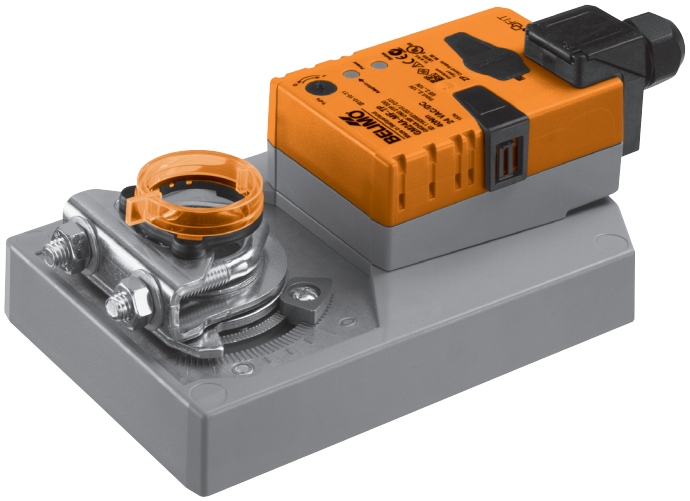
Parameterisable rotary actuator for adjusting air dampers in ventilation and air-conditioning systems for building services installations

- **For air dampers up to approx. 8 m²**
- **Torque 40 Nm (Piggyback 80 Nm) ***
- **Nominal voltage AC/DC 24 V**
- **Control: Modulating DC 0 ... 10 V or variable**
- **Position feedback DC 2 ... 10 V or variable**
- **with connecting terminals**



* For more detailed information about piggyback, please contact your Belimo representative.

Technical data

Electrical data

Nominal voltage	AC 24 V, 50/60 Hz / DC 24 V
Nominal voltage range	AC 19.2 ... 28.8 V / DC 21.6 ... 28.8 V
Power consumption In operation	4.5 W @ nominal torque
At rest	1.5 W
For wire sizing	7 VA
Connection	Terminals 4 mm² (Cable ∅ 4 ... 10 mm, 4-core)

Functional data	Factory settings	Variable	Settings
Torque (nominal torque)	Min. 40 Nm @ nominal voltage	25%, 50%, 75% reduced	.....
Control Control signal Y	DC 0 ... 10 V, input impedance 100 kΩ	Open-close, 3-point (AC only), modulating (DC 0 ... 32 V)	.....
Operating range	DC 2 ... 10 V	Start point DC 0.5 ... 30 V End point DC 2.5 ... 32 V	.....
Position feedback (Measuring voltage U)	DC 2 ... 10 V, max. 0.5 mA	Start point DC 0.5 ... 8 V End point DC 2.5 ... 10 V	.....
Position accuracy	±5%		
Direction of rotation	Reversible with switch 0 / 1		
Direction of motion at Y = 0 V	In switch position 0 ↶ and 1 ↷, respectively	Electronically reversible	.....
Manual override	Gearing latch disengaged with pushbutton, can be locked		
Angle of rotation	Max. 95°∢, can be limited at both ends with adjustable mechanical end stops		
Running time	150 s / 90°∢	75 ... 290 s	.....
Automatic adjustment running time, operating range and measuring signal U to match the mechanical angle of rotation	Manual triggering of the adaption by pressing the «Adaption» button or with the PC-Tool	Automatic adaption whenever the supply voltage is switched on, or manual triggering	.....
Override control	MAX (maximum position) = 100% MIN (minimum position) = 0% ZS (intermediate position, AC only) = 50%	MAX = (MIN + 30°∢) ... 100% MIN = 0% ... (MAX – 30°∢) ZS = MIN ... MAX	.....
Sound power level	Max. 45 dB (A)	With a running time 75 s = 50 dB (A) 290 s = <40 dB (A)	
Position indication	Mechanical, pluggable		

Safety

Protection class	**III** Safety extra-low voltage UL Class 2 Supply
Degree of protection	IP54 NEMA 2, UL Enclosure Type 2
EMC	CE according to 2004/108/EC
Certification	Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14 cULus according to UL 60730-1A and UL 60730-2-14 and CAN/CSA E60730-1:02
Mode of operation	Type 1
Rated impulse voltage	0.8 kV
Control pollution degree	3

Technical data *(continued)*

Ambient temperature	–30 ... +50°C
Non-operating temperature	–40 ... +80°C
Ambient humidity	95% r.h., non-condensating
Maintenance	Maintenance-free
Dimensions / Weight	
Dimensions	See «Dimensions» on page 6
Weight	approx. 1.8 kg

Safety notes

- **The actuator is not allowed to be used outside the specified field of application, especially in aircraft or any other form of air transport.**
- **It may only be installed by suitably trained personnel. Any legal regulations or regulations issued by authorities must be observed during installation.**
- **The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.**
- **The cable must not be removed from the device.**
- **When calculating the required torque, the specifications supplied by the damper manufacturers (cross section, design, installation site), and the air flow conditions must be observed.**
- **The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.**

Product features

Mode of operation
The actuator is controlled with a standard modulating signal of DC 0 ... 10 V and moves to the position defined by the control signal. Measuring voltage U serves for the electrical display of the damper position 0 ... 100% and as slave control signal for other actuators.

Parameterisable actuators
The factory settings cover the most common applications. Input and output signals and other parameters can be altered with the Belimo Service Tool, MFT-P.

Simple direct mounting
Simple direct mounting on the damper spindle with a universal spindle clamp, supplied with an anti-rotation strap to prevent the actuator from rotating.

Manual override
Manual operation is possible with the pushbutton (the gearing latch remains disengaged as long as the pushbutton is pressed or detented).

Adjustable angle of rotation
Adjustable angle of rotation with mechanical end stops.

High functional reliability
The actuator is overload-proof, requires no limit switches and automatically stops when the end stop is reached.

Home position
When the supply voltage is switched on for the first time, i.e. at commissioning or after pressing the «gear disengagement» switch, the actuator moves to the home position.

Pos. direction of rotation switch	Home position
	ccw Left stop cw Right stop

The actuator then moves into the position defined by the control signal.

Piggyback
(mechanically coupled actuators)
The torque can be increased to 80 Nm by coupling two GM24A-MF actuators with one another. For more detailed information about piggyback, please contact your Belimo representative.

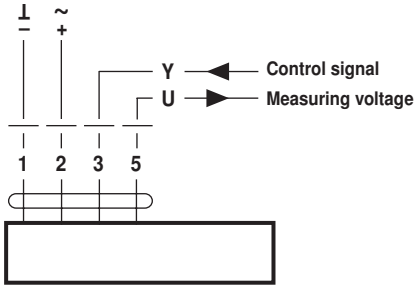
Accessories

	Description	Data sheet
Electrical accessories	Auxiliary switch S..A..	T2 - S..A..
	Feedback potentiometer P..A..	T2 - P..A..
	PC-Tool MFT-P	T2 - MFT-P
	Position sensor SGA24, SGE24 and SGF24	T2 - SG..24
	Digital position indication ZAD24	T2 - ZAD24
Mechanical accessories	Various accessories	T2 - Z-GM..A..

Electrical installation

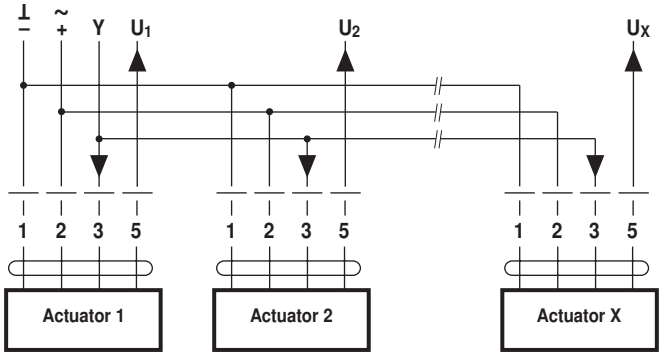
Wiring diagram

Notes
Connection via safety isolating transformer.



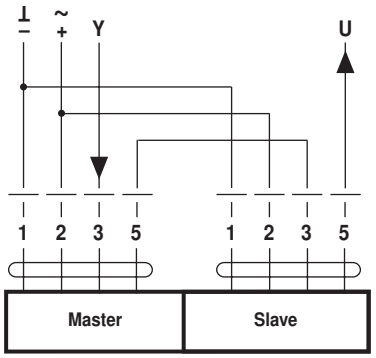
Wiring diagram for parallel operation
(mechanically decoupled actuators)

Notes
- A maximum of eight actuators can be connected in parallel.
- Parallel operation is permitted only on separated axes.
- It is imperative that the performance data be observed with parallel operation.



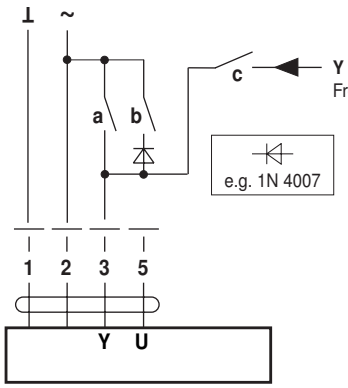
Piggyback operation wiring diagram
(mechanically coupled actuators)

Notes
- A maximum of two actuators can be connected in Master-Slave operation.
- Master-Slave operation is permitted only on one fixed axis or on two mechanically coupled axes.
- The programming of the Master actuator is adopted by the Slave actuator.



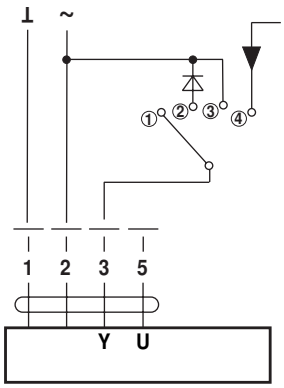
Functions with basic values

Override control with AC 24 V with relay contacts



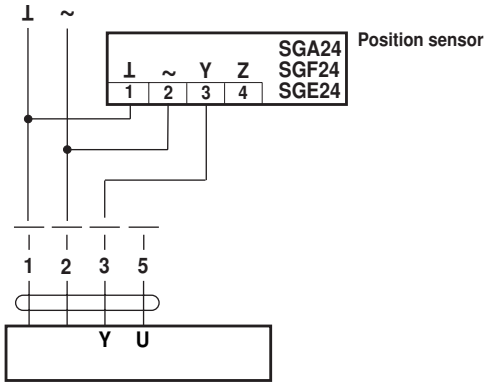
Functions	a	b	c
0%			
ZS 50% (intermediate position)			
100%			
Control mode in accordance with Y			

Override control with AC 24 V with rotary control switch

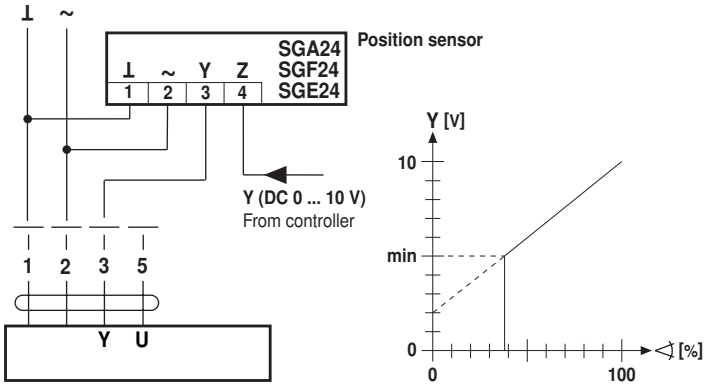


Pos	Functions
1	0%
2	ZS 50% (intermediate position)
3	100%
4	Control mode in accordance with Y

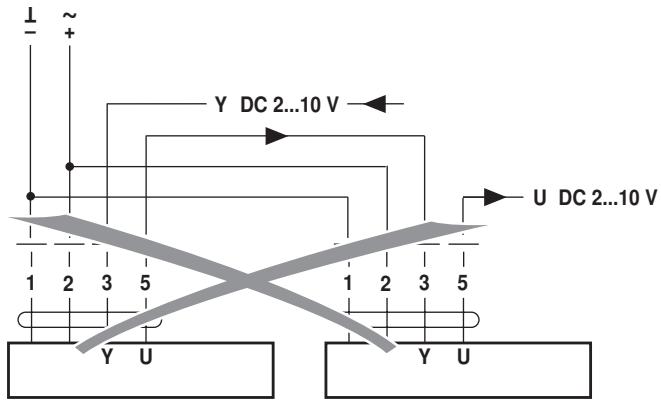
Remote control 0 ... 100 %



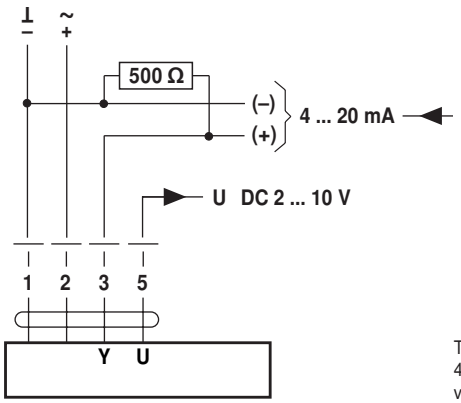
Minimum limit



Master/Slave control (position-dependent)

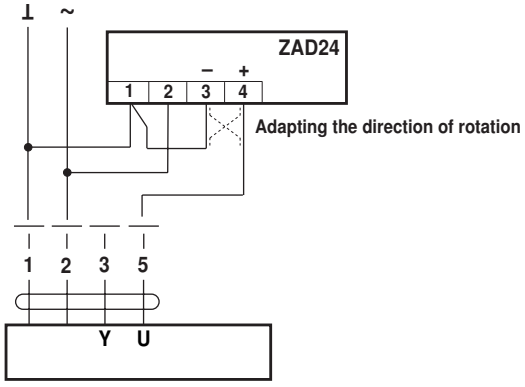


Control with 4 ... 20 mA via external resistance

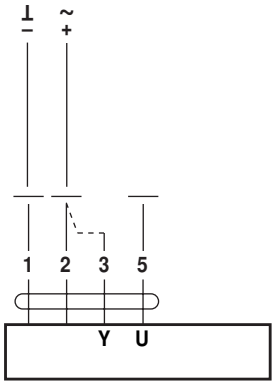


The 500 Ω resistor converts the 4 ... 20 mA current signal to a voltage signal DC 2 ... 10 V

Position indication



Functional check

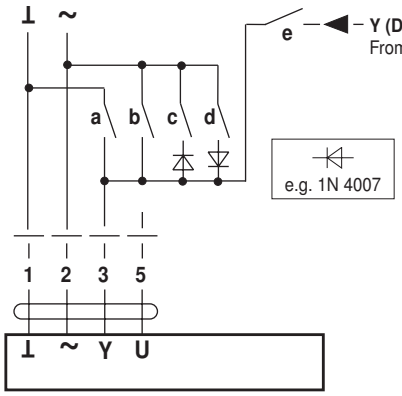


Procedure

- Apply 24 V to connection 1 and 2
- Disconnect connection 3:
  - For direction of rotation 0: Actuator turns in the direction of ↶
  - For direction of rotation 1: Actuator turns in the direction of ↷
- Short circuit connections 2 and 3:
  - Actuator travels in the opposite direction

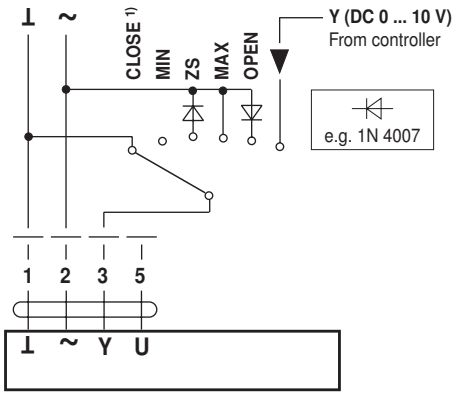
Functions for actuators with specific parameters

Override control and limiting with AC 24 V with relay contacts



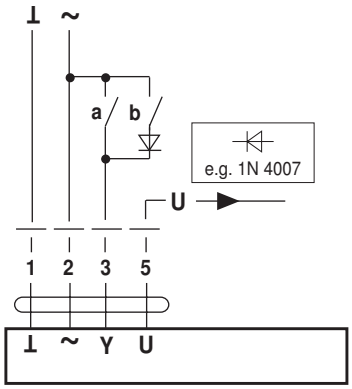
Functions	a	b	c	d	e
CLOSE [1]	⊥	~	~	~	~
MIN	~	⊥	~	~	~
ZS (intermediate position)	~	~	⊥	~	~
MAX	~	⊥	~	~	~
OPEN	~	~	~	⊥	~
Control mode in accordance with Y	~	~	~	~	⊥

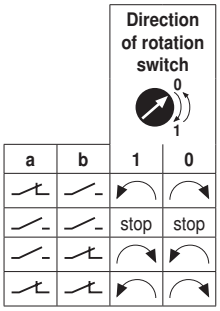
Override control and limiting with AC 24 V with rotary switch



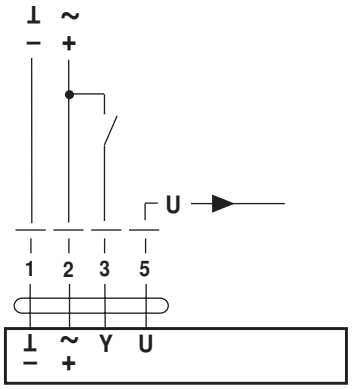
[1] **Caution!** This function is only guaranteed if the start point of the operating range is defined as min. 0.6 V

3-point control

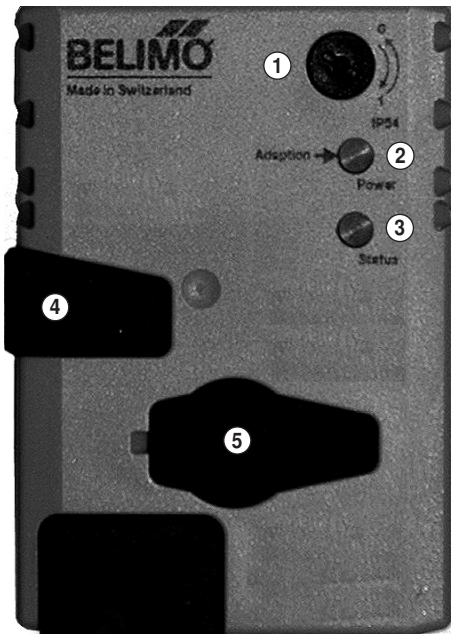




Open-close control



Operating controls and indicators



(1) Direction of rotation switch
Switching over: Direction of rotation changes

(2) Pushbutton and green LED display
Off: No voltage supply or malfunction
On: Operation
Press button: Switches on angle of rotation adaption followed by standard operation

(3) Pushbutton and yellow LED display
Off: Standard operation
On: Adaption or synchronising process active
Press button: No function

(4) Gear disengagement pushbutton
Press button: Gear disengaged, motor stops, manual operation possible
Release button: Gear engaged, synchronisation starts, followed by standard operation

(5) Service plug
For connecting parameterising and service tools

Check voltage supply connection

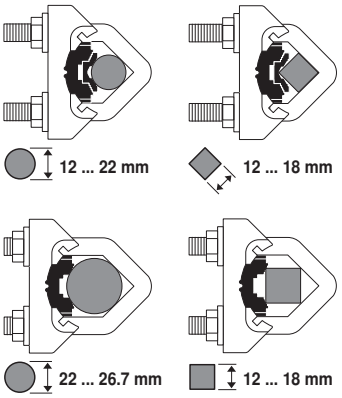
a) (2) Off and (3) On
b) (2) Blinking and (3) Blinking

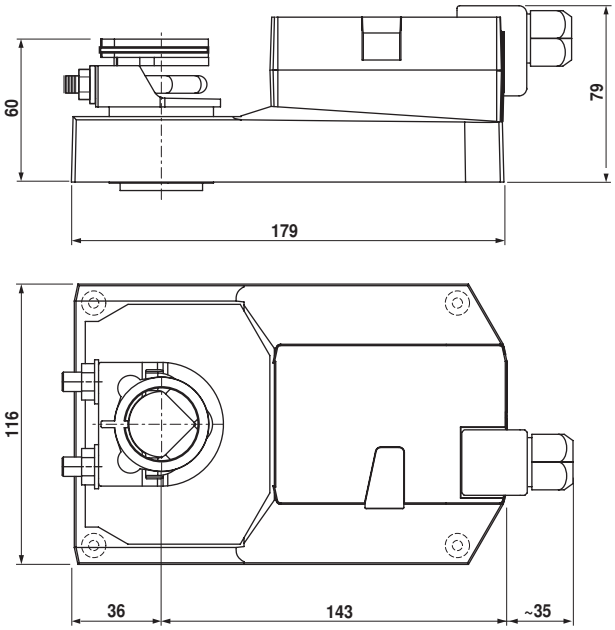
} Check the supply connections. Possibly ⊥ and ~ are swapped over.

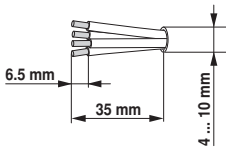
Dimensions [mm]

Dimensional drawings

Damper spindle	Length	○	□	◇
	≥52	12 ... 26.7	≥12	≤25.2
	≥20	12 ... 26.7	≥12	≤25.2







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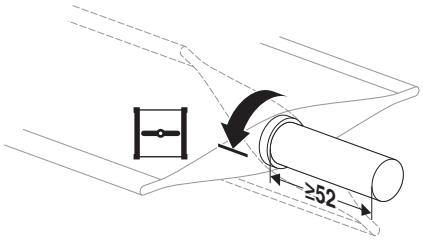

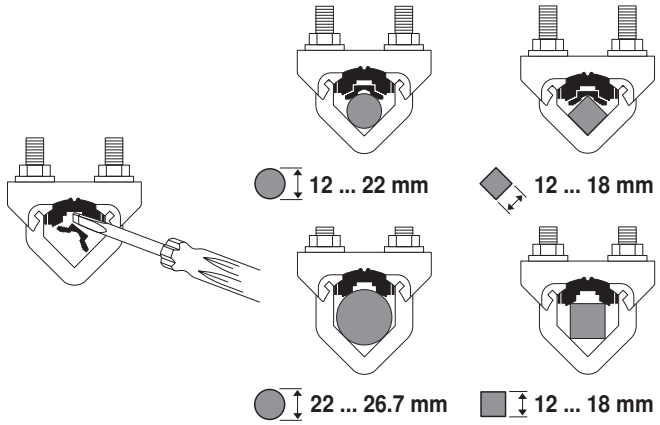

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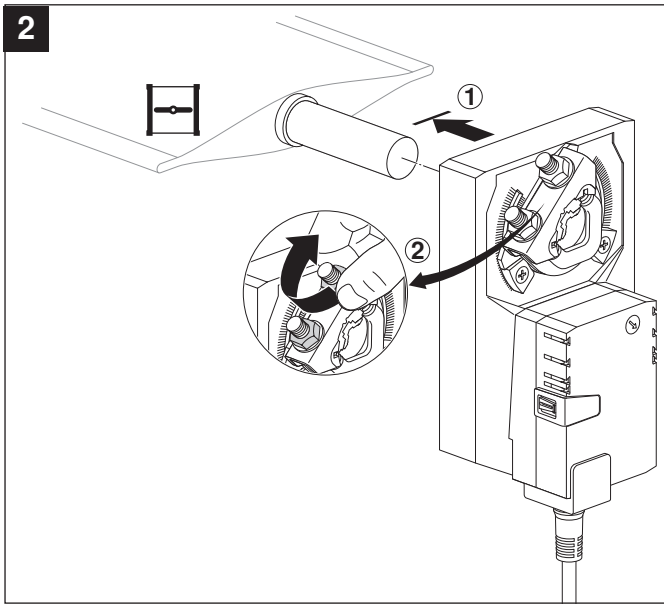

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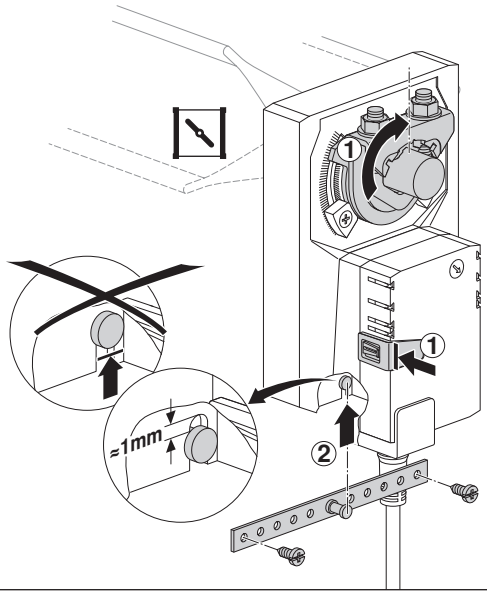

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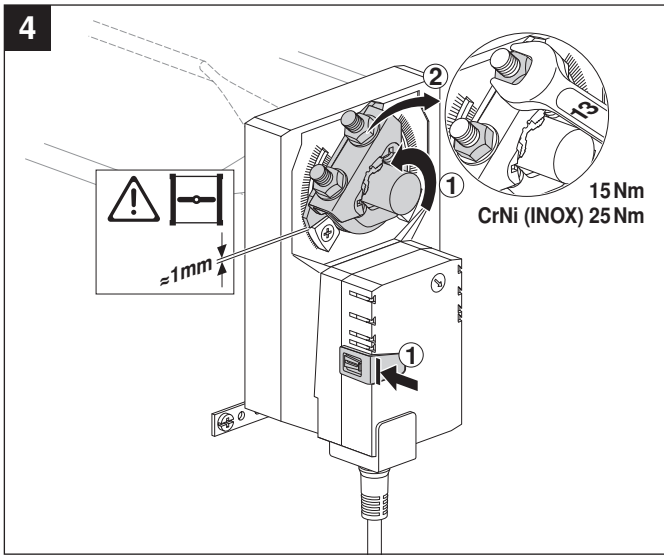

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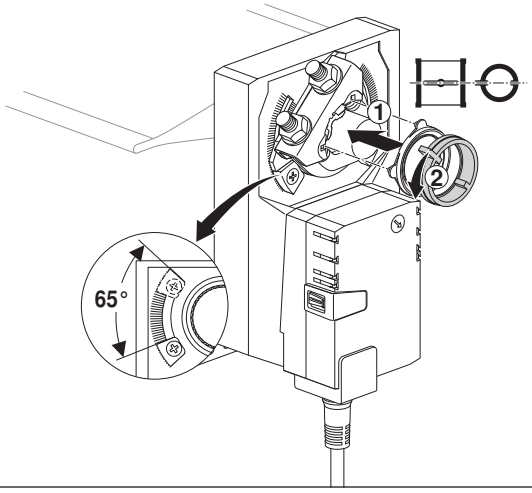
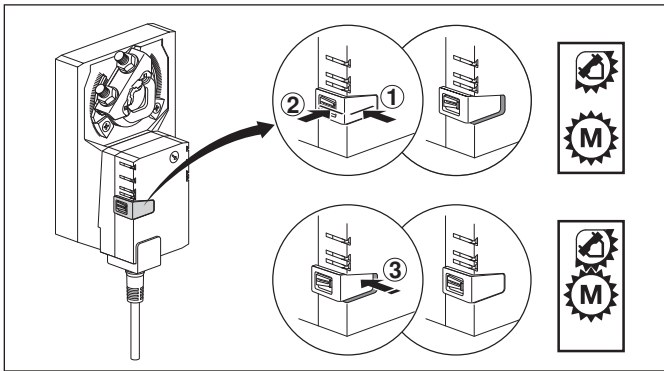
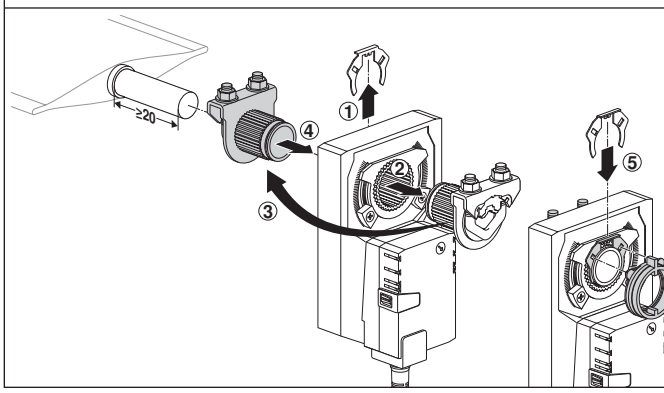
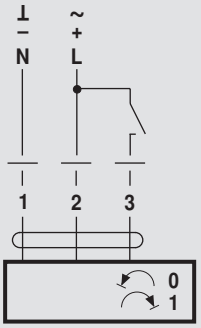
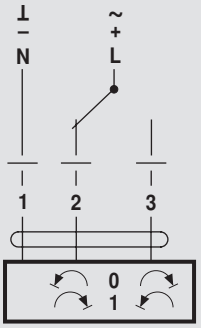
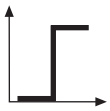




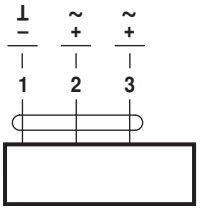






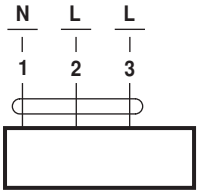


AC 24 V / DC 24 V

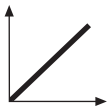


GM24A..

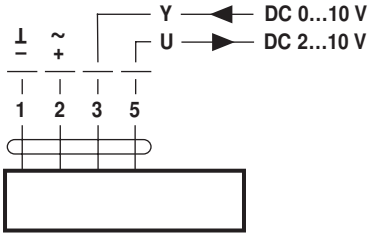
AC 100 ... 240 V ⚠



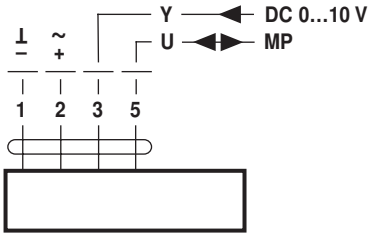
GM230A..



AC 24 V / DC 24 V



GM24A-SR..
GM24A-MF..



GM24A-MP..

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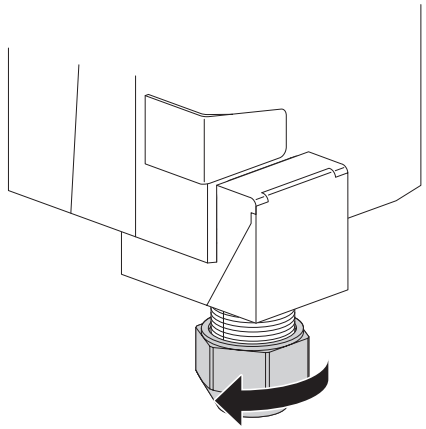

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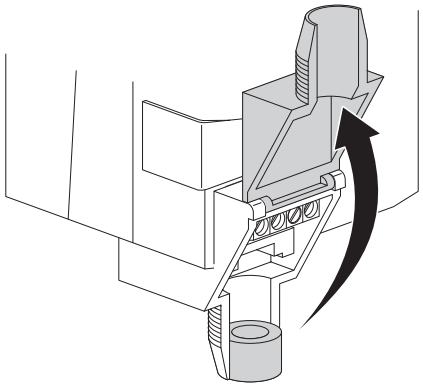

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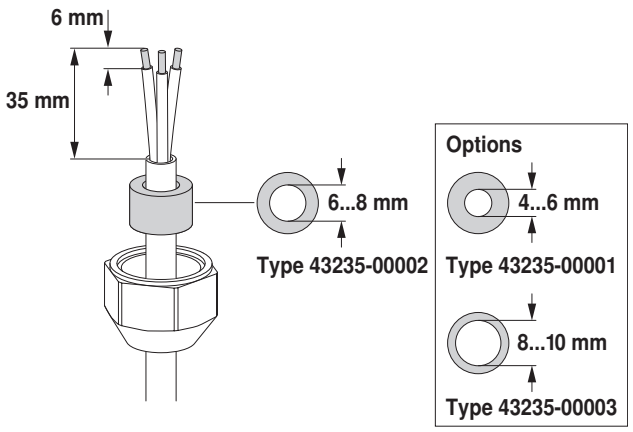

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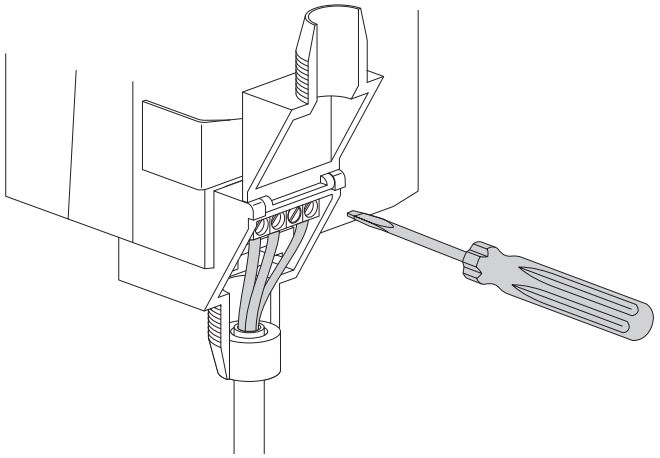

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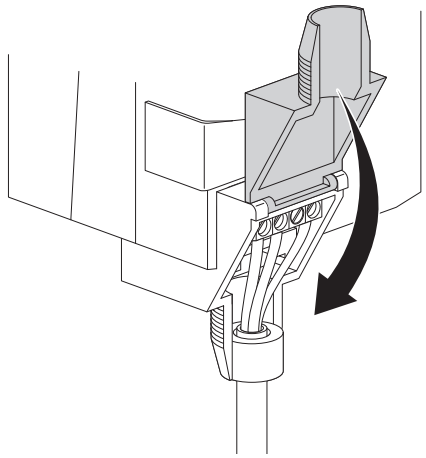

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