

DC rotary solenoid

6

Product group

G DA ... C

Function

- Rotary movement without axial wave movement (Axial spid < 0,15 mm)
- Rotation angle 35°, 65°
- Increasing torque characteristic (for smaller duty cycles almost linear torque characteristic)

Construction

- Shaft protruding on both sides
- Spring return force infinitely adjustable
- Armature guided in ball bearings
- Fastening via thread bores at the end faces
- Insulation materials of the excitation winding correspond to thermal class F
- Electrical connection via free flexible lead ends
- Protection class according to DIN VDE/DIN EN 60529 when properly installed: IP 20

Application examples

- Tooling machines, office machines, packing machines, textile machines
- Shutter for laser and optical devices
- Measuring and control technology

Options

- Without return spring
- Clockwise and anticlockwise version
- Proportional rotary solenoids, double-acting with high torque type GDR
- Reverse and polarized rotary solenoids on request
- Please contact us for application related solutions or functional units

Standards

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



Fig. 1: G DA with return spring

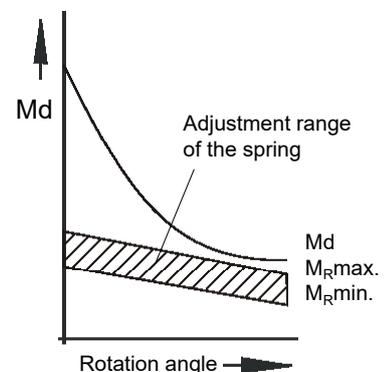


Fig. 2: torque characteristic

Technical data G DA Y without return spring

	G DA Y 025 X20 C21					G DA Y 060 X20 C25					
Rotation angle (°)	65 ⁺³					65 ⁺³					
Operating mode	S1	S3	S3	S3	S3	S1	S3	S3	S3	S3	
rel. duty cycle	100 %	40 %	25 %	15 %	5 %	100 %	40 %	25 %	15 %	5 %	
Torque M _d (Ncm) at Δ	0°	1.17	1.83	2.00	2.07	1.95	31.5	36.5	36.5	35.4	30.4
	20°	0.46	1.11	1.44	1.70	2.06	17.8	28.2	32.4	35.6	28.2
	40°	0.27	0.67	0.98	1.30	1.88	8.7	18.1	23.0	28.2	34.9
	65°	0.22	0.51	0.78	1.15	2.00	4.6	11.2	15.9	21.5	31.7
Rated power P ₂₀ (W)	5.4	13.4	20.4	31.8	89.0	21.8	54.1	81.9	130.0	300.0	
Moment of inertia (kgm ²)	0.132 x 10 ⁻⁶					5.21 x 10 ⁻⁶					
Time constant τ (ms)	9					40					
Solenoid weight m _M (kg)	0,075					0.738					
Max. surface temperature (°C)	110										
Service life under laboratory conditions 1)	10 Mio. switching cycles										
Max.permissible axial force (N)	10										

	G DA Y 025 X20 C03					
Rotation angle (°)	35 ⁺³					
Operating mode	S1	S3	S3	S3	S3	
rel. duty cycle	100 %	40 %	25 %	15 %	5 %	
Torque M _d (Ncm) at Δ	0°	1.1	1.8	2.0	2.1	2.2
	10°	0.95	1.7	2.1	2.3	2.8
	20°	0.76	1.53	2.0	2.4	3.2
	35°	0.43	1.05	1.5	1.95	2.9
Rated power P ₂₀ (W)	5.4	13.4	20.4	31.8	89.0	
Moment of inertia (kgm ²)	0.132 x 10 ⁻⁶					
Time constant τ (ms)	9					
Solenoid weight m _M (kg)	0.075					
Max. surface temperature (°C)	110					
Service life under laboratory conditions 1)	10 Mio. switching cycles					
Max.permissible axial force (N)	10					

1) Laboratory conditions for service life test:

- Rated voltage 24 VDC
- Room temperature 25° C, dry environment
- Solenoid in horizontal position
- Movement against the spring without additional load
- Rotation angle externally limited, internal stops remain free of load

Technical data G DA Y with return spring

	G DA Y 025 X20 C21 (clockwise)					G DA Y 060 X20 C25 (anti-clockwise)				
Rotation angle (°)	65 ⁺³					65 ⁺³				
Operating mode	S1 100 %	S3 40 %	S3 25 %	S3 15 %	S3 5 %	S1 100 %	S3 40 %	S3 25 %	S3 15 %	S3 5 %
Spring return torque M _R (Ncm)	min. 0.1	0.1	0.1	0.1	0.1	0.56	0.56	0.56	0.56	0.56
	max. 0.1	0.3	0.4	0.6	0.6	1.5	4.0	6.2	6.5	6.5
Spring constant (Ncm/°)	0.00206					0.026				

G DA Y ... C23 (clockwise)	025				
G DA Y ... C27 (anti-clockwise)					
Rotation angle (°)	35 ⁺³				
Operating mode	S1 100 %	S3 40 %	S3 25 %	S3 15 %	S3 5 %
Spring return torque M _R (Ncm)	min. 0.1	0.1	0.1	0.1	0.1
	max. 0.3	0.6	0.6	0.6	0.6
Spring constant (Ncm/°)	0.00206				

Return spring - Adjustment

The above table indicates the adjustment range of the spring return torque depending on the operating mode. (Diagram fig. 3)

The spring return torque is to be modified within the adjustment range by changing the tooth spaces and by turning the spring housing. For turning the spring housing, the fastening screws are to be loosened and tightened again.

Notes on the tables

Due to natural dispersion torque data may deviate by approx. ± 10 % from the table values and base on:

- Rated voltage = 24 V / 5 %-100 % duty cycle
- 90 % of the rated voltage
- Normal operating temperature at 35° ambient temperature
- Mounting on heat-insulating base

Duty cycle (%)	100	40	25	15	5
Operating time (s)	constantly	120	75	45	15

Rated power P20 applies for a coil temperature of 20 °C

0° is the end position in energized condition.

The torque data M_d (Ncm) do not consider any return spring. For types with return spring, self-aligning torques according to table „**Technical Data with return spring**“ are to be considered.

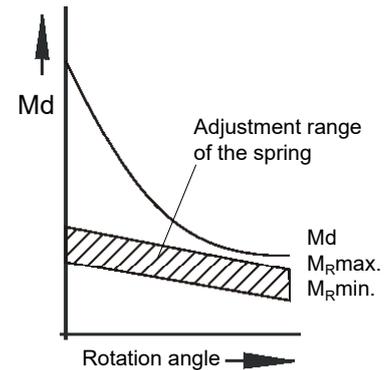


Fig. 3: Torque characteristic and return spring characteristic

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: 24 V, S1 (100%) / S3 (40%).

The devices correspond to protection class III. Electrical equipment of protection class III may be only connected to low voltage systems (PELV, SELV)(IEC 60364-4-41). 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.

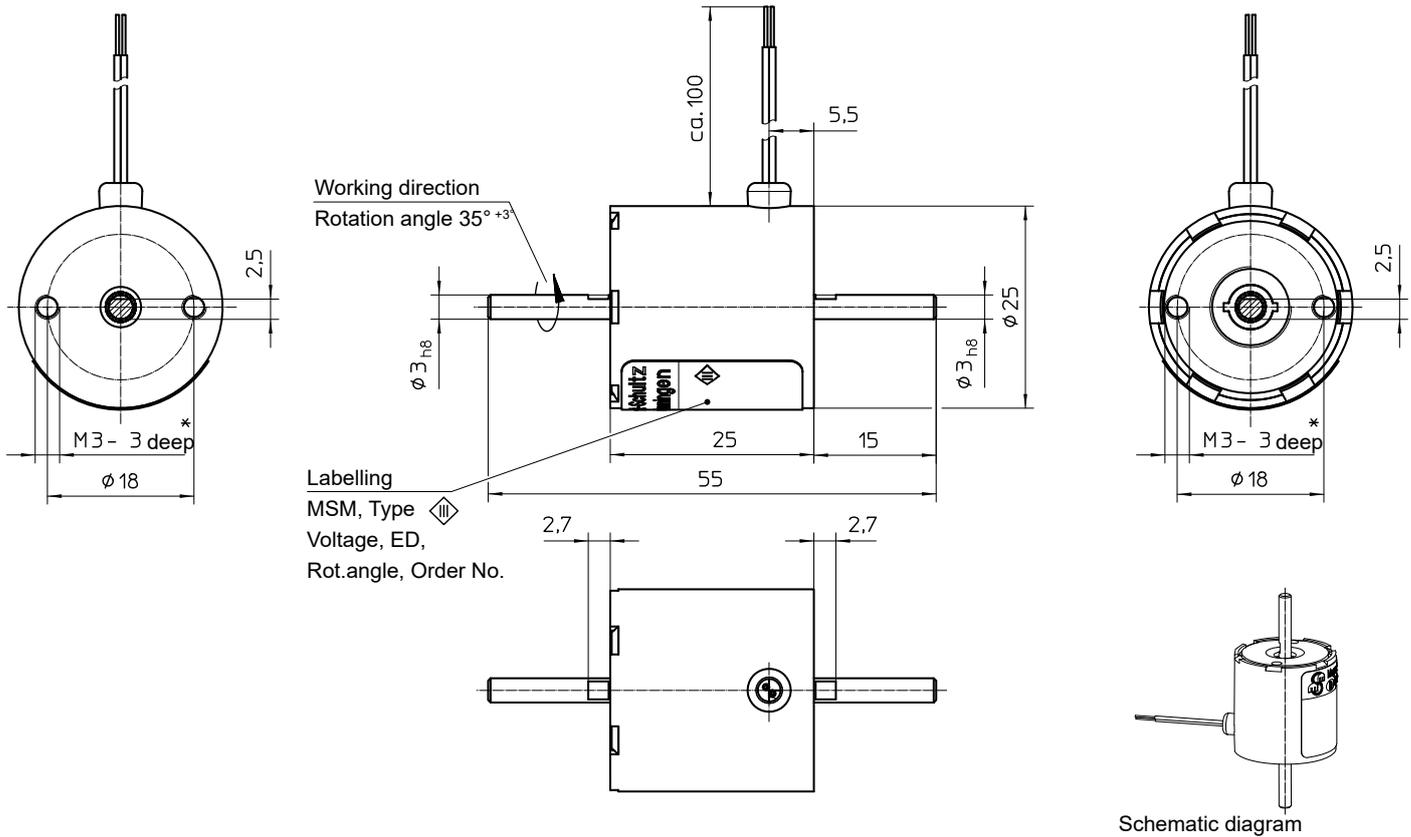


Fig. 4: Type G DA Y 025 X20 C03
(with return spring)

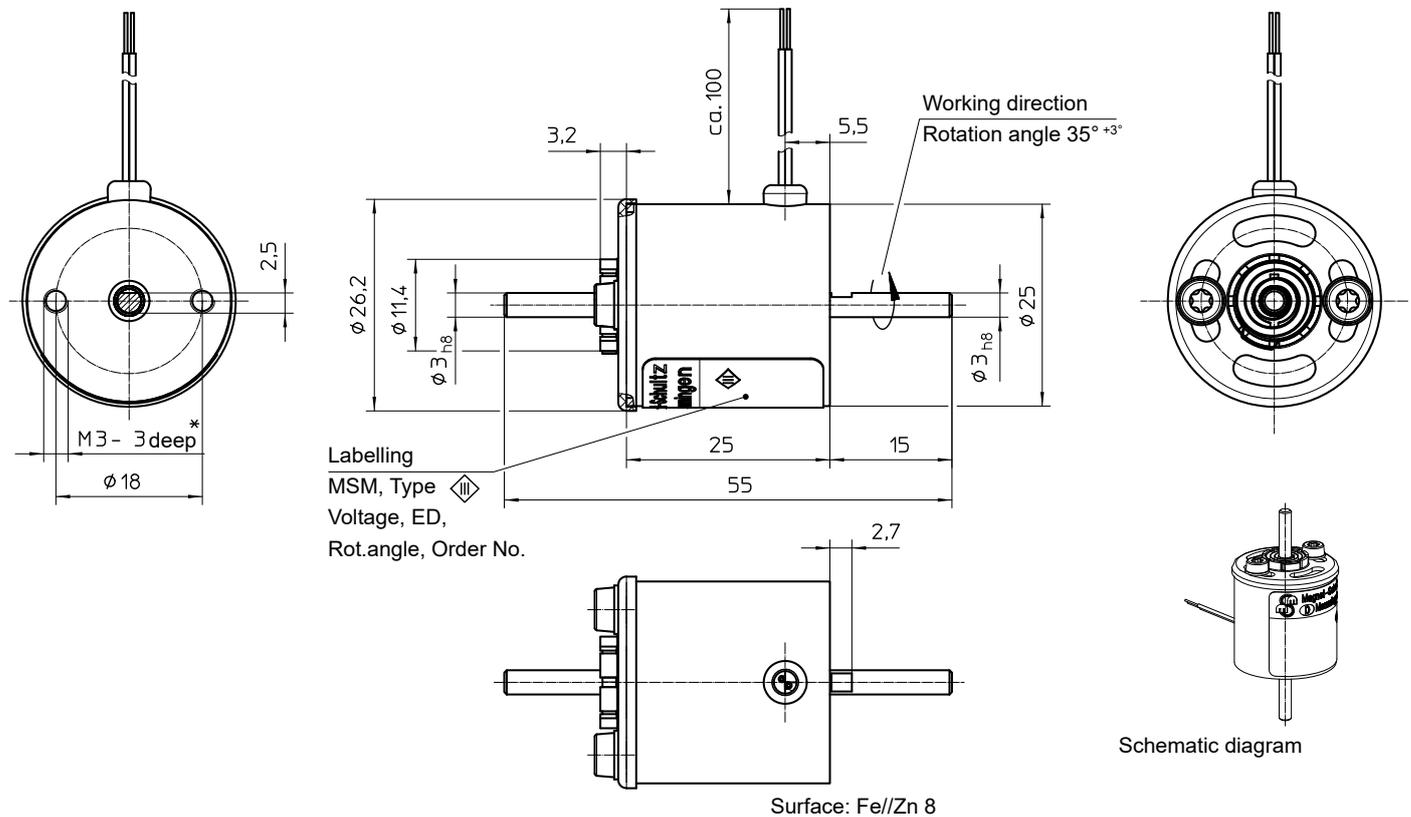


Fig. 4: Type G DA Y 025 X20 C23
(with return spring)

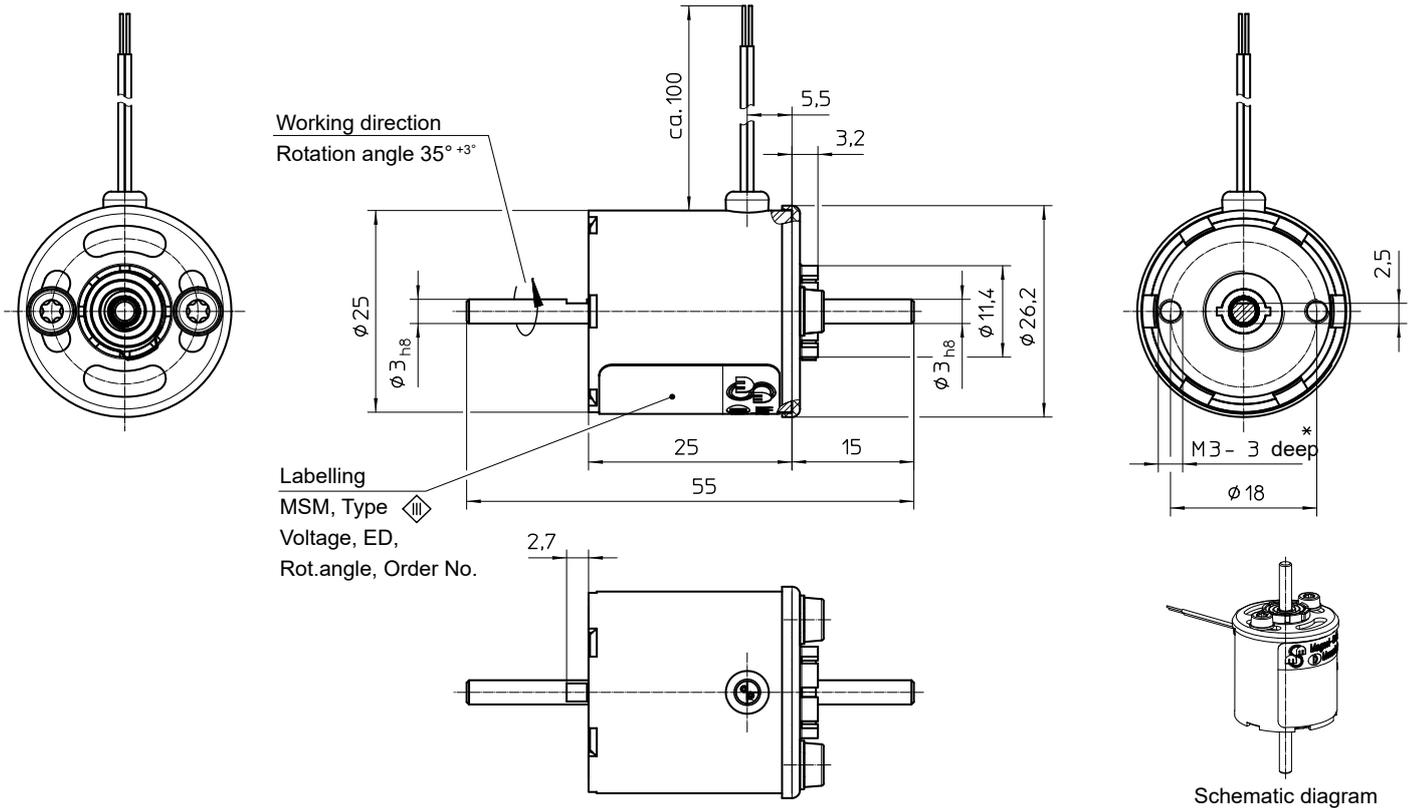


Fig. 4: Type G DA Y 025 X20 C27
(with return spring)

Surface: Fe//Zn 8

* Note the thread depth
Exceeding it may cause damage to the coil

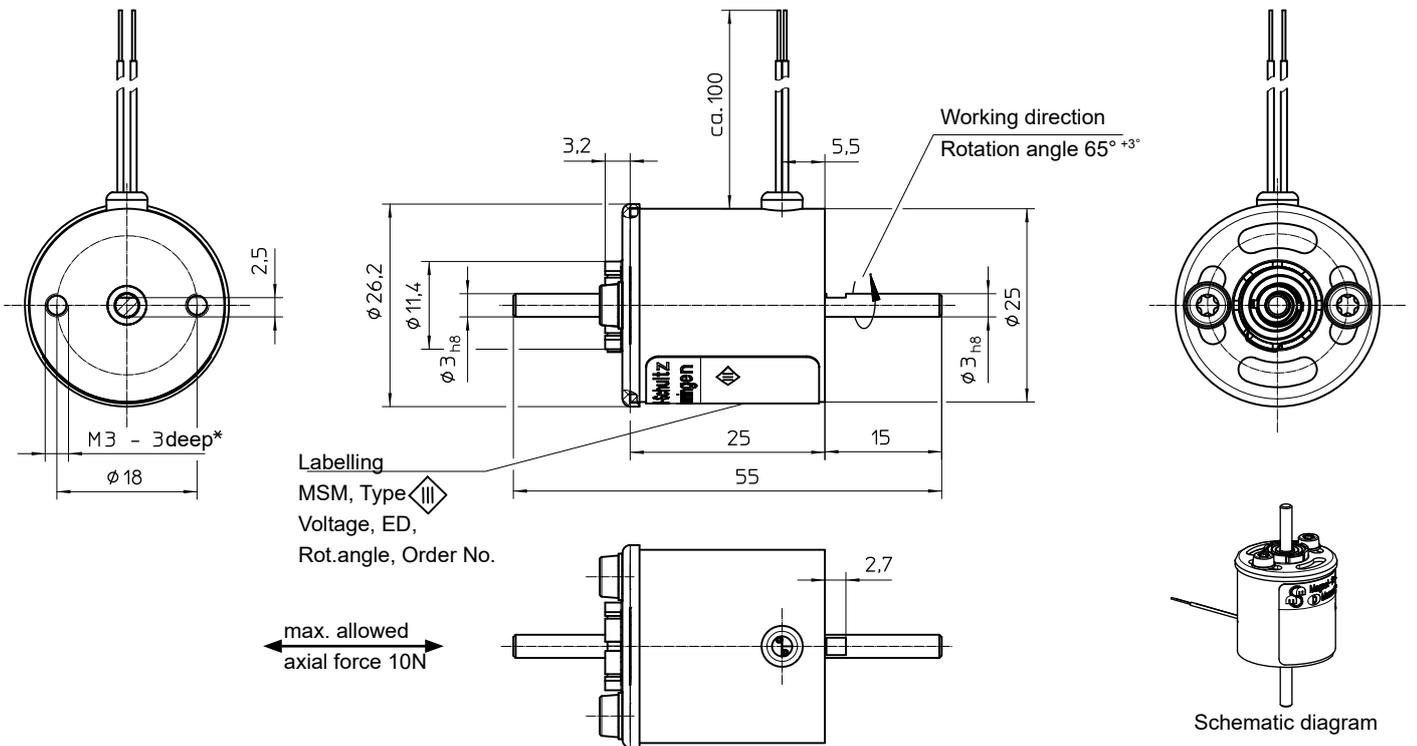


Fig. 4: Type G DA Y 025 X20 C21
(with return spring)

Surface: Fe//Zn 8

* Note the thread depth
Exceeding it may cause damage to the coil

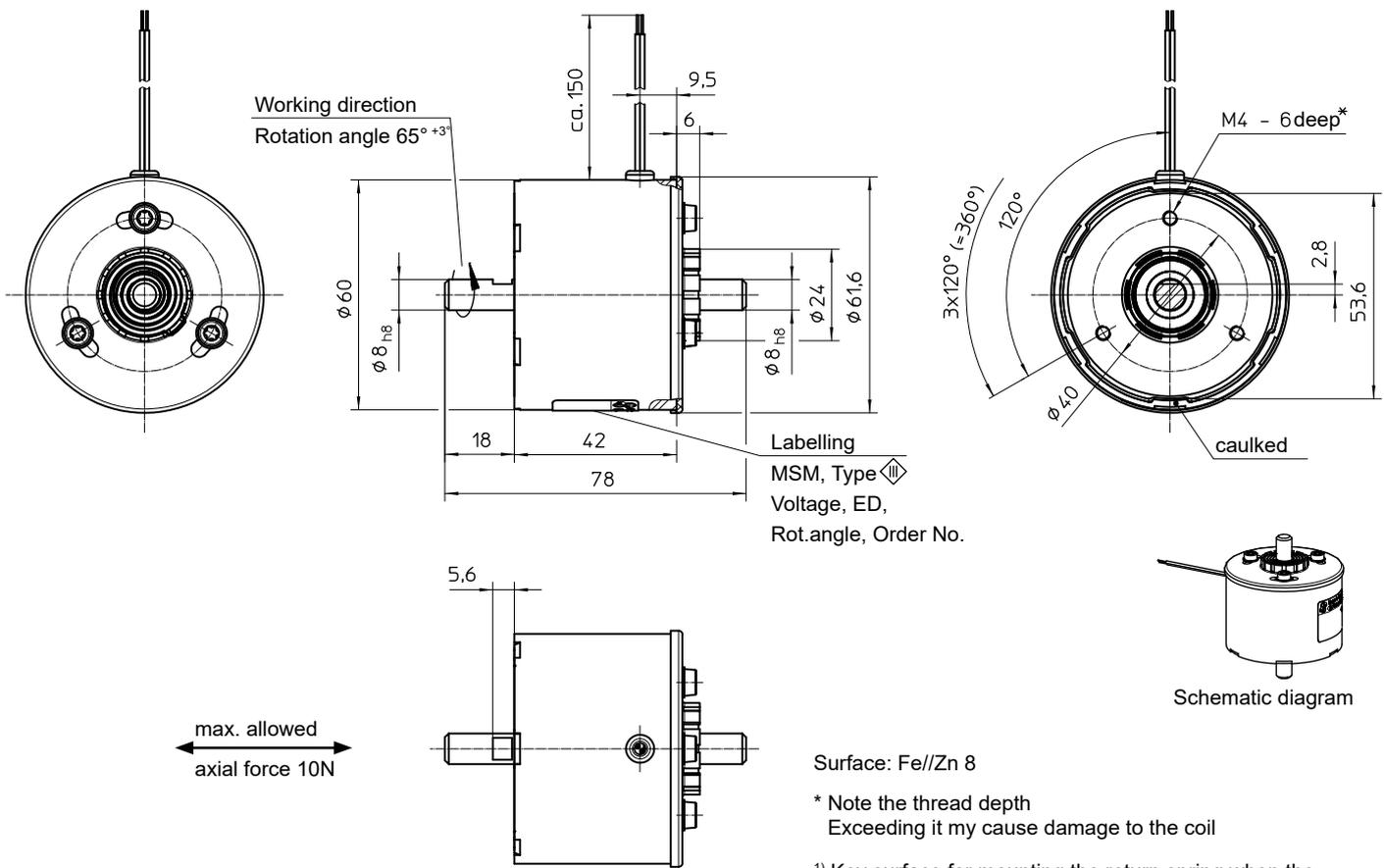


Fig. 5: Type G DA Y 060 X20 C25
(with return spring)

Safety

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 Explanations, the effective DIN VDE0580 as well as the relevant specifications.

Installation instructions

The rotary solenoids may be inserted in any mounting position. In the interest of service life and function of the bearing, please make sure that impacts and bigger pressures on the rotation axis in axial direction are avoided.

In case of vertical installation, the support of installed masses should take place outside the solenoid. Furthermore it is advisable to do not intercept bigger, with the axis connected masses with the stops inside the solenoid but by external stops or damping elements installed by the customer.

The device may not show any mechanical or electrical damages.

For application with reduced rotation angle the range from end position 0° (energized condition) should be used in order to achieve the max. possible torque.

Standard devices will be delivered with free lead ends. Types with clamps or connector on request.

For connection via plug connector Z KB X resp. Z KB G please pay attention to max. continuous current of the connector.

Information and remarks concerning European directives can be taken from the correspondent information sheet which is available online *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 to 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.

This publication is for information purposes only and is not to be regarded as a binding representation of the products, unless this is expressly confirmed by us.

Type code

Example	G DA Y	060	X20	C25
Type	G DA Y	025 060	X20	²⁾ on request
Size				
Code for execution & protection class				
Numbering				Rotation angle 35° C03 ²⁾ without spring C23 with return spring clockwise C27 with return spring anti-clockwise Rotation angle 65° C01 ²⁾ without spring C21 with return spring clockwise C25 with return spring anti-clockwise

Example

Type G DA Y 060 X20 C25
 Voltage  24 V DC
 Operating mode S1 (100 %)

Specials designs

Please do not hesitate to ask for our assistance in finding a solution of your application-oriented task. In order to find a reliable solution within short time, 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 required, please request assistance from our experts.

