

Data sheet

Electrical-linear-actuator SG + AM5

Please read these data sheet carefully and fully. Work on these devices must only be carried out by qualified personnel.

Meaning of the symbols

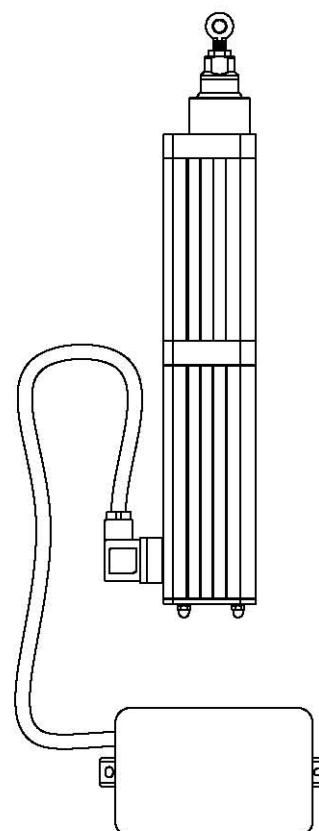
-  **Safety instructions** must be observed!
The disregarding of these instructions can lead to personal injury and / or material damage.
-  **Advice**, the non-compliance with these instructions or the technical data shall lead to the loss of rights under guarantee.
-  **Correct**,
This is how it should be done.
-  **Incorrect**,
This is how it should not be done.

Technical description

- anodized aluminium casing
- push rod made of aluminium (25A, 25) or steel (25S)
- for motor dimensions refer to data sheet „07.021.DAT.00.xx“
- AM5 housing of light grey plastic
- internal interference suppression according to EN 55011
- enclosure motor/electrical according to DIN EN 60529: IP54
- disconnection in both end positions by internal limit switches
- electronic overload emergency disconnection
- push rod support by eye bolt Ø8
- continuously variable mounting by slot nuts and bearing pins
- light grey silicone connection cable, standard length 2,5m
- max. cross section of the connection cable: 4x6mm²

Possible options

- bottom mounting (refer to data sheet: 07.021.DAT.01.xx)
- push rod mounting: - eye bolt Ø6, Ø10;
- clevis (refer to data sheet: 07.021.DAT.02.xx)
- painted motor housing in chosen RAL colour
- enclosure motor/electronic according to DIN EN 60529: IP64
- connection cable length between motor and AM5 on request



picture 1: spindle drive with AM5

Order designation

SG1xx/25A-yyy-zz-2,5 + AM5 (uuww)

xx	type, refer to output data
25A	push rod material
yyy	desired stroke [mm]
zz	bore Ø of eye bolt [mm]
2,5	length of connection cable [m]
uu	overload cut-off device [A]
	1,6 / 2,0 / 2,6 / 4,0 / 6,0 / 8,0
ww	function
	(EG ... output control)

Grasl Pneumatic-Mechanik GmbH

Technical data

voltage range	24 - 48 VDC
permissible residual ripple	2VSS
current range	1,6 - 8,0A (refer to nameplate)
stroke	100 - 1500mm (refer to nameplate)
pushing/pulling force	880-5660N (refer to nameplate)
ambient temperature range actuator	-25°C - +60°C
max. temp. acc. to EN 12101-2, Annex G	300°C - 30min
relative humidity	20% - 80% (non-condensing)
weight actuator	2,0kg – 7,0kg
enclosure actuator + AM5	IP54
dimensions AM5	130x85x37
ambient temperature AM5	-5°C - +75°C
max. continuous ambient temperature AM5	60°C
weight AM5	0,15kg

Initial operation AM5

1. Mount AM5 module at a suitable position
2. Set AM5 DIP switch according to the desired output data
→ ON: I; OFF: 0 (picture 2/ *1)
3. Connect cables for AM5 (picture 2/ *2). Select supply cable so that the voltage drop between the energy supply and AM5 is max. 6,25% of the rated voltage.

Extend

connection 1: „+“; connection 2: „-“

Retract

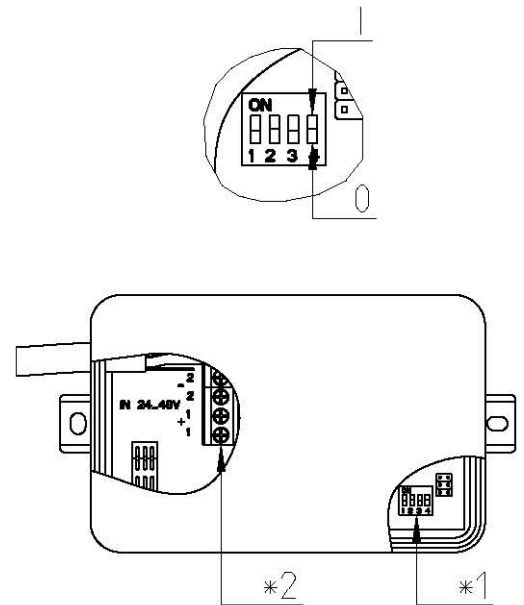
connection 1: „-“; connection 2: „+“

Output data

See following pages!

Footnote for the output datas

1. The stability is the maximum pulling force that may act on the retracted push rod. (locking force = holding force)
2. Acc. to DIN VDE 0530 part 1 (at ambient temperature of 25°C)
3. Acc. to DIN VDE 0530 part 1 (at ambient temperature of 40°C)
Either extending under load and retracting with load support, or retracting under load and extending with load support.



picture 2: AM5

Actuator type	Figure acc. To 07.021.DAT.00.xx	No-load current	Stability 1)	Speed at idle	Dip switch position at the AM5 module				Power requirement at full load		Pushing / pulling force at full load	Speed at full load	Operating mode peak load 2)	Operating mode continuous load 3)	Max. motor running time in one driving direction in continuous load operating mode	Possible push rod variants
					24V	48V	[A]	[A]	[N]	[mm/s]						
SG1BA	1	0,3	3200	5,8	I	O	I	O	1,6	1,0	1760	4,8	S2 4,0min	S3 21%	4,0min	25A/25/25S
					I	O	I	I	1,6	1,0	2820	2,1	S2 2,5min	S3 13%	2,5min	
					I	O	O	O	2,0	1,2	2260	4,5	S2 2,5min	S3 13%	2,5min	
					I	O	O	I	2,0	1,2	3600	1,6	S2 1,5min	S3 8%	1,5min	
					O	I	I	O	2,6	1,5	3020	4,1	S2 1,5min	S3 8%	1,5min	
					Permissible limit values exceeded											
SG1BB	1	0,3	3200	10,7	I	O	I	O	1,6	1,0	1090	8,8	S2 4,0min	S3 21%	4,0min	25A/25/25S
					I	O	I	I	1,6	1,0	1750	3,9	S2 2,5min	S3 13%	2,5min	
					I	O	O	O	2,0	1,2	1400	8,3	S2 2,5min	S3 13%	2,5min	
					I	O	O	I	2,0	1,2	2240	3,0	S2 1,5min	S3 8%	1,5min	
					O	I	I	O	2,6	1,5	1870	7,5	S2 1,5min	S3 8%	1,5min	
					Permissible limit values exceeded											
SG1BC	1	0,3	3200	14,8	I	O	I	O	1,6	1,0	770	12,3	S2 4,0min	S3 21%	4,0min	25A/25/25S
					I	O	I	I	1,6	1,0	1250	5,4	S2 2,5min	S3 13%	2,5min	
					I	O	O	O	2,0	1,2	1000	11,6	S2 2,5min	S3 13%	2,5min	
					I	O	O	I	2,0	1,2	1600	4,2	S2 1,5min	S3 8%	1,5min	
					O	I	I	O	2,6	1,5	1340	10,5	S2 1,5min	S3 8%	1,5min	
					Permissible limit values exceeded											
SG1BD	1	0,4	3200	19,0	I	O	I	O	1,6	1,0	590	15,8	S2 4,0min	S3 21%	4,0min	25A/25/25S
					I	O	I	I	1,6	1,0	960	7,0	S2 2,5min	S3 13%	2,5min	
					I	O	O	O	2,0	1,2	770	14,9	S2 2,5min	S3 13%	2,5min	
					I	O	O	I	2,0	1,2	1240	5,5	S2 1,5min	S3 8%	1,5min	
					O	I	I	O	2,6	1,5	1030	13,5	S2 1,5min	S3 8%	1,5min	
					Permissible limit values exceeded											
SG1BE	1	0,4	3200	26,1	I	O	I	O	1,6	1,0	410	21,9	S2 4,0min	S3 21%	4,0min	25A/25/25S
					I	O	I	I	1,6	1,0	690	9,7	S2 2,5min	S3 13%	2,5min	
					I	O	O	O	2,0	1,2	540	20,6	S2 2,5min	S3 13%	2,5min	
					I	O	O	I	2,0	1,2	890	7,6	S2 1,5min	S3 8%	1,5min	
					O	I	I	O	2,6	1,5	730	18,7	S2 1,5min	S3 8%	1,5min	
					O	I	I	I	2,6	1,5	1180	4,8	S2 1,5min	S3 8%	1,5min	
SG1BF	1	0,3	3200	8,8	I	O	I	O	1,6	1,0	1140	7,3	S2 4,0min	S3 21%	4,0min	25/25S
					I	O	I	I	1,6	1,0	1820	3,2	S2 2,5min	S3 13%	2,5min	
					I	O	O	O	2,0	1,2	1460	6,8	S2 2,5min	S3 13%	2,5min	
					I	O	O	I	2,0	1,2	2330	2,5	S2 1,5min	S3 8%	1,5min	
					O	I	I	O	2,6	1,5	1950	6,2	S2 1,5min	S3 8%	1,5min	
					Permissible limit values exceeded											
SG1BG	1	0,3	3200	16,0	I	O	I	O	1,6	1,0	710	13,3	S2 4,0min	S3 21%	4,0min	25/25S
					I	O	I	I	1,6	1,0	1140	5,9	S2 2,5min	S3 13%	2,5min	
					I	O	O	O	2,0	1,2	920	12,5	S2 2,5min	S3 13%	2,5min	
					I	O	O	I	2,0	1,2	1460	4,6	S2 1,5min	S3 8%	1,5min	
					O	I	I	O	2,6	1,5	1220	11,3	S2 1,5min	S3 8%	1,5min	
					Permissible limit values exceeded											

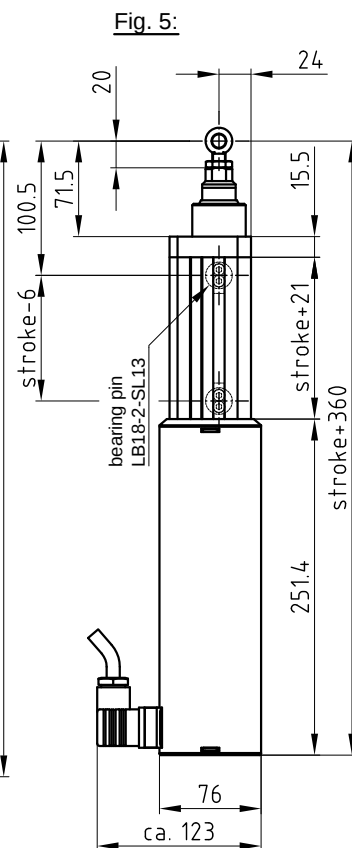
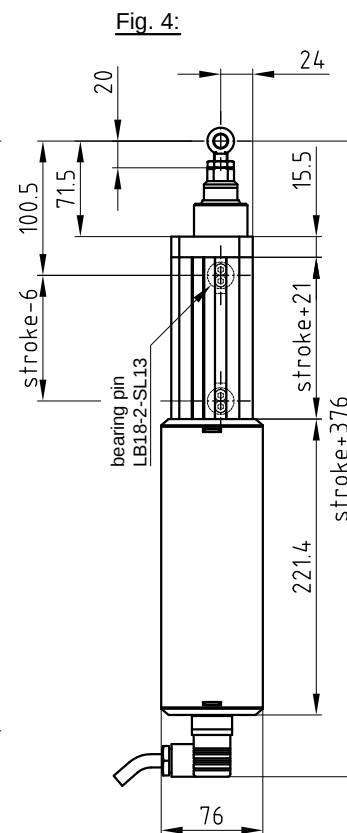
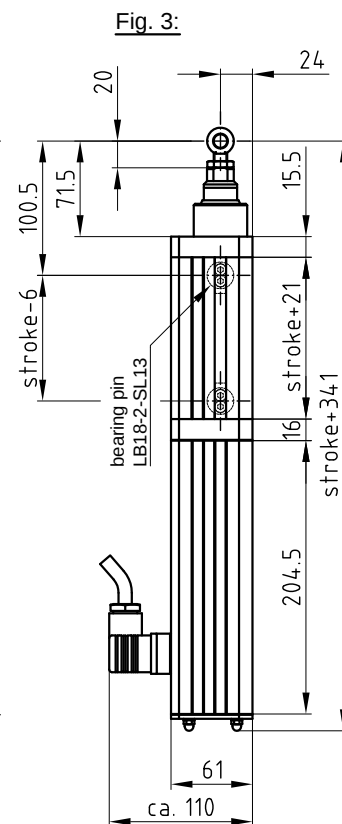
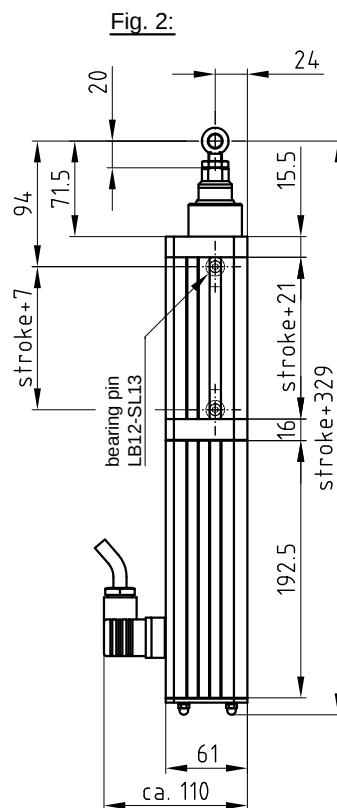
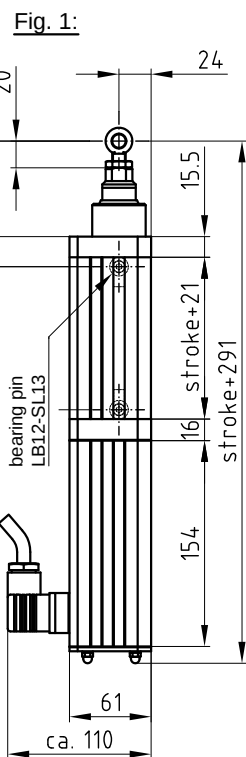
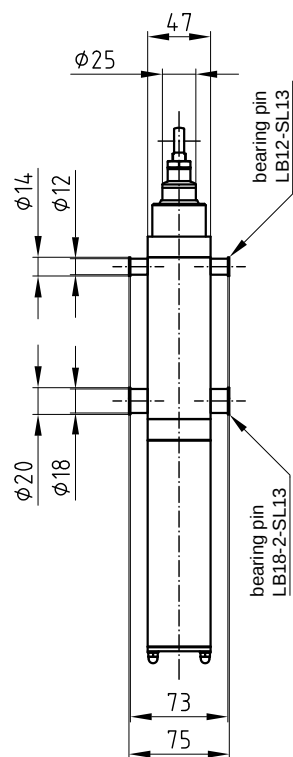
Actuator type	Figure acc. To 07.021.DAT.00.xx	No-load current	Stability 1)	Speed at idle	Dip switch position at the AM5 module				Power requirement at full load		Pushing / pulling force at full load	Speed at full load	Operating mode peak load 2)	Operating mode continuous load 3)	Max. motor running time in one driving direction in continuous load operating mode	Possible push rod variants	
									24V	48V							
		[A]	[N]	[mm/s]	1	2	3	4	[A]	[A]	[N]	[mm/s]					
SG1BH	1	0,3	3200	22,2	I	O	I	O	1,6	1,0	500	18,5	S2 4,0min	S3 21%	4,0min	25/25S	
					I	O	I	I	1,6	1,0	820	8,2	S2 2,5min	S3 13%	2,5min		
					I	O	O	O	2,0	1,2	650	17,4	S2 2,5min	S3 13%	2,5min		
					I	O	O	I	2,0	1,2	1050	6,4	S2 1,5min	S3 8%	1,5min		
					O	I	I	O	2,6	1,5	880	15,8	S2 1,5min	S3 8%	1,5min		
					Permissible limit values exceeded												
SG1BJ	1	0,4	3200	28,5	I	O	I	O	1,6	1,0	390	23,8	S2 4,0min	S3 21%	4,0min	25/25S	
					I	O	I	I	1,6	1,0	630	10,5	S2 2,5min	S3 13%	2,5min		
					I	O	O	O	2,0	1,2	500	22,4	S2 2,5min	S3 13%	2,5min		
					I	O	O	I	2,0	1,2	810	8,2	S2 1,5min	S3 8%	1,5min		
					O	I	I	O	2,6	1,5	670	20,3	S2 1,5min	S3 8%	1,5min		
					Permissible limit values exceeded												
SG1BL	1	0,3	3200	4,4	I	O	I	O	1,6	1,0	2210	3,6	S2 4,0min	S3 21%	4,0min	25A/25/25S	
					I	O	I	I	1,6	1,0	3530	1,6	S2 2,5min	S3 13%	2,5min		
					I	O	O	O	2,0	1,2	2830	3,4	S2 2,5min	S3 13%	2,5min		
					I	O	O	I	2,0	1,2	4500	1,2	S2 1,5min	S3 8%	1,5min		
					O	I	I	O	2,6	1,5	3780	3,1	S2 1,5min	S3 8%	1,5min		
					Permissible limit values exceeded												
SG1BM	1	0,3	3200	8,0	I	O	I	O	1,6	1,0	1360	6,6	S2 4,0min	S3 21%	4,0min	25A/25/25S	
					I	O	I	I	1,6	1,0	2190	2,9	S2 2,5min	S3 13%	2,5min		
					I	O	O	O	2,0	1,2	1750	6,2	S2 2,5min	S3 13%	2,5min		
					I	O	O	I	2,0	1,2	2800	2,3	S2 1,5min	S3 8%	1,5min		
					O	I	I	O	2,6	1,5	2340	5,6	S2 1,5min	S3 8%	1,5min		
					Permissible limit values exceeded												
SG1BN	1	0,3	3200	11,1	I	O	I	O	1,6	1,0	970	9,2	S2 4,0min	S3 21%	4,0min	25A/25/25S	
					I	O	I	I	1,6	1,0	1560	4,1	S2 2,5min	S3 13%	2,5min		
					I	O	O	O	2,0	1,2	1250	8,7	S2 2,5min	S3 13%	2,5min		
					I	O	O	I	2,0	1,2	2010	3,2	S2 1,5min	S3 8%	1,5min		
					O	I	I	O	2,6	1,5	1670	7,9	S2 1,5min	S3 8%	1,5min		
					Permissible limit values exceeded												
SG1BP	1	0,4	3200	14,2	I	O	I	O	1,6	1,0	740	11,9	S2 4,0min	S3 21%	4,0min	25A/25/25S	
					I	O	I	I	1,6	1,0	1210	5,2	S2 2,5min	S3 13%	2,5min		
					I	O	O	O	2,0	1,2	960	11,2	S2 2,5min	S3 13%	2,5min		
					I	O	O	I	2,0	1,2	1550	4,1	S2 1,5min	S3 8%	1,5min		
					O	I	I	O	2,6	1,5	1290	10,1	S2 1,5min	S3 8%	1,5min		
					Permissible limit values exceeded												
SG1BR	1	0,4	3200	19,6	I	O	I	O	1,6	1,0	520	16,4	S2 4,0min	S3 21%	4,0min	25A/25/25S	
					I	O	I	I	1,6	1,0	860	7,3	S2 2,5min	S3 13%	2,5min		
					I	O	O	O	2,0	1,2	680	15,5	S2 2,5min	S3 13%	2,5min		
					I	O	O	I	2,0	1,2	1110	5,7	S2 1,5min	S3 8%	1,5min		
					O	I	I	O	2,6	1,5	920	14,0	S2 1,5min	S3 8%	1,5min		
					Permissible limit values exceeded												

Actuator type	Figure acc. To 07.021.DAT.00.xx	No-load current	Stability 1)	Speed at idle	Dip switch position at the AM5 module				Power requirement at full load		Pushing / pulling force at full load	Speed at full load	Operating mode peak load 2)	Operating mode continuous load 3)	Max. motor running time in one driving direction in continuous load operating mode	Possible push rod variants			
									24V	48V									
		[A]	[N]	[mm/s]	1	2	3	4	[A]	[A]	[N]	[mm/s]							
SG1CA	2	0,6	6400	6,6	O	I	I	I	2,6	1,5	4140	3,3	S2 4,0min	S3 20%	4,0min	25A/25/25S			
					O	I	O	O	4,0	2,0	4190	5,6	S2 4,0min	S3 20%	4,0min				
					O	I	O	I	Permissible limit values exceeded										
					O	O	I	O	Permissible limit values exceeded										
					O	O	I	I	Permissible limit values exceeded										
					O	O	O	O	Permissible limit values exceeded										
					O	O	O	I	Permissible limit values exceeded										
SG1CB	1	0,6	6400	12,1	O	I	I	I	2,6	1,5	2520	6,0	S2 4,0min	S3 20%	4,0min	25A/25/25S			
					O	I	O	O	4,0	2,0	2540	10,3	S2 4,0min	S3 20%	4,0min				
					O	I	O	I	Permissible limit values exceeded										
					O	O	I	O	Permissible limit values exceeded										
					O	O	I	I	Permissible limit values exceeded										
					O	O	O	O	Permissible limit values exceeded										
					O	O	O	I	Permissible limit values exceeded										
SG1CC	1	0,6	6400	16,8	O	I	I	I	2,6	1,5	1800	8,4	S2 4,0min	S3 20%	4,0min	25A/25/25S			
					O	I	O	O	4,0	2,0	1820	14,3	S2 4,0min	S3 20%	4,0min				
					O	I	O	I	Permissible limit values exceeded										
					O	O	I	O	Permissible limit values exceeded										
					O	O	I	I	Permissible limit values exceeded										
					O	O	O	O	Permissible limit values exceeded										
					O	O	O	I	Permissible limit values exceeded										
SG1CD	1	0,6	6400	21,6	O	I	I	I	2,6	1,5	1390	10,8	S2 4,0min	S3 20%	4,0min	25A/25/25S			
					O	I	O	O	4,0	2,0	1400	18,5	S2 4,0min	S3 20%	4,0min				
					O	I	O	I	4,0	2,0	2220	9,3	S2 2,0min	S3 10%	2,0min				
					O	O	I	O	6,0	3,0	2220	16,6	S2 2,0min	S3 10%	2,0min				
					O	O	I	I	Permissible limit values exceeded										
					O	O	O	O	Permissible limit values exceeded										
					O	O	O	I	Permissible limit values exceeded										
SG1CE	1	0,7	6400	29,8	O	I	I	I	2,6	1,5	1000	14,9	S2 4,0min	S3 20%	4,0min	25A/25/25S			
					O	I	O	O	4,0	2,0	1000	25,5	S2 4,0min	S3 20%	4,0min				
					O	I	O	I	4,0	2,0	1590	12,8	S2 2,0min	S3 10%	2,0min				
					O	O	I	O	6,0	3,0	1590	23,0	S2 2,0min	S3 10%	2,0min				
					O	O	I	I	6,0	3,0	2470	9,1	S2 1,0min	S3 5%	1,0min				
					O	O	O	O	8,0	4,0	2180	20,5	S2 1,0min	S3 5%	1,0min				
					O	O	O	I	Permissible limit values exceeded										

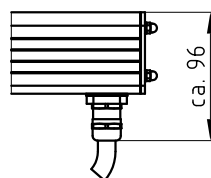
Actuator type Figure acc. To 07.021.DAT.00.xx	No-load current	Stability 1)	Speed at idle	Dip switch position at the AM5 module	Power requirement at full load		Pushing / pulling force at full load	Speed at full load	Operating mode peak load 2)	Operating mode continuous load 3)	Max. motor running time in one driving direction in continuous load operating mode	Possible push rod variants					
					24V	48V											
		[A]	[N]	[mm/s]	1	2	3	4	[A]	[A]	[N]	[mm/s]					
SG1CF	2	0,6	6400	10,0	O	I	I	I	2,6	1,5	2790	4,9	S2 4,0min	S3 20%	4,0min	25/25S	
					O	I	O	O	4,0	2,0	2820	8,5	S2 4,0min	S3 20%	4,0min		
					O	I	O	I	4,0	2,0	4420	4,2	S2 2,0min	S3 10%	2,0min		
					O	O	I	O	6,0	3,0	4420	7,6	S2 2,0min	S3 10%	2,0min		
					O	O	I	I	Permissible limit values exceeded								
					O	O	O	O	Permissible limit values exceeded								
					O	O	O	I	Permissible limit values exceeded								
SG1CG	1	0,6	6400	18,2	O	I	I	I	2,6	1,5	1700	9,0	S2 4,0min	S3 20%	4,0min	25/25S	
					O	I	O	O	4,0	2,0	1710	15,5	S2 4,0min	S3 20%	4,0min		
					O	I	O	I	Permissible limit values exceeded								
					O	O	I	O	Permissible limit values exceeded								
					O	O	I	I	Permissible limit values exceeded								
					O	O	O	O	Permissible limit values exceeded								
					O	O	O	I	Permissible limit values exceeded								
SG1CH	1	0,6	6400	25,2	O	I	I	I	2,6	1,5	1210	12,6	S2 4,0min	S3 20%	4,0min	25/25S	
					O	I	O	O	4,0	2,0	1230	21,5	S2 4,0min	S3 20%	4,0min		
					O	I	O	I	Permissible limit values exceeded								
					O	O	I	O	Permissible limit values exceeded								
					O	O	I	I	Permissible limit values exceeded								
					O	O	O	O	Permissible limit values exceeded								
					O	O	O	I	Permissible limit values exceeded								
SG1CJ	1	0,6	6400	32,4	O	I	I	I	2,6	1,5	940	16,2	S2 4,0min	S3 20%	4,0min	25/25S	
					O	I	O	O	4,0	2,0	950	27,7	S2 4,0min	S3 20%	4,0min		
					O	I	O	I	4,0	2,0	1500	13,9	S2 2,0min	S3 10%	2,0min		
					O	O	I	O	6,0	3,0	1490	25,0	S2 2,0min	S3 10%	2,0min		
					O	O	I	I	Permissible limit values exceeded								
					O	O	O	O	Permissible limit values exceeded								
					O	O	O	I	Permissible limit values exceeded								
SG1CL	2	0,5	6400	6,0	O	I	I	I	2,6	1,5	4550	3,0	S2 4,0min	S3 20%	4,0min	25A/25/25S	
					O	I	O	O	4,0	2,0	4600	5,1	S2 4,0min	S3 20%	4,0min		
					O	I	O	I	Permissible limit values exceeded								
					O	O	I	O	Permissible limit values exceeded								
					O	O	I	I	Permissible limit values exceeded								
					O	O	O	O	Permissible limit values exceeded								
					O	O	O	I	Permissible limit values exceeded								
SG1CM	2	0,6	6400	9,5	O	I	I	I	2,6	1,5	3230	4,7	S2 4,0min	S3 20%	4,0min	25A/25/25S	
					O	I	O	O	4,0	2,0	3260	8,0	S2 4,0min	S3 20%	4,0min		
					O	I	O	I	4,0	2,0	5110	4,0	S2 2,0min	S3 10%	2,0min		
					O	O	I	O	6,0	3,0	5110	7,3	S2 2,0min	S3 10%	2,0min		
					O	O	I	I	Permissible limit values exceeded								
					O	O	O	O	Permissible limit values exceeded								
					O	O	O	I	Permissible limit values exceeded								

Actuator type	Figure acc. To 07.021.DAT.00.xx	No-load current	Stability 1)	Speed at idle	Dip switch position at the AM5 module				Power requirement at full load		Pushing / pulling force at full load	Speed at full load	Operating mode peak load 2)	Operating mode continuous load 3)	Max. motor running time in one driving direction in continuous load operating mode	Possible push rod variants	
					24V	48V											
		[A]	[N]	[mm/s]	1	2	3	4	[A]	[A]	[N]	[mm/s]					
SG1CN	2	0,6	6400	12,1	O	I	I	I	2,6	1,5	2520	6,0	S2 4,0min	S3 20%	4,0min	25A/25/25S	
					O	I	O	O	4,0	2,0	2540	10,3	S2 4,0min	S3 20%	4,0min		
					O	I	O	I	4,0	2,0	3990	5,2	S2 2,0min	S3 10%	2,0min		
					O	O	I	O	6,0	3,0	3990	9,3	S2 2,0min	S3 10%	2,0min		
					O	O	I	I	6,0	3,0	6140	3,6	S2 1,0min	S3 5%	1,0min		
					O	O	O	O	8,0	4,0	5430	8,3	S2 1,0min	S3 5%	1,0min		
					O	O	O	I	Permissible limit values exceeded								
SG1CP	2	0,6	6400	18,9	O	I	I	I	2,6	1,5	1600	9,4	S2 4,0min	S3 20%	4,0min	25A/25/25S	
					O	I	O	O	4,0	2,0	1610	16,1	S2 4,0min	S3 20%	4,0min		
					O	I	O	I	4,0	2,0	2540	8,1	S2 2,0min	S3 10%	2,0min		
					O	O	I	O	6,0	3,0	2540	14,6	S2 2,0min	S3 10%	2,0min		
					O	O	I	I	6,0	3,0	3930	5,7	S2 1,0min	S3 5%	1,0min		
					O	O	O	O	8,0	4,0	3460	13,0	S2 1,0min	S3 5%	1,0min		
					O	O	O	I	8,0	4,0	5080	4,6	S2 1,0min	S3 5%	1,0min		
SG1CR	2	0,6	6400	24,2	O	I	I	I	2,6	1,5	1240	12,0	S2 4,0min	S3 20%	4,0min	25A/25/25S	
					O	I	O	O	4,0	2,0	1250	20,7	S2 4,0min	S3 20%	4,0min		
					O	I	O	I	4,0	2,0	1980	10,4	S2 2,0min	S3 10%	2,0min		
					O	O	I	O	6,0	3,0	1970	18,6	S2 2,0min	S3 10%	2,0min		
					O	O	I	I	6,0	3,0	3060	7,3	S2 1,0min	S3 5%	1,0min		
					O	O	O	O	8,0	4,0	2700	16,6	S2 1,0min	S3 5%	1,0min		
					O	O	O	I	8,0	4,0	3960	5,8	S2 1,0min	S3 5%	1,0min		
SG1CS	2	0,5	6400	9,1	O	I	I	I	2,6	1,5	3070	4,5	S2 4,0min	S3 20%	4,0min	25/25S	
					O	I	O	O	4,0	2,0	3100	7,7	S2 4,0min	S3 20%	4,0min		
					O	I	O	I	4,0	2,0	4850	3,9	S2 2,0min	S3 10%	2,0min		
					O	O	I	O	6,0	3,0	4850	7,0	S2 2,0min	S3 10%	2,0min		
					O	O	I	I	Permissible limit values exceeded								
					O	O	O	O	Permissible limit values exceeded								
					O	O	O	I	Permissible limit values exceeded								
SG1CT	2	0,6	6400	14,2	O	I	I	I	2,6	1,5	2180	7,0	S2 4,0min	S3 20%	4,0min	25/25S	
					O	I	O	O	4,0	2,0	2200	12,1	S2 4,0min	S3 20%	4,0min		
					O	I	O	I	4,0	2,0	3440	6,1	S2 2,0min	S3 10%	2,0min		
					O	O	I	O	6,0	3,0	3450	10,9	S2 2,0min	S3 10%	2,0min		
					O	O	I	I	6,0	3,0	5310	4,3	S2 1,0min	S3 5%	1,0min		
					O	O	O	O	8,0	4,0	4690	9,7	S2 1,0min	S3 5%	1,0min		
					O	O	O	I	Permissible limit values exceeded								
SG1CU	2	0,6	6400	18,2	O	I	I	I	2,6	1,5	1700	9,0	S2 4,0min	S3 20%	4,0min	25/25S	
					O	I	O	O	4,0	2,0	1710	15,5	S2 4,0min	S3 20%	4,0min		
					O	I	O	I	4,0	2,0	2690	7,8	S2 2,0min	S3 10%	2,0min		
					O	O	I	O	6,0	3,0	2690	14,0	S2 2,0min	S3 10%	2,0min		
					O	O	I	I	6,0	3,0	4150	5,5	S2 1,0min	S3 5%	1,0min		
					O	O	O	O	8,0	4,0	3660	12,4	S2 1,0min	S3 5%	1,0min		
					O	O	O	I	8,0	4,0	5360	4,4	S2 1,0min	S3 5%	1,0min		

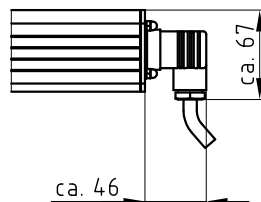
Actuator type	Figure acc. To 07.021.DAT.00.xx	No-load current	Stability 1)	Speed at idle	Dip switch position at the AM5 module				Power requirement at full load		Pushing / pulling force at full load	Speed at full load	Operating mode peak load 2)	Operating mode continuous load 3)	Max. motor running time in one driving direction in continuous load operating mode	Possible push rod variants
					1	2	3	4	24V	48V						
		[A]	[N]	[mm/s]					[A]	[A]	[N]	[mm/s]				
SG1CV	2	0,6	6400	28,4	O	I	I	I	2,6	1,5	1080	14,1	S2 4,0min	S3 20%	4,0min	25/25S
					O	I	O	O	4,0	2,0	1090	24,2	S2 4,0min	S3 20%	4,0min	
					O	I	O	I	4,0	2,0	1710	12,2	S2 2,0min	S3 10%	2,0min	
					O	O	I	O	6,0	3,0	1710	21,9	S2 2,0min	S3 10%	2,0min	
					O	O	I	I	6,0	3,0	2650	8,6	S2 1,0min	S3 5%	1,0min	
					O	O	O	O	8,0	4,0	2340	19,5	S2 1,0min	S3 5%	1,0min	
					O	O	O	I	8,0	4,0	3420	6,9	S2 1,0min	S3 5%	1,0min	
SG1CW	2	0,6	6400	36,3	O	I	I	I	2,6	1,5	840	18,1	S2 4,0min	S3 20%	4,0min	25/25S
					O	I	O	O	4,0	2,0	840	31,1	S2 4,0min	S3 20%	4,0min	
					O	I	O	I	4,0	2,0	1330	15,6	S2 2,0min	S3 10%	2,0min	
					O	O	I	O	6,0	3,0	1330	28,0	S2 2,0min	S3 10%	2,0min	
					O	O	I	I	6,0	3,0	2060	11,0	S2 1,0min	S3 5%	1,0min	
					O	O	O	O	8,0	4,0	1820	24,9	S2 1,0min	S3 5%	1,0min	
					O	O	O	I	8,0	4,0	2670	8,8	S2 1,0min	S3 5%	1,0min	



Option PG, option E:
(with cable screw
connection MS-M20x1,5)



Option KU:
(with connector on
housing bottom)



Eye bolt:

M10x40 Ø8 or Ø10: +10mm/-4mm setting range
Thread in the tube plug: M10x29

Bearing pin:

- SG08x - SG26x (Fig. 1-2): LB12-SL13 (Ø12, shaft length 13mm)
- SG40x - SG120x (Fig. 2-5): LB18-2-SL13 (Ø18, shaft length 13mm)
On request, the actuators SG08x - SG26x can also be supplied with LB18-2-SL13.

Tolerance	Scale	1:4	Material	
Created Simetzberger	Sheet 1/2	Format A3	Title Overview of housing dimensions Electro-linear-actuator SG	Document Style Data sheet
Approved HA	Issue Date 27.09.2017			Document State Valid
Gras				Document Number 07.021.DAT.00.03-E
Pneumatic Mechanik GmbH QM FO.05.24.0				

Technical Instructions

Spindle drives type S, G, SG

Please read through these „technical instructions“ carefully and fully.
Work on these devices must only be carried out by qualified personnel.

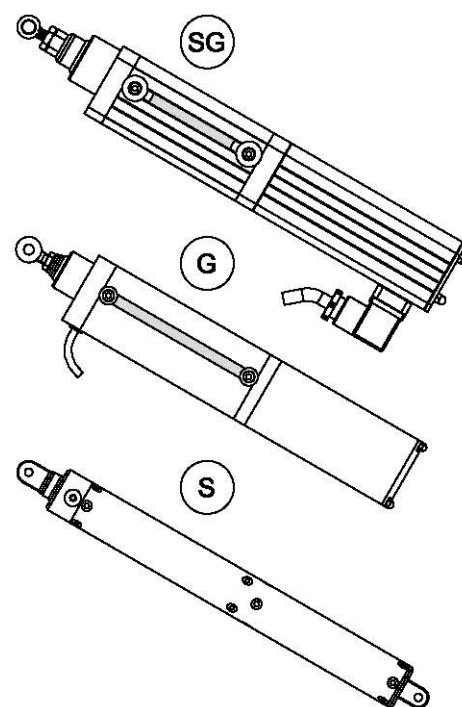
Meaning of the symbols

-  **Safety instructions** must be observed!
The disregarding of these instructions can lead to personal injury and / or material damage.
-  **Advice**, the non-compliance with these instructions or the technical data shall lead to the loss of rights under guarantee.
-  **Correct**,
This is how it should be done.
-  **Incorrect**,
This is how it should not be done.

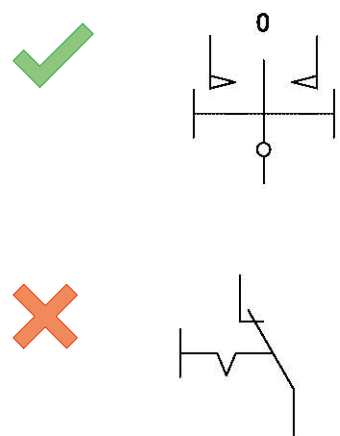
Correct and proper use

The drives serve the purpose of opening and closing NSHEV's, such as windows, blinds and vents in the roof area (no free access for system-external persons). The producer of the NSHEV is responsible for the implementation of EN 12101. For all other applications the compatibility and thus the security can not be guaranteed. On the application of voltage, a movement command is activated.

If the drives are installed below an installation height of 2,5m to the floor, or to the next access level, appropriate devices must be fitted so that people are not endangered (crushing and trapping hazards). Apply the Directives, Rules and Standards intended for this purpose, such as, for example, EN 14351, DIN EN 60335-2-103:2003 and ASR A1.6. Do not allow children to play with the device or its control and / or control devices, including window controls.



picture 1: spindle drives



picture 2: ventilation buttons

Technical details/control

The drives are suitable for connection to K+G/Grasl - control centres. With control via other control centres or other power supplies, the compatibility must be checked. As the drive housings are not earthed, it must be ensured via the controller that no voltages are routed to the drives over the protective low voltage (keyword, galvanic isolation on the transformer, etc.).

With a fault on the internal drive overload cut-off device in the event of a short circuit or overcurrent, the upstream controller as a second safety circuit must disconnect the defective drive via a fuse or similar.

i The dimensioning must be carried out and / or be checked by a qualified electrical company. In doing so, in addition to the nominal values the maximum start-up current of the drives must be taken into account.

! The cross section of the cable between the junction box and the control centre must be so dimensioned that even at full load the voltage drop between the control centre and the drive does not exceed 1V (see the control centre documentation).

The drives must only be operated with a nominal voltage according to drive data sheet and with a tolerance of +30/-20% and a residual ripple <5%. Only with these limits can the trouble-free functioning of the motor electronics be guaranteed.

The drives must only be used in normal atmospheric conditions. In the case of atypical ambient atmosphere (for example, SO₂-, saline atmosphere), please consult.

i The drives are not allowed to be loaded beyond their technical datas. The technical data must be adhered to.

For the control of the drives, only use mutually mechanically interlocked ventilation buttons with contactless centre positions, "no changeover switch", with independent return from the two switching positions (see picture 2). The direct switching of the direction of movement while the drive is running is not permitted and can lead to defects (approx. 2s pause required).

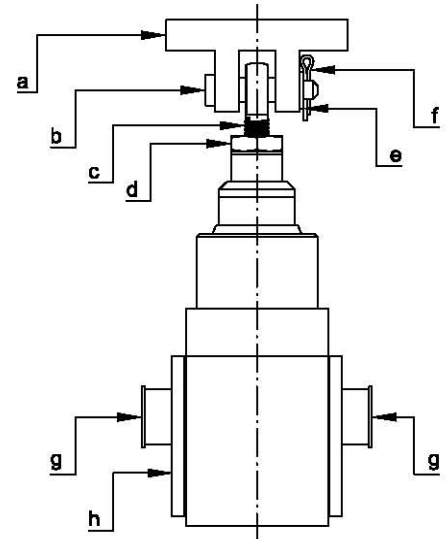
After full extension or retraction, the opposite direction must be travelled for approx. 1s before the previous direction can be travelled again (type series S).

Sound pressure level: L_{PA} ≤ 70dB(A) (test distance 1m)

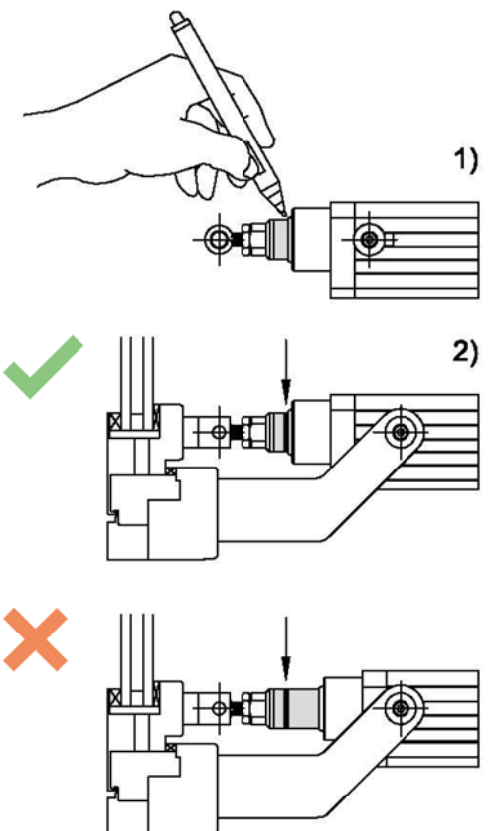
Installation

! Handle the drive only wearing safety gloves and suitable work clothes.

- a ... coupling bracket
- b ... coupling bracket bolts
- c ... eyebolt
- d ... lock nut
- e ... washer
- f ... split pin
- g ... bearing pins
- h ... mounting bracket



picture 3: fixing elements



picture 4: end position

 So design the installation area of the drive that there is no risk of crushing injuries (for example, provide protective covers).

Before the installation, the following must be observed:

 Check the completeness of the scope of supply. Inspect the drive for transport damage.

Connect the drive via a customer-provided junction box with strain relief. When selecting the cable length, take into account the positioning of the box and the pivoting range of the drive.

Ensure that the drives can freely pivot in the whole of the stroke range and cannot come into contact with parts of the building (see the data sheets for the cable outlets of the drives).

Before fixing the drives to the coupling bracket, mounting brackets or other fixing elements, the possible installation dimensions of the relevant drive designs must be taken from the data sheets.

Mount the drives on the appropriate fixing elements. It must be ensured that the mountings are secured by means of appropriate safety devices (see picture 3).

 In order to prevent the screwing out of the eyebolt, the lock nut must be tightened (see picture 3).

Pay attention to the aligned installation of coupling brackets, mounting brackets or other fixing elements. Lateral forces must be avoided (see picture 3).

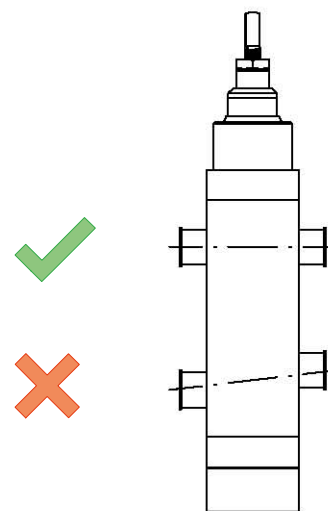
 It must be ensured that the drives can always reach their end positions as otherwise the internal end cut-off is not guaranteed. Use the eyebolt (adjustment range) and bearing pins for adjustment. Continuous operation over the load cut-off is not permitted. Check the setting in the retracted condition by means of marking on the pushrod end (see picture 4).

Setting the closing force with which the NSHEV is driven into the seal (NSHEV must be tightly closed all around):

 In the process, the maximum pushing / pulling force of the drive must not be exceeded (see the data sheets) as otherwise it cannot travel fully in (internal limit switches are then not activated).

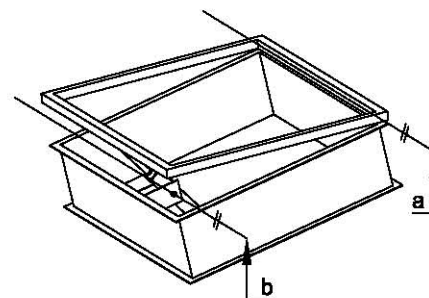
- Drives with variable mountings (lateral guide slots or clamping rings): by pulling the drives, for example, with a spring balance, and then tightening the bearing pins / plugs. During the setting, the bearing pins / plugs must be loosened so far so that the movement of the drive along the drive axis is possible.
- Drives with fixed mountings: by adjusting the eyebolt or other pushrod mountings.

With drives with variable mountings (lateral guide slots) it must be ensured that the bearing plugs / pins lie on the same axis (see pic-

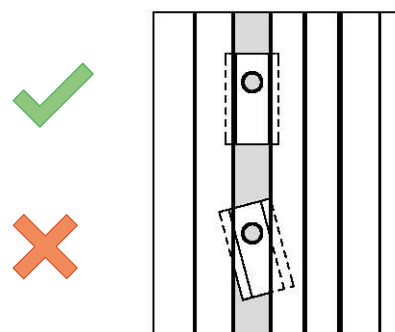


picture 5: bearing pin position

a ...hinge axis
b ...pivot axis



picture 6: installation



picture 7: sliding block

ture 5) and that this is parallel to the hinge axis. In addition, when fitting the mounting bracket, it must be ensured that the pivot axis of the drives is parallel to the hinge axis (see picture 6).

It must also be ensured that the sliding blocks are inserted parallel to the slot. In order to prevent twisting during fitting, the fixing screws should first be carefully hand-tightened so that the sliding blocks are correctly clamped against the profile (see picture 7). Then secure them with sufficient tightening torque (max. tightening torque M5 = 10Nm).

Due to their low cut resistance, handle the connecting cables of the drives with great care. Be careful with sharp-edged materials. Use rubber grommets, cable glands, etc.

Maintenance/dismantling/fault finding

-  Disconnect the drives to avoid unwanted movements due to external control and drive commands.
-  Make sure that the working area is clear of obstacles and that there are no persons in the danger zone.
-  When re-connect, observe possible movements by pending travel commands.

The following points must be checked:

- During the course of the annual maintenance, an inspection of the mechanical fixings must be carried out. Where necessary, these must be re-tightened using customary tools.
- Inspection of the pushrod for damage and cleanliness (clean where necessary).
- Inspection of the pushrod wiper for wear.
- Inspection for freeness from dust (clean where necessary).
- Inspection of the structural conditions for changes with regard to the requirements listed in the point, Installation.
- The equipment should be checked for imbalance, signs of wear or damage to cables, springs and fasteners.
- Perform a manual functional test.

Commissioning

When commissioning (test run, installation or maintenance work), for example, with accumulators it is absolutely necessary to fit a fuse of the same value as the nominal current of the drive in the supply line of the drive. In doing so, the drives must not be connected to the drive output of a control centre / controller at the same time. Otherwise and it can lead to faults on the power output of the control centre / controller. During test runs, the complete NSHEV mechanical systems must be observed.

Normal operation

-  The drive has no internal protection against crushing injuries.
-  The static self-locking effect can be lost due to external influences.
-  The maintenance must be carried out once per year by a specialist trained for the purpose.
-  The drive must not be opened. The unauthorized opening of the drive shall lead to the exclusion of liability and loss of warranty. After opening the housing, the drive is no longer safe to operate and must not be used anymore.

Disposal

The drive consists of electronic parts, wires, steel, non-ferrous metal and plastic.

-  The drive must be disposed of in accordance with national regulations.