MAGNET-SCHULTZ
SOLENOIDS AND SOLUTIONS

QUALITY SINCE 1912

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)

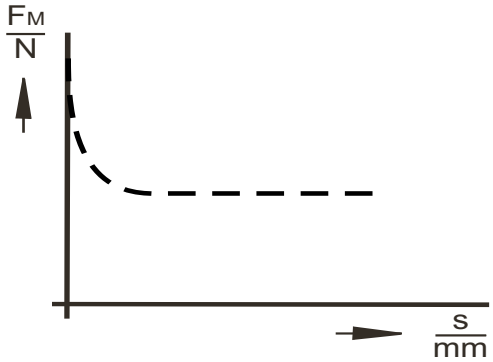

Fig. 2: force vs. stroke characteristic within the nominal stroke

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

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Technical data

G FC		025					030				
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) [1]	(mm)	4					5				
Max. stroke s [2]	(mm)	7					9				
Holding force	(N)	7.0	10.4	12	13.9	20.7	11	17	20	25	32
Magnetic force F_M 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_M with max. stroke	(N)	0.6	1.3	1.7	3	6.8	0.9	2.0	2.8	4.7	9.2
Rated work A_N	(Ncm)	1.08	2.0	2.52	3.04	4.44	2.15	4.15	4.95	6.35	8.75
Rated power P_{20}	(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_1	(ms)	50	50	45	45	45	70	70	70	70	70
Drop time t_2	(ms)	33	30	28	25	21	50	45	40	35	32
Protection class		III (without protective conductor connection)									
Armature weight m_A	(kg)	0.02					0.03				
Solenoid weight m_M	(kg)	0.10					0.16				
G FC		**035**					**040**				
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) [1]	(mm)	7					8				
Max. stroke s [2]	(mm)	11					12				
Holding force	(N)	16.7	23.4	27.5	34.4	52	41	56	63	74	95
Magnetic force F_M with nominal stroke	(N)	7.7	13.2	15.5	19.1	30	12.2	19	22.6	26.4	38
Magnetic force F_M with max. stroke	(N)	2	4	6	9.5	18	3	7	9.5	14	26.5
Rated work A_N	(Ncm)	5.4	9.3	10.8	13.4	21	9.8	15.2	18.1	21.1	30.4
Rated power P_{20}	(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_1	(ms)	100	80	75	70	60	120	120	100	90	80
Drop time t_2	(ms)	60	50	50	50	45	85	70	60	60	55
Protection class		I (with protective conductor connection)									
Armature weight m_A	(kg)	0.04					0.08				
Solenoid weight m_M	(kg)	0.27					0.45				
G FC		**050**					**060**				
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) [1]	(mm)	10					12				
Max. stroke s [2]	(mm)	15					19				
Holding force	(N)	71	100	120	135	190	90	120	133	170	252
Magnetic force F_M with nominal stroke	(N)	21	37	47	55	78	33	57	65	85	125
Magnetic force F_M with max. stroke	(N)	7	16	26	35	65	9	20	30	43	89
Rated work A_N	(Ncm)	21	37	47	55	78	39.6	68.4	78	102	150
Rated power P_{20}	(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_1	(ms)	180	150	135	130	100	230	230	200	150	125
Drop time t_2	(ms)	85	70	65	60	60	100	85	80	75	65
Protection class		I (with protective conductor connection)									
Armature weight m_A	(kg)	0.15					0.24				
Solenoid weight m_M	(kg)	0.85					1.3				

Table 1: GFCX technical data

[1] approximately linear characteristic

[2] achievable by adjustment of the nuts on the armature rod

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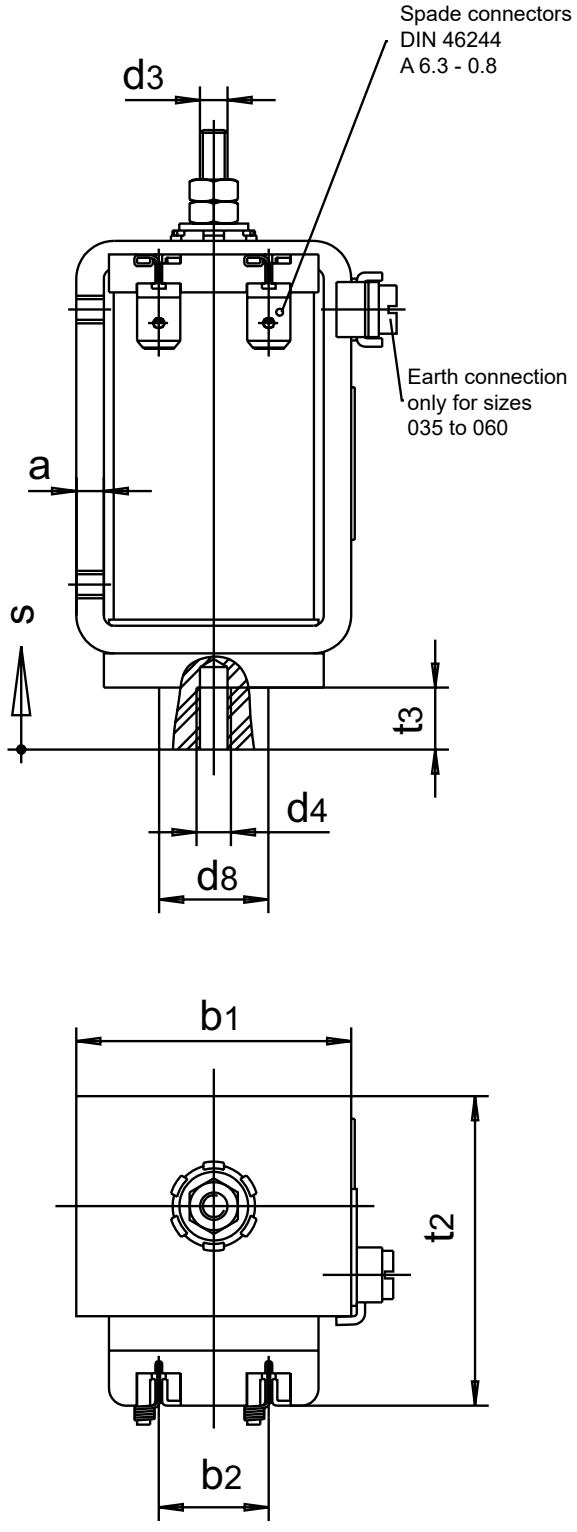
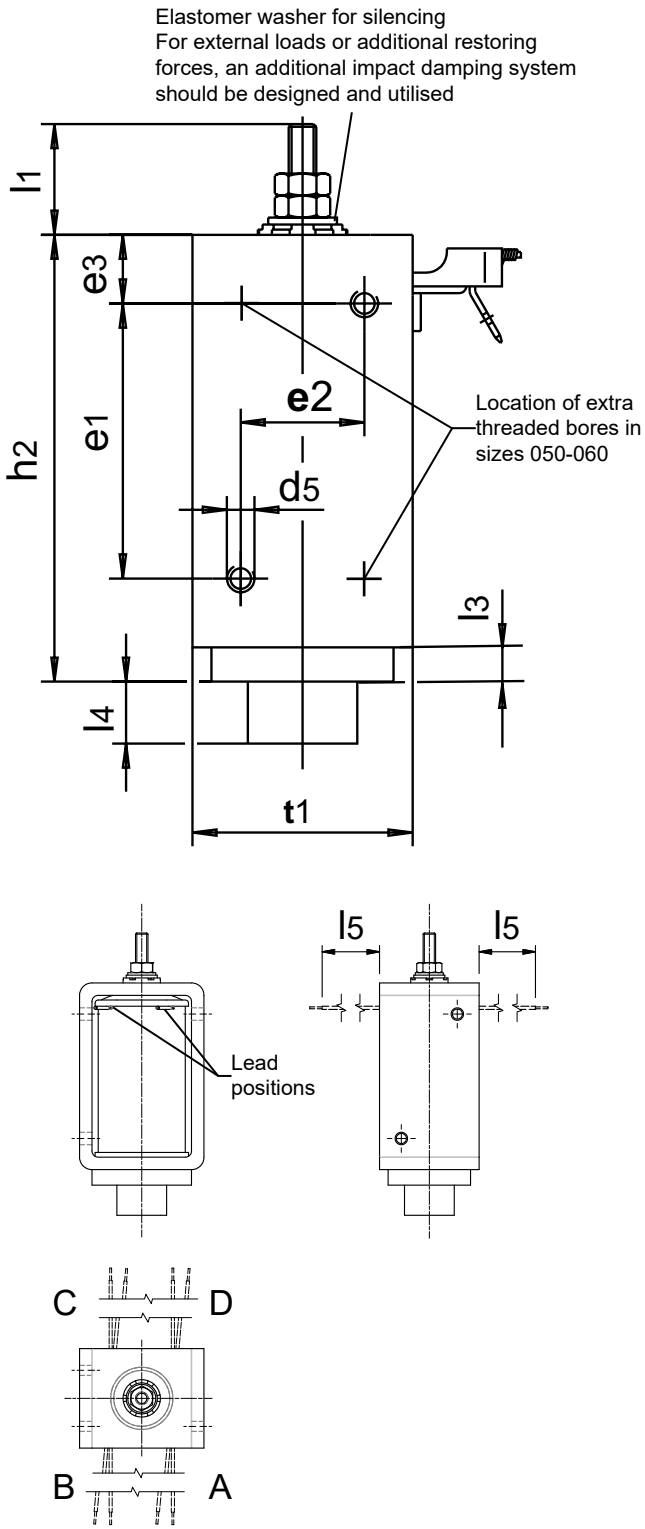
Dimensional drawing





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						
[1)]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
[3)]l1	12	12	12	16	18	22
l3	4	5	5	5	6	8
[3)]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

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 X00 E13 datasheet

Table 2 notes:

[1)] Do not use over-length screws and exceed the screw depth 'a' as this could damage the coil

[2)] For sizes 050 and 060 an additional 2 tapped holes are provided

[3)] Dimensions apply for nominal stroke

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

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Notes on the tables

The magnetic force values indicated in the table refer to 90 % of the rated voltage (U_N = ⎓ 24 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. ± 10 % from the table values.

The normal operating temperature is based on:

a) Mounting on heat-insulating base
b) Rated voltage ⎓ 24 V
c) Operating mode S1 (100%) up to S3 5 %
d) Reference temperature 35° C

Rated voltage

Rated voltage ⎓ 24 V, for types from size 035 the coil can be adjusted to a rated voltage of ⎓ 250 VDC on request.

Standard values for voltage and operating mode: 24 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 60364-4-4-41). The design limit of the equipment is a rated voltage no higher than 120 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.

Information and remarks concerning European directives can be taken from the corresponding information sheet which is available on our website.

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 relevent 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.

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 X00 E13 datasheet

Order example

Type	G FC X 040 X00 E23
Voltage	⎓ 24 V DC
Operating mode	S1 (100 %)