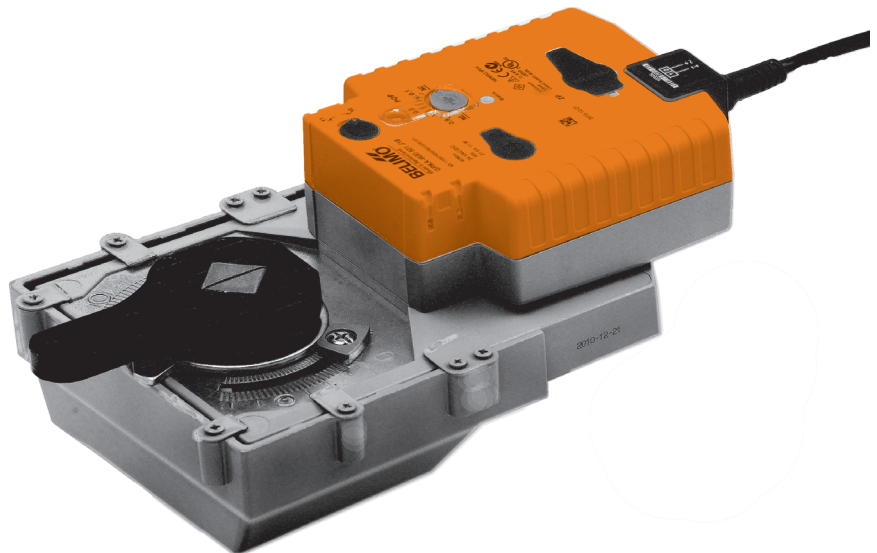


Modulating SuperCap rotary actuator with emergency setting function and extended functionalities for butterfly valves and ball valves with mounting flange ISO 5211-F05

- Torque 40 Nm
- Nominal voltage AC/DC 24 V
- Control: modulating DC 0 ... 10 V
- Position feedback DC 0 ... 10 V
- Design life SuperCaps 15 years


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 (I_{max} 20 A @ 5 ms)
	Connection	Cable 1 m, 4 x 0.75 mm ²	
Parallel operation	Yes (note the performance data)		
Functional data	Torque	≥40 Nm	
	Control	Control signal Y	DC 0 ... 10 V, input impedance 100 kΩ
		Operating range	DC 0.5 ... 10 V
	Position feedback (Measuring voltage U)	DC 0.5 ... 10 V, max. 0.5 mA	
	Emergency setting position (POP)	NC / NO or adjustable 0...100% (POP rotary button)	
	Bridging time with voltage interruption	2 s	
	Position accuracy	±5%	
	Direction of rotation	Emergency setting position	Reversible with switch 0 ... 100% (end stop ↻ 0%)
	Manual override	Gearing latch disengaged with push button	
	Running time	Motor	150 s / 90° ↻
		Emergency setting function	35 s @ 0 ... 50°C
	Sound power level	Motor	≤53 dB (A) @ 90 s running time
			≤52 dB (A) @ 150 s running time
Emergency setting function		≤61 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.AA		
Rated impulse voltage	0.8 kV		
Control pollution degree	3		
Ambient temperature	-30 ... +50°C		
Non-operating temperature	-40 ... +80°C		
Ambient humidity	95% r.h., non-condensing		
Maintenance	Maintenance-free		
Dimensions / Weight	Dimensions	See «Dimensions» on page 5	
	Weight	Approx. 2.8 kg	

Terms and abbreviations POP = Power off position / emergency setting position
PF = Power fail delay time / bridging time

Safety notes



- The actuator has been designed for use in stationary heating, ventilation and air conditioning systems and 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 installation.
- The switch for changing the direction of rotation may only be operated by authorised personnel. The direction of rotation must not in particular be reversed in a frost protection circuit.
- 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 allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

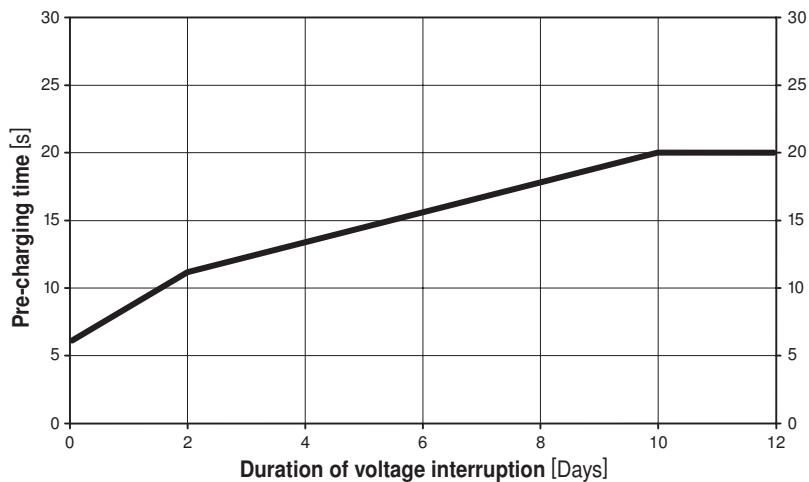
Product features

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

	Duration of voltage interruption [Days]				
	0	1	2	7	≥10
Pre-charging time [s]	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 a valve with ISO 5211-F05 mounting flange. The mounting orientation in relation to the valve can be selected in 90° steps.

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

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

Product features

(continued)

- 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 90° 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.
- Combination valve/actuator** Für Ventile mit folgenden mechanischen Spezifikationen nach ISO 5211 - F05:
– Square stem head (14 mm) for form-fit attachment of the rotary actuator.
– Hole circle d = 50 mm for installation with the butterfly valve.

Accessories

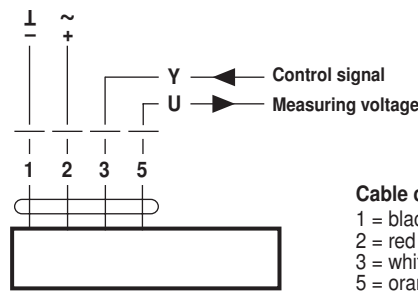
	Description	Data sheet
Electrical accessories	Auxiliary switch S..A..	T2/T5 - S..A..
	Feedback potentiometer P..A..	T2/T5 - P..A..
	Position sensor SGA24, SGE24 and SGF24	T2 - SG..24
	Digital position indication ZAD24	T2 - ZAD24
	Room temperature controller CR24..	S4 - CR24-..

Electrical installation

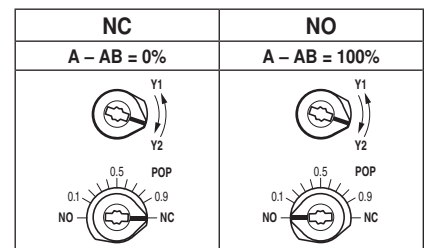
Wiring diagram

Note

- Connect via safety isolation transformer.
- Factory setting of the direction of rotation switch Y2



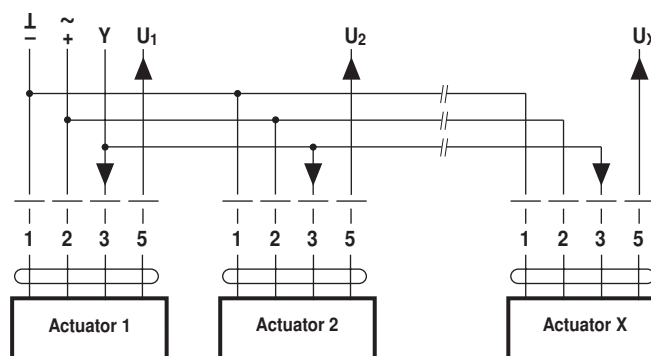
Cable colours:
1 = black
2 = red
3 = white
5 = orange



Wiring diagram for parallel operation

Notes

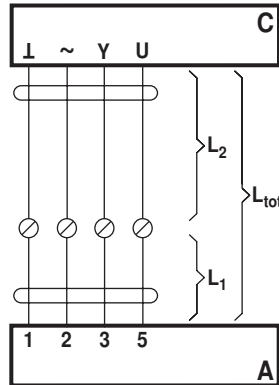
- A maximum of eight actuators can be connected in parallel.
- Parallel operation is permitted only on separated axes.
- It is imperative that the performance data be observed with parallel operation.



Electrical installation

(continued)

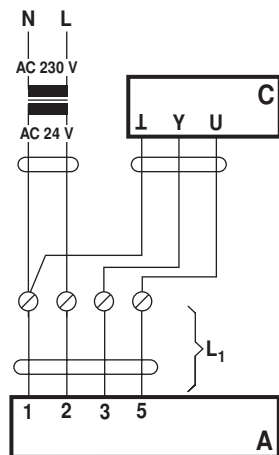
Cable lengths



- 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)

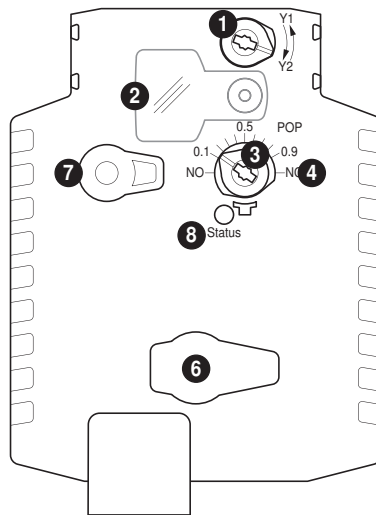
Note
When several actuators are connected in parallel, the maximum cable length must be divided by the number of actuators.



- 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



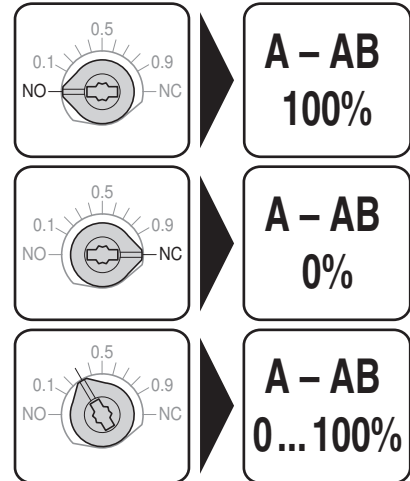
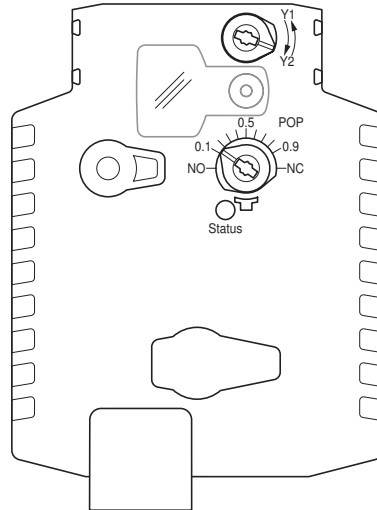
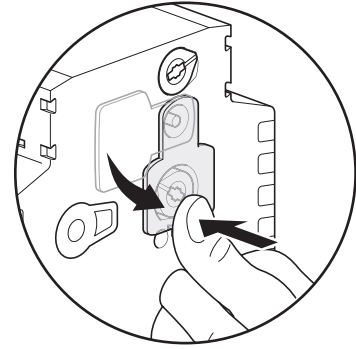
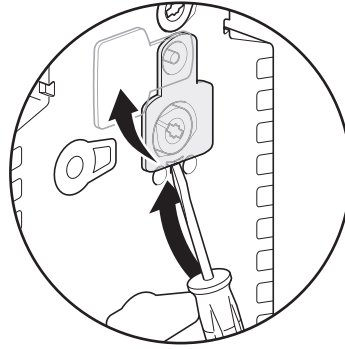
- 1 Direction of rotation switch
- 2 Cover, POP button
- 3 POP button
- 4 Scale for manual adjustment
- 6 (no function)
- 7 Disengagement button

LED display 8 green	Meaning / function
Illuminated	Operation OK / without fault
Blinking	POP function active
Off	- Not in operation - Pre-charging time SuperCap - Fault SuperCap

Operating controls and indicators

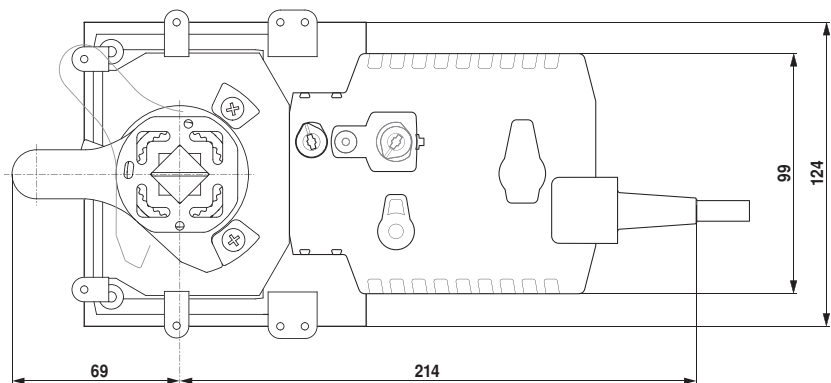
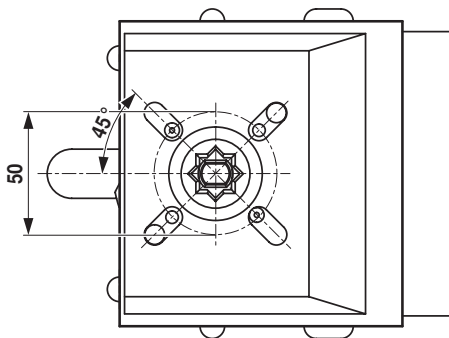
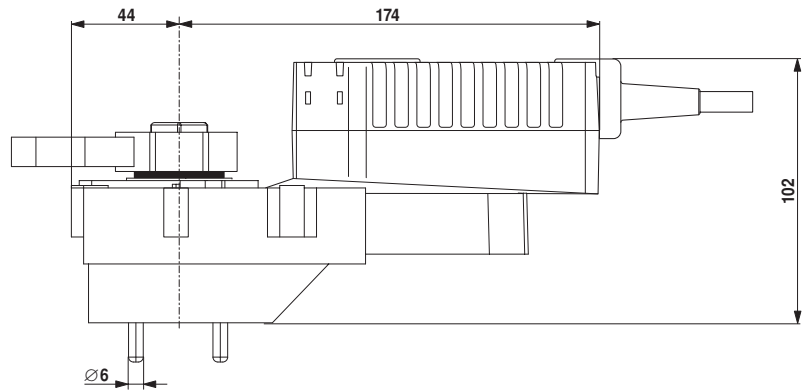
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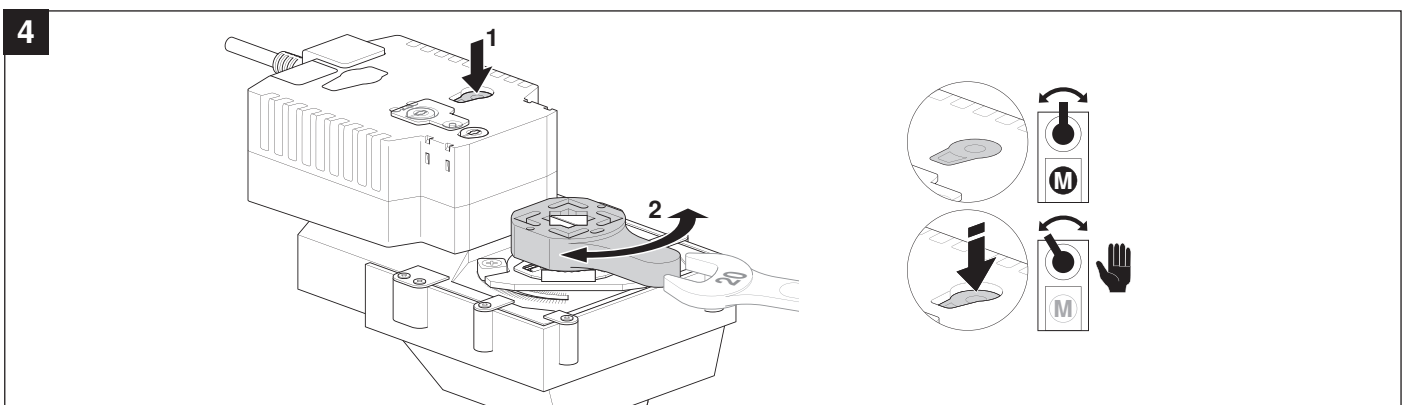
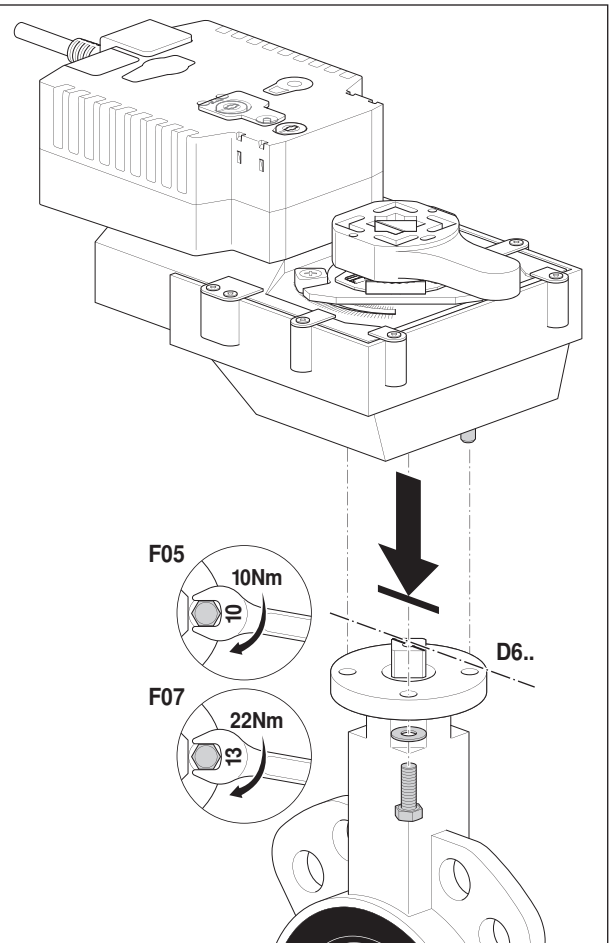
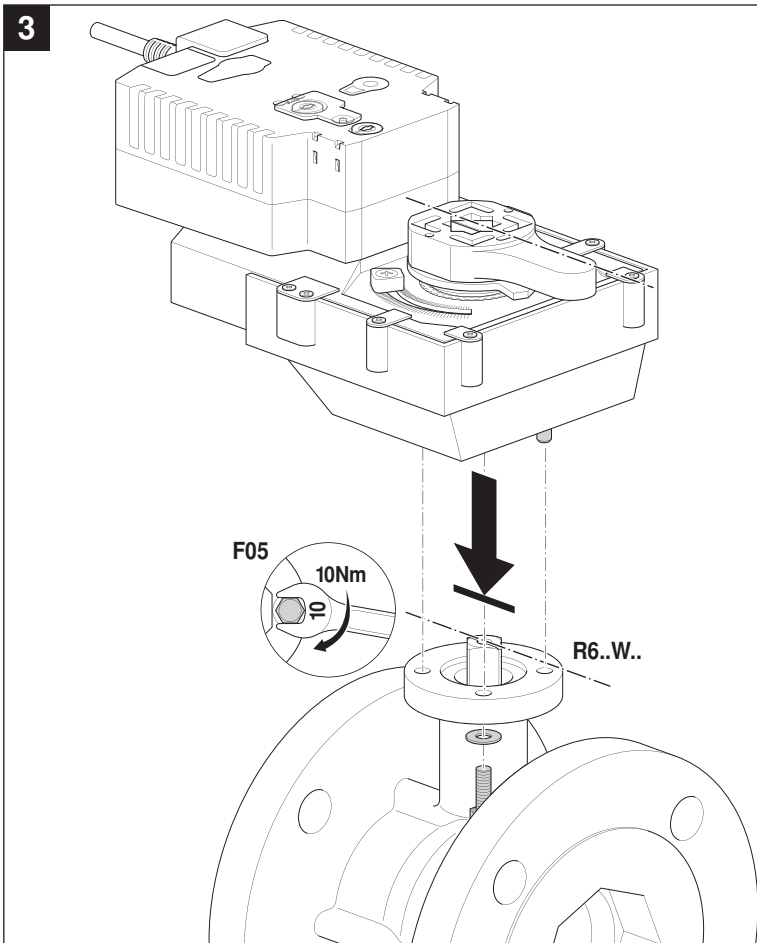
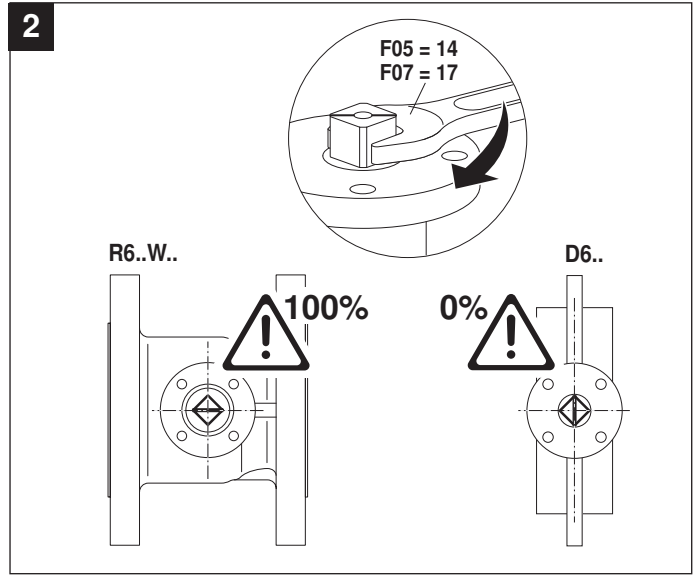
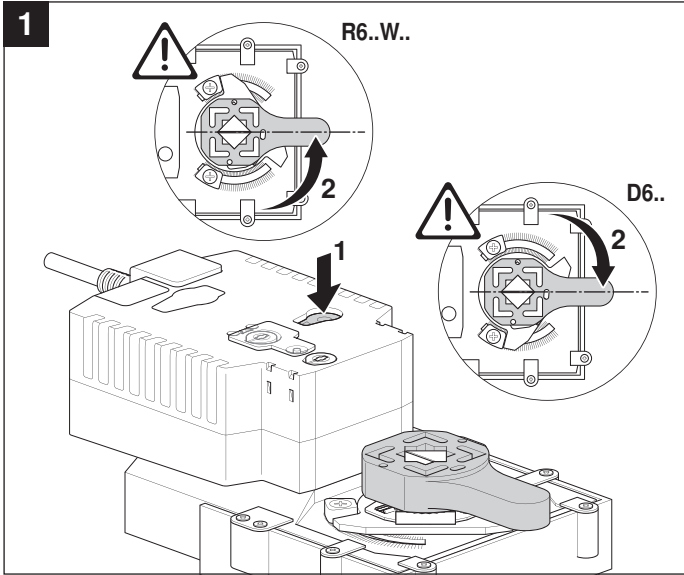
Setting the POP Power off position



Dimensions [mm]

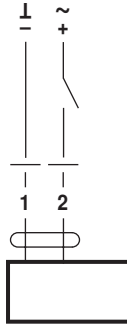
Dimensional drawings





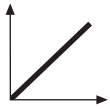


AC 24 V / DC 24 V

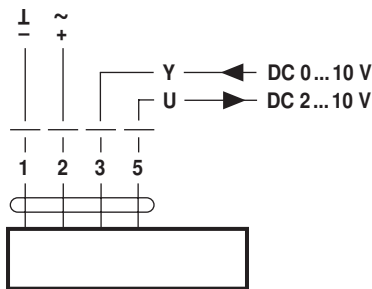


GRK24A-5
GRK24A-7

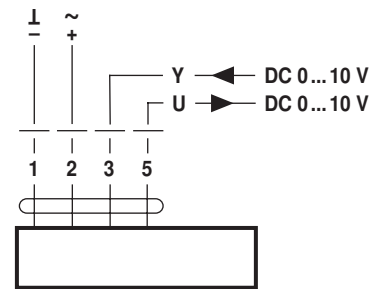
NC	NO
A - AB = 0%	A - AB = 100%



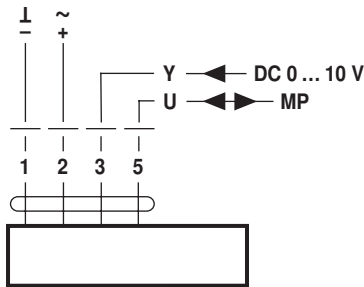
AC 24 V / DC 24 V



GRK24A-SR-5
GRK24A-SR-7

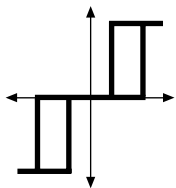


GRK24A-SZ-5 GRK24A-MF-5
GRK24A-SZ-7 GRK24A-MF-7

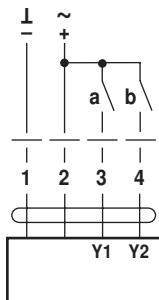


GRK24A-MP-5
GRK24A-MP-7

NC	NO
A - AB = 0%	A - AB = 100%



AC 24 V / DC 24 V



GRK24A-3-5
GRK24A-3-7

		NC	NO
		A - AB = 0%	A - AB = 100%
3	4		
a	b		
(Y1)	(Y2)		