

## DC Single Acting Solenoids

## Type GFC

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### Function

- push and pull type
- approximately linear magnetic force vs. stroke characteristic, fig. 2

### Construction

- 6 sizes available
- armature bearings:
  - maintenance free PTFE
  - long life
  - nickel-plated armature
- stroke modification by adjustment of the hex nuts
- mounting via 2 to 4 tapped holes
- coil insulation: thermal Class F
- protection classification: DIN VDE/DIN EN 60529 - IP 00

### Application examples

- office machines, textile machines
- measuring and control technology, automation

### Options

- available as standard with either spade connectors or flying leads
- attachments including [bolts, clevises and return springs](#)
- please contact us for application-related solutions

### Standards

- designed and tested to DIN VDE 0580
- manufactured to ISO 9001



Fig. 1: Type G FC X with flying leads (hidden)

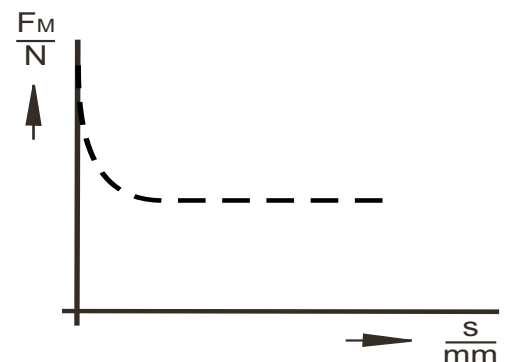


Fig. 2: force vs. stroke characteristic within the nominal stroke



For videos of this and our other products, please visit our YouTube channel

## Technical data

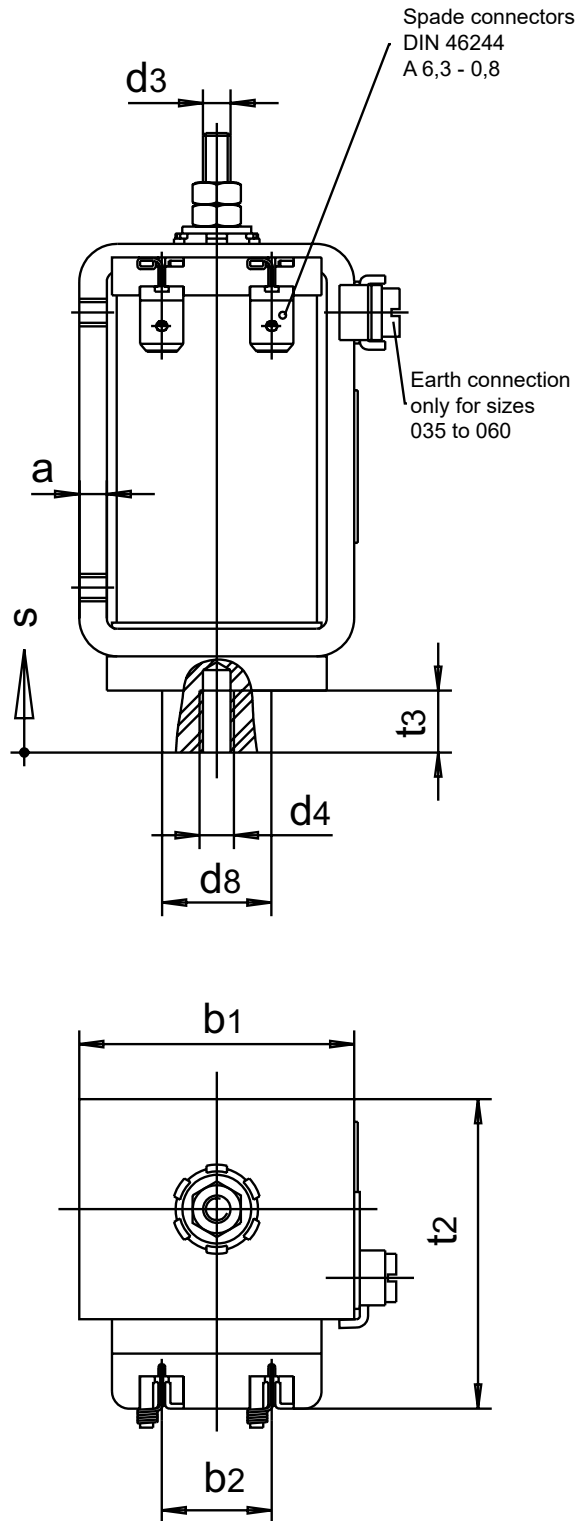
G FC	025					030				
	S1 100%	S3 40%	S3 25%	S3 15%	S3 5%	S1 100%	S3 40%	S3 25%	S3 15%	S3 5%
Operating mode										
Stroke s (nominal stroke) <sup>1)</sup> (mm)	4					5				
Max. stroke s <sup>2)</sup> (mm)	7					-				
Holding force (N)	7,0	10,4	12	13,9	20,7	11	17	20	25	32
Magnetic force F <sub>M</sub> 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
Protection class	III (without protective conductor connection)									
Armature weight m <sub>A</sub> (kg)	0,02					0,03				
Solenoid weight m <sub>M</sub> (kg)	0,10					0,16				
G FC	035					040				
	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)	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
Protection class	I (with protective conductor connection)									
Armature weight m <sub>A</sub> (kg)	0,04					0,08				
Solenoid weight m <sub>M</sub> (kg)	0,27					0,45				
G FC	050					060				
	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)	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
Protection class	I (with protective conductor connection)									
Armature weight m <sub>A</sub> (kg)	0,15					0,24				
Solenoid weight m <sub>M</sub> (kg)	0,85					1,3				

Table 1: GFCX technical data

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

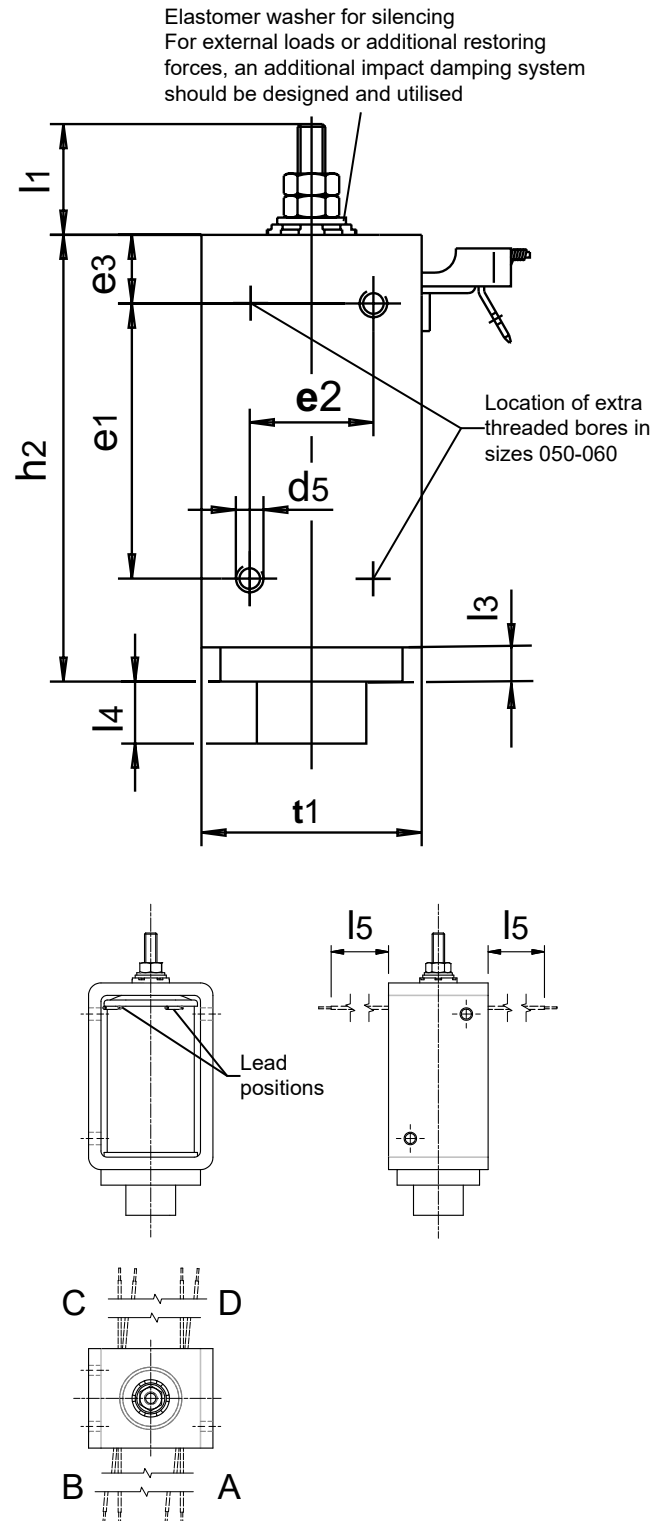
<sup>2)</sup> achievable by adjustment of the nuts on the armature rod

## Dimensional drawing



Surface: case and core galvanised

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



**Fig. 4:** Type G FC X... flying lead placement

## Dimensional tables

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>3)</sup> l1	12	12	12	16	18	22
l3	4	5	5	5	6	8
<sup>3)</sup> l4	5	6	8	9	11	13
l5	150	150	200	200	200	250
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

Table 2: GFCX dimensions

## Adaptations available

A variety of mechanical adaptations are available on our solenoids, including bolt-end, clevis-end, and spring-returns. For further information on these adaptations please see our [Return Springs and Attachments for GFC](#) datasheet or contact our sales team.

All of our open-frame solenoids are available with either spade connectors or flying leads as standard; should a specific electrical connector be required please contact our sales team.



Fig. 5: GFCX 040 with spring-return and clevis-end



Fig. 6: GFCX 025 with spring-return and bolt-end

G FC						
Size	025	030	035	040	050	060
Lead position	A	B	A	A	A	C
Type code GFCX...X00...	E07	*	E11	E23	E14	E03

Table 3: Order codes for flying lead versions

\* Please see [encapsulated GFCX 030](#) datasheet

Table 2 notes:

- Do not use over-length screws and exceed the screw depth 'a' as this could damage the coil
- For sizes 050 and 060 an additional 2 tapped holes are provided
- 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:

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

## Rated voltage

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

Standard values for voltage and operating mode:  $24 \text{ V}$ , S1 (100%).

The devices in sizes 25 and 30mm correspond to protection class III. Electrical equipment of protection class III may only be connected to low voltage systems (PELV, SELV)(IEC 60364-4-41). The design limit of the equipment is a rated voltage no higher than  $120 \text{ V}$  (EN 61140:2002) with DC.

On request we may be able to offer custom coil windings which are rated for use at higher voltages.

## Type code

Type	Size (width) (mm)	Execution and protection	Connector type		Standard voltage and operating mode	
			Spade connectors	Flying leads		
G FC X	025	X00	B12	OR	E07	24V DC (max. 120V), S1 (100%) Protection class III - without protective conductor connection
	030				*	
	035				E11	24V DC (max. 250V), S1 (100%) Protection class I - with protective conductor connection
	040				E23	
	050				E14	
	060				E03	

\* Please see [encapsulated GFCX 030](#) datasheet

## Order example

Type                    G FC X 040 X00 E23  
Voltage                 $\text{---} 24 \text{ V DC}$   
Operating mode      S1 (100 %)

Information and remarks concerning European directives can be taken from the corresponding information sheet which is available on the [magnetschultz.co.uk website](http://magnetschultz.co.uk).

## Note on the RoHS Directive

According to our current state of knowledge, the devices shown in this document do not contain concentrations of hazardous substances which would result in them, or subsequent assemblies in which they are utilised, not complying with RoHS.

**Please make sure that the described devices are suitable for your application. Our offers for these devices are based on the assumption of maximal 8 in an FMEA severity table, i. e. in case of malfunction of the device model as offered, there is, amongst others, no jeopardy of life or limb. Supplementary information concerning its proper usage and installation can be found in our [Technical Explanations \(GXX\)](#) document, as well as [DIN VDE0580](#) and other relevant specifications. Further information regarding device selection can be found in our [Solenoid Selection Guide](#).**

This datasheet 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 explicitly confirmed.

## Special designs

Please do not hesitate to ask us for application-oriented solutions. In order to find a reliable solution we require details about your specific application and installation conditions. The details should be specified as precisely as possible in accordance with the relevant [Technical Explanations \(GXX\)](#) document.

## Need more information or advice?

Email one of our technical experts at [sales@magnetschultz.co.uk](mailto:sales@magnetschultz.co.uk) or call **+44(0)1483 794700** now