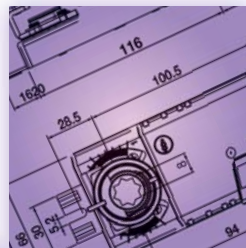


Damper Actuators



Technical Databook

Version 5.1



Product naming

	e.g.	L	M	U	24	-SR
Torque						
<u>General Damper Actuator</u>						
40Nm	G					
20Nm	S					
10Nm	N					
5Nm	L					
2Nm	C					
<u>Mechanical Fail-Safe Damper Actuator</u>						
30Nm	E					
20Nm	S					
10Nm	N					
4Nm	L					
2.5Nm	T					
<u>Electronic Fail-Safe Damper Actuator</u>						
40Nm	G					
General Damper Actuator	M					
Mechanical Fail-Safe Damper Actuator	F					
Electronic Fail-Safe Damper Actuator	K					
New Generation General Damper Actuator for Asia Pacific						
Power supply						
AC/DC 24V	24					
AC 100...240V (AC 230V for Mechanical Fail-Safe Damper Actuator)	230					
Function						
<u>General Damper Actuator</u>						
Open/Close, 3-point	Blank					
Modulating DC (0)2...10V	-SR					
Auxiliary switch	-S					
Form fit	-F					
Terminal connection	-T					
<u>Mechanical Fail-Safe Damper Actuator</u>						
Open/Close	Blank					
Modulating DC (0)2...10V	-SR					
3-point	-3					
Auxiliary switch	-S,-S2					
<u>Electronic Fail-Safe Damper Actuator</u>						
3-point	-MF					

For customising types of damper actuators, please contact your nearest Belimo sales representative.


Note:
Using Belimo Damper Actuators:

- The actuators listed in this catalogue are intended for the operation of air dampers in HVAC systems.
- The damper actuator is not allowed to be used outside the specified field of application, especially in aircraft.
- The enclosure of the actuator equipment may only be opened by the manufacturer. It contains no components which the user can replace or repair.
- 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.

Torque requirements:

- When calculating the torque required to operate dampers, it is essential to take into account all the data supplied by the damper manufacturer concerning cross sectional area, design, mounting and air flow condition.

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	2Nm	5Nm	10Nm	20Nm	40Nm
General Damper Actuator	CMU..	LMU..	NMU..	SMU..	GMU..
Open/Close, 3-point AC/DC 24V 50/60Hz	CMU24(-F8/-F10)(-T)	LMU24(-F-T)	NMU24(-T)	SMU24	GMU24*
Auxiliary switch built-in 1 SPDT AC 100...240V 50/60Hz	CMU230(-F8/-F10)	LMU230	NMU230	SMU230	GMU230*
Auxiliary switch built-in 1 SPDT		LMU230-S	NMU230-S	SMU230-S	
Modulating Control signal DC (0)2...10V, feedback DC 2...10V AC/DC 24V 50/60Hz	CMU24-SR-R**	LMU24-SR	NMU24-SR	SMU24-SR	GMU24-SR
AC 100...240V 50/60Hz		LMU230SR	NMU230SR	SMU230SR	
Running time	75s	150s			
Shaft diameter	6...12.7mm	6...20mm	8...26.7mm	10...20mm	12...25.2mm
Sound power level	Max. 35dB(A)			Max. 45dB(A)	
Manual override	Gear disengaging by magnet		Gear disengaging by push button		
Electrical connection	Cable 1m (-T: Terminal)				
Direction of rotation	Selected by switch				
Angle of rotation	Max. 95°, can be limited at both ends with mechanical adjustable end stops				
Position indicator	Mechanical, plug-on				
Degree of protection	IP54 (-T: IP20)				
EMC	CE according to 89/336/EEC				
LVD***	CE according to 73/23/EEC				
Ambient temperature	-30...+50°C				
Non-operation temperature	-40...+80°C				
Humidity	5...95% RH, non-condensing				

* Only Open/Close, no 3-point.

** CMU24-SR-R: Control signal (0)2V at the right side, and the left side is available on request.

*** For 230V models.

	4Nm	8Nm	16Nm	
General Damper Actuator	LMQU..	NMQU..	SMQU..	SMDU..
Open/Close AC 24V 50/60Hz, DC 24V	LMQU24	NMQU24	SMQU24	
AC 100...240V 50/60Hz				SMDU230
Modulating Control signal DC (0)2...10V, feedback DC 2...10V AC 24V 50/60Hz, DC 24V	LMQU24-SR	NMQU24-SR	SMQU24-SR	
Running time	2.5s	4s	7s	20s
Shaft diameter	8...26.7mm		12...25.2mm	10...20mm
Sound power level	Max. 52dB(A)			Max. 55dB(A)
Manual override	Disengaging the gearing latch by means of a push button, self-resetting			
Electrical connection	Cable 1m			
Direction of rotation	Selected by switch			
Angle of rotation	Max. 95°, can be limited at both ends with mechanical adjustable end stops			
Position indicator	Mechanical, plug-on			
Degree of protection	IP54			
EMC	CE according to 2004/108/EC			
LVD*	CE according to 2006/95/EC			
Ambient temperature	-30...+40°C (without restrictions); +40...+50°C (with restrictions)			
Non-operation temperature	-40...+80°C			
Humidity	5...95% RH, non-condensing			

* For 230V models.

	2.5Nm	4Nm
Mechanical Fail-Safe Damper Actuator	TF..	LF..
Open/Close AC/DC 24V 50/60Hz	TF24	LF24
Auxiliary switch built-in 1 SPDT	TF24-S	LF24-S
AC 230V 50/60Hz	TF230**	LF230
Auxiliary switch built-in 1 SPDT	TF230-S	LF230-S
3-point AC/DC 24V 50/60Hz	TF24-3**	LF24-3
Modulating Control signal DC (0)2...10V, feedback DC 2...10V		
AC/DC 24V 50/60Hz	TF24-SR	LF24-SR
Running time -Motor -Spring return	<75s* <25s	40-75s* <20s
Shaft diameter	6...12mm	8...16mm
Sound power level -Motor	Open/Close max. 50dB(A) Modulating and 3-point max. 35dB(A)	Open/Close max. 50dB(A) Modulating and 3-point max. 30dB(A)
-Spring	62dB(A)	
Electrical connection	Cable 1m	
Direction of rotation	Selected by mounting L/R	
Angle of rotation	Max. 95°	
Mechanical end stops	Yes	
Position indicator	Yes	
Degree of protection	IP42	IP54
EMC	CE according to 89/336/EEC	
LVD***	CE according to 73/23/EEC	
Ambient temperature	-30...+50°C	
Non-operation temperature	-40...+80°C	
Humidity	5...95% RH, non-condensing	

* LF24-3 and all -SR types are 150s.

** TF24-3 nominal voltage is AC 24V, TF230 nominal voltage is AC 100...240V.

*** For 230V models.

	10Nm	20Nm	30Nm
Mechanical Fail-Safe Damper Actuator	NFU..	SFU..	EFU..
Open/Close AC 24...240V / DC 24...125V	NFU	SFU	-
Auxiliary switch built-in 2 SPDT AC/DC 24V 50/60Hz	NFU-S2	SFU-S2	-
Auxiliary switch built-in 2 SPDT AC 230V 50/60Hz	-	-	EFU24-S2
Auxiliary switch built-in 2 SPDT	-	-	EFU230-S2
Modulating Control signal DC (0)2...10V, feedback DC 2...10V AC/DC 24V 50/60Hz	NFU24-SR	SFU24-SR	EFU24-SR
Running time -Motor -Spring return	Open/Close 75s; modulating 150s 20s @ -20 ...+50°C / max. 60s @ -30°C		Open/Close 60s; modulating 150s 20s @ -20 ...+50°C / max. 60s @ -30°C
Shaft diameter	10...25.4mm / 14...25.4mm		12...26.7mm / 12...25.2mm
Sound power level -Motor -Spring return	Open/Close max. 45dB(A) Modulating max. 40dB(A) max. 62dB(A)		Open/Close max. 55dB(A) Modulating max. 45dB(A) max. 71dB(A)
Electrical connection	Cable 1m		
Direction of rotation	Selected by mounting L/R		
Angle of rotation	Max. 95°		
Mechanical end stops	Yes		
Position indicator	Yes		
Degree of protection	IP54		
EMC	CE according to 89/336/EEC		
LVD*	CE according to 2006/95/EC		
Ambient temperature	-30...+50°C		
Non-operation temperature	-40...+80°C		
Humidity	5...95% RH, non-condensing		

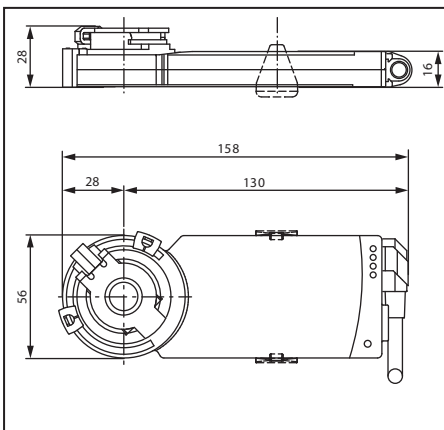
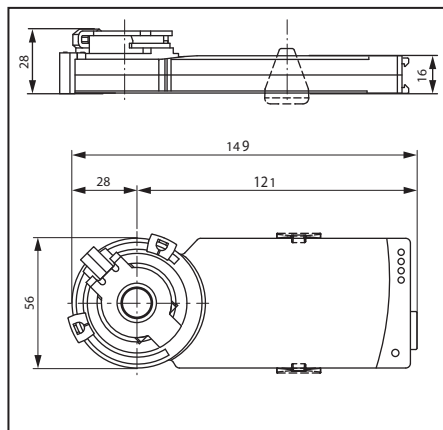
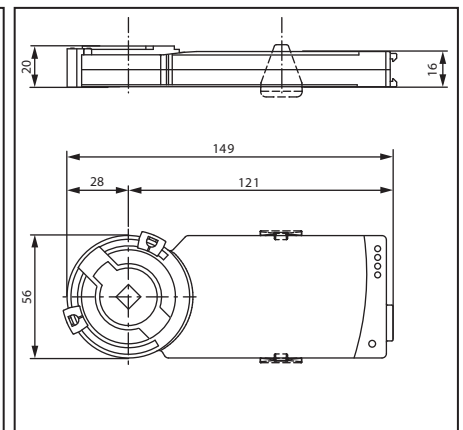
* For 230V only.

	40Nm
Electronic Fail-Safe Damper Actuator	GKU..
Open/Close AC/DC 24V 50/60Hz	GKU24
Modulating / 3-point Control signal DC (0)2...10V, feedback DC 2...10V AC/DC 24V 50/60Hz	-
Running time -Standard -Power off position	150s 35s
Shaft diameter	12...26.7mm / 12...25.2mm
Sound power level -Standard -Power off position	Max. 53dB(A) Max. 61dB(A)
Electrical connection	Cable 1m
Direction of rotation	Selected by mounting L/R
Angle of rotation	Max. 95°
Mechanical end stops	Yes
Position indicator	Yes
Degree of protection	IP54
EMC	CE according to 2004/108/EC
Ambient temperature	-30...+50°C
Non-operation temperature	-40...+80°C
Humidity	5...95% RH, non-condensing

- For operation of air control dampers in HVAC system
- Torque: 2Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close or 3-point


Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V	
	Nominal voltage range	AC/DC 19.2...28.8V	
	Power consumption	0.5W @ nominal torque / 0.2W @ holding	
	For transformer sizing	1VA	
	Connection (-T) cable	Terminals for 3x1.5mm ² CU wire or 3x1.0mm ² CU litz wires 1m, 3x0.75mm ²	
Functional data	Torque	2Nm @ nominal voltage	
	Direction of rotation	Depends on electrical installation	
	Manual override	Gear disengagement by magnet	
	Angle of rotation	no limiters with limiters	Endless Fixed 315° or 0... 287.5° with mechanical end stops, can be adjusted in 2.5° increments
	Running time	75s	
	Sound power level	Max. 35dB(A)	
	Position indicator	Mechanical, pluggable with integrated magnet for gear disengagement	
	Working conditions	Protection class	III (safety extra-low voltage)
		Degree of protection (-T) cable	IP20 IP54
		EMC	CE according to 89/336/EEC
Mode of operation		Type 1 (EN 60730-1)	
Ambient temp.		-30...+50°C	
Non-operation temp.		-40...+80°C	
Humidity		5...95% RH, non-condensing	
Maintenance		Maintenance-free	
Dimensions / weight		Dimensions (LxWxH)	See "Dimensions"
		Shaft	⌀ 6...12.7mm
	Form fit (-F8)	8x8mm	
	(-F10)	10x10mm	
	Weight	0.13...0.22kg	

Dimensions [mm]
CMU24

CMU24-T

CMU24-F8-T


- For operation of air control dampers in HVAC system
- Torque: 2Nm
- Nominal voltage: AC/DC 24V
- Control signal: DC (0)2...10V
- Position feedback: DC 2...10V

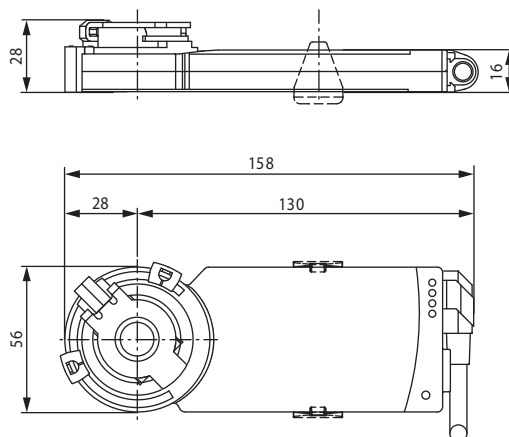


Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V
	Nominal voltage range	AC/DC 19.2...28.8V
	Power consumption	1W @ nominal torque / 0.5W @ holding
	For transformer sizing	2VA
	Connecting cable	Cable 1m, 4x0.75mm ²
Functional data	Torque	2Nm @ nominal voltage
	Control signal Y	DC(0)2...10V @ input impedance 100kΩ
	Position feedback signal U	DC 2...10V @ max. 1mA
	Position accuracy	±5%
	Direction of rotation	Y=0V at right end stop position
	Manual override	Gear disengagement by magnet
	Angle of rotation	Max. 95°, adjustable by mechanical stops
	Running time	75s
	Sound power level	Max. 35dB(A)
	Position indicator	Mechanical, pluggable with integrated magnet for gear disengagement
Working conditions	Protection class	III (safety extra-low voltage)
	Degree of protection	IP54
	EMC	CE according to 89/336/EEC
	Mode of operation	Type 1 (EN 60730-1)
	Ambient temp.	-30...+50°C
	Non-operation temp.	-40...+80°C
	Humidity	5...95% RH, non-condensing
Dimensions / weight	Maintenance	Maintenance-free
	Dimensions (LxWxH)	See "Dimensions"
	Shaft	⌀ I◇ 6...12.7mm
	Weight	0.22kg

* -R: Control signal (0)2V at right side

Dimensions [mm]



- For operation of air control dampers in HVAC system
- Torque: 2Nm
- Nominal voltage: AC 100...240V
- Control: Open/Close or 3-point



Technical data

Electrical data

Nominal voltage	AC 100...240V 50/60Hz
Nominal voltage range	AC 85...265V
Power consumption	1.5W @ nominal torque / 1W @ holding
For transformer sizing	3VA
Connecting cable	Cable 1m, 3x0.75mm ²

Functional data

Torque	2Nm @ nominal voltage
Direction of rotation	Depends on electrical installation
Manual override	Gear disengagement by magnet
Angle of rotation	no limiters: Endless with limiters: Fixed 315° or 0... 287.5° with mechanical end stops, can be adjusted in 2.5° increments
Running time	75s
Sound power level	Max. 35dB(A)
Position indicator	Mechanical, pluggable with integrated magnet for gear disengagement

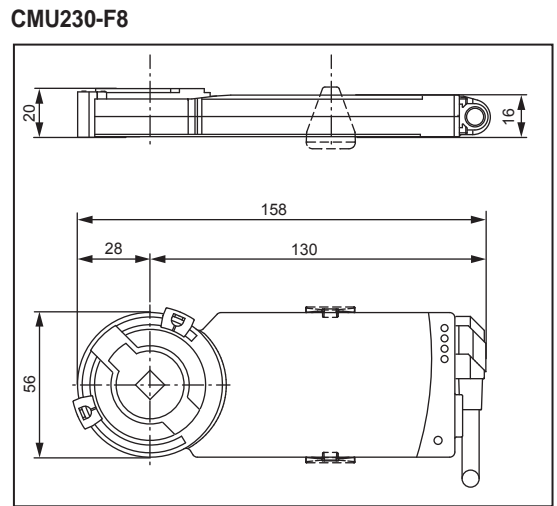
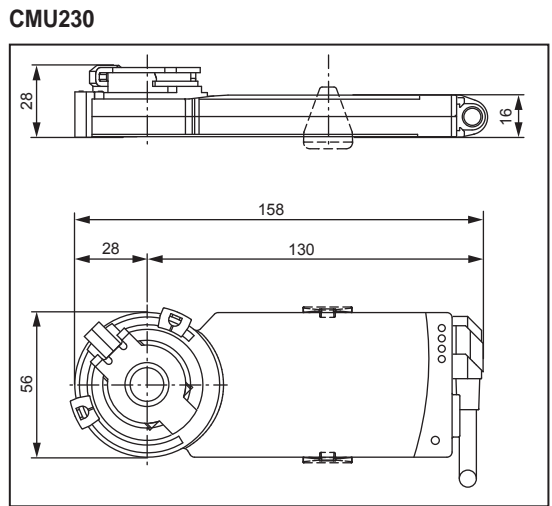
Working conditions

Protection class	II (Totally insulated)
Degree of protection	IP54
EMC	CE according to 2004/108/EC
Low voltage directive	CE according to 2006/95/EC
Mode of operation	Type 1 (EN 60730-1)
Ambient temp.	-30...+50°C
Non-operation temp.	-40...+80°C
Humidity	5...95% RH, non-condensing
Maintenance	Maintenance-free

Dimensions / weight

Dimensions (LxWxH)	See "Dimensions"
Shaft	⌀ 6...12.7mm
Form fit (-F8)	8x8mm
(-F10)	10x10mm
Weight	0.22kg

Dimensions [mm]



- For operation of air control dampers in HVAC system
- Torque: 5Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close or 3-point

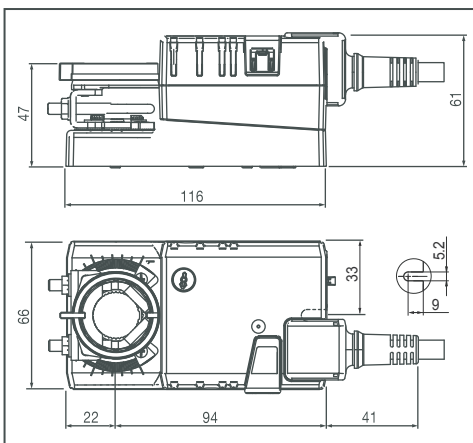


Technical data

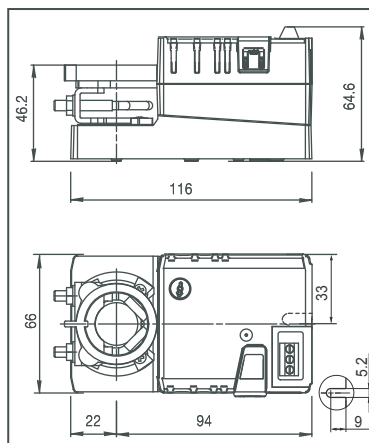
Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V	
	Nominal voltage range	AC/DC 19.2...28.8V	
	Power consumption	1W @ nominal torque / 0.2W @ holding	
	For transformer sizing	1.5VA	
	Auxiliary switch (-S)	1 SPDT, 1mA...3(0.5)A, AC 250V, adjustable	
	Connection	-motor -auxiliary switch (-S) -terminals (-T)	Cable 1m, 3x0.75mm ² Cable 1m, 3x0.75mm ² Max. 3x1.5mm ²
Functional data	Torque	5Nm @ nominal voltage	
	Direction of rotation	Selectable by switch	
	Manual override	Gearing latch disengaged by push button, self-resetting	
	Angle of rotation	Max. 95°, adjustable by mechanical stops	
	Running time	150s	
	Sound power level	Max. 35dB(A)	
	Position indicator	Mechanical, remote visible	
	Protection class	III (safety extra-low voltage)	
Working conditions	Degree of protection	LMU24(-S/-F) IP54 LMU24-T IP20	
	EMC	CE according to 89/336/EEC	
	Mode of operation	Type 1 (EN 60730-1)	
	Ambient temp.	-30...+50°C	
	Non-operation temp.	-40...+80°C	
	Humidity	5...95% RH, non-condensing	
	Maintenance	Maintenance-free	
	Dimensions / weight	Dimensions (LxWxH)	See "Dimensions"
		Shaft length	Min. 37mm
		Shaft	LMU24(-S/-T) $\varnothing 6 \dots 20\text{mm}$ LMU24-F 8x8mm
Weight		0.5kg	

Dimensions [mm]

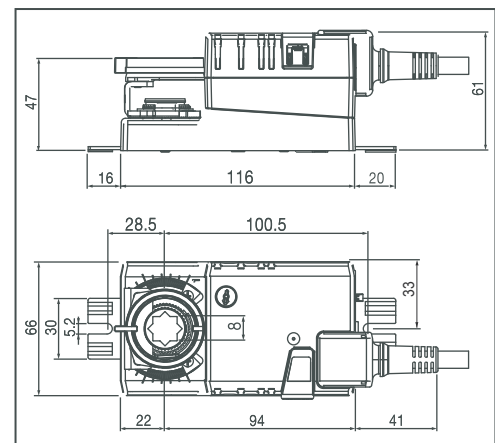
LMU24(-S)



LMU24-T



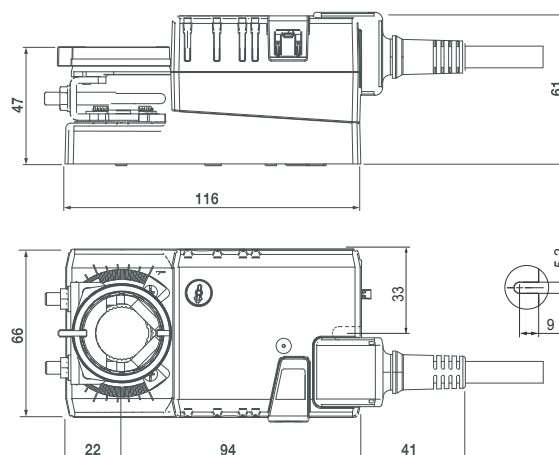
LMU24-F



- For operation of air control dampers in HVAC system
- Torque: 5Nm
- Nominal voltage: AC/DC 24V
- Control signal: DC (0)2...10V
- Position feedback: DC 2...10V


Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V
	Nominal voltage range	AC/DC 19.2...28.8V
	Power consumption	1W @ nominal torque / 0.4W @ holding
	For transformer sizing	2VA
Functional data	Connecting cable	Cable 1m, 4x0.75mm ²
	Torque	5Nm @ nominal voltage
	Control signal Y	DC (0)2...10V @ input impedance 100kΩ
	Position feedback signal U	DC 2...10V @ max. 1mA
	Position accuracy	±5%
	Direction of rotation	Selectable by switch
	Manual override	Gearing latch disengaged by push button, self-resetting
	Angle of rotation	Max. 95°, adjustable by mechanical stops
	Running time	150s
	Sound power level	Max. 35dB(A)
	Position indicator	Mechanical, remote visible
Working conditions	Protection class	III (safety extra-low voltage)
	Degree of protection	IP54
	EMC	CE according to 89/336/EEC
	Mode of operation	Type 1 (EN 60730-1)
	Ambient temp.	-30...+50°C
	Non-operation temp.	-40...+80°C
	Humidity	5...95% RH, non-condensing
Dimensions / weight	Maintenance	Maintenance-free
	Dimensions (LxWxH)	See "Dimensions"
	Shaft	⌀ 6...20mm
	Weight	0.5kg

Dimensions [mm]


- For operation of air control dampers in HVAC system
- Torque: 5Nm
- Nominal voltage: AC 100...240V
- Control: Open/Close or 3-point

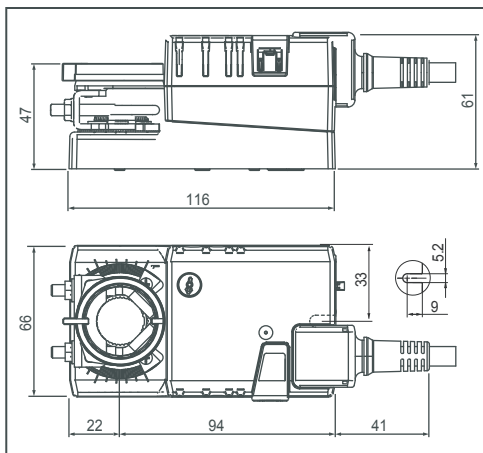


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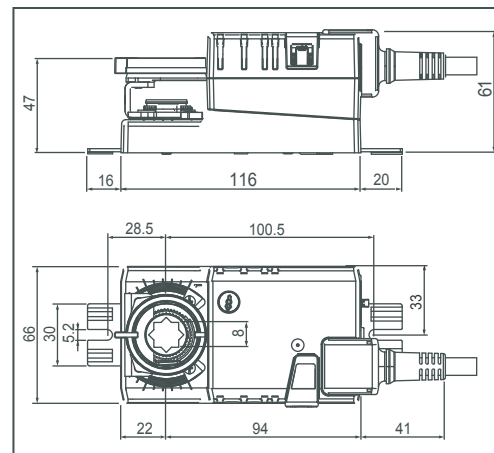
Electrical data	Nominal voltage	AC 100...240V 50/60Hz
	Nominal voltage range	AC 85...265V
	Power consumption	1.5W @ nominal torque / 0.5W @ holding
	For transformer sizing	3.5VA
	Auxiliary switch (-S)	1 SPDT, 1mA...3(0.5)A, AC 250V, adjustable
	Connection	-motor Cable 1m, 3x0.75mm ² -auxiliary switch (-S) Cable 1m, 3x0.75mm ²
Functional data	Torque	5Nm @ nominal voltage
	Direction of rotation	Selectable by switch
	Manual override	Gearing latch disengaged by push button, self-resetting
	Angle of rotation	Max. 95°, adjustable by mechanical stops
	Running time	150s
	Sound power level	Max. 35dB(A)
	Position indicator	Mechanical, remote visible
	Working conditions	Protection class
Degree of protection		IP54
EMC		CE according to 89/336/EEC
Low voltage directive		CE according to 73/23/EEC
Mode of operation		Type 1 (EN 60730-1)
Ambient temp.		-30...+50°C
Non-operation temp.		-40...+80°C
Humidity		5...95% RH, non-condensing
Maintenance		Maintenance-free
Dimensions / weight		Dimensions (LxWxH)
	Shaft length	Min. 37mm
	Shaft	LMU230(-S) $\varnothing 6 \dots 20\text{mm}$ LMU230-F 8x8mm
	Weight	0.55kg

Dimensions [mm]

LMU230(-S)



LMU230-F



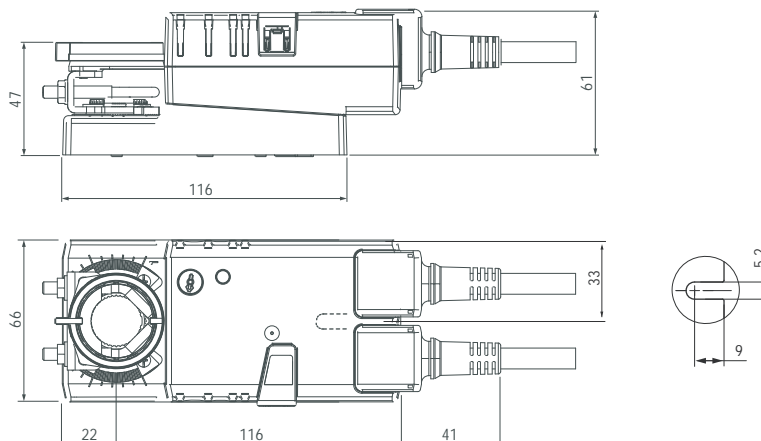
- For operation of air control dampers in HVAC system
- Torque: 5Nm
- Nominal voltage: AC 100...240V
- Control signal: DC (0)2...10V
- Position feedback: DC 2...10V



Technical data

Electrical data	Nominal voltage	AC 100...240V 50/60Hz
	Nominal voltage range	AC 85...265V
	Power consumption	2W @ nominal torque / 1W @ holding
	For transformer sizing	4VA
	Connecting cable	-power supply -signal
Functional data	Torque	5Nm @ nominal voltage
	Control signal Y	DC (0)2...10V @ input impedance 100kΩ
	Position feedback signal U	DC 2...10V @ max. 1mA
	Position accuracy	±5%
	Direction of rotation	Selectable by switch
	Manual override	Gearing latch disengaged by push button, self-resetting
	Angle of rotation	Max. 95°, adjustable by mechanical stops
	Running time	150s
	Sound power level	Max. 35dB(A)
	Position indicator	Mechanical, remote visible
	Working conditions	Protection class
Degree of protection		IP54
EMC		CE according to 89/336/EEC
Low voltage directive		CE according to 73/23/EEC
Mode of operation		Type 1 (EN 60730-1)
Ambient temp.		-30...+50°C
Non-operation temp.		-40...+80°C
Humidity		5...95% RH, non-condensing
Dimensions / weight	Maintenance	Maintenance-free
	Dimensions (LxWxH)	See "Dimensions"
	Shaft	⌀ 6...20mm
	Weight	0.7kg

Dimensions [mm]



- For operation of air control dampers in HVAC system
- Torque: 10Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close or 3-point

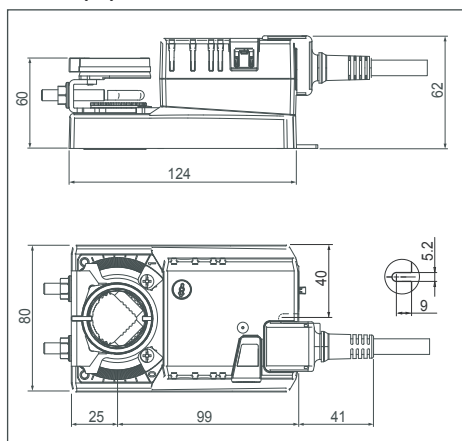


Technical data

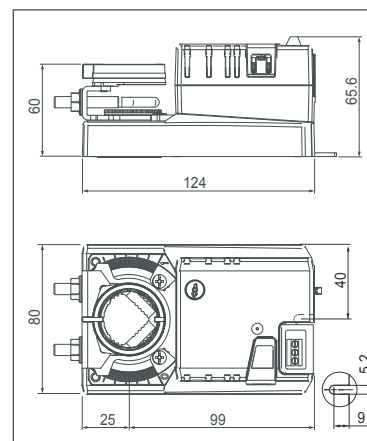
Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V	
	Nominal voltage range	AC/DC 19.2...28.8V	
	Power consumption	1.5W @ nominal torque / 0.2W @ holding	
	For transformer sizing	3.5VA	
	Auxiliary switch (-S)	1 SPDT, 1mA...3(0.5)A, AC 250V, adjustable	
	Connection	-motor Cable 1m, 3x0.75mm ² -auxiliary switch (-S) Cable 1m, 3x0.75mm ² -terminals (-T) Max. 3x1.5mm ²	
	Functional data	Torque	10Nm @ nominal voltage
Direction of rotation		Selectable by switch	
Manual override		Gearing latch disengaged by push button, self-resetting	
Angle of rotation		Max. 95°, adjustable by mechanical stops	
Running time		150s	
Sound power level		Max. 35dB(A)	
Position indicator		Mechanical, remote visible	
Working conditions	Protection class	III (safety extra-low voltage)	
	Degree of protection	NMU24(-S) IP54 NMU24-T IP20	
	EMC	CE according to 89/336/EEC	
	Mode of operation	Type 1 (EN 60730-1)	
	Ambient temp.	-30...+50°C	
	Non-operation temp.	-40...+80°C	
	Humidity	5...95% RH, non-condensing	
	Maintenance	Maintenance-free	
	Dimensions / weight	Dimensions (LxWxH)	See "Dimensions"
		Shaft length	Min. 40mm (20mm with K-NA for reverse mounting-optional)
Shaft		⌀ 8..26.7mm (8...20mm with K-NA)	
Weight		0.75kg	

Dimensions [mm]

NMU24(-S)



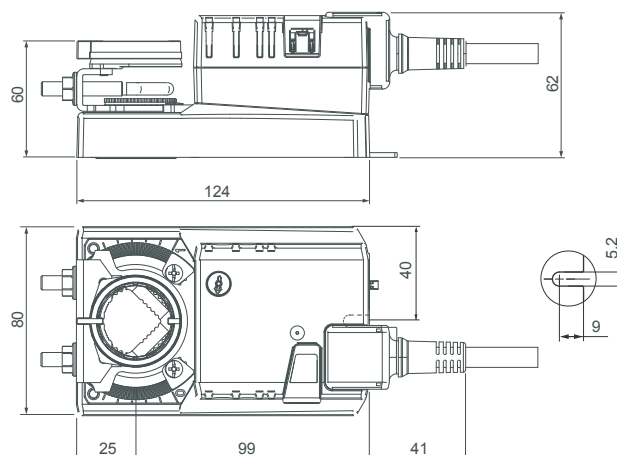
NMU24-T



- For operation of air control dampers in HVAC system
- Torque: 10Nm
- Nominal voltage: AC/DC 24V
- Control signal: DC (0)2...10V
- Position feedback: DC 2...10V


Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V
	Nominal voltage range	AC/DC 19.2...28.8V
	Power consumption	2W @ nominal torque / 0.4W @ holding
	For transformer sizing	4VA
Functional data	Connecting cable	Cable 1m, 4x0.75mm ²
	Torque	10Nm @ nominal voltage
	Control signal Y	DC (0)2...10V @ input impedance 100kΩ
	Position feedback signal U	DC 2...10V @ max. 1mA
	Position accuracy	±5%
	Direction of rotation	Selectable by switch
	Manual override	Gearing latch disengaged by push button, self-resetting
	Angle of rotation	Max. 95°, adjustable by mechanical stops
	Running time	150s
	Sound power level	Max. 35dB(A)
	Position indicator	Mechanical, remote visible
Working conditions	Protection class	III (safety extra-low voltage)
	Degree of protection	IP54
	EMC	CE according to 89/336/EEC
	Mode of operation	Type 1 (EN 60730-1)
	Ambient temp.	-30...+50°C
	Non-operation temp.	-40...+80°C
	Humidity	5...95% RH, non-condensing
Dimensions / weight	Maintenance	Maintenance-free
	Dimensions (LxWxH)	See "Dimensions"
	Shaft	⌀ 8...26.7mm (8...20mm with K-NA)
	Weight	0.8kg

Dimensions [mm]


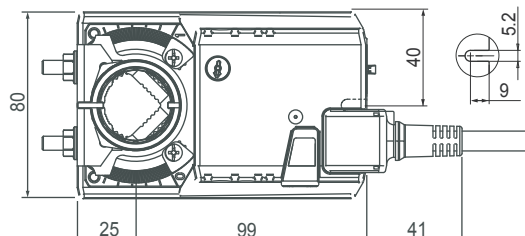
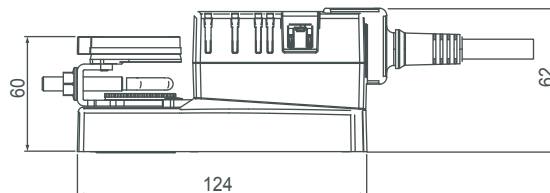
- For operation of air control dampers in HVAC system
- Torque: 10Nm
- Nominal voltage: AC 100...240V
- Control: Open/Close or 3-point



Technical data

Electrical data	Nominal voltage	AC 100...240V 50/60Hz
	Nominal voltage range	AC 85...265V
	Power consumption	2.5W @ nominal torque / 0.6W @ holding
	For transformer sizing	5.5VA
	Auxiliary switch (-S)	1 SPDT, 1mA...3(0.5)A, AC 250V, adjustable
	Connection	-motor Cable 1m, 3x0.75mm ² -auxiliary switch (-S) Cable 1m, 3x0.75mm ²
Functional data	Torque	10Nm @ nominal voltage
	Direction of rotation	Selectable by switch
	Manual override	Gearing latch disengaged by push button, self-resetting
	Angle of rotation	Max. 95°, adjustable by mechanical stops
	Running time	150s
	Sound power level	Max. 35dB(A)
	Position indicator	Mechanical, remote visible
	Working conditions	Protection class
Degree of protection		IP54
EMC		CE according to 89/336/EEC
Low voltage directive		CE according to 73/23/EEC
Mode of operation		Type 1 (EN 60730-1)
Ambient temp.		-30...+50°C
Non-operation temp.		-40...+80°C
Dimensions / weight	Humidity	5...95% RH, non-condensing
	Maintenance	Maintenance-free
	Dimensions (LxWxH)	See "Dimensions"
	Shaft length	Min. 40mm (20mm with K-NA for reverse mounting-optional)
	Shaft	⌀I◇ 8..26.7mm (8...20mm with K-NA)
	Weight	0.8kg

Dimensions [mm]



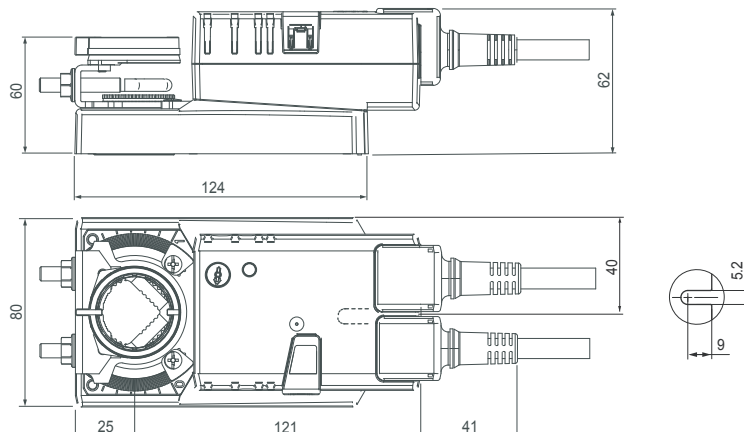
- For operation of air control dampers in HVAC system
- Torque: 10Nm
- Nominal voltage: AC 100...240V
- Control signal: DC (0)2...10V
- Position feedback: DC 2...10V



Technical data

Electrical data	Nominal voltage	AC 100...240V 50/60Hz
	Nominal voltage range	AC 85...265V
	Power consumption	3.5W @ nominal torque / 1W @ holding
	For transformer sizing	6.5VA
	Connection	-power supply -signal
Functional data	Torque	10Nm @ nominal voltage
	Control signal Y	DC (0)2...10V @ input impedance 100kΩ
	Position feedback signal U	DC 2...10V @ max. 1mA
	Position accuracy	±5%
	Direction of rotation	Selectable by switch
	Manual override	Gearing latch disengaged by push button, self-resetting
	Angle of rotation	Max. 95°, adjustable by mechanical stops
	Running time	150s
	Sound power level	Max. 35dB(A)
	Position indicator	Mechanical, remote visible
Working conditions	Protection class	II (Totally insulated)
	Degree of protection	IP54
	EMC	CE according to 89/336/EEC
	Low voltage directive	CE according to 73/23/EEC
	Mode of operation	Type 1 (EN 60730-1)
	Ambient temp.	-30...+50°C
	Non-operation temp.	-40...+80°C
	Humidity	5...95% RH, non-condensing
	Maintenance	Maintenance-free
	Dimensions / weight	Dimensions (LxWxH)
Shaft length		Min. 40mm (20mm with K-NA for reverse mounting-optional)
Shaft		⌀ I 8...26.7mm (8...20mm with K-NA)
Weight		0.95kg

Dimensions [mm]



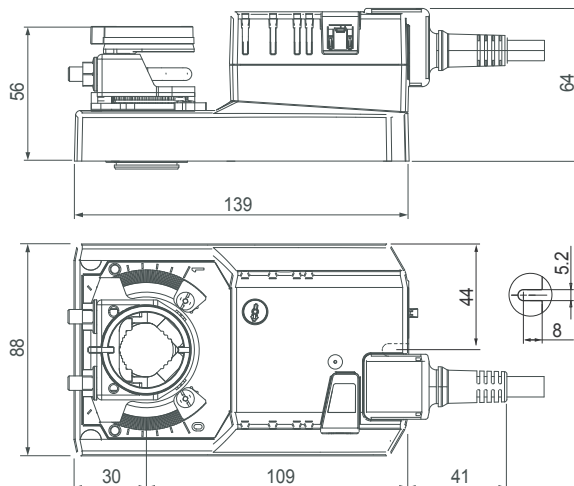
- For operation of air control dampers in HVAC system
- Torque: 20Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close or 3-point



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V	
	Nominal voltage range	AC/DC 19.2...28.8V	
	Power consumption	2W @ nominal torque / 0.2W @ holding	
	For transformer sizing	4VA	
	Auxiliary switch (-S)	1 SPDT, 1mA...3(0.5)A, AC 250V, adjustable	
	Connection -motor -auxiliary switch (-S)	Cable 1m, 3x0.75mm ² Cable 1m, 3x0.75mm ²	
Functional data	Torque	20Nm @ nominal voltage	
	Direction of rotation	Selectable by switch	
	Manual override	Gearing latch disengaged by push button, self-resetting	
	Angle of rotation	Max. 95°, adjustable by mechanical stops	
	Running time	150s	
	Sound power level	Max. 45dB(A)	
	Position indicator	Mechanical, remote visible	
	Working conditions	Protection class	III (safety extra-low voltage)
		Degree of protection	IP54
		EMC	CE according to 89/336/EEC
Mode of operation		Type 1 (EN 60730-1)	
Ambient temp. Non-operation temp.		-30...+50°C -40...+80°C	
Dimensions / weight	Humidity	5...95% RH, non-condensing	
	Maintenance	Maintenance-free	
	Dimensions (LxWxH)	See "Dimensions"	
	Shaft length	Min. 42mm (20mm for reverse mounting)	
	Shaft	⌀10..20mm (10...26.7mm with K-ENSA - optional)	
	Weight	1.05kg	

Dimensions [mm]



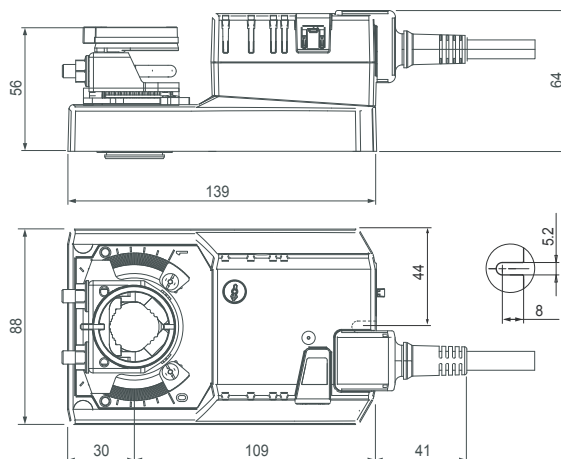
- For operation of air control dampers in HVAC system
- Torque: 20Nm
- Nominal voltage: AC/DC 24V
- Control signal: DC (0)2...10V
- Position feedback: DC 2...10V



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V
	Nominal voltage range	AC/DC 19.2...28.8V
	Power consumption	2W @ nominal torque / 0.4W @ holding
	For transformer sizing	4VA
Functional data	Connecting cable	Cable 1m, 4x0.75mm ²
	Torque	20Nm @ nominal voltage
	Control signal Y	DC (0)2...10V @ input impedance 100kΩ
	Position feedback signal U	DC 2...10V @ max. 1mA
	Position accuracy	±5%
	Direction of rotation	Selectable by switch
	Manual override	Gearing latch disengaged by push button, self-resetting
	Angle of rotation	Max. 95°, adjustable by mechanical stops
	Running time	150s
	Sound power level	Max. 45dB(A)
Working conditions	Position indicator	Mechanical, remote visible
	Protection class	III (safety extra-low voltage)
	Degree of protection	IP54
	EMC	CE according to 89/336/EEC
	Mode of operation	Type 1 (EN 60730-1)
	Ambient temp.	-30...+50°C
	Non-operation temp.	-40...+80°C
Dimensions / weight	Humidity	5...95% RH, non-condensing
	Maintenance	Maintenance-free
	Dimensions (LxWxH)	See "Dimensions"
	Shaft length	Min. 42mm (20mm for reverse mounting)
	Shaft	⌀I◇ 10..20mm (10...26.7mm with K-ENSA - optional)
	Weight	1.05kg

Dimensions [mm]



- For operation of air control dampers in HVAC system
- Torque: 20Nm
- Nominal voltage: AC 100...240V
- Control: Open/Close or 3-point

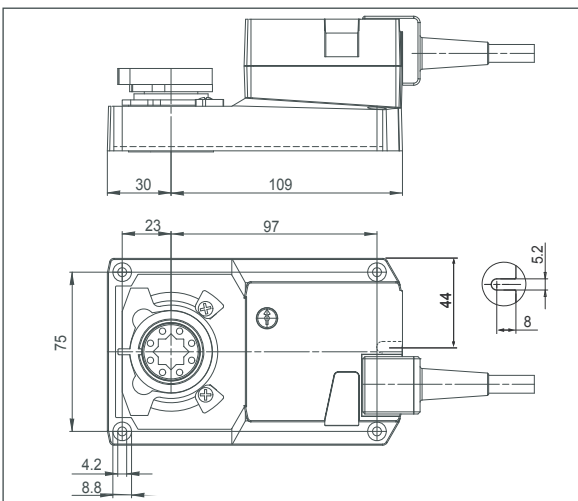


Technical data

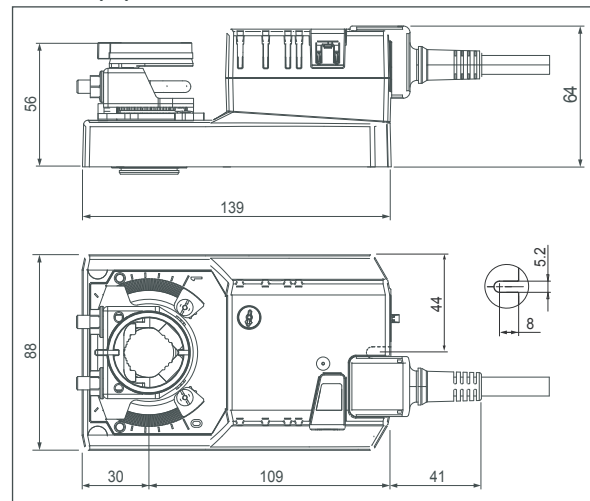
Electrical data	Nominal voltage	AC 100...240V 50/60Hz
	Nominal voltage range	AC 85...265V
	Power consumption	2.5W @ nominal torque / 0.6W @ holding
	For transformer sizing	6VA
	Auxiliary switch (-S)	1 SPDT, 1mA...3(0.5)A, AC 250V, adjustable
	Connection	-motor Cable 1m, 3x0.75mm ² -auxiliary switch (-S) Cable 1m, 3x0.75mm ²
Functional data	Torque	20Nm @ nominal voltage
	Direction of rotation	Selectable by switch
	Manual override	Gearing latch disengaged by push button, self-resetting
	Angle of rotation	Max. 95°, adjustable by mechanical stops
	Running time	150s
	Sound power level	Max. 45dB(A)
	Position indicator	Mechanical, remote visible
	Working conditions	Protection class
Degree of protection		IP54
EMC		CE according to 89/336/EEC
Low voltage directive		CE according to 73/23/EEC
Mode of operation		Type 1 (EN 60730-1)
Ambient temp.		-30...+50°C
Non-operation temp.		-40...+80°C
Humidity		5...95% RH, non-condensing
Maintenance		Maintenance-free
Dimensions / weight		Dimensions (LxWxH)
	Shaft length	Min. 42mm (20mm for reverse mounting)
	Shaft	SMU230(-S) $\odot \text{I} \diamond$ 10..20mm (10...26.7mm with K-ENSA-optional) SMU230-F 12x12mm
	Weight	1.05kg

Dimensions [mm]

SMU230-F



SMU230(-S)



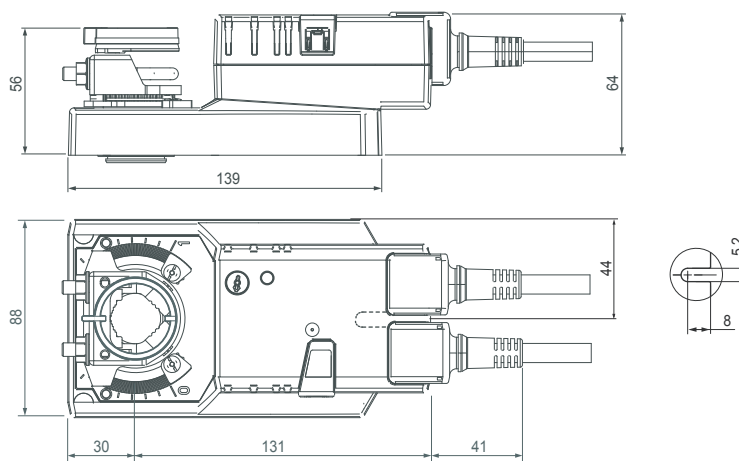
- For operation of air control dampers in HVAC system
- Torque: 20Nm
- Nominal voltage: AC 100...240V
- Control signal: DC (0)2...10V
- Position feedback: DC 2...10V



Technical data

Electrical data	Nominal voltage	AC 100...240V 50/60Hz
	Nominal voltage range	AC 85...265V
	Power consumption	3.5W @ nominal torque / 1W @ holding
	For transformer sizing	6.5VA
Functional data	Connection -power supply	Cable 1m, 2x0.75mm ²
	-signal	Cable 1m, 4x0.75mm ²
	Torque	20Nm @ nominal voltage
	Control signal Y	DC (0)2...10V @ input impedance 100kΩ
	Position feedback signal U	DC 2...10V @ max. 1mA
	Position accuracy	±5%
	Direction of rotation	Selectable by switch
	Manual override	Gearing latch disengaged by push button, self-resetting
	Angle of rotation	Max. 95°, adjustable by mechanical stops
	Running time	150s
	Sound power level	Max. 45dB(A)
	Position indicator	Mechanical, remote visible
Working conditions	Protection class	II (Totally insulated)
	Degree of protection	IP54
	EMC	CE according to 89/336/EEC
	Low voltage directive	CE according to 73/23/EEC
	Mode of operation	Type 1 (EN 60730-1)
	Ambient temp.	-30...+50°C
	Non-operation temp.	-40...+80°C
	Humidity	5...95% RH, non-condensing
	Maintenance	Maintenance-free
	Dimensions / weight	Dimensions (LxWxH)
Shaft length		Min. 42mm (20mm for reverse mounting)
Shaft		⌀ I 10..20mm (10...26.7mm with K-ENSA-optional)
Weight		1.2kg

Dimensions [mm]



- For operation of air control dampers in HVAC system
- Torque: 40Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close



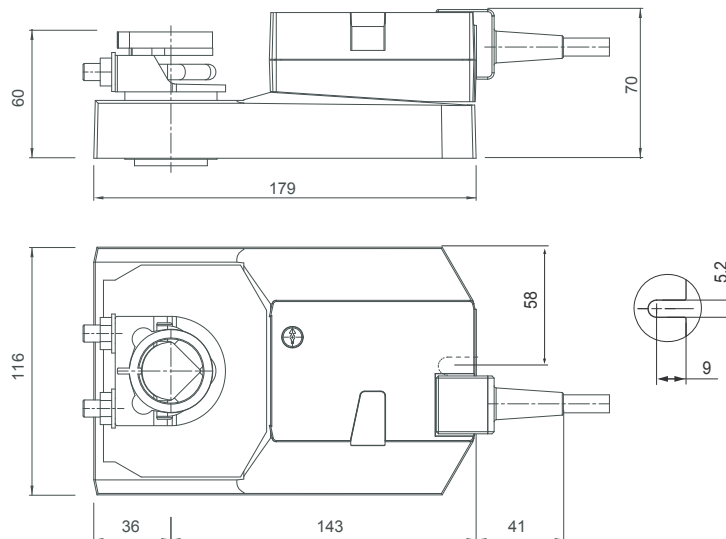
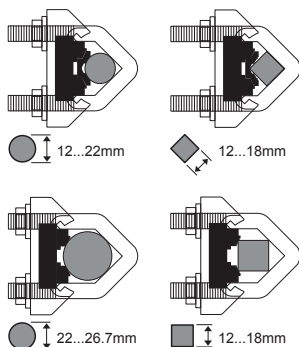
Technical data

Electrical data	
Nominal voltage	AC 24V 50/60Hz, DC 24V
Nominal voltage range	AC/DC 19.2...28.8V
Power consumption	4W @ nominal torque / 2W @ holding
For transformer sizing	6VA
Connecting cable	Cable 1m, 3x0.75mm ²
Functional data	
Torque	40Nm @ nominal voltage
Direction of rotation	Selectable by switch
Manual override	Gearing latch disengaged by push button, self-resetting
Angle of rotation	Max. 95°, adjustable by mechanical stops
Running time	150s
Sound power level	Max. 45dB(A)
Position indicator	Mechanical, remote visible
Working conditions	
Protection class	III (safety extra-low voltage)
Degree of protection	IP54
EMC	CE according to 89/336/EEC
Mode of operation	Type 1 (EN 60730-1)
Ambient temp.	-30...+50°C
Non-operation temp.	-40...+80°C
Humidity	5...95% RH, non-condensing
Maintenance	Maintenance-free
Dimensions / weight	
Dimensions (LxWxH)	See "Dimensions"
Shaft length	Min. 52mm (20mm for reverse mounting)
Shaft	⌀ 12...26.7mm / 12...25.2mm
Weight	1.7kg

Dimensions [mm]

Standard :

Damper spindle	Length	⌀	□	◇
	>52	12...26.7	>12	<25.2
	>20	12...26.7	>12	<25.2



- For operation of air control dampers in HVAC system
- Torque: 40Nm
- Nominal voltage: AC/DC 24V
- Control signal: DC (0)2...10V
- Position feedback: DC 2...10V



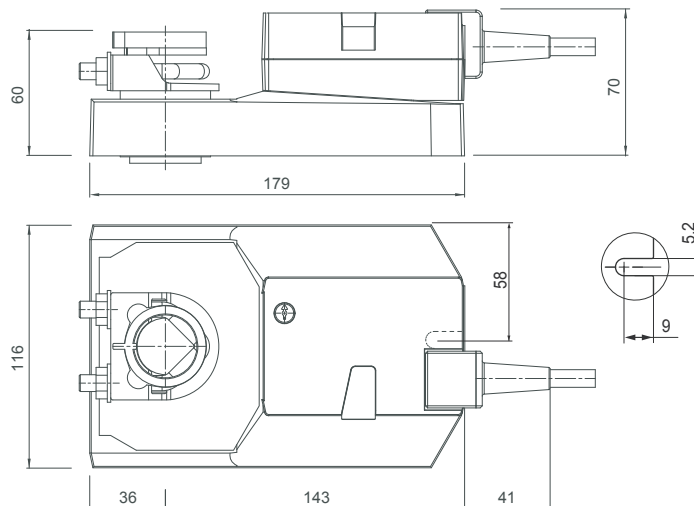
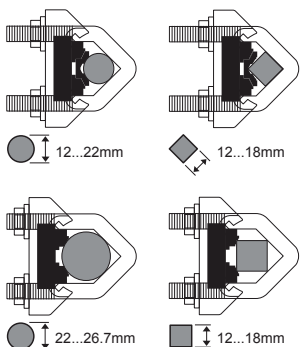
Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V
	Nominal voltage range	AC/DC 19.2...28.8V
	Power consumption	4.5W @ nominal torque / 2W @ holding
	For transformer sizing	6.5VA
Functional data	Connecting cable	Cable 1m, 4x0.75mm ²
	Torque	40Nm @ nominal voltage
	Control signal Y	DC (0)2...10V @ input impedance 100kΩ
	Position feedback signal U	DC 2...10V @ max. 1mA
	Position accuracy	±5%
	Direction of rotation	Selectable by switch
	Manual override	Gearing latch disengaged by push button, self-resetting
	Angle of rotation	Max. 95°, adjustable by mechanical stops
	Running time	150s
	Sound power level	Max. 45dB(A)
Working conditions	Position indicator	Mechanical, remote visible
	Protection class	III (safety extra-low voltage)
	Degree of protection	IP54
	EMC	CE according to 89/336/EEC
	Mode of operation	Type 1 (EN 60730-1)
	Ambient temp.	-30...+50°C
	Non-operation temp.	-40...+80°C
	Humidity	5...95% RH, non-condensing
	Maintenance	Maintenance-free
	Dimensions / weight	Dimensions (LxWxH)
Shaft length		Min. 52mm (20mm for reverse mounting)
Shaft		⌀ 12...26.7mm / 12...25.2mm
Weight		1.7kg

Dimensions [mm]

Standard :

Damper spindle	Length	⌀ I	II	III
	>52	12...26.7	>12	<25.2
	>20	12...26.7	>12	<25.2



- For operation of air control dampers in HVAC system
- Torque: 40Nm
- Nominal voltage: AC 100...240V
- Control: Open/Close



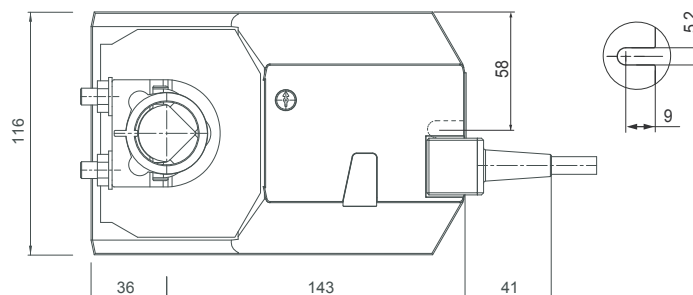
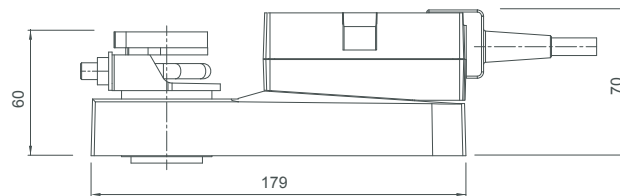
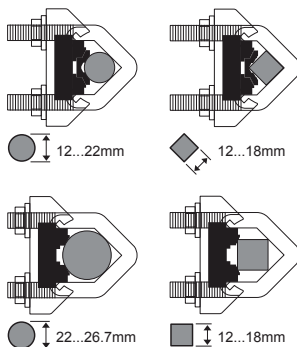
Technical data

Electrical data	
Nominal voltage	AC 100...240V 50/60Hz
Nominal voltage range	AC 85...265V
Power consumption	5W @ nominal torque / 2W @ holding
For transformer sizing	9VA
Connecting cable	Cable 1m, 3x0.75mm ²
Functional data	
Torque	40Nm @ nominal voltage
Direction of rotation	Selectable by switch
Manual override	Gearing latch disengaged by push button, self-resetting
Angle of rotation	Max. 95°, adjustable by mechanical stops
Running time	150s
Sound power level	Max. 45dB(A)
Position indicator	Mechanical, remote visible
Working conditions	
Protection class	II (Totally insulated)
Degree of protection	IP54
EMC	CE according to 89/336/EEC
Low voltage directive	CE according to 73/23/EEC
Mode of operation	Type 1 (EN 60730-1)
Ambient temp.	-30...+50°C
Non-operation temp.	-40...+80°C
Humidity	5...95% RH, non-condensing
Maintenance	Maintenance-free
Dimensions / weight	
Dimensions (LxWxH)	See "Dimensions"
Shaft length	Min. 52mm (20mm for reverse mounting)
Shaft	⊙ I ⬠ 12...26.7mm / 12...25.2mm
Weight	1.7kg

Dimensions [mm]

Standard :

Damper spindle	Length	⊙ I	⬠ I	⬠ I
	>52	12...26.7	>12	<25.2
	>20	12...26.7	>12	<25.2



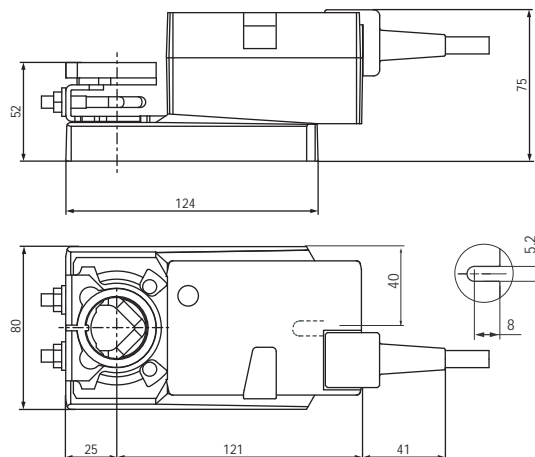
- For operation of air control dampers in HVAC system
- Torque: 4Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close (not made for 3-point applications)



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V	
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V	
	Power consumption	13W @ nominal torque / 1.5W @ holding	
	For transformer sizing	23VA (Imax. 20A @ 5ms)	
	Connecting cable	Cable 1m, 3x0.75mm ²	
Functional data	Torque	4Nm @ nominal voltage	
	Direction of rotation	Reversible with switch 0 ↺ or 1 ↻	
	Manual override	Gearing latch disengaged by push button, self-resetting	
	Angle of rotation	Max. 95°, adjustable by mechanical stops	
	Running time	2.5s	
	Automatic adjustment of operating range to match the mechanical angle of rotation	Manual triggering of the adaption by pressing the «Adaption» button	
	Sound power level	Max. 52dB(A)	
	Position indicator	Mechanical, remote visible	
	Negative torque	⚠ ≤ 50% from nominal torque (with restrictions)	
	Working conditions	Protection class	III (safety extra-low voltage)
Degree of protection		IP54	
EMC		CE according to 2004/108/EC	
Mode of operation		Type 1 (EN 60730-1)	
Ambient temp.		-30...+40°C (without restrictions) ⚠ +40...+50°C (with restrictions)	
Non-operation temp.		-40...+80°C	
Humidity		5...95% RH, non-condensing	
Maintenance		Maintenance-free	
Dimensions / weight		Dimensions (LxWxH)	See "Dimensions"
		Weight	0.85kg

Dimensions [mm]



Damper spindle	Length	● I	■ I	◆ I
	≥40	8...26.7	≥8	≤26.7
	≥20	8...20	≥8	≤20

* Option (accessory K-NA)

- For operation of air control dampers in HVAC system
- Torque: 4Nm
- Nominal voltage: AC/DC 24V
- Control signal: DC (0)2...10V
- Position feedback: DC 2...10V



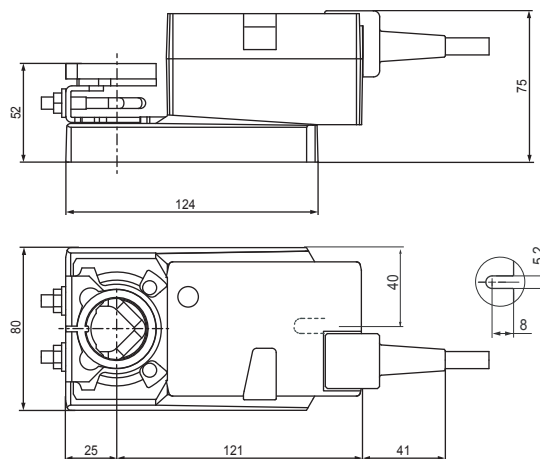
Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V	
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V	
	Power consumption	13W @ nominal torque / 1.5W @ holding	
	For transformer sizing	23VA (Imax. 20A @ 5ms)	
	Connecting cable	Cable 1m, 4x0.75mm ²	
	Functional data	Torque	4Nm @ nominal voltage
		Control signal Y	DC (0)2...10V @ input impedance 100kΩ
		Position feedback signal U	DC 2...10V @ max. 0.5mA
		Position accuracy	±5%
		Direction of rotation	Reversible with switch 0 or 1
Direction of motion at Y=0V		At switch position 0 ↺ resp. 1 ↻	
Manual override		Gearing latch disengaged by push button, self-resetting	
Angle of rotation		Max. 95°, adjustable by mechanical stops	
Running time		2.5s	
Automatic adjustment of operating range and measuring signal U to match the mechanical angle of rotation		Manual triggering of the adaption by pressing the «Adaption» button	
Working conditions	Sound power level	Max. 52dB(A)	
	Position indicator	Mechanical, remote visible	
	Negative torque	⚠ ≤ 50% from nominal torque (with restrictions)	
	Protection class	III (safety extra-low voltage)	
	Degree of protection	IP54	
	EMC	CE according to 2004/108/EC	
	Mode of operation	Type 1 (EN 60730-1)	
	Ambient temp.	-30...+40°C (without restrictions) ⚠ +40...+50°C (with restrictions)	
	Non-operation temp.	-40...+80°C	
	Humidity	5...95% RH, non-condensing	
Dimensions / weight	Maintenance	Maintenance-free	
	Dimensions (LxWxH)	See "Dimensions"	
	Weight	0.85kg	

Dimensions [mm]

Damper spindle	Length	● I	■ I	◆ I
	≥40	8...26.7	≥8	≤26.7
*	≥20	8...20	≥8	≤20

* Option (accessory K-NA)



- For operation of air control dampers in HVAC system
- Torque: 8Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close (not made for 3-point applications)



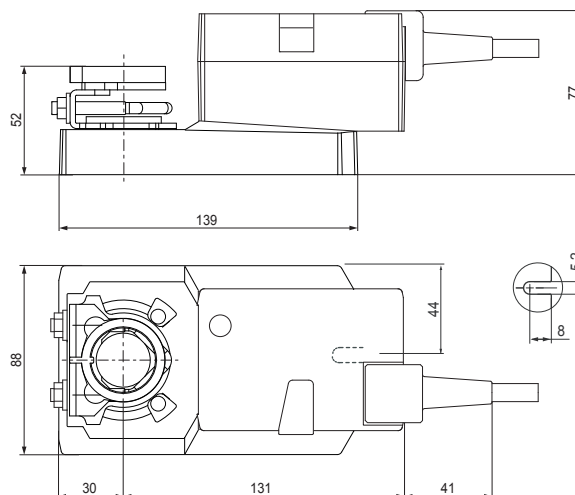
Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V	
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V	
	Power consumption	13W @ nominal torque / 1.5W @ holding	
	For transformer sizing	23VA (Imax. 20A @ 5ms)	
	Connecting cable	Cable 1m, 3x0.75mm ²	
Functional data	Torque	8Nm @ nominal voltage	
	Direction of rotation	Reversible with switch 0 ↺ or 1 ↻	
	Manual override	Gearing latch disengaged by push button, self-resetting	
	Angle of rotation	Max. 95°, adjustable by mechanical stops	
	Running time	4s	
	Automatic adjustment of operating range to match the mechanical angle of rotation	Manual triggering of the adaption by pressing the «Adaption» button	
	Sound power level	Max. 52dB(A)	
	Position indicator	Mechanical, remote visible	
	Negative torque	⚠ ≤ 50% from nominal torque (with restrictions)	
	Protection class	III (safety extra-low voltage)	
Working conditions	Degree of protection	IP54	
	EMC	CE according to 2004/108/EC	
	Mode of operation	Type 1 (EN 60730-1)	
	Ambient temp.	-30...+40°C (without restrictions) ⚠ +40...+50°C (with restrictions)	
	Non-operation temp.	-40...+80°C	
	Humidity	5...95% RH, non-condensing	
	Maintenance	Maintenance-free	
	Dimensions / weight	Dimensions (LxWxH)	See "Dimensions"
	Weight	0.97kg	

Dimensions [mm]

Damper spindle	Length	● I	■ I	◆ I
	≥42	8...26.7	≥8	≤26.7
*	≥20	8...20	≥8	≤20

* Option (accessory K-SA)



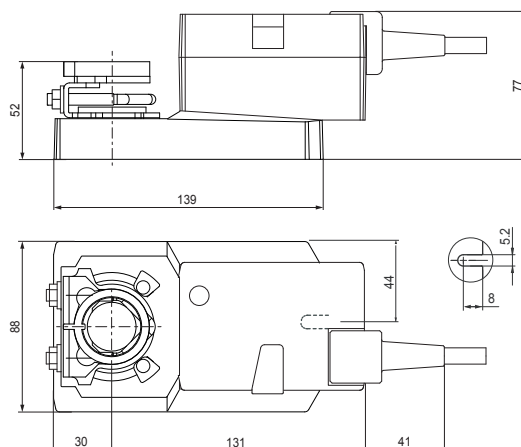
- For operation of air control dampers in HVAC system
- Torque: 8Nm
- Nominal voltage: AC/DC 24V
- Control signal: DC (0)2...10V
- Position feedback: DC 2...10V



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V	
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V	
	Power consumption	13W @ nominal torque / 1.5W @ holding	
	For transformer sizing	23VA (Imax. 20A @ 5ms)	
	Connecting cable	Cable 1m, 4x0.75mm ²	
	Functional data	Torque	8Nm @ nominal voltage
		Control signal Y	DC (0)2...10V @ input impedance 100kΩ
		Position feedback signal U	DC 2...10V @ max. 0.5mA
		Position accuracy	±5%
		Direction of rotation	Reversible with switch 0 or 1
Direction of motion at Y=0V		At switch position 0 ↺ resp. 1 ↻	
Manual override		Gearing latch disengaged by push button, self-resetting	
Angle of rotation		Max. 95°, adjustable by mechanical stops	
Running time		4s	
Automatic adjustment of operating range and measuring signal U to match the mechanical angle of rotation		Manual triggering of the adaption by pressing the «Adaption» button	
Working conditions	Sound power level	Max. 52dB(A)	
	Position indicator	Mechanical, remote visible	
	Negative torque	⚠ ≤ 50% from nominal torque (with restrictions)	
	Protection class	III (safety extra-low voltage)	
	Degree of protection	IP54	
	EMC	CE according to 2004/108/EC	
	Mode of operation	Type 1 (EN 60730-1)	
	Ambient temp.	-30...+40°C (without restrictions) ⚠ +40...+50°C (with restrictions)	
	Non-operation temp.	-40...+80°C	
	Humidity	5...95% RH, non-condensing	
Dimensions / weight	Maintenance	Maintenance-free	
	Dimensions (LxWxH)	See "Dimensions"	
	Weight	0.95kg	

Dimensions [mm]



Damper spindle	Length	● I	■ I	◆ I
	≥42	8...26.7	≥8	≤26.7
	≥20	8...20	≥8	≤20

* Option (accessory K-SA)

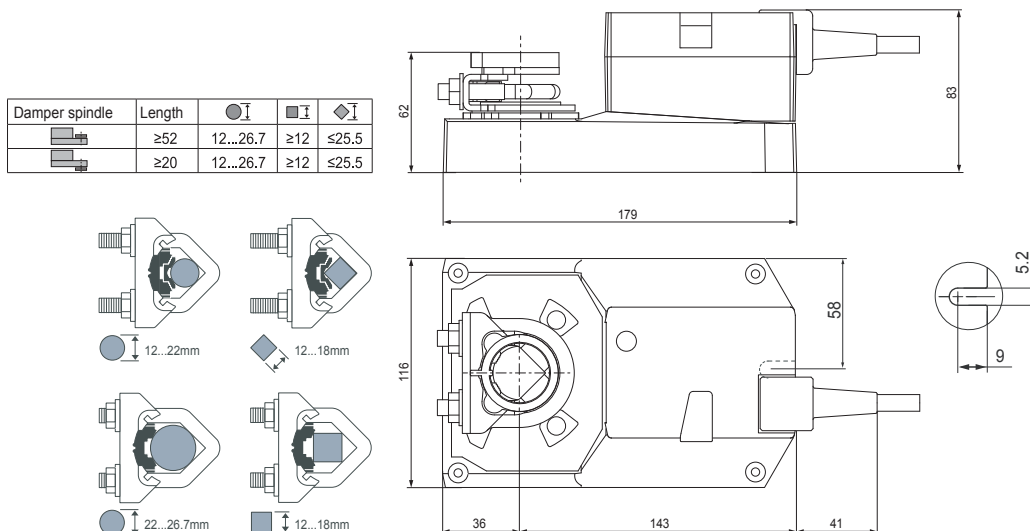
- For operation of air control dampers in HVAC system
- Torque: 16Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close (not made for 3-point applications)



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V	
	Nominal voltage range	AC/DC 21.6...26.4V	
	Power consumption	15W @ nominal torque / 1.5W @ holding	
	For transformer sizing	26VA (Imax. 20A @ 5ms)	
	Connecting cable	Cable 1m, 3x0.75mm ²	
Functional data	Torque	16Nm @ nominal voltage	
	Direction of rotation	Reversible with switch 0 ↺ or 1 ↻	
	Manual override	Gearing latch disengaged by push button, self-resetting	
	Angle of rotation	Max. 95°, adjustable by mechanical stops	
	Running time	7s	
	Automatic adjustment of operating range to match the mechanical angle of rotation	Manual triggering of the adaption by pressing the «Adaption» button	
	Sound power level	Max. 52dB(A)	
	Position indicator	Mechanical, remote visible	
	Negative torque	⚠ ≤ 50% from nominal torque (with restrictions)	
	Working conditions	Protection class	III (safety extra-low voltage)
Degree of protection		IP54	
EMC		CE according to 2004/108/EC	
Mode of operation		Type 1 (EN 60730-1)	
Ambient temp.		-30...+40°C (without restrictions) ⚠ +40...+50°C (with restrictions)	
Non-operation temp.		-40...+80°C	
Humidity		5...95% RH, non-condensing	
Maintenance		Maintenance-free	
Dimensions / weight		Dimensions (LxWxH)	See "Dimensions"
		Weight	1.7kg

Dimensions [mm]



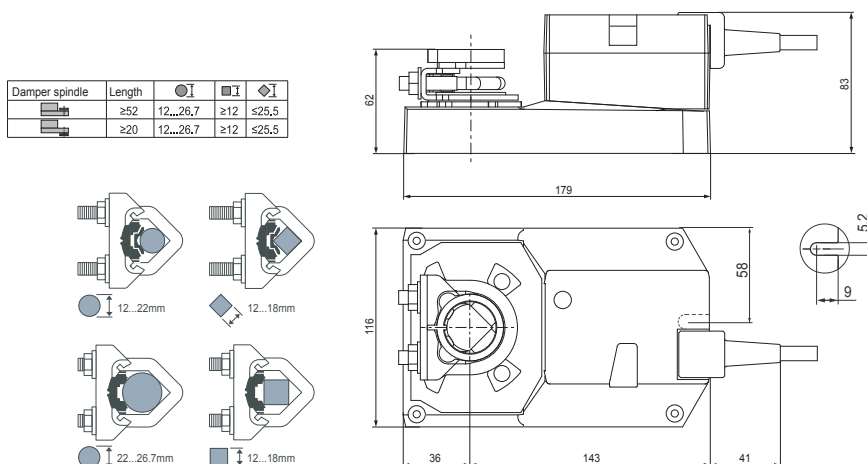
- For operation of air control dampers in HVAC system
- Torque: 16Nm
- Nominal voltage: AC/DC 24V
- Control signal: DC (0)2...10V
- Position feedback: DC 2...10V



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V
	Nominal voltage range	AC/DC 21.6...26.4V
	Power consumption	15W @ nominal torque / 1.5W @ holding
	For transformer sizing	26VA (Imax. 20A @ 5ms)
	Connecting cable	Cable 1m, 4x0.75mm ²
Functional data	Torque	16Nm @ nominal voltage
	Control signal Y	DC (0)2...10V @ input impedance 100kΩ
	Position feedback signal U	DC 2...10V @ max. 0.5mA
	Position accuracy	±5%
	Direction of rotation	Reversible with switch 0 or 1
	Direction of motion at Y=0V	At switch position 0 ↺ resp. 1 ↻
	Manual override	Gearing latch disengaged by push button, self-resetting
	Angle of rotation	Max. 95°, adjustable by mechanical stops
	Running time	7s
	Automatic adjustment of operating range and measuring signal U to match the mechanical angle of rotation	Manual triggering of the adaption by pressing the «Adaption» button
Working conditions	Sound power level	Max. 52dB(A)
	Position indicator	Mechanical, remote visible
	Negative torque	⚠ ≤ 50% from nominal torque (with restrictions)
	Protection class	III (safety extra-low voltage)
	Degree of protection	IP54
	EMC	CE according to 2004/108/EC
	Mode of operation	Type 1 (EN 60730-1)
	Ambient temp.	-30...+40°C (without restrictions) ⚠ +40...+50°C (with restrictions)
	Non-operation temp.	-40...+80°C
	Humidity	5...95% RH, non-condensing
Dimensions / weight	Maintenance	Maintenance-free
	Dimensions (LxWxH)	See "Dimensions"
	Weight	1.7kg

Dimensions [mm]



- For operation of air control dampers in HVAC system
- Torque: 16Nm
- Running time 20s
- Nominal voltage: AC 100...240V
- Control: Open/Close or 3-point



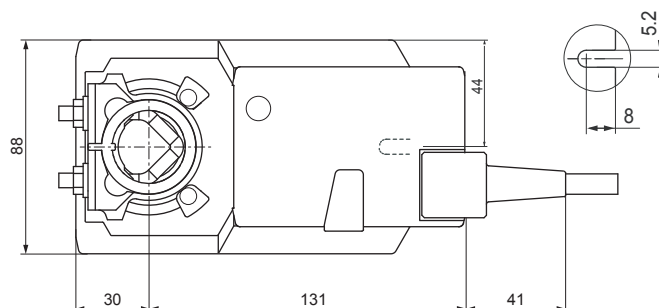
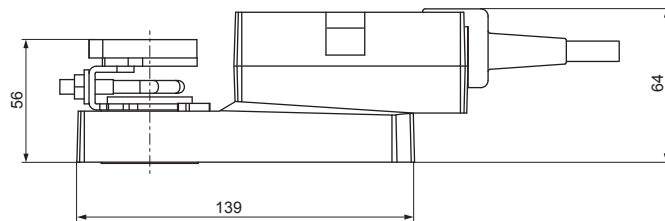
Technical data

Electrical data	Nominal voltage	AC 100...240V 50/60Hz
	Nominal voltage range	AC 85...265V
	Power consumption	4.5W @ nominal torque / 1W @ holding
	For transformer sizing	8VA
	Connecting cable	Cable 1m, 3x0.75mm ²
Functional data	Torque	16Nm @ nominal voltage
	Direction of rotation	Reversible with switch 0 ↺ resp. 1 ↻
	Manual override	Gearing disengaged by pressing the push button, can be locked
	Angle of rotation	Max. 95°, can be limited with adjustable mechanical end stops
	Running time	20s
	Sound power level	Max. 55dB(A)
	Position indicator	Mechanical, remote visible
	Protection class	II (Totally insulated)
Working conditions	Degree of protection	IP54
	EMC	CE according to 2004/108/EC
	Low voltage directive	CE according to 2006/95/EC
	Mode of operation	Type 1 (EN60730-1)
	Rated impulse voltage	4kV
	Control pollution degree	3
	Ambient temp.	-30...+50°C
	Non-operation temp.	-40...+80°C
	Humidity	5...95% RH, non-condensing
	Maintenance	Maintenance-free
Dimensions / weight	Dimensions (LxWxH)	See "Dimensions"
	Weight	1kg

Dimensions [mm]

Damper spindle	Length	● I	■ I	◆ I
	≥48	10 ... 20 ¹⁾	≥10	≤20
	≥20	10 ... 20 ¹⁾	≥10	≤20

¹⁾ CrNi (INOX) 12 ... 20



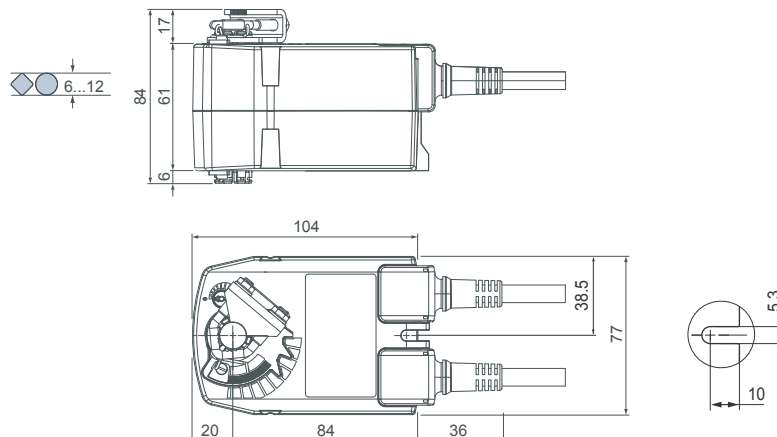
- For operation of air control dampers that perform safety function
- Torque: 2.5Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close
- Integrated auxiliary switch (TF24-S)



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption	2.5W @ nominal torque / 1.5W @ holding
	For transformer sizing	5VA
	Auxiliary switch (-S)	1 SPDT, 1mA...3(0.5)A, AC 250V, adjustable
	Connecting cable -motor -auxiliary switch (-S)	Cable 1m, 2x0.75mm ² Cable 1m, 3x0.75mm ²
Functional data	Torque	2.5Nm @ nominal voltage
	Direction of rotation	Selectable by mounting L/R
	Angle of rotation	Max. 95°, 37...100% adjustable by mechanical stops
	Running time -motor -spring return	75s 25s @ -20...+50°C / max. 60s @ -30°C
	Sound power level -motor -spring return	Max. 50dB(A) Max. 62dB(A)
	Position indicator	Mechanical
Working conditions	Protection class	III (safety extra-low voltage)
	Degree of protection	IP42
	EMC	CE according to 89/336/EEC
	Mode of operation	Type 1.AA (EN 60730-1)
	Ambient temp. Non-operation temp.	-30...+50°C -40...+80°C
	Humidity	5...95% RH, non-condensing
Dimensions / weight	Maintenance	Maintenance-free
	Dimensions (LxWxH)	See "Dimensions"
	Shaft length Clamp up Clamp down	Min. 84mm Min. 20mm
	Shaft	⌀ 6...12mm
	Weight	0.6kg

Dimensions [mm]



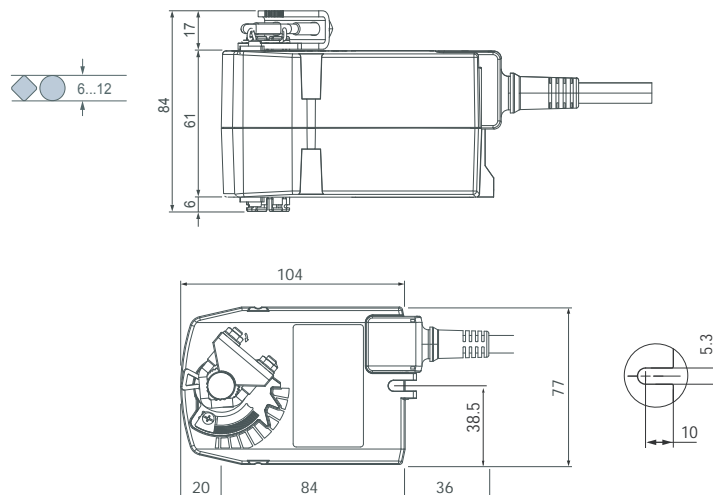
- For operation of air control dampers that perform safety function
- Torque: 2.5Nm
- Nominal voltage: AC 24V
- Control: 3-point



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz
	Nominal voltage range	AC 19.2...28.8V
	Power consumption	2.5W @ nominal torque / 1W @ holding
	For transformer sizing	4VA
	Connecting cable	Cable 1m, 4x0.75mm ²
Functional data	Torque	2.5Nm @ nominal voltage
	Direction of rotation	Selectable by mounting L/R
	Angle of rotation	Max. 95°, 37...100% adjustable by mechanical stops
	Running time	-motor 150s -spring return 25s @ -20...+50°C / max. 60s @ -30°C
	Sound power level	-motor Max. 35dB(A) -spring return Max. 62dB(A)
Working conditions	Position indicator	Mechanical
	Protection class	III (safety extra-low voltage)
	Degree of protection	IP42
	EMC	CE according to 89/336/EEC
	Mode of operation	Type 1.AA (EN 60730-1)
	Ambient temp.	-30...+50°C
	Non-operation temp.	-40...+80°C
	Humidity	5...95% RH, non-condensing
	Maintenance	Maintenance-free
	Dimensions / weight	Dimensions (LxWxH)
Shaft length	Clamp up	Min. 84mm
	Clamp down	Min. 20mm
Shaft		⌀ 6...12mm
Weight		0.6kg

Dimensions [mm]



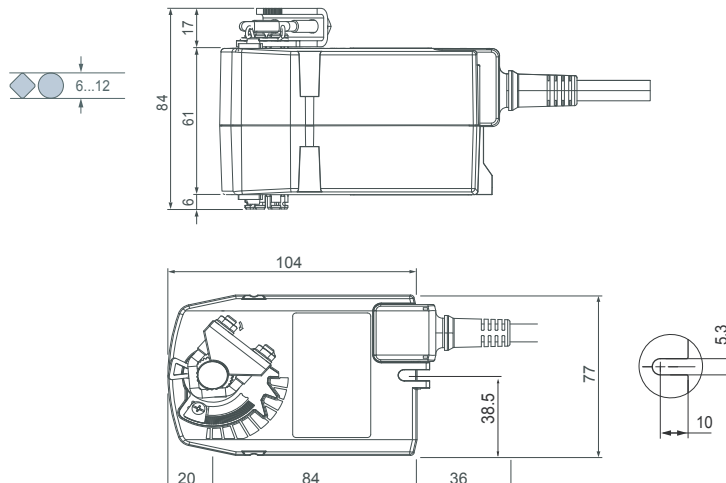
- For operation of air control dampers that perform safety function
- Torque: 2.5Nm
- Nominal voltage: AC/DC 24V
- Control signal: DC (0)2...10V
- Position feedback: DC 2...10V



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V		
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V		
	Power consumption	2.5W @ nominal torque / 1W @ holding		
	For transformer sizing	4VA		
Functional data	Connecting cable	Cable 1m, 4x0.75mm ²		
	Torque	2.5Nm @ nominal voltage		
	Control signal Y	DC (0)2...10V @ input impedance 100kΩ		
	Position feedback signal U	DC 2...10V @ max. 0.5mA		
	Direction of rotation	Selectable by mounting L/R		
	Angle of rotation	Max. 95°, 37...100% adjustable by mechanical stops		
	Running time	-motor	150s	
		-spring return	25s @ -20...+50°C / max. 60s @ -30°C	
		Sound power level	-motor	Max. 35dB(A)
			-spring return	Max. 62dB(A)
Working conditions	Position indicator	Mechanical		
	Protection class	III (safety extra-low voltage)		
	Degree of protection	IP42		
	EMC	CE according to 89/336/EEC		
	Mode of operation	Type 1.AA (EN 60730-1)		
	Ambient temp.	-30...+50°C		
	Non-operation temp.	-40...+80°C		
Dimensions / weight	Humidity	5...95% RH, non-condensing		
	Maintenance	Maintenance-free		
	Dimensions (LxWxH)	See "Dimensions"		
	Shaft length	Clamp up	Min. 84mm	
		Clamp down	Min. 20mm	
	Shaft	⌀ 6...12mm		
	Weight	0.6kg		

Dimensions [mm]



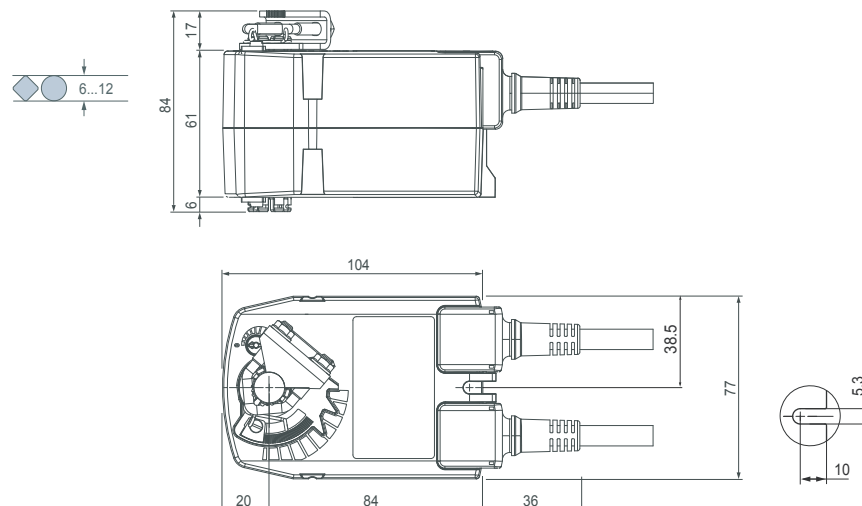
- For operation of air control dampers that perform safety function
- Torque: 2.5Nm
- Nominal voltage: AC 100...240V
- Control: Open/Close
- Integrated auxiliary switch (TF230-S)



Technical data

Electrical data	Nominal voltage	AC 100...240V 50/60Hz
	Nominal voltage range	AC 85...265V
	Power consumption	2.5W @ nominal torque / 1.5W @ holding
	For transformer sizing	5VA
	Auxiliary switch (-S)	1 SPDT, 1mA...3(0.5)A, AC 250V, adjustable
	Connecting cable -motor -auxiliary switch (-S)	Cable 1m, 2x0.75mm ² Cable 1m, 3x0.75mm ²
Functional data	Torque	2.5Nm @ nominal voltage
	Direction of rotation	Selectable by mounting L/R
	Angle of rotation	Max. 95°, 37...100% adjustable by mechanical stops
	Running time -motor -spring return	75s 25s @ -20...+50°C / max. 60s @ -30°C
	Sound power level -motor -spring return	Max. 50dB(A) Max. 62dB(A)
	Position indicator	Mechanical
Working conditions	Protection class	II (Totally insulated)
	Degree of protection	IP42
	EMC	CE according to 89/336/EEC
	Low voltage directive	CE according to 73/23/EEC
	Mode of operation	Type 1.AA (EN 60730-1)
	Ambient temp. Non-operation temp.	-30...+50°C -40...+80°C
Dimensions / weight	Humidity	5...95% RH, non-condensing
	Maintenance	Maintenance-free
	Dimensions (LxWxH)	See "Dimensions"
	Shaft length Clamp up Clamp down	Min. 84mm Min. 20mm
	Shaft	⌀ 6...12mm
	Weight	0.6kg

Dimensions [mm]



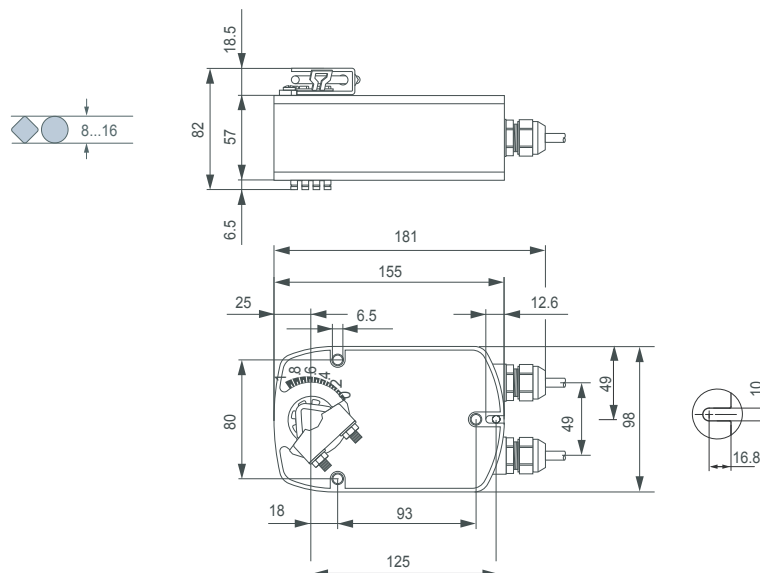
- For operation of air control dampers that perform safety function
- Torque: 4Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close
- Integrated auxiliary switch (LF24-S)



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption	5W @ nominal torque / 2.5W @ holding
	For transformer sizing	7VA
	Auxiliary switch (-S)	1 SPDT, 1mA...3(0.5)A, AC 250V, adjustable
	Connecting cable -motor -auxiliary switch (-S)	Cable 1m, 2x0.75mm ² Cable 1m, 3x0.75mm ²
Functional data	Torque	4Nm @ nominal voltage
	Direction of rotation	Selectable by mounting L/R
	Angle of rotation	Max. 95°, 37...100% adjustable by mechanical stops
	Running time -motor -spring return	40...75s 20s @ -20...+50°C / max. 60s @ -30°C
	Sound power level -motor -spring return	Max. 50dB(A) Max. 62dB(A)
	Position indicator	Mechanical
Working conditions	Protection class	III (safety extra-low voltage)
	Degree of protection	IP54
	EMC	CE according to 2004/108/EC
	Ambient temp. Non-operation temp.	-30...+50°C -40...+80°C
	Humidity	5...95% RH, non-condensing
	Maintenance	Maintenance-free
Dimensions / weight	Dimensions (LxWxH)	See "Dimensions"
	Shaft length Clamp up Clamp down	Min. 84mm Min. 20mm
	Shaft	⌀ 8...16mm
	Weight	1.4kg

Dimensions [mm]



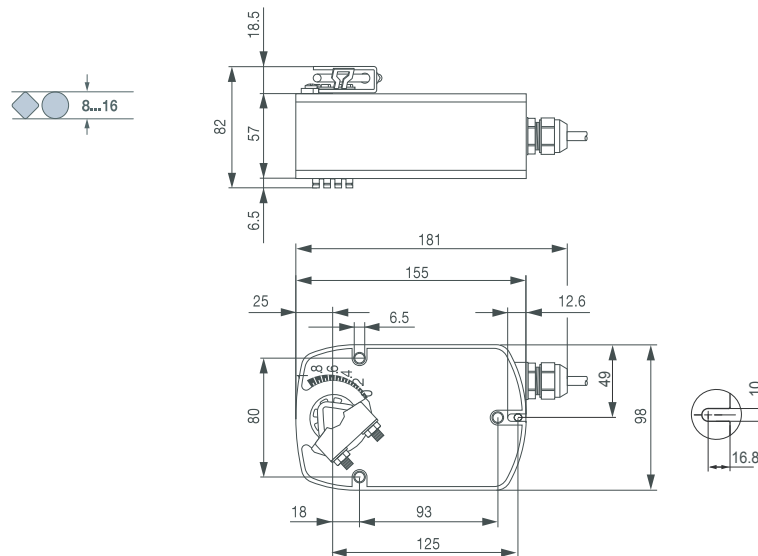
- For operation of air control dampers that perform safety function
- Torque: 4Nm
- Nominal voltage: AC/DC 24V
- Control: 3-point



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption	2.5W @ nominal torque / 1W @ holding
	For transformer sizing	5VA
Functional data	Connecting cable	Cable 1m, 4x0.75mm ²
	Torque	4Nm @ nominal voltage
	Direction of rotation	Selectable by mounting L/R
	Angle of rotation	Max. 95°, 37...100% adjustable by mechanical stops
	Running time	-motor 150s -spring return 20s @ -20...+50°C / max. 60s @ -30°C
	Sound power level	-motor Max. 30dB(A) -spring return Max. 62dB(A)
	Position indicator	Mechanical
Working conditions	Protection class	III (safety extra-low voltage)
	Degree of protection	IP54
	EMC	CE according to 2004/108/EC
	Ambient temp.	-30...+50°C
	Non-operation temp.	-40...+80°C
	Humidity	5...95% RH, non-condensing
	Maintenance	Maintenance-free
Dimensions / weight	Dimensions (LxWxH)	See "Dimensions"
	Shaft length	Clamp up Min. 84mm Clamp down Min. 20mm
	Shaft	⌀ 8...16mm
	Weight	1.4kg

Dimensions [mm]



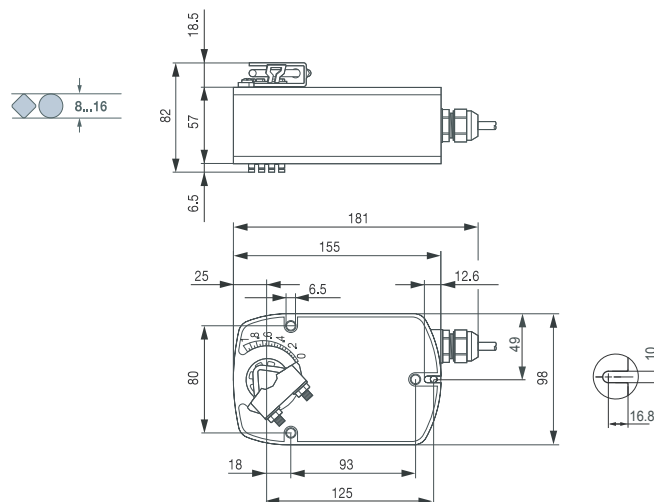
- For operation of air control dampers that perform safety function
- Torque: 4Nm
- Nominal voltage: AC/DC 24V
- Control signal: DC (0)2...10V
- Position feedback: DC 2...10V



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V	
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V	
	Power consumption	2.5W @ nominal torque / 1W @ holding	
	For transformer sizing	5VA	
	Connecting cable	Cable 1m, 4x0.75mm ²	
Functional data	Torque	4Nm @ nominal voltage	
	Control signal Y	DC (0)2...10V @ input impedance 100kΩ	
	Position feedback signal U	DC 2...10V @ max. 0.7mA	
	Direction of rotation	Selectable by L/R switch Selectable by L/R mounting	
	Angle of rotation	Max. 95°, 37...100% adjustable by mechanical stops	
	Running time	-motor 150s -spring return 20s @ -20...+50°C / max. 60s @ -30°C	
	Sound power level	-motor Max. 30dB(A) -spring return Max. 62dB(A)	
	Position indicator	Mechanical	
	Working conditions	Protection class	III (safety extra-low voltage)
		Degree of protection	IP54
EMC		CE according to 2004/108/EC	
Mode of operation		Type 1.AA (EN 60730-1)	
Ambient temp.		-30...+50°C	
Non-operation temp.		-40...+80°C	
Humidity		5...95% RH, non-condensing	
Maintenance		Maintenance-free	
Dimensions / weight		Dimensions (LxWxH)	See "Dimensions"
		Shaft length	Clamp up Min. 84mm Clamp down Min. 20mm
	Shaft	8...16mm	
	Weight	1.4kg	

Dimensions [mm]



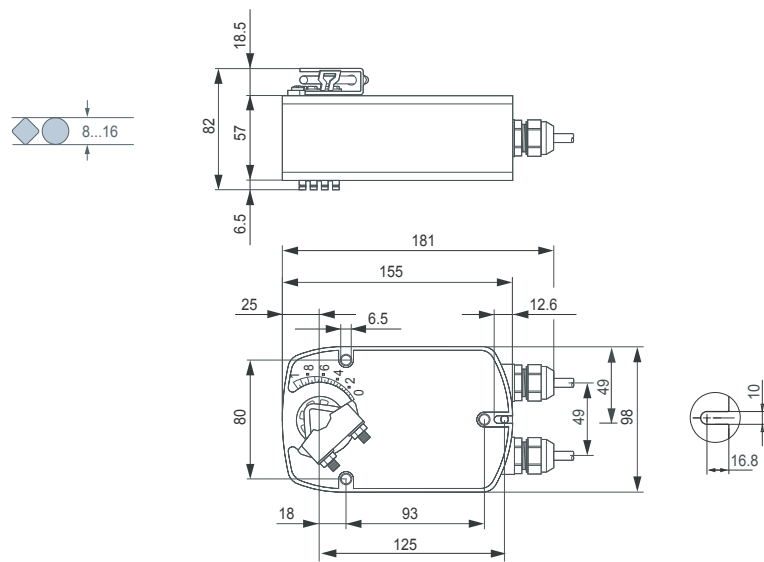
- For operation of air control dampers that perform safety function
- Torque: 4Nm
- Nominal voltage: AC 230V
- Control: Open/Close
- Integrated auxiliary switch (LF230-S)



Technical data

Electrical data	Nominal voltage	AC 230V 50/60Hz
	Nominal voltage range	AC 198...264V
	Power consumption	5W @ nominal torque / 3W @ holding
	For transformer sizing	7VA
	Auxiliary switch (-S)	1 SPDT, 1mA...3(0.5)A, AC 250V, adjustable
	Connecting cable -motor -auxiliary switch (-S)	Cable 1m, 2x0.75mm ² Cable 1m, 3x0.75mm ²
Functional data	Torque	4Nm @ nominal voltage
	Direction of rotation	Selectable by mounting L/R
	Angle of rotation	Max. 95°, 37...100% adjustable by mechanical stops
	Running time -motor -spring return	40...75s 20s @ -20...+50°C / max. 60s @ -30°C
	Sound power level -motor -spring return	Max. 50dB(A) Max. 62dB(A)
	Position indicator	Mechanical
Working conditions	Protection class	II (Totally insulated)
	Degree of protection	IP54
	EMC	CE according to 2004/108/EC
	Low voltage directive	CE according to 2006/95/EC
	Ambient temp. Non-operation temp.	-30...+50°C -40...+80°C
	Humidity	5...95% RH, non-condensing
Dimensions / weight	Maintenance	Maintenance-free
	Dimensions (LxWxH)	See "Dimensions"
	Shaft length Clamp up Clamp down	Min. 84mm Min. 20mm
	Shaft	8...16mm
	Weight	1.55kg

Dimensions [mm]



Damper actuator for operating air control dampers in ventilation and air-conditioning systems for building services installations

- Torque: 10Nm
- Nominal voltage: AC 24...240V / DC 24...125V
- Control: Open/Close



Technical data

Electrical data		Nominal voltage	AC 24...240V 50/60Hz, DC 24...125V
		Nominal voltage range	AC 19.2...264V / DC 21.6...137.5V
		Power consumption	6W @ nominal torque / 2.5W @ holding
		For transformer sizing	6VA @ AC 24V; 6.5VA @ AC 120V; 9.5VA @ AC 240V
		Connecting cable	Cable 1m, 2x0.75mm ²
Functional data		Torque	10Nm @ nominal voltage
		Direction of rotation	Selectable by mounting L/R
		Manual override	By manual override key
		Angle of rotation	Max. 95°, adjustable by mechanical stops
		Running time	-motor 75s -spring return 20s @ -20...+50°C / max. 60s @ -30°C
		Sound power level	-motor Max. 45dB(A) -spring return Max. 62dB(A)
		Position indicator	Mechanical
Working conditions		Protection class	II (Totally insulated)
		Degree of protection	IP54
		EMC	CE according to 2004/108/EC
		Low voltage directive	CE according to 2006/95/EC
		Mode of operation	Type 1.AA (EN 60730-1)
		Ambient temp.	-30...+50°C
		Non-operation temp.	-40...+80°C
		Humidity	5...95% RH, non-condensing
		Maintenance	Maintenance-free
Dimensions / weight		Dimensions (LxWxH)	See "Dimensions"
		Weight	2kg

Dimensions [mm]

Standard :
¾"-clamp (with insert)

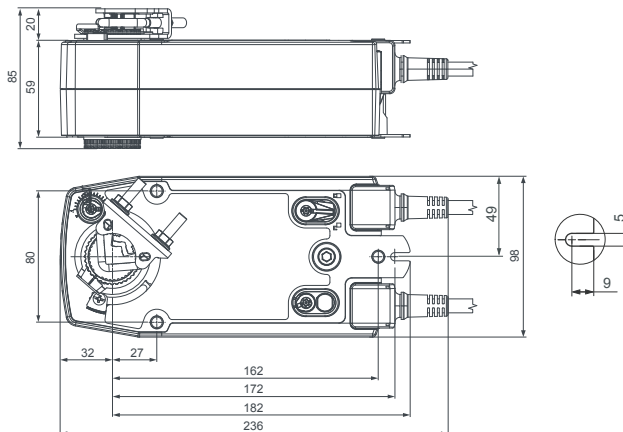
Damper shaft	Length	● I	■ I	◆ I
	≥85	10...22	10	14...25.4
	≥15	10...22	10	14...25.4

Optional 1:
1"-clamp (without insert)

Damper shaft	Length	● I	■ I
	≥85	19...25.4	12...18
	≥15	19...25.4	12...18

Optional 2:
½"-clamp (optional via configuration)

Damper shaft	Length	● I	■ I	◆ I
	≥85	10...19	—	14...20
	≥15	10...19	—	14...20



Damper actuator for operating air control dampers in ventilation and air-conditioning systems for building services installations

- Torque: 10Nm
- Nominal voltage: AC 24...240V / DC 24...125V
- Control: Open/Close
- 2xSPDT auxiliary switches



Technical data

Electrical data			
Nominal voltage		AC 24...240V 50/60Hz, DC 24...125V	
Nominal voltage range		AC 19.2...264V / DC 21.6...137.5V	
Power consumption		6W @ nominal torque / 2.5W @ holding	
For transformer sizing		6VA @ AC 24V; 6.5VA @ AC 120V; 9.5VA @ AC 240V	
Auxiliary switch (-S2)		2 SPDT, 1mA...3(0.5)A, AC 250V one fixed at 10%, one adjustable 10...90%	
Connecting cable -motor		Cable 1m, 2x0.75mm ²	
-auxiliary switch (-S2)		Cable 1m, 6x0.75mm ²	
Functional data			
Torque		10Nm @ nominal voltage	
Direction of rotation		Selectable by mounting L/R	
Manual override		By manual override key	
Angle of rotation		Max. 95°, adjustable by mechanical stops	
Running time -motor		75s	
-spring return		20s @ -20...+50°C / max. 60s @ -30°C	
Sound power level -motor		Max. 45dB(A)	
-spring return		Max. 62dB(A)	
Position indicator		Mechanical	
Protection class		II (Totally insulated)	
Degree of protection		IP54	
EMC		CE according to 2004/108/EC	
Low voltage directive		CE according to 2006/95/EC	
Mode of operation		Type 1.AA.B (EN 60730-1)	
Ambient temp.		-30...+50°C	
Non-operation temp.		-40...+80°C	
Humidity		5...95% RH, non-condensing	
Maintenance		Maintenance-free	
Dimensions / weight			
Dimensions (LxWxH)		See "Dimensions"	
Weight		2.2kg	

Dimensions [mm]

Standard :

¾"-clamp (with insert)

Damper shaft	Length	● I	■ I	◆ I
	≥85	10...22	10	14...25.4
	≥15	10...22	10	14...25.4

Optional 1:

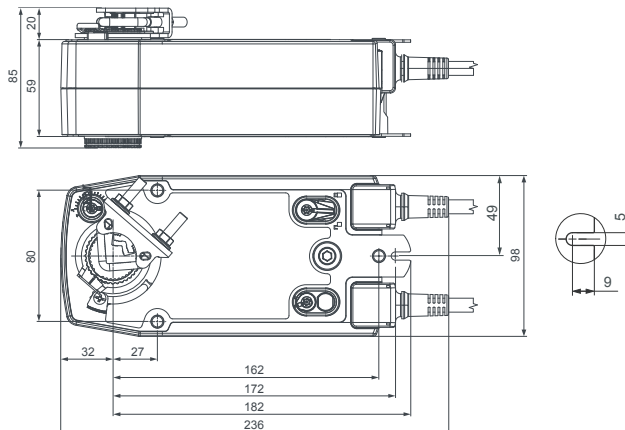
1"-clamp (without insert)

Damper shaft	Length	● I	■ I
	≥85	19...25.4	12...18
	≥15	19...25.4	12...18

Optional 2:

½"-clamp (optional via configuration)

Damper shaft	Length	● I	■ I	◆ I
	≥85	10...19	—	14...20
	≥15	10...19	—	14...20



Damper actuator for operating air control dampers in ventilation and air-conditioning systems for building services installations

- Torque: 10Nm
- Nominal voltage: AC/DC 24V
- Control signal: DC (0)2...10V
- Position feedback: DC 2...10V



Technical data

Electrical data		Nominal voltage	AC 24V 50/60Hz, DC 24V
		Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
		Power consumption	3.5W @ nominal torque / 2.5W @ holding
		For transformer sizing	6VA
		Connecting cable	Cable 1m, 4x0.75mm ²
Functional data		Torque	10Nm @ nominal voltage
		Control signal Y	DC (0)2...10V @ input impedance 100kΩ
		Position feedback signal U	DC 2...10V @ max. 0.5mA
		Position accuracy	±5%
		Direction of rotation	Reversible with switch Selectable by mounting L/R
		Manual override	By manual override key
		Angle of rotation	Max. 95°, adjustable by mechanical stops
		Running time	-motor 150s -spring return 20s @ -20...+50°C / max. 60s @ -30°C
		Sound power level	-motor Max. 40dB(A) -spring return Max. 62dB(A)
		Position indicator	Mechanical
Working conditions		Protection class	III (safety extra-low voltage)
		Degree of protection	IP54
		EMC	CE according to 2004/108/EC
		Mode of operation	Type 1.AA (EN 60730-1)
		Ambient temp.	-30...+50°C
		Non-operation temp.	-40...+80°C
		Humidity	5...95% RH, non-condensing
		Maintenance	Maintenance-free
Dimensions / weight		Dimensions (LxWxH)	See "Dimensions"
		Weight	2kg

Dimensions [mm]

Standard :
¾"-clamp (with insert)

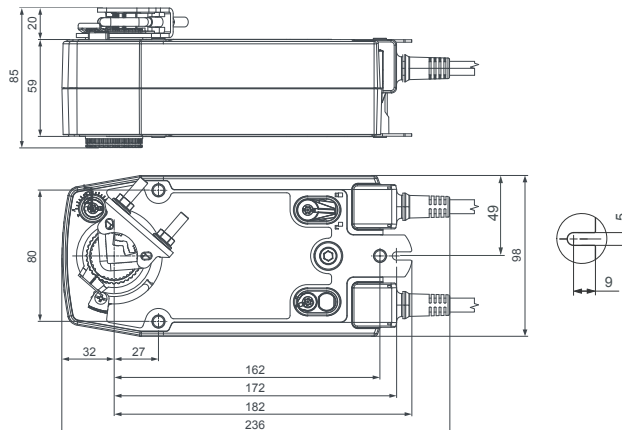
Damper shaft	Length			
	≥85	10...22	10	14...25.4
	≥15	10...22	10	14...25.4

Optional 1:
1"-clamp (without insert)

Damper shaft	Length		
	≥85	19...25.4	12...18
	≥15	19...25.4	12...18

Optional 2:
½"-clamp (optional via configuration)

Damper shaft	Length			
	≥85	10...19	—	14...20
	≥15	10...19	—	14...20



Damper actuator for operating air control dampers in ventilation and air-conditioning systems for building services installations

- Torque: 20Nm
- Nominal voltage: AC 24...240V / DC 24...125V
- Control: Open/Close



Technical data

Electrical data		Nominal voltage	AC 24...240V 50/60Hz, DC 24...125V
		Nominal voltage range	AC 19.2...264V / DC 21.6...137.5V
		Power consumption	7W @ nominal torque / 3.5W @ holding
		For transformer sizing	7VA @ AC 24V; 8.5VA @ AC 120V; 18VA @ AC 240V
		Connecting cable	Cable 1m, 2x0.75mm ²
Functional data		Torque	20Nm @ nominal voltage
		Direction of rotation	Selectable by mounting L/R
		Manual override	By manual override key
		Angle of rotation	Max. 95°, adjustable by mechanical stops
		Running time	-motor 75s -spring return 20s @ -20...+50°C / max. 60s @ -30°C
		Sound power level	-motor Max. 45dB(A) -spring return Max. 62dB(A)
Working conditions		Position indicator	Mechanical
		Protection class	II (Totally insulated)
		Degree of protection	IP54
		EMC	CE according to 2004/108/EC
		Low voltage directive	CE according to 2006/95/EC
		Mode of operation	Type 1.AA (EN 60730-1)
		Ambient temp.	-30...+50°C
		Non-operation temp.	-40...+80°C
		Humidity	5...95% RH, non-condensing
		Maintenance	Maintenance-free
Dimensions / weight		Dimensions (LxWxH)	See "Dimensions"
		Weight	2.2kg

Dimensions [mm]

Standard :

¾"-clamp (with insert)

Damper shaft	Length	● I	■ I	◆ I
	≥85	10...22	10	14...25.4
	≥15	10...22	10	14...25.4

Optional 1:

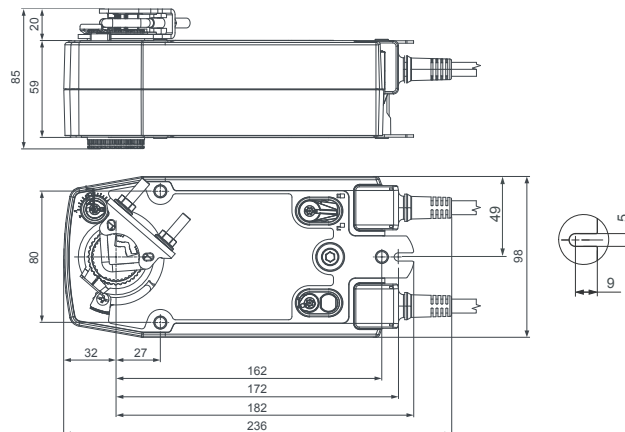
1"-clamp (without insert)

Damper shaft	Length	● I	■ I
	≥85	19...25.4	12...18
	≥15	19...25.4	12...18

Optional 2:

½"-clamp (optional via configuration)

Damper shaft	Length	● I	■ I	◆ I
	≥85	10...19	—	14...20
	≥15	10...19	—	14...20



Damper actuator for operating air control dampers in ventilation and air-conditioning systems for building services installations

- Torque: 20Nm
- Nominal voltage: AC 24...240V / DC 24...125V
- Control: Open/Close
- 2xSPDT auxiliary switches



Technical data

Electrical data			
Nominal voltage		AC 24...240V 50/60Hz, DC 24...125V	
Nominal voltage range		AC 19.2...264V / DC 21.6...137.5V	
Power consumption		7W @ nominal torque / 3.5W @ holding	
For transformer sizing		7VA @ AC 24V; 8.5VA @ AC 120V; 18VA @ AC 240V	
Auxiliary switch (-S2)		2 SPDT, 1mA...3(0.5)A, AC 250V one fixed at 10%, one adjustable 10...90%	
Connecting cable-motor		Cable 1m, 2x0.75mm ²	
-auxiliary switch (-S2)		Cable 1m, 6x0.75mm ²	
Functional data			
Torque		20Nm @ nominal voltage	
Direction of rotation		Selectable by mounting L/R	
Manual override		By manual override key	
Angle of rotation		Max. 95°, adjustable by mechanical stops	
Running time	-motor	75s	
	-spring return	20s @ -20...+50°C / max. 60s @ -30°C	
Sound power level	-motor	Max. 45dB(A)	
	-spring return	Max. 62dB(A)	
Position indicator		Mechanical	
Working conditions			
Protection class		II (Totally insulated)	
Degree of protection		IP54	
EMC		CE according to 2004/108/EC	
Low voltage directive		CE according to 2006/95/EC	
Mode of operation		Type 1.AA.B (EN 60730-1)	
Ambient temp.		-30...+50°C	
Non-operation temp.		-40...+80°C	
Humidity		5...95% RH, non-condensing	
Maintenance		Maintenance-free	
Dimensions / weight			
Dimensions (LxWxH)		See "Dimensions"	
Weight		2.4kg	

Dimensions [mm]

Standard :
¾"-clamp (with insert)

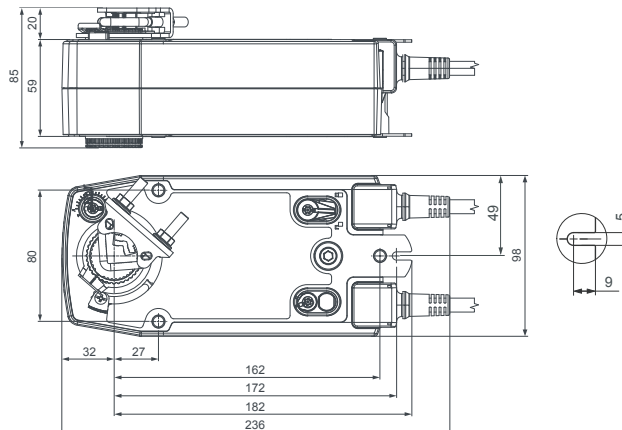
Damper shaft	Length	● I	■ I	◆ I
	≥85	10...22	10	14...25.4
	≥15	10...22	10	14...25.4

Optional 1:
1"-clamp (without insert)

Damper shaft	Length	● I	■ I
	≥85	19...25.4	12...18
	≥15	19...25.4	12...18

Optional 2:
½"-clamp (optional via configuration)

Damper shaft	Length	● I	■ I	◆ I
	≥85	10...19	—	14...20
	≥15	10...19	—	14...20



Damper actuator for operating air control dampers in ventilation and air-conditioning systems for building services installations

- Torque: 20Nm
- Nominal voltage: AC/DC 24V
- Control signal: DC (0)2...10V
- Position feedback: DC 2...10V



Technical data

Electrical data		Nominal voltage	AC 24V 50/60Hz, DC 24V
		Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
		Power consumption	5W @ nominal torque / 3.5W @ holding
		For transformer sizing	7VA
		Connecting cable	Cable 1m, 4x0.75mm ²
Functional data		Torque	20Nm @ nominal voltage
		Control signal Y	DC (0)2...10V @ input impedance 100kΩ
		Position feedback signal U	DC 2...10V @ max. 0.5mA
		Position accuracy	±5%
		Direction of rotation	Reversible with switch ↺ / ↻ Selectable by mounting L/R
		Manual override	By manual override key
		Angle of rotation	Max. 95°, adjustable by mechanical stops
		Running time	-motor 75s -spring return 20s @ -20...+50°C / max. 60s @ -30°C
		Sound power level	-motor Max. 40dB(A) -spring return Max. 62dB(A)
		Position indicator	Mechanical
Working conditions		Protection class	III (safety extra-low voltage)
		Degree of protection	IP54
		EMC	CE according to 2004/108/EC
		Mode of operation	Type 1.AA (EN 60730-1)
		Ambient temp.	-30...+50°C
		Non-operation temp.	-40...+80°C
		Humidity	5...95% RH, non-condensing
		Maintenance	Maintenance-free
Dimensions / weight		Dimensions (LxWxH)	See "Dimensions"
		Weight	2.2kg

Dimensions [mm]

Standard :

¾"-clamp (with insert)

Damper shaft	Length	● I	■ I	◆ I
	≥85	10...22	10	14...25.4
	≥15	10...22	10	14...25.4

Optional 1:

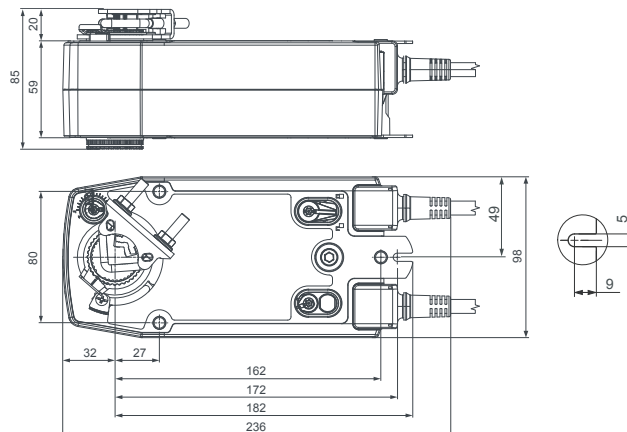
1"-clamp (without insert)

Damper shaft	Length	● I	■ I
	≥85	19...25.4	12...18
	≥15	19...25.4	12...18

Optional 2:

½"-clamp (optional via configuration)

Damper shaft	Length	● I	■ I	◆ I
	≥85	10...19	—	14...20
	≥15	10...19	—	14...20



Mechanical Fail-Safe Actuator with emergency function for adjusting air dampers in ventilation and air conditioning systems in buildings.

- Torque: 30Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close
- 2xSPDT auxiliary switches

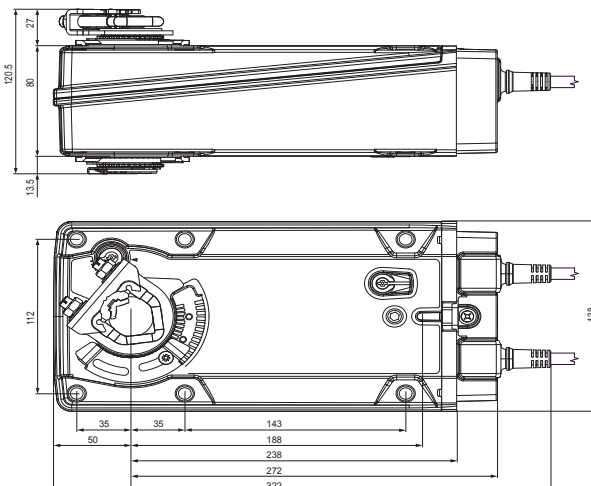
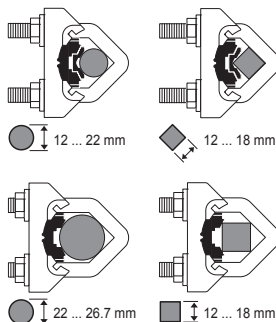


Technical data

Electrical data		Nominal voltage	AC 24V 50/60Hz, DC 24V
		Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
		Power consumption	9.5W @ nominal torque / 4.5W @ holding
		For transformer sizing	16VA
		Auxiliary switch (-S2)	2xSPDT, 1mA...3(0.5)A, AC 250V one fixed at 10%, one adjustable 10...90%
		Connecting cable-motor	Cable 1m, 2x0.75mm ²
		-auxiliary switch	Cable 1m, 6x0.75mm ²
Functional data		Torque	30Nm @ nominal voltage
		Position accuracy	±5%
		Direction of rotation	Selectable by mounting L/R
		Manual override	With hand crank and interlocking switch
		Angle of rotation	Max. 95°, can be limited with adjustable mechanical end stops
		Running time	-motor 60s -spring return 20s @ -20 ...+50°C / max. 60s @ -30°C
		Sound power level -motor	Max. 55dB(A)
		-spring return	Max. 71dB(A)
Working conditions		Position indicator	Mechanical
		Protection class	III (safety extra-low voltage)
		Degree of protection	IP54
		EMC	CE according to 2004/108/EC
		Mode of operation	Type 1.AA.B (EN60730-1)
		Ambient temp.	-30...+50°C
		Non-operation temp.	-40...+80°C
		Humidity	5...95% RH, non-condensing
		Maintenance	Maintenance-free
Dimensions / weight		Dimensions (LxWxH)	See "Dimensions"
		Weight	4.5kg

Dimensions [mm]

Damper spindle	Length	● I	■ I	◆ I
	≥117	12 ... 26.7	>12	<25.2
	≥20	12 ... 26.7	>12	<25.2



Mechanical Fail-Safe Actuator with emergency function for adjusting air dampers in ventilation and air conditioning systems in buildings.

- Torque: 30Nm
- Nominal voltage: AC/DC 24V
- Control signal: DC (0)2...10V
- Position feedback signal: DC 2...10V

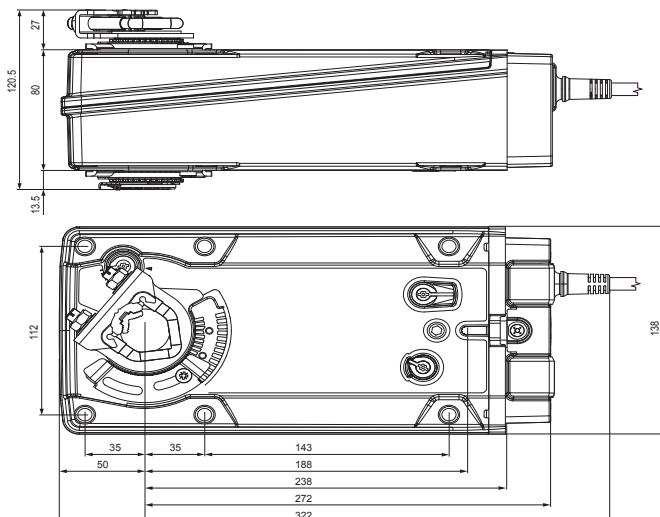
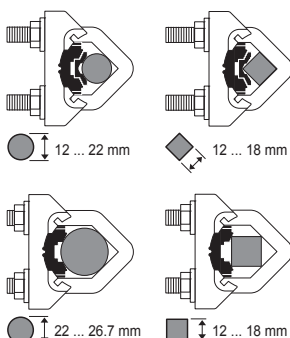


Technical data

Electrical data			
Nominal voltage		AC 24V 50/60Hz, DC 24V	
Nominal voltage range		AC 19.2...28.8V / DC 21.6...28.8V	
Power consumption		7W @ nominal torque / 4.5W @ holding	
For transformer sizing		12VA	
Connecting cable		Cable 1m, 4x0.75mm ²	
Functional data			
Torque		30Nm @ nominal voltage	
Control signal Y		DC (0)2...10V @ input impedance 100kΩ	
Position feedback signal U		DC 2...10V @ max. 0.5mA	
Position accuracy		±5%	
Direction of rotation		Reversible with switch ↺ / ↻ selectable by mounting L / R	
Manual override		With hand crank and interlocking switch	
Angle of rotation		Max. 95°, can be limited with adjustable mechanical end stops	
Running time		-motor 150s -spring return 20s @ -20 ...+50°C / max. 60s @ -30°C	
Sound power level		-motor Max. 45dB(A) @ 150s running time -spring return Max. 71dB(A)	
Position indicator		Mechanical	
Protection class		III (safety extra-low voltage)	
Degree of protection		IP54	
EMC		CE according to 2004/108/EC	
Mode of operation		Type 1.AA (EN60730-1)	
Ambient temp.		-30...+50°C	
Non-operation temp.		-40...+80°C	
Humidity		5...95% RH, non-condensing	
Maintenance		Maintenance-free	
Dimensions / weight			
Dimensions (LxWxH)		See "Dimensions"	
Weight		4.3kg	

Dimensions [mm]

Damper spindle	Length	● I	■ I	◆ I
	≥117	12 ... 26.7	>12	<25.2
	≥20	12 ... 26.7	>12	<25.2



Mechanical Fail-Safe Actuator with emergency function for adjusting air dampers in ventilation and air conditioning systems in buildings.

- Torque: 30Nm
- Nominal voltage: AC 230V
- Control: Open/Close
- 2xSPDT auxiliary switches

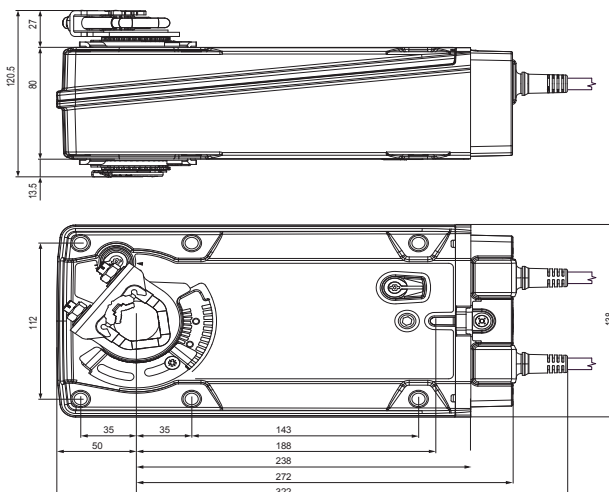
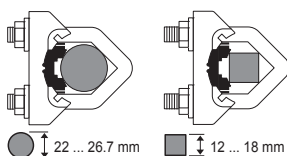
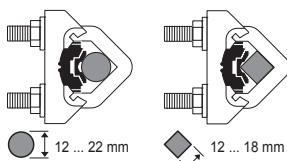


Technical data

Electrical data		Nominal voltage	AC 230V 50/60Hz
		Nominal voltage range	AC 198...264V
		Power consumption	9.5W @ nominal torque / 4.5W @ holding
		For transformer sizing	22VA
		Auxiliary switch (-S2)	2xSPDT, 1mA...3(0.5)A, AC 250V one fixed at 10%, one adjustable 10...90%
		Connecting cable -motor	Cable 1m, 2x0.75mm ²
		-auxiliary switch	Cable 1m, 6x0.75mm ²
Functional data		Torque	30Nm @ nominal voltage
		Position accuracy	±5%
		Direction of rotation	Selectable by mounting L/R
		Manual override	With hand crank and interlocking switch
		Angle of rotation	Max. 95°, can be limited with adjustable mechanical end stops
		Running time -motor	60s
		-spring return	20s @ -20 ...+50°C / max. 60s @ -30°C
		Sound power level -motor	Max. 55dB(A)
		-spring return	Max. 71dB(A)
		Position indicator	Mechanical
Working conditions		Protection class	II (Totally insulated)
		Degree of protection	IP54
		EMC Low voltage directive	CE according to 2004/108/EC CE according to 2006/95/EC
		Mode of operation	Type 1.AA.B (EN60730-1)
		Ambient temp.	-30...+50°C
		Non-operation temp.	-40...+80°C
		Humidity	5...95% RH, non-condensing
		Maintenance	Maintenance-free
Dimensions / weight		Dimensions (LxWxH)	See "Dimensions"
		Weight	4.5kg

Dimensions [mm]

Damper spindle	Length	● I	■ I	◆ I
	≥117	12 ... 26.7	>12	<25.2
	≥20	12 ... 26.7	>12	<25.2



Parameterisable 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.



- Torque: 40Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close

Technical data

Electrical data

Nominal voltage	AC 24V 50/60Hz, DC 24V
Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
Power consumption	12W @ nominal torque / 3W @ holding
For transformer sizing	21VA
Connecting cable	Cable 1m, 2x0.75mm ²

Functional data

Torque	40Nm @ nominal voltage
Emergency setting position (POP)	0...100% adjustable
Bridging time (PF)	2s
Position accuracy	±5%
Direction of rotation	-motor As an option with ↻/↻ -POP Reversible with switch 0 ... 100%
Manual override	Gearing latch disengaged by push button
Angle of rotation	Max. 95°, adjustable by mechanical stops
Running time	-standard 150s -POP 35s @ 0...+50°C
Sound power level	-standard Max. 52dB(A) @ 150s running time -POP Max. 61dB(A)
Position indicator	Mechanical

Working conditions

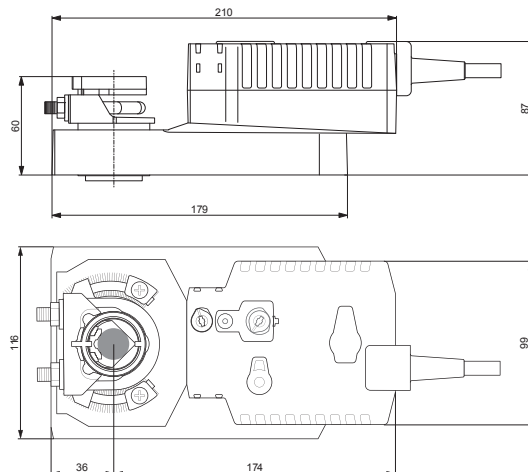
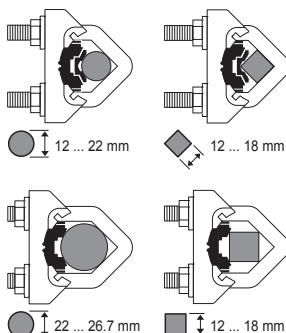
Protection class	III (safety extra-low voltage)
Degree of protection	IP54
EMC	CE according to 2004/108/EC
Certification	Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14
Mode of operation	Type 1.AA (EN 60730-1)
Ambient temp.	-30...+50°C
Non-operation temp.	-40...+80°C
Humidity	5...95% RH, non-condensing
Maintenance	Maintenance-free

Dimensions / weight

Dimensions (LxWxH)	See "Dimensions"
Weight	1.8kg

Dimensions [mm]

Damper spindle	Length	⊙ I	⊠ I	⬠ I
	≥52	12 ... 26.7	>12	<25.5
	≥20	12 ... 26.7	>12	<25.5



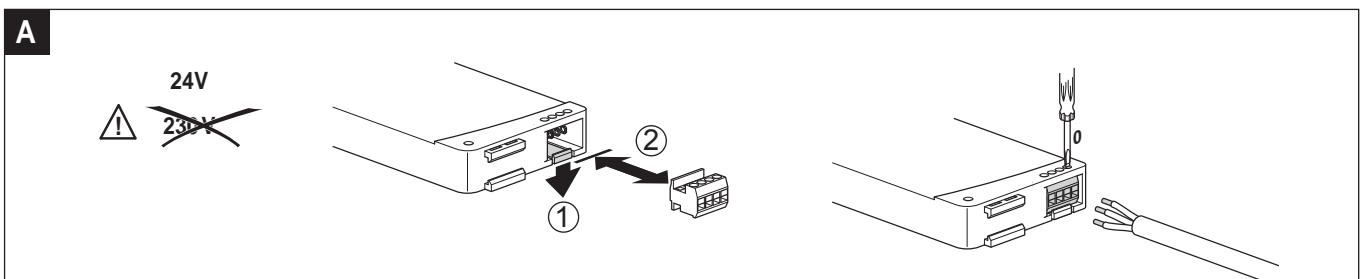
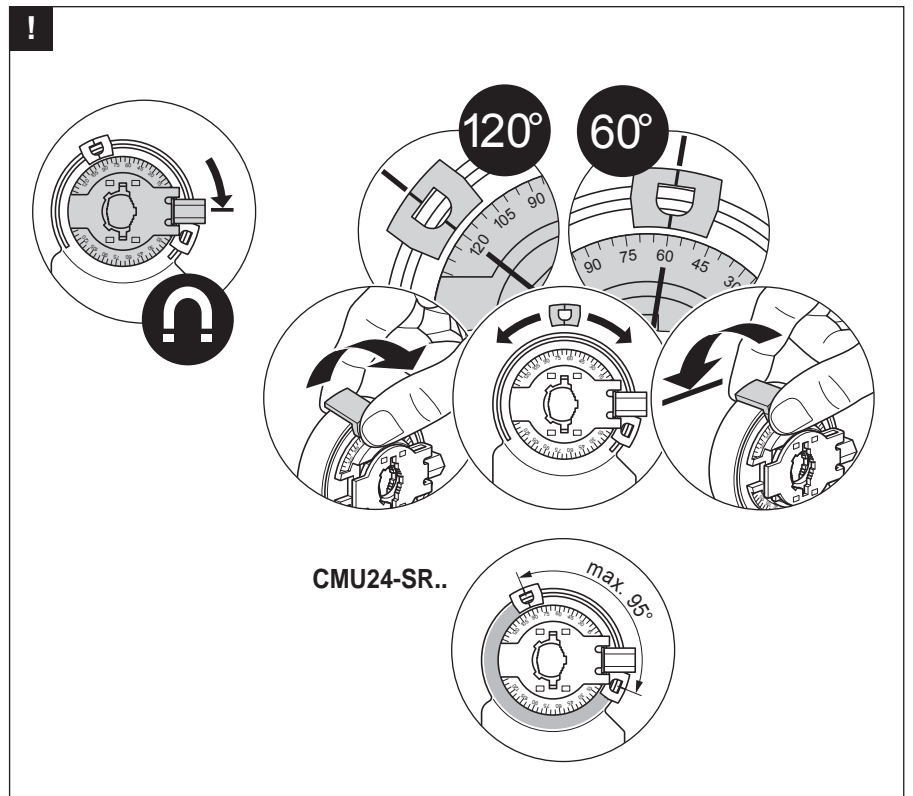
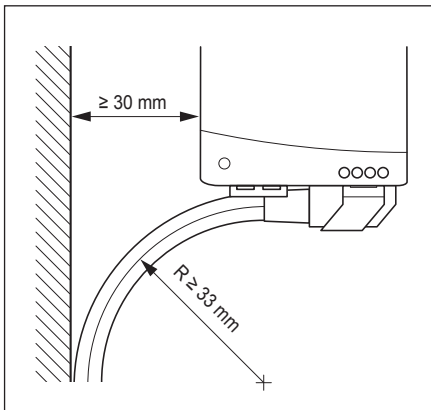
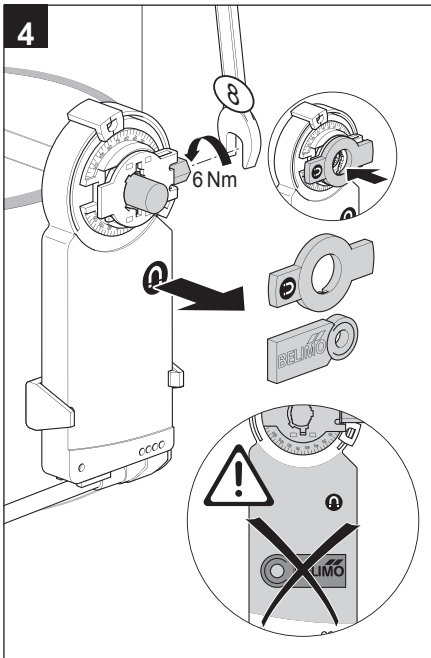
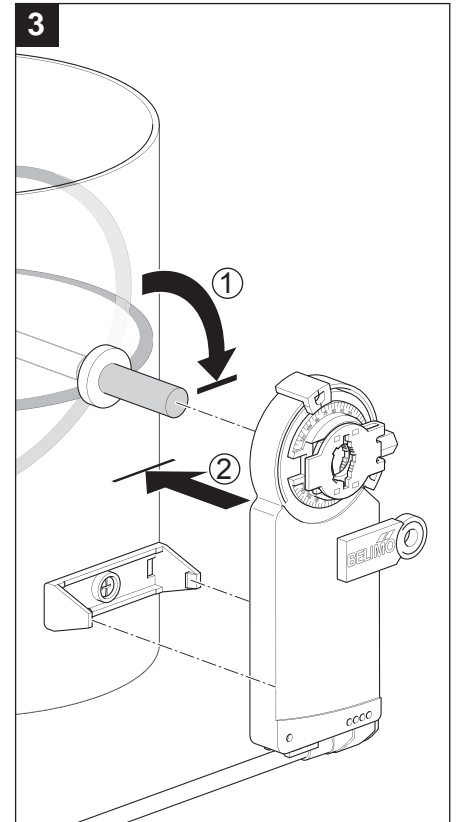
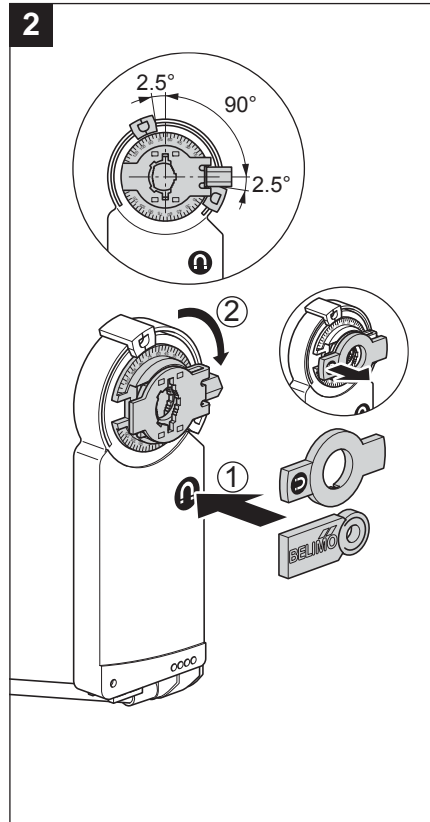
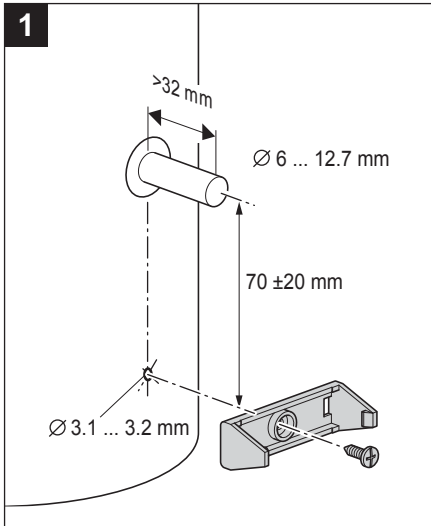
Parameterisable damper actuator with capacitor technology for adjusting air dampers with emergency control function and extended functionalities in ventilation and air-conditioning systems for building services installations and in laboratories.

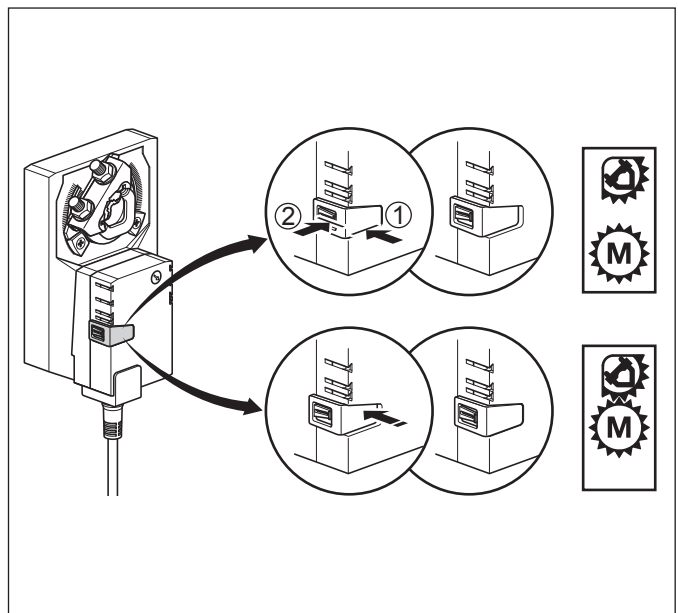
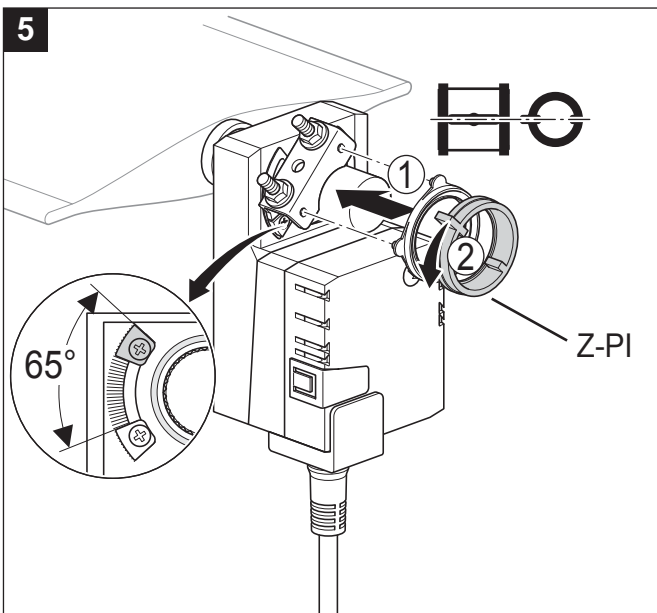
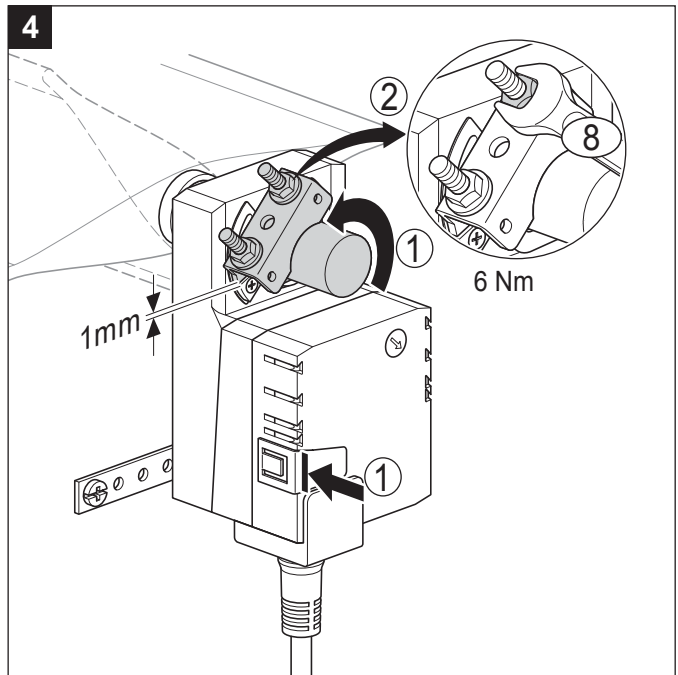
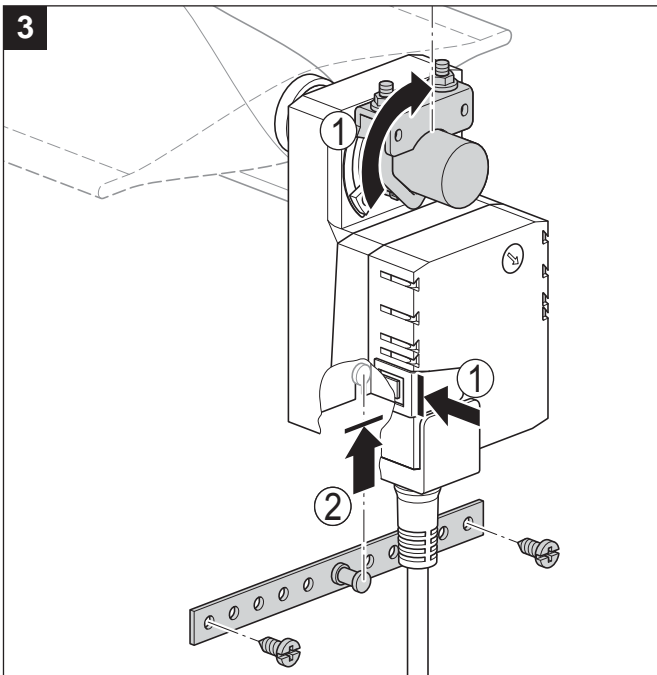
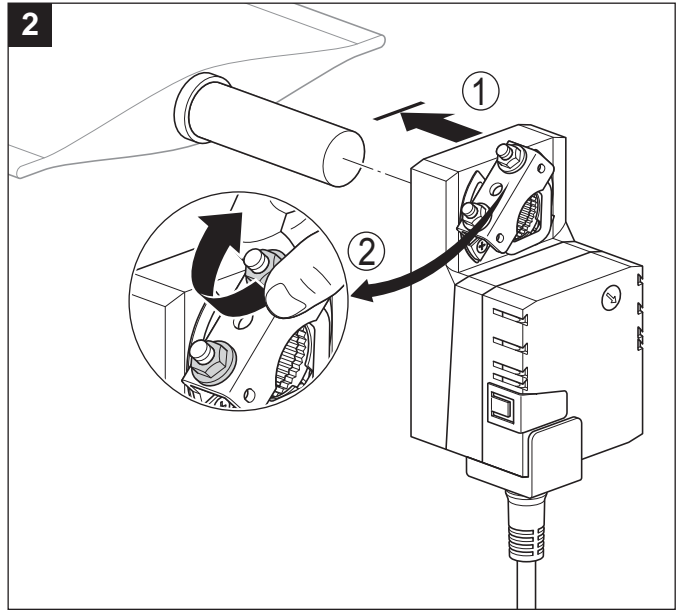
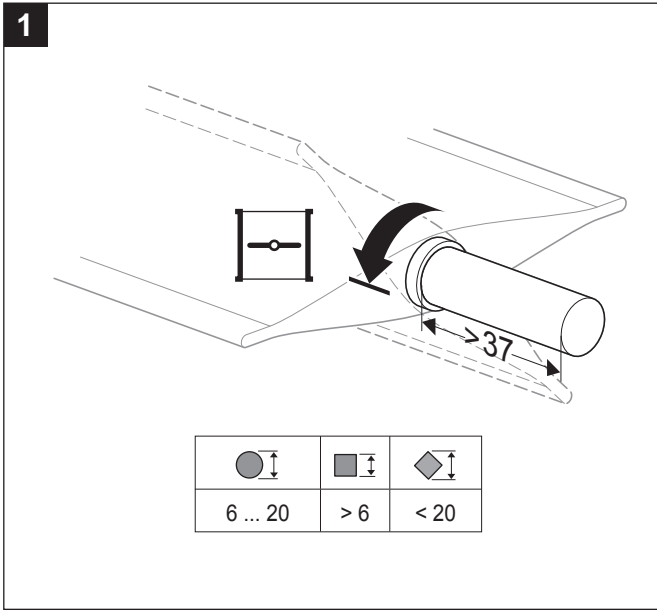
- Torque: 40Nm
- Nominal voltage: AC/DC 24V
- Control: DC (0)2...10V
- Position feedback signal U: DC (0)2...10V

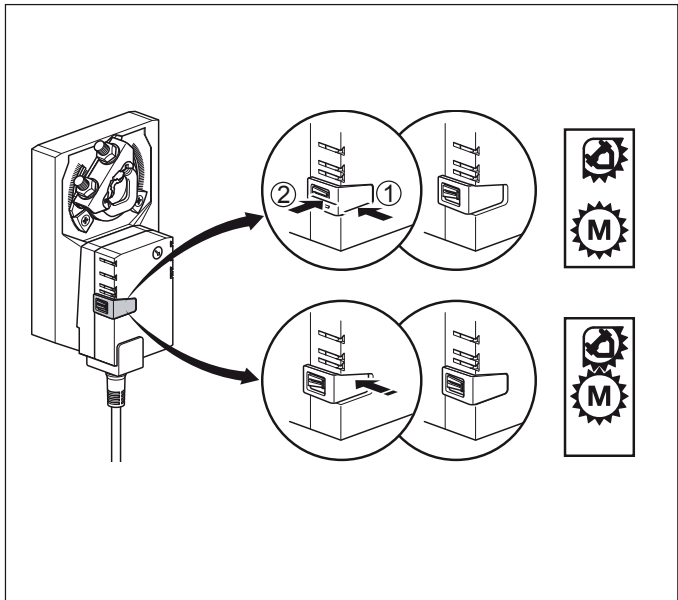
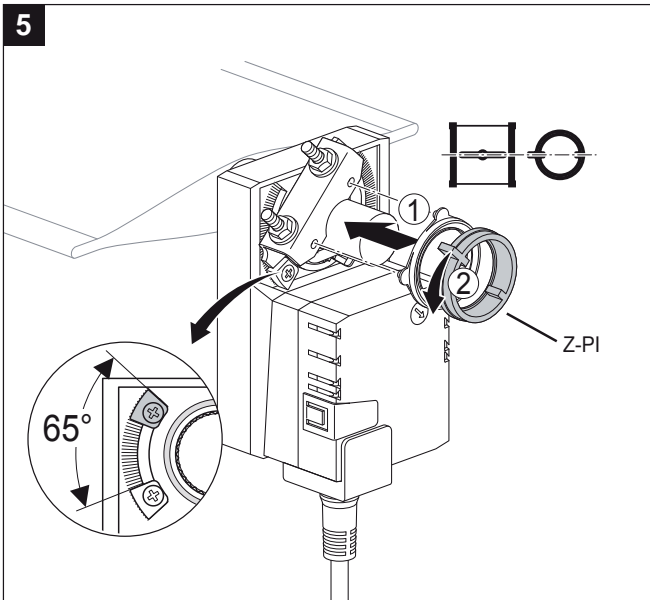
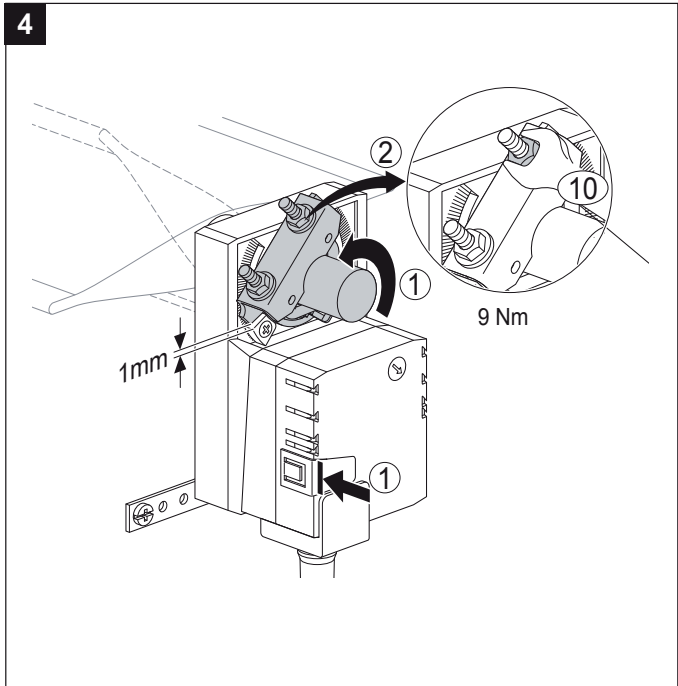
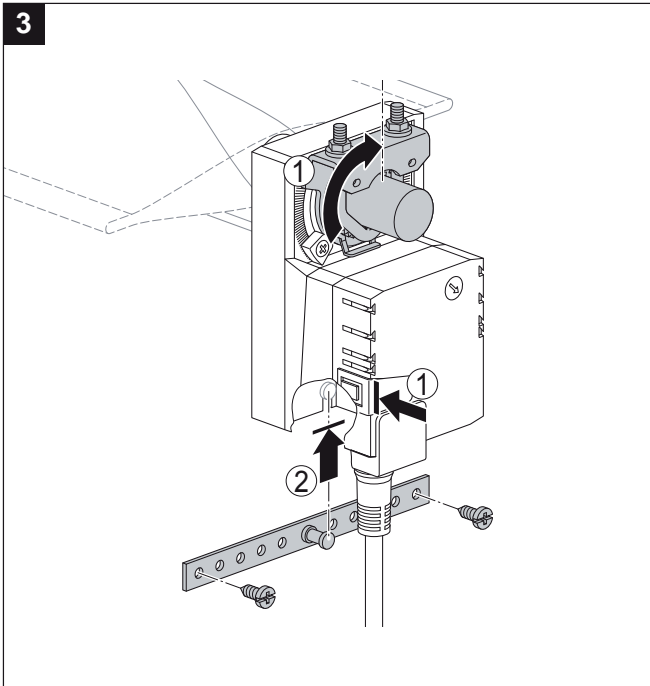
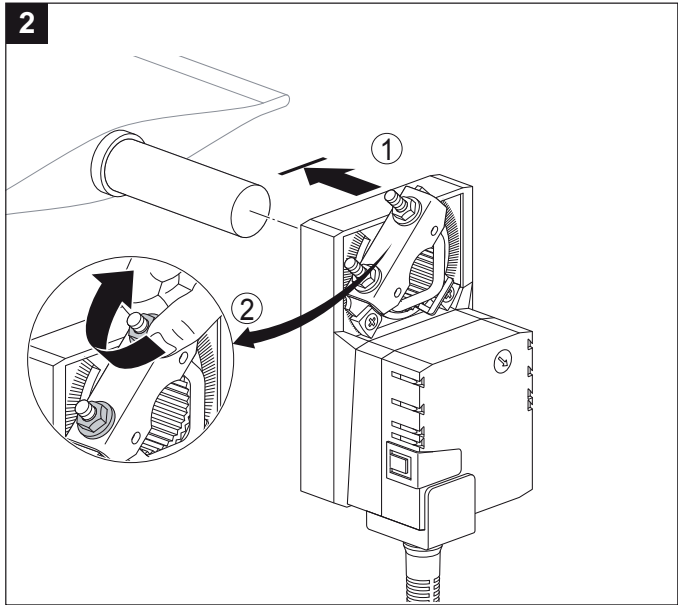
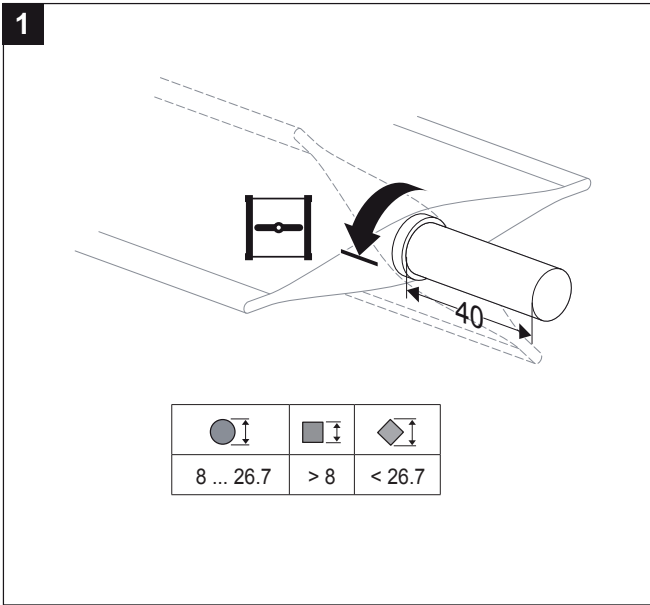


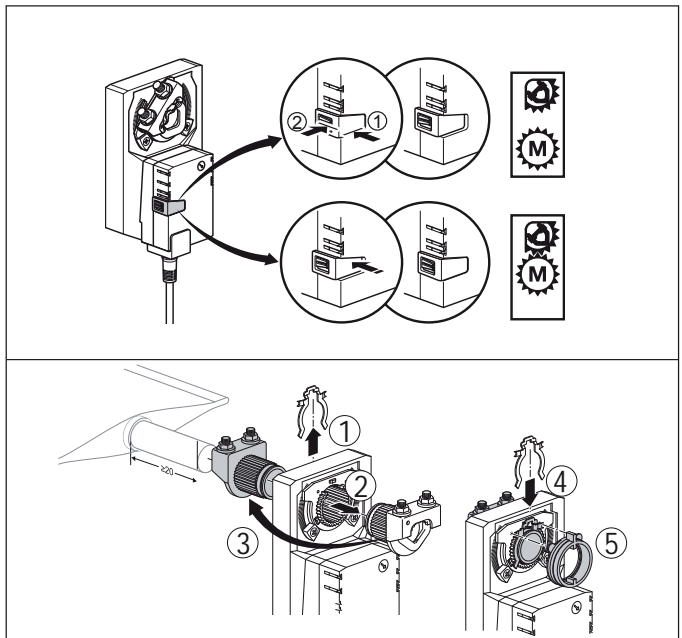
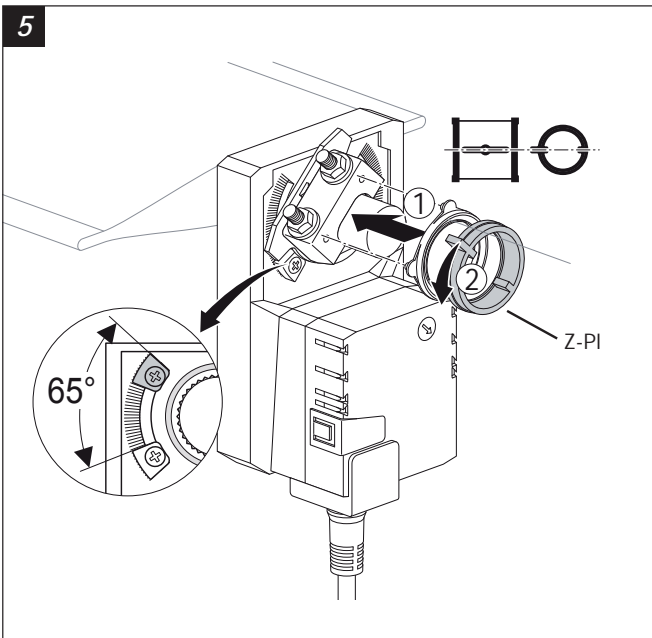
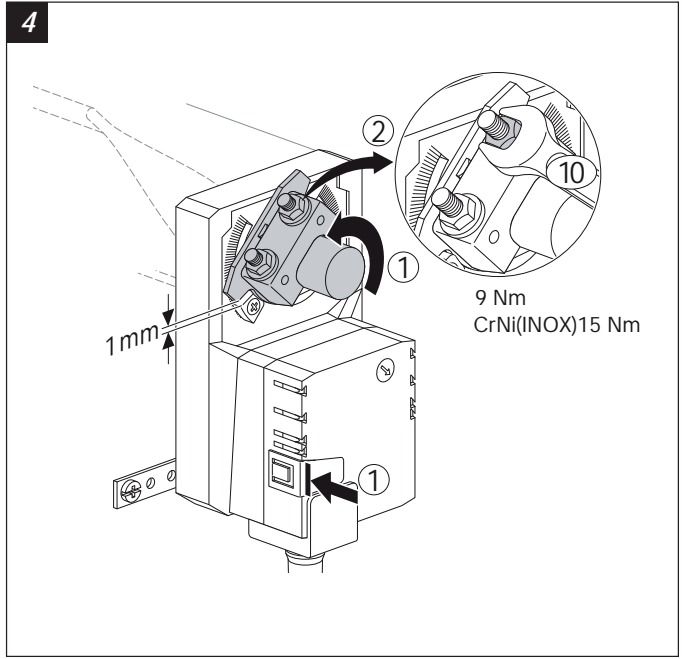
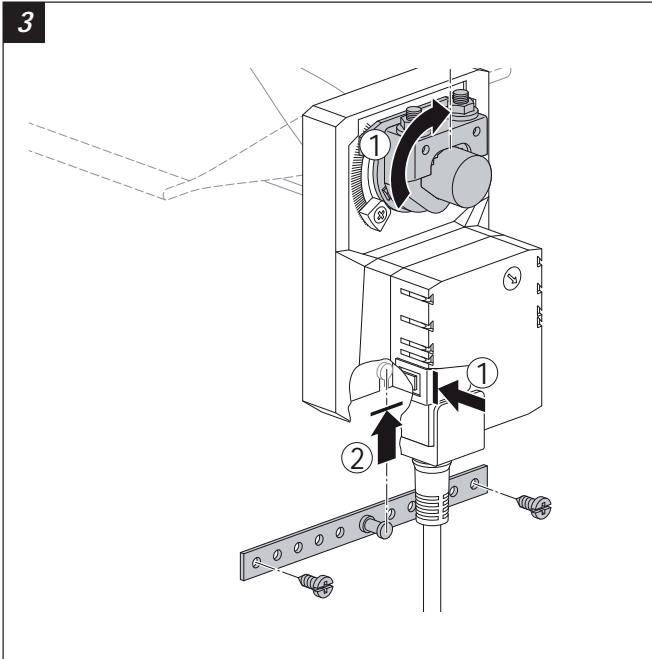
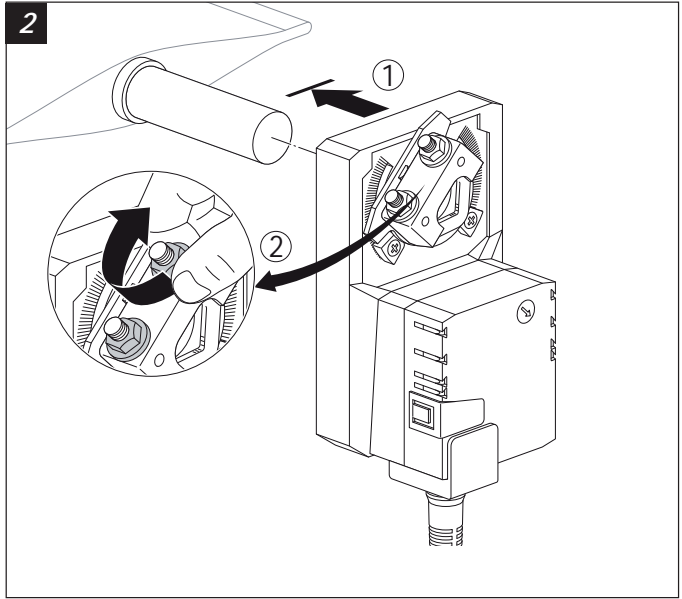
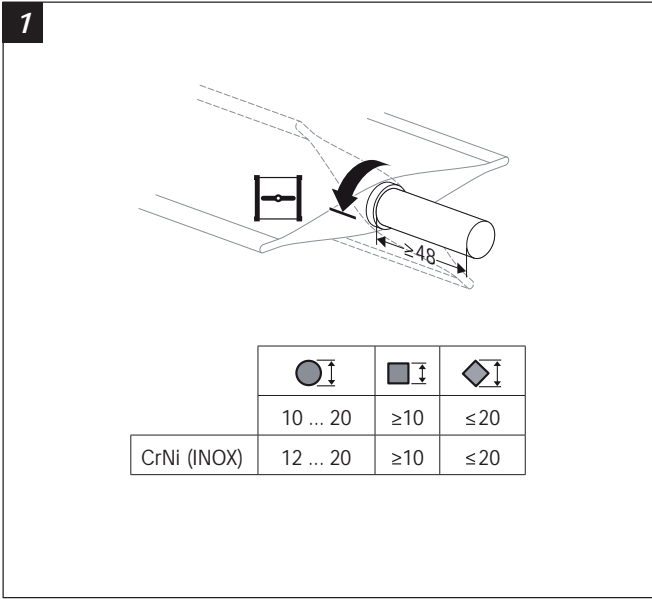
Technical data

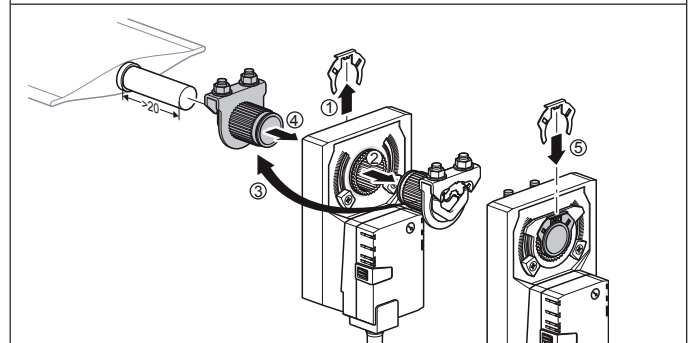
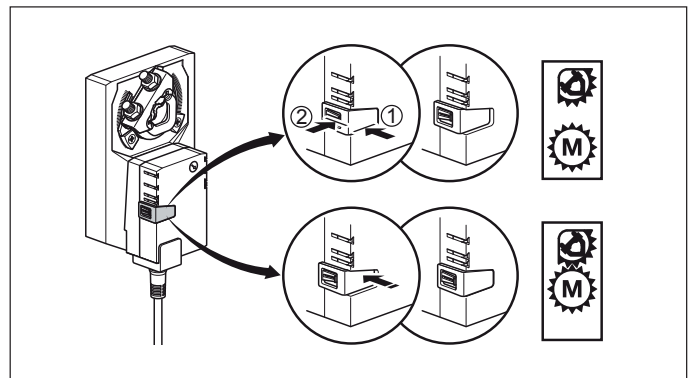
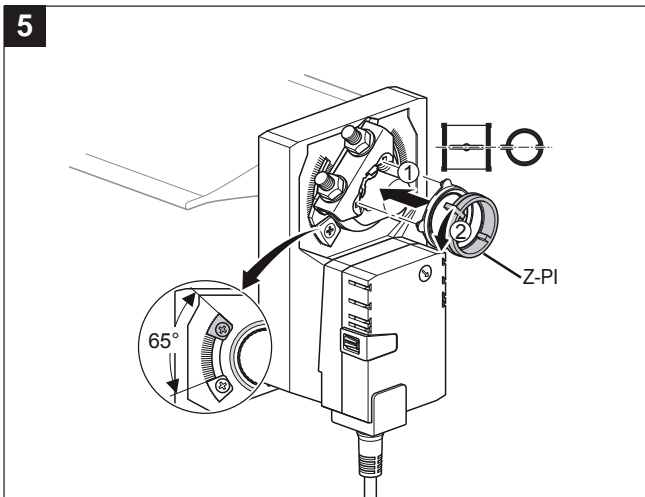
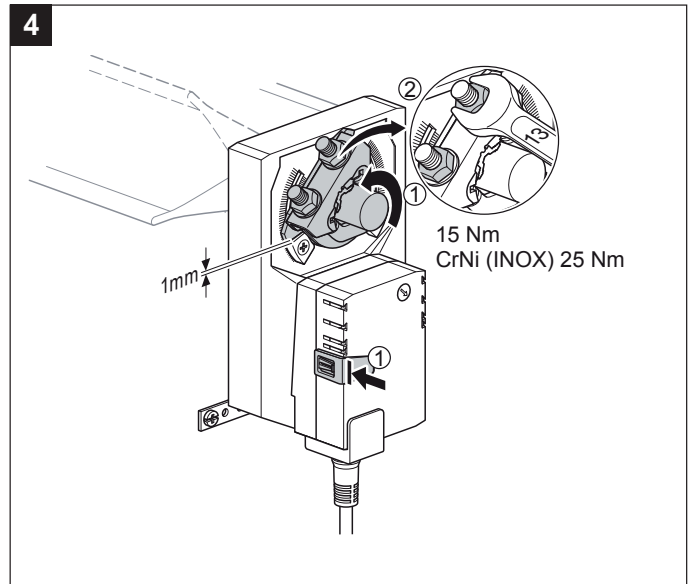
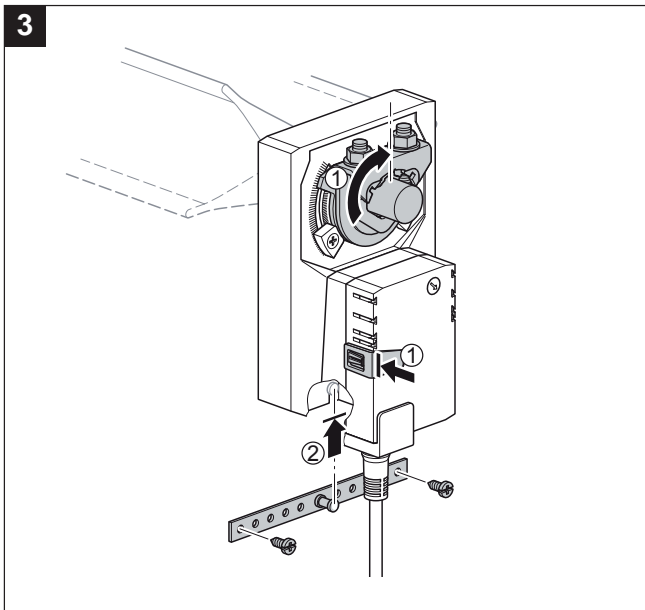
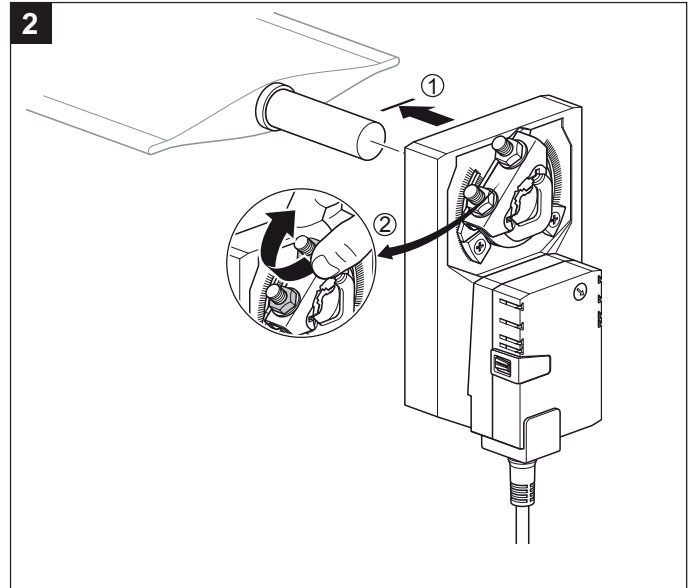
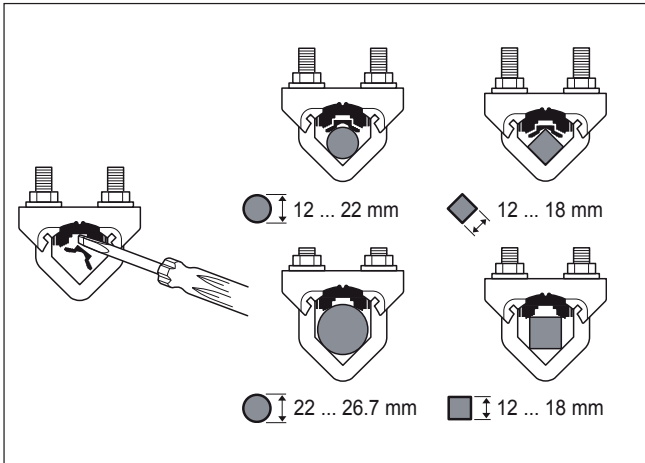
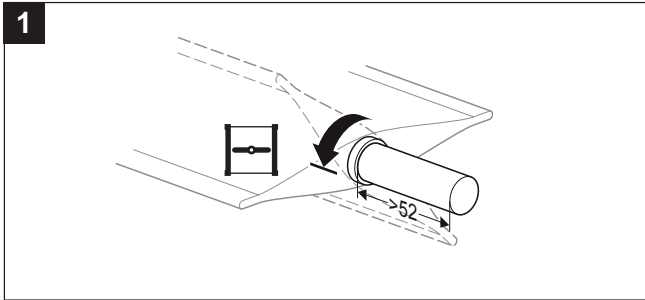
Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption	12W @ nominal torque / 3W @ holding
	For transformer sizing	21VA (I _{max} 20A @ 5ms)
Functional data	Connecting cable	Cable 1m, 5x0.75mm ²
	Torque	40Nm @ nominal voltage
	Control signal Y	DC (0)2...10V @ input impedance 100kΩ
	Position feedback signal U	DC 2...10V @ max. 0.5mA
	Emergency setting position (POP)	0...100% adjustable
	Bridging time (PF)	1...10s adjustable (factory setting 2s)
	Position accuracy	±5%
	Direction of rotation	-motor As an option with ↻/↻ -POP Reversible with switch 0 ... 100% -Y=0V At switch position 1 ↻ or 0 ↻, respectively
	Manual override	Gearing latch disengaged by push button
	Angle of rotation	Max. 95°, adjustable by mechanical stops
	Running time	-standard 90...150s adjustable (factory setting 150s/90°) -POP 35s @ 0...+50°C
	Automatic adjustment of 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
	Override control	MAX (maximum position) = 100% MAX = (MIN + 32%)...100% MIN (minimum position) = 0% MIN = 0%...(MAX - 32%) ZS (intermediate position, only AC) = 50% ZS = MIN...MAX
	Working conditions	Sound power level
Position indicator		Mechanical
Protection class		III (safety extra-low voltage)
Degree of protection		IP54
EMC		CE according to 2004/108/EC
Certification		Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14
Mode of operation		Type 1.AA (EN 60730-1)
Ambient temp.		-30...+50°C
Non-operation temp.		-40...+80°C
Humidity		5...95% RH, non-condensing
Dimensions / weight	Maintenance	Maintenance-free
	Dimensions (LxWxH)	210x116x87mm (same dimensions as GKU24)
	Weight	1.8kg



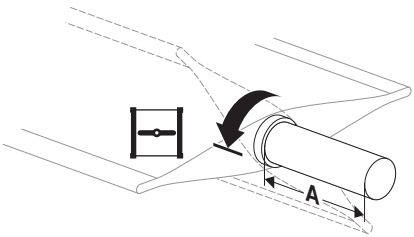






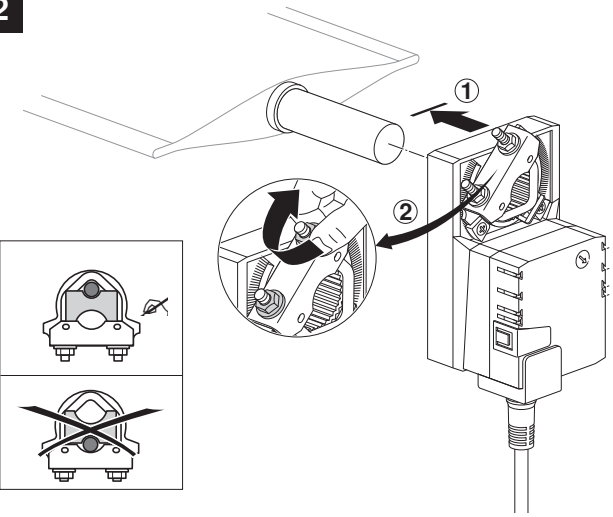


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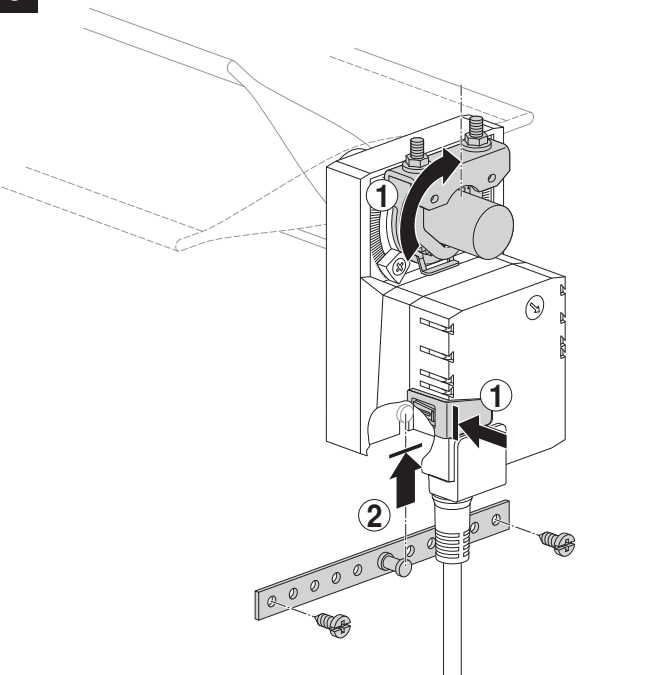


	A			
LMQU24..	≥40	8 ... 26.7	≥ 8	≤ 26.7
NMQU24..	≥42	8 ... 26.7	≥ 8	≤ 26.7

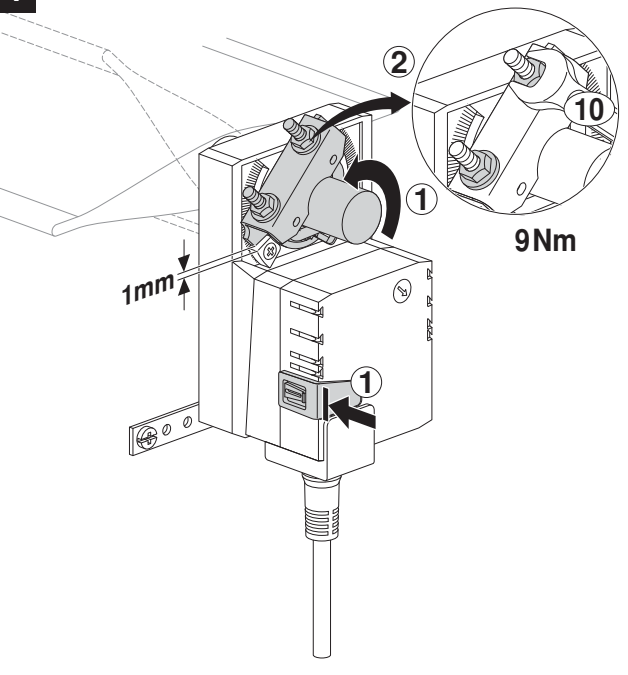
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3



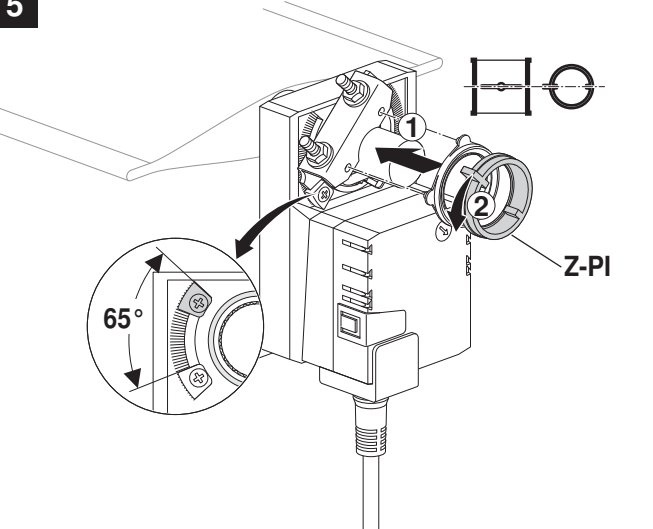
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9Nm

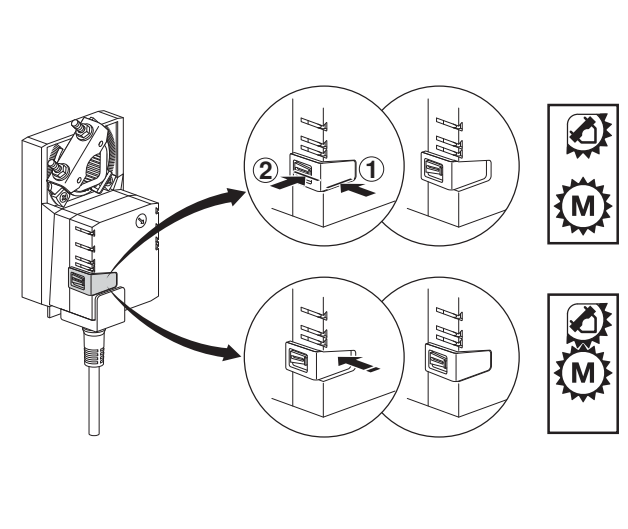
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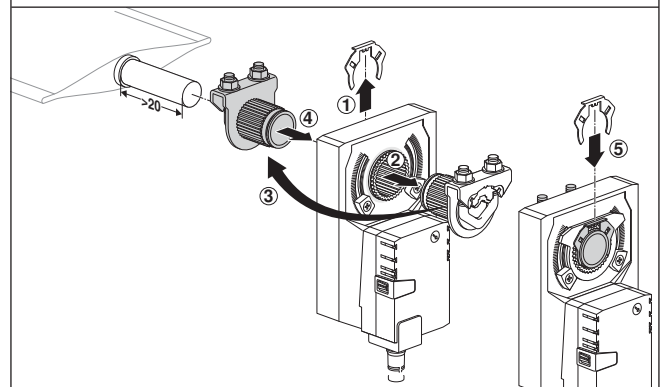
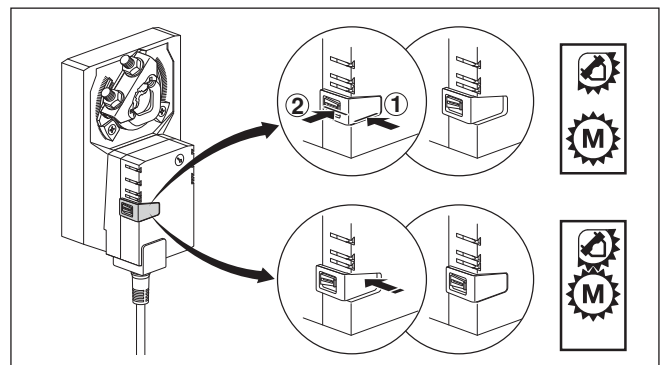
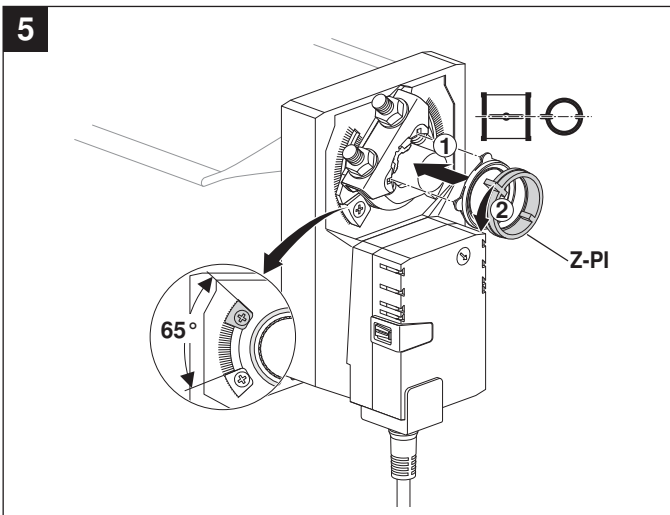
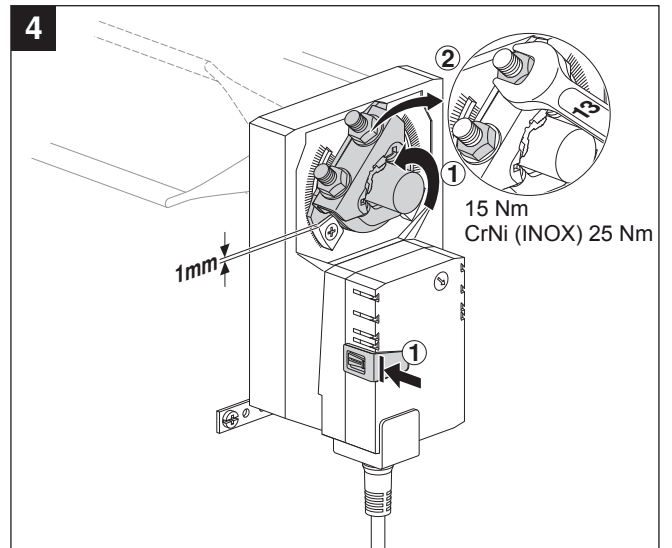
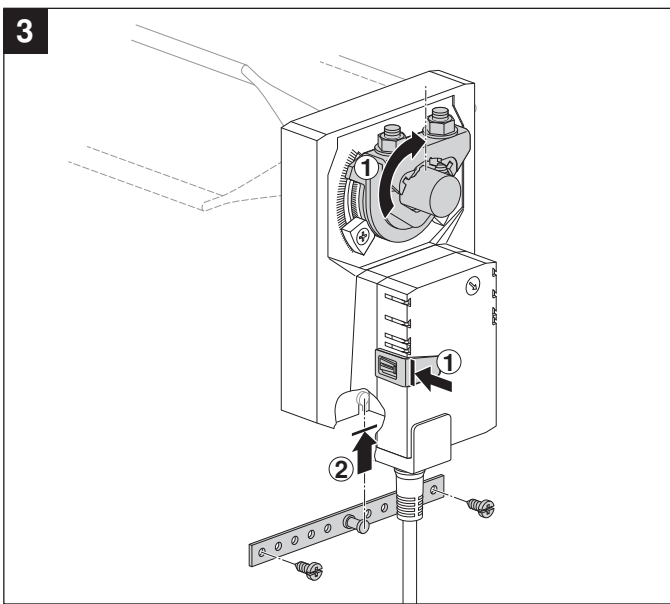
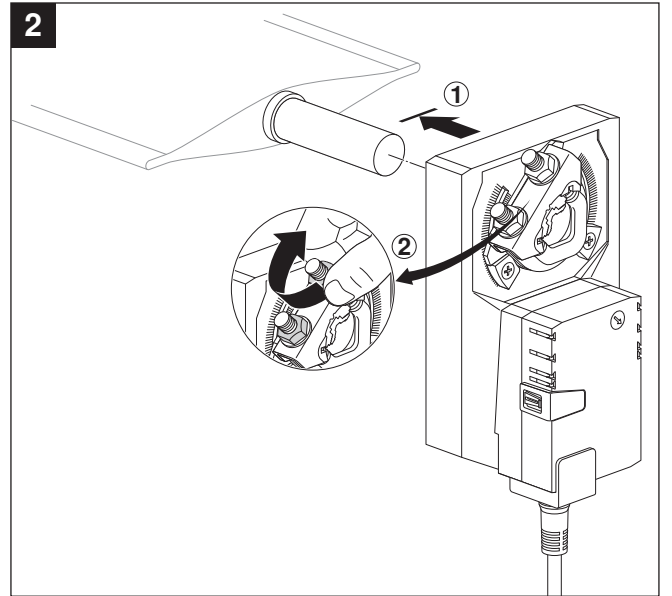
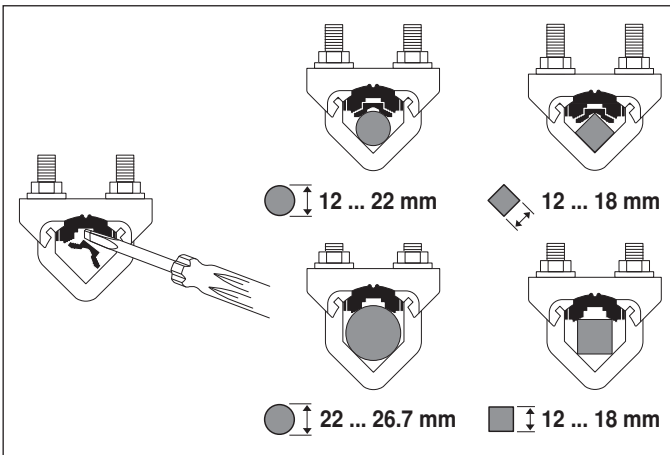
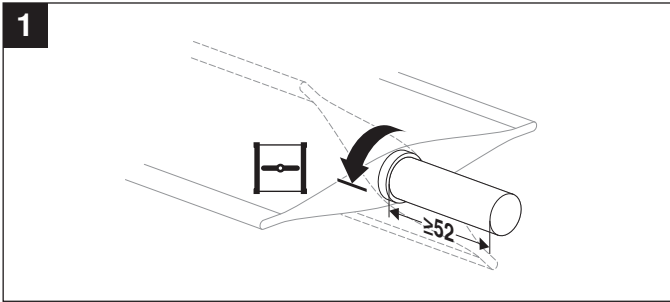
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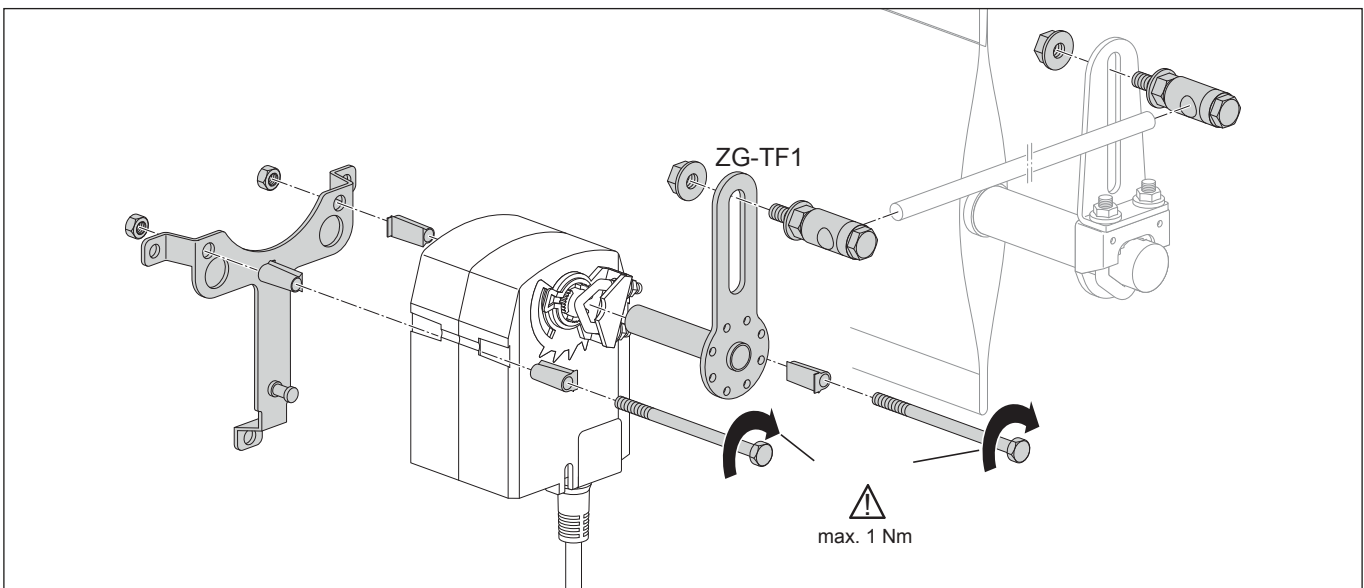
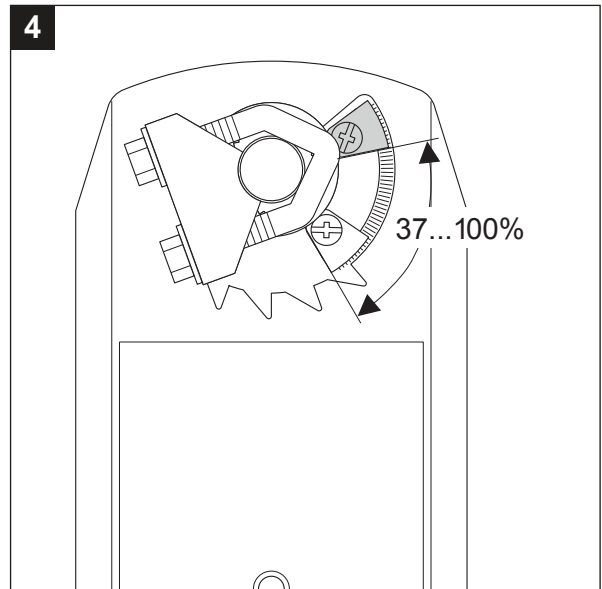
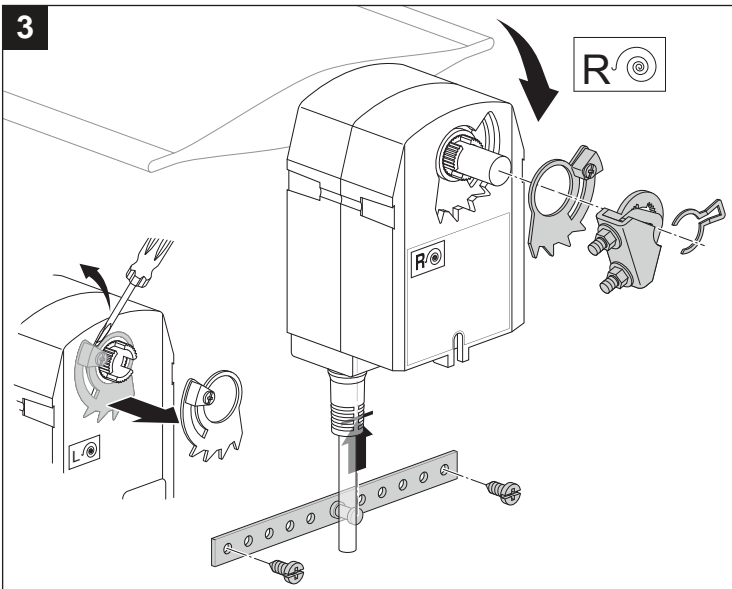
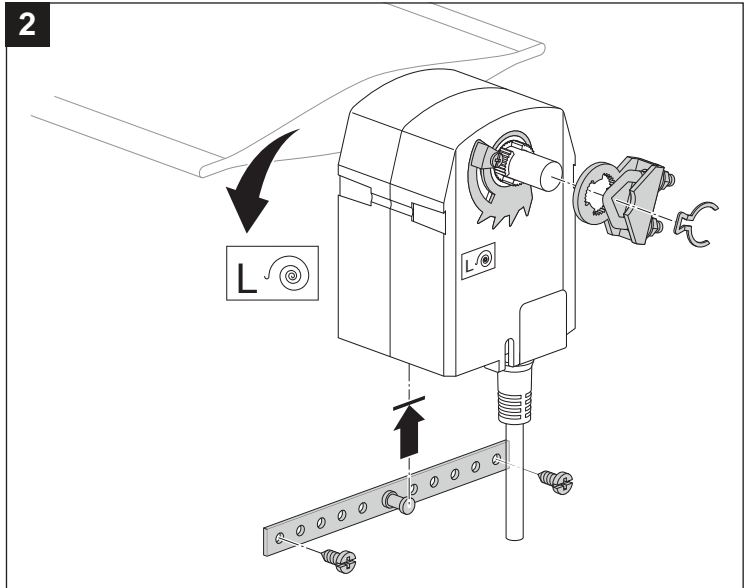
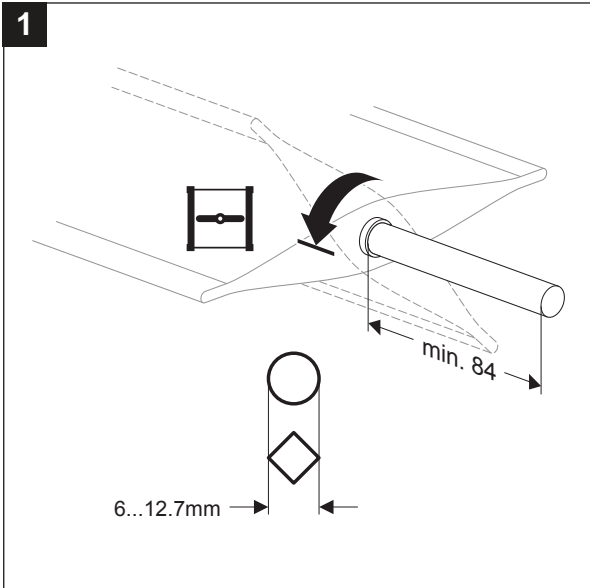


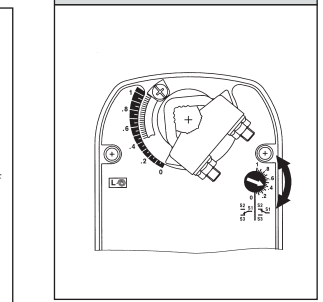
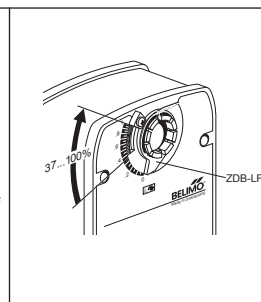
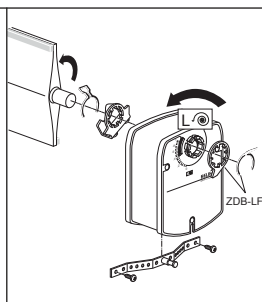
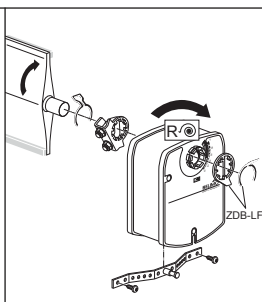
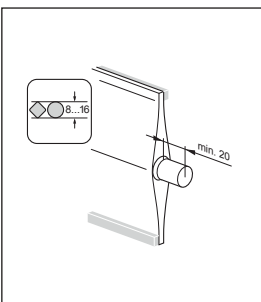
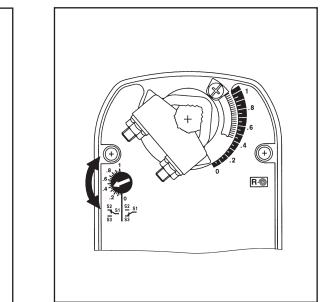
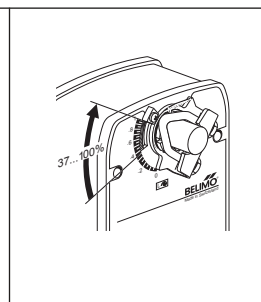
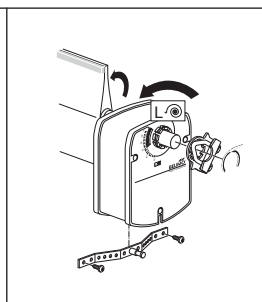
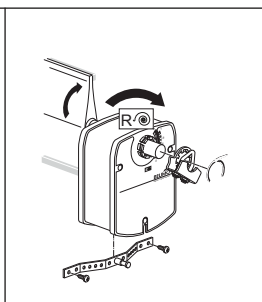
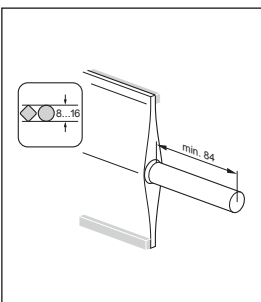
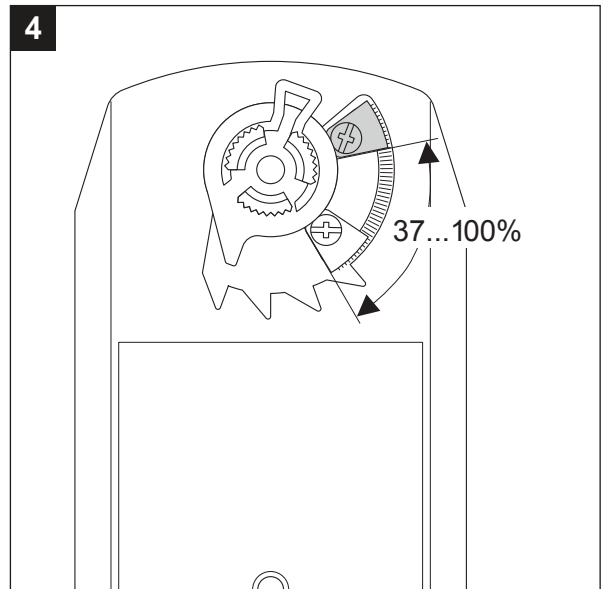
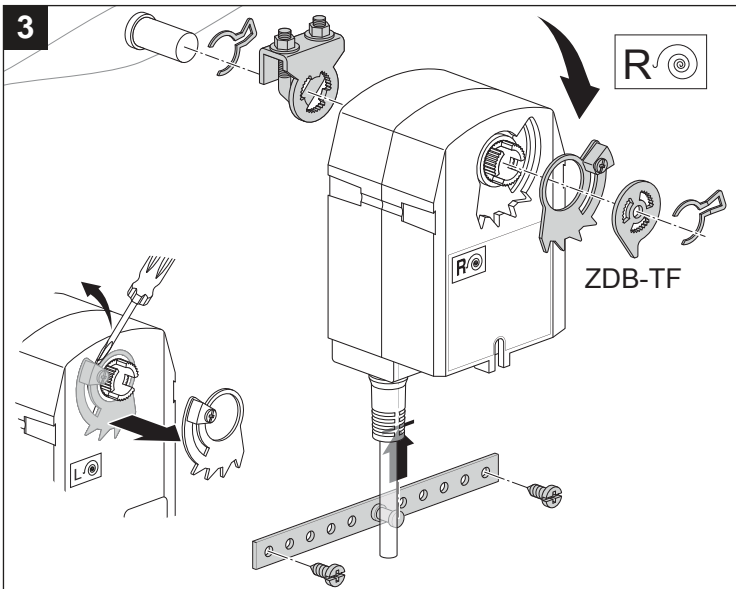
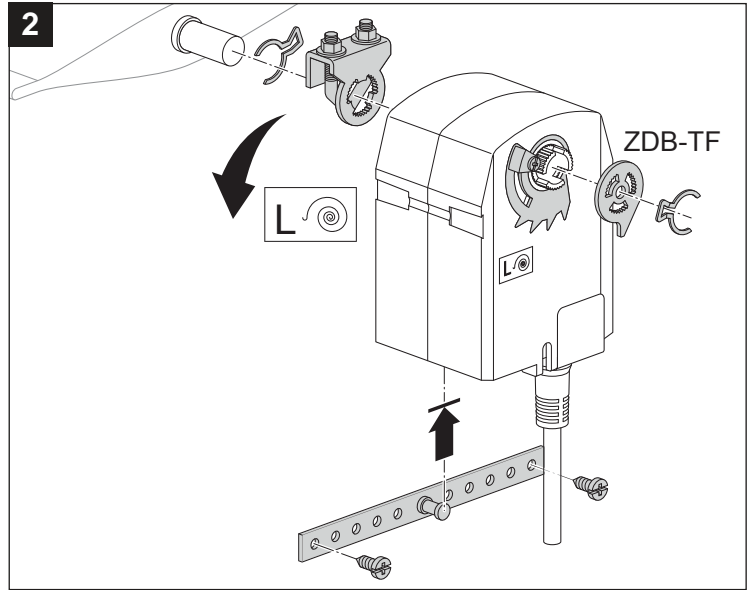
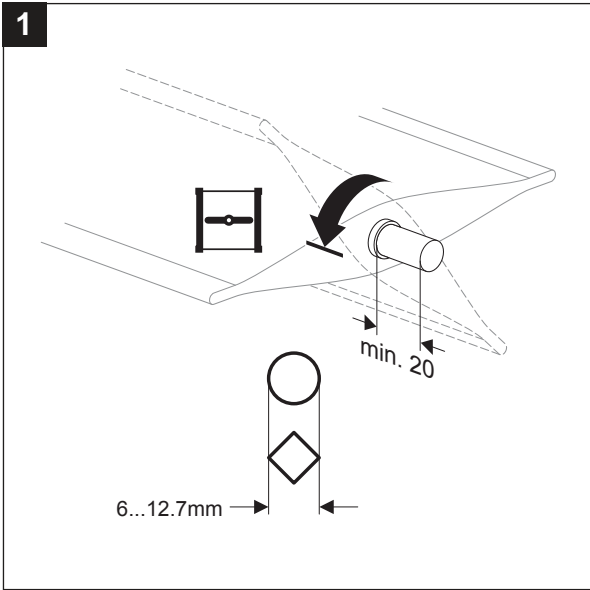
Z-PI

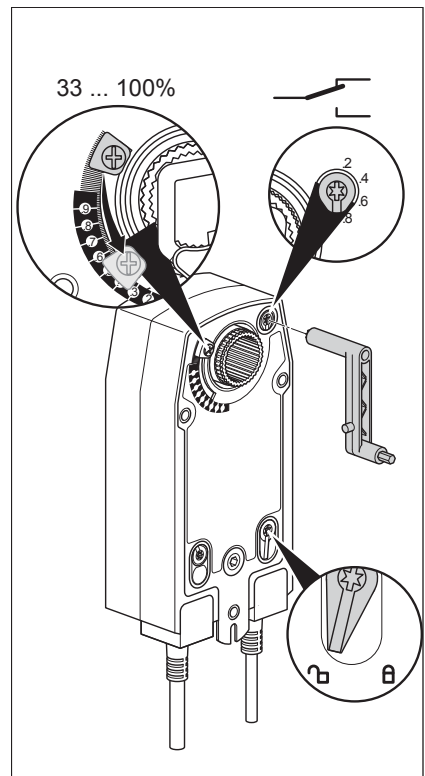
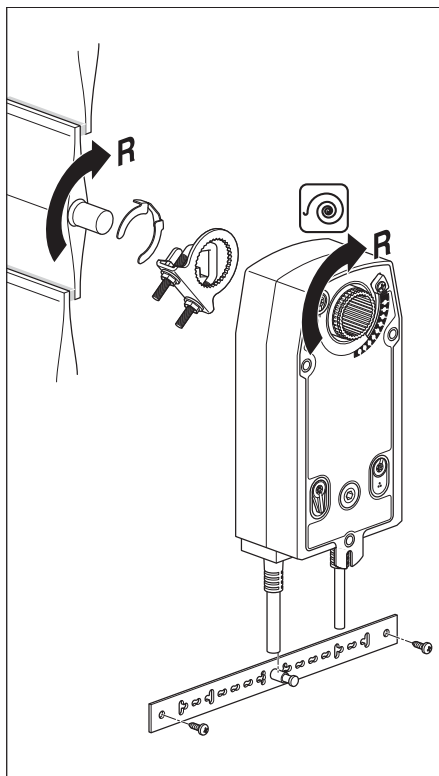
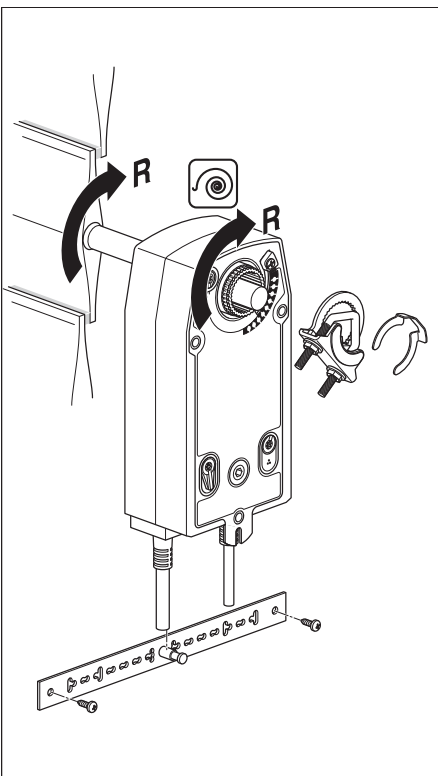
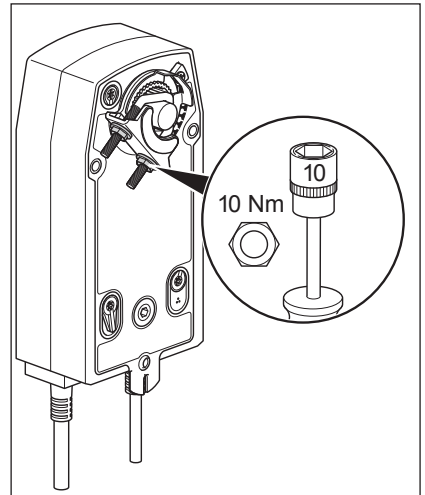
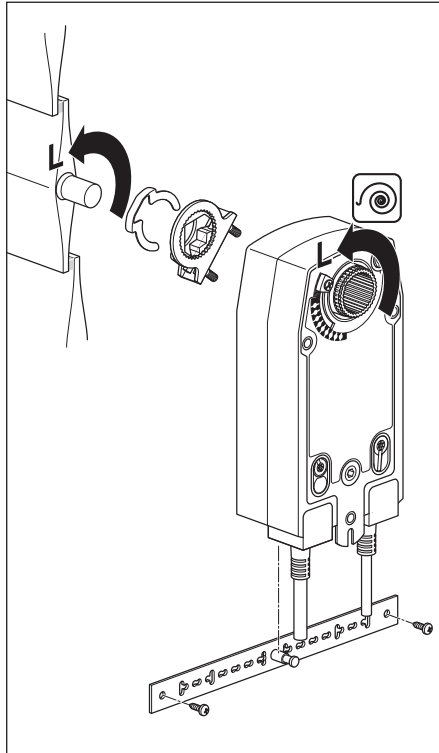
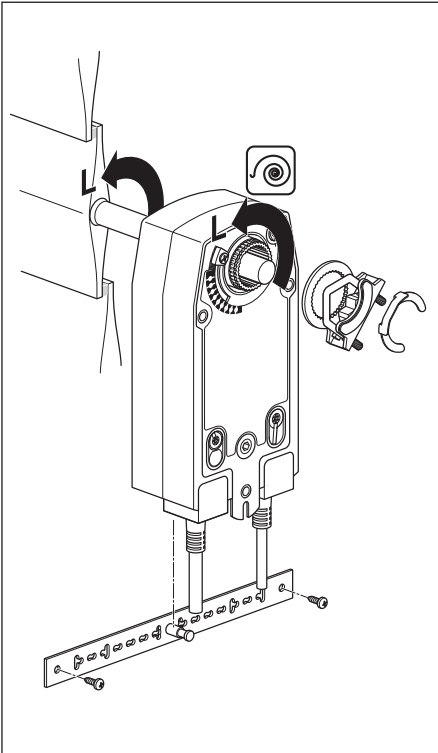
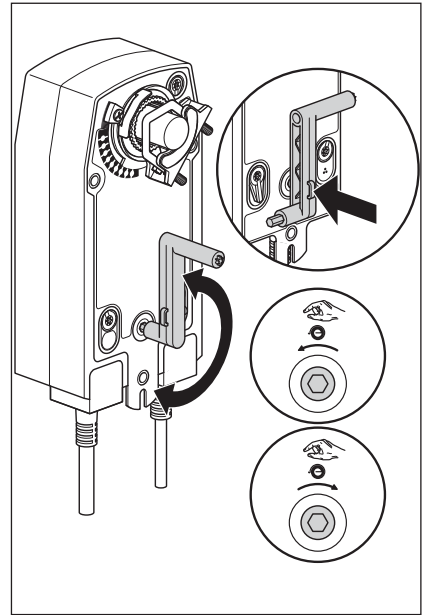
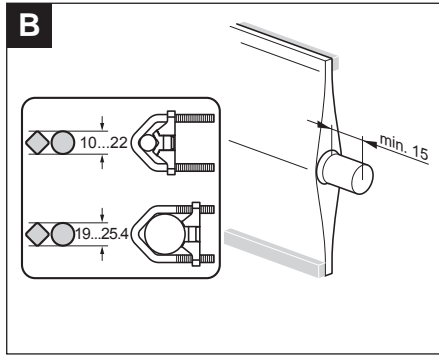
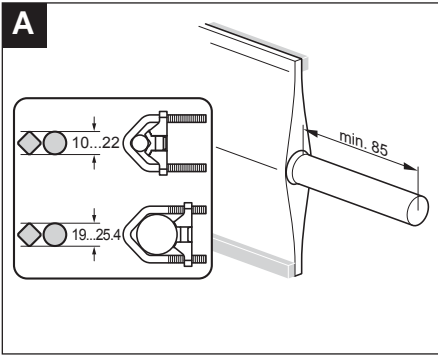
65°

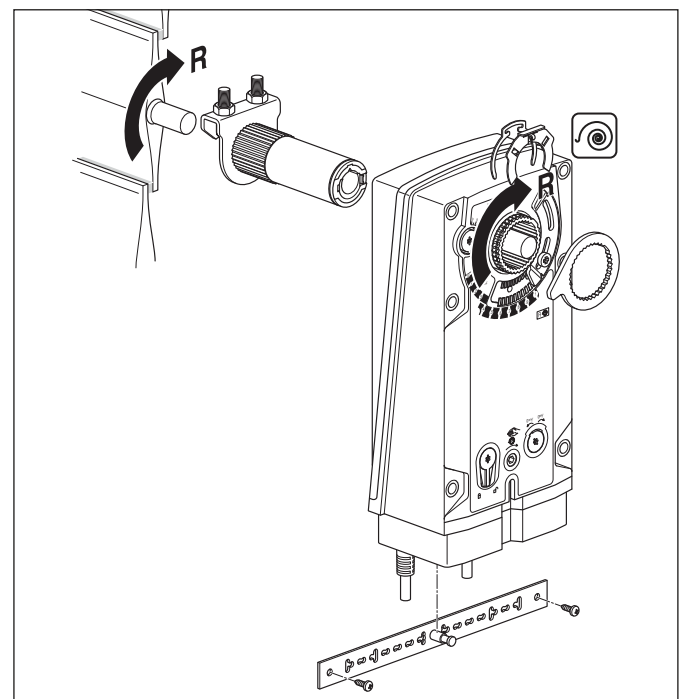
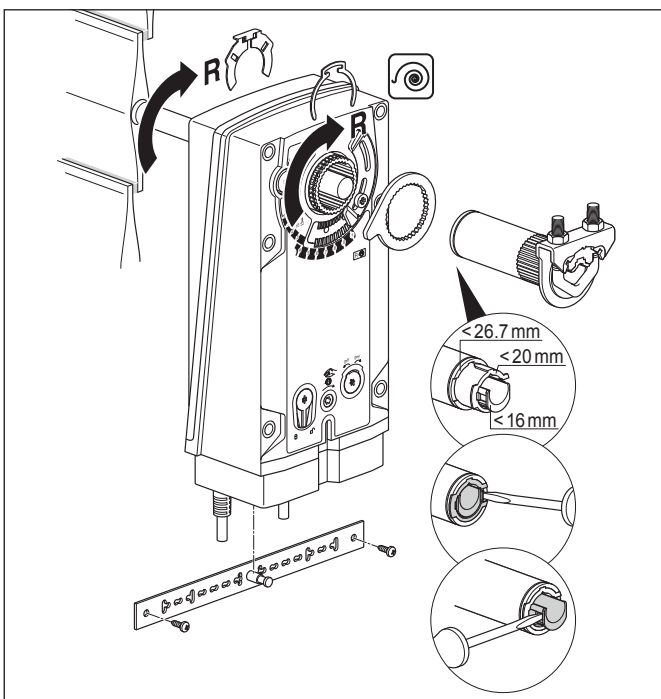
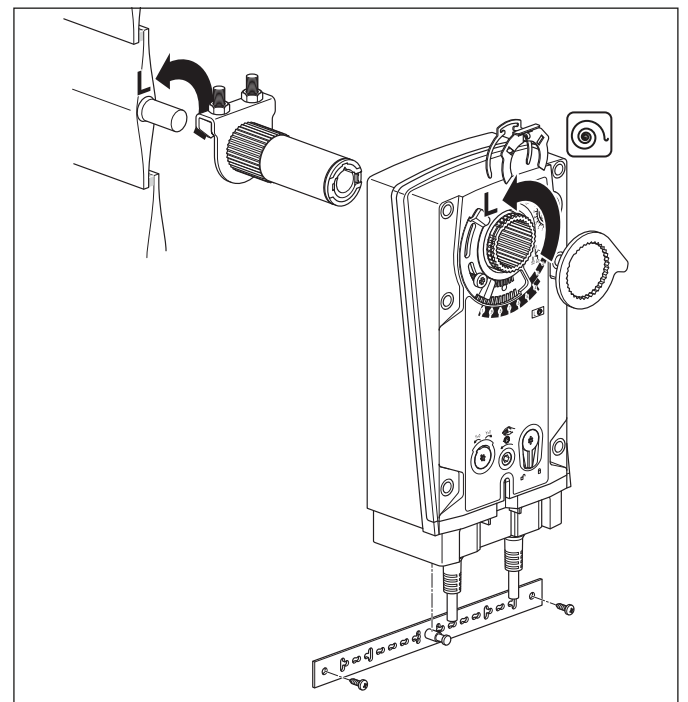
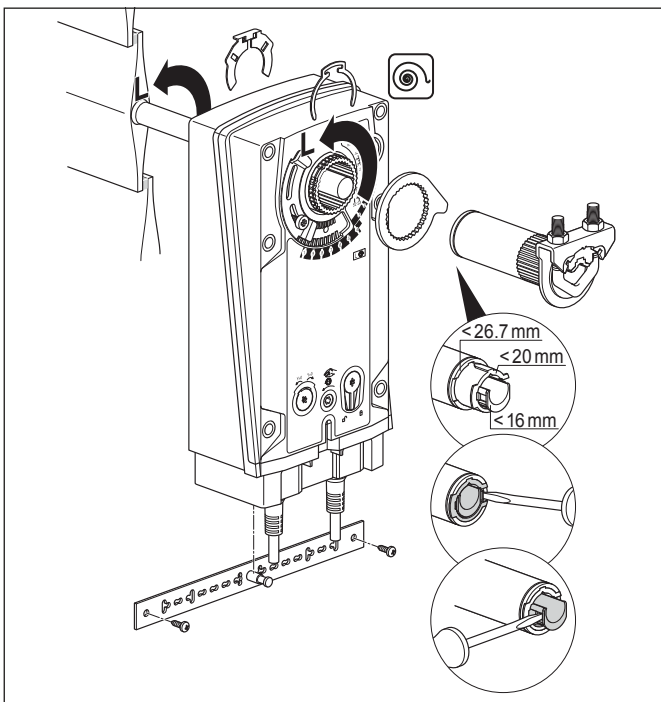
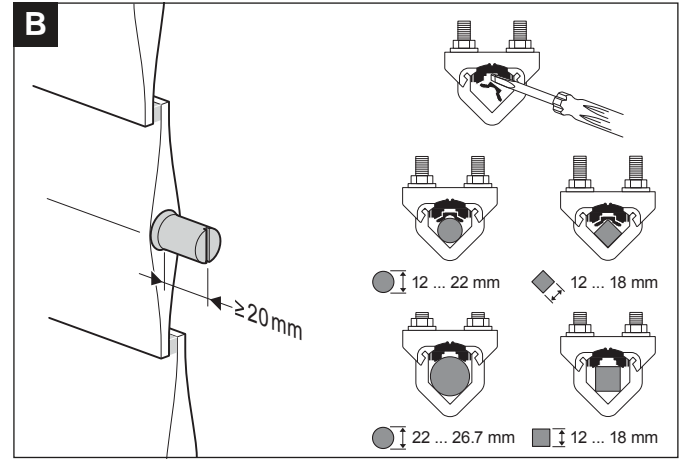
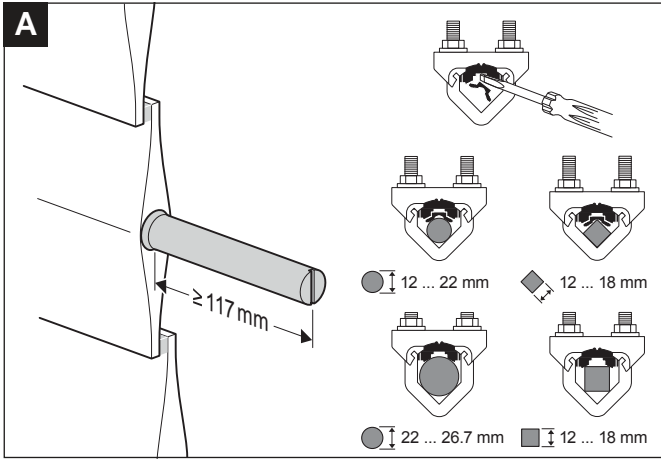


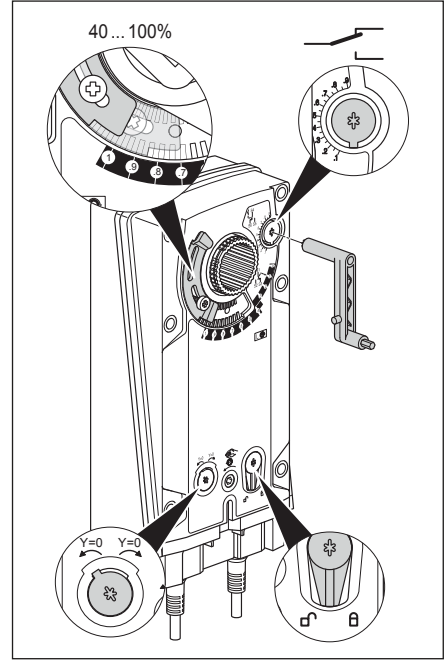
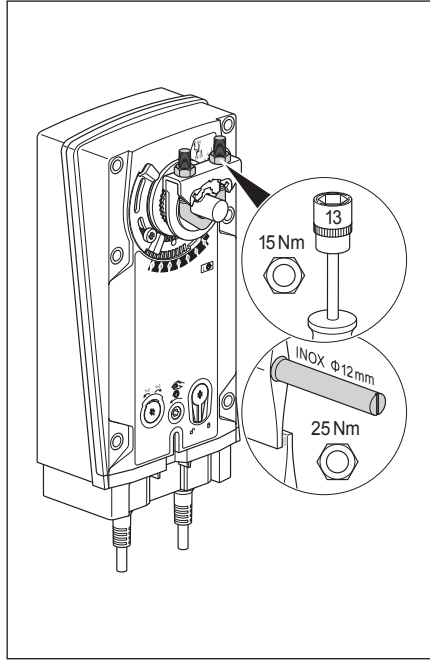
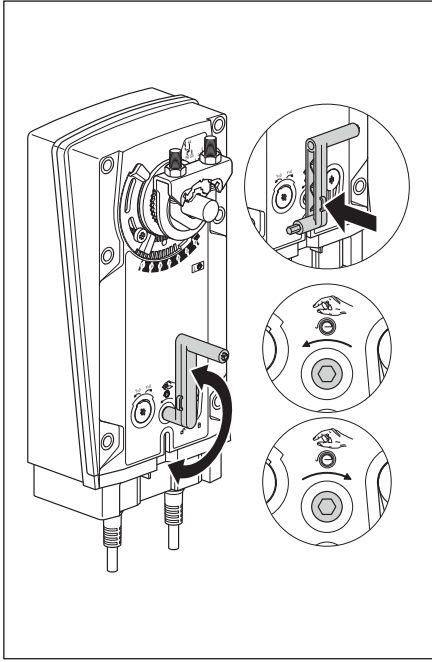


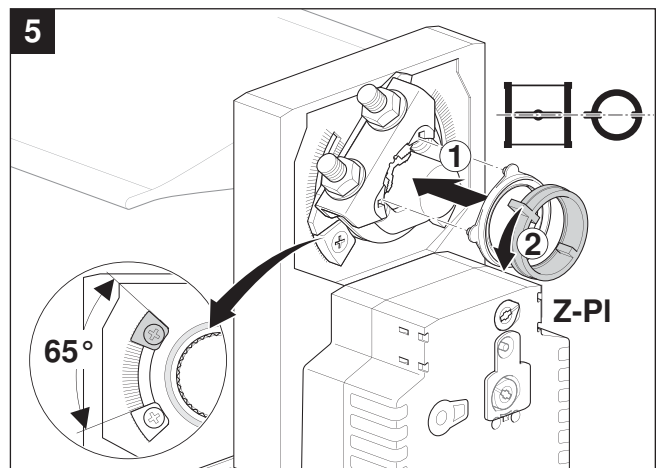
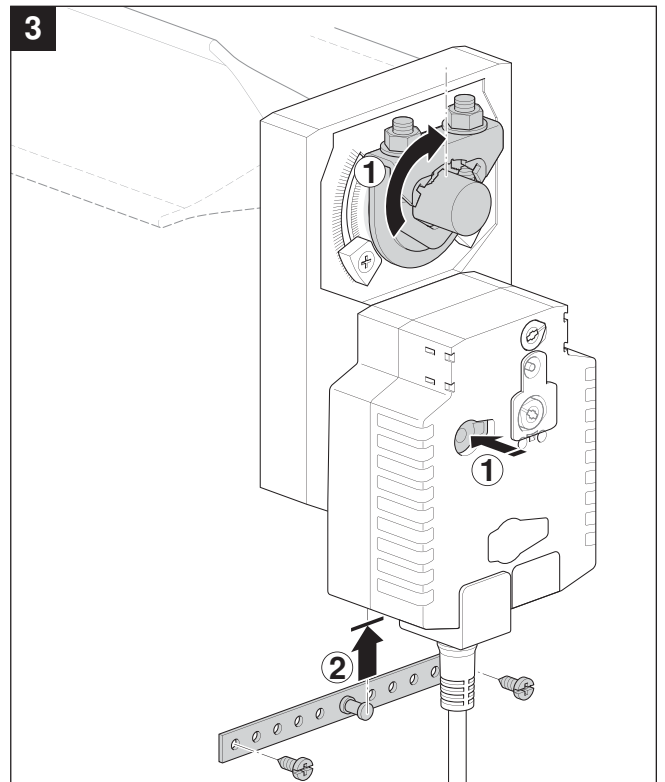
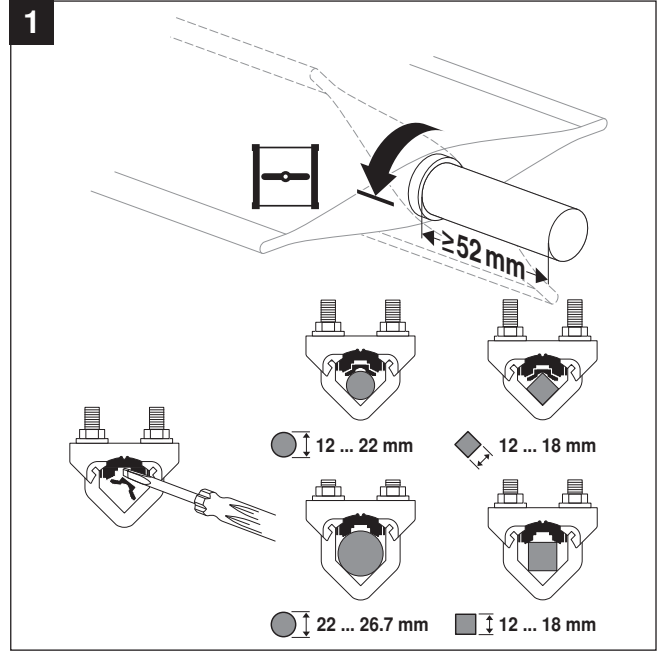
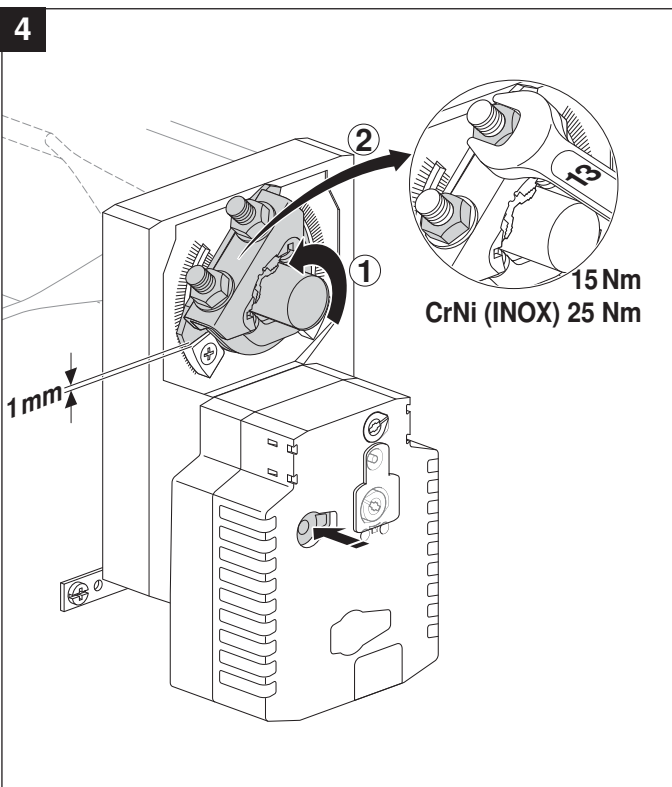
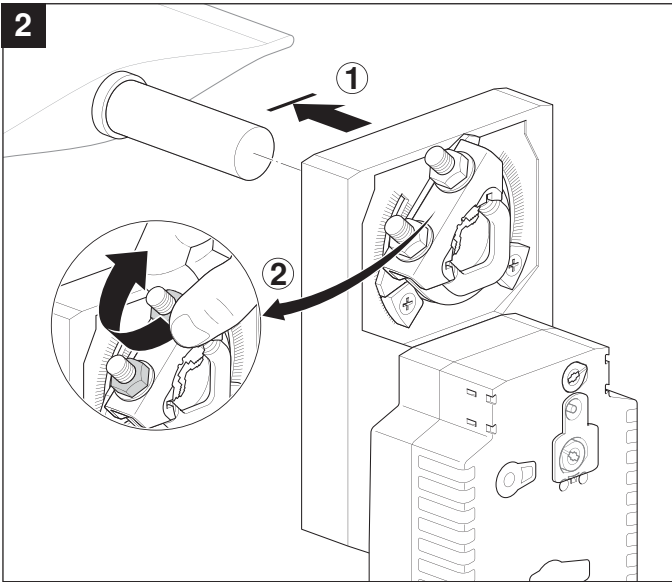
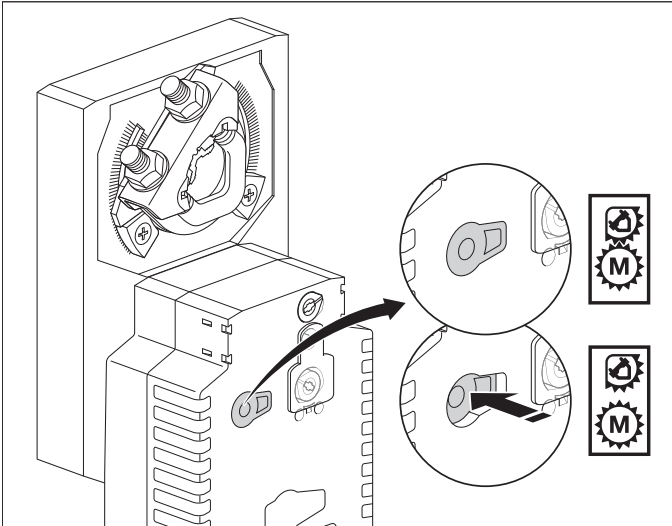


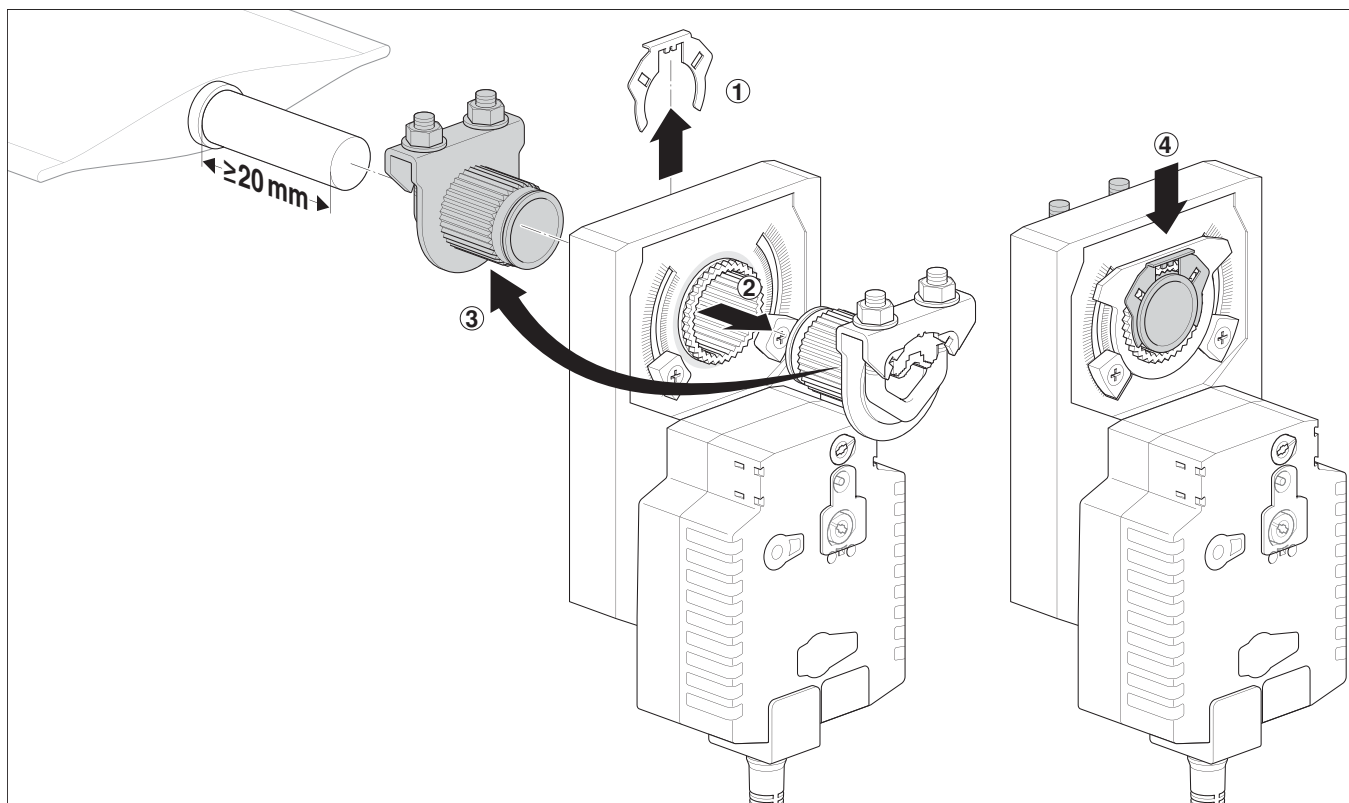










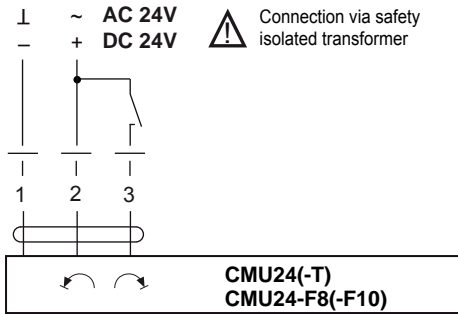


Wiring diagrams: CMU.. series actuators

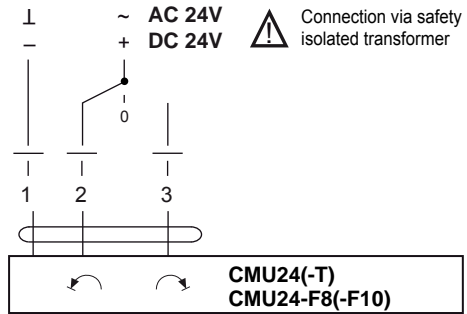
Notes:

- Parallel connection of several actuators is possible.
- Power consumption must be observed.

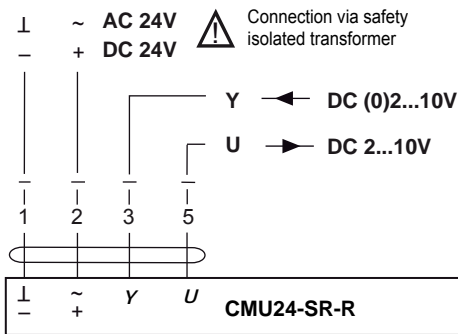
Open/Close control



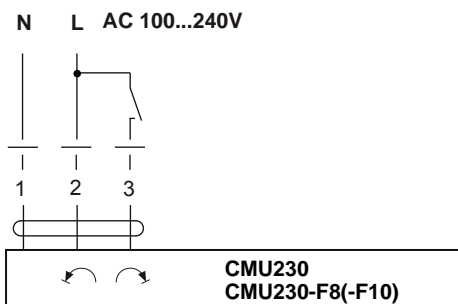
3-point control



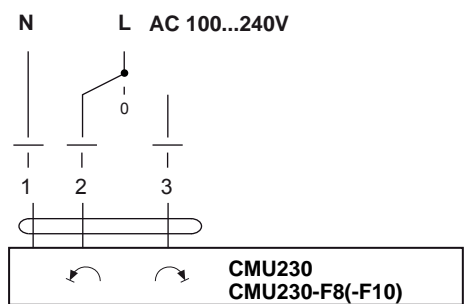
Modulating control



Open/Close control



3-point control



Wiring diagrams: Open/Close actuators—parallel connection possible, please note the performance data.

1-wire control

AC 24V DC 24V Connection via safety isolated transformer

Direction of rotation (while direction of rotation reverses)

1 2 3 S1 S2 S3

LMU24-S, NMU24-S
SMU24-S

0...100%

LMU24(-T/-F), NMU24(-T), SMU24
GMU24, LMQU24, NMQU24, SMQU24

N L AC 100...240V

1 2 3 S1 S2 S3

LMU230-S, NMU230-S
SMU230-S

0...100%

LMU230(-F), NMU230
SMU230(-F), SMDU230, GMU230

2-wire control

AC 24V DC 24V Connection via safety isolated transformer

Direction of rotation (while direction of rotation reverses)

1 2 3 S1 S2 S3

LMU24-S, NMU24-S
SMU24-S

0...100%

LMU24(-T/-F), NMU24(-T)
SMU24, GMU24*

N L AC 100...240V

1 2 3 S1 S2 S3

LMU230-S, NMU230-S
SMU230-S

0...100%

LMU230(-F), NMU230(-F)
SMU230(-F), SMDU230, GMU230*

*GMU.. only for Open/Close application.

Wiring diagram: Modulating actuators—parallel connection possible, please note the performance data.

AC 24V DC 24V Connection via safety isolated transformer

Y ← DC (0)2...10V
U → DC 2...10V

1 2 3 5

LM(Q)U24-SR, NM(Q)U24-SR
SM(Q)U24-SR, GMU24-SR

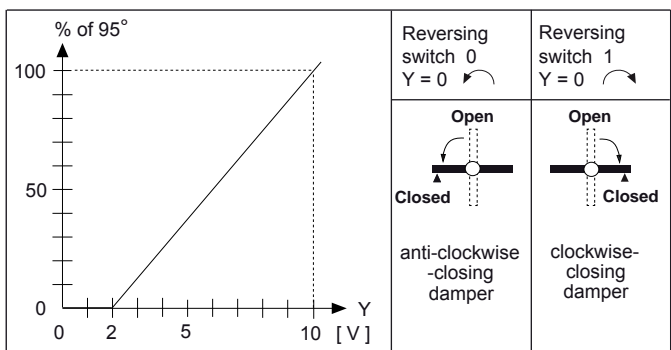
N L AC 100...240V

AC 24V power output

1 2 3 5

LMU230SR, NMU230SR
SMU230SR

Position - signal voltage

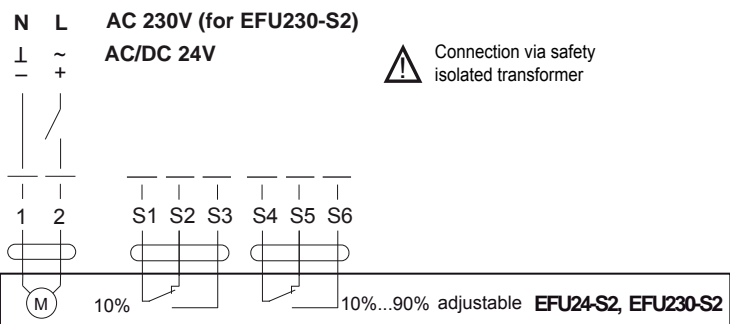
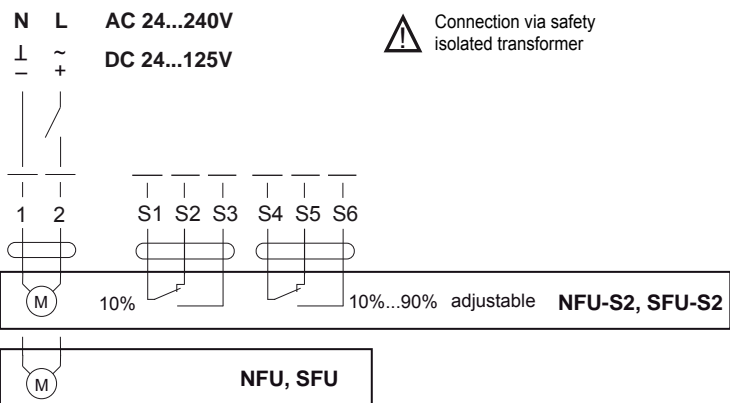
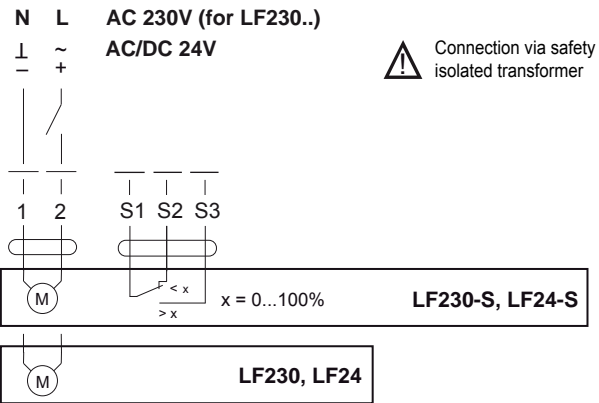
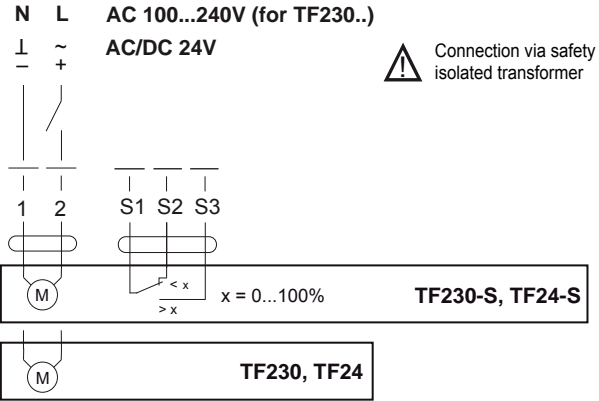


Direction of rotation

Wiring diagrams: Open/Close actuators

Notes:

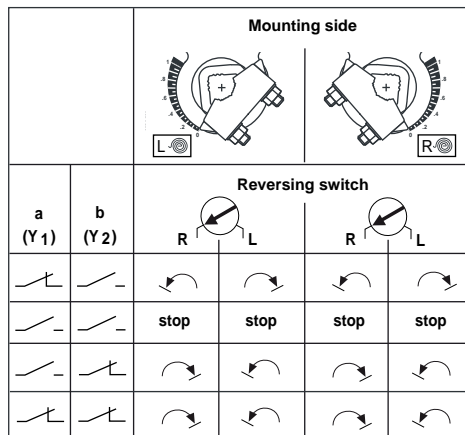
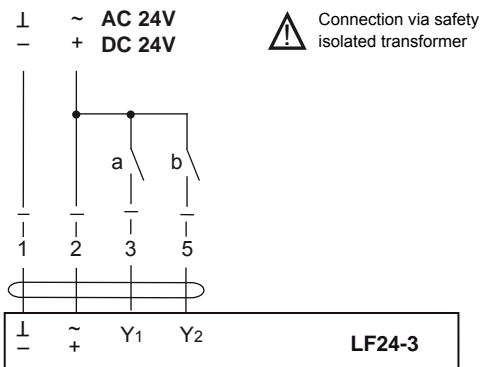
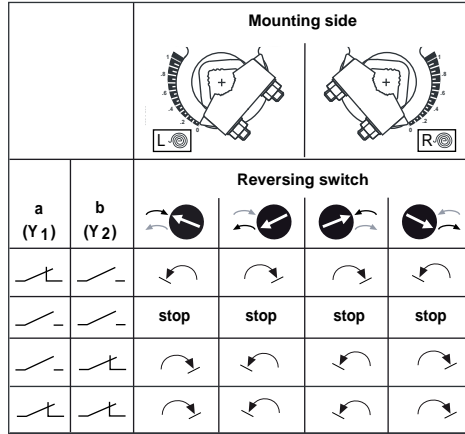
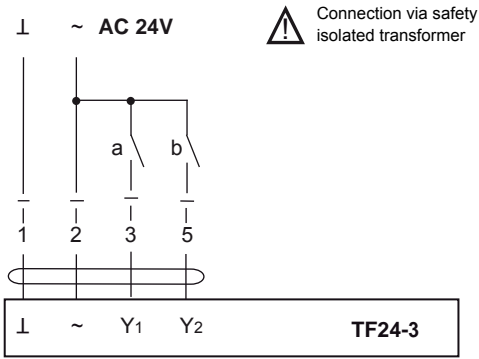
- Parallel connection of several actuators is possible.
- Power consumption must be observed.



Wiring diagram: 3-point actuators

Notes:

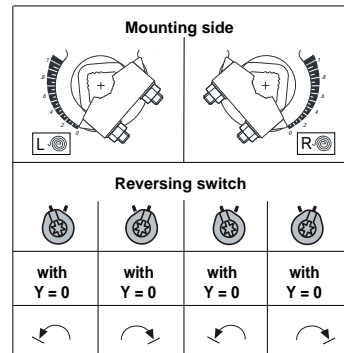
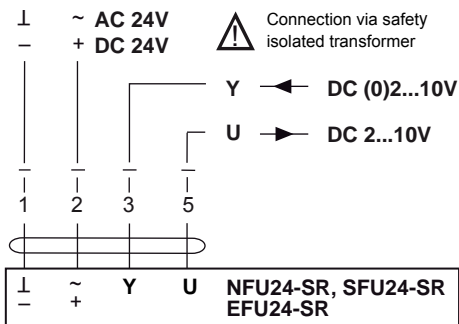
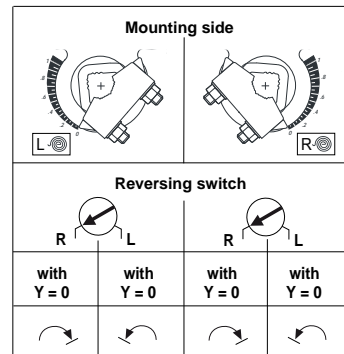
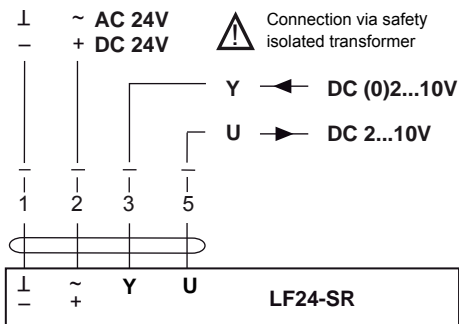
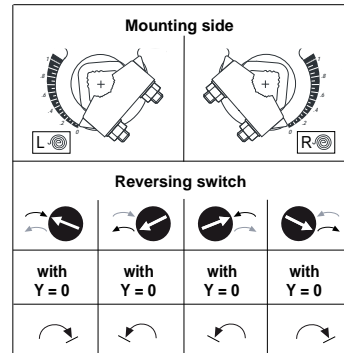
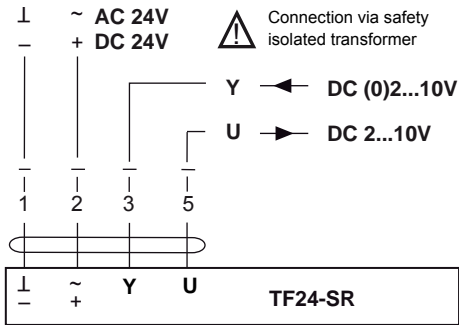
- Connection via safety isolating transformer.
- Parallel connection of several actuators is possible.
- Power consumption must be observed.



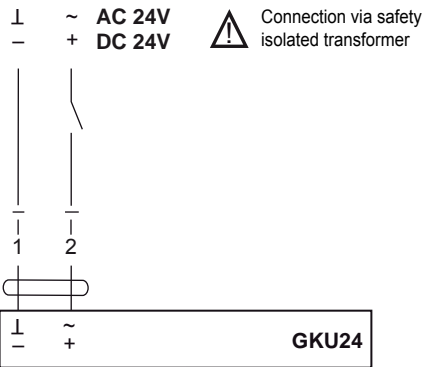
Wiring diagram: modulating actuators

Notes:

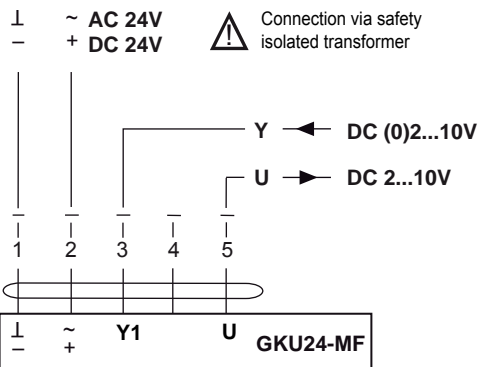
- Connection via safety isolating transformer.
- Parallel connection of several actuators is possible.
- Power consumption must be observed.



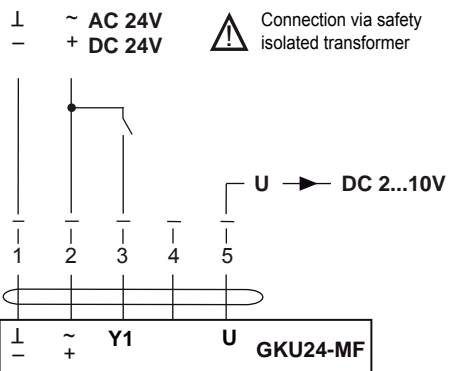
Wiring diagram: Open/Close actuators



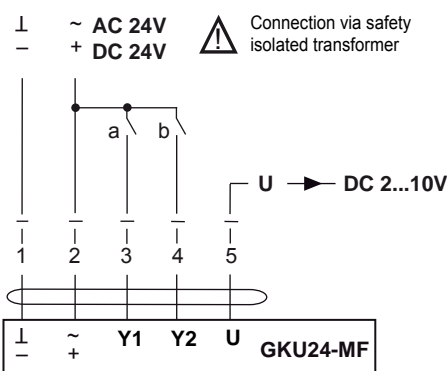
Wiring diagram: -MF



Open/Close control



3-point control

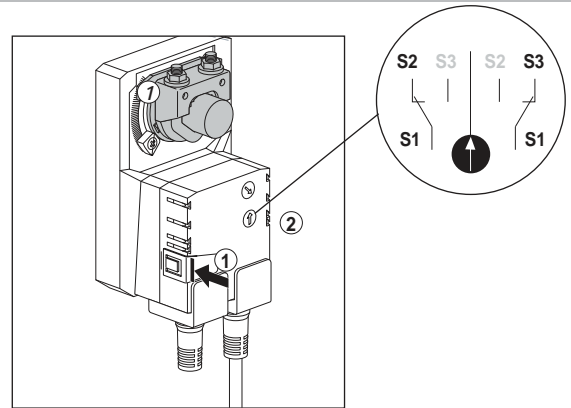


a (Y1)	b (Y2)	Reversing switch	
		stop	stop

Auxiliary switch adjustment for General Damper Actuators

1. Press the pushbutton, manually operate the universal clamp to desired switch position.
2. Turn switch pointer to the middle line.
3. When actuator moves clockwise (counter clockwise) to switch position, switch indicator passes the middle line counter clockwise (clockwise), the contact between S1 and S3 is disconnected (connected) and the contact between S1 and S2 is connected (disconnected).

Note: The switching point should be about 5° from the mechanical end stops (1 short step on the scale).



Auxiliary switch adjustment for Mechanical Fail-Safe Damper Actuators

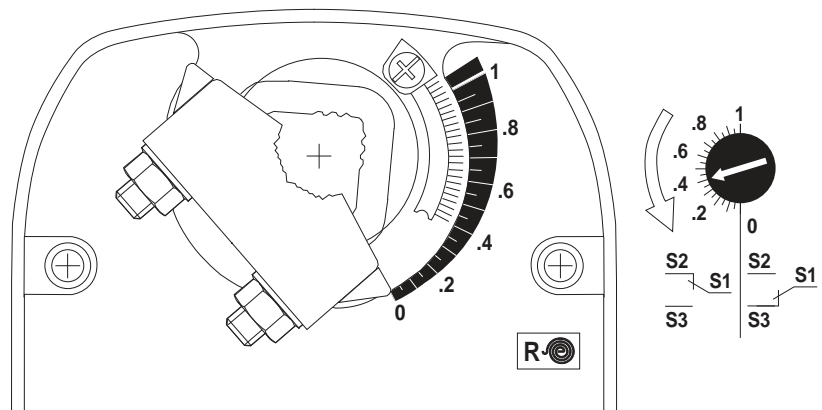
LF..-S (Mounting side R); NFU-S2, SFU-S2, EFU..-S2 (Mounting side L)

Starting point: Actuator in safe position

Procedure

Turn the knob of the auxiliary switch until the tip of the arrow is pointing to the required switching position (see right). Example: Switching point setting = 4 corresponds to 40% angle of rotation.

When the actuator runs to the operating position (ccw ↺), the switch knob will also rotate counter-clockwise (ccw ↺) and the auxiliary switch will operate as the tip of the arrow passes the scale zero (S1–S3 linked).



Fast Running Q.. Actuators 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 fault
On: In 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 switch**
Press button: Gear disengaged, motor stops, manual override possible
Release button: Gear engaged, synchronisation starts, followed by standard operation

Check voltage supply connection














- a) ② Off and ③ On } Check the supply connections.
- b) ② Blinking and ③ Blinking } Possibly \pm and $\bar{\sim}$ are swapped over.






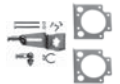




- ⑤ **No function**

		Actuators										
		CMU	LMU	NMU	SMU	GMU	TF	LF	NFU	SFU	EFU	GPU
	S..A.. Auxiliary switch, add on											
	S1A 1xSPDT 3A(0.5A), AC 250V		•	•	•	•						•
	S2A 2xSPDT 3A(0.5A), AC 250V S2A -F 2xSPDT 3A(0.5A), AC 250V		•	•	•	•			•	•	•	•
	P..A.. Feedback potentiometer, add on											
	P140A.. 140Ω		•	•	•	•						•
	P500A.. 500Ω		•	•	•	•						•
	P1000A.. 1000Ω		•	•	•	•						•
	P2800A.. 2800Ω		•	•	•	•						•
	P5000A.. 5000Ω		•	•	•	•						•
	P10000A.. 10000Ω P200A-F 200Ω		•	•	•	•			•	•	•	•
	SGA24 Positioner for surface mounting 0...100% Reversible operating range DC 0...10V or DC 2...10V	1)	1)	1)	1)	1)	1)	1)	1)	1)	1)	2)
	SGE24 Positioner for rack mounting 0...100% Reversible operating range DC 0...10V or DC 2...10V	1)	1)	1)	1)	1)	1)	1)	1)	1)	1)	1)
	SGF24 Positioner for front-panel mounting 0...100% Reversible operating range DC 0...10V or DC 2...10V	1)	1)	1)	1)	1)	1)	1)	1)	1)	1)	2)
	ZDA24 Digital position indicator for front-panel mounting 0...99% Front size 72x72mm Operating range DC 2...10V	1)	1)	1)	1)	1)	1)	1)	1)	1)	1)	1)

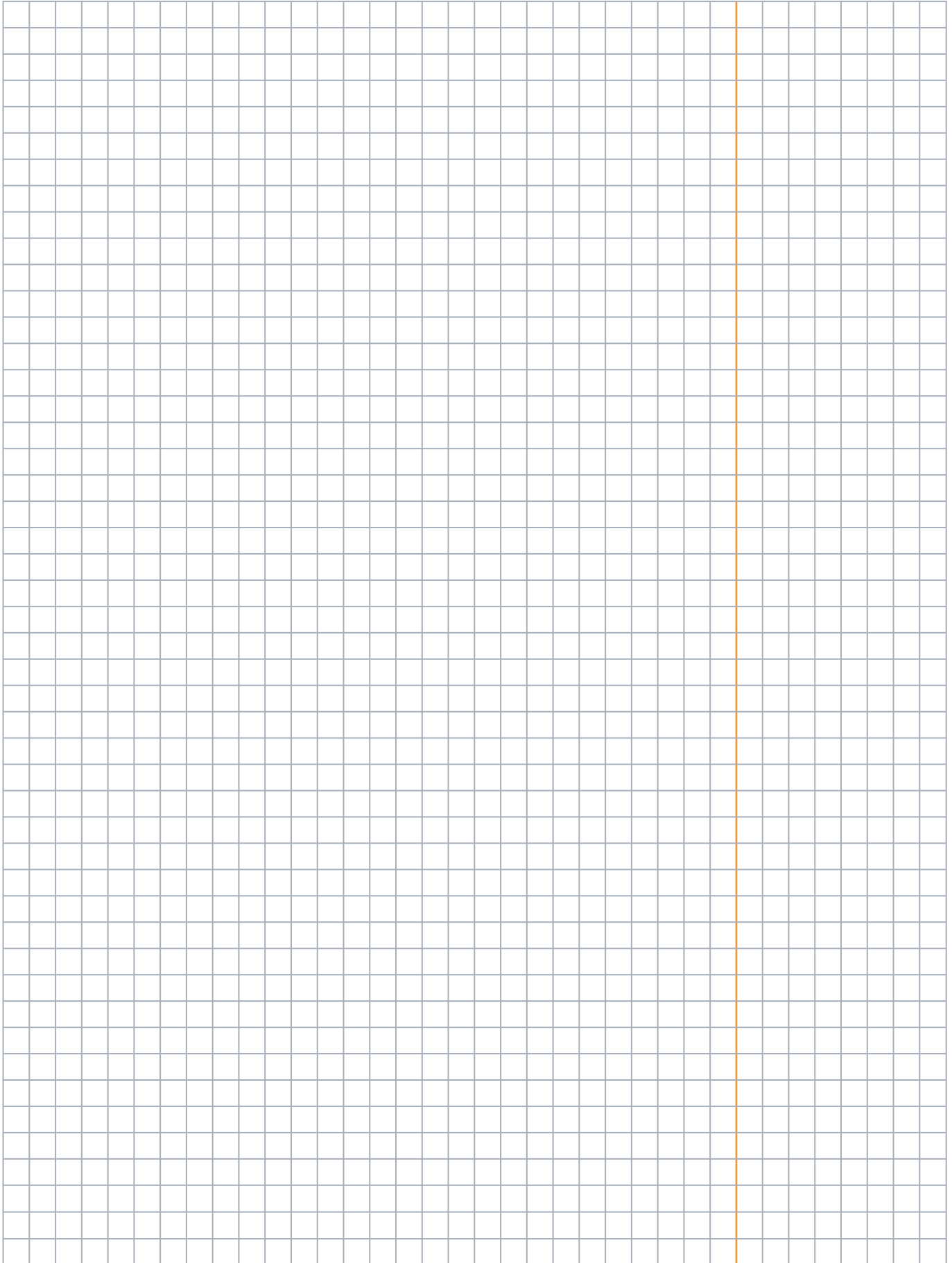
1) For ...SR

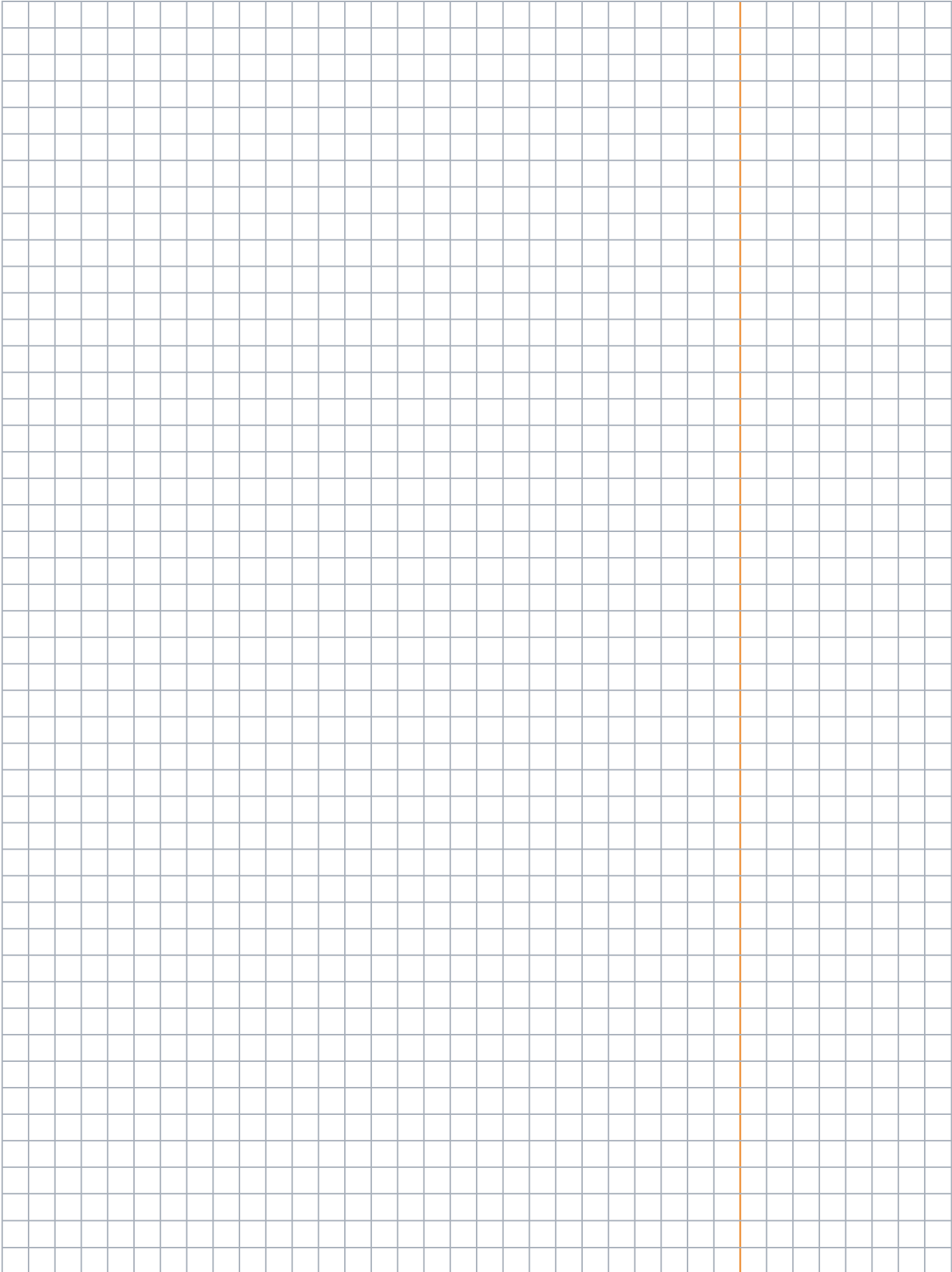
2) For ...MF

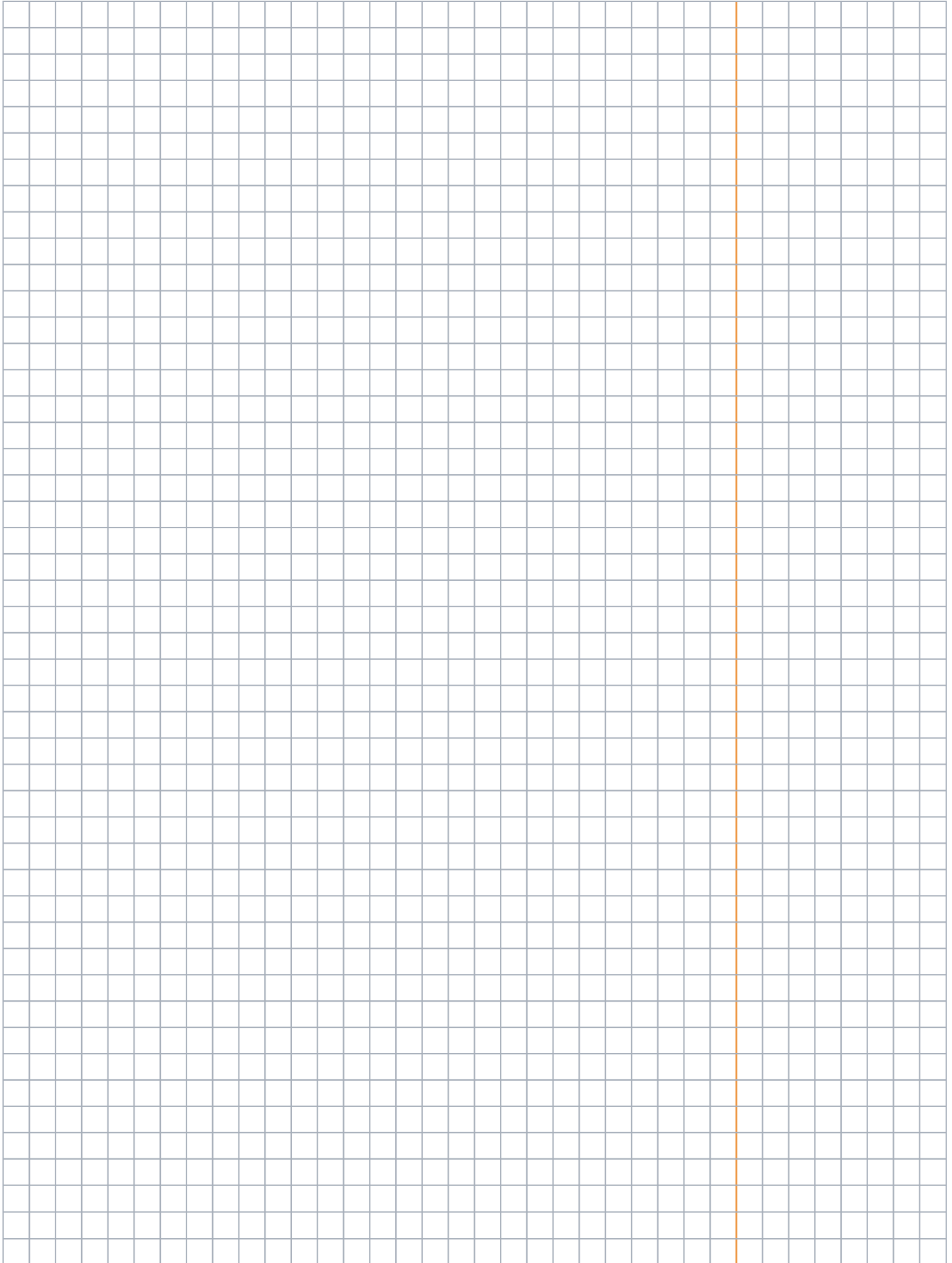
		Actuators							
		LMU	NMU LMQU NMQU	SMU SMDU	GMU SMQU	TF	LF	NFU	SFU
AN-20	Actuator arm 		•	•					
AH-25	Actuator arm 		•	•					
AH-GMA	Actuator arm 				•				
AV6-20	Shaft extension Length approximately 170mm For damper spindles ø6...20mm Extension ø10mm 	•				•	•		
AV8-25	Shaft extension Length approximately 250mm For damper spindles ø8...25mm Extension ø20mm 		•	•					
IND-AFB	NFU/SFU.. position indicator 							•	•
K6-1	Spindle clamp for LF.. For damper spindles ø16...20mm 						•		
K7-2	NFU/SFU.. standard clamp 1/2", 3/4", 1.05" 							•	•
K-ENSA	Spindle clamp For damper spindles ø8...20mm 		•	•					
K-NA	Reversible spindle clamp For damper spindles ø8...20mm 		• (except NMQU)						
K-SA	Reversible spindle clamp For damper spindles ø10...20mm 			• (NMQU)					
KG8	Ball joint Suitable for damper crank arm KH8 For round steel rod with ø8mm Zinc-plated steel 		•	•		•	•	•	•
KG10A	Ball joint Suitable for damper crank arm KH8 For round steel rod with ø10mm Zinc-plated steel 		•	•	•	•	•	•	•

		Actuators							
		LMU	NMU LMQU NMQU	SMU SMDU	GMU SMQU	TF	LF	NFU	SFU
ZG-118	NFU/SFU.. mounting bracket 							•	•
ZG-AFB	NFU/SFU.. crank arm adapter kit 							•	•
ZG-AFB118	NFU/SFU.. crank arm adapter kit 							•	•
ZG-GMA	Mounting kit For flat and side mounting 				•				
ZG-LF1	Damper linkage kit For side mounting (with 2 ball joint KG8) 						•		
ZG-LF3	Damper linkage kit For side mounting (with 2 ball joint KG8) 						•		
ZG-NMA	Mounting kit For flat and side mounting 		•						
ZG-SMA	Mounting kit For flat and side mounting 			•					
ZG-TF1	Damper linkage For flat mounting 					•			
Z-AF	Retrofit adapter for NG NFU/SFU.. while replacing old NF/AF/AFR 							•	•
ZF10-NSA-F	10x10 formfit adapter mutipack 20 pieces							•	•
ZF12-NSA-F	12x12 formfit adapter mutipack 20 pieces							•	•
ZF16-NSA-F	16x16 formfit adapter mutipack 20 pieces							•	•

Series	Old models	New Generation	Description
NFU..	NF24	NFU	Open/Close 10Nm
	NF230		Open/Close 10Nm
	NF24-S	NFU-S2	Open/Close 10Nm, 2xSPDT auxiliary switch
	NF230-S		Open/Close 10Nm, 2xSPDT auxiliary switch
	NF24-SR	NFU24-SR	Modulating 10Nm
SFU..	AF24	SFU	Open/Close 20Nm
	AFR24		Open/Close 20Nm
	AF230		Open/Close 20Nm
	AFR230		Open/Close 20Nm
	AF24-S	SFU-S2	Open/Close 20Nm, 2xSPDT auxiliary switch
	AFR24-S		Open/Close 20Nm, 2xSPDT auxiliary switch
	AF230-S		Open/Close 20Nm, 2xSPDT auxiliary switch
	AFR230-S		Open/Close 20Nm, 2xSPDT auxiliary switch
	AF24-SR	SFU24-SR	Modulating 20Nm
	AFR24-SR		Modulating 20Nm







ASIA PACIFIC HEADQUARTERS

Belimo Actuators Ltd.
Room 207, 2/F, New Commerce Center
19 On Sum Street, Shatin, N.T.
Hong Kong
Tel: +852 2687 1716
Fax: +852 2687 1795
E-mail: info.asiapacific@belimo.ch

Belimo AUSTRALIA**Melbourne Office:**

Belimo Actuators Pty. Ltd.
12 Enterprise Court
Mulgrave Business Park
Mulgrave, VIC 3170, Australia
Tel: +61 (0)3 9545 0844
Fax: +61 (0)3 9545 0855
E-mail: info.australia@belimo.ch

Sydney Office:

Belimo Actuators Pty. Ltd.
Suite 2.20, 32 Delhi Road
North Ryde, NSW 2113, Australia
Tel: +61 (0)2 9805 1777
Fax: +61 (0)2 9805 1722
E-mail: info.australia@belimo.ch

Belimo CHINA**Shanghai Office:**

Belimo Actuators (Shanghai) Trading Ltd.
479 Chun Dong Road, Building C-2
Xin Zhuang Industry Park
Shanghai 201108
P.R. China
Tel: +86 21 5483 2929
Fax: +86 21 5483 2930
E-mail: info.shanghai@belimo.ch

Beijing Office:

Belimo Actuators Ltd.
Room 605, Hai Chang Edifice
44 Liang Ma Qiao Road
Beijing 100016
P.R. China
Tel: +86 10 6462 1382
Fax: +86 10 6462 1383
E-mail: info.beijing@belimo.ch

Chongqing Office:

Belimo Actuators Ltd.
Room 4, 9th floor, Unit 7, Luoma Jiari Gardan
No. 36, Qing Ling Road, Nan'an District
Chongqing 400060
P.R. China
Tel: +86 23 6275 3155
Fax: +86 23 6280 3380 *519
E-mail: info.chongqing@belimo.ch

Guangzhou Office:

Belimo Actuators Ltd.
Room 1202, Skyline Plaza
644 Tong Fu East Road, Haizhu Area
Guangzhou 510240
P.R. China
Tel: +86 20 3435 1860
Fax: +86 20 3435 1870
E-mail: info.guangzhou@belimo.ch

Belimo HONG KONG**Hong Kong Office:**

Belimo Actuators Ltd.
Room 207, 2/F, New Commerce Center
19 On Sum Street, Shatin, N.T.
Hong Kong
Tel: +852 2687 1716
Fax: +852 2687 1795
E-mail: info.hongkong@belimo.ch

Japan Office:

Belimo Actuators Ltd.
7th Floor, Honjo-Azumabashi DJ Building
4-19-3, Honjo, Sumida-ku
Tokyo 130-0004 Japan
Tel: +81-3-6823-6961
Fax: +81-3-3626-3911
E-mail: info.japan@belimo.ch

Malaysia Office:

Belimo Actuators Ltd.
12-1, Jalan PJS 10/2, Subang Indah
46000 Petaling Jaya Selangor, Malaysia
Tel: +603 5631 2188
Fax: +603 5638 2189
E-mail: info.malaysia@belimo.ch

Singapore Office

Belimo Actuators Ltd.
1 Tannery Road #08-04, One Tannery
Singapore 347719
Tel: +65 6842 1626
Fax: +65 6842 1630
E-mail: info.singapore@belimo.ch

Taiwan Office:

Belimo Actuators Ltd.
7F-2, No.343, Jhonghe Road, Yonghe City
Taipei County 234, Taiwan
Tel: +886 2 2922 8805
Fax: +886 2 2922 8806
E-mail: info.taiwan@belimo.ch

Thailand Office:

Belimo Actuators Ltd.
90/2 Pensiri Place
Soi Phaholyothin 32, Phaholyothin Road
Chandrakasem, Jatujak
Bangkok 10900, Thailand
Tel: +662 9415582-3
Fax: +662 9415584
E-mail: info.thailand@belimo.ch

Belimo INDIA**Mumbai Office:**

Belimo Actuators India Pvt. Ltd.
23/ ABCD, Govt. Industrial Estate,
Charkop, Kandivali West,
Mumbai 400067, India
Tel: +91 22 4025 4800
Fax: +91 22 4025 4899
E-mail: info.india@belimo.ch

Bangalore office:

Belimo Actuators India Pvt. Ltd.
Sreerama Complex,
No. 13, 2nd Floor, 5th Cross Road,
6th Block, Koramangala,
Bangalore – 560097, India
Tel: +91-80-40906311
Fax: +91-80-40906288
E-mail: info.india@belimo.ch

New Dehli Office:

Belimo Actuators India Pvt. Ltd.
Flat No. 516, DLF Tower – B,
Jasola Distt. Centre, Jasola,
New Delhi 110025, India
Tel: +91 11 41078501 to 41078507
Fax: +91 11 41078508
E-mail: info.india@belimo.ch

Chennai Office:

Belimo Actuators India Pvt. Ltd.
#25, Bagavadam Street, T-Nagar
Chennai - 600017, India
Tel: 91 44 42999450
Fax: 91 44 42999451
E-mail: info.india@belimo.ch

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EU BELIMO Automation AG
Brunnenbachstrasse 1
8340 Hinwil, Switzerland
Tel: +41 43 843 61 11
Fax: +41 43 843 62 68
E-mail: info@belimo.ch

AP Belimo Actuators Ltd.
Room 207, 2/F, New Commerce Center
19 On Sum Street, Shatin, N.T., Hong Kong
Tel: +852 2687 1716
Fax: +852 2687 1795
E-mail: info.asiapacific@belimo.ch

US BELIMO Aircontrol (USA), Inc.
43 Old Ridgebury Road
Danbury, CT 06813-2928
USA
Tel: +800 543-9038 / 203 791-9915
Fax: +800 228-8283 / 203 791-9919

Or contact your nearest Sales Representative

www.belimo.com

