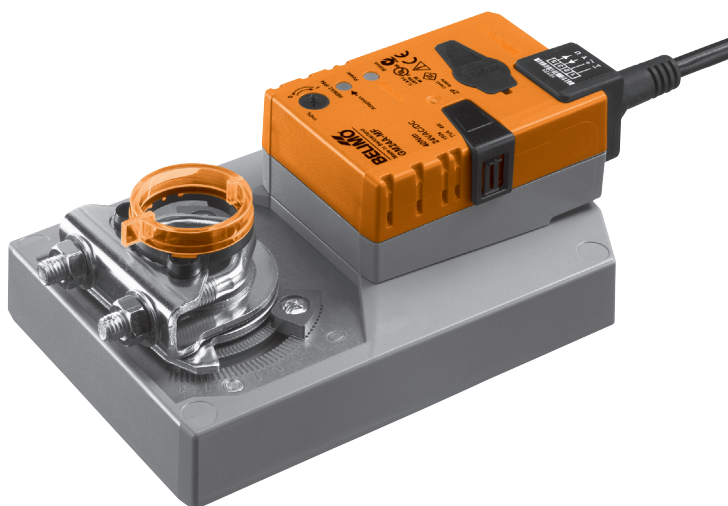


Parameterisable rotary actuator for adjusting air dampers in ventilation and air-conditioning systems for building services installations

- For air dampers up to approx. 8 m<sup>2</sup>
- 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



\* 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 Cable 1 m, 4 x 0.75 mm<sup>2</sup>

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 75 s = 50 dB (A) running time 290 s = <40 dB (A)	
Position indication	Mechanical, pluggable		

### Safety

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

<b>Mode of operation</b>	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.						
<b>Parameterisable actuators</b>	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.						
<b>Simple direct mounting</b>	Simple direct mounting on the damper spindle with a universal spindle clamp, supplied with an anti-rotation strap to prevent the actuator from rotating.						
<b>Manual override</b>	Manual operation is possible with the pushbutton (the gearing latch remains disengaged as long as the pushbutton is pressed or detented).						
<b>Adjustable angle of rotation</b>	Adjustable angle of rotation with mechanical end stops.						
<b>High functional reliability</b>	The actuator is overload-proof, requires no limit switches and automatically stops when the end stop is reached.						
<b>Home position</b>	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. <table border="1" data-bbox="552 1453 1145 1561"> <thead> <tr> <th>Pos. direction of rotation switch</th><th>Home position</th></tr> </thead> <tbody> <tr> <td>  Y = 0  </td><td> ccw  Left stop </td></tr> <tr> <td> Y = 1  </td><td> cw  Right stop </td></tr> </tbody> </table> <p>The actuator then moves into the position defined by the control signal.</p>	Pos. direction of rotation switch	Home position	 Y = 0 	ccw  Left stop	Y = 1 	cw  Right stop
Pos. direction of rotation switch	Home position						
 Y = 0 	ccw  Left stop						
Y = 1 	cw  Right stop						
<b>Piggyback</b> (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

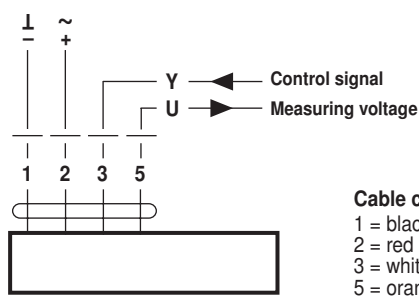
	Description	Data sheet
Electrical accessories	Auxiliary switch S..A..	T2 - S..A..
	Feedback potentiometer P..A..	T2 - P..A..
	PC-Tool MFT-P	T2 - MFT-P
	Position sensor SGA24, SGE24 and SGF24	T2 - SG..24
	Digital position indication ZAD24	T2 - ZAD24
Mechanical accessories	Various accessories	T2 - Z-GM..A..

## Electrical installation

### Wiring diagram

#### Notes

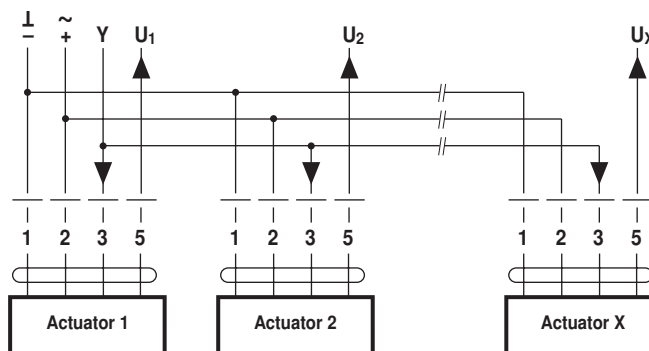
Connection via safety isolating transformer. 



### Wiring diagram for parallel operation (mechanically decoupled actuators)

#### Notes

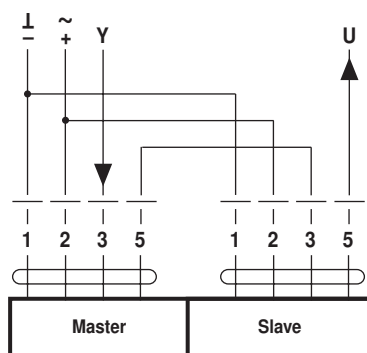
- A maximum of eight actuators can be connected in parallel.
- Parallel operation is permitted only on separated axes.
- It is imperative that the performance data be observed with parallel operation.



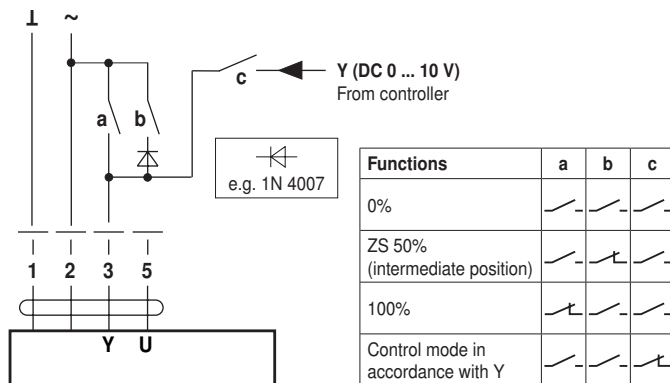
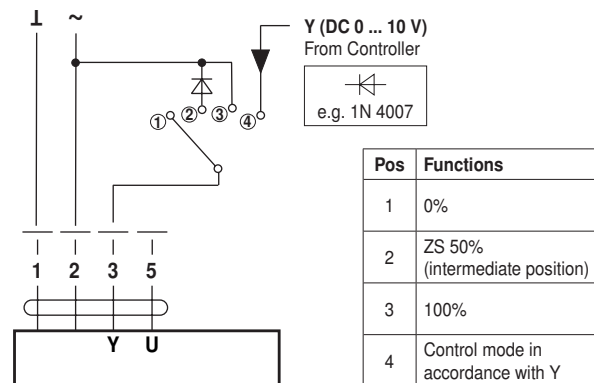
### Piggyback operation wiring diagram (mechanically coupled actuators)

#### Notes

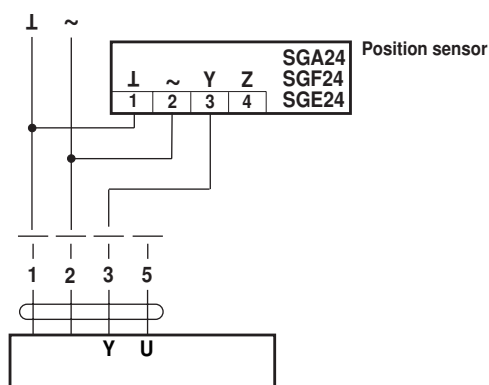
- A maximum of two actuators can be connected in Master-Slave operation.
- Master-Slave operation is permitted only on one fixed axis or on two mechanically coupled axes.
- The programming of the Master actuator is adopted by the Slave actuator.



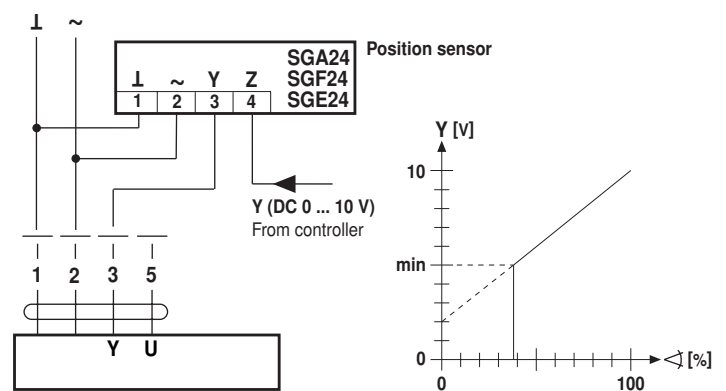
## Functions with basic values

Override control with AC 24 V  
with relay contactsOverride control with AC 24 V  
with rotary control switch

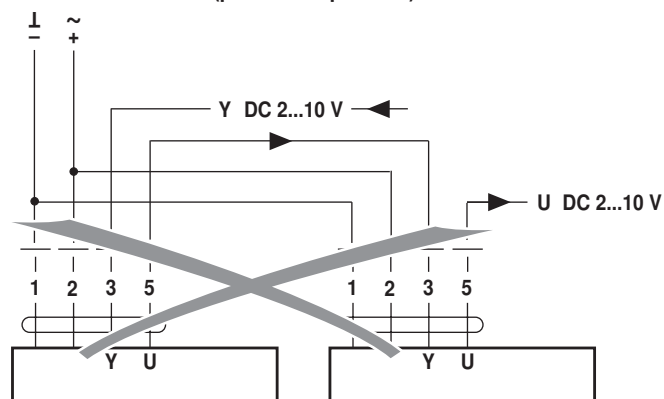
## Remote control 0 ... 100 %



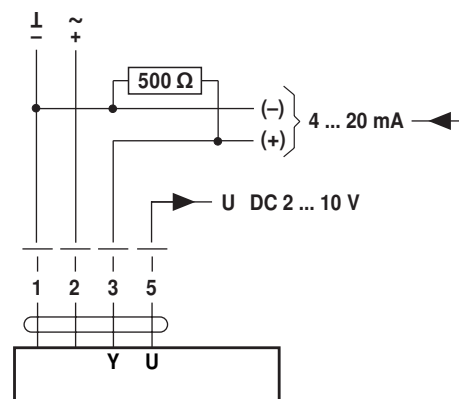
## Minimum limit



## Master/Slave control (position-dependent)

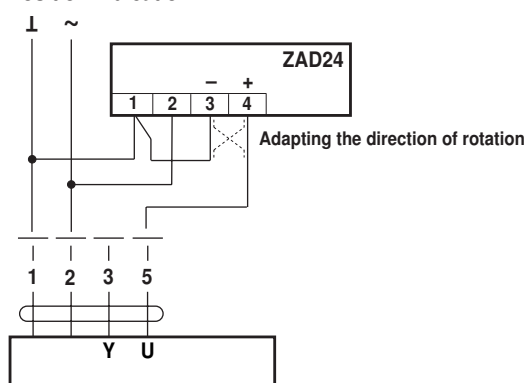


## Control with 4 ... 20 mA via external resistance

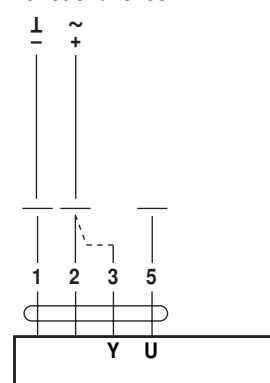


The 500 Ω resistor converts the 4 ... 20 mA current signal to a voltage signal DC 2 ... 10 V

## Position indication



## Functional check

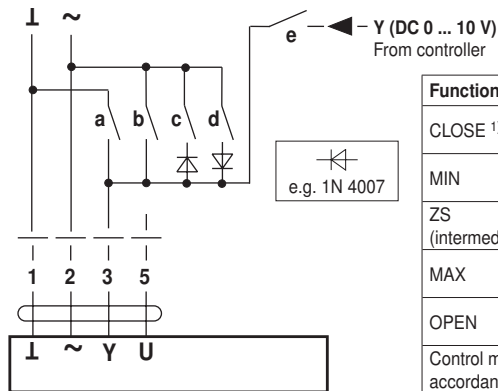


## Procedure

- 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

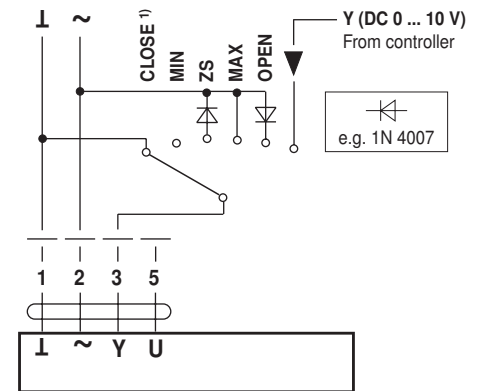
## Functions for actuators with specific parameters

### Override control and limiting with AC 24 V with relay contacts



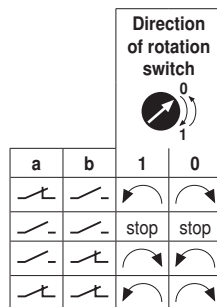
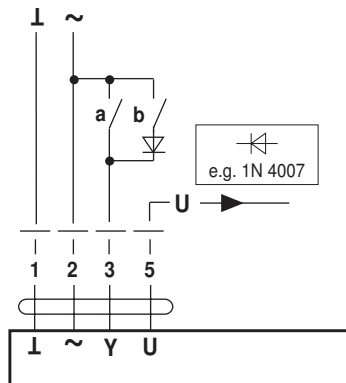
Functions	a	b	c	d	e
CLOSE <sup>1)</sup>					
MIN					
ZS (intermediate position)					
MAX					
OPEN					
Control mode in accordance with Y					

### Override control and limiting with AC 24 V with rotary switch

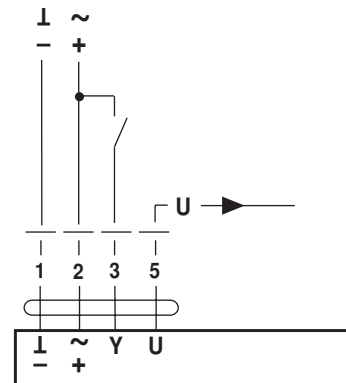


<sup>1)</sup> **Caution!** This function is only guaranteed if the start point of the operating range is defined as min. 0.6 V

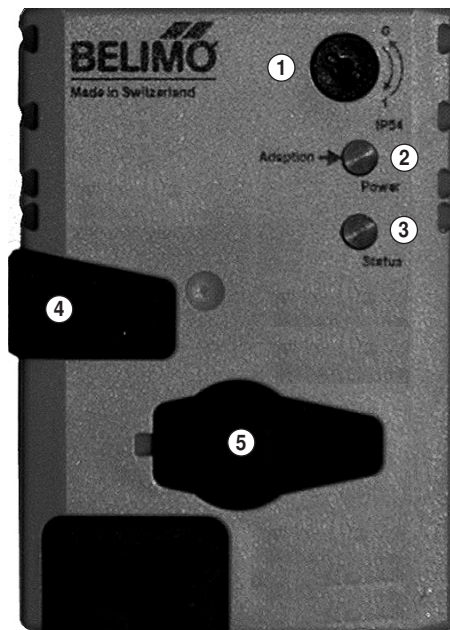
### 3-point control



### Open-close control



## Operating controls and indicators








- Direction of rotation switch**  
Switching over: Direction of rotation changes
- 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
- Pushbutton and yellow LED display**  
Off: Standard operation  
On: Adaption or synchronising process active  
Press button: No function
- Gear disengagement pushbutton**  
Press button: Gear disengaged, motor stops, manual operation possible  
Release button: Gear engaged, synchronisation starts, followed by standard operation
- Service plug**  
For connecting parameterising and service tools

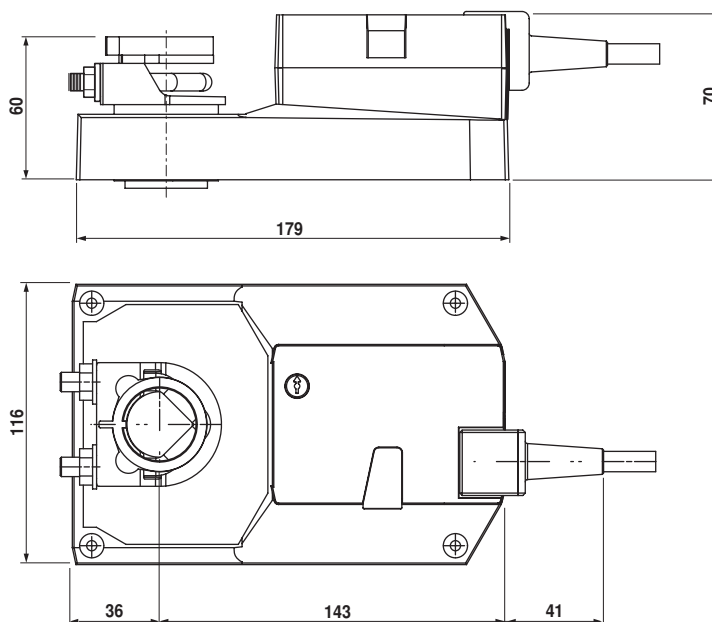
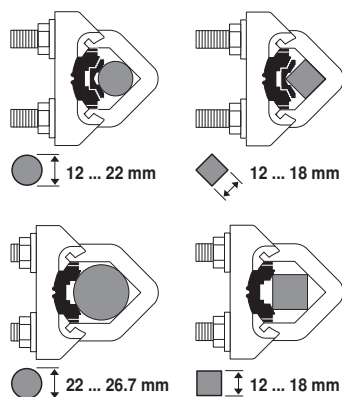
### Check voltage supply connection

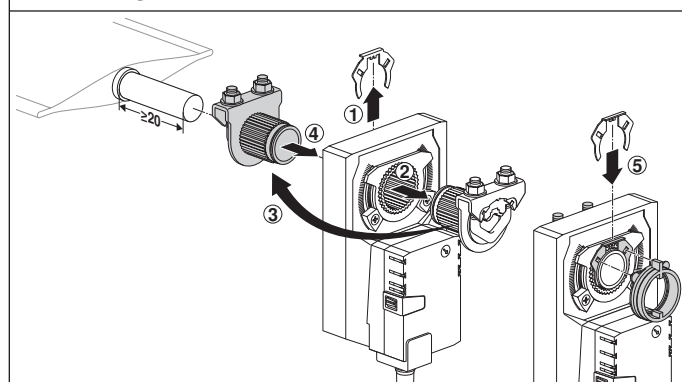
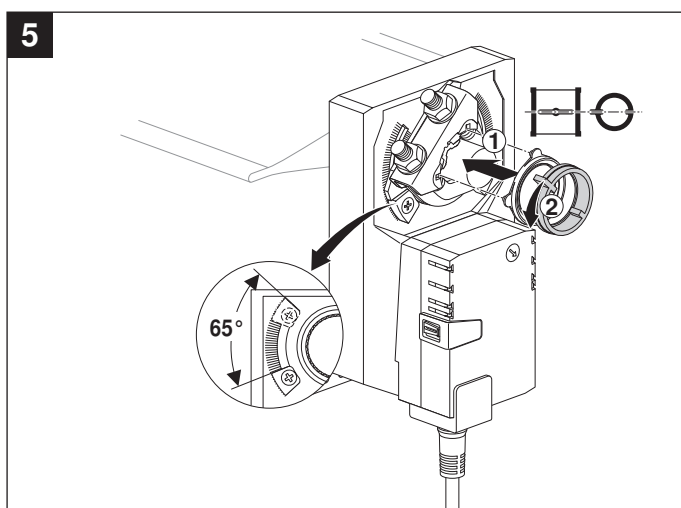
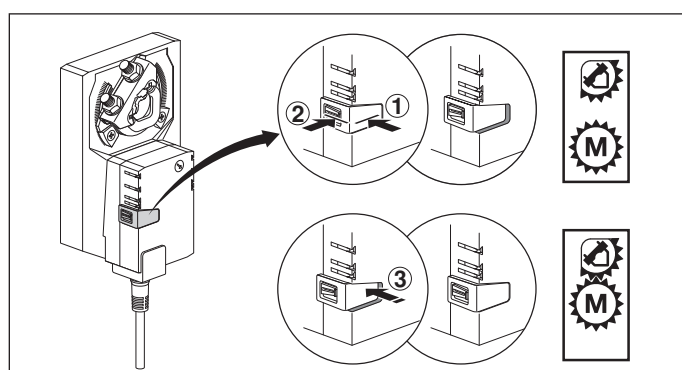
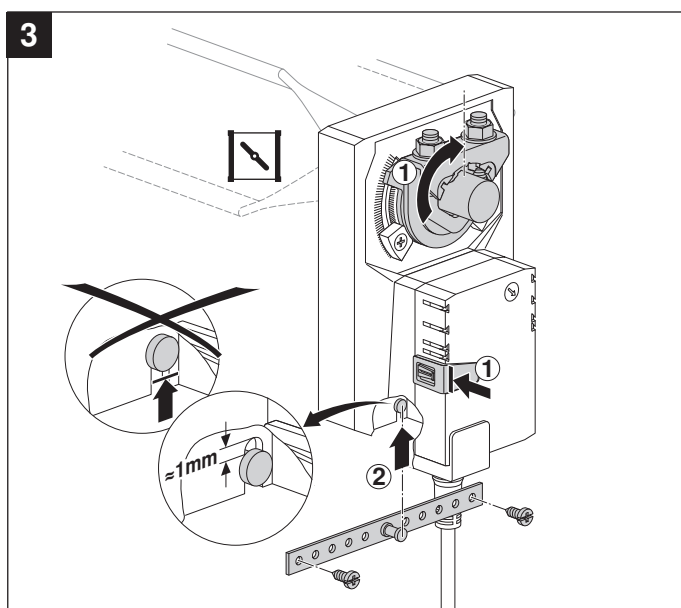
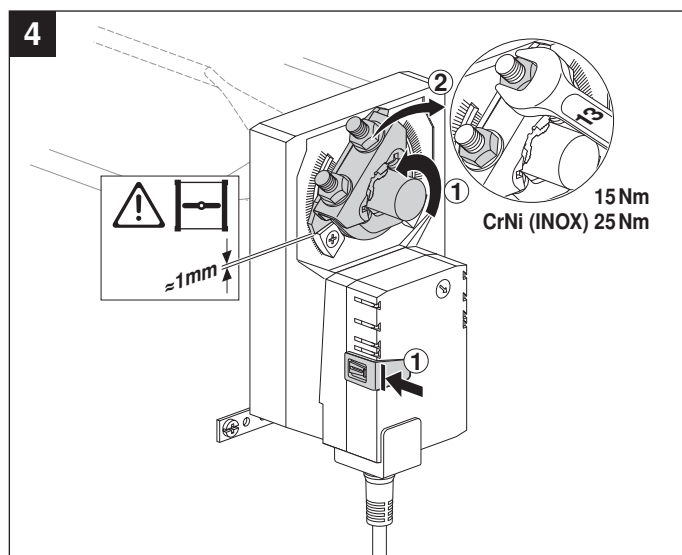
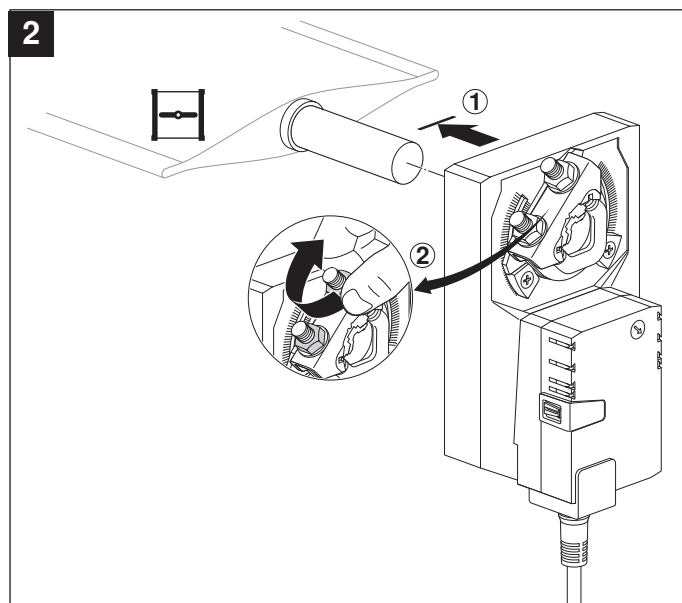
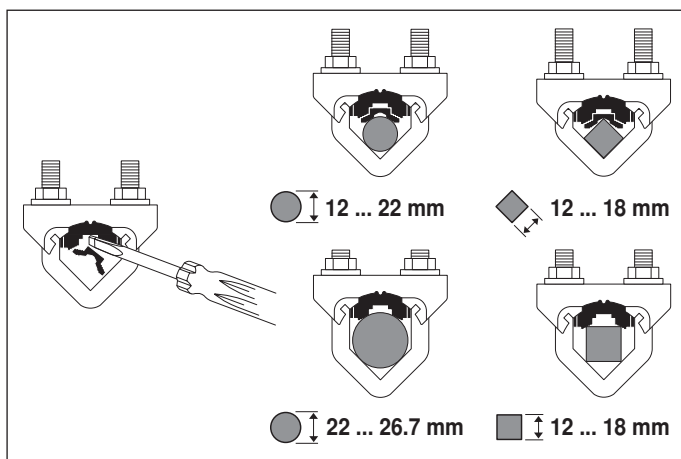
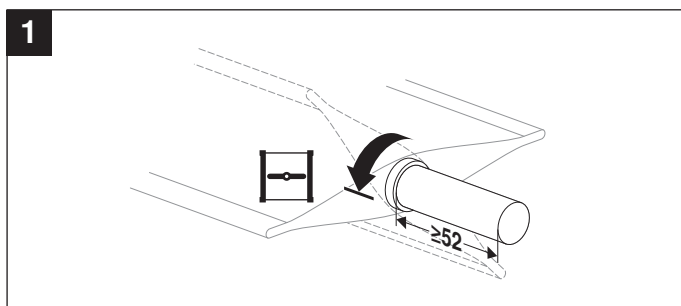
- ② Off and ③ On } Check the supply connections.
- ② Blinking and ③ Blinking } Possibly L and N are swapped over.

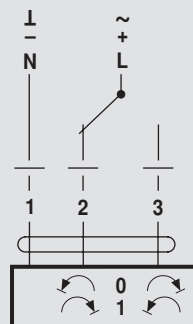
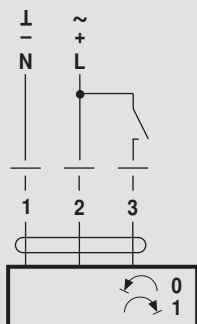
## Dimensions [mm]

## Dimensional drawings

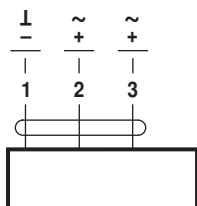
Damper spindle	Length			
	≥52	12 ... 26.7	≥12	≤25.2
	≥20	12 ... 26.7	≥12	≤25.2



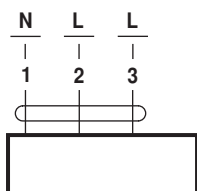





AC 24 V / DC 24 V



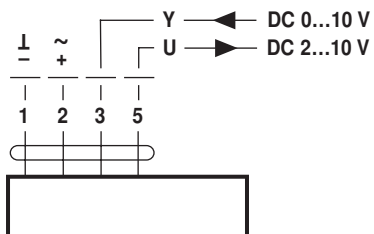
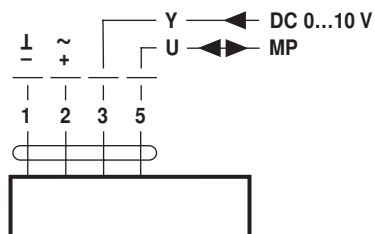
GM24A..

AC 100 ... 240 V 

GM230A..



AC 24 V / DC 24 V

GM24A-SR..  
GM24A-MF..

GM24A-MP..