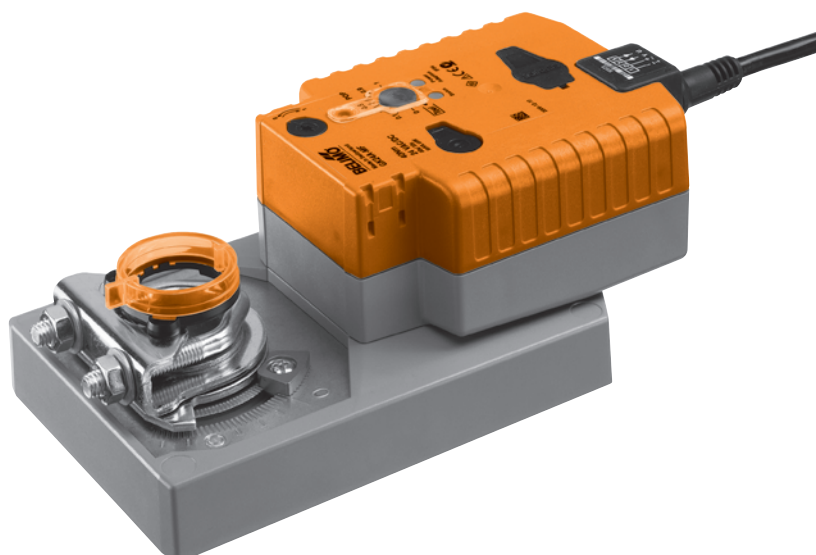






Modulating damper actuator with capacitor technology for adjusting air dampers with emergency control function and extended functionalities in ventilation and air-conditioning systems for building services installations and in laboratories

- Air damper size up to approx. 8 m²
- Torque 40 Nm
- Nominal voltage AC/DC 24 V
- Control: modulating DC 0 ... 10 V
- Position feedback DC 2 ... 10 V



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 11 W @ nominal torque At rest <3 W For wire sizing ≤21 VA
	Connection	Cable 1 m, 4 x 0.75 mm ²
	Parallel operation	yes (note the performance data)
Functional data	Torque	≥40 Nm
	Inhibiting torque	≥40 Nm
	Control Control signal Y	DC 0 ... 10 V, input impedance 100 kΩ
	Operating range	DC 2 ... 10 V
	Position feedback (measuring voltage U)	DC 2 ... 10 V, max. 0.5 mA
	Setting emergency position (POP)	0...100%, adjustable (POP rotary button)
	Position accuracy	±5%
	Direction of rotation Motor	As an option with switch  / 
	Emergency setting position	Reversible with switch 0 ... 100%
	Direction of rotation Y = 0 V	At switch position 1  or 0  , respectively
	Manual override	Gearing latch disengaged with pushbutton
	Angle of rotation	Max. 95°↔, can be limited at both ends with adjustable mechanical end stops
	Running time Motor	150 s / 90°↔
	Emergency setting position	35 s @ 0 ... 50°C
Sound intensity Motor		≤53 dB (A) @ 90 s running time
	Emergency setting position	≤52 dB (A) @ 150 s running time ≤61 dB (A)
Service life	Design life	15 years
	Full cycles	100,000
	Part cycles	1,000,000
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.AA
Rated impulse voltage		0.8 kV
Control pollution degree		3

Terms and abbreviations	CPO = Controlled power off / controlled emergency control function
	POP = Power off position / emergency setting position
	PF = Power fail delay time / bridging time

Technical data

(continued)

Safety	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 5
	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 in any other airborne means of transport.
- It may only be installed by suitably trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.
- 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.
- The device contains electrical and electronic components and is not permitted to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

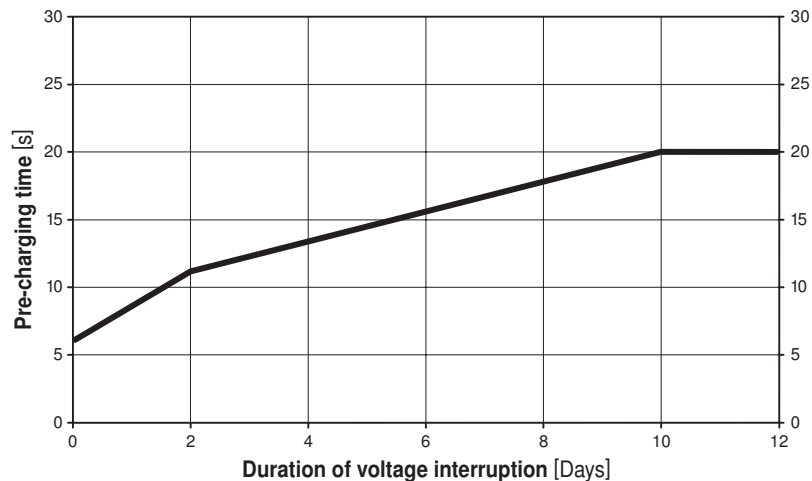
Product features

Mode of operation The actuator moves the air damper to the operating position at the same time as the integrated capacitors are loaded. Interrupting the supply voltage causes the air damper to be rotated back into the emergency setting position by means of stored electrical energy. The actuator is controlled with a standard modulating signal of DC 0 ... 10 V and travels to the position defined by the control signal. The measuring voltage U serves for the electrical display of the damper position 0 ... 100%.

Pre-charging time (start up) The capacitor actuators require a pre-charging time. This time is used for charging the capacitors up to a usable voltage level. This ensures that, in the event of a voltage interruption, the actuator can be moved at any time from its current position into the preset emergency setting position (POP). The duration of the pre-charging time depends mainly on how long the power was interrupted.

Typical pre-charging times

Pre-charging time [s]	Duration of voltage interruption [Days]				
	0	1	2	7	≥10
	6	9	11	16	20



Delivery condition (capacitors) The actuator is completely discharged after delivery from the factory, which is why the actuator requires approximately 20 s pre-charging time before initial commissioning in order to bring the capacitors up to the required voltage level.

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 override with push-button possible (the gear is disengaged for as long as the button remains pressed down).

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

Product features

(continued)

Home position / Start	The clamp of the actuator is set ex-works to 0°↯. After the supply voltage has been applied, the actuator moves into the position defined by the control signal.
Direction of rotation switch	When actuated, the direction of rotation switch changes the running direction in normal operation. The direction of rotation switch has no influence on the emergency setting position (POP) which has been set.
Emergency setting position (POP) rotary button	The «Emergency setting position» rotary button can be used to adjust the desired emergency setting position (POP) between 0 and 100% in 10% increments. The rotary button always refers to an angle of rotation of 95°↯ and does not take into account any retroactively adjusted end stops. In the event of a voltage interruption, the actuator will move into the selected emergency setting position, taking into account the bridging time (PF) of 2 s which was set ex-works.

Accessories

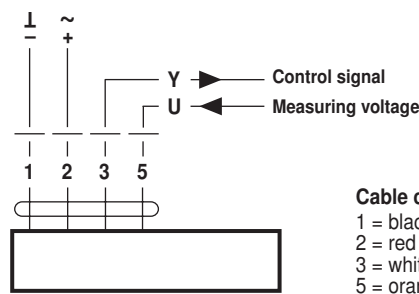
	Description	Data sheet
Electrical accessories	Auxiliary switch S..A..	T2 - S..A..
	Feedback potentiometer P..A..	T2 - P..A..
	Adapter Z-SPA	
	It is imperative that this adapter be ordered if an auxiliary switch or a feedback potentiometer is required and if at the same time the shaft adapter is installed on the rear side of the actuator (e.g. with short-spindle installation).	
	Position sensor SGA24, SGE24 and SGF24	T2 - SG..24
Mechanical accessories	Digital position indication ZAD24	T2 - ZAD24
	Room temperature controller CR24..	S4 - CR24-..
	Various accessories	T2 - Z-GM..A../GK..A..

Electrical installation

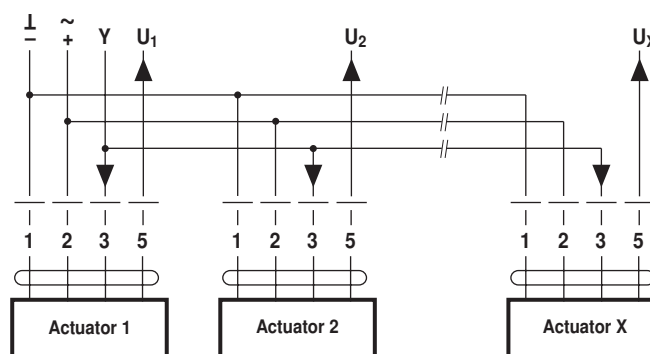
Wiring diagram

Note

Connect via safety isolation transformer.



Wiring diagram for parallel operation



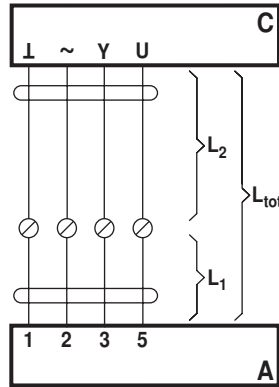
Notes

- 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.

Electrical installation

(continued)

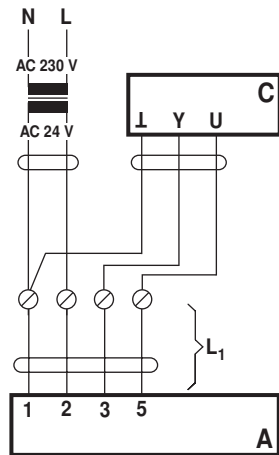
Cable lengths



- A = Actuator
- C = Control unit
- L₁ = Belimo connecting cable, 1 m (4 x 0.75 mm²)
- L₂ = Customer cable
- L_{tot} = Maximum cable length

Cross-section L ₂ ↓ / ~	Max. cable length L _{tot} = L ₁ + L ₂		Example for DC
	AC	DC	
0.75 mm ²	≤40 m	≤20 m	1 m (L ₁) + 19 m (L ₂)
1.00 mm ²	≤50 m	≤30 m	1 m (L ₁) + 29 m (L ₂)
1.50 mm ²	≤80 m	≤45 m	1 m (L ₁) + 44 m (L ₂)
2.50 mm ²	≤130 m	≤80 m	1 m (L ₁) + 79 m (L ₂)

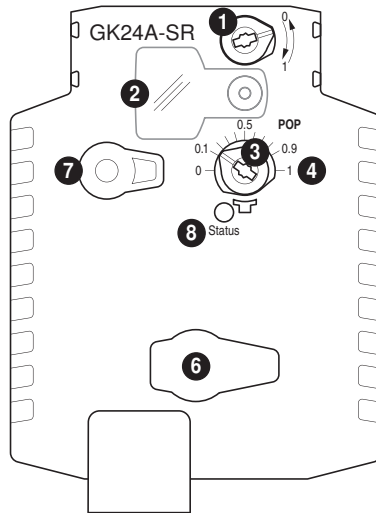
Note
When several actuators are connected in parallel, the maximum cable length must be divided by the number of actuators.



- A = Actuator
- C = Control unit
- L₁ = Belimo connecting cable, 1 m (4 x 0.75 mm²)

Note
There are no special restrictions on installation if the supply and data cable are routed separately.

Operating controls and indicators

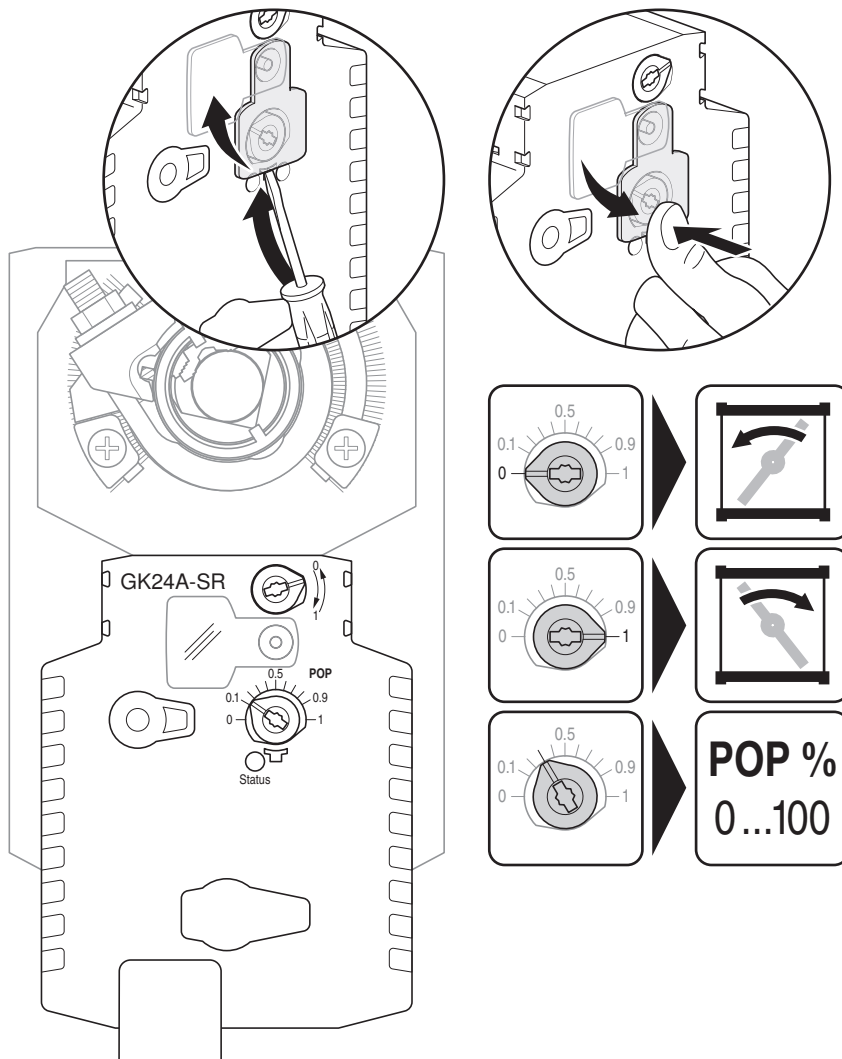


- 1 Direction of rotation switch
- 2 Cover, POP button
- 3 POP button
- 4 Scale for manual adjustment
- 5 (no function)
- 6 Disengagement switch
- 7 LED display green
Off: No voltage or fault
Illuminated: Operation
- 8 Status

Operating controls and indicators

(continued)

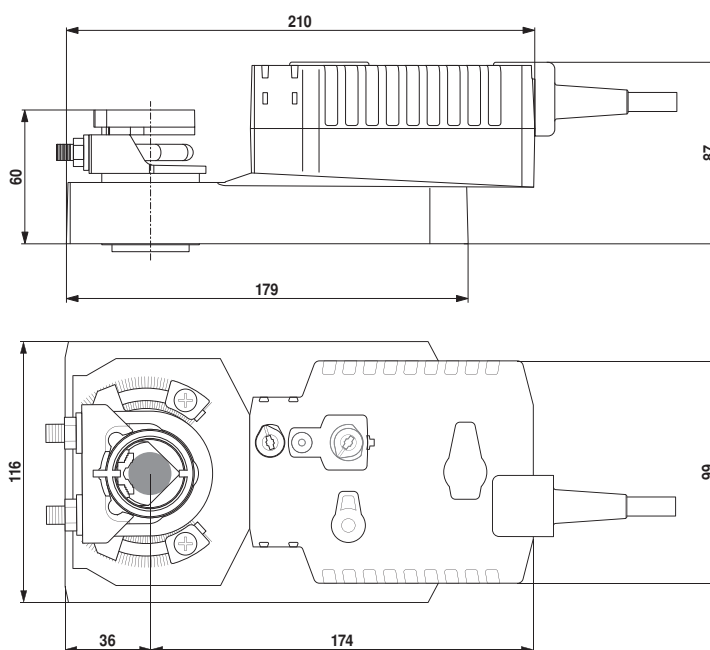
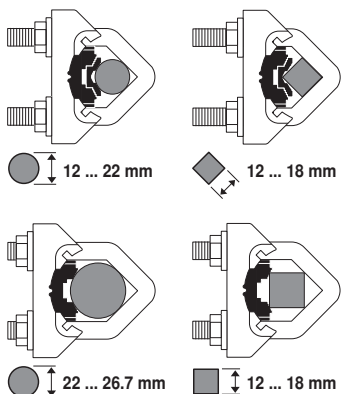
Setting the POP Power Off position



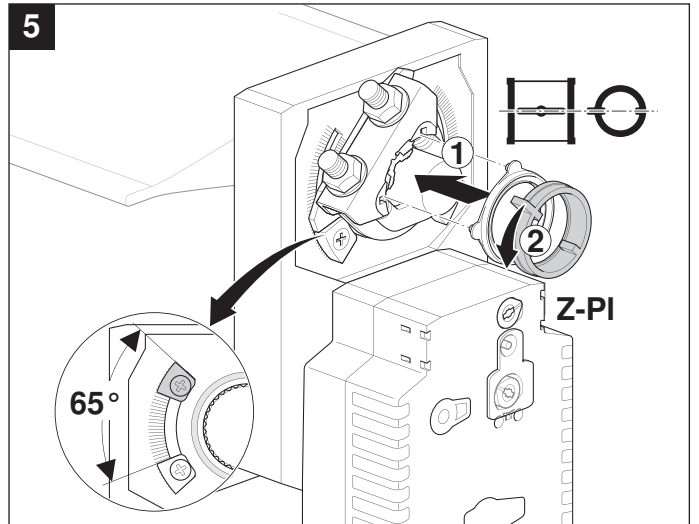
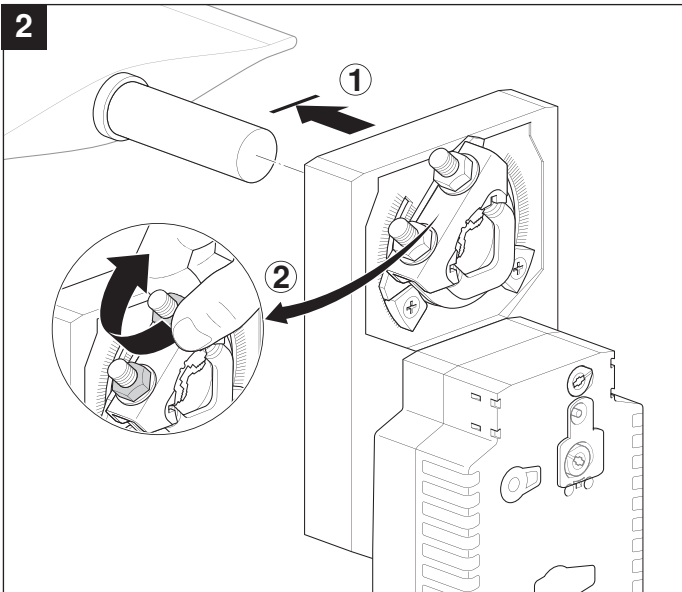
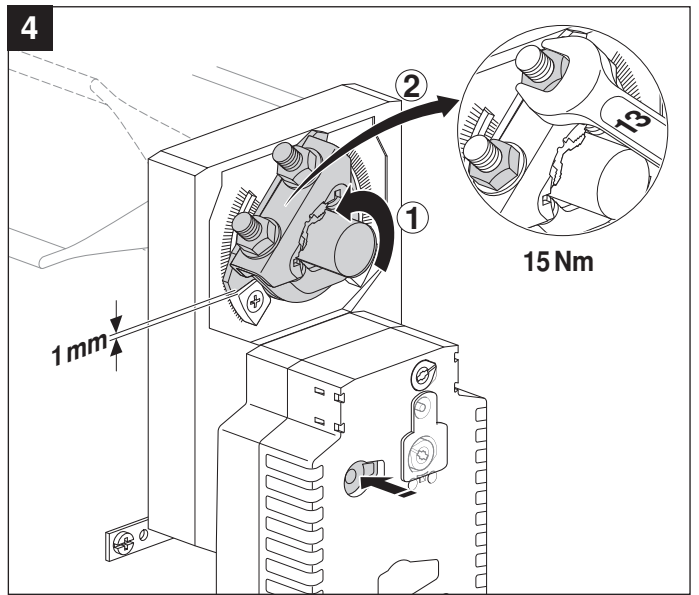
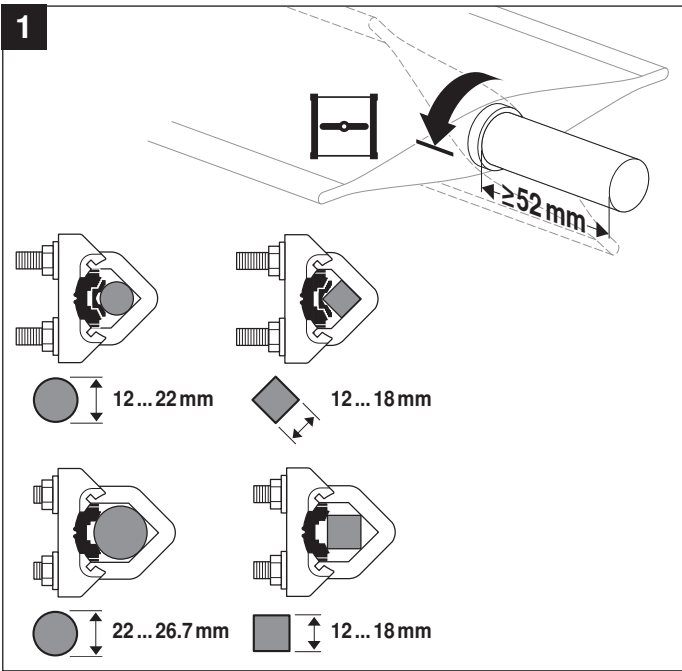
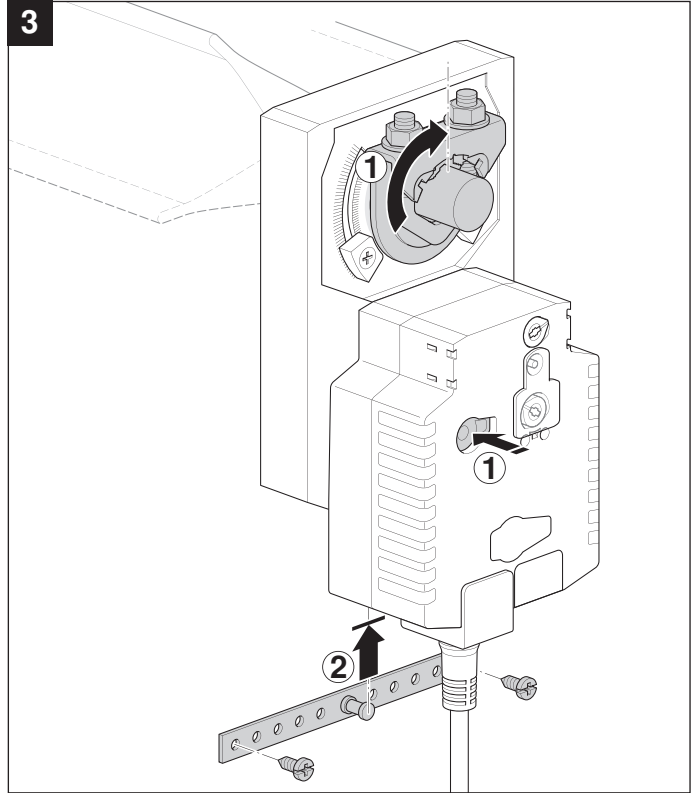
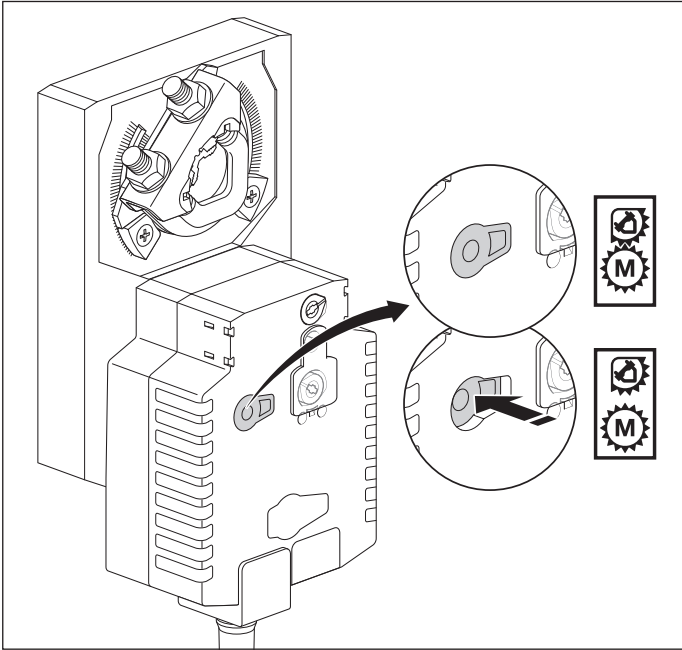
Dimensions [mm]

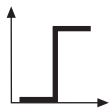
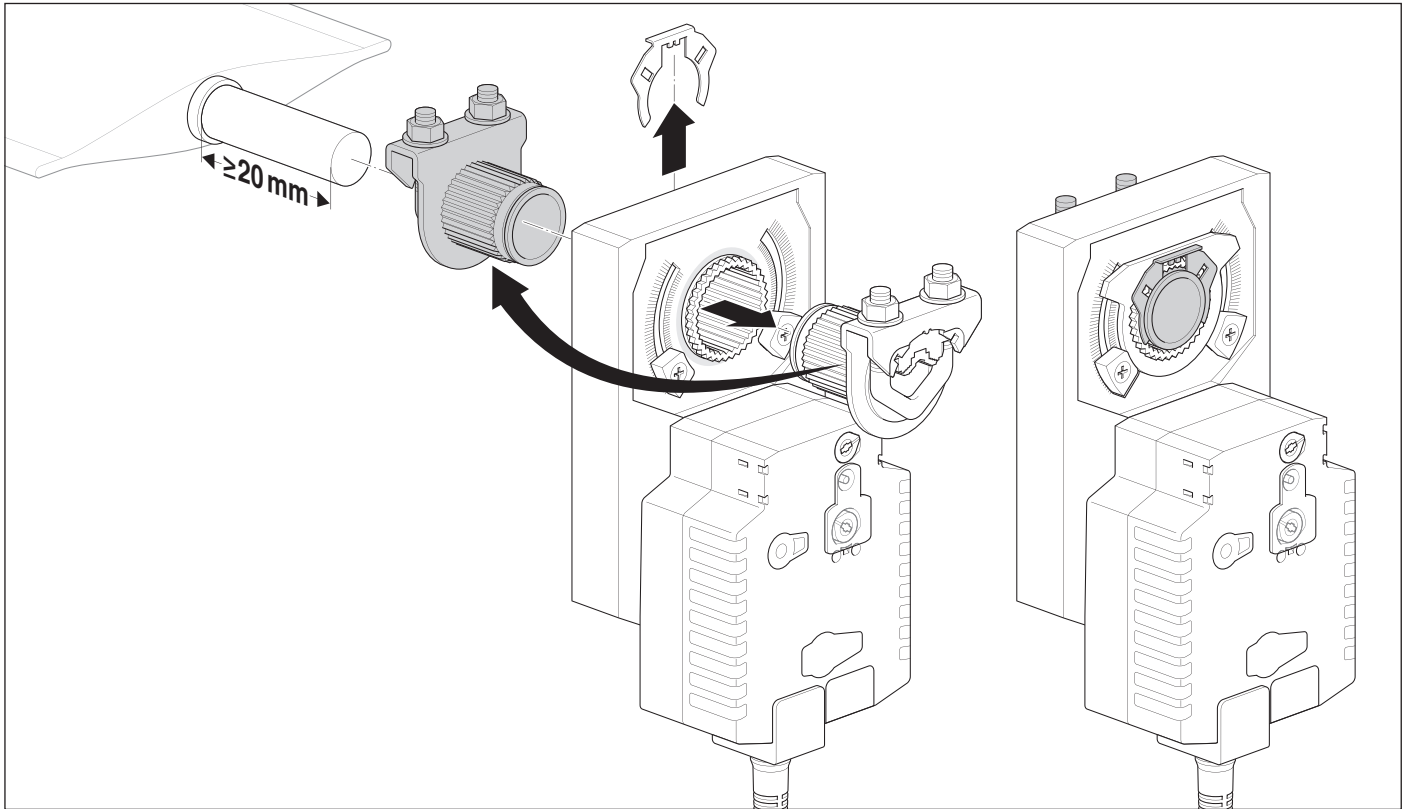
Dimensional drawings

Damper spindle	Length	● I	■ I	◆ I
	≥52	12 ... 26.7	≥12	≤25.5
	≥20	12 ... 26.7	≥12	≤25.5

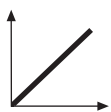
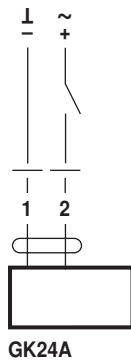


* When an auxiliary switch or a feedback potentiometer is used, see «Accessories»





AC 24 V / DC 24 V



AC 24 V / DC 24 V

