

ELEKTROMATEN SE

Sectional-door-drive

For driving: Counterbalanced sectional doors

Series SG50/SG50E
SE 5.24 WS - SE 14.21

ELEKTROMATEN SE are special drives for counterbalanced sectional doors. The drive unit is normally directly fitted to the door shaft. ELEKTROMATEN SE comprises:
Worm gear with hollow shaft, emergency manual operator, integrated limit switches and electrical motor.
Control panels to suit all requirements can be found in section 7.

Approvals and certificates

ELEKTROMATEN and control panels:
Mark approval certificate according to DIN EN 12453

Holding torque
Test report 630900, approval Institute TÜV



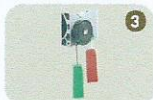
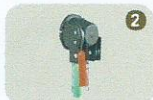
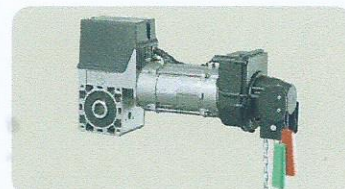
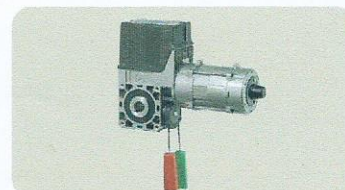
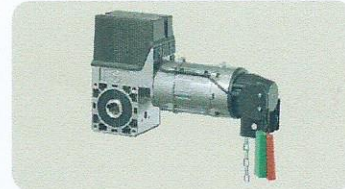
"The Dynamic Duo"

Awarded innovation prize at R+T 2006 trade fair

GfA sectional-door ELEKTROMATEN with patented direct inverter and control panel TS 970 or TS 981.

Individual adjustment, of drive speeds of 20 - 65 rpm with soft start and soft stop function.

Description: page 3.13, section 3



Emergency manual operation

- Hand crank NHK 1
- Rapid hand chain operator SK 2
- Release ER 3

Limit switches

Mechanical limit NES 4

- For WS 900, TS 956/961 control panels
- 2 operating, 2 emergency- and 2 auxiliary limit switches

Digital limit DES 5

- For TS 958/970/981 control panels
- Absolute encoder
- After a power failure, re-adjustment is not required.

Mounting

- Fitting thread 8xM8 (standard fitting)
- Torque mount (page 3.16)
- Flange bracket (page 3.16)

Special versions

- Higher motor duty cycle
- Higher protection class
- Other voltages, frequencies on request
- Explosion-proof according to ATEX (page 5.11)

Control panels

- Simple connection to the limit switch by means of non-interchangeable plug connections allowing simple exchange with other GfA control panels.
- Control voltage: 24V, 50Hz
- Supply voltage: 1x230V/N/PE, 3x230V/PE, 3x400V/N/PE, 3x400V/PE

To be used with mechanical limit switch NES

- Reversing contactor control WS 900 (page 7.11) 6
- Hold to run control panel TS 956 (page 7.21) 7
- Automatic control panel TS 961 (page 7.31) 7

To be used with digital limit switch DES

- Hold to run control panel TS 958 (page 7.25) 7
- Automatic control panel TS 970 (page 7.41) 7
- Automatic control panel with traffic management TS 981 (page 7.51) 7

Details of the above GfA control panels can be found in section 7.

1. Technical data

ELEKTROMATEN Series		SE 5.24 WS SG50 / SG50E	SE 9.24 WS SG50 / SG50E	SE 9.15 SG50 / SG50E	SE 9.20 SG50 / SG50E	SE 9.24 SG50 / SG50E
Output torque	Nm	50	90	90	90	90
Output speed	rpm	24	24	15	20	24
Hollow-shaft Ø ¹	mm	25,4	25,4	25,4	25,4	25,4
Holding torque Mstat ²	Nm	200	450	450	450	450
Max. door weight ³	N	2000	4000	4000	4000	4000
Permitted OPEN / CLOSE output speed in frequency-inverter operating mode ⁴	rpm	--	--	26 / 26	36 / 30	42 / 30
Motor power	kW	0,37	0,45	0,30	0,30	0,37
Supply voltage, frequency	V - Hz	1x230-50	1x230-50	3x230/400-50	3x230/400-50	3x230/400-50
Nominal current ⁵	A	3,5	3,9	2,6 / 1,5	2,6 / 1,5	2,1 / 1,2
Motor duty cycle	ED	S3-40%	S3-20%	S3-60%	S3-60%	S3-60%
Max. cycles per hour ³		12	16	20	20	20
Supply side wiring / fusing (delayed action)		3x1,5 ² / 10A	3x1,5 ² / 10A	5x1,5 ² / 10A	5x1,5 ² / 10A	5x1,5 ² / 10A
Limit switch range ⁶		20	20	20	20	20
ELEKTROMATEN weight	kg	15	16	15	15	15
Spare parts: Catalogue page		8.83 8.85 [ER]	8.83 8.85 [ER]	8.83 8.85 [ER]	8.84 8.86 [ER]	8.83 8.85 [ER]
Part no. installation drawing (dxf, dwg)		50000563 50000872 [ER]	50000853 50001092 [ER]	50000563 50000872 [ER]	50000563 50000872 [ER]	50000563 50000872 [ER]
Part no. ELEKTROMATEN		10003331 10003332 [ER]	10002237 10002763 [ER]	10003277 10003376 [ER]	10003152 10003157 [ER]	10002188 10002748 [ER]

ELEKTROMATEN Series		SE 9.30 SG50 / SG50E	SE 14.15 SG50 / SG50E	SE 14.21 SG50 / SG50E	SE 6.65 DU SG50 / SG50E
Output torque	Nm	90	140	140	60
Output speed	rpm	30	15	21	20-65
Hollow-shaft Ø ¹	mm	25,4	25,4 / 31,75	25,4 / 31,75	25,4 / 31,75
Holding torque Mstat ²	Nm	450	600	600	450
Max. door weight ³	N	4000	6000	6000	3000
Permitted OPEN / CLOSE drive speed in frequency-inverter operating mode ⁴ and/or DU	rpm	52 / 30	26 / 26	36 / 30	65 / 30
Motor power	kW	0,37	0,35	0,45	0,45
Supply voltage, frequency	V - Hz	3x230/400-50	3x230/400-50	3x230/400-50	3x400-50
Nominal current ⁵	A	2,1 / 1,2	3,3 / 1,9	4,3 / 2,5	0,9
Motor duty cycle	ED	S3-60%	S3-60%	S3-60%	S3-60%
Max. cycles per hour ³		20	16	16	20
Supply side wiring / fusing (delayed action)		5x1,5 ² / 10A	5x1,5 ² / 10A	5x1,5 ² / 10A	5x1,5 ² / 10A
Limit switch range ⁶		20	20 [14]	20 [14]	20 [14]
ELEKTROMATEN weight	kg	15	17	16	16
Spare parts: Catalogue page		8.84 8.86 [ER]	8.84 8.86 [ER]	8.84 8.86 [ER]	8.84 8.86 [ER]
Part no. installation drawing (dxf, dwg)		50000563 50000872 [ER]	50000846 50001076 [ER]	50000846 50001076 [ER]	50001313 50001314 [ER]
Part no. ELEKTROMATEN		10002195 10002738 [ER]	10002516 [25,4] 10002621 [31,75] 10003377 [ER]	10002204 [25,4] 10002206 [31,75] 10002758 [ER]	10003393 [25,4] 10003378 [31,75] 10003346 [ER]

The following applies for all ELEKTROMATEN: Protection class IP54, permissible temperature range -5°C to +40°C, operating sound pressure level SPL 70 dB(A)
¹ For SG50E range unlocking mechanism, hollow shaft 25.4 only; hollow shafts 25/30/35/SW 22 on request. ² Read note in 2.5. ³ Read note in 2.2. ⁴ We recommend to select a special ELEKTROMATEN (enquire) for use with frequency inverter, OPEN drive speed at 87 Hz, read note in 2.7. ⁵ The operating current in door drives can reach up to 4x the rated current for limited periods, read notes in 2.6 and 2.7. ⁶ Maximum possible revolutions of hollow shaft: Limit switch range 14 turns with hollow shaft 30/31, 75/35



2. Notes

2.1 European directive

In accordance with the product standard DIN EN 13241-1 Doors- and DIN EN 12453 Safety in use of power operated doors-Requirements.

2.2 Number of switching cycles / door weight

Reduce weight of the door if the stated number of cycles per hour is exceeded (item 1 of technical data) – e.g. high frequently used doors (enquire).

2.3 Gear self-braking

ELEKTROMATEN without an electric brake have a self-sustaining worm gear and stop automatically.

2.4 Manual operation / counterbalancing

Emergency manual operation with NHK hand crank / SK rapid hand chain 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.

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

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

2.5 Holding torque

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

Static stability M_{stat} is calculated as follows:

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

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

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

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

2.6 Motor overload protection

Motor overload protection must be able to withstand 4x the nominal motor current because the starting current of the drive unit can reach these levels for short periods.

2.7 Use with frequency inverter

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 (item 1, technical data). The operating forces must comply with DIN EN 12453.

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

When using a frequency inverter we recommend ELEKTROMATEN in special version (enquire).

2.8 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 DIN 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. SE 6.65 DU

Sectional-door ELEKTROMATEN with patented direct inverter in combination with control panel TS 970 or TS 981 for digital limit switch DES

- Individual adjustment of drive speeds of 20 - 65 rpm
- Soft start and soft stop
- Automatic adjustment of acceleration and deceleration in three steps
- Comfortable limit adjustment and programming of all functions from the ground initial rapid limit adjustment in 4 steps with rotary switch and display

Additional functions, such as:

- Automatic ground adjustment
- Overrun correction to compensate door over running
- Load monitoring in OPEN direction
- Automatic close feature
- Cycle counter
- etc.



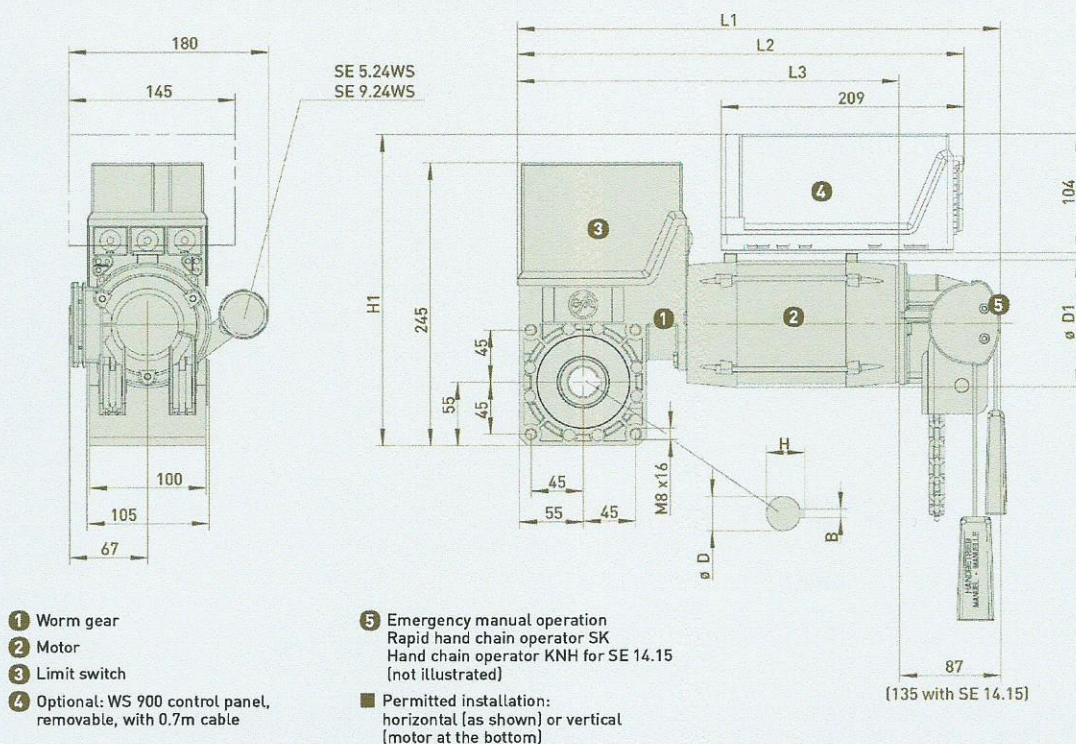
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Subject to measurement and design revisions.



4.1 Dimensions • SE 5.24 WS - SE 14.21

Emergency manual operation: Rapid hand chain operator SK • Series SG50



ELEKTROMATEN	ØD	H	B	L1			L2	L3	H1	ØD1
				SK	NHK	ER				
SE 5.24 WS SE 9.15 SE 9.20 SE 9.24 SE 9.30	25,4	28,4	6,35	402	362	347	385	315	272	108
SE 9.24 WS	25,4	28,4	6,35	414	374	359	391	327	281	126
SE 14.15	25,4 31,75	28,4 34,7	6,35 6,35	507	419	404	391	372	281	126
SE 14.21	25,4 31,75	28,4 34,7	6,35 6,35	428	388	373	395	341	272	108

4.2 Dimensions • SE 5.24 WS - SE 14.21

Emergency manual operation: Hand crank NHK • Series SG50

