)

Roller shutter



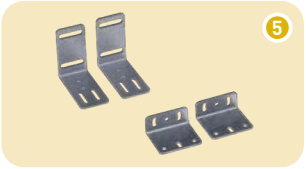
- Guarding the point of entrapment with a photo cell, if C ‹ 2,500mm. Additional photo cell is required if A ‹ 2,500mm and B ‹ 80 mm (by open shutter)

1) AOPD = active opto-electronic protective device

2) OSSD = output signal switching devic

Raytector for protection against drawing-in

Raytector protection against drawing-in



Designation		Description	Part no.
Complete Raytector system	1	For door controls TS 959 / TS 970 / TS 971	30004528
		Consisting of: Evaluator OSE 2300 supply voltage 230 V AC, IP54 Safety photo cell, 2 pairs (2 transmitters / 2 receivers) self-regulating, each with 10,5 m cable Supply voltage 12 V DC, IP54 with fixing items	
Complete Raytector system	2	For door controls TS 981 evaluation integrated in TS 981	30004628
		Consisting of: Safety photo cell, 2 pairs (2 transmitters / 2 receivers) self-regulating, each with 10,5 m cable Supply voltage 12 V DC, IP54 with fixing items	
Individual parts			
Evaluator OSE 2300	3	Supply voltage 230 V AC, IP54	40015028
Safety photo cell	4	1 pair (1 transmitter / 1 receiver) self-regulating, each with 10,5 m cable Supply voltage 12 V DC, IP54 without fixing items	30004680
Mounting kit	5	For Safety photo cell	40014452

Electrical accessories

Push buttons • Plastic housing • protection class IP65 • aP = wall-mounting

Designation		W x H x D [mm]	Part no.
Emergency STOP switch No. 22 aP	1	72 x 72 x 48	40007038
Two push button OPEN/CLOSE No. 30 aP	2	72 x 102 x 49	40000288
Three push button OPEN/STOP/CLOSE No. 31 aP	3	72 x 140 x 49	40015034
Three push button [1] OPEN/Emergency STOP/CLOSE No. 38 aP	4	72 x 140 x 49	40008196
Three push button [1] ON/OFF - OPEN/STOP/CLOSE No. 39 aP	5	72 x 171 x 49	40008197
Three push button OPEN/STOP/CLOSE No. 51 aP II 2 G Ex db eb IIC T6 Gb II 2 D Ex tb IIIC T80 °C Db	6	80 x 185 x 85	40009665

1) Supplied with 2 keys

Electrical accessories

Key pushbutton • Metal housing • protection class IP54 • aP = wall-mounting • uP = flush-mounting

Designation	W x H x D [mm]	Part no.
Key pushbutton[1] OPEN/CLOSE No. 420 aP No. 420 aPg matching cylinders[2] No. 420 aP one-sided latching	70 x 90 x 65	40000308 40011038 40000695
Key pushbutton[1] OPEN/CLOSE No. 421 uP No. 421 uPg matching cylinders[2]	Housing dimensions 70 x 90 x 65 Plate dimensions 100 x 125	40000309 40012322
Key pushbutton[1] OPEN/CLOSE/STOP No. 430 aP No. 430 aPg matching cylinders[2]	70 x 130 x 65	40000310 40014657
Key pushbutton[1] OPEN/CLOSE/STOP No. 431 uP No. 431 uPg matching cylinders[2]	Housing dimensions 70 x 130 x 65 Plate dimensions 100 x 170	40000311 40014658
Key pushbutton[1] ON/OFF - OPEN/STOP/CLOSE No. 330 aP No. 330 aPg matching cylinders[2]	75 x 192 x 52	40000306 40014988

1) Supplied with 3 keys

2) When using matching lock cylinders, the ordered items can be opened with a key

Electrical accessories

Radio
434 MHz, dip-switch coding • switching contacts, max. 230 V, 5 A

Midi-transmitter • Dip-switch coding • including 12 V battery • LED function display

Designation		Channels	Description	W x H x D [mm]	Part no.
SKX1LC	1	1		43 x 83,5 x 15	40012142
SKX2LC	2	2		43 x 83,5 x 15	40012143
SKX4LC	3	4		43 x 83,5 x 15	40012145
Transmitter holder LC	4		black		40013415

Transmitter • Dip-switch coding • including 12 V battery • LED function display

Designation		Channels	Description	W x H x D [mm]	Part no.
SKX1GS	5	1		45 x 75 x 16	40017859
SKX2GS	6	2		45 x 75 x 16	40017860
SKX4GS	7	4		45 x 75 x 16	40017861
Transmitter holder GS	8		black		40017862

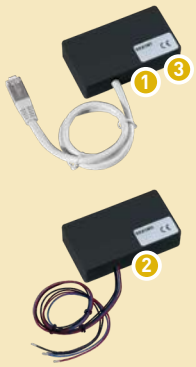
Transmitter • Dip-switch coding • including 9V battery • LED function display

Designation		Channels	Description	W x H x D [mm]	Part no.
SKX1	9	1		60 x 85 x 20	40010623
SKX2	10	2		60 x 115 x 20	40010624
SKX4	11	4		60 x 115 x 20	40010626

Electrical accessories

Radio
434 MHz, dip-switch coding • switching contacts, max. 230 V, 5 A

Receiver • Dip-switch coding



Designation		Channels	Description	W x H x D [mm]	Part no.
EKX1M	1	1	UBS plug connection, to be fitted with door controls TS 970 / TS 981; Voltage 12 V-24 V AC/DC	82 x 45 x 20	40014953
EKX1MG	2	1	Cable connection, to be fitted with TS 961 / TS 970 models up to 06.2006; Voltage 12 V-24 V AC/DC	82 x 45 x 20	40012778
EKX2M	3	2[1]	UBS plug connection, to be fitted with door control TS 981; Voltage 12 V-24 V AC/DC	82 x 45 x 20	40014856

1) The two channels can only be used for OPEN commands (TS 981 with two-way traffic control)

Midi-receiver • Supply voltage 230 V AC

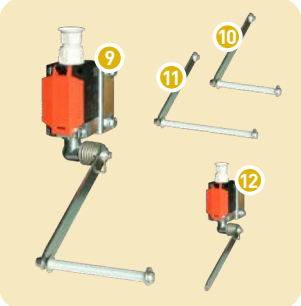
Designation		Channels	Description	W x H x D [mm]	Part no.
EKX1MD EKX4MD	4	1 4		120 x 80 x 57 120 x 80 x 57	40012146 40012147

Rod antenna

Designation		Description	Part no.
Rod antenna ANT3	5	With coaxial cable 3 m, for midi receiver 434 MHz, with adapter for direct connection to the receiver, length of the rod 130 mm	40000351

Electrical accessories

Switches



Designation		Description	W x H x D [mm]	Part no.
Mains switch	1	Up to 5,5 kW; 400 V; IP65	100 x 125 x 70	40000526
Mains switch Ex	2	16 A, up to 690 V; II 2 G Ex db eb IIC T6 Gb II 2 D Ex tb IIIC T80 °C Db	112 x 205 x 130	40014087
Pull switch no. 21	3	For wall-mounting; IP65	36 x 135 x 33	40000530
Pull switch no. 23	4	Heavy-duty for wall-mounting; with 2.5 m red/white chain; IP65	60 x 131 x 100	40019479
Chain	5	Plastic, red / white	Material sold by the metre	40001477
Coil spring actuator	6	No. 6 slow break contact, 1 NO contact, 1 NC contact; IP65 No. 7 snap action contact, 1 NO contact, 1 NC contact; IP65	36 x 205 x 33	40000532 40007351
Roller-arm limit switch no. 17	7	1 NO contact, 1 NC contact; IP65	36 x 96 x 33	40000529
Roller-arm limit switch no. 20	8	2 change-over contacts, left- and right-side activation, overrun possible; IP65	40 x 177 x 60	40000542
Slack-rope switch[1]	9	Left-hand short pulley 88 mm long Right-hand short pulley 88 mm long Left-hand long pulley 170 mm long Right-hand long pulley 170 mm long	150 x 294 x 157 232 x 294 x 157	30000972 30000973 30000907 30000437
Spare parts for slack-rope switch	10 11 12	Lever with short pulley 88 mm long Lever with long pulley 170 mm long Slack-rope switch with lever, without pulley		40010665 40012630 40008306
Pass-door switch	13	Door frame installation; cable length 6 m, safety switch according EN 12453:2022; monitoring via door controls TS 959 / TS 970 / TS 971 / TS 981 from Software ≥ 3.0; IP68		30005912
Pass-door switch[2]	14	Door frame installation; cable length 6 m, monitoring via door controls TS 959 / TS 970 / TS 971 / TS 981 up to Software < 3.0; IP68		30004677

1) Figure as an example: Right side 2) Discontinued part

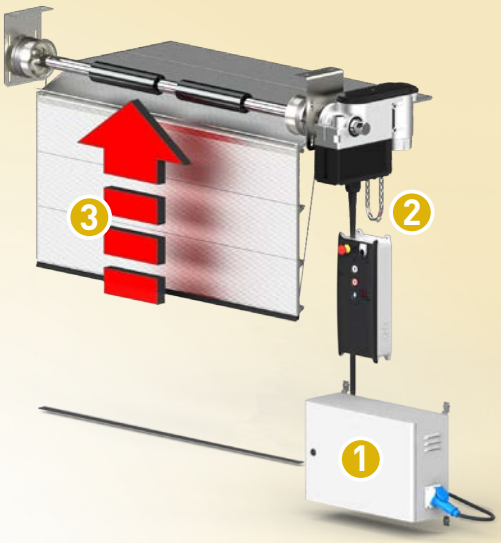
Electrical accessories

UPS – Uninterrupted Power Supply

A UPS ❶ guarantees the uninterruptible power supply of a door drive system consisting of drive unit and door control ❷. If a power failure is detected, the UPS automatically switches to emergency operation. In emergency operation, the drive system can be used for at least one opening process of the door ❸. The possible duration of emergency operation depends on the power consumption of the door drive system and the battery capacity of the UPS. The GfA product range offers two different UPS devices for door drive systems with supply via single-phase alternating current.[1)]

Specific features:

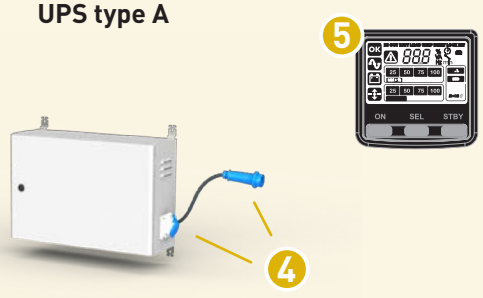
- High protection to ensure power supply to the door
- Equipped with CEE plug connections on input and output side ❹
- Automatic shutdown in case of overtemperature and overload
- Illuminated LCD display ❺



UPS		Type A	Type B
Input voltage range	V	162 - 290	190 - 264
Input frequency	Hz	50 / 60	50 / 60
Output voltage	V	1~230	1~230
Output power (active power / nominal power)	W / VA	1600 / 2000	3000 / 3750
Output waveform		Sinus	
Max. capacity	Ah	36	110
Bypass switching time (max.)	ms	8 - 10	12
Batteries		4 x 12 V	2 x 12 V
Temperature range	°C	0 .. +40	+5 .. +40
Weight (with batteries)	kg	35	103
Dimensions (W x H x D)	mm	677 x 400 x 200	815 x 760 x 300
Part no. UPS		20003219.00004 [2)]	20003219.00012 [3)]
Part no. battery set (with 2 batteries 55 Ah)		–	40017178 [4)] ❻
Part no. installation drawing		50002039	50002040

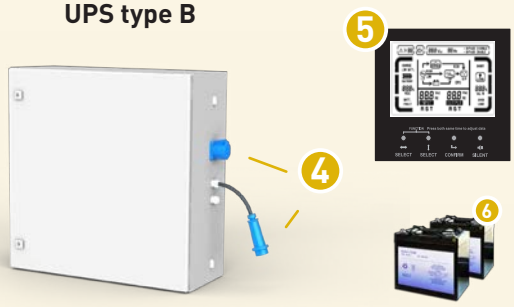
1) Not suitable for use in escape and rescue routes · 2) Delivery incl. batteries · 3) Delivery without batteries · 4) Battery set for UPS type B

UPS type A



Suitable for the following ELEKTROMATEN®:
SIK 17.10 WS / KE 9.24 WS / SE 5.24 WS / TSE 5.24 WS / SE 8.60 FI / SE 9.15 WS / SE 9.20 WS / SE 9.24 WS

UPS type B



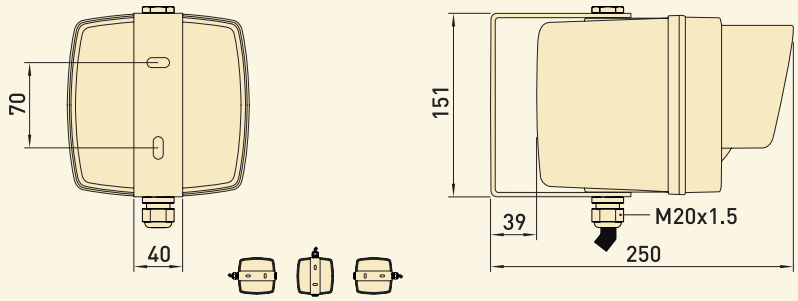
Suitable for the following ELEKTROMATEN®:
SIK 25.10 WS / SI 25.15 WS / SI 45.7 WS / SE 6.80 FI / all FI drive units with 0.85 kW or 1.5 kW motor power, e.g. SI 17.60 FI, SI 25.80 FI, KE 40.40 FI

Electrical accessories

LED traffic-lights

- High durability
- Low power consumption
- Low heat-generating
- Better optically perception, no glare effect
- Variable connection

Designation		Description	Part no.
LED traffic-light		Calotte: Ø 130 mm; Protection class: IP65 Voltage: 230 V / 50 Hz - 60 Hz; 3 W (15 mA) Socket: E27	
	1	Red	30005345
	2	Green	30005346
	3	Yellow	30005347
	4	Red-Green	30005348
LED illuminant for replacemet	5	Voltage: 230 V / 50 Hz - 60 Hz Socket: E27 Suitable for all color options	40017652



Beacon

Designation		Dimensions	Part no.
LED-Beacon	6	Ø 100 mm, height 139 mm Colour: Orange Protection class: IP65, Voltage: 230 V, 3 W	40019343

Flashlamps

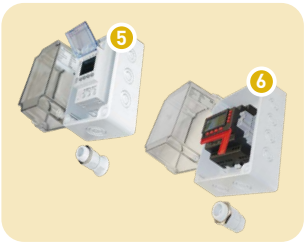
Designation		Dimensions	Part no.
Flashlamp set for TS controls	7	Ø 100 mm, height: 110 mm per lamp Colour: Orange Protection class: IP65 Voltage: 230 V, 15 W	20003217

Electrical accessories

Loop detectors (loop laying carried out by customer onsite)

Designation		Description	W x H x D [mm]	Part no.
Loop detector	1	1-channel to be fitted into a housing; Supply voltage 100 V - 240 V; IP20	38 x 75 x 71	40015427
Loop detector	2	2-channel to be fitted into a housing; Supply voltage 100 V - 240 V; IP20	38 x 75 x 71	40015882
Loop detector	3	1-channel in housing; Supply voltage 100 V - 240 V; IP66	75 x 125 x 125	30001266
Loop detector	4	2-channel in housing; Supply voltage 100 V - 240 V; IP66	75 x 125 x 125	30002517

Timer



Designation		Description	W x H x D [mm]	Part no.
Weekly timer "AlphaRex"	5	1-channel to be fitted into a housing; for door controls TS 970 / TS 971 / TS 981; Supply voltage 230 V, IP66	75 x 125 x 125	30002255
Yearly timer	6	1-channel to be fitted into a housing; for door controls TS 970 / TS 971 / TS 981; Supply voltage 230 V, IP66; via Bluetooth programmable	125 x 175 x 150	30002464

Photo cells

Designation		Description	Part no.
Polarised reflex photo cell	7	With 5 m connecting cable; range 7.5 m, Reflector, mounting bracket; Voltage 24 V - 240 V AC/DC; IP66	40014429
Reflector as a spare part	8		40015033
Polarised reflex photo cell ATEX	9	Ex II 2G Ex ia op is IIC T4 Gb Range 10 m, reflector, mounting bracket; Voltage 5 V - 15 V DC; IP66 To be used with door control TS 971-Automatic ATEX	30005772
Through photo cell	10	Range 25 m, transmitter, receiver, 2 mounting brackets; Voltage 24 V - 240 V AC/DC; IP66	40014432

Safety photo cell for protection against drawing-in see page 9.014

Radar detector

Designation		Description	W x H x D [mm]	Part no.
Herkules 2	11	Voltage 12 V - 28 V AC / 12 V - 36 V DC; IP65	134 x 82 x 75	40015923
Remote Control	12	IR remote control for radar detector Herkules 2		40015924

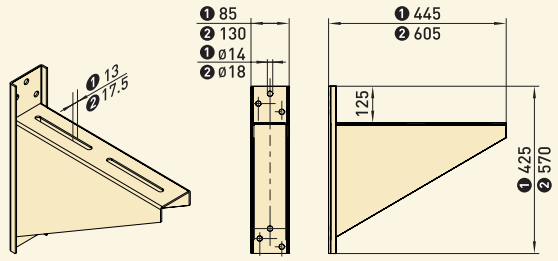
Gearbox-heating

Designation		Description	Part no.
Gearbox-heating with automatic temperature regulation	13	Max. heating capacity 50 W (0,271 A), 230 V, IP65; For later fitting to all ELEKTROMATEN from 06.2005 onwards (not suitable for SIK- / ATEX- / FS-ELEKTROMATEN), for use at temperatures below -5 °C; when used with the SG115 series, 2 heaters are recommended	20002766.00002

Mechanical accessories

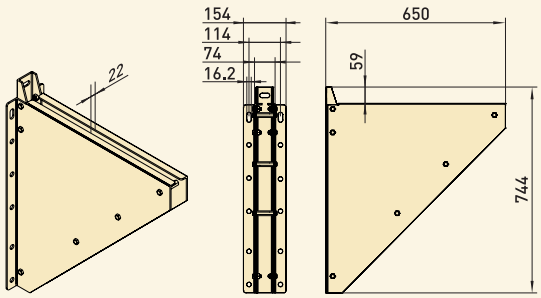
1. Brackets for ELEKTROMATEN SI + SIK

1.1 Bracket



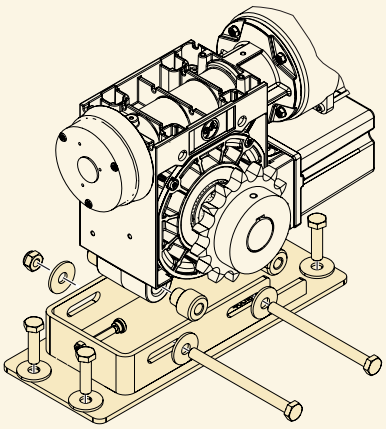
For Series		Part no.	Max. load
SG63F / SG63F-SIK SG85F (≤ SI 55)	1	40006488	5 kN
SG115F (≤ SI 140)	2	40012396	12 kN

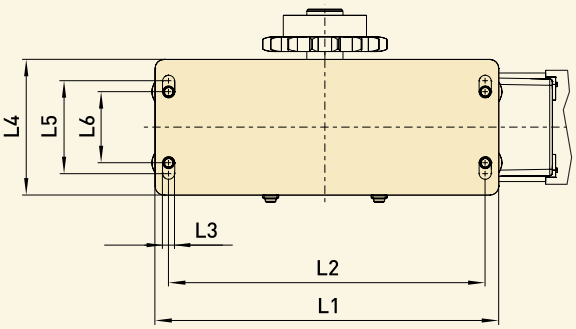
1.2 Bracket

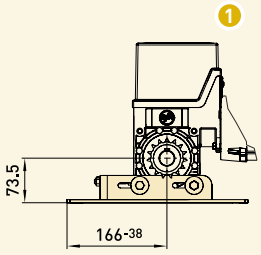


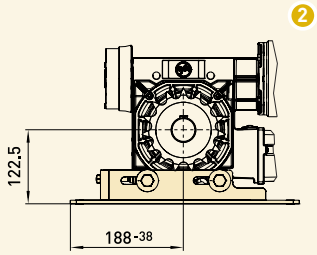
For Series	Part no.	Max. load
SG115F (≥ SI 180) SG186F	40016189	29 kN

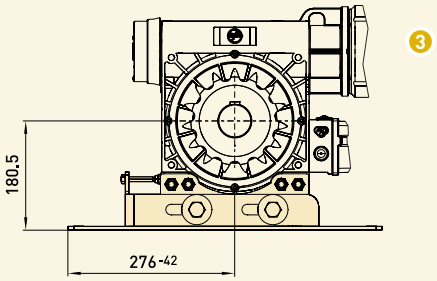
2. Brackets for ELEKTROMATEN KE











	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

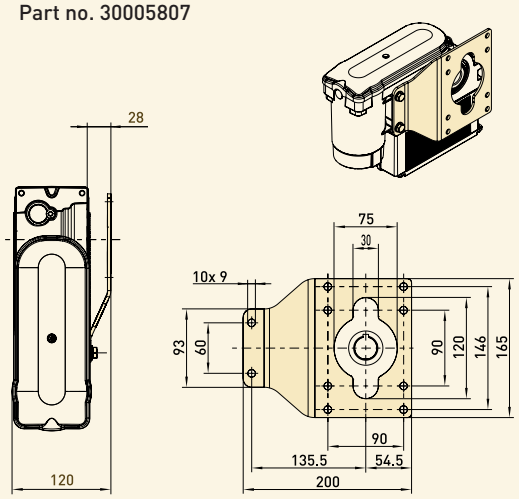
■ Mounting without foot angles

Mechanical accessories

3. Torque mount for series SG40

3.1 Torque bracket SG40 Type A

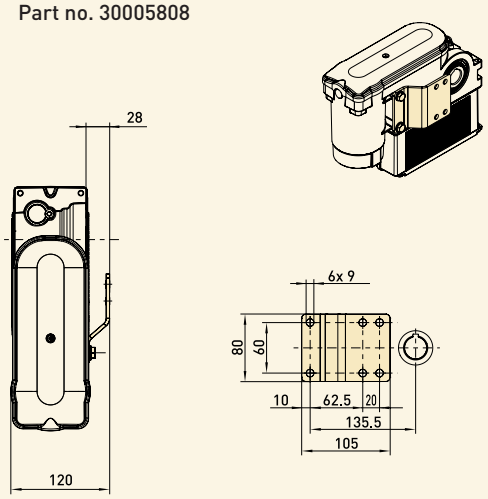
Part no. 30005807



■ ELEKTROMATEN horizontal only

3.2 Torque bracket SG40 Type B

Part no. 30005808

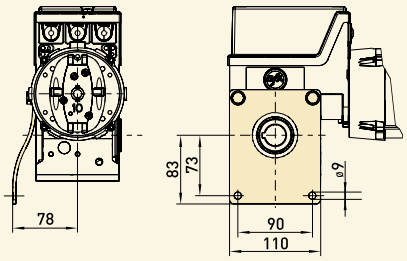


■ ELEKTROMATEN horizontal only

4. Torque mount + Flange bracket for series SG50

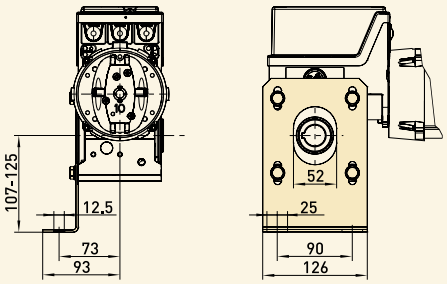
4.1 Torque bracket

Part no. 30002636



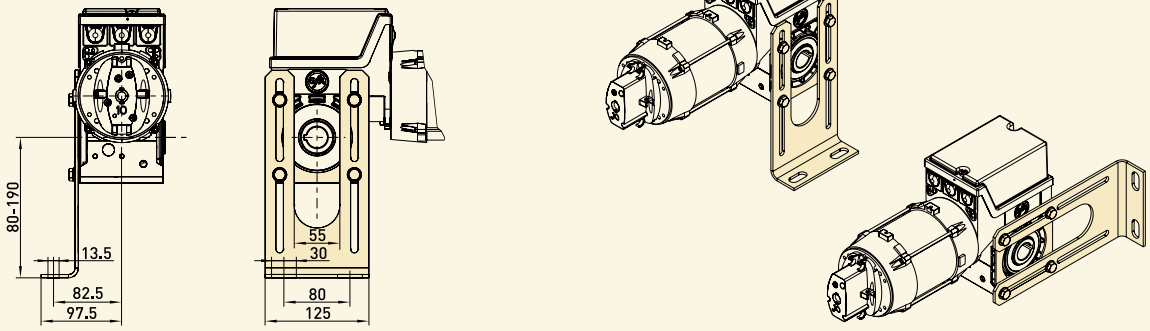
4.2 Flange bracket H 107-125

Part no. 30002685



4.3 Flange bracket H 80-190

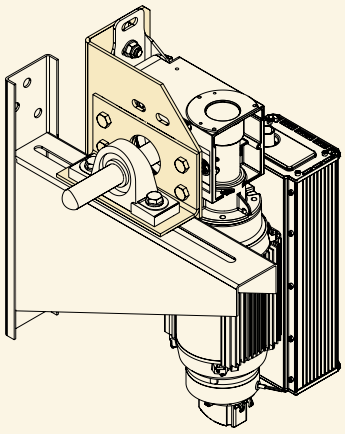
Part no. 30005839

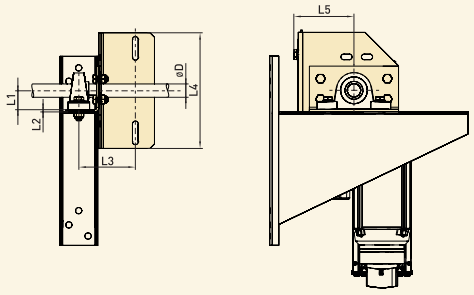


■ All brackets can be mounted vertically or horizontally

Mechanical accessories

5. Torque mount for series SG63 up to SG115

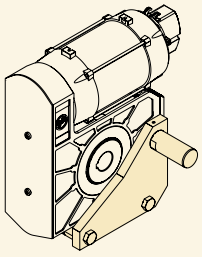




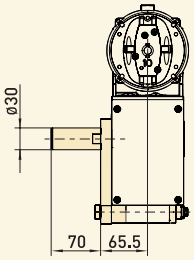
For Series	Ø D	Part.-no.	L1	L2	L3	L4	L5
SG63F	25	30002930	36,5	5	127	260	135
SG63F / SG85F	30	30002930	42,9	5	127	260	135
SG85F	40	30002930	49,2	5	127	260	135
SG115F	55	30003162	63,5	6	174	350	148
SG115F	60	30003162	69,8	6	174	350	148

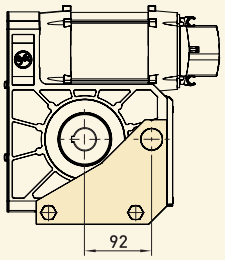
- Right- or left-hand use
- For mounting with floating foot additional requirements: Bracket 1.1 or 1.2 and bearing
- ELEKTROMATEN vertical (as shown) or horizontal (for vertikal mounting, FI-motors has to be turned by 90°)

6. Moving-torque mount for series SG63F-SIK



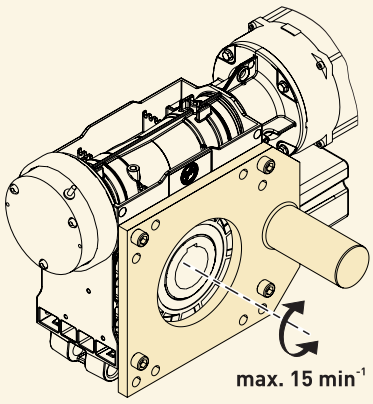
Part no.:
20002773.00005

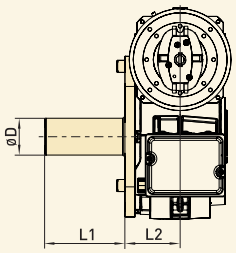


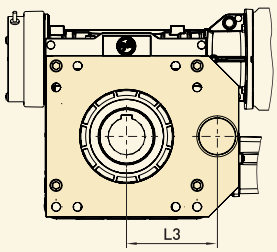


- Right- or left-hand use
- ELEKTROMATEN horizontal only

7. Moving-torque mounts for series SG63 up to SG115







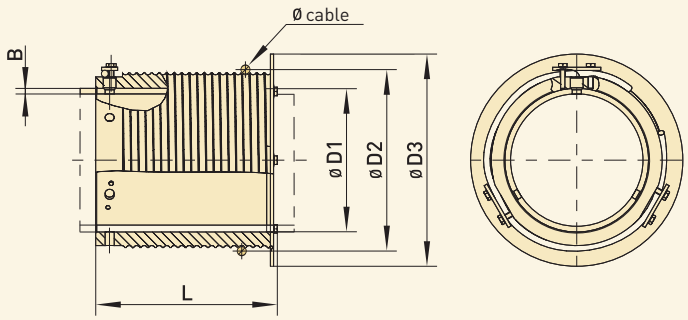
Series	Ø D	Part no.	L1	L2	L3
SG63F [1]	30	20002641.00004	70	72,5	95
SG85F	30	20002494.00024	80	70	105
SG85F	40	20002494.00025	80	70	105
SG115F [2]	55	20002495.00004	120	83	135

- Right- or left-hand use
- ELEKTROMATEN horizontal (as shown) or vertikal

- **1)** Special version of ELEKTROMATEN with side thread is required
- **2)** No use with SI 180.6

Mechanical accessories

8. Cable drums for tubes — Type A

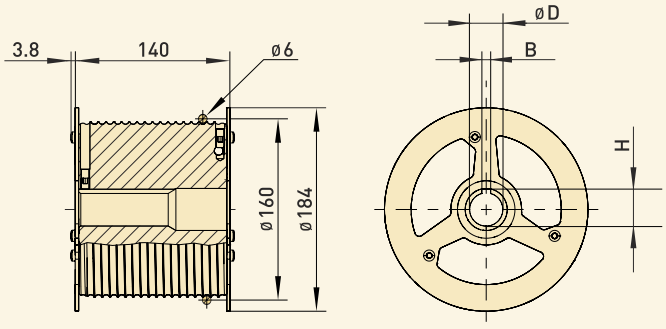


Designation	Tube-Ø	Cable-Ø	Useful cable length	Max. door weight[1]	Lead	Part no.
Cable drum A 160-6R-133 Cable drum A 160-6L-133	133 mm	6 mm	9 m	5000 N	Right Left	30001196 30001197
Cable drum A 160-8R-133 Cable drum A 160-8L-133	133 mm	8 mm	7 m	6500 N	Right Left	30001235 30001236
Cable drum A 200-6R-159 Cable drum A 200-6L-159	159 mm	6 mm	17 m	5000 N	Right Left	30004998 30004999
Cable drum A 200-8R-159 Cable drum A 200-8L-159	159 mm	8 mm	12,5 m	6500 N	Right Left	30001863 30001864
Cable drum A 200-10R-159 Cable drum A 200-10L-159	159 mm	10 mm	10 m	10000 N	Right Left	30001369 30001370

D1 [mm]	D2 [mm]	D3 [mm]	L [mm]
134	165,4	198	171
134	166	198	171
160	204,4	248	254
160	205	248	254
160	205	248	254

1) When using two cable drums. Use ropes according to EN 12385-4. Design the rope with 6 times the safety factor of the maximum static load acting on the rope. Also, design the rope with 3 times the safety factor to the maximum acting force in the case of catching. The larger of the two values applies.

9. Cable drums for shafts — Type B



Designation	Shaft-Ø	Cable-Ø	Useful cable length	Max. door weight[1]	Lead	Part no.
Cable drum B 160-6R-25 Cable drum B 160-6L-25	25 mm	6 mm	7 m	6000 N	Right Left	30005980 30005981
Cable drum B 160-6R-25,4 Cable drum B 160-6L-25,4	25,4 mm	6 mm	7 m	6000 N	Right Left	30005982 30005983
Cable drum B 160-6R-30 Cable drum B 160-6L-30	30 mm	6 mm	7 m	8000 N	Right Left	30005984 30005985
Cable drum B 160-6R-31,75 Cable drum B 160-6L-31,75	31,75 mm	6 mm	7 m	8000 N	Right Left	30005986 30005987
Cable drum B 160-6R-40 Cable drum B 160-6L-40	40 mm	6 mm	7 m	8000 N	Right Left	30005988 30005989

Ø D	H	B
25	28,3	8
25,4	28,4	6,35
30	33,3	8
31,75	34,7	6,35
40	43,3	12

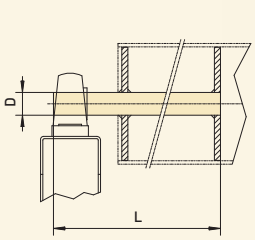
1) When using two cable drums. Use ropes according to EN 12385-4. Design the rope with 6 times the safety factor of the maximum static load acting on the rope. Also, design the rope with 3 times the safety factor to the maximum acting force in the case of catching. The larger of the two values applies.

Mechanical accessories

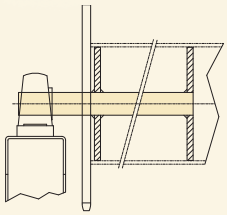
10.1 Shafts A

Without key

Material:
S355J2C+C (No. 1.0579)



Bearing side



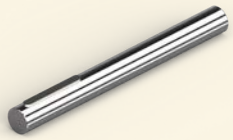
Bearing side wih plate wheel

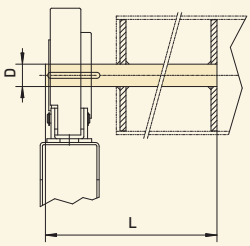
Ø D	L [mm]	Part no.
25	350	40012327
30	600	40012328
40	600	40012329
50	600	40012330
55	600	40012663
60	600	40012331
80	800	40012664
100	980	40017002

10.2 Shafts B

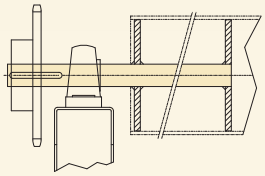
With key

Material:
S355J2C+C (No. 1.0579)





Safety brake



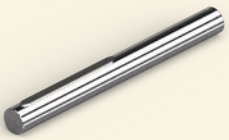
Sprocket and bearing

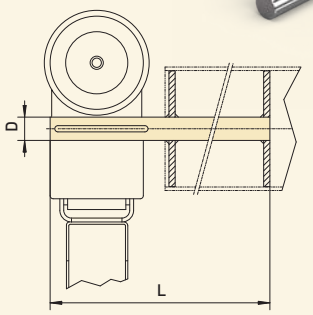
Ø D	L [mm]	Key	Part no.
30	600	8 x 7 x 70	30003002
40	600	12 x 8 x 70	30003003
50	600	14 x 9 x 70	30003004
60	600	18 x 11 x 100	30003005
80	800	22 x 14 x 100	30003184

10.3 Shafts C

With key

Material:
S355J2C+C (No. 1.0579)





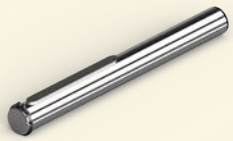
ELEKTROMATEN SI + SIK with floating foot

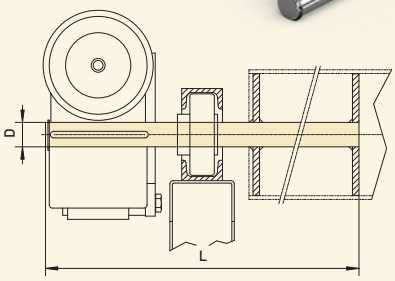
Ø D	L [mm]	Key	Part no.
25	350	8 x 7 x 100	30003007
30	600	8 x 7 x 120	30003008
40	600	12 x 8 x 120	30003009
55	600	16 x 10 x 140	30003185
60	600	18 x 11 x 140	30005035
80	800	22 x 14 x 200	30005905
100	980	28 x 16 x 210	30005173

10.4 Shafts D

With key and circlip

Material:
S355J2C+C (No. 1.0579)



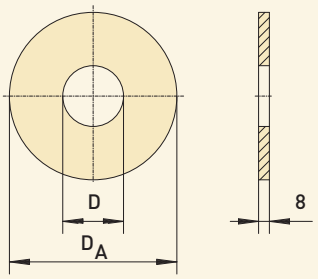


ELEKTROMATEN SI + SIK with moving-torque mount

Ø D	L [mm]	Key	Part no.
30	600	8 x 7 x 120	30003013
40	600	12 x 8 x 120	30003014
55	600	16 x 10 x 140	30003186

11. Discs for tubes

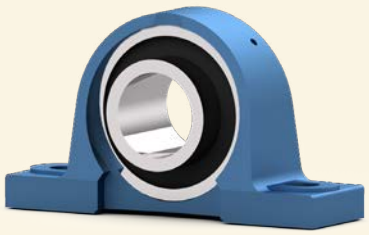
Material:
S235JR (No. 1.0038)

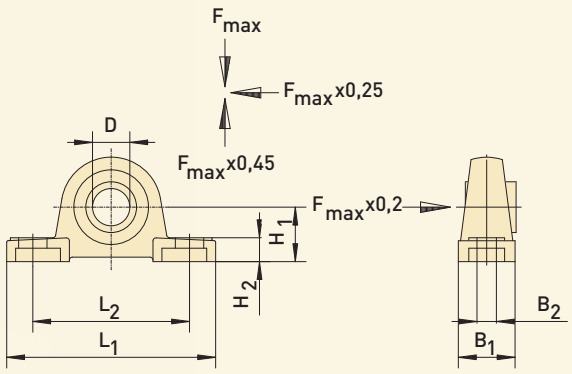


D	D_A	For tube	Part no.
30	99	108,0 x 3,6	40000376
30	124	133,0 x 4,0	40000379
40	124	133,0 x 4,0	40000381
55	124	133,0 x 4,0	40012974
30	149	159,0 x 4,5	40000383
40	149	159,0 x 4,5	40000385
50	149	159,0 x 4,5	40000387
55	149	159,0 x 4,5	40011017
30	166	177,8 x 5,0	40000681
40	166	177,8 x 5,0	40000389
50	166	177,8 x 5,0	40000391
55	166	177,8 x 5,0	40000958
30	182	193,7 x 5,4	40001214
40	182	193,7 x 5,4	40000394
50	182	193,7 x 5,4	40000396
55	182	193,7 x 5,4	40010131
60	182	193,7 x 5,4	40000397
40	206	219,1 x 5,9	40000682
50	206	219,1 x 5,9	40000400
55	206	219,1 x 5,9	40001881
60	206	219,1 x 5,9	40000403
40	231	244,5 x 6,3	40000405
50	231	244,5 x 6,3	40000407
55	231	244,5 x 6,3	40011551
60	231	244,5 x 6,3	40001769
70	231	244,5 x 6,3	40000408
55	259	273,0 x 6,3	40010168
60	259	273,0 x 6,3	40000411
70	259	273,0 x 6,3	40000412
80	259	273,0 x 6,3	40000413
55	283	298,5 x 7,1	40012567
60	283	298,5 x 7,1	40000416
55	308	323,9 x 7,1	40012568
60	308	323,9 x 7,1	40000421
70	308	323,9 x 7,1	40000422
80	308	323,9 x 7,1	40000423

Mechanical accessories

12. Pedestal bearings

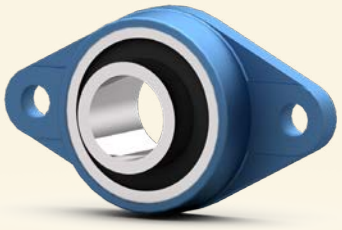


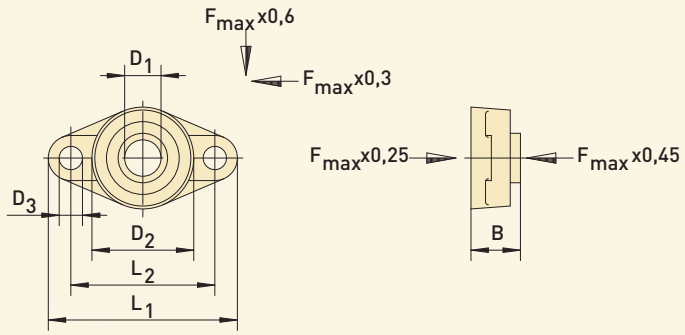


Observe loading-direction

D	L1	L2	H1	H2	B1	B2	F_{max} (KN)	Part no.
25	140	105	36,5	16	38	13	7,3	40000435
30	165	121	42,9	18	48	17	10,5	40000436
40	184	137	49,2	19	54	17	16,5	40000438
50	206	159	57,2	22	60	20	21,0	40000440
55	219	171	63,5	22	60	20	26,6	40003006
60	241	184	69,8	25	70	20	33,0	40000441
70	266	210	79,4	27	72	25	40,0	40000442
80	292	232	88,9	30	78	25	47,5	40000443
100	490	380	140	55	120	36	135,0	40001531

13. Flange bearings

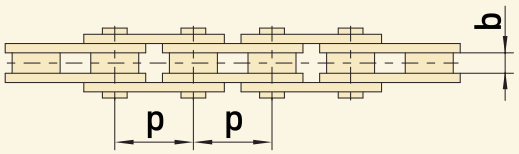




Observe loading-direction

D1	D2	D3	L1	L2	B	F_{max} (KN)	Part no.
25	68	16	130	99	34	7,3	40000425
30	80	16	148	117	38,1	10,5	40000426
40	100	16	175	144	49,2	16,5	40000428
50	115	19	197	157	54,6	21,0	40000430
55	130	19	224	184	58,4	26,6	40012570
60	140	23	250	202	68,7	33,0	40000431
80	180	25	290	233	83,3	47,5	40000433

14. Roller chains / Chain link

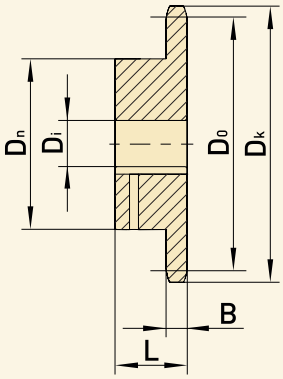


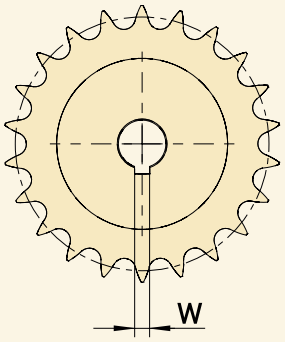
Designation	p x b [inch]	p x b [mm]	Ultimate load of chain DIN 8187 [N]	Number of teeth's	Max. M_{ab} [Nm]	Description	Part no.
08 B-1	1/2" x 5/16"	12,7 x 7,75	18.000	15 19	90 115	1,5 m 5,0 m Link	40005050 40017783 40000613
12 B-1	3/4" x 7/16"	19,05 x 11,68	29.000	15 19	220 280	2,0 m 5,0 m Link	40003030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

Mechanical accessories

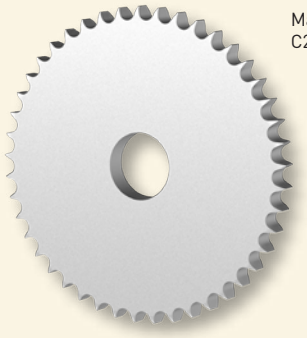
15. Sprockets



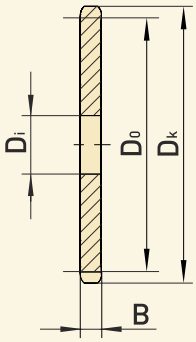


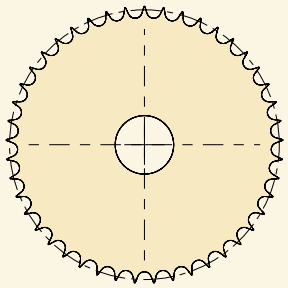
Number of teeth Z	Bore Ø D_i [mm]	Pitch circle Ø D_0 [mm]	Ø D_k [mm]	Hub Ø D_n [mm]	Tooth width B [mm]	Total width L [mm]	Width of key W [mm]	Part no.
15.1 Teilung 08 B-1 (1/2" x 5/16")								
15	25	61,1	65,5	45	7,2	28	8	30000237
19	25	77,2	81,7	60	7,2	28	8	30000238
19	25,4	77,2	81,7	60	7,2	28	6,35	30001086
19	31,75	77,2	81,7	60	7,2	28	6,35	30002243
25	25,4	101,3	105,8	60	7,2	28	6,35	30000761
25	31,75	101,3	105,8	60	7,2	28	6,35	30001990
30	30	121,5	126,1	80	7,2	30	8	30000239
30	40	121,5	126,1	80	7,2	30	12	30000406
45	30	182,1	188,0	70	7,2	42	8	30000242
45	40	182,1	188,0	70	7,2	42	12	30000244
57	30	230,5	236,4	70	7,2	42	8	30000245
57	40	230,5	236,4	70	7,2	42	12	30000247
15.2 Pitch 12B-1 (3/4" x 7/16")								
15	25	91,6	99,8	70	11,1	35	8	30000211
15	30	91,6	99,8	70	11,1	35	8	30000538
15	40	91,6	99,8	70	11,1	35	12	30000219
19	25	115,8	124,2	80	11,1	35	8	30000212
19	30	115,8	124,2	80	11,1	35	8	30000310
19	40	115,8	124,2	80	11,1	35	12	30000220
22	25	133,9	141,8	90	11,1	40	8	30000213
30	40	182,3	190,5	95	11,1	40	12	30000223
30	50	182,3	190,5	95	11,1	40	14	30000224
45	50	273,1	282,5	100	11,1	56	14	30002824
45	60	273,1	282,5	100	11,1	56	18	30002832
57	50	345,8	355,4	100	11,1	56	14	30000234
15.3 Pitch 16B-1 (1" x 17,02 mm)								
15	40	122,2	133,0	92	16,2	40	12	30000171
15	55	122,2	133,0	92	16,2	40	16	30000173
19	40	154,3	165,2	100	16,2	45	12	30000321
19	50	154,3	165,2	100	16,2	45	14	30000322
19	55	154,3	165,2	100	16,2	45	16	30000688
30	50	243,0	254,0	120	16,2	50	14	30000181
30	60	243,0	254,0	120	16,2	50	18	30002396
45	50	364,1	377,9	125	16,2	70	14	30000184
45	60	364,1	377,9	125	16,2	70	18	30000185
57	50	461,1	474,9	125	16,2	70	14	30000192
57	60	461,1	474,9	125	16,2	70	18	30000193
57	80	461,1	474,9	125	16,2	70	22	30001032
15.4 Pitch 20B-1 (1¼" x 3/4")								
15	50	152,7	167,9	118	18,5	45	14	30002900
15	55	152,7	167,9	118	18,5	45	16	30000920
19	55	192,9	208,1	120	18,5	50	16	30003163
45	60	455,2	470,3	150	18,5	70	18	30003190
45	80	455,2	470,3	150	18,5	70	22	30003191
57	60	576,4	592,3	150	18,5	80	18	30003192
57	80	576,4	592,3	150	18,5	80	22	30003193

16. Plate wheels



Material:
C20D (No. 1.0414)

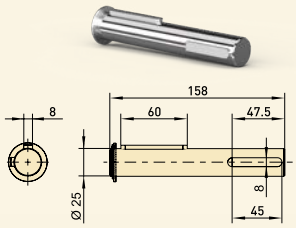




Number of teeth Z	Bore Ø D_i [mm]	Pitch circle Ø D_0 [mm]	Ø D_k [mm]	Tooth width B [mm]	Part no.
16.1 Pitch 08 B-1 (1/2“ x 5/16“)					
45	30	182,1	188,0	7,2	40000464
57	30	230,5	236,4	7,2	40000468
57	40	230,5	236,4	7,2	40000470
16.2 Pitch 12 B-1 (3/4“ x 7/16“)					
45	50	273,1	282,5	11,1	40012557
45	60	273,1	282,5	11,1	40012598
57	50	345,8	355,4	11,1	40000458
16.3 Pitch 16 B-1 (1“ x 17,02 mm)					
30	50	243,0	254,0	16,2	40000474
45	50	364,1	377,1	16,2	40000477
45	60	364,1	377,1	16,2	40000478
57	50	461,1	474,0	16,2	40000485
57	60	461,1	474,0	16,2	40000486
57	70	461,1	474,0	16,2	40000487
57	80	461,1	474,0	16,2	40006524
16.4 Pitch 20 B-1 (1 1/4“ x 3/4“)					
45	60	455,2	470,3	18,5	40012672
45	70	455,2	470,3	18,5	40012709
45	80	455,2	470,3	18,5	40012673
57	60	576,4	591,5	18,5	40006404
57	70	576,4	591,5	18,5	40012710
57	80	576,4	591,5	18,5	40001532

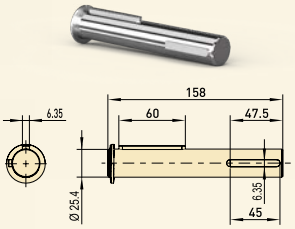
Mechanical accessories

17.1 Stub shafts

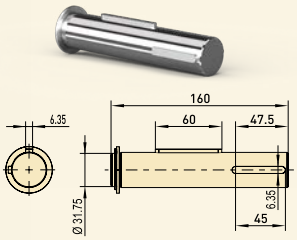


25 Part no. 30002596

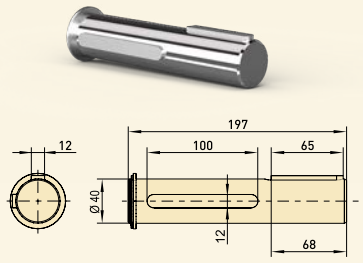
for series **SG50**



25.4 Part no. 30002628



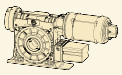
31.75 Part no. 30002699

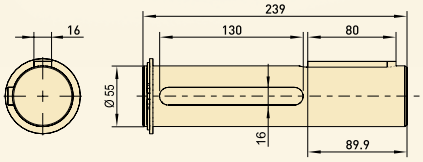


40 Part no. 30002637

for series **SG85**

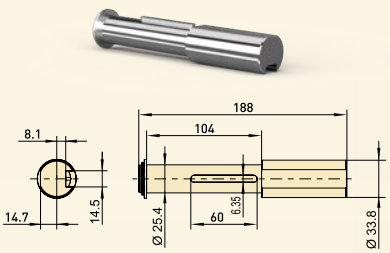
for series **SG115**





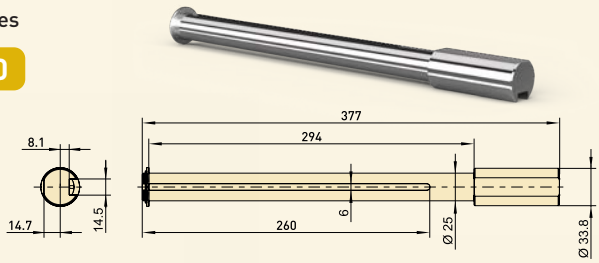
55 Part no. 30003078

17.2 Adapter shafts

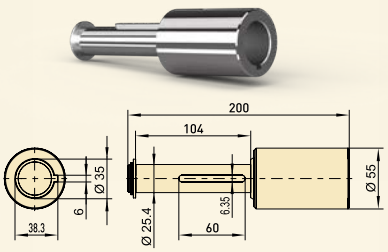


25.4/33.8 Part no. 30004619

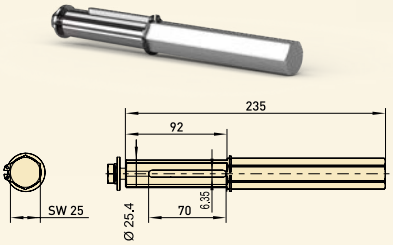
for series **SG50**



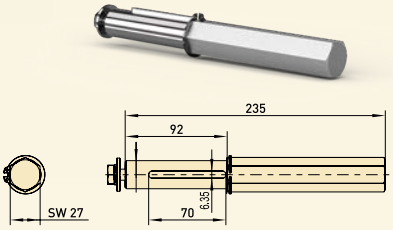
25.4/33.8 Part no. 30004710



25.4/35 Part no. 30004630



25.4/SW25 Part no. 30004823



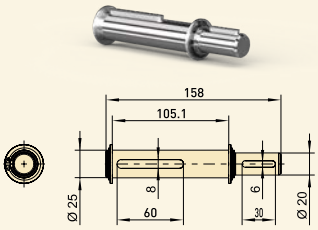
25.4/SW27 Part no. 30002125

Mechanical accessories

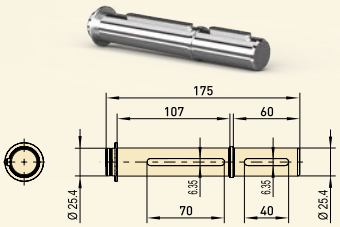
17.3 Adapter stub shafts

for series

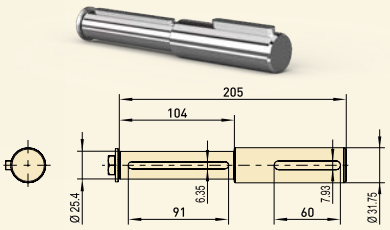
SG50



25/20 Part no. 30004845



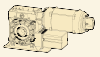
25.4/25.4 Part no. 30002691

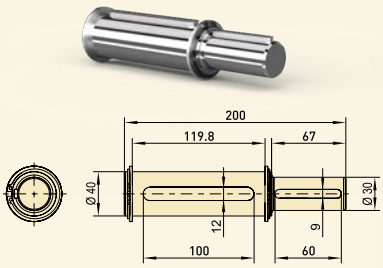


25.4/31.75 Part no. 30005146

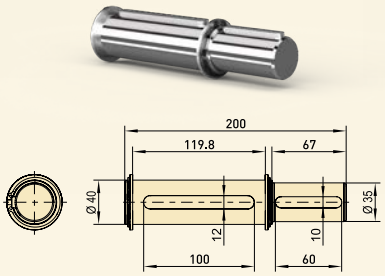
for series

SG85

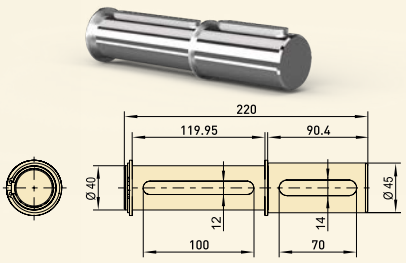




40/30 Part no. 30004436



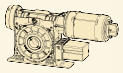
40/35 Part no. 30003288

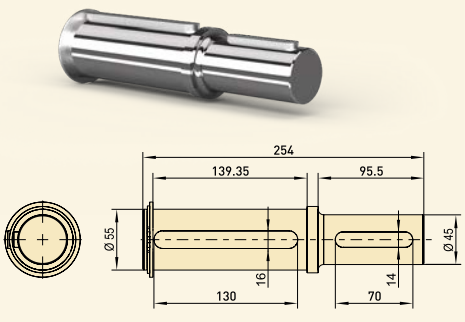


40/45 Part no. 30005125

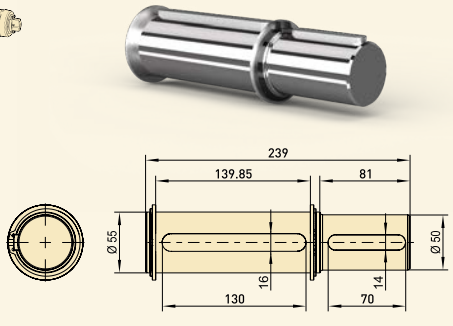
for series

SG115





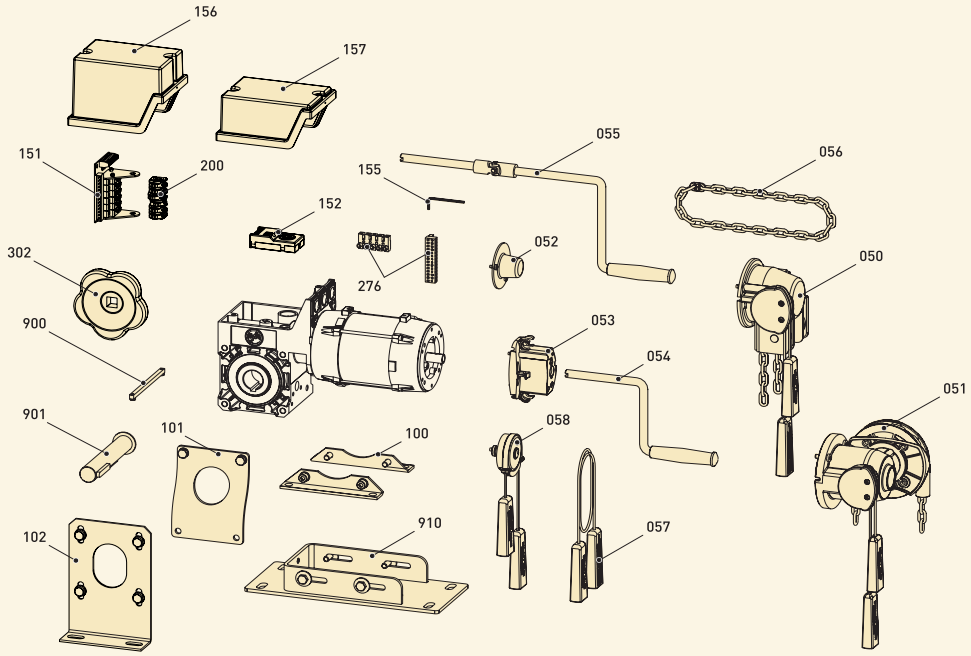
55/45 Part no. 30003305



55/50 Part no. 30004879

Spare parts

Series
SG50

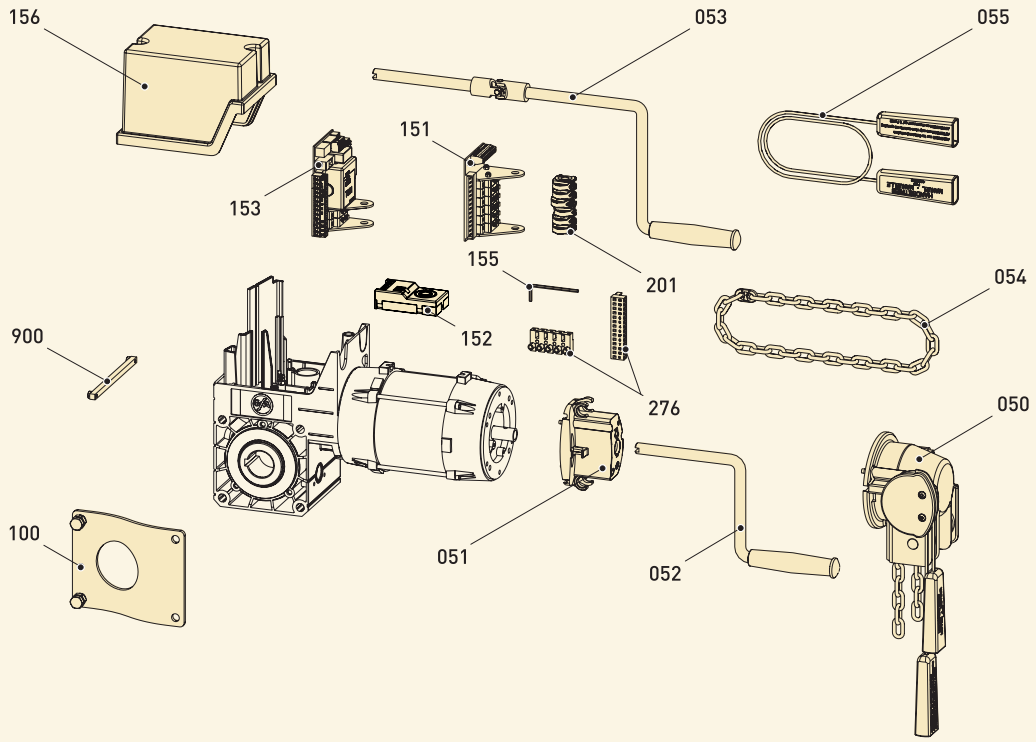


Pos.	Designation		Part no.
050	Emergency operation [1]	SK [2] Rapid hand chain operator 4 m (for all SE-drive; SE 14.15 from 9/2012)	20002862.00021
		SK [2] Rapid hand chain operator 4 m (SI 8.20 / KE 9.24 / KE 9.24 WS / ST 9.24)	20002862.00028
051		KNH25 Hand chain operator (SI 14.15 / SI 14.20 / SE 14.15up to 8/2012)	20002862.00032
052	Motor cover		20002862.00000
053	Hand crank switch [1]		20002862.00001
054	Hand crank	Ø 10 mm	30002591
055	Hand crank with knuckle joint	Ø 10 mm	30002715
056	Hand chain extension	2 m	30004555.00002
		4 m	30004555.00004
		6 m	30004555.00006
		8 m	30004555.00008
		10 m	30004555.00010
057	Shifter cable extension	2 x 4 m	30003965
		2 x 7 m	30004789
		2 x 10 m	30004242
058	Gear release mechanism set	only for SG50E	20002802.00001
100	Assembling kit	Foot angle	20002492.00002
101		Torque mount	30002636
102		Flange bracket	30002685
151	Limit switch unit	NES 6 micro / 7 micro	30003040 / 30003041
152		DES 4	30004757
155	Hex wrench		40000148
156	Cover [1]	NES	30002345
157	Cover [1]	DES	30005363
200	Assembling kit limit cams	6 micro	20002496.00001
276	Connection plugs	14/5-pole for NES	30003380
302	Hand wheel	for ST drive units	30004097
900	Key cpl. for	Ø 25 mm / Ø 30 mm (B 8 x 7 x 130)	30000979
		Ø 25,4 mm / Ø 31,75 mm (B 6,35 x 6,35 x130)	30000958
		Ø 25,4 mm (B 6,35 x 9,525 x 130)	30002661
901	Tub shaft cpl.	Ø 25 mm	30002596
		Ø 25,4 mm	30002628
		Ø 31,75 mm	30002699
910	Bracket SG50 cpl.		30005056

1) Not for drive units in accordance to ATEX specification;
2) The following applies to drive units up to 2022: please see page 9.061
Subject to technical alterations - on request, we supply article- and/or model-specific lists of spare parts

Spare parts

Series
KG50

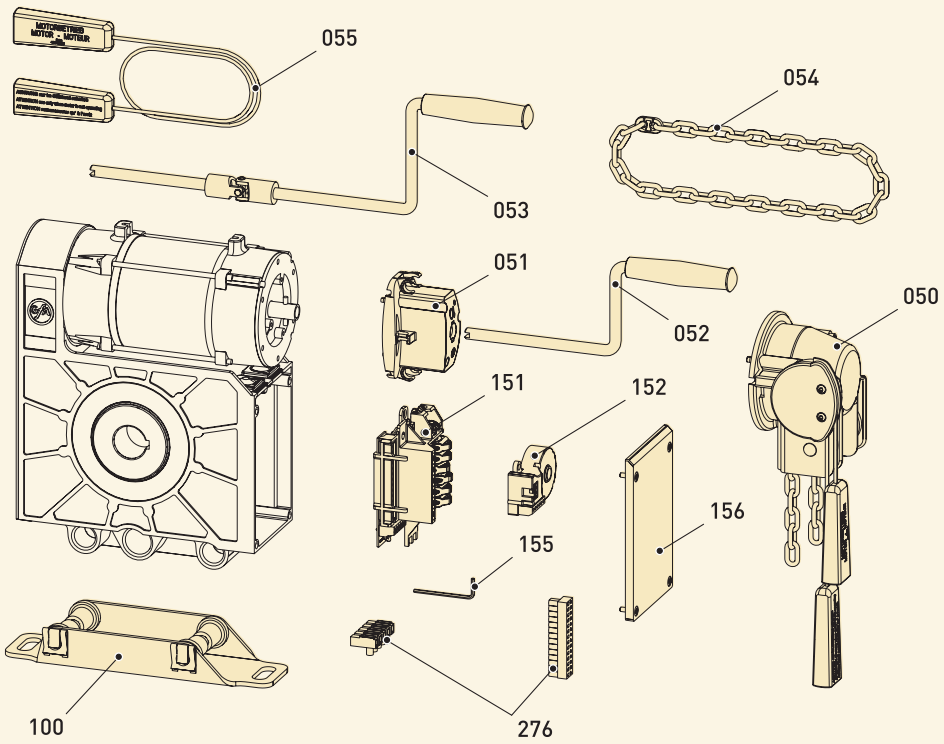


Pos.	Designation		Part no.
050	Emergency operation	SK Rapid hand chain operator 4 m	20002862.00021
051	Hand crank switch		20002862.00001
052	Hand crank	Ø 10 mm	30002591
053	Hand crank with knuckle joint	Ø 10 mm	30002715
054	Hand chain extension	2 m	30004555.00002
		4 m	30004555.00004
		6 m	30004555.00006
		8 m	30004555.00008
		10 m	30004555.00010
055	Shifter cable extension	2 x 4 m	30003965
		2 x 7 m	30004789
		2 x 10 m	30004242
100	Assembling kit	Torque mount	30002636
151	Limit switch unit	NES 6 micro	30003040
152		DES 4	30004757
153		NES 2 micro - T 801	30005049
155	Hex wrench		40000148
156	Cover		30002345
201	Assembling kit limit cams	6 micro	20002496.00001
276	Connection plugs	14/5-pole for NES	30003380
900	Key cpl. for	Ø 25,4 mm / Ø 31,75 mm (B 6,35 x 6,35 x130)	30000958
		Ø 25,4 mm (B 6,35 x 9,525 x 130)	30002661

Subject to technical alterations - on request, we supply article- and/or model-specific lists of spare parts

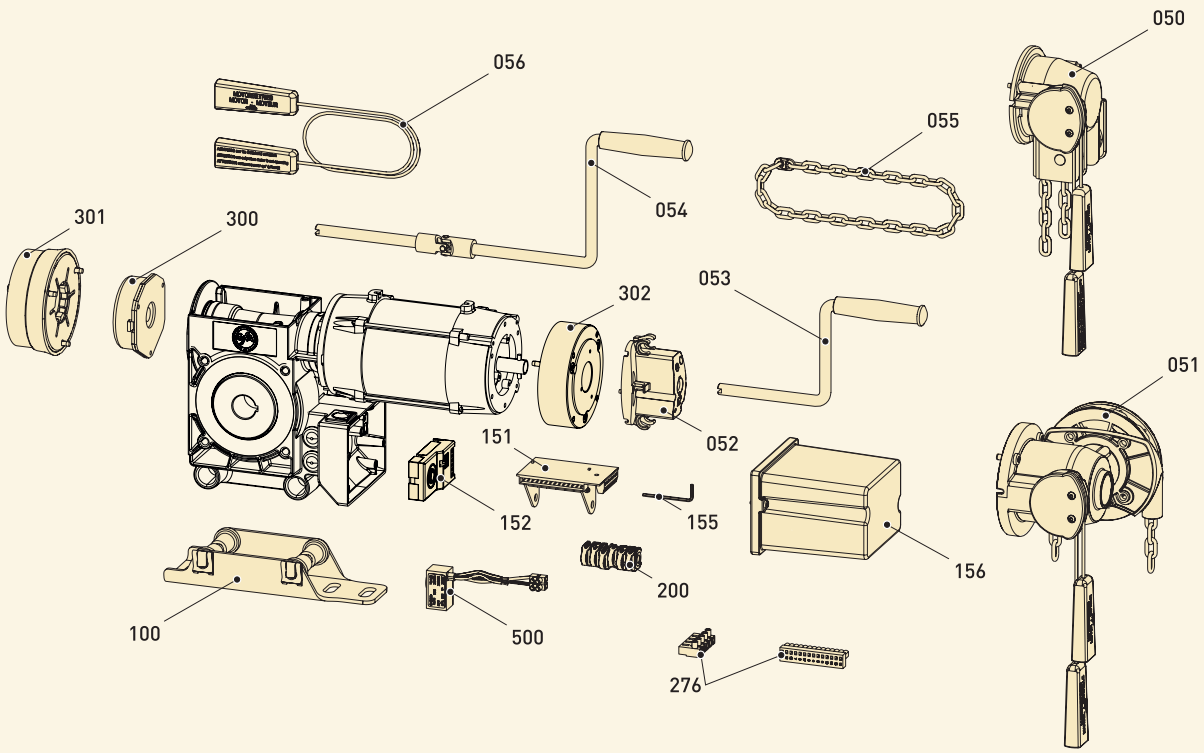
Spare parts

Series
SG63F-SIK



Pos.	Designation		Part no.
050	Emergency operation	SK [1] Rapid hand chain operator 4 m	20002862.00021
051	Hand crank switch		20002862.00001
052	Hand crank	Ø 10 mm	30002591
053	Hand crank with knuckle joint	Ø 10 mm	30002715
054	Hand chain extension	2 m	30004555.00002
		4 m	30004555.00004
		6 m	30004555.00006
		8 m	30004555.00008
		10 m	30004555.00010
055	Shifter cable extension	2 x 4 m	30003965
		2 x 7 m	30004789
		2 x 10 m	30004242
100	Assembling kit	Floating foot	20002773.00001
151	Limit switch unit	NES 6 micro	20003106.00001
152		DES 3	40019982
155	Hex wrench		40000148
156	Cover		30002706
276	Connection plugs	14/5-pole for NES	30003380

1) The following applies to drive units up to 2022: please see page 9.061
Subject to technical alterations - on request, we supply article- and/or model-specific lists of spare parts

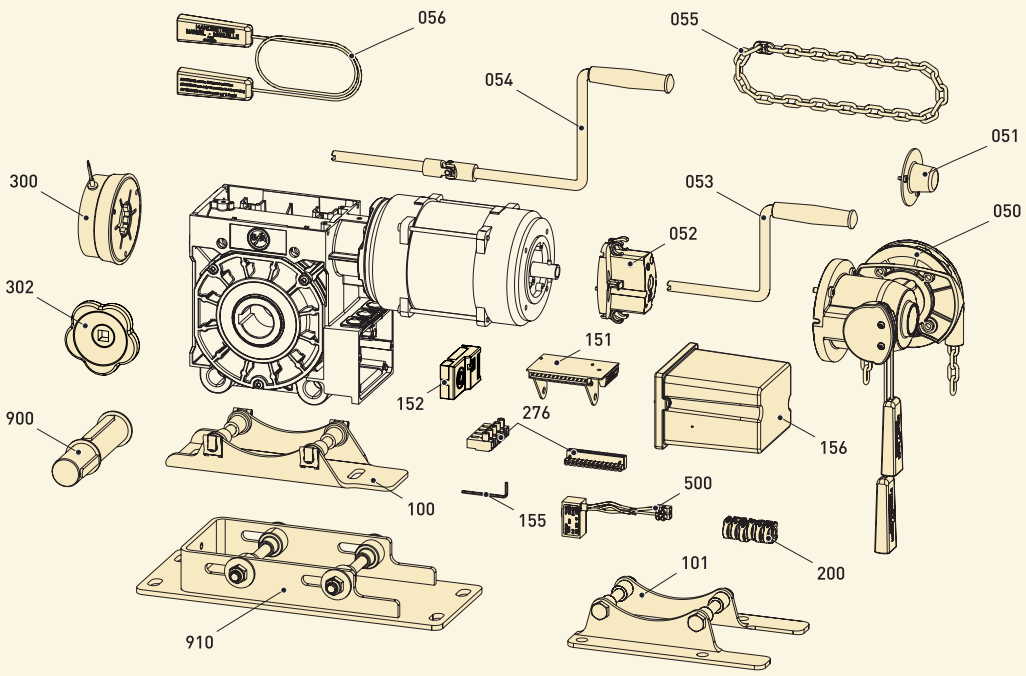


Pos.	Designation		Part no.
050	Emergency operation	SK [1] Rapid hand chain operator 4 m (SI 10.15)	20002862.00028
051	Emergency operation	KNH25 Hand chain operator 4 m (for all SG63F, except SI 10.15)	20002862.00032
052	Hand crank switch	for: SI 10.15 and all ELEKTROMATEN FI	20002862.00001
		for: SI 17.15 / SI 17.24 / SI63 25.15	20002862.00011
053	Hand crank	Ø 10 mm / for: SI 10.15 and all ELEKTROMATEN FI	30002591
		Ø 12 mm / for: SI 17.15 / SI 17.24 / SI63 25.15	30002749
054	Hand crank with knuckle joint	Ø 10 mm / for: SI 10.15 and all ELEKTROMATEN FI	30002715
		Ø 12 mm / for: SI 17.15 / SI 17.24 / SI63 25.15	30002750
055	Hand chain extension	2 m	30004555.00002
		4 m	30004555.00004
		6 m	30004555.00006
		8 m	30004555.00008
		10 m	30004555.00010
056	Shifter cable extension	2 x 4 m	30003965
		2 x 7 m	30004789
		2 x 10 m	30004242
100	Assembling kit	Floating foot	20002641.00001
151	Limit switch unit	NES 6 micro / 7 micro	30003040 / 30003041
152		DES 4	30004757
155	Hex wrench		40000148
156	Cover		30004298
200	Assembling kit limit cams	6 micro	20002496.00001
276	Connection plugs	14/5-pole for NES	30003380
300	Brake unit gearbox	2 Nm, 102 V [2] (SI 17.24 [3])	20002959.02001
301	Brake unit gearbox	9 Nm, 102 V/130 V [2] (SI 13.100 FI [4])	20002959.09204
302	Brake unit motor for NHK	5 Nm, 102 V /130 V [2] (for SI 17.24 [5] / SG63F with Motor FI [6])	20003352.05590
	Brake unit motor for KNH	5 Nm, 102 V /130 V [2] (for SI 17.24 [5] / SG63F with Motor FI [6])	20003352.05591
500	Rectifier EGR II [2]	only for drive units with brake	20003369.00001

1) The following applies to drive units up to 2022: please see page 9.061 ·
2) Standard configuration for 3~230 V/400 V-50 Hz · **3)** Up to approx. 02/2021 · **4)** Up to approx. 07/2020 · **5)** From approx. 03/2021 · **6)** From approx. 08/2020
Other versions are available in addition to the listed replacement brake sets. Please contact your sales representative in case of doubt. Please write down in advance the part and serial number of the drive unit.
Subject to technical alterations - on request, we supply article- and/or model-specific lists of spare parts

Spare parts

Series
SG85

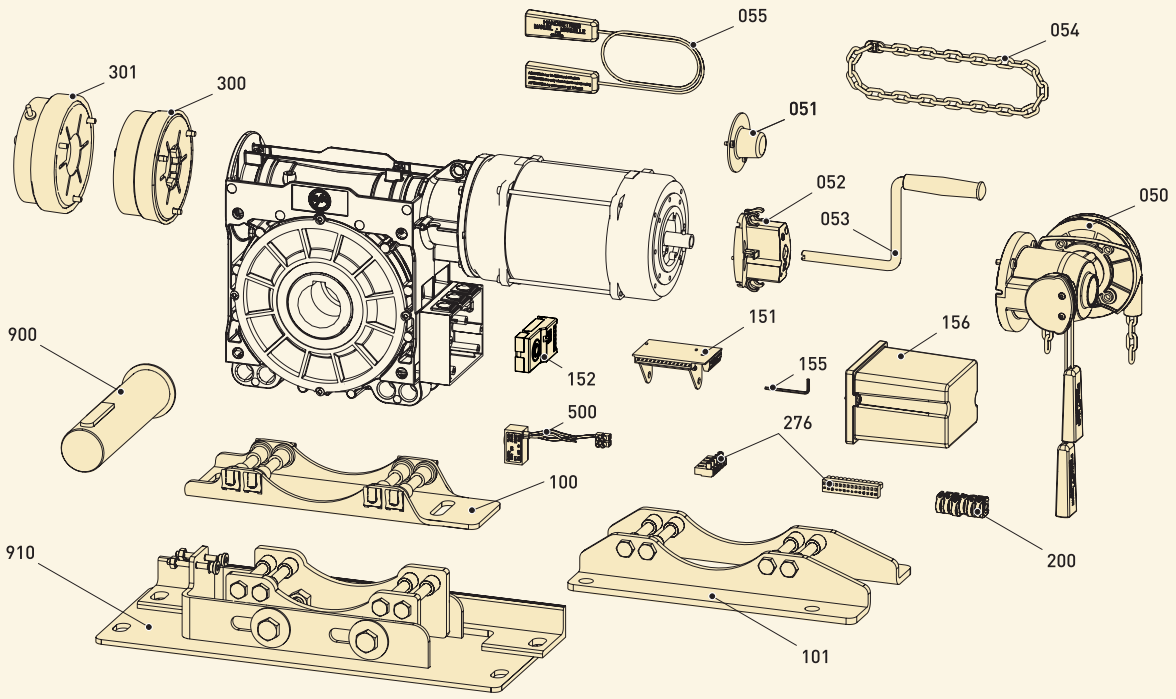


Pos.	Designation		Part no.
050	Emergency operation [1), 2)]	KNH25 Hand chain operator 4 m for: KE 20.24 / SI 8.200 FI / SI 10.70 / SI 10.160 FI / SI 10.200 FI / SI 13.70 / SI 15.140 FI / SI 20.100 FI / SI 25.10 / SI 25.15 / SI 25.15 WS / SI 40.10 / SI 40.15 / SI 45.7 WS	20002862.00032
		KNH60 Hand chain operator 4 m for: KE 30.24 / KE 40.24 / SI 12.140 FI / SI 15.120 FI / SI 20.90 / SI 25.24 / SI 25.35 / SI 25.60 / SI 25.60 FI / SI 25.80 FI / SI 25.150 FI / SI 35.30 / SI 35.100 FI / SI 40.24 / SI 40.40 FI / SI 45.60 FI / SI 55.10 / SI 55.15 / SI 55.40 FI	20002862.00042
051	Motor cover		20002862.00000
052	Hand crank switch [1)]		20002862.00011
053	Hand crank	Ø 12 mm	30002749
054	Hand crank with knuckle joint	Ø 12 mm	30002750
055	Hand chain extension	2 m	30004555.00002
		4 m	30004555.00004
		6 m	30004555.00006
		8 m	30004555.00008
		10 m	30004555.00010
056	Shifter cable extension	2 x 4 m	30003965
		2 x 7 m	30004789
		2 x 10 m	30004242
100	Assembling kit	Floating foot	20002494.00001
101		Foot angle	20002494.00006
151	Limit switch unit	NES 6 micro / 7 micro	30003040 / 30003041
152		DES 4	30004757
155	Hex wrench		40000148
156	Cover [1)]		30004298
200	Assembling kit limit cams	6 micro	20002496.00001
276	Connection plugs	14/5-pole for NES	30003380
300	Brake unit	9 Nm, 102 V/130 V [3)]	20002959.09104
302	Hand wheel	for ST drive units	30004098
500	Rectifier EGR II [3)]	only for drive units with brake	20003369.00001
900	Stub shaft cpl.	Ø 40 mm	30002637
910	Bracket SG85 cpl.		30005055

1) Not for drive units in accordance to ATEX specification
2 Please contact us if of your drive unit is not listed
3) Standard configuration for 3~230 V/400 V-50 Hz; Other versions are available in addition to the listed replacement brake sets. Please contact your sales representative in case of doubt. Please write down in advance the part and serial number of the drive unit.
Subject to technical alterations - on request, we supply article- and/or model-specific lists of spare parts

Spare parts

Series
SG115



Pos.	Designation		Part no.
050	Emergency operation [1]	KNH60 Hand chain operator 7 m	20002862.00043
051	Motor cover		20002862.00000
052	Hand crank switch [1]		20002862.00011
053	Hand crank	Ø 12 mm	30003112
054	Hand chain extension	2 m	30004555.00002
		4 m	30004555.00004
		6 m	30004555.00006
		8 m	30004555.00008
		10 m	30004555.00010
055	Shifter cable extension	2 x 4 m	30003965
		2 x 7 m	30004789
		2 x 10 m	30004242
100	Assembling kit	Floating foot	20002495.00001
101		Foot angle	20002495.00002
151	Limit switch unit	NES 6 micro / 7 micro	30003040 / 30003041
152		DES 4	30004757
155	Hex wrench		40000148
156	Cover [1]		30004298
200	Assembling kit limit cams	6 micro	20002496.00001
276	Connection plugs	14/5-pole for NES	30003380
300	Brake unit	9 Nm, 102 V/130 V [2] (for KE 60.24 / SI 60.24)	20002959.09104
301		20 Nm, 102 V/130 V [2] (for all other drive units with brake)	20002959.20004
500	Rectifier EGR II [2]	(only for drive units with brake)	20003369.00001
900	Stub shaft cpl.	Ø 55 mm	30003078
910	Bracket SG115 cpl.		30005100

1) Not for drive units in accordance to ATEX specification
2 Standard configuration for 3~230 V/400 V-50 Hz; Other versions are available in addition to the listed replacement brake sets. Please contact your sales representative in case of doubt. Please write down in advance the part and serial number of the drive unit.
Subject to technical alterations - on request, we supply article- and/or model-specific lists of spare parts

Spare parts

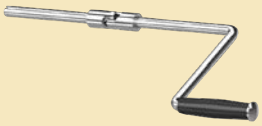
ELEKTROMATEN®
from 1995 - 2002

Limit switch board • up to 12.1997

Designation	Part no.
Limit switch board, dublex with terminals 6 micro	40009596

Emergency manual operator, with mounting accessories
Enquire. in the case of: motors with a fan and cover or ELEKTROMATEN with built on brake, ATEX

NHK "Hand Crank" • from 1995 onwards



Designation		Part no.
Hand crank switch	Ø 10 mm Ø 12 mm	20002862.00001 20002862.00011
Hand crank NHK	Ø 10 mm Ø 12 mm	30002591 30002749
Hand crank with knuckle joint NHKK	Ø 10 mm Ø 12 mm	30002715 30002750

SK "Rapid hand chain operator" • up to 04.2002

Designation	Part no.
Rapid hand chain operator SK (Hand chain 4 m, 0.5 m engaging and disengaging cord)	30004272.00004

KNH "Hand chain operator" • from 1997 onwards

Designation	Part no.
KNH25 KNH60 (replacement for KNH50) Hand chain 4 m, 0.5 m engaging and disengaging cord	20002862.00032 20002862.00042

Spare parts and analysis tools
Door controls

Service case

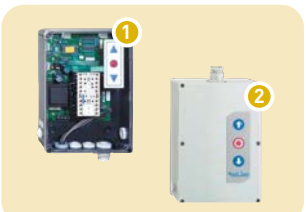
The GfA service case allows the efficient and cost-effective fault analysis on site.

Designation	Description	Part no.
Service case Content → 1	Documentation -de- -en- -nl- Documentation -fr- -es- -it- Documentation -ru- -pl- -cs-	20004007.00001 20004007.00002 20004007.00003

1

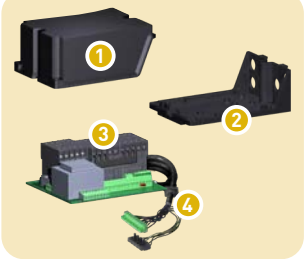
No.	Designation		No.	Designation	
1.	Case	A	10.	Rubber profile OSE 0.2 m	
2.	GfA-Stick	B	11.	Connection cable 6.5 m for OSE	J
3.	Voltcraft digital multimeter	C	12.	Rectifier EGR II	K
4.	Door control TS 971 (for hard wiring)	D	13.	Resistor 8k2	
5.	WSD door module with battery	E	14.	Operating and installation instructions	
6.	Spiral cable with junction box	F		(e.g. for TS 970, TS 971, WSD)	
7.	Digital limit switch DES 4	G	15.	Additional documents for	
8.	Universele OSE-set 0.5 m	H		structured fault diagnostics	
9.	OSE tester	I			

Door controls • up to year 2006



Designation		Description	Part no.
Keypad TS 910/TS 912/TS 913	1	For door controls up to year 2000	40010409
Keypad TS 955/TS 960/TS 961/TS 970	2	For door controls up to year 2005	40012783

Reversing contactor control WS 900

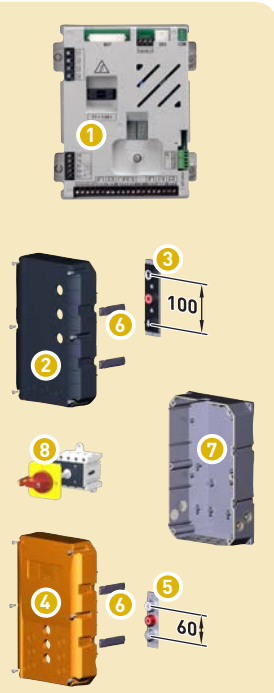


Designation		Description	Part no.
Top section of housing WS	1	With screws	30003375
Bottom section of housing WS	2		30005388
Reversing contactor board	3	2 reversing contactors; control voltage: 24 V	30004039[1)]
Reversing contactor board	3	3 reversing contactors; control voltage: 24 V	30004229
Connection cable 0.8 m	4	With connection plug for ELEKTROMATEN	30004717.00080

1) Discontinued part

Spare parts
Door controls (TS-A housing)

Door controls: TS 956 / TS 958 / TS 961 / TS 970 • up to year 2013 / TS 981



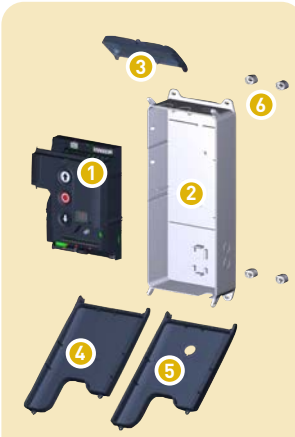
Designation		Description	Part no.
TS 981 board	1	Within cover	30004613
Housing TS-A1 cpl.	2+3+6+7	Top section with screws, keyboard, hinges, bottom section	20002984.00001
Housing TS-A2 cpl. "orange"	4+5+6+7	Top section with screws, keyboard, hinges, bottom section	20002984.10002
Top section of housing TS-A1 cpl.	2+3+6	Top section with screws, keyboard, hinges	20002985.00001
Top section of housing TS-A2 cpl. "orange"	4+5+6	Top section with screws, keyboard, hinges	20002985.10002
Keyboard for TS-A1	3	With mounting material	30004638
Keyboard for TS-A2 "orange"	5	With mounting material	30005064
Hinge TS-A	6	2 pc	30004632
Bottom section of housing TS-A	7		40014770
Mains switch	8	For TS 956, TS 958, TS 961, TS 970; 4-pole	40015183

Door control: TS 981-XL

Designation		Description	Part no.
Mounting kit for housing XL	1	4 pc	40017128
Membrane push button for TS-A	2	With viewing window	40016547
Hinge	3	2 pc	30005828
Housing XL for TS-A	3+4+5	Consits of: Hinge, cover, bottom section with mounting plate and 3 DIN mounting rails	30005246
TS 981 board	6	Within cover	30004613
Mains switch for housing XL	7	4-pole	40015183
Housing XL for TS-A with mains switch, complete	1+2+3+4+5+7	Consits of: Mounting kit for housing XL, Membrane push button for TS-A, Housing XL for TS-A, mains switch for housing XL	20002984.20006
Lock for padlock	8	2 pc (without padlock)	40019408

Spare parts
Door controls (TS-B housing)

Door controls: TS 959 / TS 970 / TS 971 • from year 2012



Designation		Description	Part no.
TS 959 board TS 970 board TS 971 board (350 mA) TS 971 board (1000 mA)	1	Within cover incl. keyboard Within cover incl. keyboard Within cover incl. keyboard Within cover incl. keyboard	30005241.00001 30005273.00001 30005070.00001 30005070.00012
Bottom section of housing TS-B - for TS 959 / TS 970 - for TS 971	2	For installation of the TS-board	 40019859 40019858
Cover kit TS-B1	3+4+6	Consists of: small cover, large cover	30005192.00001
Cover kit TS-B1 for mains switch	3+5+6	Consists of: small cover, large cover, prepared for mains switch	30005192.00006
Spacer foot TS-B	6	4 pc	40016530

Door controls: TS 970-XL / TS 971-XL • from year 2012

Designation		Description	Part no.
Mounting kit for housing XL	1	4 pc	40017128
Membrane push button for TS-B	2	With viewing window	30005408
Hinge	3	2 pc	30005828
Top section of housing XL for TS-B	2+3+4	Consists of: Membrane push button for TS-B, hinge, cover	30005827.00001
Housing XL for TS-B	3+4+5	Consits of: Hinge, cover, bottom section with mounting plate and 3 DIN mounting rails	30005126
TS 970 board TS 971 board (350 mA) TS 971 board (1000 mA)	6	Within cover incl. keyboard Within cover incl. keyboard Within cover incl. keyboard	30005273.00001 30005070.00001 30005070.00012
Mounting adapter TS-B TS 970 Mounting adapter TS-B TS 971	7	For installation of the TS-board For installation of the TS-board	40019862 40019861
Connection kit, when hardwired	8+9	Consists of: Mains supply terminal and slide gland	30005132.00001
TS 970 for control enclosure installation TS 971 for control enclosure installation	6+7+8	 (350 mA) Consists of: Board, mounting adapter TS-B, mains supply terminal	30005405 30005406
Mains switch for housing XL	10	4-pole	40015183
Housing XL for TS-B with mains switch, complete	1+2+3+ 4+5+7+ 10	Consits of: Mounting kit for housing XL, Membrane push button for TS-B, Housing XL for TS-B, Mounting adapter TS-B, mains switch for housing XL	20002984.20005
Lock for padlock	11	2 pc (without padlock)	40019408

Important information:
Subject to errors
and alterations.

Always the latest.

GfA ELEKTROMATEN GmbH & Co. KG
Wiesenstraße 81 · 40549 Düsseldorf
Germany
t: +49 (0) 211 500 90 0
f: +49 (0) 211 500 90 90
www.gfa-elektromaten.com
info@gfa-elektromaten.com

PhG: GfA-Antriebstechnik GmbH, Düsseldorf
Geschäftsführer: Dr.-Ing. Jörn Böhl, Stephan Kleine
Amtsgericht Düsseldorf: HRA 2924 · HRB 10953

Steuer-Nr.: 103/5825/0177
USt.-IdNr.: DE 119246263

WEEE-Reg.-Nr.: DE 25583354
AGB: www.gfa-elektromaten.de

Commerzbank AG Düsseldorf
IBAN DE22 3008 0000 0676 2001 00
BIC DRESDEFF300

Stadtsparkasse Düsseldorf
IBAN DE12 3005 0110 0013 0318 51
BIC DUSSDEDDXXX