

## DC single-acting solenoids

# 1

Product group

## G FC

### Function

- Push and pull type
- Almost linear magnetic force vs. stroke characteristic

### Construction

- Fastening via 2 resp. 4 threaded holes
- Armature bearing:
  - Maintenance free position
  - High service life
  - Armature surface nickel-plated
- Stroke modification by adjustment of the hex nuts
- Insulation materials of the excitation winding correspond to thermal class F
- Electrical connection via flat plug A 6.3 x 0.8 DIN 46244
- Protection class according to DIN VDE/DIN EN 60529 IP 00

### Application examples

- Office machines, textile machines
- Measuring and control technology, building of automats

### Options

- Please contact us for application related solutions

### Standards

- Design and testing according to DIN VDE 0580
- Production according to ISO 9001



Fig. 1: Type G FC X 040 X00 B12

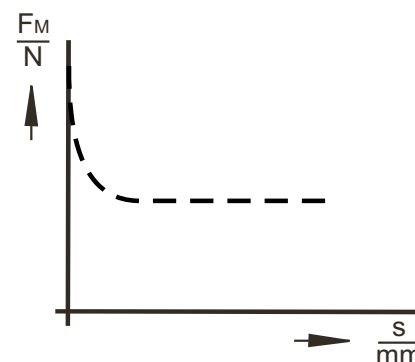


Fig. 2: force vs. stroke characteristic within the nominal stroke

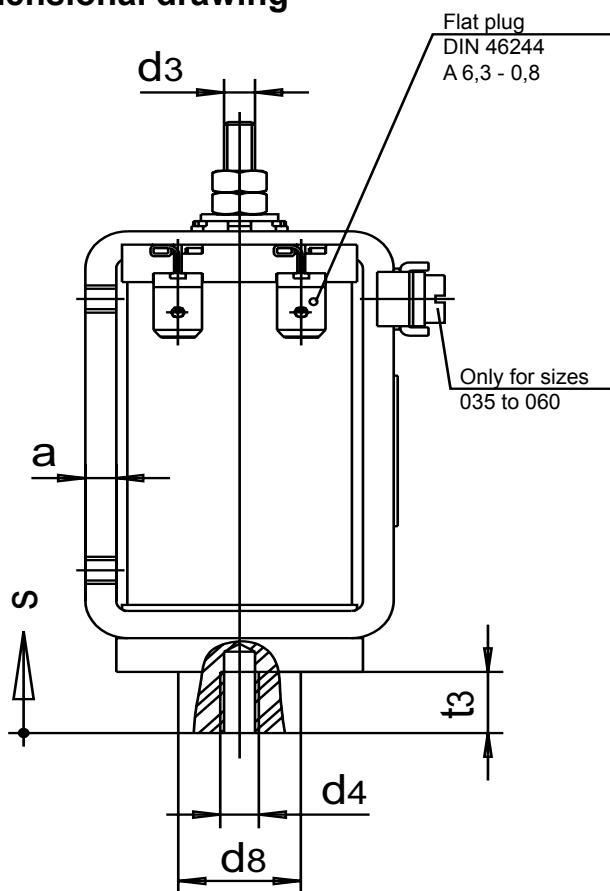
## Technical data

G FC	025					030				
	S1 100%	S3 40%	S3 25%	S3 15%	S3 5%	S1 100%	S3 40%	S3 25%	S3 15%	S3 5%
Operating mode										
Stroke s (nominal stroke) <sup>1)</sup> (mm)	4					5				
Max. stroke s <sup>2)</sup> (mm)	7					-				
Holding force (N)	7,0	10,4	12	13,9	20,7	11	17	20	25	32
Magnetic force F <sub>M</sub> with nominal stroke (N)	2,7	5,0	6,3	7,6	11,1	4,3	8,3	9,9	12,7	17,5
Magnetic force F <sub>M</sub> with max. stroke (N)	0,6	1,3	1,7	3	6,8	-	-	-	-	-
Rated work A <sub>N</sub> (Ncm)	1,08	2,0	2,52	3,04	4,44	2,15	4,15	4,95	6,35	8,75
Rated power P <sub>20</sub> (W)	6,3	12	18	25	58	7	15	20	36	83
Operating frequency Sh (1/h)	30000	21000	15000	9000	3000	22000	15000	9000	5500	1900
Actuation time t <sub>1</sub> (ms)	50	50	45	45	45	70	70	70	70	70
Drop time t <sub>2</sub> (ms)	33	30	28	25	21	50	45	40	35	32
Armature weight m <sub>A</sub> (kg)	0,02					0,03				
Solenoid weight m <sub>M</sub> (kg)	0,10					0,16				
<b>G FC</b>	<b>035</b>					<b>040</b>				
Operating mode	S1 100%	S3 40%	S3 25%	S3 15%	S3 5%	S1 100%	S3 40%	S3 25%	S3 15%	S3 5%
Stroke s (nominal stroke) <sup>1)</sup> (mm)	7					8				
Max. stroke s <sup>2)</sup> (mm)	11					12				
Holding force (N)	16,7	23,4	27,5	34,4	52	41	56	63	74	95
Magnetic force F <sub>M</sub> with nominal stroke (N)	7,7	13,2	15,5	19,1	30	12,2	19	22,6	26,4	38
Magnetic force F <sub>M</sub> with max. stroke (N)	2	4	6	9,5	18	3	7	9,5	14	26,5
Rated work A <sub>N</sub> (Ncm)	5,4	9,3	10,8	13,4	21	9,8	15,2	18,1	21,1	30,4
Rated power P <sub>20</sub> (W)	10	23	32	55	125	14	31	44	62	134
Operating frequency Sh (1/h)	16000	13000	9000	5500	2200	13000	9000	6500	4500	1600
Actuation time t <sub>1</sub> (ms)	100	80	75	70	60	120	120	100	90	80
Drop time t <sub>2</sub> (ms)	60	50	50	50	45	85	70	60	60	55
Armature weight m <sub>A</sub> (kg)	0,04					0,08				
Solenoid weight m <sub>M</sub> (kg)	0,27					0,45				
<b>G FC</b>	<b>050</b>					<b>060</b>				
Operating mode	S1 100%	S3 40%	S3 25%	S3 15%	S3 5%	S1 100%	S3 40%	S3 25%	S3 15%	S3 5%
Stroke s (nominal stroke) <sup>1)</sup> (mm)	10					12				
Max. stroke s <sup>2)</sup> (mm)	15					19				
Holding force (N)	71	100	120	135	190	90	120	133	170	252
Magnetic force F <sub>M</sub> with nominal stroke (N)	21	37	47	55	78	33	57	65	85	125
Magnetic force F <sub>M</sub> with max. stroke (N)	7	16	26	35	65	9	20	30	43	89
Rated work A <sub>N</sub> (Ncm)	21	37	47	55	78	39,6	68,4	78	102	150
Rated power P <sub>20</sub> (W)	20	50	76	117	284	26	60	66	128	320
Operating frequency Sh (1/h)	10000	7000	5000	3000	1300	8000	4500	3000	2600	1000
Actuation time t <sub>1</sub> (ms)	180	150	135	130	100	230	230	200	150	125
Drop time t <sub>2</sub> (ms)	85	70	65	60	60	100	85	80	75	65
Armature weight m <sub>A</sub> (kg)	0,15					0,24				
Solenoid weight m <sub>M</sub> (kg)	0,85					1,3				

<sup>1)</sup> Almost linear characteristic

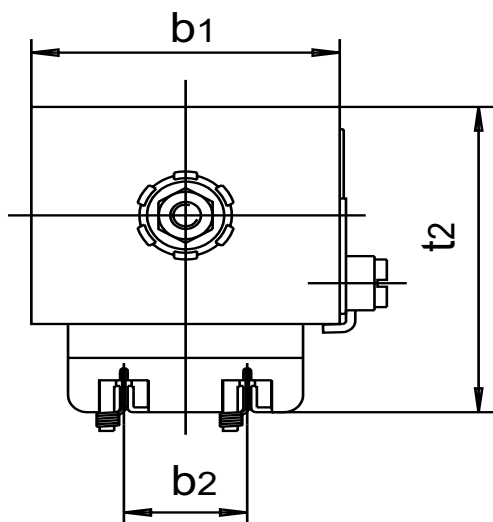
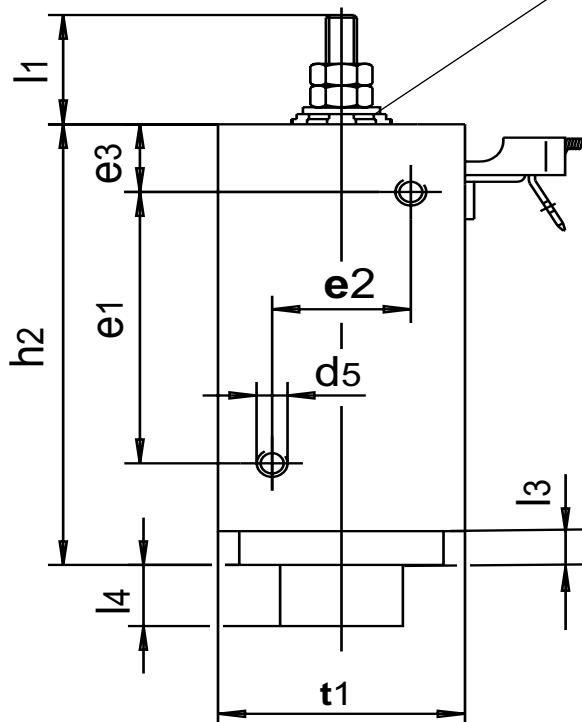
<sup>2)</sup> Achievable by adjustment of the nuts on the armature rod

## Dimensional drawing



Elastomer washer for silencing

For external loads or additional restoring forces the customer should design an external impact damping.



Surface: case and core galvanised

**Fig. 3:** Type G FC X 025 X00 B12 to type G FC X 060 X00 B12

G FC						
Size	025	030	035	040	050	060
Dimensions in mm						
<sup>1)</sup> a	2	2,5	2	4	4	4
b1	25	30	35	40	50	60
b2	16	16	16	16	16	16
d3	M3	M3	M3	M4	M5	M6
d4	M3	M4	M4	M5	M5	M6
d5*	M3	M3	M3	M4	M4	M5
d8	9,9	12	14	16	20	24
e1	20	25	30	40	45	50
e2	12	14	18	18	28	32
e3	7,5	7,5	10	10	12,5	15
h2	39	45	55	65	76	88
<sup>2)</sup> l1	12	12	12	16	18	22
l3	4	5	5	5	6	8
<sup>2)</sup> l4	5	6	8	9	11	13
t1	20	24	30	32	41	50
t2	31,5	36	42	45	54	63
t3	6	6	7	8	8	10
s	4	5	7	8	10	12

<sup>1)</sup> We ask you to please do not exceed the screw depth a, because this could lead to damage of the coil.

\* For sizes 050 and 060 4 threaded bores

<sup>2)</sup> Dimensions apply for nominal stroke

### Notes on the tables

The magnetic force values indicated in the table refer to 90 % of the rated voltage ( $U_N = \text{---} 24 \text{ V}$ , deviations of the magnetic force may occur for other voltages) and the normal operating temperature.

Due to natural dispersion the magnetic force values may deviate by approx.  $\pm 10 \%$  from the table values.

The normal operating temperature is based on:

- Mounting on heat-insulating base
- Rated voltage  $\text{---} 24 \text{ V}$
- Operating mode S1 (100%) up to S3 5 %
- Reference temperature  $35^\circ \text{ C}$

### Rated voltage

Rated voltage  $\text{---} 24 \text{ V}$ , for types from size 035 the exciter coil can be adjusted to a rated voltage of  $\text{---} 250 \text{ VDC}$  on request.

The devices in size 25 and 30 correspond to protection class III. Electrical equipment of protection class III may be only connected to low voltage systems (PELV, SELV)(IEC 60364-4-41). The design limit of the equipment is a rated voltage not higher than  $120 \text{ V}$  (EN 61140:2002) with DC.

On request we are pleased to check to what extent the delivery of higher rated voltages is possible as special solutions by agreement.

### Type code

Type	Size = width	Voltage, admissible duty cycle for rated voltage 24V
G FC X 025 X00 B12	25 mm	24V DC (max. 120V) Without protective conductor connection, protection class III
G FC X 030 X00 B12	30 mm	
G FC X 035 X00 B12	35 mm	24V DC, 196V DC, 205V DC, Protection class I
G FC X 040 X00 B12	40 mm	
G FC X 050 X00 B12	50 mm	
G FC X 060 X00 B12	60 mm	


### Order example

Type                    G FC X 025 X00 B12  
Voltage                 $\text{---} 24 \text{ V DC}$   
Operating mode      S1 (100 %)

**Information and remarks concerning European directives** can be taken from the correspondent information sheet which is available under *Produktinfo.Magnet-Schultz.com*.

### Note on the RoHS Directive


According to our current state of knowledge the devices pictured in this document do not contain any substances in concentration values or applications for which putting into circulation with products manufactured from them is prohibited in accordance to RoHS.

**Please make sure that the described devices are suitable for your application. Supplementary information concerning its proper installation can be taken also from the  -Technical Explanation, the effective DIN VDE0580 as well as the relevant specifications.**

This part list is a document for technically qualified personnel.

The present publication is for informational purposes only and shall not be construed as mandatory illustration of the products unless otherwise confirmed expressively.

### Specials designs

Please do not hesitate to ask us for application-oriented problem solutions. In order to find rapidly a reliable solution we need complete details about your application conditions. The details should be specified as precisely as possible in accordance with the relevant  -Technical Explanations.

If necessary, please request the support of our corresponding technical office.