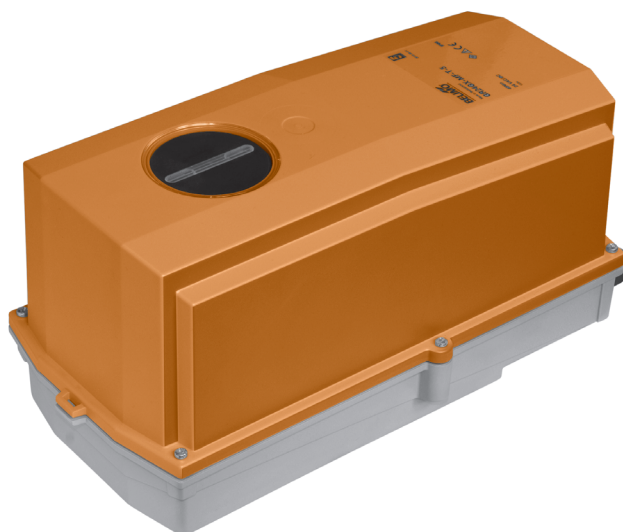


Modulating spring return actuator with emergency function in the IP66 protective housing for adjusting air dampers in industrial plants and in technical building installations

- For air dampers up to approx. 2 m<sup>2</sup>
- Torque 10 Nm
- Nominal voltage AC/DC 24 V
- Control: modulating DC 0 ... 10 V
- Position feedback DC 2 ... 10 V
- Two integrated auxiliary switches

Optimum weather protection (for use in ambient temperatures up to -40°C, there is a separate actuator available with built-in heater ex works)



### Technical data

<b>Electrical data</b>	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	3.5 W @ nominal torque
		At rest	2.5 W
	For wire sizing	5.5 VA (I <sub>max</sub> 20 A @ 5 ms)	
Auxiliary switch	2 x SPDT, 1 mA ... 3 (0.5) A, AC 250 V ☐ (1 x fix 10% / 1 x adjustable 10 ... 90%)		
Connection	Motor	Cable 1 m, 4 x 0.75 mm <sup>2</sup>	
	Auxiliary switch	Cable 1 m, 6 x 0.75 mm <sup>2</sup>	
<b>Functional data</b>	Torque	Motor	Min. 10 Nm @ nominal voltage
		Spring return	Min. 10 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	
	Position accuracy	±5%	
	Direction of rotation	Motor	Reversible with switch ↻ / ↻
		Spring return	L (ccw)
	Manual override	With hand crank and interlocking switch	
	Angle of rotation	Max. 95°↔, can be limited with adjustable mechanical end stop	
	Running time	Motor	≤150 s (0 ... 10 Nm)
		Spring return	≤20 s @ -20 ... 50°C / max. 60 s @ -30°C
	Sound power level	Motor	≤40 dB (A) @ 150 s running time
		Spring return	≤62 dB (A)
	Service life	Min. 60,000 emergency positions	
Position indication	Mechanical		
<b>Safety</b>	Protection class	III Safety extra-low voltage UL Class 2 Supply	
	Degree of protection	IP66	
		NEMA 4, UL Enclosure Type 4	
	EMC	CE according to 2004/108/EC	
	Low-voltage directive	CE according to 2006/95/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.B	
	Rated impulse voltage	Actuator	0.8 kV
		Auxiliary switch	2.5 kV
	Control pollution degree	4	
	Ambient temperature	-30 ... +50°C (actuator with built-in heater -40 ... +50°C)	
	Non-operating temperature	-40 ... +80°C	
	Ambient humidity	100% r.h.	
	Maintenance	Maintenance-free	

## Technical data

Dimensions / Weight	Dimensions	See «Dimensions» on page 4
	Weight	Approx. 5.0 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 installation.
- The cover of the protective housing may be opened for adjustment and servicing. When it is closed afterwards, the housing must seal tight (see installation instructions).
- The device on the inside may only be opened up in the factory. It does not contain any parts that can be replaced or repaired by the user.
- The cable must not be removed from the device on the inside.
- 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 integrated switches of this actuator have to be connected either to Power supply voltage or safety extra low voltage. The combination Power supply voltage / safety extra low voltage is not allowed.
- 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.
- The actuator is not designed for applications where chemical influences (gases, fluids) are present or for utilisation in corrosive environments in general.
- The materials used may be subjected to external influences (temperature, pressure, constructional fixture, effect of chemical substances, etc.), which cannot be simulated in laboratory tests or field trials.  
In case of doubt, we definitely recommend that you carry out a test. This information does not imply any legal entitlement. Belimo will not be held liable and will provide no warranty.
- For UL (NEMA) Type 4 applications flexible metallic cable conduits or threaded cable conduits of equal value are to be used.
- The actuator may not be used in plenum applications (e.g. suspended ceilings or raised floors).

## Product features

<b>Fields of application</b>	<p>The actuator is particularly suitable for utilisation in outdoor applications and is protected against the following weather conditions:</p> <ul style="list-style-type: none"> <li>– UV radiation</li> <li>– rain / snow</li> <li>– dirt / dust</li> <li>– humidity</li> <li>– Changing atmosphere / frequent and severe temperature fluctuations (recommendation: use the actuator with integrated factory-installed heating which can be ordered separately to prevent internal condensation)</li> </ul>
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Product features		(continued)
<b>Mode of operation</b>		The actuator is controlled with a standard signal of DC 0 ... 10 V and moves the damper to the operating position at the same time as tensioning the return spring. The damper is turned back to the emergency position by spring force if the supply voltage is interrupted.
<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 of the damper with the hand crank, locking in any position with the interlocking switch. Unlocking is manual or automatic by applying the operating voltage. The housing cover must be removed to set the manual override.
<b>Adjustable angle of rotation</b>		Adjustable angle of rotation with mechanical end stop. The housing cover must be removed to set the angle of rotation.
<b>High operational reliability</b>		The actuator is overload-proof, requires no limit switches and automatically stops when the end stop is reached.
<b>Flexible signalization</b>		The actuator has one auxiliary switch with a fixed setting and one adjustable auxiliary switch. They permit a 10% or 10 ... 90% angle of rotation to be signalled.

Accessories		
	Description	Data sheet
Electrical accessories	Auxiliary switch unit S2A-F *	T2 - S2A-F
	Feedback potentiometer unit P200A-F **	T2 - P200A-F
	Cable socket IP66/NEMA4 housing Z-KB-PG11	
	Range controller SBG24	T2 - SBG24
	Position positioner SGA24, SGE24 and SGF24	T2 - SG..24
	Digital position indication ZAD24	T2 - ZAD24
	Heating with mechanical hygrostat HH24-FG *	T2/T5 - HH24-FG
	Heating with mechanical thermostat HT24-FG *	T2/T5 - HT24-FG

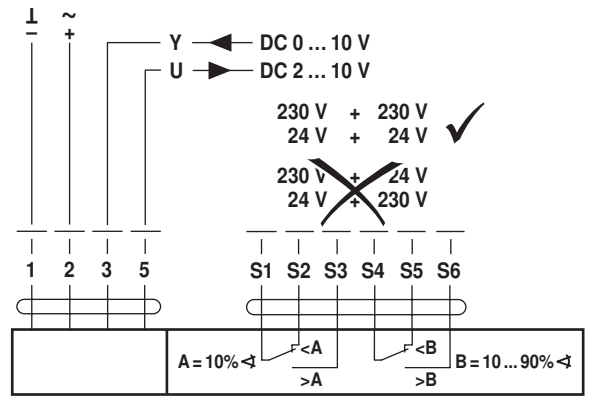
\* only available fitted in separate actuator  
 \*\* only available fitted in separate actuator, just as further feedback potentiometer units

**Electrical installation**

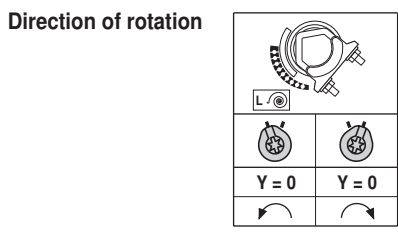
**Wiring diagram**

**Notes**

- Connect via safety isolation transformer.
- Parallel connection of other actuators possible. Note the performance data.



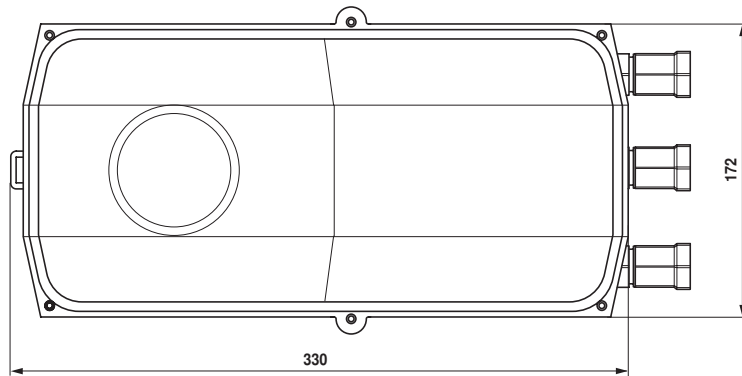
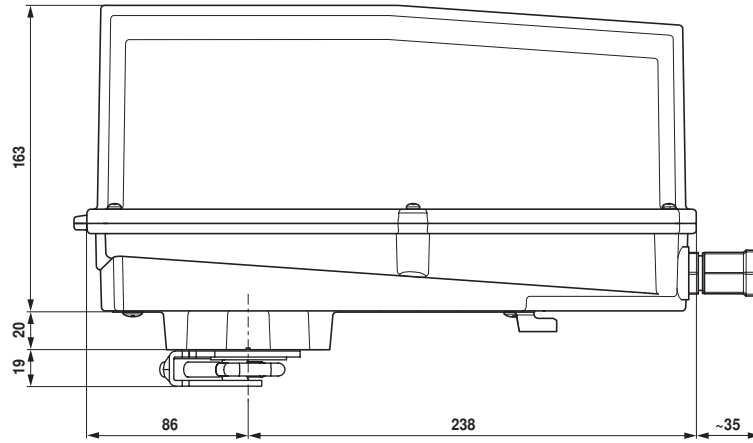
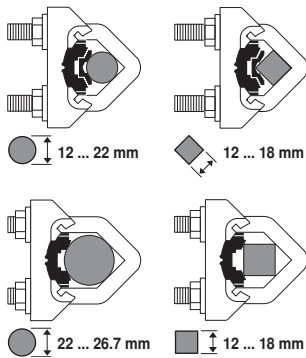
- Cable colours:**
- 1 = black
  - 2 = red
  - 3 = white
  - 5 = orange
  - S1 = violet
  - S2 = red
  - S3 = white
  - S4 = orange
  - S5 = pink
  - S6 = grey



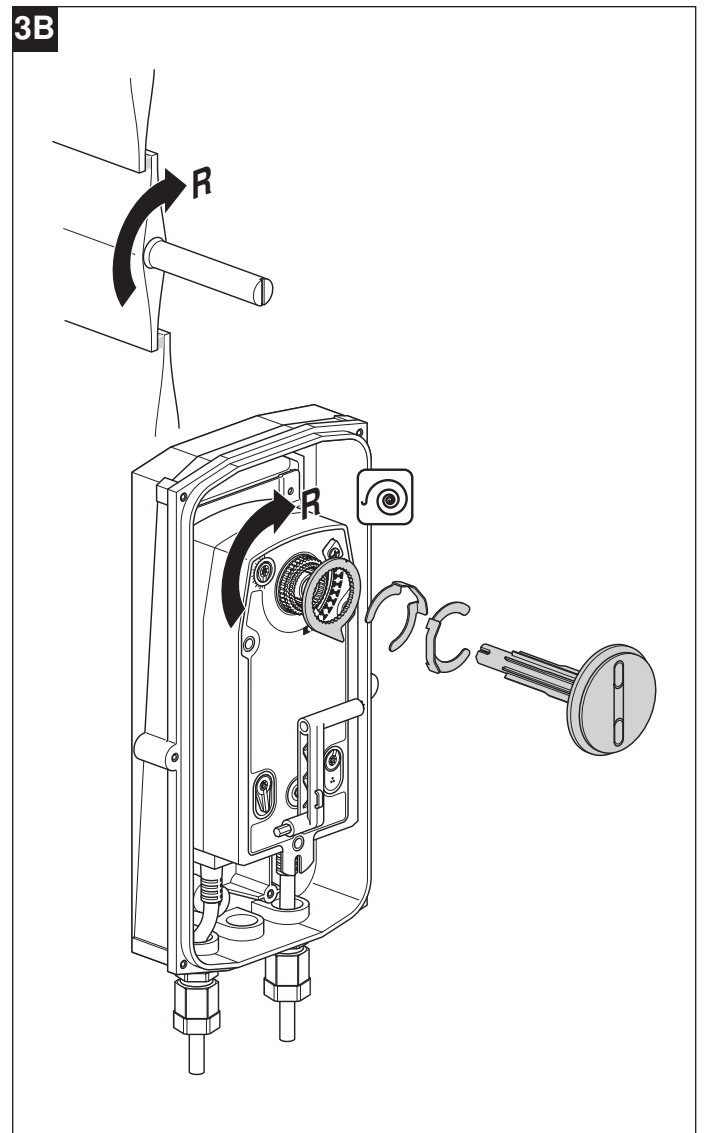
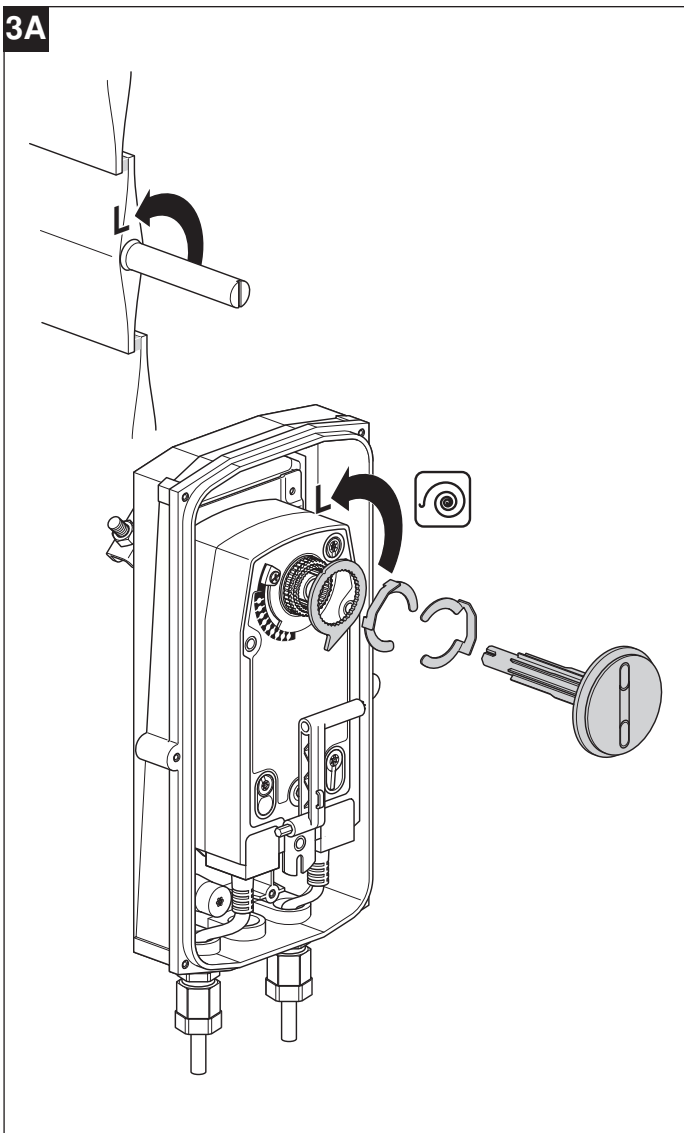
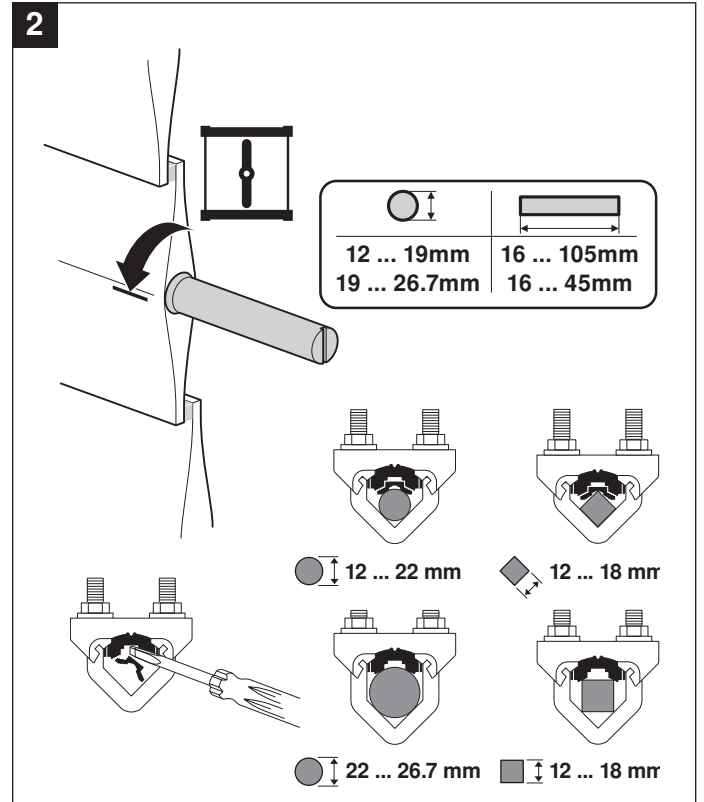
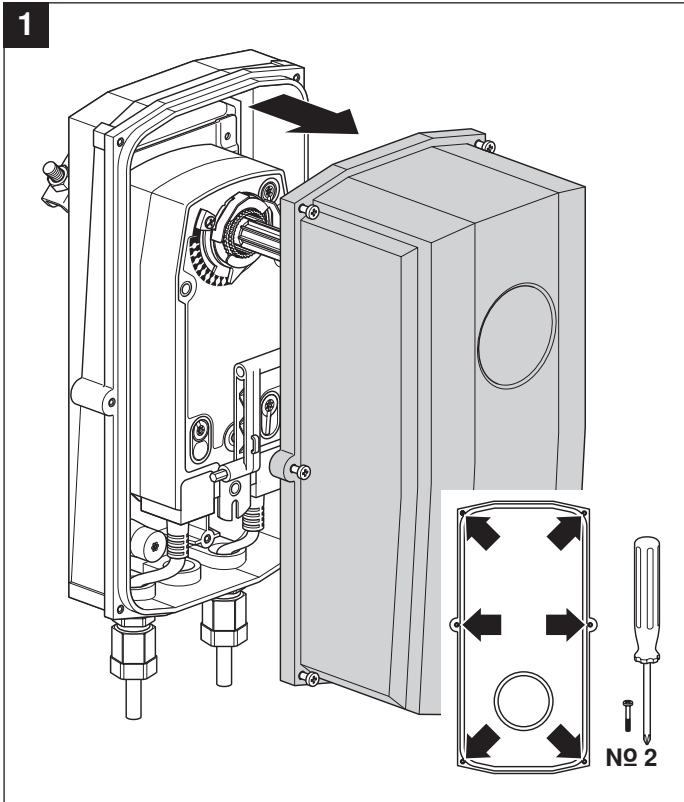
Dimensions [mm]

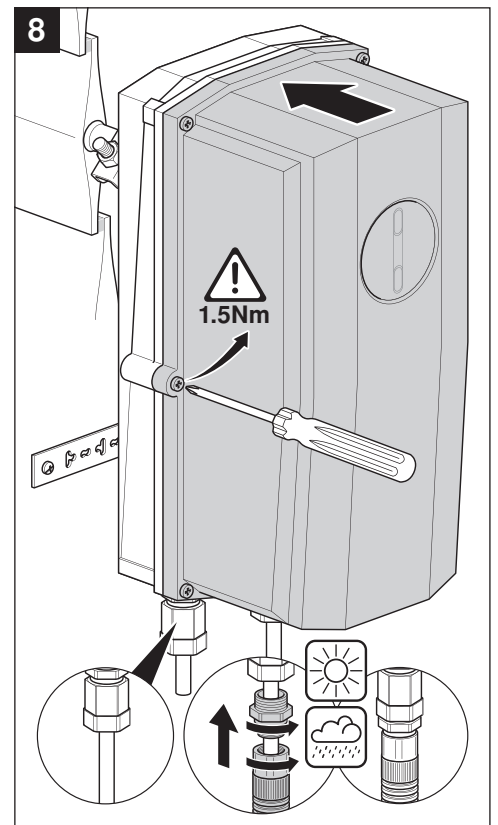
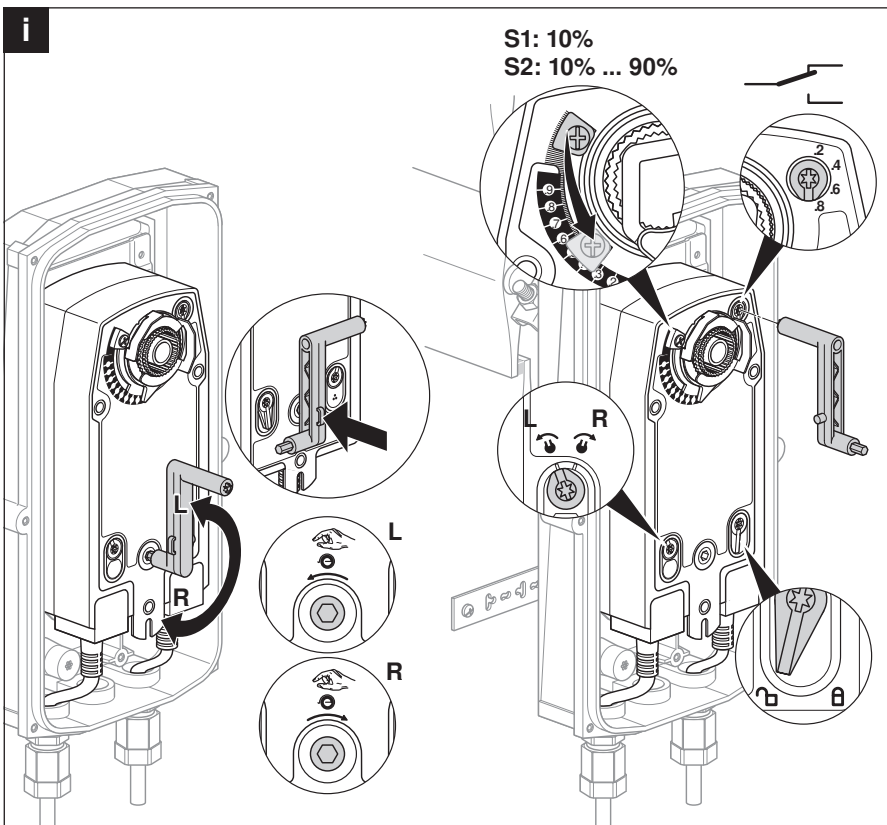
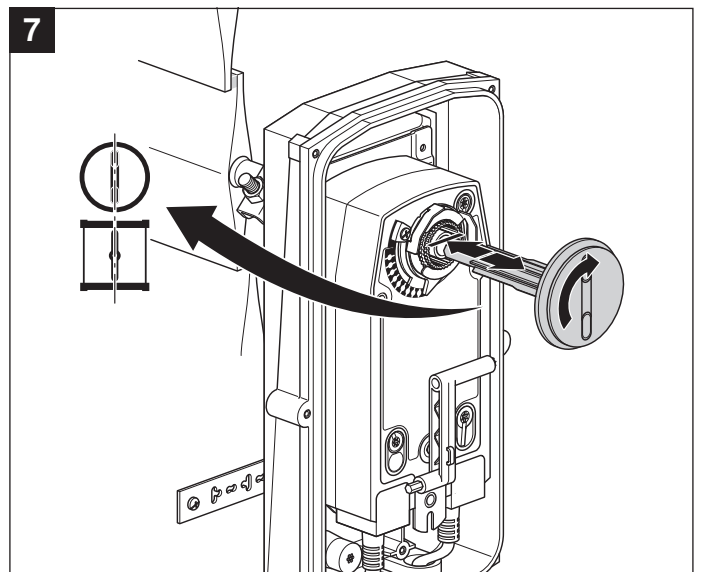
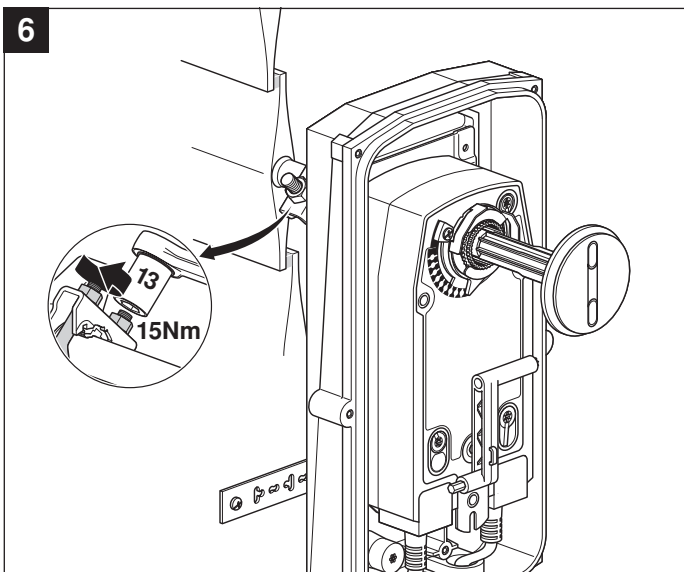
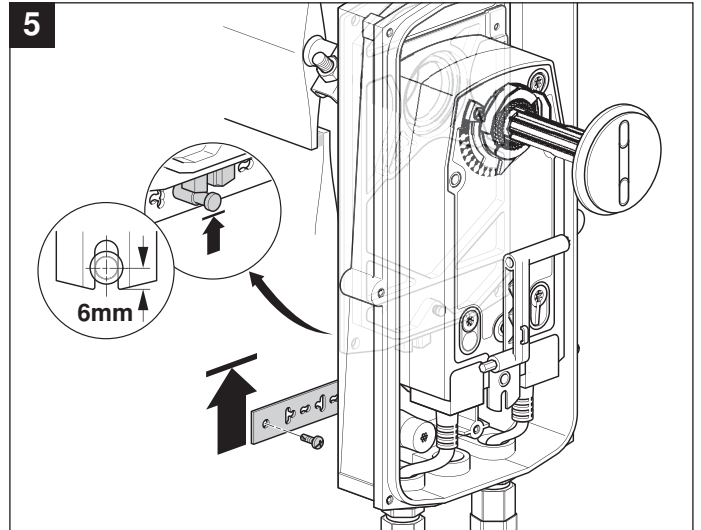
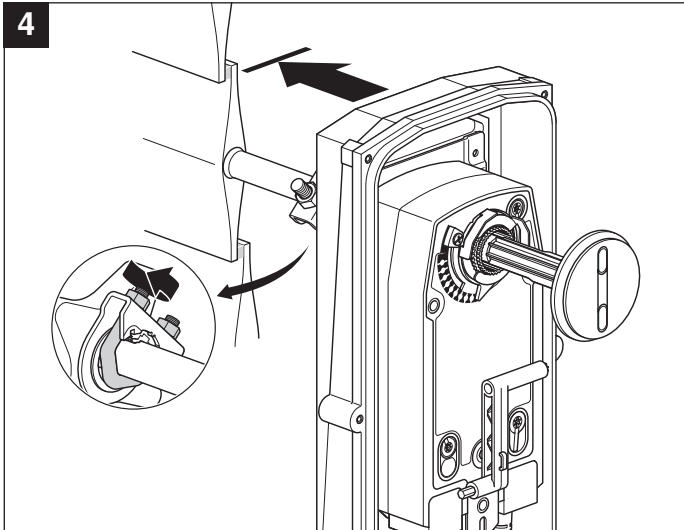
Dimensional drawings

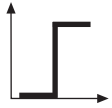
Damper spindle	Length	
	16 ... 105	12 ... 19
	16 ... 45	19 ... 26,7



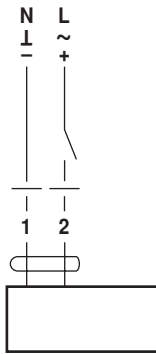
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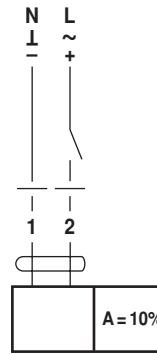




AC 24 ... 240 V  
DC 24 ... 125 V



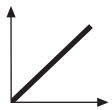
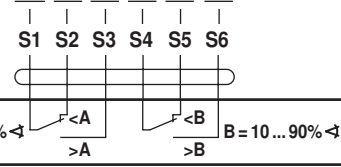
NFG  
SFG



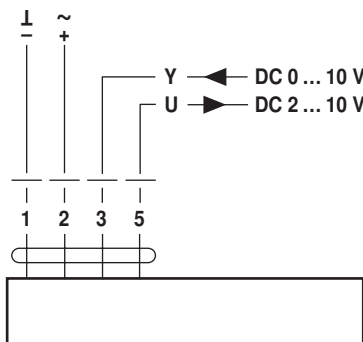
NFA-S2  
SFA-S2

230 V + 230 V  
24 V + 24 V ✓

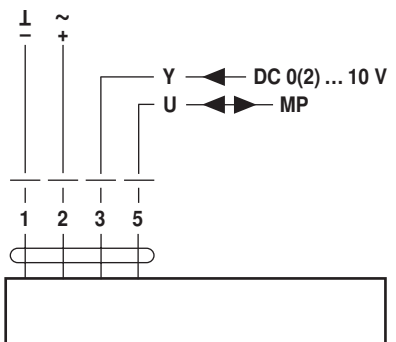
~~230 V + 24 V~~  
~~24 V + 230 V~~



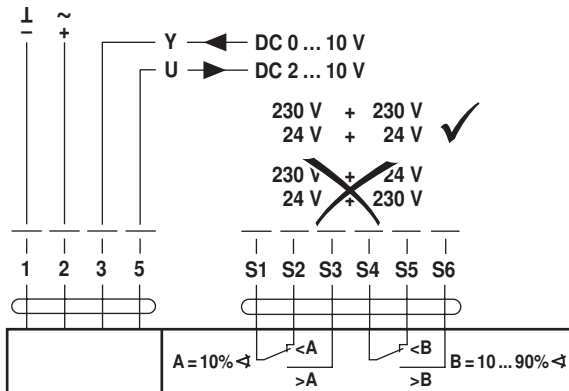
AC 24 V / DC 24 V



NF24G-SR  
NF24G-MF  
SF24G-SR  
SF24G-MF



NF24G-MP  
SF24G-MP



NF24G-SR-S2  
SF24G-SR-S2

230 V + 230 V  
24 V + 24 V ✓

~~230 V + 24 V~~  
~~24 V + 230 V~~