Electromagnetically operated shotbolt lock unit

1
Product group

F HM G + F ST X

Function

- Pull type (de-energized locked) or push type (de-energized unlocked)
- Installed return spring
- Almost linear magnetic force vs. stroke characteristic

Fig. 1: Shotbolt lock unit consisting of magnetic body type F HM G and tube type F MT X

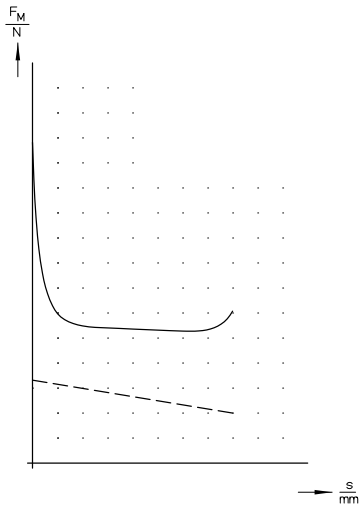


Fig. 2: force vs. stroke characteristic

Construction

- Central fastening
- Maintenance free bearings with high service life
- Armature space protected by o-ring
- Robustly built stainless locking bolt
- Insulation materials of the excitation winding correspond to thermal class F
- Electrical connection via connector plug type Z KB in compliance with DIN EN 175301-803
- Protection class according to DIN VDE/DIN EN 60529, when properly installed
  - Electrical connection and solenoid body
    - Receptacles according to DIN 46247 IP 00
    - Plug connection via connector plug: IP54
  - Tube: IP54

Application examples

- Blocking, limiting, interlocking of mechanical devices of all kind

Options

- Further electrical connections see data sheet F HM G and on request
- Please contact us for application related solutions
- ATEX-version see data sheet F MME + F MT X

Standards

- Design and testing according to DIN VDE 0580
- Quality management to ISO 9001

Technical data

Size	037		045		063
	pull-type	push-type	pull-type	push-type	pull-type
Operating mode	S1				
rel. duty cycle	100%				
Rated voltage U_N (VDC)	24				
Reference temperature ϑ_{13} (°C)	35				
Stroke s (mm)	8		10		12
Magnetic force (N)	10,5	8,7	10	10	33
„Admissible lateral force in normal position“ (N)	600		900		2000
Rated power P_{20} (W)	19,1		18,6		36
Actuation time t_1 (ms)	179,5	175,8	350	193,3	163,9
Fall time t_2 (ms)	35	45,3	59,42	62	58,6
Inductance * (mH)					
• Armature in stroke start position s_{max}	433	369	65	250	3644
• Armature in stroke end position s_0	288	280	41	334	428
Armature weight $m_{armature}$ (kg)	0,05	0,06	0,08	0,08	0,21
Solenoid weight m_M (kg)	0,4	0,4	0,7	0,6	1,5

* measured via switch-off energy (according to V1350.5786)

Table 1

Notes on the tables

The force values indicated in the tables refer to 90 % of the rated voltage, (U_N = ⎓ 24 V, for other voltages deviations of magnetic force may occur) and in the normal operating temperature.

Due to natural dispersion the force values and the force values of the spring may deviate by ± 10 % from the values indicated in the tables.

The normal operating temperature is based on:

a) Mounting on badly conductive base

b) Rated voltage ⎓ 24 V

c) Operating mode S1 (100%)

d) Reference temperature 35° C

Functional description

In the illustrations 6-10 the devices are shown in de-energised condition. The shotbolt is held in the initial position by an installed return spring. When applying the supply voltage, the shotbolt is moved by the magnetic force against the spring force.

With the pulling types, the shotbolt is pulled into the device, with the pushing types the shotbolt travels out of the device. If the device is separated from the supply voltage again, it takes the initial position actuated by the spring, as long as the shotbolt is not impaired in its movement by external forces or obstacles.

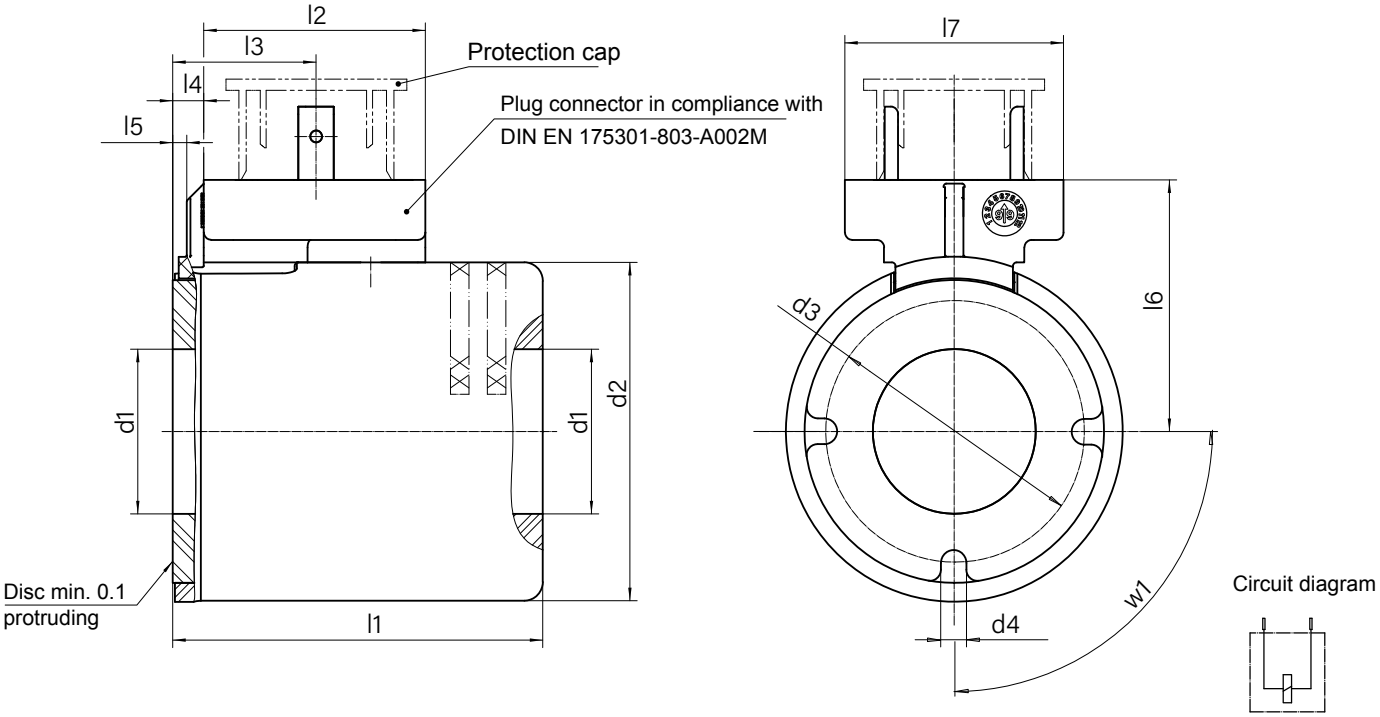
Rated voltage

Rated voltage is ⎓ 24 V. An adaptation of the exciter coil to a rated voltage less than ⎓ 120 V is possible on request.

Standard values for voltage and operating mode: 24V, S1 (100%).

The devices correspond to protection class III. Electrical equipment of protection class III may be only connected to low voltage systems (PELV, SELV)(IEC 60364-4-4-41). The design limit of the equipment is a rated voltage not higher than 120 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.

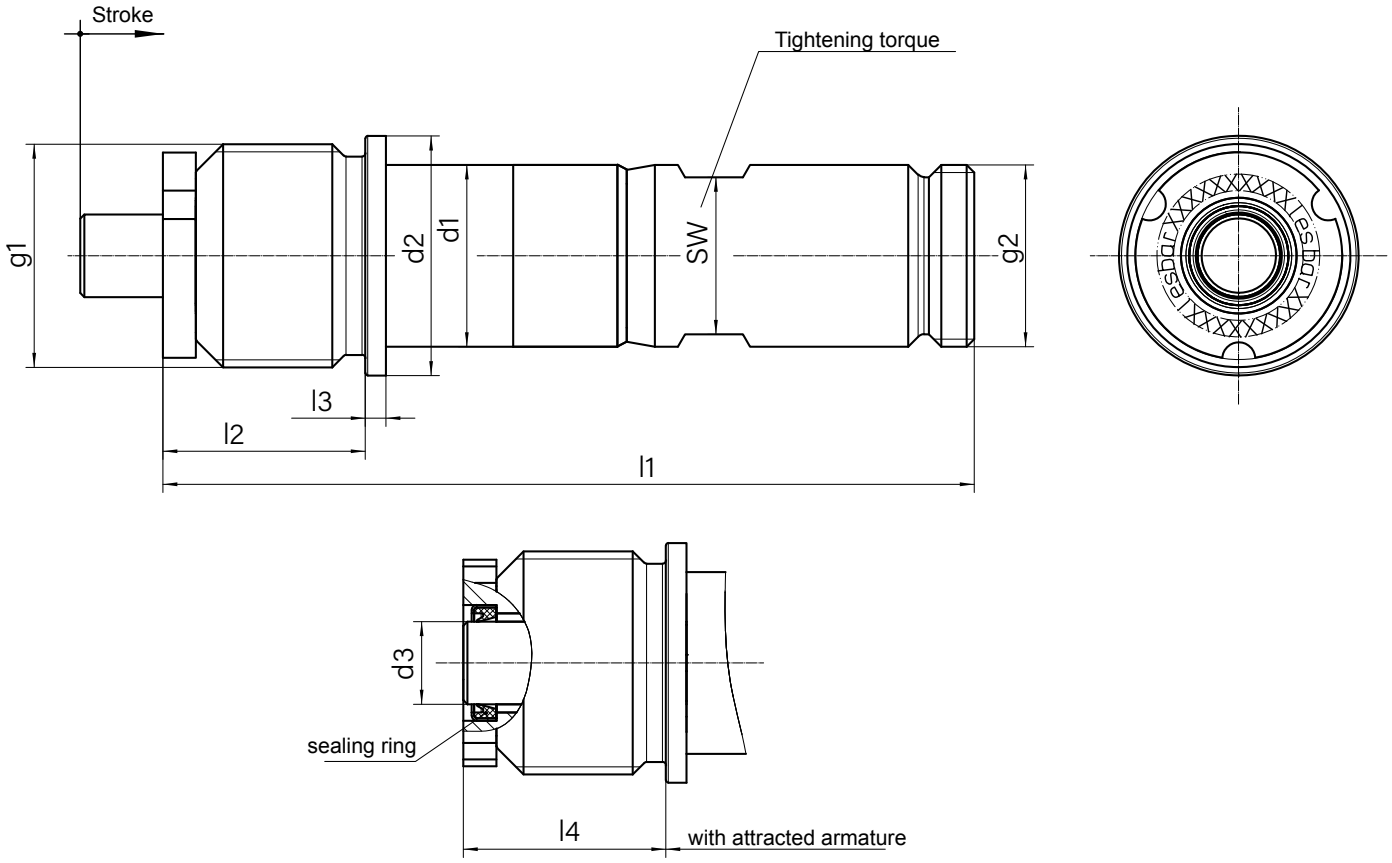
Solenoid body



Size	037	045	063
Material no.	927135	927137	927138
	Dimensions in mm / electrical data see table 1		
d1	Ø 19	Ø 22	Ø 31
d2	Ø 37	Ø 45 ±0.3	Ø 63
d3	-	-	Ø 50.9 ±0.2
d4	-	-	Ø 3.45 ±0.1
l1	50	50.1 ±0.4	72 +0.6/-0.1
l2	30	30 ±0.5	31
l3	18.35	19.4 ±1	22
l4	3.15 ±0.4	4.2	5.8
l5	0.85 ±0.4	1.9 +0.4/-0.3	-
l6	29.7	33.7 ±1	42.2
l7	29.6	29.6 ±0.5	29.6
w1	-	-	90° ±30‘

Table 2

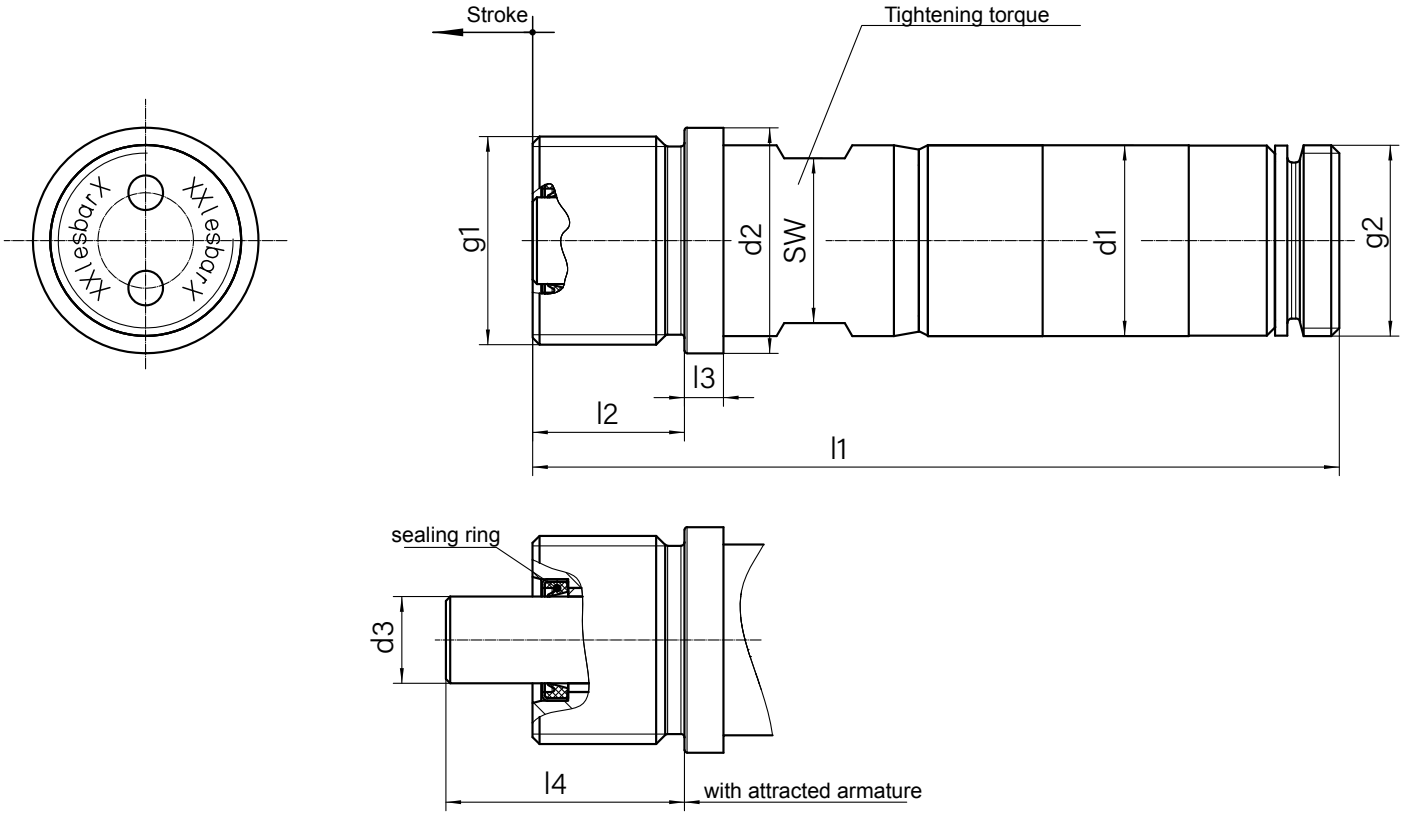
Tube pull-type



Size	037	045	063
Material no.	926477	925755	925752
	Dimensions in mm		
d1	Ø 19	Ø 22	Ø 31
d2	Ø 25 -0.1	Ø 29 -0.1	Ø 37 -0,1
d3	Ø 8	Ø 10	Ø 14
l1	92.1	98.2	133,2
l2	21.5	24.5	29
l3	2.5 ±0.4	2.5 ±0.3	3 ±0,4
l4	21.5 ±0.55	24.5 ±0.55	29 ±0.55
Hub	8	10	12
SW	SW17	SW19	SW27
Tightening torque (Nm)	23 bis 25	46 bis 48	72 bis 74
g1	M24x1.5	M27x1.5	M36x1.5
g2	M18x1.5	M22x1.5	M30x1.5

Table 3

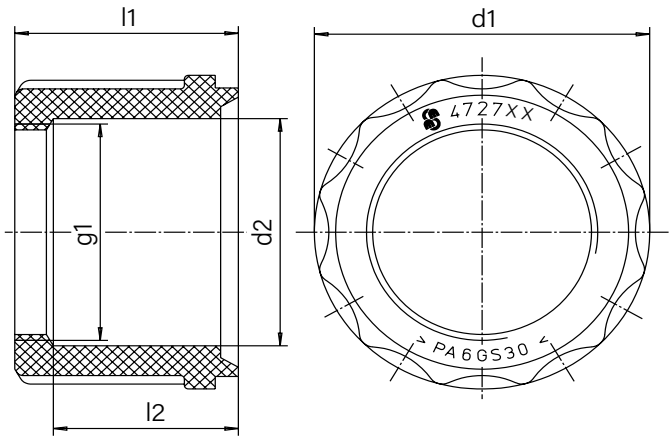
Tube push-type



Size	037	045
Material no.	926345	926552
	Dimensions in mm	
d1	Ø 19	Ø 22
d2	Ø 23 -0,1	Ø 26 -0,1
d3	Ø 8	Ø 10
l1	88,5	93
l2	15,5	17,5
l3	4,5	4,5
l4	23,4 ±0,6	27,5 ±0,6
Hub	8	10
SW	SW17	SW19
Tightening torque (Nm)	19 bis 21	37 bis 39
g1	M22x1,5	M24x1,5
g2	M18x1,5	M22x1,5

Table 4

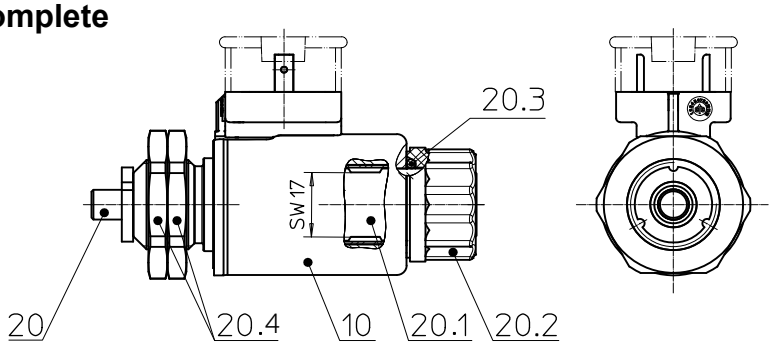
Fastening nut



Size	037	045	063
Part no.	472793	472778	472794
	Dimensions in mm		
d1	Ø 30 ±0.3	Ø 35	Ø 43.5
d2	Ø 19.5 ±0.2	Ø 23.3 ±0.1	Ø 31.5
l1	20	21	29
l2	15	15	24
g1	M18x1.5	M22x1.5	M30x1.5

Table 5

Shotbolt lock unit complete



Size	Pos.	Designation	Part no.	Designation 2	Remark
037 pull-type	**10**	**Solenoid body FHMG037**	**927135 005**	**24VDC, 100% ED**	**Order description** for complete unit please order pos. 10 + 20
	20	**Tube complete FSTX037**	**902354**	**bagged**	
	20.1	Tube FSTX037	926477		Supplied as tube compl. (included in Pos. 20)
	20.2	Fastening nut	472793	Suitable socket wrench SW26 (12 kt DIN 3124) Tightening torque 5+1 Nm	
	20.3	O-ring	781754	19x2,5 70 Sh-A NBR	
	20.4	Hex nut (2x)	611105	M24x1,5, SW36	
037 push-type	**10**	**Solenoid body FHMG037**	**927135 005**	**24VDC, 100% ED, T4**	**Order description** for complete unit please order pos. 10 + 20
	20	**Tube complete FSTX037**	**902356**	**bagged**	
	20.1	Tube FSTX037	926345		Supplied as tube compl. (included in Pos. 20)
	20.2	Fastening nut	472793	Suitable socket wrench SW26 (12 kt DIN 3124) Tightening torque 5^{+1} Nm	
	20.3	O-ring	781754	19x2,5 70 Sh-A NBR	
	20.4	Hex nut (2x)	611079	M22x1,5, SW32	
045 pull-type	**10**	**Solenoid body FHMG045**	**927137 002**	**24VDC, 100% ED**	**Order description** for complete unit please order pos. 10 + 20
	20	**Tube complete FSTX045**	**902357**	**bagged**	
	20.1	Tube FSTX045	925755		Supplied as tube compl. (included in Pos. 20)
	20.2	Fastening nut	472778	Suitable socket wrench SW30 (12 kt DIN 3124) Tightening torque 6^{+1} Nm	
	20.3	O-ring	781744	22x2,5 70 Sh-A NBR	
	20.4	Hex nut (2x)	253350	M27x1,5, SW41	
045 push-type	**10**	**Solenoid body FHMG045**	**927137 002**	**24VDC, 100% ED**	**Order description** for complete unit please order pos. 10 + 20
	20	**Tube complete FSTX045**	**902358**	**bagged**	
	20.1	Tube FSTX045	926552		Supplied as tube compl. (included in Pos. 20)
	20.2	Fastening nut	472778	Suitable socket wrench SW30 (12 kt DIN 3124) Tightening torque 6^{+1} Nm	
	20.3	O-ring	781744	22x2,5 70 Sh-A NBR	
	20.4	Hex nut (2x)	611105	M24x1,5, SW 36	
063 pull-type	**10**	**Solenoid body FHMG063**	**927138 004**	**24VDC, 100% ED**	**Order description** for complete unit please order pos. 10 + 20
	20	**Tube complete FSTX063**	**902359**	**bagged**	
	20.1	Tube FSTX063	925752		Supplied as tube compl. (included in Pos. 20)
	20.2	Fastening nut	472794	Suitable socket wrench SW38 (12 kt DIN 3124) Tightening torque 6^{+1} Nm	
	20.3	O-ring	781755	31x2,5 70 Sh-A NBR	
	20.4	Hex nut (2x)	611111	M36x1,5, SW55	

Table 6

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

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 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.

Order example

Please note that for a functional unit always a combination of solenoid body and tube must be ordered.

Solenoid body	Designation:	Solenoid body F HM G 037
	Material no.:	927135 001
	Rated voltage:	24 V DC
	Duty cycle:	100% ED
Tube	Designation:	Tube F ST X 037
	Part no.:	902354

Specials designs

Please do not hesitate to ask for our assistance with the solution of your application-oriented task. 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.